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PLANNING FOR TRANSITION

Book of Papers

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Università Iuav
di Venezia





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Planning for Transition

Contemporary cities and territories face significant challenges – natural disasters due to climate change impacts, ecological crises, growing socio-economic unrest, global migration, political rifts including a rise of right wing factions, ambitious public works and mega-projects – all of which require new capacities in dealing with such individual and multiple groupings of such challenging and profound changes.

It is a matter of fact that at international level a discourse if not a condition of transition is pervading sectors and societies. This discourse points to alternative patterns and solutions to many of the challenges faced. A quickly changing scenario requires forms of planning, both locally and globally, which bear the capacity to support and manage mutable urban and environmental conditions. In fact, although cities do incessantly change, policy-makers and institutions are never fully prepared to respond to complex and risky situations, as well as relying on planning and policy tools which are often outdated; in addition, also existing theoretical frameworks, concepts, cognitive abilities and approaches become ineffective or outmoded.

Each unintended or unanticipated change comes as a break to existing social, political, and administrative routines and yet it may be anticipated that mechanisms of collective reflection and action will be generated. The congress invites scholars and practitioners to present and discuss case-studies of cities and projects that have engaged in meeting challenging situations – supporting transitions in urban contexts.

Specifically, it is aimed at offering an understanding of the forms of knowledge, concepts, tools, and skills needed to plan and address transition. Furthermore, it seeks to explore whether (and how) managing such changes has brought any overall reconsideration of the city design model and towards more general institutional reconfigurations.

The book collects all the papers presented at the Aesop Venice 2019 conference.

It is articulated in chapters that correspond to the tracks (16) and special sessions proposed (23).

Tracks

1. Transforming built heritage and landscapes
2. Urban design for multilevel planning
3. Teaching planning for the transition
4. Institutional change and regional transition
5. Methods and technologies for transformative planning
6. Community-based planning and social innovation
7. Theorizing urban change: complexity and ethics
8. Transition paths and urban futures
9. Climate proof cities and resilient societies
10. Urban metabolism and circular economy
11. Housing, gentrification and socio-spatial dynamics
12. Food, planning and healthy cities
13. Planning for accessibility and sustainable mobility
14. Planning, Law and Property Right: facing urban transitions
15. Tourism, spaces and urban cultures
16. Urban and Regional economics for transition

Special Session

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2. Urban Tourism, Neighborhood Change and Social Conflicts
3. Innovative Agriculture for Healthy Cities
4. Towards Post-Growth Planning Theory and Practice
5. Planning and Designing Green Infrastructures
6. Land Development and Management in Post-Socialist Countries
7. Home Sharing. Short-Term Rentals Affecting Local Housing Markets
8. Dynamic Change, Uncertainty and Planning for Adaptivity
9. Space, Citizenship and Identity: The Eu-Mena Region
10. The Role of The Local in Improving Cohesion and Spatial Justice
11. Friendly Spaces and Mobility for Ageing
12. Emerging Spatialities and Eu Policy Instruments: Cases and Perspectives
13. Facing Migrants Exclusionary Urban Policies
14. Learning Loops in The Public Realm. Enabling Social Learning in Communities to Tackle the Challenges of Cities in Transition
15. Planning and Biodiversity
16. Acsp-Aesop Special Session: Morsels of Hope: Migration and Urban Planning
17. Spatial Tensions: Urban Microgeographies for Changing Cities
18. Affordable Housing in Developing Countries: a Comparative Perspective
19. Acsp-Aesop Special Session: Learning from Arnstein's Ladder: from Citizen Participation to Public Engagement
20. Smart Cities and Regions Informing the Energy Transition
21. Maritime Spatial Planning (MSP) In Europe: Challenges in Transition
22. Shrinking Cities and Sustainability
23. Regional Design: Impacts on Territorial Governance and Planning Practice



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PA02

Transforming built heritage
and landscapes

INFLUENCE OF CREATIVE ACTIVITIES ON THE RESIDENTS AND CONSERVATION OF CULTURE, HISTORY, AND LANDSCAPE IN SETOUCHI ISLANDS, JAPAN

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Abstract: Due to worldwide changes in economic conditions and industrial infrastructures, many coastal industrial areas are now suffering from the outflows of industry and population. In recent years, efforts aimed at halting such declines and revitalizing those areas have often been led by cultural and artistic activities. One such effort is the “Setouchi Art Festival” on islands in Japan’s Seto Inland Sea. On Inujima, one of them, the Inujima Seirenscho Art Museum was built on the ruins of an old copper refinery as a tribute to the island’s industrial heritage. A number of other art projects were created on the island and old houses were renovated as part of the art festival. This paper aims to identify the influence of these creative activities on the island’s residents and learn how they reflect the conservation of culture, history, and the natural landscape of Inujima Island. To accomplish this, we conducted a field survey and interviews with local residents and learned that many of them feel positive about interacting with the young people who visit the art festival, including foreign tourists, while other local residents have developed a sense of separation from the old refinery since it was transformed into an art museum.

Keywords: heritage; artistic activities; Setouchi Art Festival; islands

1. Introduction

In Japan, huge coastal industrial areas were formed along with the rapid development of the heavy chemical industries during the rapid economic growth that began in the 1960s. However, due to the worldwide changes in economic conditions and industrial infrastructure, many of those coastal areas are now experiencing significant outflows of industry and population, which means that local economic conditions are now facing serious problems (Abe, 2017).

In many places, efforts aimed at promoting sustainable development in such declining areas are led by creating and revitalizing industries that focus on cultural and artistic activities (Lee *et al.* 2017). One such effort is the “Setouchi Art Festival”, which has been attracting numerous tourists over the last ten years. Although many of the Setouchi islands, a geographic region in Japan that includes the Seto Inland Sea, prospered during the years when the copper mining and refining industries were influential, many of those

factories have since closed and the islands that hosted them are now facing the related problems of depopulation and aging residents.

In response to those circumstances, Soichiro Fukutake, former Chairman of the Benesse Corporation and Chairman of the Naoshima Fukutake Art Museum Foundation, has led an effort to revitalize these areas. Focusing initially on four islands, he enlisted the aid of famous architects and artists in efforts to build art museums, hotels, and recreational facilities. Through his efforts, and with the assistance of the Kagawa Prefecture and Takamatsu City governments, the Setouchi Art Festival had spread to seven islands by 2010, and had been attended by more than ten million people by 2016.

However, since excessive dependence on government funding for such activities could result in difficulties during times when budgets are lean, it is hoped that those abovementioned activities will eventually become self-sustaining and develop in ways that allow culture, history, and natural landscapes of those islands to be conserved. With that point in mind, this paper aims at identifying the influence of these creative activities on the residents and determining their effectiveness in preserving local culture, history, and landscape. Specifically, we selected Inujima Island from among the seven participating islands of the Setouchi Art Festival and conducted a field survey there along with interviews with local residents.

2. Setouchi Art Festival

The “Setouchi Art Festival” is a modern art festival held on the Setouchi islands once every three years beginning in 2010, so it has been held three times so far. Although the festival’s executive committee is composed of many local organizations, its primary members are regional and local authorities such as Kagawa Prefecture, Takamatsu City, and the Fukutake Foundation. In 2010, the festival was held at Naoshima, Teshima, Megijima, Ogijima, Shodoshima, Oshima, Inujima, and Takamatsu Port. It has since been held on a total of 12 islands and two ports, including Shamijima, Honjima, Takamijima, Awashima, Ibukijima, and Uno Port.



Figure 1. Setouchi Art Festival locations (Setouchi Triennale 2019, 2018)

The festival’s exhibitions consist of modern artworks such as paintings and sculptures, visual media, performances, and architecture in harmony with natural landscapes. A total of 938,246 people visited the first festival in 2010, 1,070,368 people visited in 2013, and 1,040,050 people visited in 2016. The figures in Table 1 show the total income and expenditures for the festival from 2010 to 2016. Here, it can be seen that Kagawa Prefecture, the Fukutake Foundation, and another city paid an almost half of the total expenditures. Furthermore, it can be seen that Kagawa Prefecture and the Fukutake Foundation account for a third of those expenditures, while subsidies and donations account for another fourth. The remaining expenses were met with revenues from the sales of goods or tickets.

The Expenditure table also shows the costs of the art projects. Although the festival has continued to expand, the proportion of revenues obtained from tickets and goods has not changed, even though the

related expenditures increase each time it is held. In the period since 2013, total expenditures have increased by 47%.

source \ period		2010				2013				2016			
		2008	2009	2010	total	2011	2012	2013	total	2014	2015	2016	total
burden charge	Kagawa Prefecture	10	50	91	151	10	95	95	200	10	95	95	200
	other city	7	50	50	107	8	110	110	228	14	107	107	228
	Fukutake Foundation	0	50	50	100	0	95	95	190	0	95	95	190
	subtotal	17	150	191	358	18	300	300	618	24	297	297	618
subsidy		8	9	11	28	10	23	61	94	10	114	114	217
donation		1	64	87	152	30	90	37	157	4	24	24	190
sales of goods etc.		0	0	29	29	0	15	32	47	0	95	197	292
sales of tickets		0	0	222	222	0	63	175	238				
the others		0	3	1	4	15	5	1	21	47	3	21	71
subtotal		26	226	541	793	73	496	303	1175	85	650	653	1338
money carried forward to the next year		0	3	118	121	0	54	162		0	51	239	
total		26	229	659	914	73	550	768		85	701	892	

Table 1. Income of Setouchi Art Festival from 2010 to 2016 (million) (The Setouchi Art Festival Committee, 2010, 2013 and 2016)

cost of purpose \ period		2010				2013				2016			
		2008	2009	2010	total	2011	2012	2013	total	2014	2015	2016	total
art project	production	0	19	262	281	0	170	190	360	20	240	314	574
	production management	13	21	58	92	2	49	50	101				
	director	0	10	10	20	0	15	15	30				
	project estimate	0	4	0	4	15	0	0	15				
holding events		1	8	48	57	0	20	49	69	0	28	88	116
subtotal		14	62	378	454	17	254	304	575	20	268	402	690
management	publicity	7	25	49	81	1	57	38	96	2	87	72	161
	traffic measure	0	0	13	13	0	1	24	25	0	2	29	31
	operating site	0	0	28	28	0	4	103	107	0	37	169	206
	management of supporters	0	6	35	41	0	9	71	80				
	management of secretariat	2	7	23	32	1	22	31	54	12	21	32	65
	subtotal	9	38	148	195	2	93	267	362	14	147	302	463
production of tickets etc.		0	11	29	40	0	41	37	78	0	47	38	85
subtotal		23	111	555	689	19	388	608	1015	34	462	742	1238
money carried forward to the next year		3	118	0	121	54	162	160		51	239	150	
total		26	229	555	810	73	550	768		85	701	892	

Table 2. Expenditures of Setouchi Art Festival from 2010 to 2016 (million) (The Setouchi Art Festival Committee, 2010, 2013 and 2016)

From Table 1, it can be seen that burden charges account for about half of the income and the proceeds account for less than a quarter of the income in 2014-2016. In addition, it can be seen that the subsidies and donations account for a third of the income in 2014-2016. From Table 2, it can be seen that the art project costs, especially production costs, account for more than half of the expenditures.

From the above, it can be seen the Setouchi Art Festival is heavily dependent on outside funding. This is suboptimal because there are many calls for such outside funds and the festival might not be chosen for support in times when budgets are lean. Hence, increases in self-generated revenues and improvements in the financial cycle of the festival are urgently needed.

3. Art Projects in Inujima

Inujima, which once had a population of about 6,000 people, is one of the islands that prospered during the time when copper quarrying and refining were major industries. However, both of those industries



have since declined, and the average age of an island resident is now about 75 years old. Furthermore, the population has sharply declined to just 50 people. In an effort to revitalize the island while paying homage to its industrial heritage, the Inujima Art Museum was built on the foundations and surviving structures of an old copper refinery. Additionally, a number of art projects were created and old houses were renovated as part of the art festival.

Of a number of art projects launched in Inujima, the most famous three projects are explained as follows.

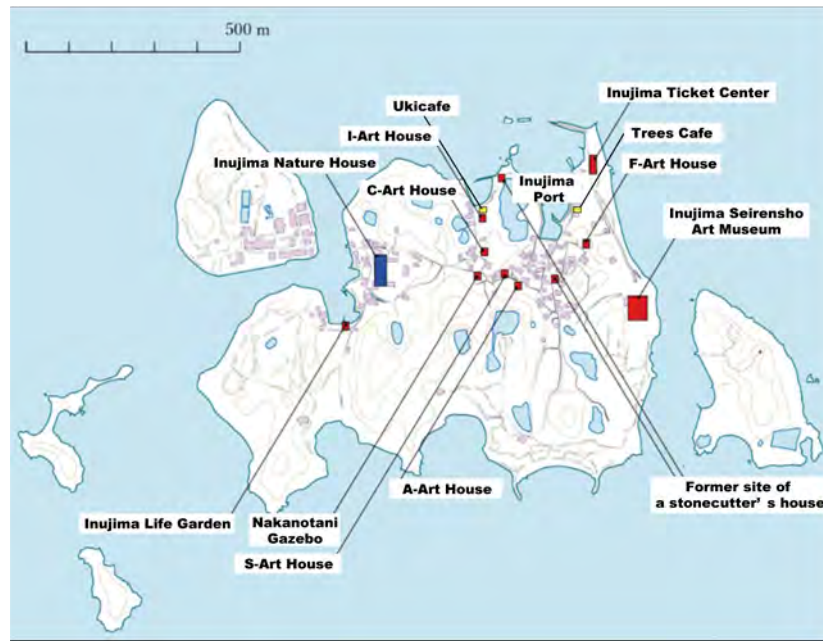


Figure 2. Map of Inujima

3.1 Inujima Seirenscho Art Museum

Based on the concept of “Utilizing existing elements and creating elements that do not exist,” the Inujima Seirenscho Art Museum conserved and restored the ruins of a former copper refinery in Inujima. The present-day facility, which introduced the architecture of Hiroshi Sambuichi, was designed to utilize existing chimneys and Karami bricks and to take advantage of natural energy sources such as sunlight and geothermal heat, thus minimizing the museum’s environmental impact. Artwork by Yukinori Yanagi based on a motif of Yukio Mishima (a famous Japanese author) and a high-efficiency plant-based water purification system were included as well. With careful attention paid to such elements as heritage, architecture, art, and the natural environment, this museum embodies the consciousness of a recycling-oriented society (Benesse Art Site Naoshima, 2018).



Figure 3. Seirenscho Art Museum

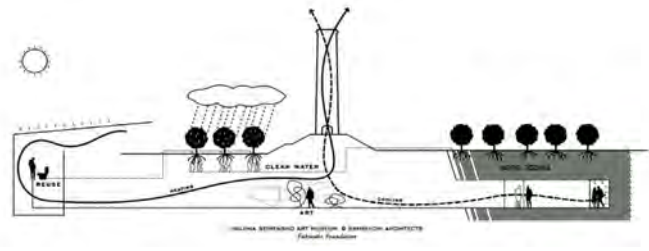


Figure 4. Circulation of Seirenscho Art Museum

(Benesse Art Site Naoshima, 2018)

3.2 Inujima Art House Project

This Inujima village project was developed by artistic director Yuko Hasegawa and architect Kazuyo Sejima. Artworks are exhibited in refurbished “art house” galleries scattered around the island so that visitors can also experience the beauty of the natural landscape as they meander from house-to-house while interacting with each other and villagers engaged in their usual everyday lives. The galleries dotting the village were constructed from various material such as the roof tiles and beams of old houses. In some places, transparent acrylic and aluminum panels have been installed to showcase the surrounding natural landscape. This provides visitors with opportunities to walk in places where they can appreciate the beauty of Inujima while also enjoying the exhibitions (Benesse Art Site Naoshima, 2018).



Figure 5. F-Art House, “Biota (Fauna/Flora)”



Figure 6. F-Art House, “Self-loop”



Figure 7. S-Art House, “Contact lens”



Figure 8. A-Art House, “Yellow Flower Dream”



Figure 9. C-Art House, “Ether”



Figure 10. “Former site of a stonecutter’s house”

(Benesse Art Site Naoshima, 2018)

3.3 Inujima Life Garden

The Inujima Life Garden is another Inujima Landscape Project created by Sejima. For this permanent facility, she revived a long-abandoned glass-paned greenhouse and developed a small park and botanical

garden around it that are rooted in the island's climate and culture. She envisions the garden as a space in which it is possible to design a new lifestyle by experiencing self-sufficient living within the island's rich natural environment (Benesse Art Site Naoshima, 2018).

4. Interviews with local residents and management representatives of the Setouchi Art Festival

We conducted interviews with nine people, including local residents and the management representatives of the Setouchi Art Festival, on the following five points:

- (1) Changes of the attachment to Inujima and lifestyles before and after the festival
- (2) Artworks
- (3) Advantages and disadvantages of the festival
- (4) Relationships with tourists
- (5) Issues and future perspectives

	gender	age	occupation	When live in Inujima?	How long live?	Who live with?	Where go shopping?
A	male	70's	pension	before the festival	more than 5 years	couple	out of the island
B	female	30's	Ukicafe	after the festival	4 years	couple	out of the island
C	male	20's	Trees café	-	-	-	out of the island
D	female	60's	Arimoto's store	before the festival	more than 5 years	family	out of the island
E	male	30's	Ukicafe	after the festival	more than 5 years	couple	out of the island
F	male	70's	part-time job of Benesse	before the festival	more than 5 years	alone	out of the island
G	male	60's	Nature House in Inujima	-	-	-	-
H	female	20's	Benesse	-	-	-	-
I	male	20's	Benesse	-	-	-	-

Table 3. Local Resident Data

Interviewee A is a pensioner, as well as a leader of the Inujima Community Association. He lives on the island with his wife and provides leadership to the festival. Although originally from one of the Setouchi Islands belonging to Hiroshima Prefecture, he came to Inujima because it is where his wife lives.

Neither my attachment with this island nor my lifestyle has changed because the tourists only stay for two or three hours during the day and the island becomes as quiet as usual at night. Besides, there are no workplaces, nursery schools, elementary schools, or junior high schools here, so even if you wanted to move here, you could not stay on the island full-time.

When Mr. Fukutake asked me to cooperate with the neighborhood association for the Setouchi Art Festival, I told him I'd give him as much help as I could. He created employment opportunities for islanders up to three hours a day doing such chores as planting flowers, but we do not sell things made from Inujima resources, so the festival economically influences the island.

Regarding the art, it may be impressive to some, but there are many artworks I simply cannot understand. But that's natural because priorities between the aged and young are different, as are their understandings. One issue about the Setouchi Art Festival that needs improvement is that we do not have good verbal communication with foreign visitors because of a lack of interpreters.

Nevertheless, we are grateful to the festival just for increasing the number of people that know about Inujima. I think the festival will continue in the future. Of course, the continuation of the festival depends on the commitment of Mr. Fukutake, but I think his son will follow his example.

Interviewee C is a man working at the Trees Café who stays on Inujima most of the week, but has not yet completely moved to the island.

I originally came here to participate in Inujima events, but I came to know the owner of this café who asked me to help here. This island is a quiet and calm place.



Interviewee D was born in Inujima and worked in other locations in Okayama Prefecture, but came back to Inujima to provide care for his aged father.

I think the Inujima Seirenscho Museum is very good, but the location does not have the same connection to the residents it had before. Regarding interactions with visitors, I sometimes inform tourists about how to find the art houses and give them some basic explanations regarding them because there is not any posted information or explanations. For example, sometimes it is necessary to let tourists know that they can enter the galleries freely because there are no signs indicating that they can go inside. Sometimes I also tell them how to view the artworks, but I am often troubled providing explanations to foreigners.

Since the Setouchi Art Festival is centered in Kagawa Prefecture, Okayama Prefecture does not provide financial help to Inujima and Okayama Prefecture residents on Inujima feel somewhat abandoned. We want Okayama Prefecture to help Inujima, too, and I want the festival to continue as long as possible. However, since we do not have the resources to operate the festival by ourselves, it depends on Mr. Fukutake's generosity.

Interviewee E was originally a staff member for an event held on Inujima who decided he wanted to live on the island and moved to Inujima with his wife B four years so. Now, they run Ukicafe.

We love Inujima because of its charms such as its quiet and relaxing atmosphere – not because of its artworks. However, the festival influences people whether they are running their own café or working at the museum.

Interviewee F is a pensioner who was born in Inujima, left to find work, and returned 30 years ago. He currently works part time.

Since the start of the festival, Inujima has recovered more energy than it had before, but my attachment with this island has never changed. I feel it is a little noisy during the day, but usually quiet and relaxed at night. My part-time job for Benesse Corp. is mainly mowing. The festival has never influenced us. Besides, it is very questionable whether the old refinery should have been renovated into the Seirenscho Art Museum.

The former refinery was sufficiently beautiful, but now we cannot enter the facility site freely because it was purchased by Mr. Fukutake. I think the buildings are good, but I cannot understand the artworks. Regarding interactions with visitors, I talk sometimes to the tourists because I can understand English if it is spoken slowly, but cannot speak Korean or Chinese.

Interviewee G is an employee of a lodging company in Inujima. A number of the employees work in shifts so they can always respond to guests.

Members of the theatrical groups and the architects usually stay here. Sometimes foreigners do too. There are also a few guests that are here to enjoy astronomy. However, almost all of the guests want to see the artworks or participate in events for children.

Interviewees H and I are employed by the Seirenscho Art Museum and commute to work without living in the island.

Okayama City is not very much involved in the Setouchi Art Festival. In Inujima, new houses cannot be built because of strong resistance from Okayama City, so the number of immigrants does not increase.

Summary of interviews with local residents and the festival's managers

- The festival has not changed local residents' lifestyles and attachments for Inujima significantly.
- The festival has attracted several migrants to Inujima, but they live on the island because of its intrinsic charms, not because of the artworks.
- The refinery's relationship with the local residents has become more distant since it became a museum.
- Okayama City does not provide much support to Inujima.
- The local residents are grateful to the festival for providing interactions with young people and foreigners. They hope the festival will continue.



5. Interviews with visitors to Inujima

We conducted interviews on the following three points with six visitors:

- (1) Inujima art projects
- (2) The Setouchi islands they have visited and will visit, and their trip routes
- (3) Opinions about the Setouchi Art Festival

	gender	age	occupation	address	transit port	companion	Where stay at?
J	male	20's	student	Kinki	Houden Port	friends	no
K	femae	30's	employee	Kantou	Naoshima/Teshima	alone	no
L	male	70's	retirement	Kinki	Houden Port	friends	no
M	male	30's	employee	Cyugoku	Houden Port	alone	no
N	femae	60's	part-time job	Cyugoku	Houden Port	family	no
O	male	20's	employee	Cyugoku	Naoshima/Teshima	friends	no

Table 4. Visitor Data

Visitor J said,

I want to come here again, but I would not want to move here, because this island is difficult to visit and does not have any convenience stores. I wish it was more accessible. The Seirenscho Art Museum is good and within my expectations. The museum educated me on historical contexts through the renovation of the refinery.

The Art House Project was normal, but Inujima Life Garden was very good. I talked with an elderly man that owns a colored carp. He was very friendly. However, I thought Inujima was an island that does not have a lived-in feel because there are so few residents.

Visitor K said,

I want to come here again and would like to live here for a limited period. I think it is good that the museum is made using an existing building. I get a sense that history has continued without destroying the past. I could understand the F-Art House, but I could not understand the others.

Visitor O said,

I think I want to come here again in several years in order to find how Inujima has changed. I hope to live on an island in the future, so I think moving to Inujima would be a good choice.

Summary of interviews with the visitors

- There are many who would like to move to Inujima if the island had better facilities. This is related to the point that it is currently too difficult to increase the number of immigrants.
- Inujima's attractions are not limited to the artworks; they also include the enhancement of atmosphere and scenic nature of the island, as well as the local residents' behavior towards visitors.

6. Conclusions

In this paper, we aimed at identifying the influence of creative activities such as Setouchi Art Festival and the creation of the Seirenscho Art Museum on the island's residents in an effort to learn how they reflect the conservation of culture, history, and the natural landscape of Inujima Island, and how they are perceived by both the residents and visitors to Inujima.

The paper results can be summarized as follows:



1. It was revealed that there were few changes in resident lifestyles and their attachments to the island as a result of the Setouchi Art Festival.
2. It was revealed that the number of people who have come to know about Inujima has increased because of the festival, but it is currently too difficult to increase the number of immigrants. Improvements to the basis of the island's livelihood and facilities will be needed in order to increase the number of immigrants.
3. It was revealed that the people who live in Inujima, or want to move there, like the island regardless of the artworks. Furthermore, it has become clear that one reason the number of immigrants will not increase easily is there is a strong policy of Okayama City to restrict new housing construction.
4. Most local residents have somewhat comfortable lives due to their pensions and wages resulting from Benesse Corp. employment opportunities, but they do not think there have been any significant economic effects as a result of the festival.
5. It was revealed the many visitors are satisfied by seeing the things that have long existed on the island that they would not have had a chance to learn about without the festival. It was further revealed there many people like the atmosphere of the island, which means that one of the purposes of the Setouchi Art Festival, helping others to discover the attractive characteristic of the islands, has been achieved, even though some of the residents regret losing familiarity with the refinery since it was converted into a museum.
6. The local residents appreciate the increased opportunities to communicate and interact with young people and foreigners that resulted from the festival, which has brightened up their lives, even though improvements need to be made to the ways in which they communicate with foreigners.
7. It was revealed Okayama City does not provide significant support for the festival compared to Kagawa Prefecture. The local residents of Inujima, which is the only island that belongs to Okayama Prefecture, feel alienated because the festival is managed primarily by Kagawa Prefecture.
8. Local resident support for the festival is more passive than active. However, they are generally of the opinion that the festival should continue and understand that it is necessary to Inujima's continued existence as an inhabited island.

We found almost no disadvantages to the Setouchi Art Festival and that the local residents enjoy interactions with the young people and foreigners. The festival has not changed Inujima excessively, but we have learned that there are some things that would not have happened without it, and those things have added cheer to the lives of the elderly people that live on the island. As a result, it can be said that the festival has been successful up to now.

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Invisible projects: imagined nearness as a tool to
explore long-term transitions of landscape/heritage.
The case of the river Tiber in Rome

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Abstract: How to deal with landscapes (and heritage) whose transformation has only been imagined by built environment disciplines for more than a century? How can long-term transitions of landscapes/heritage be explored to better understand a territory? This paper focuses on invisible projects: imagined transformations that have been developed for the Tiber riverbanks, in the historic centre of the city of Rome. The “massive change” determined by the construction of the riverbanks, at the end of the Nineteenth century, is here taken as a starting point for a process of long-term transition for the landscape/heritage of the Tiber, in its relationship with Rome historic centre. Such a change has physically modified the perception of the river in the city, with the construction of two embankment walls along the river. Because of this change, planners and designers have had difficulties in rethinking a role for the Tiber riverbanks. This can be linked to a lack of effective analytical tools to address the (sometimes invisible) existing dynamics that occur in and towards the area. The concept of nearness will be introduced to investigate a number of narratives, representations and collective memories partaking on the construction of positions/points of view of who practices a place.

Keywords: landscape/heritage; long-term transitions; nearness; imaginary; Tiber.

Introduction

This paper aims to discuss possible ways to explore long-term transition of landscape/heritage in order to better understand transformation processes that are still continuing nowadays. This will be questioned through a case study whose long-term transition includes numerous transformation that have only been imagined by built environment disciplines for more than a century. I will focus on invisible projects: imagined transformations developed for the Tiber embankments, in the historical centre of the city of Rome.

The construction of the embankments of the river Tiber, in its section crossing the historical centre of the city of Rome, might seem to have determined an arrest in designing further transformations for it. Beginning from the early 1900's the river started its life across the city about 10 metres below the new urban level, leaving a physical gap with the rest of the city. The size of this transformation, that many have pointed as a terrible mistake for a synergetic development of the city with its river (D'Onofrio, 1970, Ravaglioli, 1982), seemed to have ended a possible further development, or at least a feasible further transformation.

Nevertheless, ideas, desires and aspirations (most of which impossible to put into practice) were not prevented from being produced, leading to a body of information regarding how such projects faced material and immaterial¹ obstacles to an actual transformation of the river embankments. This paper aims to discuss in which sense looking at projects apparently invisible, since never actually put into practice, can be of interest for built environment studies. The reasons for this are not to be found uniquely among analytical purposes: such a study can also lead to better understand transformation processes that are being carried on nowadays and possibly future processes too.

I will try to focus on these imagined transformations inquiring how material and immaterial dimensions have been integrated into these projects for the river embankments. In particular, I will introduce the concept of 'nearness' to investigate a number of narratives, representations and collective memories partaking on the construction of positions/points of view of who practices a place. This concept will be used as a tool to gather knowledge on how elements like representations and collective memories have been employed in an integrated way with more physical, visible aspects of a same place through time, as well as looking at how this integration has changed through time. Beginning from transformation proposals for the river elaborated between the end of the XIX century and the beginning of the 1900's, I will then look at some proposals from the 1960's and 1980's. I will then draw some conclusions on the concept of nearness for future uses.

A "massive change"

The current appearance of the riverfront running through Rome historical city centre was shaped, in its main features² following an exceptional flood occurred in December 1870, only a few months after the city was declared part of the Kingdom of Italy and subsequently capital city of Italy (Pasquali, Rossi, 1987). The first official discussions regarding urban transformations of the new-born capital happened to be about the future of the river in the city, so to respond to the effect of the recent flood. A specific commission was set to examine possible solutions to the river periodically flooding the city (ibid.). The commission focused on two directions of transformation: on one hand the construction of embankment walls high enough to prevent the river to flood, on the other hand options of deviations of the riverbed outside the city. This second option was eventually discarded by the commission, but it nonetheless produced several proposals, among which an idea fostered by Giuseppe Garibaldi, one of the main figures of the Italian unification. Starting from 1872, Garibaldi began to take an interest in the possible future structure of the Tiber, studying, unlike previous projects, a territorial scale solution that would have implied the reclamation of an extended area surrounding the city (Agro Romano). This project focused on the complete deviation of the Tiber and Aniene (its main tributary in the urban area) through a canal that would have crossed the areas east of Rome so to enter the Tiber again south of its urban area, as shown in figure 1. The urban stretch of the river would have been abandoned, with the intent to allow a small amount of water to flow through a complex hydraulic machines system (Pasquali, Rossi, 1987). This proposal imagined a parallel industrial development in the southern part of the city (ibid.) where it will be realized part of the few industrial interventions of the city.

¹ The terms material and immaterial are here understood according to a common sense meaning, for which material would be related to objects, constructions, buildings and, in short, what is tangible, while immaterial would be related to the history, memory, culture and social relations that meet in a particular place.

² Some elements of the current layout will be added later, like a riverside walk on both sides of the river in the 1950's (Insolera, 2011).

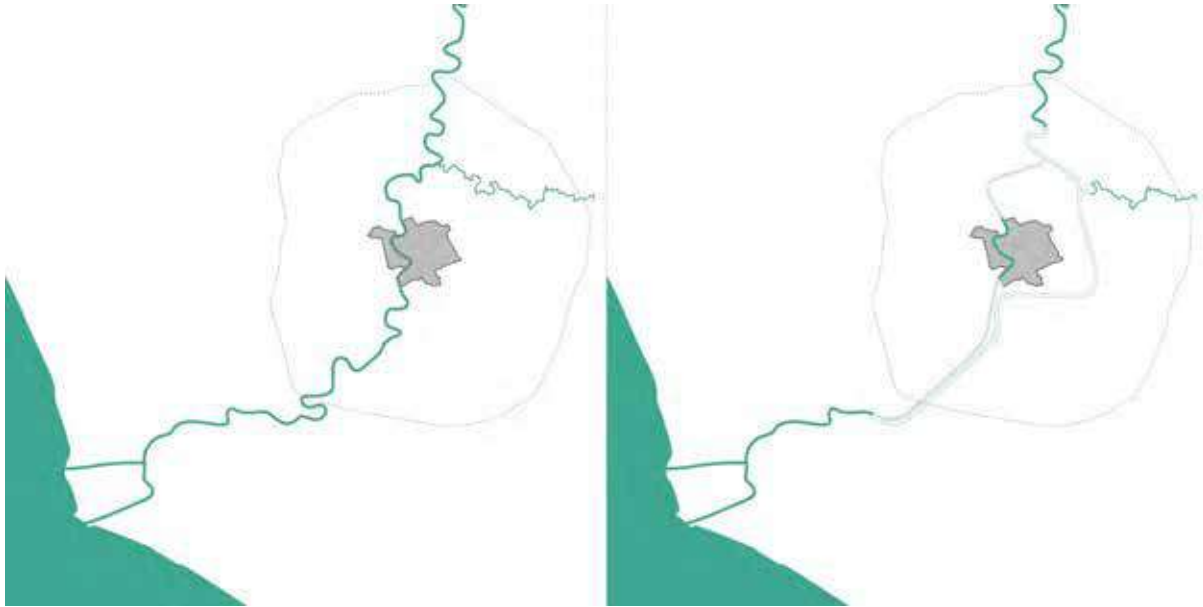


Figure 1. The course of the river as it was preserved (on the left) and the deviations of course of the river as they were imagined by one of Garibaldi's proposals (on the right). Drawing by the author

On that occasion, the construction of the embankment walls was preferred to the development of an industrial future, choosing to focus uniquely on the protection of the city from the river floods.

The approved project included, among others, the following points:

- the construction of 10 meters high walls along the banks;
- the definition of a constant width of the riverbed, fixed at 100 meters;
- the realization of two *lungotevere*, embankment streets at the new urban level (10 meters above the river);
- the construction of two collectors below the *lungotevere* that would have ensured the separation of the inland waters from those of the River (Ravaglioli, 1982).

Despite this, not even twenty years after this decision, a new scenario seemed to reopen for a possible industrial development. In fact, a new river port was planned, less than a kilometre northern the port of Ripetta, now covered by the construction of the embankment walls. This port already present in the Italian Geographic institute map of Roma of 1891 (Segarra Lagunes, 2004), was meant to be a part of a new industrial development, given the presence of a gasometer along the river and industrial settlements like a foundry and a tannery. This development was only for a short period part of the plans of the city: a few years later, the new urban regulations (1909) would have determined a residential end use for that area, leading to the demolition/dismissions of the industrial settlement to be replaced by a new neighbourhood (Flaminio) (ibid.). The river port nonetheless still remains, having though lost its purposes.

The physicality of the embankment walls did not stop, even during the XX century, the production of new urban imaginaries for alternative solutions. Between the 1960's and 1980's several projects were developed to offer

alternative visions to the material “gap” produced by the embankments³. Among others, two proposals (one by Paolo Portoghesi and Pierluigi Erolì and the other by Leonardo Benevolo) developed a plan addressing this issue, leading to extremely different conclusions.

The project by Portoghesi and Erolì is part of a collection of projects elaborated in individual and collective ways during their careers (Erolì and Portoghesi 1984). This collection produced through the years is meant to create a dialogue between the actual form of the city and “a second city. Conceived by the same architects of the first, made by their ideas, tensions, secret passions accumulated over time”. The purpose of this dialogue would be to “reduce the distance between these two cities” to “bring the world of aspirations closer to that of reality” (ibid.: 7, my translation). This collection aims to formulate a proposal to imagine a transformation strategy for the city of Rome. This strategy finds one of its main principles in the development of the Tiber into an “equipped” urban axis (figure 2). The banks of the river are imagined in most of the cases without the walls built in the Nineteenth Century so to give space to the “reconstruction” (ibid.) of buildings (for both residential and service/commercial use) along the banks, that are removed in order to proceed with the embankments. Removing the embankments was also meant to allow the resurface of parts of the city that were covered by the embankments, like the old river port of Ripetta, which in this project is reconstructed as it used to be.



Figure 2. The strategy along the river according to Erolì and Portoghesi (1984).

In 1977, Leonardo Benevolo proposed, within the book “Roma oggi”, a strategy of intervention for the historical centre of Rome, containing a specific strategy for the river. This consisted in the elaboration of a linear park that would have replaced the entire length of the embankments walls (figure 3). Such operation would have brought back on the surface not only the old river port of Ripetta, but also traces of the ancient Roman roads, now

³ For more design proposals addressing the river embankments see Muratore, 1983 and Purini et al, 1987.

hidden. The author describes this proposal as a “liberation” (Benevolo 1977) of the riverbanks, aiming to connect the city level with the river level through a long park for leisure activities.

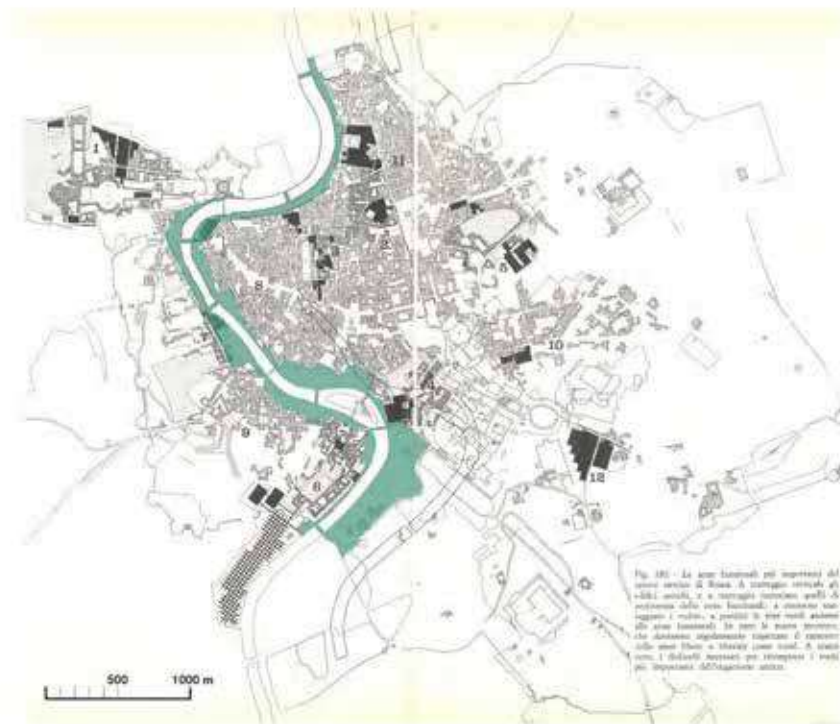


Figure 3. The strategy along the river according to Benevolo (1977).

Even though always trying to imagine alternative functions and roles for the river in the historical city, proposals have always struggled to balance the definition of new uses for the river with its historical and memorial value, leading to a reinforcement of the latter in the ways the future of the river has been thought. How can we better understand the relations underneath these proposals so to gain useful information for nowadays processes towards an actual (and not only imagined) transformation of the river? In the following section, a possible methodological tools will be discussed so to question what types of relations can be found between who have practiced the riverbanks in different ways (beginning from planners/designers who have tried during the last century to imagine a future transformation of the banks) and the place itself. The concept of nearness will be introduced to investigate a number of narratives, representations and collective memories partaking on the construction of positions/points of view of who practices a place.

Nearness

How are we “near” things or places? How the design proposals introduced in the previous section made emerge a relation with a place (the riverfront). Such relations cannot be limited to physical ones: the imagined solutions necessarily dealt, for instance, with historical and memorial issues. Through the idea of nearness, physical, material instances of the design proposals will be put in relation with immaterial, “invisible” aspects nevertheless present in those proposals. The concept of nearness will be here discussed through the work of Buchli (2010, 2013) on propinquity, Hall (1966) on proxemics and Low (2011, 2014, 2017) on embodiment and Altman and Low (1992) on place attachment.

The word nearness is used by Buchli (2010, 2013) to explain the ways a person or a group can feel attached to a place or thing. To explore this, he theorises the concept of propinquity (Buchli, 2010, 2013). This concerns not only a spatially referred nearness but a wider range of relationships with a specific place. Propinquity can be linked to nearness of personal relationships, of association, affinity, time, but it can also be related to narratives, stories (ibid.).

To understand the concept of nearness, it is useful to look at Edward T. Hall's (1966) concept of proxemics. This highlights the spatial distances people use according to different social relations. Analysing the distance receptors of our senses, being eyes, ears and nose (Hall, 1966, also quoted in Gehl 2011), Hall theorized four types of interpersonal distance: intimate (between 0 and 45 centimetres: the distance of personal feelings), personal (0,45 to 1,30 metres: the distance we use with close friends and family), social (1,30 to 3,75 metres: the distance we use for conversations with friends, colleagues, people we meet on the street) and public distance (over 3,75 metres: the distance for formal contexts) (Hall, 1966).

The concepts of embodiment, and embodied space⁴, (Low, 2011, 2014, 2017) and place attachment (Altman and Low, 1992) are also useful concepts to understand nearness. Embodiment, (ibid.) expresses "the location where human experience and consciousness take on material and spatial form" (Low, 2011: 467). The focus is centred on the actor, rather than on space: the actor's feeling, past experiences and thoughts are a means to give meaning to a place (ibid.). Place attachment (Altman and Low, 1992) underlines how place incorporates both individual and collective experiences and memories (ibid.). Place is not necessarily considered the final aim of attachment, but rather a mean that incorporates our experiences, with no distinction between the individual and the group (ibid.).

The word nearness has been chosen for its ambivalent stance between the physicality of place and its "intangibility", allowing to decline it as the set of knowledge, competences and resources on which the position of those who practice a place with respect of the same is constructed. It is therefore a feeling of appropriation and at the same time a proxemic of the individual towards a place. One's nearness to a place, therefore one's own position, also determines one's own point of view and, consequently, interpretation of a place, also generating the possibilities of use which have been imagined for it. This concept will be now put to the test on the case study of the river, as introduced in the previous section.

Invisible projects

In this section, the concept of nearness will be discussed through the analysis of two design proposals for the river, one by Eroli and Portoghesi (1984) and one by Benevolo (1977) previously introduced. In both cases, the focus will be drawn on the specific proposals for the area surrounding the Ripetta river port, covered by the embankment walls. The analysis will underline the main elements of the proposals in relations to the uses that these imagined transformations would have brought and some of the immaterial qualities that have fostered those material changes. This will help to understand a network of relations, "nearness", some tighter than others, representing the positions one could have, according to the proposals, towards material and immaterial qualities of the place.

Eroli and Portoghesi's proposal focuses on five main elements: the first is the Tiber river; the second is obviously the port of Ripetta, which is rebuilt since its archaeology; the third element that we can identify are the boats, which in the intentions of the designer should cross the river making base on the renewed port; the fourth element is the construction of dwellings and services conceived by the authors to replace the current

⁴ Low explains that "the body (bodies), conceptualized as embodied space(s), incorporates metaphors, ideology, and language, as well as behaviours, habits, skills, and spatial orientation derived from global discourses and faraway places [...] and yet is grounded at any one moment in an urban location" (Low, 2011: 464).

embankment walls; the fifth element is finally constituted by the same embankment walls, which are partially kept to constitute the boundary and the visual horizon of the area drawn in the view (figure 4).

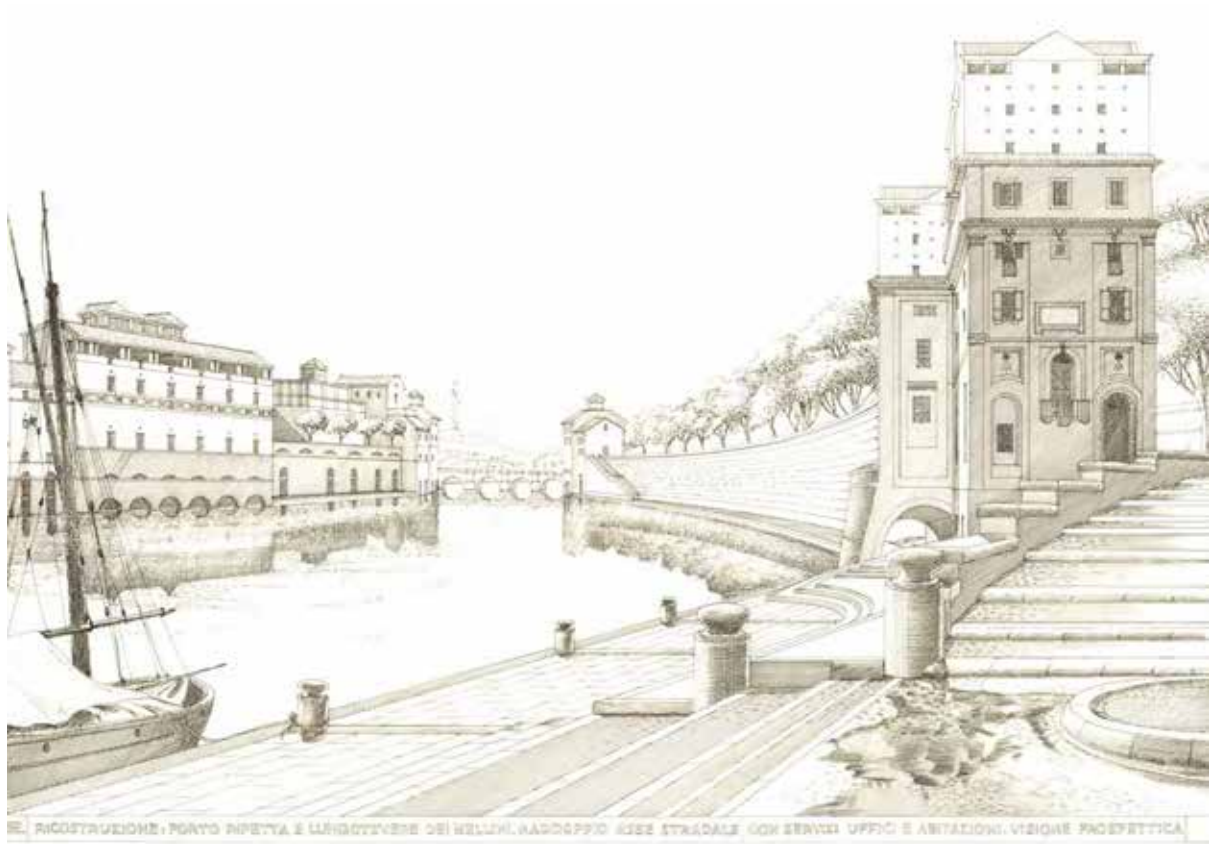


Figure 4. The reconstruction of the Ripetta river port (Eroli and Portoghesi, 1984).

Through a nostalgic reconstruction of the river port of Ripetta this element is reconnected to the hypothesis of commercial and leisure uses, as the presence of boats also. The dwellings along the river have the clear purpose to be inhabited and to provide services to the surrounding areas. The walls on the other side, seems to remain the visual horizon of this scene, without however seeming connected by any kind of use to the river or other spatial elements present. Looking at the uses related to each of these spatial elements, we can then try to imagine what immaterial qualities, according to the proposals, should have been connected or incorporated to the various elements.

In the description of the whole "renovatio urbis" operation (Eroli and Portoghesi, 1984), the two authors make a broad and clear reference to memorial issues, to the (re)foundational meaning of the place constituted by the restoration of a precise ancient monument or archaeological finding, that is the port of Ripetta. The latter therefore seems clearly to be distinguished by the ability to evoke an evenemential history, that is the city's past, but also to evoke collective memories of a past that, even at the time of the proposal, was not so recent but still deeply present in narratives of the relationship between the Tiber and the city. These capacities to evoke the history and memory of the place held by the port are shared with the river, which is an integral part of this narrative. To some extent, also the walls play a role in this process, playing, according to the authors, the "negative" role of having erased testimonies of how life along the river used to be (ibid.).

Collective memory of citizens is also embodied in these elements in different ways: if the river and the walls share the same memorial experiences and a common narrative, the port is only tangentially linked to them, as a "spectre" (de Certeau, 2001) of something that was no longer there and which must be recalled nostalgically.

The port and the boats are clearly connected by the idea of a possible exchange, mainly in a commercial sense but also in a broader sense of movement, while an idea of everyday life seems to unite the buildings on the river with the boats, which would share a same routinary "landscape" of use, even though they would not necessarily be connected otherwise. At this point, it is possible to understand the positions, both physical and ideal, that the individual could occupy within this so designed place, observing then that degrees of nearness the place would have offered him/her, who would then have to re-elaborate them based on his/her personal experience. The project seems almost divided into two blocks, with history, memory and nostalgic practices to have a preeminent part and struggling to integrate the physicality of buildings that are only a form landscape, having little effect on everyday experiences.

As the second proposal is concerned, the key element underlined by Benevolo (1977) is the idea of a linear park on both sides of the river, to replace the embankment walls. The main elements of this project are: first of all, the spatial element constituted by the park; secondly, the embankment walls themselves, paradoxically present in this proposal through their absence; an additional element can be identified in the port of Ripetta, which is also restored in this intervention; finally, the traces of ancient paths, also made reemerged as the river port.

The relationship with the walls becomes clearly non-existent given the disappearance of the latter in favor of the birth of the linear park, with which instead comes to constitute a connection through uses related to leisure. The same type of use related to free time and a nostalgic re-enactment connects the river with the ancient paths and with the port. The immaterial qualities to which these elements seem to be related are primarily aspects evoked by leisure: ideas of everyday life but also of affectivity towards a long river park that seems conceived to create a special experience in the everyday lives of the Romans. If the port is once again evoking ideas of exchange, it is the history and collective memory of place to have a prominent role, through the reconstruction of streets and ancient monuments, but also through the disappearance of the embankment walls that remain part of a memorial narrative of the place (and with its disappearance it becomes part of its past).

The history of Rome is proven once again to be one of the strongest traits uniting most of the spatial element of the proposal, building a symbolic link between the river, the port and the reemerged ancient paths. Tangentially, also the embankment walls are part of this relation, entering to be a part of the past, even if a less ancient past and, in a certain sense, less (rhetorically) prestigious. As mentioned earlier, great importance is given to the construction of a park which builds a strong connection with the river in terms of naturality, as well as in terms of daily use and no longer in terms of exceptional use. The work on the historical qualities of the place tries to connect with an attempt to build a daily atmosphere of use, defining a nearness to the place that is based on the combination of daily experience and historical re-enactment.

Conclusion

After a closer look to these "invisible projects", it is interesting to point out how they are not only design proposals remained on paper, but they are also part of processes that through the concept of nearness can be unveiled. Nearness is then a tool not only to analyse the qualities of those never realised projects, but also to underline ongoing processes that architectural and urban design are not able to grasp, like "involuntary" design processes that have a long-term development.

In the case of the river Tiber, the concept of nearness can be useful to highlight a predominant point of view that have been adopted (in more or less voluntary ways) to look at the river, especially the part crossing the historical centre of the city, which sees it "only" as a monument, symbolically and socially important, but almost impossible to "dwell". In order to think of a future for the river, it will be necessary to find a compromise between its monumental state and the declared necessity to use it, to inhabit it and stay close to it. In this sense, the concept of nearness is not meant to be only a tool for retroactive analysis, but also a tool to be put at work in contemporary and future designs.



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Track 1: Transforming built heritage and landscapes

Assessing the Transition From Traditional To Participatory Heritage Management In Turkey

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Abstract: Turkey is in a unique geographical position with 18 nominated World Heritage Sites. Since 2005, United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Committee requires a management system through participatory means to guarantee the protection of these sites. In this same year, Turkey enacted the associated legislation by proposing a new actor named *site manager* who has both local and professional knowledge with the main role of coordination of the site management system to ensure protection of the nominated property through participation. Public participation is therefore mandatory in the site management processes in Turkey. The aim of this research is to examine current site management practices in Turkey to understand how they address public participation inferring how the site manager scrutinises public participation during the development of the management plan. A combination of qualitative analyses is proposed to assess information contained in the documentation available for the development of management plans, including the management plans themselves. The focus is on understanding how knowledge from public participation is transferred, from focus group meetings to management plans, considering the actors, actions and outputs involved in the process. This case-based proof of concept provides a set of indicators to model public participation in site management processes to resolve the mistrust issues between authorities and communities and to gauge the level of knowledge transfer by the *site manager*.

Keywords: heritage management, community involvement, participation, knowledge engineering, comparative analysis

Introduction and background

The idea of public participation as a political principle has been part of several agendas for sustainable and economic development. The “Local Agenda 21” (UNCED, 1992) introduced the concept of “capacity building” to widen public participation from national to local government levels. The United Nations Economic Commission for Europe (UNECE) signed a convention with 46 members states in 1998 emphasizing three pillars to promote a healthy environment and securing citizens’ rights based on: access to information, public participation in decision-making and access to justice (Aarhus Convention, 1998). Few years later, the Organization for Economic Co-operation and Development (OECD, 2001) published the handbook on strengthening the relationships between citizens and governments.

Theories and methods related to public participation in urban planning can be found in the works of Arnstein, 1969; Cole, 1974; Davidoff, 1965; Davidson, 1998; Fainstein, 2000; Fischer, 2000; Forester, 1999; Friedmann, 1965; Healey, 1997; Innes & Booher, 2004; Innes, 1996; Sanoff, 2000, to cite a few. Davidoff (1965) pioneered in bringing public participation to urban planning agendas through the idea of advocacy planning. In subsequent



years a series of theories started being developed such as Transactive Planning (Friedmann, 1973), Equity Planning (Krumholz, 1982), Consensus Building (Innes, 1996), Collaborative Planning (Healey, 1997), Cosmopolis (Sandercock, 1998) and the Just City (Fainstein, 2000). The aim behind all these theories was primarily to bridge the communication gap between the public and planning professionals.

In parallel with these theories, there were studies which addressed public participation from a more practical and empirical perspective such as the work of Arnstein (1969) and Davidson (1998). These studies examined the engagement level of public authorities with communities. Arnstein's (1969) model Ladder of Participation was developed to categorize different types of community involvement, from non-participation to citizen empowerment, after assessing the Model Cities program implemented in the USA in 1966. Davidson (1998) reinterpreted Arnstein's model critiquing the idea of levels and replacing it by the Wheel of Participation model which advocated the concept of a non-linear spectrum of participation between government and communities. Gibson (1986) focused on residents' real needs and preferences and raised the Planning for Real method to overcome the communication gap between planners and residents. Glass (1979) created a matrix of objectives and techniques of participation, while Lane (2005) analysed the relationship between planning theories and public participation.

Nowadays the literature in this domain is copious. The realm of public participation is defined, theorized and practiced by its elements, limits, tools, and methods in many areas. However, most of the work related to it still focuses on the processes of engagement between citizens and communities with public authorities assuming that information and knowledge transfer depend primarily upon it. To the best of the authors' knowledge, there are no records in the literature related to the assessment of how successful knowledge from citizens and communities are effectively translated into planning actions i.e. there are no methods to test how much information from community engagement is actually used in the development and implementation of planning decisions to judge if participation is actually happening or if it is merely a paper exercise.

This work proposes to start a discussion in this important aspect of public participation. It focuses on understanding public participation in conservation, tracing how knowledge from public participation is transferred from focus group meetings to management plans considering the actors, actions and outputs involved in the process. The method is illustrated as a proof of concept through a case study in Turkey and provides a set of indicators to model public participation in site management processes in conservation of heritage sites to resolve mistrust issues between authorities and communities and to gauge the level of knowledge transfer by the *site manager*.

Participation in site management plans in Turkey

Management plans are a required document to apply for nomination for UNESCO World Heritage Site since 1994. These documents specify the management system of the heritage site and the way of preservation of its "outstanding universal value" (UNESCO, 2008, IIF.108). They are regulated by an administrative organizational and operational structure and legalise actions to implement management systems in these heritage sites. Since 2005, they impose management system through participatory means "to ensure the effective protection of the nominated propert[ies] for present and future generations" (UNESCO, 2005, IIF.108) requiring countries wishing to apply for UNESCO nominations to adapt their own national legislation and regulatory framework to comply with it.

Turkey incorporates site management plans as defined by UNESCO to its legislation in 2004, by Law no. 5226 making changes in Law on Conservation of Cultural and Natural Assets and Other Laws. This change in law states site management plans as mandatory and defines as "conservation and development projects defined with yearly and five yearly implementation phases and five yearly review plans, generated by considering the management plan, excavation plan and if any, landscape plan or conservation master plan in order to protect, sustain, valuate of the related site management area." (Law no. 5226, 2004, Article 1(11)). In 2005, the

regulation for the Substance and Procedures of the Establishment and Duties of the Site Management and the Monument Council and Identification of Management Sites becomes effective. Those legal amendments include a mandatory protocol for public participation to become an integral part of site management processes as required by UNESCO. The role of the site manager is then defined in the regulation as the actor who:

“has previously worked on the area, has adequate knowledge of the area, can develop a specific vision for the area, has knowledge on new approaches to cultural and natural property management, is experienced in management policies and implementations, is a graduate from university departments such as architecture, urban and regional planning, archaeology, art history, public administration, business management and economics shall be appointed by the relevant municipality to manage the urban conservation sites and shall be appointed by the Ministry to manage non-urban conservation sites.” (Regulation for Site Management, 2005, 3(14))

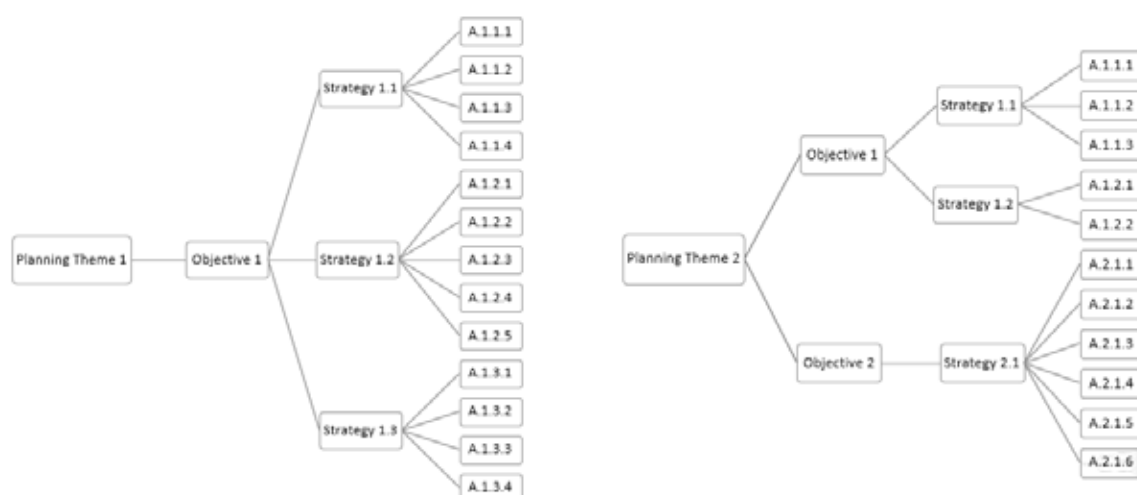
The site manager is supposed to act as a catalyst for the transition from traditional to participatory heritage management once in charge of coordinating the development and implementation of a management plan. However, can this actor coordinate the interpretation and transferring of knowledge gathered from public participation into actions? Do those actions address the problems of the place and enhance its values? How are the different community actors and stakeholders involved in the development and implementation of the actions and outputs defined in the management plan?

The proposed method

Two types of documents were investigated in detail: (i) Reports from focus group meetings and (ii) Site management plan. The former, being the most important record of community participation in the heritage management process, summarises a set of issues raised by the different stakeholders involved in the project, expressing insiders' knowledge of the site and its context. The latter, is the official document, prepared by a project team coordinated by the site manager and contains, in theory, community knowledge embedded in it as it is prepared based on a SWOT analysis which merges a technical assessment of the site with information coming from focus groups.

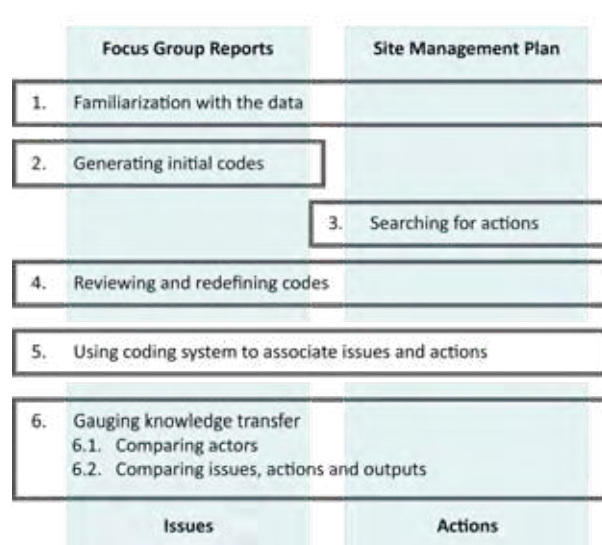
Focus group reports are structured according to a set of themes derived from focus group meetings whereas management plan content is structured according to Figure 1. Each planning theme has a set of objectives, which have a set of strategies with a subsequent set of related actions structuring guidelines for the implementation and monitoring of the management plan.

Figure 1: Management Plan Structure



A content based thematic analysis was undertaken to extract patterns of knowledge transfer (Braun & Clarke, 2006). The first stage of this analysis comprised familiarization with the documents to understand the types of discussions happening in focus group meetings and the types of actions defined in the management plan. Initially, recurrent issues or patterns of issues were extracted from focus group reports for the different geographic locations within the boundaries of the heritage site, generating an initial coding system¹ around which different stakeholders could be grouped. Stakeholders involved in the different focus group meetings were then associated, according to the different issues they raised, to this initially generated coding system. This coding system was used to search for actions in the management plan which would, in theory, respond to issues raised by the different stakeholders. However, this association was not linear and involved a series of iterations between searching and re-coding, until a final coding system was produced (Figure 2).

Figure 2: Methodology Diagram



Associating actions in the management plan with issues raised by interactions with all stakeholders involved in focus group meeting was the first step to assess knowledge transfer from community participation to management plan implementation. This association enables one to gauge, at least qualitatively, how much issues raised by the community are translated into actions in the management plan. Qualitative gauging is defined at three different levels: (i) Actions which are a direct translation from issues raised by different stakeholders, (ii) Actions which are partially or indirectly translated from issues raised by different stakeholders and (iii) Absence of actions to address issues raised by different stakeholders. This gauging is undertaken for the actions which are directly, indirectly or partially translated from issues raised by stakeholders according to the following types of assessment:

- Verifying whether stakeholders from focus group meetings are transformed into actors responsible for implementing the action, beneficiaries of the action or consultants on the action being implemented;
- Verifying if there is a designated budget for the action;

¹ Coding system in Social Science means essentially labelling recurring themes in a data source

- Discussing if an issue raised in the focus group report is translated into an action reported in the management plan considering the corresponding outputs used to monitor its success.

Knowledge is considered transferred when there is correspondence between community stakeholders from focus groups and implementers, beneficiaries and/or consultants in the management plan. An action is considered implemented if a budget is allocated to it. When they mitigate issues, actions' outputs are compared to ideal scenarios to monitor their implementation.

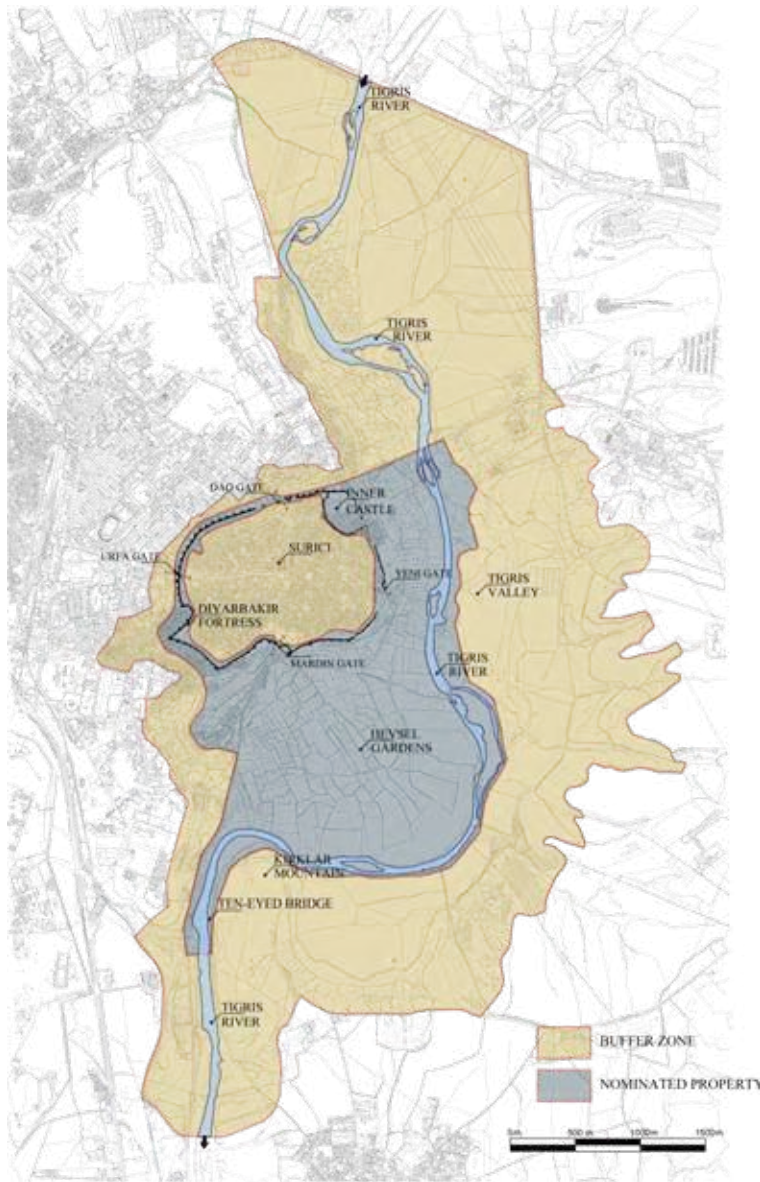
The method is applied to the case of Diyarbakir Fortress and Hevsel Gardens Cultural Landscape which is inscribed by UNESCO World Heritage Committee as a world heritage site in July, 2015 (Decision: 39 COM 8B.32, 2015). In 2000, the site was included in the temporary nomination list of UNESCO World Heritage List (WHL). Diyarbakir Greater Municipality started the process of the preparation of site management plan and UNESCO WHL application dossier in January, 2012. The site management plan was completed in November, 2013 and official nomination dossier was presented to UNESCO WHL in February, 2014.

The Diyarbakir Fortress and Hevsel Gardens Cultural Landscape

The site is located in the city of Diyarbakir, in South-eastern Anatolia Region of Turkey and includes a fortified city with its adjacent and surrounding landscape. The city walls are the longest ones in the world after the Great Wall of China and were constantly modified throughout the Hellenistic, Roman, Sassanid, Byzantine, Islamic and Ottoman periods as the city was a regional capital. The Tigris River and the Hevsel Gardens supply food and water for the area, hence being site and cultural landscape due to their outstanding universal value, respectively defined as *works of man* and *combined works of nature and man* in the UNESCO World Heritage Convention (UNESCO, n.d. Article 1). The nominated property with its 7000 years history has six components: Amida Mound, City Walls, Hevsel Gardens, Ten-Eyed Bridge, Tigris Valley and natural resources (Figure 3).

The Amida Mound is an archaeological area known as inner castle and located on the northwest of the fortress, built on the Fiskaya cliff with 4 gates and 19 bastions (Figure 3). The city walls are 2 meters wide, comprise 82 bastions, and extend through 5.8 km once the inner castle is included. Bastions are built in three or four storey with the first two enclosed and used for storage or military purposes. Upper levels are built as terraces and have a wider surface area. The city walls have four gates opening to north, south, west and east (Figure 3). Hevsel Gardens are both agricultural lands as a source of livestock and cultural landscape, combined works of nature and man as defined by UNESCO. They are located in the southeast of the fortress and cover an area of 400 hectares. Ten-Eyed bridge is on the southern border of the property and its name comes from its ten arches.

Figure 3: Diyarbakir Fortress and Hevsel Gardens Cultural Landscape



(Map from the site management plan, 2014)



City Walls and Urfa Gate (2014)



Surici & Hevsel Gardens (2014)



Hevsel Gardens and Fortress (2014)



Ten-Eyed Bridge (Tuncay Cilasun 2019)

As inscribed in the UNESCO WHL, this heritage site has a management plan, which was informed by community involvement through participatory meetings, cf. Article 108 of (UNESCO, 2005). Records of community meetings are documented in focus group reports and the resulting management plan should in theory reflect the interests, ideas, problems and needs of the people who have a stake on the heritage site. Both documents will be used as a basis to illustrate a proof of concept of the proposed method to assess community knowledge transfer throughout the planning process.

Proof of concept and discussion

Community engagement took the form of: (i) Focus group meetings and (ii) Search workshops to inform the SWOT analysis.

The project team conducted eight focus group meetings to list and discuss current issues and needs of the heritage site according to the viewpoint of its different stakeholders. Each focus group had clear theme and a predefined area of common interest to all stakeholders taking part on the meeting. One can infer three different criteria used to organise focus group meeting: (i) Documentation and management of heritage and tourism, (ii) Management of urban and agricultural land use and (iii) Special needs of specific groups of people. Table 1 shows an extract of areas of interest and the participants involved in each of these eight focused groups. Participants included a comprehensive list of stakeholders: public authorities (municipalities, etc.), NGOs, development agencies, universities and, different types of chambers, associations and foundations. A summary of the discussion which happened in each of these eight meetings is documented in a single report.

Besides focus group meetings, the project team also organised two search workshops for the heritage site focused on Hevsel Gardens Cultural Landscape and Diyarbakir Fortress with Surici Area. These workshops were designed to inform a SWOT analysis used in the development of the management plan. Outcomes of it are presented in the management plan as a single summary table which does not form part of this analysis as it lacks detail and information related to different stakeholder participation.

Table 1: Focus Group participants and area of interests

Focus Group and its acronym	Area of interest	Participants of the meeting
HM Heritage Management and Tourism	Institutional structure of the heritage management based on its preservation, economic development, and institutional capacity of competent authorities	. Diyarbakir Provincial Directorate of Culture and Tourism . Diyarbakir Cultural Values Conservation Committee . Diyarbakir Greater Municipality Site Management Unit . Museum of Diyarbakir . City Planners Chamber . Landscape Architects Chamber . Architects Chamber . Yenisehir Municipality . Karacadag Development Agency . Diyarbakir Greater Municipality Coach Station . Special Provincial Administration
SM Spatial Management	Spatial structure of the area, urbanisation, conservation, infrastructure and built environment quality of the heritage area and its surrounding	. Diyarbakir Provincial Directorate of Urbanism and Environment . Diyarbakir Provincial Directorate of Culture and Tourism . Diyarbakir Cultural Values Conservation Committee . Diyarbakir Greater Municipality Site Management Unit . Museum of Diyarbakir . City Planners Chamber . Architects Chamber . Sur Municipality . Yenisehir Municipality
HG Hevsel Gardens	Agricultural structure of Hevsel Gardens, its management, production and marketing problems, importance of agriculture for local communities	. Farmers . University representatives . Sarmasik Association . Professionals Association . Agriculture General Directorate . Diyarbakir Greater Municipality Infrastructure Department . Diyarbakir Greater Municipality Public Health Department

		<ul style="list-style-type: none"> . Agriculture City Directorate . Diyarbakir Cultural Values Conservation Committee
ICH Intangible Cultural Heritage	Detection, documentation and protection of intangible cultural heritage	<ul style="list-style-type: none"> . Diyarbakir Greater Municipality Culture and Tourism Directorate . Diyarbakir Provincial Directorate of Culture and Tourism . South-eastern Anatolia Municipalities Association . Diyarbakir Museum . Artisans . Tigris University . Folk poets (Dengbej)
W Woman	Problems women face in the social life in terms of education, health, recreation, culture, and safety	<ul style="list-style-type: none"> . AÇEV – Mother Children Education Foundation . ÇATOM – Multi-purpose Commercial Centre . Ceren Women Association . South-eastern Anatolia Municipalities Association . Woman Branch / Local Agenda 21 . Sarmasik Association . Woman Education, Mental Health Consultancy Service Centre
C Children	Access to social services and education, safety and drug addiction risks, children employment, issues within the families	<ul style="list-style-type: none"> . ÇATOM – Multi-purpose Commercial Centre . Greater Municipality of Diyarbakir / Camasir Evi . Greater Municipality of Diyarbakir Social Services Directorate . City Council / Local Agenda 21 . Umut Isigi Woman Cooperative . South-eastern Anatolia Municipalities Association . Immigration Trustee (Göç Vakfı)
Y Youth	Education, social services, social life quality, relationships with family and society, drug addiction risks	<ul style="list-style-type: none"> . City Council / Youth Branch . MEGAM . Greater Municipality of Diyarbakir
D Disabled	Position in social life, accessibility of public facilities, rehabilitation and social services	<ul style="list-style-type: none"> . Disabled Council . Physically Disabled Association . Greater Municipality of Diyarbakir Social Services Directorate . Disabled Branch / Local Agenda 21 . Visually Impaired Sports School Association

The familiarization stage involved a detailed reading of the focus group reports and management plan. Information was extracted from the issues found in the focus group meetings for the two different types of predominant land uses of this heritage site: Urban land-use in Diyarbakir Fortress and Surici area and agricultural land-use and natural landscape in Hevsel Gardens and Tigris Valley. Common issues related to the heritage site as a whole, its management and coordination between different types of land uses were also identified. The management plan was used to review and refine the information extraction strategy so issues and actions could be associated and qualitatively gauged against each other.

An example of the information extraction strategy for this case study is displayed in Table 2 which presents the geographic location in which the issue arises with a brief description of what the problem is followed by the code attributed to it. For consistency purposes, codes were kept identical when a similar type of issue is raised in different geographic locations. Table 2 illustrates for instance that issues related to coordination can happen in the urban area, rural area or over the heritage site however differences arise in relation to what is being coordinated and therefore who is involved in this coordination. A total of 41 entries were produced for this case study, 20 are attributed to Diyarbakir Fortress and Surici Area; 14 are attributed to Hevsel Gardens and Tigris Valley and 7 are attributed to the heritage site as a whole.

Table 2: Illustrating the information extraction strategy: each row in the table is an entry

Geographic location: Diyarbakir Fortress and Surici Area Issue description: Due to the increasing obscurity in Surici, there is an urgent need of coordination among institutions and NGOs. Code Label: Coordination
Geographic Location: Hevsel Gardens and Tigris Valley Issue description: Due to the large number of authorised institutions in the area, different projects planned by different authorities without coordination and this damage the natural structure of Hevsel Gardens and Tigris Valley. Coordination between authorities should be provided to solve the pollution and production problems. Code Label: Coordination
Geographic location: The Heritage Site as a whole Issue description: Lack of coordination between institutions cause to fragmentary and unreliable documentation of intangible cultural heritage. Only through coordination, the multi identity of heritage can be maintained. Code Label: Coordination

An example of the association of actions and issues is presented in Table 3. This case study has a total of 242 actions, from which 207 of them somehow relate to focus group meetings. The 35 actions not related to information coming from focus group meetings mainly refer to the preservation of tangible and intangible cultural values, improvement in the quality of life, and tourism activities with the respective spatial organizations related to it. Four of these actions are expanded to illustrate the analysis process in detail. The first two actions are related to the need to increase the number of food markets in the Surici area whereas the third and fourth refer to universal spatial accessibility in public spaces and historic sites. These issues illustrate special needs of specific groups of people who participated in focus group meetings, providing iconic examples of community knowledge inputs to the participatory process.

Table 3: Coded issues for Diyarbakir Fortress and Surici Area

Diyarbakir Fortress and Surici Area		
Coded issues	Focus Group	Management plan actions
Coordination	SM HM	PT5 - S 1.1: Action 1.1.3:
Food Market	W	PT2 - S 1.2: Action 1.2.1: Reviewing the Suriçi market structure to conduct food demand forecasts in neighbourhood scale and increase the number of food stalls and market clusters in the area. PT2 - S 1.2: Action 1.2.2: Developing an organizational structure that can monitor the food prices in an effective and dynamic way and stabilise the market rate.
Accessibility	HM, SM, W, D	PT3 - S 4.3: Action 4.3.1: Action 4.3.2: PT3 - S 6.1: Action 6.1.3: Conducting spatial arrangements to make public spaces handicap-friendly and transforming public spaces to areas that can be easily used by women, disabled and disadvantaged groups. PT5 - S 6.1: Action 6.1.4: Action 6.1.5: PT5 - S 6.1: Action 6.1.6: Creating a safe and accessible structured environment for the elderly, the handicapped and the children.
Hevsel Gardens and Tigris Valley		
Coordination	HG	PT5 - S 2.1: Action 2.1.1: PT5 - S 2.2: Action 2.2.3:
Unregistered Activities	ICH SM Y HG HM	PT3 - S 5.1: Action 5.1.1: Action 5.1.2:
Water Pollution	HG SM	PT3 - S 4.2: Action 4.2.1: Action 4.2.4: Action 4.2.8: PT3 - S 5.2: Action 5.2.1: PT5 - S 1.4: Action 1.4.16: Action 1.4.17: PT5 - S 2.2: Action 2.2.1: PT5 - S 2.3: Action 2.3.2: Action 2.3.3:

Heritage Site as a Whole		
Coordination	ICH	PT6 - S 1.1: Action 1.1.1: Action 1.1.3: Action 1.1.4: Action 1.1.7:
Holistic Approach	ICH HG SM HM	PT1 - S 1.1: Action 1.1.1: Action 1.1.2: PT5 - S 2.1: Action 2.1.2: Action 2.1.3:
Staff	SM HM	PT1 - S 1.1: Action 1.1.3: PT3 - S 5.1: Action 5.1.5: Action 5.1.6:

The purpose of associating issues with actions is to analyse how the first informed the latter; i.e. to analyse how issues in focus group meetings were, in theory, used to inform actions in the management plan. This analysis comprises examining whether stakeholders from focus group meetings are beneficiaries, implementers and/or act as consultants for the actions listed in the management plan (Table 4). The analysis is complemented by examining how each issue, as reported in the focus group meeting, is translated or re-written in the form of an action in the management plan including the corresponding output used to monitor its success (Table 5).

Table 4: Verifying stakeholders' involvement in focus group meeting and management plan

Action	Community Stakeholders from focus group	Beneficiaries	Consultants	Implementers
PT2 - S 1.2: Action 1.2.1: Reviewing the Suriçi market structure to conduct food demand forecasts in neighbourhood scale and increase the number of food stalls and market clusters	W <u>Consumers:</u> AÇEV – Mother Children Education Foundation; ÇATOM – Multi-purpose Commercial Centre; Ceren Women Association; Woman Branch / Local Agenda 21; Sarmasik Association; Woman Education Mental Health Consultancy Service Centre	Hevsel Gardens producers, Consumers Budget: ~88.359 EUR (580.000 TRY)	Tigris University Faculty of Agriculture; Agricultural Engineers Chamber; Diyarbakır Greater Municipality Information Technology Directorate; South-eastern Anatolia Project Regional Development Administration; Diyarbakır Chamber of Commerce and Industry; Diyarbakır Chamber of Agriculture	Diyarbakır Greater Municipality Resource Development Directorate; Diyarbakır Provincial Directorate of Food Agriculture and Livestock
PT2 - S 1.2: Action 1.2.2: Developing an organizational structure that can monitor the food prices in an effective and dynamic way and stabilise the market rate		No Target Group No budget	Diyarbakır Chamber of Commerce and Industry; Diyarbakır Chamber of Agriculture; Diyarbakır Greater Municipality Strategy Development Directorate; Diyarbakır Greater Municipality Resource Development and Affiliates Branch Directorate	Diyarbakır Provincial Directorate of Food, Agriculture and Livestock
PT3 - S 6.1: Action 6.1.3: Conducting spatial arrangements to	W, D <u>Relevant NGOs:</u> Disabled Council;	No Target Group Budget:	Relevant NGOs; Sur Municipality Construction and Urbanisation	Diyarbakır Greater Municipality Social Services Directorate;

make public spaces handicap-friendly and transforming public spaces to areas that can be easily used by women, disabled and disadvantaged groups	Physically Disabled Association; Disabled Branch / Local Agenda 21; Visually Impaired Sports School Association;	4.000.000 EUR	Directorate	Diyarbakır Greater Municipality Construction and Urbanisation Directorate
PT5 - S 6.1: Action 6.1.6: Creating a safe and accessible structured environment for the elderly, the handicapped and the children	AÇEV – Mother Children Education Foundation; ÇATOM – Multi-purpose Commercial Center; Ceren Women Association; Woman Branch / Local Agenda 21; Sarmasik Association; Woman Education Mental Health Consultancy Service Centre	No Target Group No budget	Diyarbakır Greater Municipality Construction and Urbanisation Directorate; Sur Municipality Construction and Urbanisation Directorate; Yenisehir Municipality Construction and Urbanisation Directorate	Diyarbakır Greater Municipality Transportation Directorate

Table 5: Issue from focus group with corresponding action and output

Issue	Action	Output
<p>Food market</p> <p>The prices in the food markets are reasonable because they supply vegetables and fruits from Hevsel Gardens.</p> <p>Local people request to increase the number of food stalls and market clusters.</p>	PT2 - S 1.2: Action 1.2.1: Reviewing the Suriçi market structure to conduct food demand forecasts in neighbourhood scale and increase the number of food stalls and market clusters in the area	Analysis reports showing food demand predictions; Number of market places established based on these reports
	PT2 - S 1.2: Action 1.2.2: Developing an organizational structure that can monitor the food prices in an effective and dynamic way and stabilise the market rate	Establishment of the organizational structure that can stabilise the market rate; The number of experts who monitor the food prices as a part of this organizational structure
<p>Accessibility</p> <p>The occupation of streets by commercial activities make women feel unsafe and uncomfortable to walk in the streets.</p> <p>Bastions and city walls should be accessible to disabled people. At least, the most important ones.</p>	PT3 - Action 6.1.3: Conducting spatial arrangements to make public spaces handicap-friendly and transforming public spaces to areas that can be easily used by women, disabled and disadvantaged groups	Number of public spaces that have become disabled friendly; Length of the pedestrian walkway on which tracking bricks are laid; Number of traffic lights with sound warning system; Number of disadvantageous groups that use public spaces
	PT5 - S 6.1: Action 6.1.6: Creating a safe and accessible structured environment for the elderly, the handicapped and the children	The number of interventions undertaken for the elderly, disabled and children on bus roads, stops, ramps, traffic lights and pedestrian walkways

Table 3, illustrates that issues related to food market are raised by one focus group only, the one related to the special needs of women in the area. However, Table 4 shows that women related NGOs are not clearly represented in either of these actions. Beneficiaries are only listed for Action 1.2.1 and stated as generically the ones trading and consuming in these markets. Interestingly, Hevsel Garden producers, despite being direct beneficiaries are not included as either implementers or consultants to this action. From Table 2, one can infer

their interest might be represented through consultants from professional association which attended the Hevsel Garden focus group meeting, but there is no documentary evidence for this. As a whole, in both of these actions, there is no documentary evidence of contact between implementers and the community. Implementers of Action 1.2.1 are mainly the greater municipality and the provincial directorate, which did not take part on the women or Hevsel Garden focus group meetings.

When looking at Table 5, it is possible to see that the community claims prices are reasonable and therefore should be maintained. This request is directly translated into the proposal of a regulatory structure to control food prices with outputs which, in spite not directly measuring this implementation and not having a designated budget assigned to it, seem to suggest it will be provided. The action and its outputs might attend consumer requests but no evidence is provided in relation to how producers will take part in this decision-making process, making it a potential focus for community tensions.

Table 5 also illustrates the community requests to increase the number of food stalls and market clusters. This action is translated into an assessment, comprising a review of current market infrastructure followed by a forecast on demand with outputs dependent on results from this analysis. Outputs however, are mainly quantitative, i.e. they relate to demand predictions with numbers of places established based on them. There is no documentary evidence in relation to the placement and positioning of these new food stalls and market clusters in space as well as no documentary evidence in relation to how the community will have a say on these and will be taken into consideration in demand assessments.

Table 3 illustrates that issues related to accessibility are raised by four different focus groups. Two of them contain community representatives from women in the area and people with disabilities whereas the other two contain representatives of heritage management and tourism as well as representatives of urban land use management. For the purpose of illustrating the community role in relation to this issue, only community focus group stakeholders are listed in Table 4. No target groups are specified for these actions and community representatives are supposed to be part of the list of consultants as 'relevant NGOs' in Action 6.1.3. One can infer that community interests might be represented by the Diyarbakır Greater Municipality Social Services Directorate, an implementer of Action 6.1.3, which attended the focus group discussion for people with disability but there is no direct community involvement other than through this municipality actor. Implementers in this case are mainly the Diyarbakır Greater Municipality departments while other municipalities are acting as consultants.

Issues raised by the community, as reported in Table 5, mainly refer to conflict of use in the urban space, lack of universal accessibility to heritage monuments and problems related to pedestrian vehicle segregation. Action 6.1.3 relates to the implementation of principles of universal accessibility to public spaces, whereas Action 6.1.6 refers to general improvements in accessibility for children, the elderly and people with disabilities despite no budget being assigned to it. Outputs are unspecific in relation to the types of solutions proposed with the exception of traffic light systems, ramps and pavement. They are also purely quantitative, i.e. not referring to any specific areas to be transformed, not even heritage monuments despite them being clearly listed in issues coming from focus group meetings.

As a whole, the four actions examined enable one to conclude that there is a weak involvement of the community in this part of the decision-making process. Despite initial consultation, members of the community are partially listed explicitly as beneficiaries and also partially or indirectly involved as consultants to the actions proposed. Actions' outputs are mainly quantitative, i.e. with no specific site location for them to be implemented, despite community clarity in this respect. The lack of budget for two of the actions (Action 1.2.2 and Action 6.1.6) examined suggest their implementation is no more than a paper exercise, especially considering they have clear costs associated to the proposed outputs.

Conclusion and future work

This paper proposed a method to assess and understand how knowledge from public participation is transferred from focus group meetings to management plan considering the actors, actions and outputs involved in the process. A proof of concept of the method is demonstrated through the assessment of parts of the UNESCO WHL application dossier for the Diyarbakir Fortress and Hevsel Gardens Cultural Landscape in Turkey. This proof of concept is supposed to be the starting point in the development of a method to test how much information from community engagement is used in the development and implementation of planning decisions to judge if participation is actually happening or if it is merely a paper exercise.

By extracting and relating some of the information in reports from focus group meetings with the some of the information contained in the management plan available for this area, it was possible to start assessing the level of control and influence communities had in relation to the implementation of the different actions proposed in this plan. It was also possible to see how communities would benefit from the implementation of the different proposed actions and to what extent the outputs proposed for these actions would better integrate communities to the related world heritage site.

The assessment was qualitative and undertaken for only part of this case study. However, the method has proven already useful as it could clearly identify different degrees of community involvement in the decision-making process as well as gauge how actions proposed in the management plan could benefit them. The method will be used to assess the 207 actions of this case study and also applied to two other UNESCO World Heritage Sites in Turkey in future studies. Through that, the authors expect to develop a set of recommendations for declaring community involvement more effectively in management plans and better translating issues raised by them into a set of actions with outputs that are not only measurable but also more clearly related to the effective protection of the nominated sites. Work in this area can contribute to the development of new guidelines which can empower UNESCO to check the effectiveness of public participation in WHL applications.

Besides that, assessing knowledge transfer, in general, is important in reinforcing the need to maintain community participation throughout site management processes. However, further studies are needed to enable the identification of patterns and types of actions to produce a proper theory generic enough to assess knowledge transfer in different types of participatory projects. For instance, clarity is needed in relation to which pieces of information need to be extracted from reports of community meetings and management plans to prove or disprove community engagement.

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Transitions towards landscape- and heritage-centred local development strategies: A Multi-Level Perspective

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Abstract: At the beginning of the new century, the European Landscape Convention (ELC) marked a paradigm shift in the conception of landscape, which is now conceived of as a common good and of crucial importance to people's everyday lives. A challenge is thus to find new approaches and tools to make the new concept translated into practice. The paper employs the Multi Level Perspective (MLP) to analyse transition pathways towards innovative forms of landscape management. In contrast with a linear conception of innovation, the use of this framework enables the authors to show nested and bi-directional dynamics of change across multiple levels and the interactions between different sectors/actors: governance and policy, professionals and public administration, grassroots organizations, citizens, market, industry. The paper focuses on the way new concepts and tools for landscape protection and improvement have been spread into planning practice in the Apulia region through the development of the new Territorial Landscape Plan (TLP). In the analysis, a particular attention is paid to the way innovative forms of management of landscape are actually mobilized, supported and given long-term perspectives, while resistance to change is lowered throughout the development and the implementation of the plan.

Keywords: transition, spatial planning system, landscape, heritage, multi-level perspective

Introduction

The European Landscape Convention (ELC), signed in Florence in 2000, marks a turning point in the way landscapes are or should be regarded by decision-makers, professionals, academics, and the people at large. The general aims of the ELC are to promote European landscape protection, management and planning as a key element of individual and social well-being. Among other things, it requires a crucial shift from an exclusive focus on the identification, valorisation and protection of 'special' landscapes towards the acknowledgement of the importance of the qualities of the ordinary, the everyday, even the degraded or stigmatized places. According to the ELC, landscape "is an important part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas" (Council of Europe, 2000, Preamble).

This implies the need of a radical change from the way landscape planning practices have been developed across Europe and in Italy in particular, where heritage and landscape issues have been traditionally tackled through the development of ad-hoc legislation, which imposed the statutory protection of places of exceptional beauty. In Italy the first law of this type was passed in 1939, then followed by the so-called Galasso law in 1985, which enlarged

the range of areas to be protected by law to environmental features, while keeping the same approach to protection through binding rules and regulatory plans. These plans were mostly sectorial and focused on single protected areas, i.e. extra-urban areas of ‘extraordinary beauty’ or high environmental value, detached from the complex and conflictual transformations of the territory.

The elitist conception of landscape and the regulatory focus of plans nevertheless proved to be largely ineffective to contrast widespread practices of landscape disruption, as strategies for economic growth and local development kept being made without any consideration for landscape and heritage. Laws and rules for landscape protection as well as any plan trying to enforce them were largely regarded as constraints that might limit pro-growth interventions, thus poorly tolerated or opposed by local governments and communities. This happened despite in most cases pro-growth plans not only betrayed the promised solutions to economic and social problems, but also produced huge environmental and territorial damages.

Partly in line with the innovations introduced by the ELC, the new Italian Cultural Heritage and Landscape Code (2004, amended in 2006 and 2008) combines some innovations of the ELC with the Italian legal system of landscape protection. It distinguishes between protection and enhancement of the landscape, preserving the former in the State’s jurisdiction and devolving the latter to the Regions (Degrassi, 2012) together with the responsibility to approve a spatial (territorial) plan for the entire regional territory aimed at improving landscape quality. The Code states that the regional landscape plan must contain prescriptions (binding rules) aiming to preserve protected areas, but it does not prevent regions from introducing other planning measures, tools and devices in order to achieve these objectives.

A wide opportunity space is thus opened up for regions, requiring deep changes in planning approaches and tools (Marson, 2016). How to take up this challenge? How to foster and support a transition in the spatial planning system leading to landscape- and heritage-centred local development strategies in the place of old fashion pro-growth land use planning? This will be the research focus of this paper.

In order to tackle this issue a first question to be answered is what we mean by spatial planning system and how we conceptualize transitions in those systems. The issue is anything but simple as there are very divergent positions. On one side there are advocates of a regulatory vision of planning, centred on what has been defined ‘project plan’ (Albrechts, 2004, quoting Faludi and Van der Valk, 1994), who maintain change to be the result of normative, top-down command-and-control measures. Their idea is that through the enforcement of laws, regulation, standards, etc., change would trickle-down and spread in due course at the level of planning practice and territorial development projects. This approach has been widely followed in planning practice in Italy as elsewhere, while being hardly criticized for its ineffectiveness in contrasting dominant interests and in “making urban life more beautiful, exciting, and creative, and more just” (Davidoff, 1965, p. 432).

On the opposite side, for a long time now, completely different approaches to the definition of planning and – consequently – to the way changes may be produced in the planning system were attempted. Although embracing a varied range of perspectives, these approaches shared a process-centred (instead of a plan-centred) vision of planning (Davidoff, 1965; Forester, 1980; Friedmann, 1987; Innes, 1995; Healey, 1996). Their vision marked a shift in the interests from the technical dimension of planning to governance processes. Experiences of innovation in urban governance promoted by active citizenship and community-based movements started receiving increasing attention in planning (Douglass and Friedmann, 1998). This also led to a diversion of research foci from large scale realities to fine-grained, micro-scale experiences together with the idea that transformative practices in planning needed to be conceived of as bottom-up, insurgent processes (Sandercock, 2003; Friedmann, 2011). “Can neighbourhoods save the city?” is the title of a quite recent book on community development and social innovation (Moulaert *et al.*, 2010), whereas social innovation is conceived of as encompassing three main dimensions – product, process and empowerment dimensions (Moulaert and Nussbaumer, 2005) –, none of which is related to any technical form of planning.

But can planning really do without a plan? Despite hard criticisms on the limitations of plans, it's hard to say that planning does not need a plan (Neuman, 1998). This is even more evident in places like Italy, where the 'urbanism tradition' has long dominated and has led to the identification by law of a number of technical tools and plans, including landscape plans, which are still mandatory although innovations are needed in line with the ELC.

In between the two opposite positions outlined above, the authors of this paper adopt a perspective that consider spatial planning systems as socio-technical systems, i.e. systems whose technological dimension is closely linked and co-evolving with several other dimensions including policy, markets, scientific knowledge, changes in user practices and cultural meanings (Geels, 2004). Because of this, in the analysis of the research issue outlined in the paper, the MLP framework will be used, which has been developed within the broad field of innovation studies to analyse transitions of such systems (Geels, 2002, 2005; Rip and Kemp, 1998).

The paper will be structured as follows. Next section provides a description of the framework known as Multi-Level Perspective (MLP) together with a proposed adaptation of that framework for the research problem under scrutiny. This framework will be used in the following section for the case study analysis, which is about the ongoing transition in spatial planning strategies in the Apulia region towards landscape- and heritage-centred local development and the role played in this process by the new Territorial Landscape Plan (TLP) of the region. A particular attention in the analysis will be paid to the way innovative forms of management of landscape have been actually mobilized, supported and given long-term perspectives, while resistance to change of key powerful actors has been lowered throughout the development and the implementation of the plan. Some lessons learned will be drawn in the concluding section.

A Multi-level perspective on transitions of socio-technical systems

According to the authors of this paper, a transition in the spatial planning system leading to landscape- and heritage-centred local development strategies in the place of old fashion pro-growth land use planning may be considered a problem of transition of a socio-technical system, as several dimensions are involved and co-evolving in it. Its scientific-technological dimension includes planning tools for spatial strategies' development at different scales (including general and sectoral plans, masterplans, strategic development plans, etc.) and the evolution of disciplinary knowledge and skills owned by professionals and those involved in plan making. But in order to turn landscape and heritage in a cornerstone of planning practice, to work on the scientific/technological dimension of spatial planning is not enough.

Several dimensions need to be touched. There is a policy dimension made of policy instrument mixes framing spatial planning strategies as well as spatial policies directing territorial transformations. There is an industry dimension, linked to the many private developers and construction companies making their profits in public infrastructure and private building sectors. There is also a dimension linked to market/user preferences, in so far as private buildings and farming plots are sold on the market to consumers while public infrastructures, both in urban and rural areas, are collectively used by citizens. There is then a cultural dimension linked to the way local communities perceive their territory and develop their place consciousness and identity. There is finally an institutional/governance dimension, which is related to the institutional framework for spatial strategies development and to the role local communities have in spatial strategies' formulation and management. Any transition in the spatial planning system thus need to encompass a collective effort to re-imagine the territory and to define new priorities for development reaching the many actors dealing with landscape 'production', i.e. development companies, farmers, local inhabitants, government officials, technical professionals, etc.

Because of the intertwining of all the above mentioned dimensions in the spatial planning system evolution, we suggest the use of the framework known as Multi Level Perspective (MLP), which has been developed in the broad field of innovation studies to explain transitions in socio-technical systems (Geels, 2002, 2005; Rip and



Kemp, 1998). Nevertheless, as already done in the application of that framework to the analysis of transitions in urban regeneration policies (Barbanente and Grassini, 2019), we propose the use of a modified framework, which add an institutional/governance pillar to the original six pillars defined in the MLP literature. This is done because of the higher relevance of the institutional/governance dimension in urban studies compared to other sectors to which the MLP framework has been applied.

The MLP framework has been developed based on insights from evolutionary economics (Nelson and Winter, 1982), from sociology of technology (Bijker *et al.*, 1987; Hughes, 1987) and from neo-institutional theory (Giddens, 1984). In short, it frames transitions as the result of co-evolutionary and non-linear dynamics of change taking place within and across three levels (Geels, 2002, 2005; Rip and Kemp, 1998). The lower level is the level of niches, which act as ‘incubation rooms’ for radical novelties (Schot, 1998); in this level three important processes happen: different actors, involved in niche-innovation experiments, learn through cycles of actions, sensemaking and adjustment of cognitive frames (Raven and Geels, 2010); expectations and visions are developed and provide direction to internal innovation activities and to learning processes; social networks are built and strengthened to increase the legitimacy of niche-innovations (Kemp *et al.*, 1998; Hoogma *et al.*, 2002). The meso level is the so-called ‘socio-technical regime’, which embodies the deep-structural rules, cognitive routines and beliefs that coordinate and guide – in a Giddensian manner (Giddens, 1984) – perceptions and actions of all actors involved, i.e. engineers/technicians, policy makers, public officials, civil society, scientists, private developers, funding bodies, grassroots organizations, etc. Finally, the macro-level is called ‘socio-technical landscape’ and represents the wider exogenous context of macro-economic trends, deep cultural patterns, macro-political development, etc, which influences niche and regime dynamics while being beyond the control of individual actors.

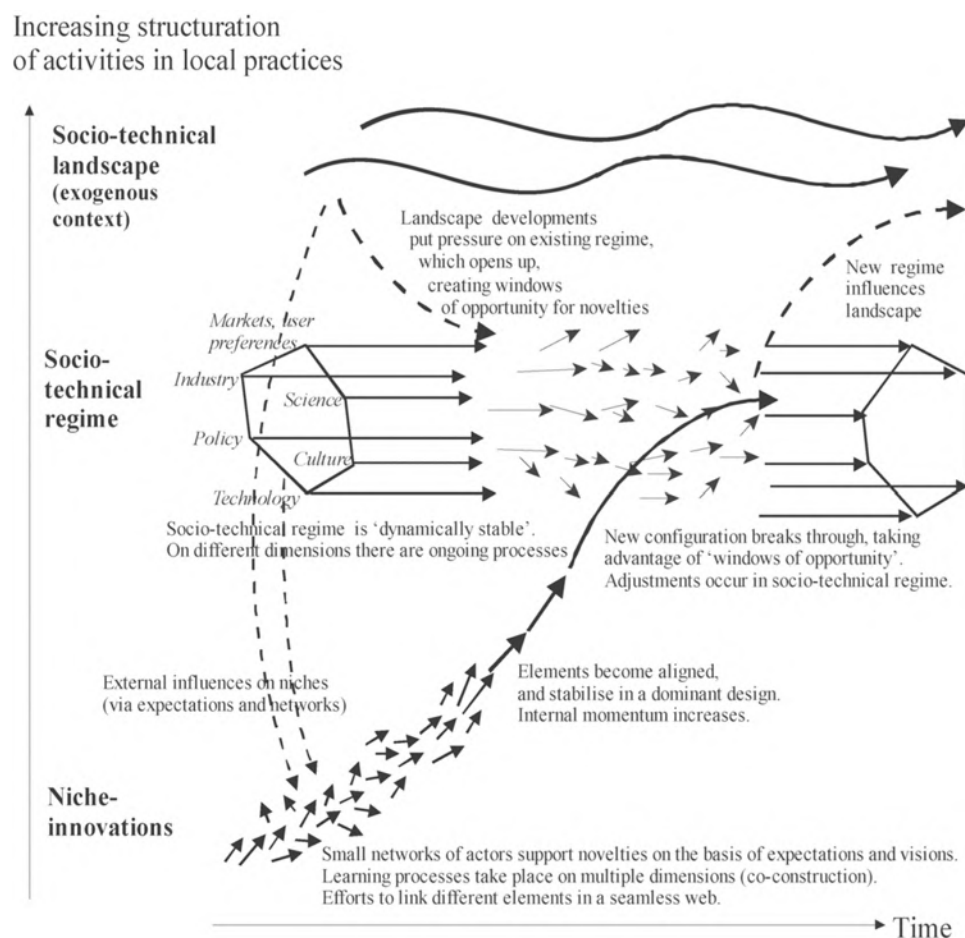


Figure 1. Dynamics of socio-technical transitions according to MLP. Source: Geels and Schot, 2007.

According to MLP, innovations in socio-technical systems come about through the interplay between dynamics at multiple levels (see Figure 1), as far as niche innovations build internal momentum, with rules and user preferences becoming stabilized in a dominant design after a period of experimentation, and break through the regime levels thanks to ‘windows of opportunity’ opened up at the regime level due to pressures put by landscape development (Geels, 2002). This may create changes in the socio-technical regime, which may eventually influence landscape development.

While this framework seems particularly interesting for the analysis of transitions in spatial planning systems because of its capacity to explain changes doing away with simple causality and emphasising the importance of the interaction of multiple agencies and actors through different levels, it does not offer in depth explanations of the mechanisms through which existing regimes may be destabilized and windows of opportunities may be opened up. At the same time, there is not in-depth research on the way transitions may be intentionally supported through policy interventions, which seems a particularly relevant issue in urban studies.

In the attempt to shed more light on the influence of timing and multi-level interactions on transition pathways, Geels and Schot (2007) have identified four typologies of transitions ranging from more symbiotic patterns like transformation and reconfiguration pathways (which happen when niche innovations are added to the regime without disrupting its basic architecture), to de-alignment/re-alignment pathways (when windows of opportunities are opened while niches are still competing to find the dominant one), and to technological substitution (which happens when windows are opened at the same time when niches are ready to get momentum).

As much of the transition patterns seems to depend on the timing and wideness of the windows of opportunity and on the capacity of regime actors to resist to pressures exerted by those windows, a core question may be how to foster a widening of those windows and how to support their capacity to exert pressures on regime? Are windows opened only as a result of a ‘landscape’ event, which is by definition outside the control of individual actors, or that process may be somehow supported and accelerated by interventions of key actors involved in the transition of the socio-technical system?

Very recently some MLP scholars started analysing possible conditions for deliberate acceleration of socio-technical transitions (Kivimaa and Kern, 2016; Roberts, 2017; Roberts and Geels, 2019), thus recognizing the importance of planned policy interventions on transition patterns. They shed light on the way deliberate strategies and policy mixes may work: (i) to encourage the breakthrough of socio-technical systems from initial niches, and (ii) to lower the resistance to change from incumbent actors and powerful regime players (Roberts and Geels, 2019); to say in other words, their research focused on how policy mixes supporting transitions may include elements of ‘creative destruction’, i.e. they may involve strategies and tools aimed both at the creation of the new and at the destabilization of the old (Kivimaa and Kern, 2016). These contributions are linked to a more explicit acknowledgement of the importance of politics and power on transition pathways, which was largely under-theorized in initial conceptions of the MLP (Meadowcroft, 2011). For instance Geels (2014) recently tried to give a more nuanced picture of regimes by showing the plurality of actors embedded in it, together with the multiple types of power (instrumental, discursive, material and institutional) they use to resist to transition.

In this paper we take further these new research foci in MLP by analysing, in a MLP perspective, multi-faceted and multi-level strategies for the destabilization of existing socio-technical regimes and for nurturing niches as a pre-requisite for the transition of a specific socio-technical system. In the definition of these broader strategies we also refer to policy instrument mixes, as these were defined within policy analysis studies, in their move from a focus on single instruments toward a combination of procedural and substantive instruments for a specific policy (Howlett, 2004). Howlett *et al.* (2006, p. 8) used the well-known taxonomy proposed by Hood (1986) as an overall template for assessing the potential components of any policy instrument mix. According to the Hood's schema, government resources can be grouped under four distinct groups, depending on their reliance on nodality (information, being in the middle of a network), authority (legal or official power), treasure (financial resources),

organisation (personnel and structural resources). According to this schema, the statutory document, above defined ‘project plan’, is only one of the instruments that governments use to implement or give effect to public policies.

Towards a new conception of territory in planning and local development policies: the Apulia case study

The case study analysed in this section is about the transition in spatial planning strategies in the Apulia region towards landscape- and heritage-centred local development. That transition started in 2005, when an abrupt change happened in the governmental lead of the Apulia region. For the first time since the setting up of the Italian ordinary regions in 1970, a centre-left government started ruling Apulia, which so far had always been ruled by centre or right parties. It was furthermore the first time in Italy that such a centre-left government was led by a president of the Communist Refoundation Party. This abrupt change in the regional leadership brought deep changes in regional government visions, with the ambition to promote “a new development cycle based on the enhancement of tangible and intangible resources, set up by women, men, youth, and cultural and environmental heritage of the territory” (Vendola, 2005). The failure of the development models implemented or sought after in a ‘less developed region’ like Apulia during the entire second post-war period, aimed at supporting economic growth through imposed or exogenously inspired policies, had fed such a political change. This reflected Apulian society growing awareness of the environmental and social unsuitability and unsustainability in the long term of these models (Barbanente, 2011).

At that time, the Apulian spatial planning system was still essentially centred on (mostly old) municipal land use plans mainly concerned with the management of future (abundant) options for urban growth; besides them, there was a regional landscape plan passed in 2000 imposing a landscape zoning on the territory and normative restrictions on the use of individual natural beauties, while neglecting the other parts of the territory. Such planning system included all the key features of the Italian ‘urbanism tradition’, i.e. rigid zoning and codes and ineffective development control (CEC, 1997) combined with low levels of trust and acceptance of planning intervention in society (Nadin and Stead, 2013, p. 1551). This was partly due to the fact that planning rules were generally considered an obstacle to growth especially in a ‘less developed region’. On the other side, low social acceptance of planning rules was linked to the acknowledgement that main decisions in urban planning were mostly influenced by interested actors able to organize political and professional power in support of their own interests at the expense of collective interests. This, together with the entrenchment of familism, clientelism and corruption, was further undermining the foundation of the regional planning system's social legitimacy.

In this context, the new vision carried out by the new government, aiming to give rise to a new development cycle based on the enhancement of tangible and intangible resources of the territory, thus created an extraordinary opportunity for giving political centrality to urban and regional planning in a landscape- and heritage-centred direction. The new regional Territorial Landscape Plan (TLP), launched at the end of 2007 and approved in February 2015, was conceived of by the regional government as the essential instrument to face this challenge. As the ELC provided the TLP with a wider conceptual framework to shift the focus from private interests to the common good (Pedroli *et al.*, 2013; Settis, 2013), the TLP interpreted the territory/landscape as a product of social processes, which in turn shape the ways in which processes are set up and evolve. This view emphasises that territory/landscape is socially produced, and implies that the plan must be able to capture a multitude of social, economic and cultural factors involved in its transformation, to increase ‘place consciousness’ (Magnaghi, 2010) and to guide towards an identitarian self-recognition, the recovery of cultural, economic and political ways of achieving self-determination and the valorisation of endogenous resources, among which landscape also features (Magnaghi, 2011).

This approach required a radical change in the regional spatial planning regime. How to trigger and support change in such a way that it could reach the several dimensions involved in that socio-technical transition? Replacing the old spatial planning instruments with new ones would not be enough. A much deeper process needed to take place to reach all the many actors involved in and to start the construction of a new history in the collective interpretation and production of the regional territory. This was done through the manifold actions and strategies carried out along the different pillars of the socio-technical transition.

Along the scientific and technical dimension, transition involved manifold and complex changes. On one side, new analytical tools needed to be found to describe and interpret the territory and represent regional landscapes through multi-faceted and multi-disciplinary perspectives, with an emphasis on the specific characters and identities of different regional landscapes, including the ordinary and degraded landscapes as required by the ELC (Council of Europe, 2000, II, 23-25, 36.). This entailed a complex process of social production of the plan carried out by the inter-disciplinary planning team and the local authorities/engaged citizens/society, acting together for the common good. The team was composed of 15 young experts in architecture, engineering, geology, agriculture, forestry, history and archaeology, many of which holding a PhD. They set up the TLP office in the regional planning department, with the scientific coordination of Alberto Magnaghi, an academic activist planner, founder of the so-called ‘territorialist school’.

The social production process was anything but easy in a region of about 20 thousand square kilometres and 4 million inhabitants. Hundreds of informal meetings were held across the region, together with thirteen formal conferences in different cities and villages. An interactive website provided continuous information on plan-making progress and an on-line ‘Landscape Observatory’ was created to facilitate interaction between citizens and the planning team in order to grasp best practices in the promotion of landscape values and worst practices about landscape damages to be prevented.

On the other side, innovative tools had to be identified to pursue the strategic vision of the plan besides the traditional part, still made of a regulatory framework that used authority resources, i.e. rules which all public and private bodies are required to comply with in accordance with the provisions of the Code, in order to prevent ‘special’ protected landscapes from being further compromised by the usual practices of development planning (Legacy and Leshinsky, 2016).

Innovative tools, all included in the Strategic Scenario of the plan, identified by the new TLP to foster its strategy-oriented approach, encompassed seven Guidelines, five Regional Territorial Projects and a number of Experimental Integrated Projects. The latter were particularly relevant for the transition pathways undertaken through the TLP as they constituted small niches of alternative modes of description, interpretation and transformation of local territories-landscapes developed throughout the region.

Some Experimental Integrated Projects were seeds of alternative development found across the region in a scattered way, then supported and coordinated within the TLP strategy thanks to special cooperative agreements signed between the regional government and local authorities and/or civil society groups, to become demonstration cases across the region that showed that ‘doing things’ differently was possible. In this way, those little niches gained momentum and aligned to break through thanks to the strategic vision of the new TLP.

One such niche was the Paduli case. After a brief introduction of this case, in the following sub-sections we will focus on how the regional government defended and encouraged the development of niche innovations through policy mixes aiming to produce positive interactions with each other and to break the well-established regime in the policy field at hand. Then, we will highlight how some ideas arisen from one of those niches spread throughout the region, with different characteristics and emphases depending on the specific features of the territory-landscape involved, and gave rise to different, sometimes unexpected niche innovations.

An example of niche innovations: the Paduli grassroots experimentation

An alternative, heritage- and landscape-centred, development strategy for the Paduli area had been started in 2003 as a grassroots experimentation in the extreme southern part of Apulia, southern Salento, which is called Paduli because of the geomorphological depression that characterises its core area. This area is mainly covered by olive trees and surrounded by a crown of small towns (overall 30.000 inhabitants). With its 5500 hectares it is the most continuous and extended olive grove of Salento. Ten thousand trees planted without a geometric order, one next to the other, stand among a labyrinth of rural roads, canals, sinkholes, reeds, fragments of woodland. The area is affected by enduring migratory processes and consequent abandonment of traditional activities, aging of population, impoverishment of socioeconomic structure, and depletion of infrastructures. A higher percentage of workers than the regional average are still employed in agriculture. But many of them depend on public assistance and on the ability to find other non-agricultural sources of income to sustain themselves. The fragmentation of land and the predominance of family run holdings make this economic sector incapable both to compete with productivistic agriculture and to meet the increased demand for high-quality products. These features can only worsen the abandonment and degradation processes already evident in various parts of this rural area.

A participatory and empowering process started in 2003 on the initiative of a small group of off-site architecture students, and progressively involved ten municipalities and local inhabitants. It was conceived as an open process, freely accessible to people coming from outside and in which everyone could observe, criticise and propose their ideas about the problems affecting the area and how to solve them for a better future. This process continued for some years and led local inhabitants and the young promoters themselves to (re)discover the peculiar qualities of the rural core, which had been abandoned and disregarded for decades by younger people who lived in the surrounding small towns. An identity of a place discarded and condemned to a slow degradation, which reminded the inhabitants the deprivation which previous generations succeeded to jettison, gradually turned into a new identity of mysterious and unique place which had preserved its territory from the social and environmental disasters occurred in other parts of Apulia. The close interactions between the small towns and a rural environment, easily accessible to all the inhabitants, were being progressively recognised as factors of diffuse spatial quality, relevant components of individual and collective well-being to be maintained and defended. From this collective cultural process arose the idea that such unique territory-landscape qualities had the potential to suggest new path of endogenous development for this rural area. The ‘Paduli park’ was the design concept identified to hint at the need to protect the traditional agricultural use while promoting various forms of cultural, recreational, touristic activities. These were essential to integrate the agricultural income, create new economy, attract people from abroad, and induce the local communities to re-connect with and to take care of their environmental and cultural heritage.

Supporting the development of the Paduli niche innovations

The regional planning team, which at the beginning of 2008 had just started drafting the TLP and triggering its social production, grasped the process underway in the Paduli area as an interesting experience with respect to the TLP Strategic Scenario and included it within the Experimental Integrated Projects. Thus, at the end of the same year, the ten municipalities and LUA – Laboratorio Urbano Aperto (Open Urban Laboratory) – association, which in the meantime had been founded by the young promoters of the process, signed an agreement with the regional government of Apulia. The core objective of the agreement was the joint implementation of a ‘multifunctional agricultural park’ as part of the TLP. This favoured the development of the ongoing process, since it gave it recognition and visibility, and so ensured its continuity. Moreover, it facilitated information exchange between the regional and the local level and continuous help to the weak organizational structure of the small municipal authorities involved. Furthermore, the competitive bidding processes, launched by the regional government to provide financial support for the implementation of the TLP, gave municipalities and people involved in the Paduli

process the opportunity to enlarge their experience to the different dimensions of innovation at the base of the idea of ‘multifunctional agricultural park’.

In 2010 the ten municipalities adopted an integrated regeneration programme developed by a coordination unit involving their urban planning offices and supported and harmonised by the LUA association. The main initiatives carried out since then, as briefly outlined below, were financed by funding derived from various regional policies. In 2010, a project aiming at recovering the ten historical centres and connecting them through the Park of Paduli was co-financed by the region using the Apulia European Regional Development Fund (ERDF) Operational Programme 2007-2013. In 2011, thanks to the regional initiative ‘Urban Laboratories: old buildings for young ideas’ launched by the regional youth policy department and co-financed by the National Fund for Underdeveloped Areas (Fondo per le Aree Sottoutilizzate - FAS), local young people were involved in the reuse of five public buildings and of a municipal-owned olive grove of about 8000 sqm for experimental, innovative self-organizing activities. Under the name “Living the Paduli”, these include different initiatives in the field of hospitality and tourism, slow mobility, food and craft, agriculture and environment, cultural heritage. Furthermore, by drawing on other priority objectives of the Apulia ERDF Operational Programme 2007-2013, slow mobility interconnections of cycle and pedestrian paths and ecological networks were implemented. Finally, a project for the integrated management of environmental and cultural heritage was developed thanks to an innovative tool launched by the regional department of cultural heritage with the aim of protecting and enhancing the cultural heritage through local development strategies based on vision and objectives of the TLP. The emphasis on the ‘integrated’ approach hints at an idea of joint management of cultural heritage and activities, environmental heritage and local welfare services, which actively involves a wide range of social and economic local actors. All these interventions triggered a virtuous circle of social, technical and organizational learning. In the 2014-20 ERDF-ESF (European Social Fund) programming cycle, the Paduli group of municipalities placed at the top of the regional ranking of applications for funding received under the ‘Sustainable Urban Development’ program.

The idea of the ‘park of Paduli’, originally aimed to protect the environment, to support a poor local agriculture, and to promote the local cultural heritage for leisure and tourism, has progressively become a space (territorial, but also social and institutional) that is building a new economy and a new heritage- and landscape-centred local development model. This consists of a number of different activities deeply based on the social relations between people and place, which guarantees the reproduction of the essential conditions of well-being and social cohesion.

This process gradually destabilized regime perceptions and strategies of key actors involved in this deprived area. This challenge was indeed quite easy in the Paduli case for a number of reasons. First, in that context the interests at stake are weak as well as the actors capable of resisting the penetration of innovation. Second, peripheral areas feel detached from the centres of political decision. Therefore, the appreciation of the importance of the process going on in the area by the Apulia regional government increased the self-confidence of the grassroots groups who had promoted the process, and assured them recognition and support from local government institutions.



Figure 2. “Living the Paduli”: ongoing activities

Supporting the diffusion of the niche innovations

The regional government used different policy tools to trigger the transition in the spatial planning system towards landscape- and heritage-centred local development strategies.

In order to strengthen and give coherence to niche experimentations fostered through Integrated Experimental Projects, the regional government carried out several actions under the umbrella of the TLP. One of them was the development of the Five Regional Territorial Projects, which received inspiration and support from innovations experienced in niches. The Paduli case, for instance, strongly inspired the development of the Project called City-Countryside Pact, as far as this identified 5 ‘multifunctional agricultural parks’ for the valorization of the regional countryside and some other parks for the countryside refurbishment. The implementation of Regional Territorial Projects was then supported through several tools and policy instruments.

In 2013, in order to encourage the creation of multifunctional agricultural parks, the regional government launched a call for proposals. Eight municipalities located north of the regional capital city of Bari and included in the ‘Park of towers and hamlets’ placed at the top of the regional ranking. They proposed a feasibility study that interprets the park as a great environmental equipment of the metropolitan city of Bari, where the multi-functional agriculture is a key source for landscape protection, enhancement and improvement, in line with the objectives of the TLP. Thus the study proposes the preservation of open spaces in urban areas and the historical alternation of open and built spaces along the coast, the enhancement of historic rural landscapes, and the halt of land consumption. According to these objectives, the municipality of Bari approved an address document to modify the old land use plan centred on an expansionary vision of spatial planning in order to adapt it to the TLP. Its main objective was to “safeguard and enhance valuable agriculture areas located around the built-up area”, where the feasibility study provided for halting urban expansion and carrying out actions aimed at reconstructing a landscape in which agriculture can be developed to serve the citizens and increase biodiversity and the connectivity of the rural system. This decision was followed by a conflict with a developer who had proposed the construction of a settlement in the park area, in conformity with the land use plan. Thanks to a difficult negotiation promoted by the municipality, an agreement was reached on a development proposal that allows to limit the land consumption by redeveloping the urban margin and integrating the existing settlement, characterized by profound social and physical marginality, in a high quality ecological and landscape system.

In this more economically dynamic context it was much more difficult to break the regime: powerful coalitions of interest around particular issues or areas try to bend financial resources to their own benefit, preventing niche innovations from expanding and stabilizing.

Another resistance to innovation arose from planning professionals and public officials, which mostly considered the territory essentially as an abstract, static and functional space, as a mere physical support adaptable to accommodate and able to bear any kind of development. The implementation of an innovative plan such as the TLP required the development of new skills and competencies among these professionals and officials. For this purpose at the end of 2014 the regional department for vocational training, together with landscape planning department and professional associations, organised a specific training course that lasted six months and was attended by more than 1000 people thanks to the possibility of streaming connection with thirty locations around Apulia.

Interesting to note is that in 2013 another multifunctional agricultural park was promoted, explicitly on the model of the Paduli park and located in the same ‘landscape area’. The signature of a specific agreement among 24 municipalities and the Province of Lecce gave rise to the project of the ‘Ionian Greenhouse Agricultural Park’. This aims to promote quality agriculture and the protection of agricultural biodiversity on the one hand, and on the other hydrogeological safeguards, improvement landscape quality, ecological complexity and closure of resource cycles. Moreover, during TLP implementation, the process of niche alignment is continuing, as the

complete regime shift has not occurred yet. Other innovation niches arose after the TLP approval, during the adaptation of the municipal land use plans to the TLP. Among the others, Campi Salentina envisioned an use of the rural areas centred on quality agricultural production, and implying a shift from a productivist space to shared and multifunctional space. This vision stemmed from the Negroamaro Multifunctional Agricultural Park proposed by Campi Salentina together by with six neighbouring municipalities in the northern Salento as an Integrated Project in line with the LTP guidelines. This aimed to experiment new pathways of territorial development through the enhancement of landscape, historical and intangible heritage, focusing on quality agricultural production, greater collective well-being and new forms of welfare.

Conclusions

In this paper we have analysed the ongoing transition in the spatial planning system in the Apulia region from an existing 'regime', dominated by a pro-growth vision of planning, to a landscape- and heritage-centred development vision, in line with innovations requested by the ELC. The spatial planning system has been interpreted as a socio-technical system, thus the MLP framework has been applied for its analysis. The analysis has shown how the ongoing transition profited from an abrupt change happened at the governmental lead of the Apulia region in 2005, which brought deep changes in regional government visions, with the ambition to promote a new heritage- and people-centred development cycle for the region, based on the enhancement of its tangible and intangible resources. But the opening of this window of opportunity and the existence, at that time, of small innovation niches scattered across the region cannot explain the pace and width of ongoing transitions unless we acknowledge the importance of a wide range of purposive strategies and policy instrument mixes envisaged by the regional government under the framework of the new TLP.

Through the application of the MLP framework the paper thus has focused on the analysis of multi-faceted and multi-level strategies envisaged by the TLP in order to grasp and strengthen innovation niches while fostering a destabilization of the pre-existing regime. Transition has been shown as the result of a blend of interactive enabling, supporting and contrasting practices. On one side, innovation niches have been identified by the TLP and given longer term perspective through the development of the regional development strategies. Different tools and policy mixes were devised by the new plan throughout its development and, later on, during its implementation phase, to support the alignment of niche innovations towards the new heritage- and landscape-vision of the plan. On the other side, the new TLP tried to challenge strong power networks and old regime perspectives owned by key powerful players like private developers, technicians and public officials, as well as perception of places own by people at large, which were deeply challenged to engage in a collective process of place-consciousness and alternative local development.

In places where the regime was particularly strong and there were no grassroots resources able to trigger processes of collective rediscovery of place quality and revitalization of local economy, Experimental Integrated Projects were the tools through which the regional government promoted niche innovations in the attempt to break through the existing monolithic regime. They were intended as 'soft infrastructures' (Vigar and Healey, 2002) leading to collective representations of tangible and intangible local heritage through community mapping, and local community involvement in landscape interpretation, preservation and enhancement through eco-museums.

The transition is still ongoing in a piecemeal path made of some accelerations, with financial supports from the 2014-20 ERDF-ESF Regional Operational Program to innovative TLP strategies, and some slowdowns, due to changes in political governance at the regional level and the reorganization of technical structures at regional and state level. This might eventually lead to the establishment of a new socio-technical regime. But there is no guarantee of this, as the MPL analytical framework suggests by doing away with simple causality and linear explanations (Geels and Schot, 2007).

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The slow line as an opportunity to regenerate heritage in the fragile areas: the case of VENTO project.

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Abstract: The topic dealt with is the tangible and intangible widespread heritage located in the fragile areas of the northern Italy, crossed by the river Po. Here the idea of the line is defined through its thickness, that is the heritage that we want to discover and evaluate, and for which the line represents an opportunity to become a hinge, an anchor and a flywheel, in order to regenerate fragile territories. To undertake this investigation, we will use the VENTO cycle route as case study for applying this analytical approach. VENTO is a territorial project, designed by Politecnico di Milano and part of a network of paths on a national scale decided by the Italian Ministry, that uses a cycle route along the river Po as an opportunity to regenerate fragile areas from Venice to Turin. In this research VENTO proposes itself as an experimental laboratory which provides the possibility of reversing the work perspective on territory. This research, by identifying, mapping and trying to evaluate the heritage along VENTO, will investigate ontologically the relationship between fragility and heritage and how it can change according to this new perspective of the line.

Keywords: slow infrastructure; heritage; evaluation

Introduction. Which fragility, which heritage.

More than 60% of the Italian territory is occupied by small municipalities (53% of all Italian municipalities), where reside about a quarter of the Italian population (SNAI, 2013). These territories, which occupy most of the Italian territory, have been called "*inner areas*", defined as "*areas significantly distant from the centers offering essential services (education, mobility and health care), but rich of important environmental and cultural resources and highly diversified by nature*" (SNAI, 2013). The scarce offer of essential services, accessibility and work places characterizes the inner areas and it is the effect of a series of dynamics that emerged at different times and intertwined in various ways.

These dynamics were mainly due to historical phenomena and to some more recent ones. On one hand, the rural exodus from the mountain to the plain; on the other, in the lowland territories, the reduction of work places for the increasingly industrialized agriculture, which it does not offset by growth in industrial and tertiary employment. Then, more recent phenomena due to the crisis of some

industrial-type local economies and strong contractions of employment in large industrial activities caused by the process of automation, not compensated by the growth of employment in the commercial and tertiary sectors (Lanzani, Curci, 2018). The effects of all these phenomena are depopulation, emigration, social and productive rarefaction, the abandonment of the land. Already in 1961, the Italian agrarian economist Emilio Sereni had understood the extent of this transformation by speaking of "*a prelude to the disintegration of the agricultural landscape*". That gives us the idea that it is not only a physical phenomenon, but also a moral fact and a cultural result, of a descending story of places, people, memories. Antonella Tarpino describes these areas as "*spaesati*", that we could translate as "*lost*" and "*non-town*" at the same time, that means that they have lost the essence of a town (2012).

It is a continuous abandonment, a silent and latent phenomenon, which has led to the constant aging of towns and villages, to devastating effects on the hydrogeological system but also to the risk of loss of local identities.

In this heritage at risk, we can be able to find one of the cornerstones of the territorial rebirth of a vast part of our country. The word "*abandonment*", in fact, from the French "*abandonner*", has among its meanings that of "*making available to, referring to someone*" (Tarpino, 2016). Abandonment is not a final state, it often carries with it a symbolic and metaphorical significance of *re-birth, of return, of a second beginning*. The heritage of these places is intended as a broad concept, which includes material and immaterial elements, traces and signs that testify the relationships that the community has established over time with a territory (Zerbi, 2007) and that must be read and interpreted.

The tangible heritage is represented by: (i) immovable property, that is buildings, an underused or abandoned social fixed capital, often widespread in the territory in potentially strategic points (since they are unexplored); (ii) movable property, that means objects of domestic, religious or festive occasions. These are not disused or underutilized elements, but a complex of elements in relation to each other, affected by a phase of stalemate or crisis and no longer maintained today.

Intangible aspects represent a living heritage closely connected to the material one: the techniques and capacities that have enabled landscapes to be created, buildings and furnishings to be built and local products to be developed; dialects, music and oral literature that are derived from unwritten traditions, proof of the relationship between community and territory; types of organization of social life, such as festivals (Zerbi, 2007).

Then there are two categories of heritage that represent the perfect intersection between material and immaterial aspects. The first one is the agrarian traditional landscape (Barbera, Biasi, Marino, 2014), that is the product of natural and anthropic aspects and whose maintenance over time, as well as safety in hydrogeological terms, depends strictly on the continuity of traditional agriculture.

The second one is the heritage of food, that means products that are the result of an adaptation to the local conditions of climate and territory and to the cultural traditions of breeding, of working processes and of traditional kitchen. When an elderly person dies alone in one of these small villages, a story ends and with it they disappear a house, an era, a family, sometimes a surname.

Today we are all too focused on the transformation of the urban system, which is a laboratory of work and hospitality but also of inequality and marginalization, and we forget to look at what happens outside. The anthropology of abandonment, made up of empty spaces, abandoned or lost heritage, can be an opportunity to focus on the destiny of these villages and on the need for a new non-ideological planning, capable of rethinking opportunities for a new and sustainable regeneration of places and people (Teti, 2017).

1. Widespread heritage as a watermark of a territory. Intrinsic fragility and problems of protection.

“The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event. This applies not only to great works of art but also to more modest works of the past which have acquired cultural significance with the passing of time.” (art 1, INTERNATIONAL CHARTER FOR THE CONSERVATION AND RESTORATION OF MONUMENTS AND SITES, “THE VENICE CHARTER, IInd International Congress of Architects and Technicians of Historic Monuments, Venice, 1964).

Although many years after its adoption, the Venice Charter still shows a certain relevance, particularly in the definition of *“monument”*: it was a pioneer in transferring interest and attention from the object of *“historical and artistic value”* to the cultural heritage.

Buildings, landscapes, tools of everyday life, testimonies of the civilization that produced them for strictly utilitarian purposes: all these elements constitute the dense network of signs that make unique a territory. These elements despite of being fragile because no longer central to the life of a community and subject to degradation because abandoned, they can become the pulsating and lively center of the regeneration of a place, if adequately protected and re-identified.

Firstly, it is necessary to understand how the protection can be an action that acts as a driving force of a sustainable development for an heritage that is no longer 'exceptional' and single, but customary and widespread.

The instrument of the constraint *ex lege* for the protection becomes difficult to apply and manage when dealing with such large numbers.

Even if it were possible for a state to protect this heritage with national legislative instruments, the effectiveness of the policy should be always verified.

So what could be the strategies to put in place for the protection of widespread heritage?

Firstly, a depth knowledge without filters linked to the value judgment - historical, architectural, monumental, artistic, whatever it may be. A first important, but perhaps not yet sufficient action, partially done by many territorial bodies in recent decades, is the census of widespread heritage, to do without preconceived criteria.

An effective protection should pass through the awareness of the local communities of the unrepeatability, of the identity meaning and of the role that this heritage plays for their economy and their territory.

Respect for the heredity of the past, which translates into care for the same, should enter in the ethical dimension of community, to be able to translate into an effective, widespread and capillary new form of protection.

Already forty years ago the Amsterdam Declaration, promulgated by the Committee of Ministers of the Council of Europe in 1975, underlined the role that community had to assume in handing down its architectural heritage to the future. This role closely intertwined with the concept of Integrated Conservation: *“Integrated conservation involves the responsibility of local authorities and calls for citizens' participation”* (Amsterdam Charter, point 2).

In order to survive, cultural heritage needs to be recognized and loved: *“only if it is appreciated by the public and by the younger generation. Educational programs for all ages should, therefore, give increased attention to this subject”* (Amsterdam Charter, point i). Therefore, public awareness should

be among the priority objectives for those involved in cultural heritage, through specific educational programs.

The most recent Convention of Faro, introducing the concept of "*common heritage*", focuses the attention on the relationship between Cultural Heritage and Community, recognizing the latter an active and participatory role since its definition: "*cultural heritage is a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It encompasses aspects of the environment resulting from interaction between people and places through time*" (art. 2a).

In international documents, local communities have assumed an ever greater role in the preservation of material and immaterial heritage. The promotion and dissemination of a care culture in the local communities plays a fundamental role in ensuring the survival of this widespread and fragile heritage. The 'education' of community to see its heritage and to recognize it as a scarce and therefore exhaustible resource, could be the most effective measure to guarantee its survival. The only prohibition imposed by the "*constraint*" is almost never sufficient. However, it is necessary to find the correct ways to transmit this message. Conferences, lectures or courses, although important to train and update those who already have professional skills in the sector, they are not able to reach the common population.

Working together with local communities with practical examples and starting to share a different awareness of cultural heritage with the new generations, both could prove to be effective strategies.

2. Which tailored suit for heritage in the inner areas?

The territories defined as "*slow*", not because of an index of delay but as a distinctive development factor, are characterized by a logic that is not economist and that cannot be measured with traditional growth indicators. The same character of the territory represents a determining factor of development. The different local development models have common characteristics, such as: specialization in a production chain or technology; strong synergies and internal interactions; a marked sense of belonging by local community.

The territory, however, cannot be expressed only in terms of infrastructures or as a static reality, but it is a place where the geographical and physical elements are linked to other elements.

Thanks to the initiative of the Minister of Territorial Cohesion Fabrizio Barca, the National Strategy for Inner Areas (SNAI, in italian) is launched in 2013, coordinated by the Agency for Territorial Cohesion, and it attempts to regenerate these places. The main objective of SNAI is the reversal of the demographic trend of these territories and it is pursued through two classes of actions: (i) the first focuses on adjusting the offer of essential services, so that means the pre-conditions for the territorial development; (ii) the second aims to implement interventions in favor of local development, focused to generate labor demand through the re-use and enhancement of territorial capital. Precisely in this last class of actions there are tools that solicit the valorisation of resources through a quality regenerative tourism. In the coming years, luxury will be made up of rare goods, such as time, tranquility, silence, security, conviviality and a healthy environment. All these elements are definition of quality. "*Quality can be seen hellenistically as an attribution of meaning: when an object or a service is of quality, they acquire a particular thickness in our eyes, an aura that makes them unsustainable and precious, regardless of the intrinsic value of materials*" (Nocifora, de Salvo, Calzati, 2011). Therefore, the philosophy of the slowness, which uses time not for sentimental or

ideological reasons but as a lens to know and deepen the sense of places and to build a relationship between hosts and guests, is the suitable suit for these territories.

Therefore, in order to give a rebirth to these territories, it is needed a true innovative capacity that: makes the identity stories recognizable; assigns a new use to the heritage; generates jobs and new economies. All this is a project: an innovative project of continuous and daily education to care and protection and of a sustainable, responsible, ethically oriented tourism, able to reactivate broken narratives. To follow this direction, it is evident the need for a preliminary re-education work to recognize the specificity and the patrimonial value, in the perspective of instructing research of history, roots, identity and civic sense.

Montanari declares that heritage can no longer be something *to be visited*, but rather it is something that *contains us* (Montanari, 2014). It is necessary to consider a reversal of perspective. The reversal of gazes and actions should be able to transform: the art from an object to pay to everyday life fact and the citizens from customers into visitors. It is this type of concept that can grow users who choose sustainable tourism on a cultural and environmental level and who associate tourism with an active education, rather than passive luxury (Montanari, 2014). Starting from this clarification, talking about a project in this context means speaking of a "*pedagogical project*". It means a continuous and daily education, inside and outside school, and a sensitive and attentive eye to the recognition of what has value, that can lead to protect and care in the most emotional sense. In its most ancient form, the word "*care*" comes from the Latin "*coera*" and was used in a context of love and friendship.

Caring arises when the existence of someone or something begins to have importance, then it begins the attention, the concern, the sense of responsibility. Therefore taking care of these places and their heritage, firstly it means (re)knowing them with a moral and practical look at the same time. It means dedicating actions and projects to a sustainable, responsible and educational tourism. A tourism that is a reciprocal positive exchange between residents and visitors, aimed mainly at: identifying and bringing back those individual diffused heritage to the depth of their history; having the ability to relocate them within a narrative that knows how to produce attractiveness; develop the ability to attract tourists aware of the dimension they are discovering; proposing the slowness of knowledge and respect; enhance the specificities, rhythms, flavors, emotions, stories and roots of the place; produce work and provide supplementary incomes to consolidate the presence of community, slowing down the exodus from their homelands (Nocifera, de Salvo, Calzati, 2011). That's can be a tourism that is an economic activity but it is above all a "*multidimensional cultural practice*" (Nocifera, de Salvo, Calzati, 2011): a balanced relationship of interchange between residents and tourists.

3. The regenerative power of the slow line.

Slow tourism has been experiencing particular success in recent years. More and more people are approaching slowness as a form of possible and positive mobility. More and more people are those who wish to practice a form of holiday using slowness, in the various known ways: on foot, by bike, on horseback or mule, in kayaks, with small boats or with a combination of these ones. Often using the railway network where slow mobility infrastructures are not.

If initially, a decade ago, these were isolated initiatives or limited to a few hundred cases or to certain geographical areas (such as the case of the Camino de Santiago in Spain or the Danube cycle route in Austria), today slowness has gone on to occupy a more important place in tourism. Relevant for numbers, but above all for high social positive effects, for low environmental impacts and for the

ability to activate or reactivate local and widespread economies, especially where none of them existed before or where they were very weak.

This is one of the questions we are most interested in keeping in mind. The lines on which the different forms of slow tourism can exist, can become real and effective backbones for the territory. Unfortunately, the excessive specialization of these tourist lines has segregated them in areas far from the design interest of those working on urban studies or landscape planning, of those who design public policies. Cycling is usually seen as a way to move and nothing more. Its design, at most, concerned urban design and in any case at a very small intervention scales. Going on foot too, except for those close to pilgrimages. Moving on horseback goes beyond the design imagination. All these mobility forms, alternative to cars, have been the subject of frivolous discussions, but it has never been thought that they could be the common floor for the triggering of a new territorial vision, a different model of sustainable development, a strategy to regenerate the fragile territories.

Urban and territorial planning know little about the possible role played by these slow tourism models. And little did they inquire. Therefore, slow tourism has never found its own space in the discipline. Just today, with great difficulty, is it making itself known and accredited.

From the comparative studies made in other European countries, in the case of cycling tourism, the regenerative potential has demonstrated, especially towards the weakest areas, those farthest from the metropolis and from the traditional economies. Germany boasts 45,000 km of tourist cycle paths built in just over 30 years and today has over 175 million vacation days spent cycling every year; 2.2 occupied in cycling tourism per 1000 inhabitants. In Italy we are far from these numbers: the employed are only 0.22 per 1000 inhabitants, despite the fact that the natural and artistic heritage is decidedly greater. What is lacking is the culture for these tourisms and the infrastructures that make them possible. Let's focus on the latter.

These are linear infrastructures. Long distance cycling in the case of cycling. Paths in the case of walking trails. And so on for other specific cases. In all cases, these have the forms of lines. Thin and light lines, without motorized traffic, safe for all types of travelers (starting with the less experienced), well signposted, connected with the rail and road interchange nodes.

Those lines are often ancient ones, such as the case of mountain paths or religious paths. Lines that are more recent are the cycle paths. In both cases, these real infrastructures however show very interesting characteristics for the territories they pass through. First, compared to traffic roads, high-speed railways and highways, they interact with the places they pass as they are permeable at all points and not only at junctions, tollgates and stations.

This first characteristic makes walking paths and cycle paths dialoguing lines with the territories, meter by meter. On the contrary, with highways, the territory is used by points and gates. Thus the small and medium-sized localities remain excluded from any possibility of being known and visited. In the experience of the high-speed travelers, the internal areas disappear. There, tourism gets thinner until it disappears completely. Yet those areas, those small towns, those villages do not lack beauty, historical heritages, good traditions, history and stories to be told.

On the contrary, slowness can be a strategic opportunity for inner areas as it becomes a sort of lens with which the person passing can stop appreciating details that speed erases. The infrastructures that allow the slowness can therefore be a great resource for the internal areas if well designed and equipped to allow those forms of slow tourism such as trekking or cycling.

Slow lines can become a new paradigm for territorial design. This, however, implies the effort to see a walking path and a cycle path not only as a mobility infrastructure, but as real backbones that give new meanings to the territories.

All this also requires a change of scale. When we talk about slow tourism on foot or by bicycle, we are talking about lines of hundreds and hundreds of kilometers. Continuous, comfortable for pavements, safe and therefore usable by all (for age and ability), equipped with signs and not shared with motorized traffic, as foreseen for example in the definition of Greenway, even if here the technical ambition is to have durable and more comfortable paths, able to hundreds of thousands people. If we want a generative tourism in terms of jobs and economy, we have to imagine something able to involve a lot of people, not just a few or a specialized category of people.

Besides the change of scale, the long and slow lines need a strong coordination on the territory. Tourism does not tolerate discontinuities, management changes and administrative fragmentation. When you walk or ride, the landscape is the interlocutor we are dealing with. A landscape where administrative boundaries are not necessary to the travelers, even less where they impose changes in the rules of use that tire the traveler. Those who travel slowly design a new geography whose backbone is the following trace itself. To guarantee this, the various stakeholders must learn to agree themselves, to work together, to cooperate, to choose design details that respect a single code. They must stop promoting each one himself, but they have to learn to promote each other and the entire territory dominated by the line. This need a project. The idea of the line thus becomes a new program for governing the territory and an opportunity for a cultural change.

The vision by lines implies a real cultural work to do together with the citizens and institutions. Cycles and walking paths cannot be born either by chance or following the tourist business, because this would contradict the spirit of continuity and cooperation of which the slow lines live.

This detail obliges us to review our way of designing and planning: no longer for points, no longer solving only the single issue in a precise place, but always looking a wider territory, a sort of ecosystem where everything is linked to everything, and by everything depends.

4. How to support territorial regeneration processes: multidisciplinary tools and methods.

The opportunities for strengthen territorial development by enhancing cultural heritage are not always consensual. Conflicts between the instance of environmental resources, landscape and cultural goods preservation, social, as well as economic regeneration, often arise (Oppio et al., 2015).

The complexity given by the instance of achieving multiple and diverse objectives suggests to frame a Multicriteria-Spatial Decision Support System (MC-SDSS) able to combine the potential of GIS – collecting, elaborating and representing spatial data by maps – with those of Multicriteria Decision Aiding techniques (MCDA) – able to support decision-making processes through the elicitation of both qualitative and quantitative objectives and to evaluate potential impacts of the options under analysis (Malczewski, 1999).

In particular, MC-SDSSs transform and integrate geographic data (map criteria) and stakeholders' preferences and uncertainties (value judgments) in order to obtain information for decision-making and an overall assessment of the decision alternatives (Ferretti, Pomarico, 2012). The ability of this integrated approach to both generate alternatives during the strategic planning phase and to compare them during the evaluation phase makes this tool suitable to deal with complex and ill-structured territorial problems (Dell'Ovo et al., 2018). Differently from monetary techniques, such as Cost Benefit Analysis (CBA) and Stated Preference (SP) techniques, whose aim is to find the most efficient solution with respect to the maximization of social welfare, MCDA provide decision makers with a comprehensive analytical framework to explore decision problems, by supporting the elicitation of different views on alternative courses of action. According to the comparison carried out by

Saarikoski et al. (2016), the main differences between MCDA and monetary techniques lay in these aspects: i) aggregated versus not aggregated options; ii) universal versus context specific values; iii) unitary versus conditional conclusions; iv) distributional issue and income asymmetries; v) individual versus social rationality; vi) interests versus ethical judgements; vii) representativeness; viii) biases.

Given the aim of supporting inner areas regeneration by cultural heritage along slow mobility routes, MCDA seems to perform better than CBA and SP techniques, especially in the distributional issues, being the stakeholders' preferences an integral part of the evaluation process, and in the inclusion of multiple dimensions of the problem, that can be accounted by monetary units, proxy measures and special scales, tailored to the decision context.

The advantage of MC-SDSSs is the use of GIS for mapping spatial criteria, sub-criteria and indicators and aggregating the results in order to show both the potentials and the critical aspects of the territorial context under investigation.

It is important to underline how the strength of suitability maps is given by the possibility to read the total result and the partial ones, according to the structure of the decision problem. By providing different layers of spatial knowledge, it is possible to point out where are weaknesses and to define tailored strategies to solve them.

5. Towards an Atlas of regeneration: the VENTO project for the implementation of a Heritage Recovery Model.

The large amount of abandoned or underused heritage present in the areas subject to depopulation arises the need to reflect on the implementation of a *line tourism model*, capable of regenerating fragile territories.

With this objective, the case of VENTO is used to set the first steps of a *Heritage Recovery Model*.

VENTO, the project of a cycle route along the Po river linking VENezia to TORino, conceived by the Politecnico di Milano, is a territory project based on the line values. VENTO experiences the paradigm for a different way of territorial design: a test for sustainable alternatives shaped for helping inner and fragile areas to have a suitable perspective.

Technically VENTO is a cycle and pedestrian route. But if it were only this, it would have failed its mission which is instead to regenerate those territories and make them visible, thanks to a slow tourism vision. Slow tourism, as it is defined here, let people discover existing heritage and stories and it make them understand that they have always been linked to each other, even if today we don't see them like this anymore. We are talking about a light line that is designed to be a narrative thread, able to sew beauty.

Obviously all this has been thought to start a slow tourism, that does not exist along the Po river today, able to: generate new jobs, slow down depopulation, create new economies with very low impact, save the beauty that still exists there.

With these and other aims, in 2010 born the VENTO project, which is now under construction after years of involvement of municipalities, regions and national governments. Today, thanks to an assiduous planning and participation work of the Politecnico di Milano, the VENTO project is in the financing and realization phase (www.progetto.vento.polimi.it), thanks to a funding program of the Italian State and in collaboration with the regions.

Along the cycle route, there are two cases of heritage recovery in favor of line tourism: Ostello dei Concari (Figure 1), in Bagnolo San Vito (Mantova) and the Locanda dei Pontieri or Ostello del Po (Figure 2), in Guastalla (Reggio Emilia). Both are recoveries of public isolated buildings that have

been restructured and have been object of a call for tender. With this virtuous example, which recovers heritage, gives it a new use, generates jobs and local economies, we aim to create a Heritage Recovery Model based on the line.



Figure 1 and Figure 2: Ostello dei Concarri, MN (left) and Ostello del Po, RE (right). Two virtuous cases of recovery of public buildings in favor of tourism on the VENTO line.

In this way, the part of VENTO relative to the municipalities of the Province of Alessandria has become a test to take a first possible step towards this model for cultural regeneration and the initial approach of an Atlas that has heritage as its center. The territory under consideration, mainly agricultural (the most widespread crops are rice fields, poplar groves and arable land), includes 16 small municipalities in the Province of Alessandria (14 have less than 2000 inhabitants) in the depopulation phase (12 out of 16 registered a negative rate of change population, data source: ISTAT 2001-2013). In this context of fragility, consistent with the picture described about the Inner Areas, the Po river flows in a natural area covered by the Park of the Po Vercellese Alessandrino. The Atlas is an opportunity to carry out a census inside the area of the Park, focusing in particular on that type of buildings suitable to play a role in the line tourism, from the point of view of location and volumes. Therefore, we talk about the traditional building typology of the agricultural landscape of the plain, the Cascina (farmhouse of the north of Italy), which represents the largest widespread heritage, unrecognized, underused or abandoned. Through surveys and subsequent checks on the land registry, 24 buildings were found that reflect the requirements (Figure 3); six of these are public, the rest is privately owned.

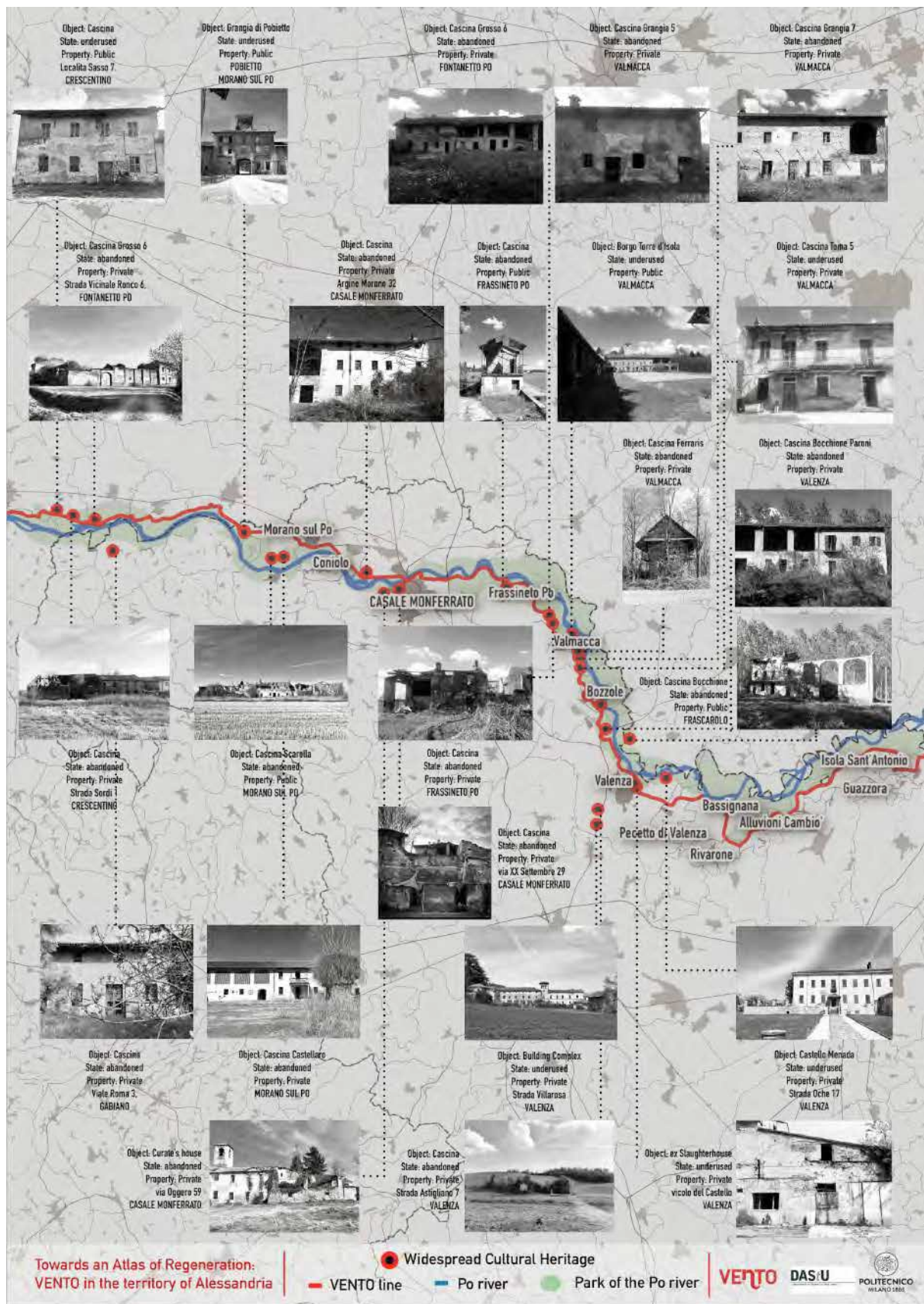


Figure 3: Towards an Atlas of Regeneration. Widespread Abandoned Heritage along the VENTO line in the territory of Alessandria (Figure elaborated by the authors).

The next steps focus on public buildings, identifying possible future scenarios thanks to the combine use of GIS and MCDA together, which allows supporting decision-making processes. Therefore, the criteria, sub-criteria and indicators will be identified on the basis of the research objectives. By aggregating the results, maps will be obtained that will show both the potential and the critical aspects of the area surrounding each building, helping to make the best choice based on the initial objectives of the research.

The model is proposed here in its first phase of pioneering approach to heritage recovery and it represents an experimental opportunity to investigate methods and tools capable of regenerating fragile territories, reactivating local micro economies based on endogenous resources.

Conclusions: scenarios and perspectives.

Attention to the cultural heritage in the Inner Areas is growing, primarily due to the damage suffered in these areas by the most recent natural disasters. Presence of people in small municipalities is a resource to protect the territory, especially for activities to contrast hydrogeological instability and for maintenance and protection of widespread common heritage. Therefore, there is a clear correlation between the SNAI, the redevelopment interventions of small villages, the contrast to the hydrogeological instability and the protection of common heritage, present here in large quantities (the places of culture surveyed in 2011 by Istat are 4,588, among them 1,803 are in inner areas). Furthermore, the SNAI indicates the tourism and the enhancement of heritage as a lever to reverse the depopulation trend in these places. The difficulties of these territories, linked to the lack of essential services, can be indirectly contained by instruments that could invert the negative indicators by creating employment opportunities and development. Therefore, small towns can become an opportunity to restart the economy, with an adequate consideration of the tourism potential and of the enhancement of heritage. Improved fruitability can act as an attractor for both inhabitants and visitors, contributing to territorial development. In the municipalities of the Inner Areas, where the degradation of spaces represents a further fragility factor, a gradual re-appropriation of places and a greater awareness of communities have a decisive impact on the actual success of policies. If were implemented policies for new governance tools and strategies for a profound educational renewal of the basic values, heritage could represent a driving force for development. That means, in some way, giving importance to the dialectical relationship between the singular, understood as individual, and the collective, on which the identity is based. Consequently, if we protect and take care of the context, or of what is collective, at the same time we take care of the individual. And that's why we take care of heritage: because heritage is of all and of each at the same time, we recognize ourselves and our identity in it; because a future without a past is an arrow without direction or orientation; because heritage is specificity, specificity is diversity, diversity is wealth; and finally, because heritage provides everyone the magnificent opportunity to *"start from the end"*, which means that describing depopulation places, apparently finished, as territories rich in potential is like declaring that the future can be changed. So it is possible to talk about a *"pedagogical project"* and in particular it is possible to do it thanks to the line: it places objects in a system, gives them added value and generates narratives by its nature of slowness. It is a project of coherence aimed at: the sensitivity of the individual in the community, the enhancement of the single object with respect to the line in which it is located, and in which the soul of places becomes the protagonist.

Authors contributions

C.D. wrote the introduction, the paragraph 2, the conclusions; M.C.G. wrote the paragraph 1; P.P. wrote the paragraph 3; A.O. wrote the paragraph 4; C.D. and P.P. they wrote the paragraph 5; C.D. has developed the map and the investigations that led to its production; C.D. coordinated the writing of the article; M.C.G., A.O., P.P. they conceived and coordinated the research activity.

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Research on the Renewal Strategy of New and Old Intersection Communities in Metropolis Based on the Concept of Landscape Urbanism——Taking a Practice in Shanghai Tianlin Community as an Example

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Abstract: With the development of the economy and the progress of society, people's demand for the quality of human habitat is increasingly urgent. However, the urban development strategy adopted by China's rapid urbanization process in the past few decades has brought problems such as high-rise buildings, dark corners, and lack of quality public spaces. Especially the new and old intersection communities have become the accumulation of problems in various periods. The Tianlin Community in Xuhui District, Shanghai is close to the inner ring road of the city, integrating a new community with high-rise buildings and a dilapidated old community. A large number of people and so rich elements such as iron orbits, hospitals, parks, slums, modern residential areas and so on, in stark contrast to the closed space, rare public activities and lack of vitality. Landscape urbanism uses landscape instead of architecture to become the basic medium in the new round of urban development. Practice has proved that landscape is the only model that has the ability to propose effective solutions to the rapid development of today's society and the problems of urban transformation from gradual adaptation and alternate evolution. This paper takes the landscape urbanism as the guiding ideology, regards the landscape as the most basic element determining the shape and experience of the city, In response to the problems of low spatial quality and lack of vitality caused by the isolation between functional zones and within functional zones in Shanghai Tianlin community, the community update strategy of connecting urban fabrics, integrating natural and engineering systems, creating synergy of shared spaces was proposed. Reorganizing the area through "landscape infrastructure", creating new urban Spaces that meet the needs of the people and finally re-establishing physical and social connections.

Key Words: Landscape Urbanism; Community Renewal; Urban Design; Shanghai Tianlin Community; Vitality Creating

1 Introduction

From the 18th National Congress of China, the new urbanization with Chinese characteristics has been proposed, which means the transformation of urbanization from quantity to quality and from extension to connotation. The 19th National Congress pointed out that the main contradictions in China's society have been transformed into the contradiction between the people's growing needs for a better life and the development of inadequate imbalances. From this we can find that China's urban development is shifting from an increase in quantity to an improvement in quality. The original way of building renovation is no longer suitable. Landscape urbanism originated from the criticism of

postmodernism on modernist architectural planning in the late 1970s. It is considered to have a profound impact on the improvement of human settlements. Therefore, at the current stage of development and stage of China, there are Important guiding significance.

China has experienced 40 years of rapid urbanization development. In order to meet the needs of urban economic and social development, a large number of new districts have been built. The population density and construction density of the cities are in a state of rapid growth. However, due to historical reasons and the development of “cake-spreading” in some areas at that time, there were problems such as low floor area ratio, dangerous buildings, backward facilities and bad sanitation (Yang *et al.* 2019). At the same time, the rapid expansion of urban space has made urban construction land reach the ceiling. Faced with the shortage of construction land indicators, urban renewal has become the main way to meet urban space needs (Tang, 2015). Especially for the new and old intersection communities of cities, the particularity of their location has led to the accumulation of urban problems, which are the key areas for urban renewal.

Based on the full understanding of landscape urbanism and urban renewal, this paper takes the urban renewal practice under the background of landscape urbanism with a new and old intersection communities in Shanghai, one of the cities with the fastest development and the most urgent urban renewal in China. Practice brings some relevant thinking.

2 The development and practice of landscape urbanism

2.1 The origin of landscape urbanism

The origin of landscape urbanism can be traced back to the critical stage of postmodernism's modernist architectural planning in the late 1970s. The main background of its emergence was that there were more and more “decentralization”, no centralization, and high liquidity in the city during the industrial transformation. People moved away from the urban center and the urban population experienced negative growth. Industrial civilization brought serious environmental problems to the society at that time, causing great damage to the natural ecology, and the human living environment was worrying (Steiner, 2011, Weller, 2008). Under such a background, landscape is the only model that has the ability to propose effective solutions to the problems during the rapid development and the urban transformation of today's society from gradual adaptation and alternate evolution (Yang, 2009). The landscape is expected to replace the building as the most basic element of the new stage of urban development, helping people to rationally use natural resources, reshape the natural ecology and the relationship between man and nature. In the 1990s, Charles Waldheim, then deputy dean of the School of Architecture, Landscape and Design at the University of Toronto, first proposed the term “landscape urbanism” to describe a series of emerging theories and practices in urban planning and design.

2.2 The concept and connotation of landscape urbanism

In the article "A Reference Manifesto", Charles Waldheim, the author of the term landscape urbanism, defines the concept of landscape urbanism: landscape urbanism describes a way to re-integrate existing order in the process of contemporary urbanization. In this process, landscape replacement of buildings has become the most basic element of urban construction. In many cases, landscape has become a perspective window for contemporary cities, especially North American cities, and an important medium for urban reconstruction (Waldheim, 2006, Waldheim, 2016).

Landscape urbanism is some different responses of a group of designers based on the same values. In the face of cities driven by capital markets, urban design should no longer be based on the capital carrier of architecture, but should return to urban Ecosystem and human-scale to do the design, its connotation has the following characteristics:

First of all, the landscape of landscape urbanism is not the visual perception of the aesthetic connotation in the traditional sense, or as a natural space for the building. It regards all the existing objects (natural or artificial) on the earth and their visual and comprehensive interpretation of the state and space as a continuation of the spread landscape. It is a combination of nature and man-made objects, a multi-functional structural carrier of the city, and the connotation of the landscape has a large degree of expansion and development (Feng *et al.* 2013).

Landscape urbanism advocates the natural process as a form of design, fully respects the natural evolution process of the site, analyzes the texture of its evolution, and uses it as a basic integration into the design. This is an artificial way to create a near-natural artificial ecosystem by using natural elements. It is based on ecological principles to reconstruct the living environment.

Landscape infrastructure is another important feature of landscape urbanism. Most people's knowledge of infrastructure is gray infrastructure such as roads and bridges. People usually only consider their technical requirements and ignore their social, aesthetic and ecological functions. Landscape urbanism advocates the coordinated integration and overall construction of "gray infrastructure" with "green infrastructure" such as park green space and rivers to form landscape infrastructure (Zhai, 2010). The landscape infrastructure is comprehensive and complex, close to the diversity of contemporary society and environment, and meets the maximum needs of social and economic development as well as ecosystem service requirements with the least amount of land.

Since landscape urbanism was born to solve the problem of the decline of American urban centers, it is very suitable for the revival of the central city that is declining. When the city develops rapidly, the central area of the city declines, and it becomes a gathering place for all kinds of dirty behaviors. It changes the image of the central area of the city through landscape urbanism, stimulates the vitality of the central area of the city, and wins new development. In addition, because the landscape is more flexible, resilience, and less costly than buildings, it is easier to cope with the social problems brought about by economic structural changes.

3 Urban renewal of the old and new intersection communities of metropolitan areas

3.1 The background and connotation of urban renewal

Urban renewal enables urban land to be economically and rationally reused through substantial maintenance, renovation, and demolition, and strengthens urban functions, enhances social well-being, improves quality of life, and promotes sound urban development. Its purpose is to promote a region (including economic, material, social, environmental and other aspects) for a long time, and the approach adopted is comprehensive and holistic (Song *et al.* 2015). The ways of urban renewal mainly include redevelopment, rehabilitation and conservation, but not limited to these three actions.

At present, the development space of China's megacities is basically saturated, construction land is increasingly scarce, and there are a lot of land resources in cities that need to be revitalized, such as

dilapidated houses, abandoned industrial buildings, and inefficient space. According to statistics, the commercial properties amount of Beijing and Shanghai are underestimated to more than 10 million square meters (Qin, 2018). China's cities have entered the era of stock development from the incremental era. Urban renewal has become a major new growth point for cities, especially megacities, due to its important role in improving the efficiency of the stock land and space.

3.2 Urban renewal of the old and new intersection communities of metropolitan areas

The old and new intersection communities of metropolitan areas is a special area in the city and an important potential area for urban renewal and structural optimization. This area was originally a fringe of urban development in the past. It has a certain sense of history and some of the functions and buildings developed in the early days. This is an area where urban space is rich in content and urban functions are highly mixed. With the rapid development and expansion of cities in recent years, these areas have become special areas between the new city and the old city. Due to the influence of traffic location, land price and other factors, in the background of increasingly tense relations between people and land, the intersection communities of old and new areas has become a center of illegally construction and social problems. It is precisely because of its problems and the prominence of contradictions that in the wave of urban renewal, this area has gradually become a hot spot for urban renewal. However, market-driven urban renewal tends to benefit value, and the update project lacks overall coordination. At the same time, the update of high development intensity has inundated the original regional characteristics. The update method only focuses on the project site itself and finally destroys the integrity of the design and the original near-human experience scale. Finally, the street vibrancy is replaced by the depressed high-rise buildings. Therefore, in the new development stage of pursuing urban quality, the new and old intersection communities of metropolises are in urgent need of a new round of renewal. Considering that most of the areas have undergone a large-scale construction and renewal, small interventions and construction should be adopted to achieve regional regeneration.

4 Urban renewal practice in Shanghai Tianlin area based on landscape urbanism

Shanghai is China's cosmopolitan city. After 40 years of rapid development, the shortage of land resources has become increasingly serious. Shanghai's new round of master plan (2016-2035) puts forward the basic requirements for the strict control of construction land use in Shanghai's new round of urban development, aiming to achieve “zero growth” in the total construction land use of the city, which requires Shanghai to transform from urban incremental planning to stock optimization.

Tianlin Community is located between the outer ring road and the inner ring road. It belongs to Xuhui District of Shanghai and is close to the Xujiahui City Sub-center (Figure 1). This area was a gathering place for workers' villages and production enterprises in the 1980s and 1990s. It is now an urban community with a predominantly residential function. Due to the particularity of its location, there are new communities with high-rise buildings, old and broken communities, and even the coexistence of illegally built urban villages. Although the facilities are complete and the flow of people is large, this area faces problems such as space closure, rare public activities, lack of vitality, etc. The update practice introduced in this paper is located on the riverside of Puhuitang river in the Tianlin community. It is a 7-hectare plot with good resources and convenient transportation, but it faces many problems such as the isolation of both physical space and social space, as well as low space quality and

lack of vitality (Figure 2). Based on the concept of landscape urbanism, we try to use ecological and human perspectives to discover problems within the site or with the surrounding environment and then solve problems, and also reorganize the site and then create new urban spaces that meet the needs of the people to re-establish material and Social connection.



Figure 1. Location of Tianlin Community between and Design Site in Shanghai



Figure 2. Problems the Site Facing(Contradictions New and Old, closures, high-voltage towers in parks,inactive public spaces, etc.)

4.1 Connecting urban fabrics

Landscape urbanism emphasizes the extension of design thinking to the urban scale, taking the perspective from the spatial organization and arrangement within the original venue, the beauty and ugliness of the design form to the discovery and solving problem within a larger scope. The design considers the role of the site in a wider range and the connection with the surrounding area, and proposes to create a blue-green network to communicate with the surrounding, to create a non-motorized traffic network and increase the openness.

4.1.1 Create a blue-green network to communicate with the surrounding

In the greenfield system planning of Shanghai 2035 master plan, Puhuitang river, which passes through the site, is an important waterfront corridor, while the Dream Park on the other side of Puhuitang river is a greenland node (Figure 3). At present, the green coverage rate in the site is low, and a large amount of green space is used for parking. At the same time, the ultra-high waterfront buildings, waterfront fences and parking spaces hinder the penetration of the green landscape and cut off the continuity of the waterfront corridor. Therefore, the design creates a green corridor along Puhuitang river and leads it into the site by constructing a multi-level greening network including waterfront green space, big green space, little community green cube, and connections between different green spaces. And finally form a greening node (Figure 4).



Figure 3. The greenfield system planning of Shanghai 2035 master plan

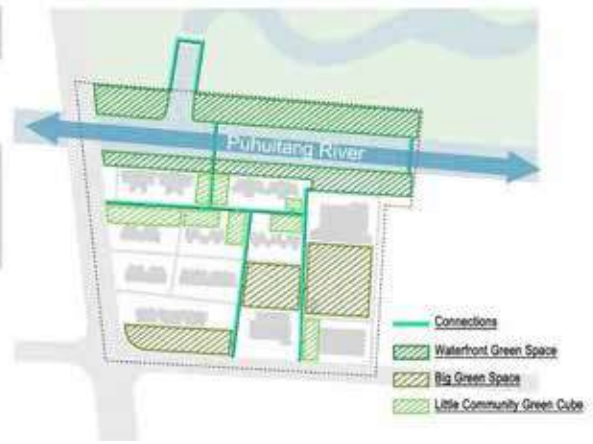


Figure 4. A multi-level greening network

4.1.2 Create a non-motorized traffic network to communicate with the surrounding

At present, the site is a typical motor vehicle-oriented traffic situation in China, with only a small amount of chronic space and poor quality (Figure 5). In order to solve this problem and create a good chronic network, firstly, plan enough underground parking space to solve a large number of ground parking problems occupying the traffic space, and secondly design a network of walking and cycling networks (including increasing the bridge connecting the banks of the Puhuitang river). And also connecting with the surrounding chronic system. On this basis, through the design of the section and the improvement of the surrounding environment, create a high-quality non-motorized traffic network (Figure 6).



Figure 5. Current non-motorized traffic spaces

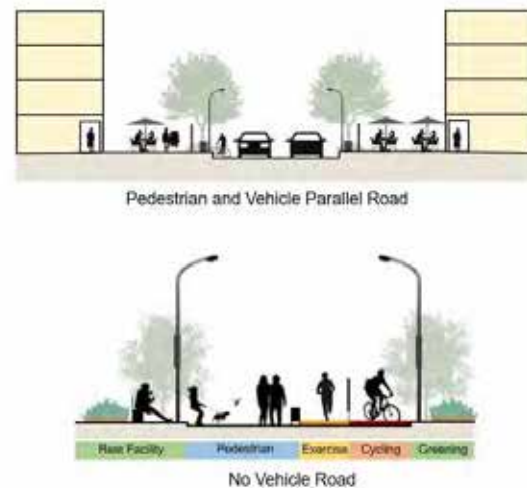


Figure 6. Designed non-motorized traffic spaces

4.1.3 Increase openness to form urban public nodes

The city's important green corridor, Puhuitang river, passes through the block, and the large urban park, Dream Park, should have become a public node of the city. However, due to the property rights of the park and the consideration of safety and management of the residential community, most areas of the site are surrounded by walls or fences, the closing rate is as high as 82%. And even there are high

fences on both sides of the river, which completely obstruct the view of people. What's more, the lack of bridges makes the two sides of the river completely isolated.

The solution is to open the residential area. Of course, it is not as open as many communities in Europe and America. This is incompatible with China's national conditions and people's perceptions. Many successful opening residential areas experiences in China have shown that opening up some public functions and closing small residential areas is a good way. At the same time, the landscape forms a system that is open to the outside world (Figure 7).

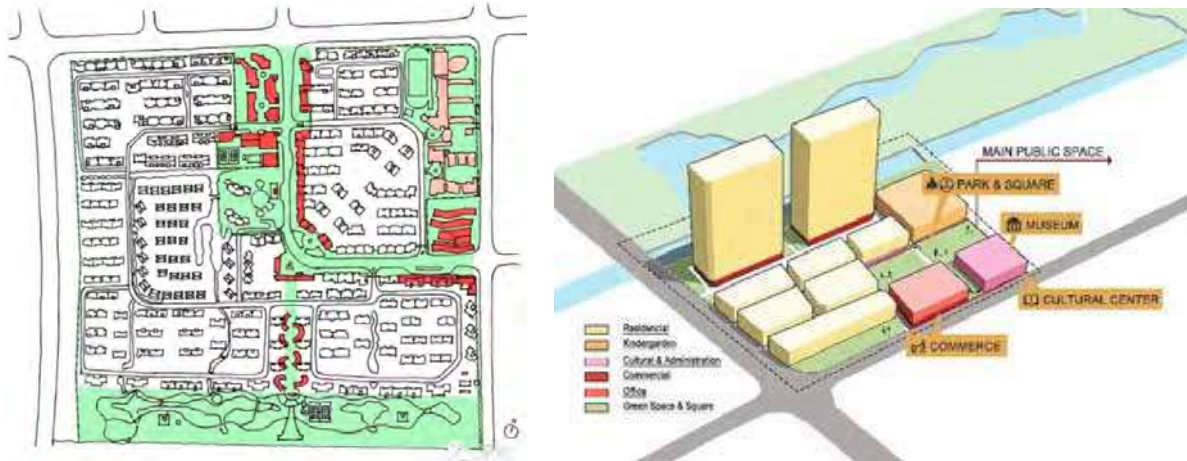


Figure 7. Case: Partially opened residential area Figure 8. Public functions promote the opening of site.

In addition, creating more public functions is also an important method. Transforming the old abandoned factory buildings into museums, cultural centers and businesses, and increasing the proportion of public green space, making the land function complex and open, and then becoming a waterfront public node serving the surrounding areas (Figure 8).

4.2 Integrating natural and engineering systems

Landscape Urbanism show interests in infrastructure and ecological functioning, its challenge to the nature–culture dichotomy and its promotion of creative assemblages, that it promotes hybridity between natural and engineered systems. For example, some experts have already introduced such features as SUDS (sustainable urban drainage systems) and reed-bed water purification systems into urban areas. And the artist-engineer Viet Ngo's lemna (pondweed) facilities, also designed to clean up waste water (Thompson, 2012). This design takes into account both the natural and engineering systems and try to exert the importance of landscape infrastructure.

4.2.1 Restore ecological function and balance

(1) Use a variety of plants

In the long-term urban construction, the builders consciously left some ecological space, but often limited to large-scale turf cultivation and single tree arrangement, the horizontal and vertical landscapes are single, and also affect the regional biodiversity as well as undermine the development of ecological functions and ecological balance. The design uses a variety of species and adaptable local species, in the roadside, waterside, parks and other types of engineering sites, in the plane, facade and other layers

of plant combinations to increase biodiversity (Figure 9, 10).



Figure 9. Diverse vegetation

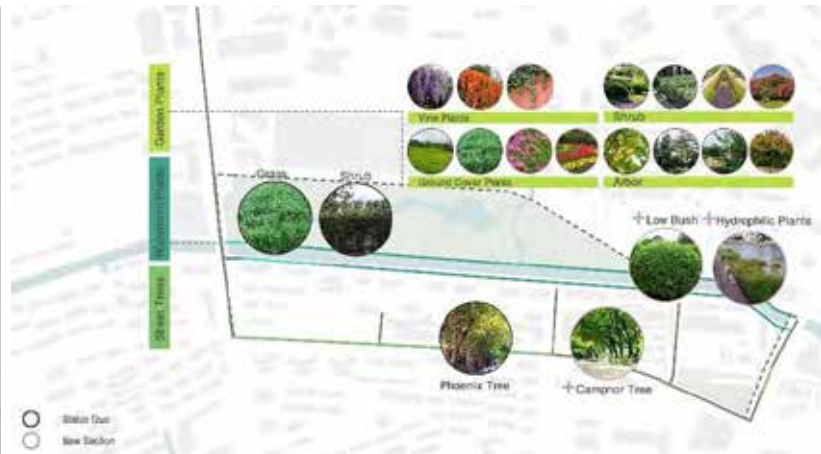


Figure 10. Rich plants configuration

(2) Create an ecological coastline

The water system is an important ecological element of the land and plays an important ecological role. However, due to flood control and safety considerations, the revetment treatment on both sides of the Puhuitang river has adopted a hard dam, and even surrounded by high fences. These rude urban construction not only affects the urban landscape but also destroys the ecosystem. The design uses natural revetment, which consists of natural slope, vegetation, natural stone, wood, etc. The ecological coastline is beneficial to protect the health of the water ecosystem, and it can prevent the erosion of water waves and floods on the shoreline. It can form a green ecological hydrophilic space and improve the landscape quality of the city's waterfront. Its berm, flood control, filtration runoff, self-purification of water enhancement, regulation of water level, and integration of waterfront plants with shoreline plants to form a complete river ecosystem are the best manifestations of integrating natural and engineering systems (Figure 11).



Figure 11. Designed ecological shoreline.

4.2.2 Redesign and re-plan the infrastructure

(1) The space under the high voltage tower

A major constraint affecting the role of the Dream Park on the other side of Puhuitang as its central park is the high-voltage corridor that passes through it. The huge high-voltage tower hinders the feeling of people in the park. In the case where the position of the high voltage tower itself cannot be changed, the space for the ecological and engineering functions can be created by redesigning the space under the high voltage tower. The specific means are to use the terrain to create visual attraction points, while using rich plant layout and artistic components to reshape the regional image to weaken the isolation and negative feeling brought by the high-voltage tower, and then integrate the new theme to re-energize the site energy, thus rejuvenating the vitality of the park.

(2) Green roofs of the buildings

The green roof is an important path for the effective integration of nature and engineering. Planting green plants on the roof can increase the green area; at the same time, absorb the rainwater runoff from the roof of the building, purify and filter through the plant roots, collect and store the rainwater through the rainwater pipe to the rainwater tank, and use it for watering or building water reuse; The planting layer can also protect the building skin, absorb building heat and alleviate the urban heat island effect (Figure 12).



Figure 12. Green roofs of the buildings

The infrastructure under landscape urbanism is not a high-performance mediocre urban machine, but a man-made organic system that enables the city to breathe freely, with a comprehensive and complex life, and more close to contemporary society and the diversity of the environment.

4.3 Creating synergy of shared spaces

Landscape urbanism is a concept that spans multiple disciplines. In addition to the practical functions of the traditional landscape, it also pays attention to the social function of the landscape. It

advocates exploring the spirit of the place, creating a space to adapt to the needs of the local people, and thus closer to the real and complex city, adding a human touch to urban planning. The design is based on the actual needs of the local people, and the space or facilities needed to be placed or replaced to create a humanized public space that can strengthen social interaction.

4.3.1 The built environment must enhance the social life

The design site is divided into four sections by four development entities (two residential areas, one kindergarten and one production enterprise), separated from each other by roads and walls. The public space within the entire site is only a few undesigned small green spaces, lacking public space for social interaction, and lack of regional vitality. In our field research, we found that people of different ages and different occupational types are active in this place, and they have different needs for this place (Figure 13). For example, children in kindergartens and communities need to play together, young people working here need a good working environment and a quality space for communication, and old people need to exercise and chat in the morning..... But they are very pessimistic about the public space assessment of the status quo (Figure 14).



Figure 13. Demands of different groups

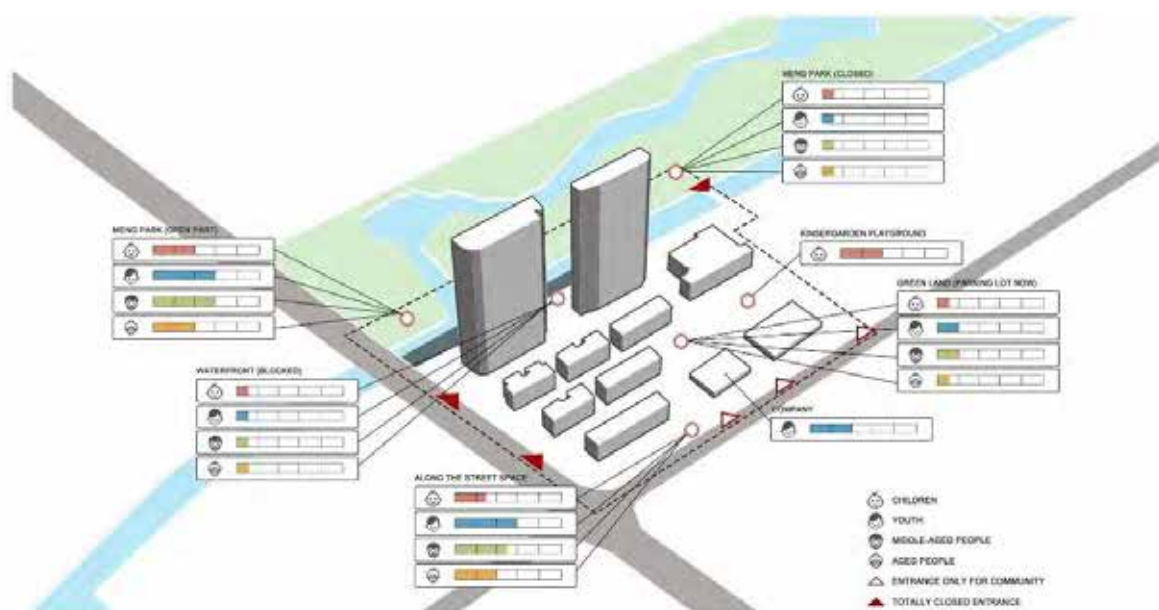


Figure 14. Spatial evaluation from different groups

The design predicts the space in which various groups of people may be active and the types of activities that may be generated, and then arranges these activities and people according to the space situation. At the same time, increase the corresponding facilities for the corresponding activities of various groups of people, and create a suitable space for activities (Figure 15). For example, set different types of game space for children of different ages, nursery and sand pool for children of 0-2 year old, graffiti wall and family coffee for children of 3-5 year old, and puzzle games and museums for children of 8-12 year old. These spaces that are truly suitable for a specific group of people can effectively promote people's activities here, thereby strengthening social interaction. They are mainly concentrated at the water's edge and a public space belt that extends from the water's edge to the interior of the city (Figure 16).



Figure 15. Activity spaces and routes for different types of people



Figure 16. A space that promotes social interaction from the water's edge to the interior of the city

4.3.2 Humanized scale public space

In the past period of time, China's rapid urbanization process has invisibly made society full of pursuit of scale and speed. A large number of simple and rude "non-human" scale space is produced, lacking space quality, unable to meet the actual needs of people, resulting in waste of space. Design site is also facing the same problem. Super-high residential buildings and large areas of artificial turf have

affected the use of public spaces. This design is based on the "human scale" as the basic ruler, focusing on small but exquisite, using the appropriate facilities and street furniture to make the public space more human, comfortable and secure (Figure 17).



Figure 17. Humanized scale of public activity space after design

5 Conclusions

Urban renewal has become an important direction and driving force for Chinese cities, especially large cities, in the new era of stock development due to the important role in improving the utilization efficiency of both stock land and space. The new and old intersection communities in metropolitan areas has become the key area of urban renewal due to the traffic location, land price and some other factors. Landscape urbanism is widely believed to have the ability to propose effective solutions to the problems of rapid development and urban transformation of today's society from the process of gradual adaptation and alternating evolution. Because it is very suitable for the revival of urban areas and can cope with the social problems brought by economic structural changes, it is suitable for urban renewal in the intersection communities of old and new in metropolises. Although the landscape urbanism theory has not produced much time and related practices are limited, its frontier nature will definitely make a great contribution to urban renewal during the period of stock development.

Acknowledgements

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Towards a Historical Urban Landscape: Principles and approaches in recent built heritage and landscape regeneration projects in the Yorkshire region of England

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Abstract: There is a recent shift in focus in the design preservation and transformation of the built heritage from building objects to historical urban landscape in the Yorkshire region of U.K. The paper will discuss the conservation policies, design regeneration principles, approaches, and socio-economic impacts of two up-to-date exemplar projects -- ‘Albert Works’ in Sheffield in 2017, and ‘Square Chapel’ in Halifax in 2017. The paper points to a more culturally and socially-sensitive way of architectural design involving built heritage and historical urban landscape, which works with the as-found conditions of historical fabric and monuments, strategic design branding, economic returns in preserving and transforming the built heritage and landscape in the Yorkshire.

Keywords: Yorkshire; historical urban landscape; built heritage; design regeneration

Historical Urban Landscape

There is a shift in focus in heritage-led regeneration projects in the UK in recent years, from the focus on the single component of building and landscape heritage, or heritage conservation area, to an integrated and evolving historical urban landscape. The emergence of the conceptual framework of historical urban landscape, which was first put forward in UNESCO Vienna conference in 2005¹, has developed with its core concept in the UK based on Patrick Geddes’s urban heritage conservation of cultural landscape² and Gordon Cullen’s townscapes³. The spatial dimension of heritage has grown from ‘monument’ to the slightly larger concepts of site, thence to ‘setting’, areas and ‘landscapes’ and cities, and finally to the historical urban landscape. The various successive enlargements of ‘heritage’ have created an all-inclusive concept of the ‘historic environment’⁴. As Taylor summarized, central to the historical urban landscape are three underlying principles: understanding of the city as an evolving process -- living entity -- not merely a series of objects (buildings): here the idea of process embraces intangible cultural heritage values, *genius loci* and interaction between culture and nature; respect for the overall morphology of the city and its landscape setting so that future development does not overwhelm the landscape physically or its intangible meanings and values; understanding that conservation of physical material aspects of urban landscape must be balanced taking into account immaterial aspects to do with layers of meanings residing in the urban landscape⁵. The conceptual framework of historical urban landscape directs to a more holistic approach to built heritage environment in the UK, with an emphasis on the layers of historic and social values of those built fabric over time, rather than sticking to or returning to a particular time period. In this way, the UK has a subtle difference from, and beneath the surface difference there’s a very contrasting ideology with Viollet-le-Duc’s conceptual framework of restoration on historical built heritage and landscape,

as can be demonstrated from John Ruskin's statement on urban heritage fabric consists of varied assemblies⁶. Ruskin's principle and approach has a far-reaching impact in British conservation and regeneration from urban, architectural and landscape perspectives. Influenced strongly by John Ruskin, the Society for Protection of Ancient Buildings (SPAB) in the U.K, founded by William Morris and others in 1877, promotes that buildings should be preserved as found with minimal interventions, and any additions should be distinguished from the original one without confusing both statuses⁷. This point of view has also been reconfirmed in the Venice Charter, for example in its Article 12, stating that within restoration, replacements for missing parts must integrate harmoniously, whilst remaining distinguishable from the original as not falsify the artistic or historic evidence.⁸

Design Principles and Approaches

There are generally three design principles, associated with three design approaches, transforming built heritage and landscape in the Yorkshire region of England, U.K: the first is restoration, which refers to literal reconstruction to return or to represent the original characteristics in their fullest authenticity; the second is preservation, which refers to the minimal conservation of the as-found condition of the site and context, in order to maintain an alternative idea of authenticity and manage the future possible change. Its extreme version leads to a monumental-ization of heritage, which celebrates the vanquished past through the enhancement of ruin and decay; the third, a landscape-based approach, which is the topic of this paper and has become increasingly compelling within current local architectural professions and academia, seeks a point of balance and reconciliation between the old fragments and new additions, the past and future, the conservation and regeneration, through a sensitive and holistic design and planning approach. This approach to the built heritage often leads to a more culturally and socially resilient 'new-into-old' hybrid, which is not only focusing on the single historic built object or landscape zone, but on the layered, integrated whole historical urban landscape. It re-attaches significance and value on the reason and rationale to add, adjust and absorb the new contemporary addition in order to preserve the as-found historical urban landscape, which itself is not static, or authentic in rationalists' perspectives, but dynamic in process and responsive in use. This resilience embedded in a broader layering of urban landscape, rather than a single freestanding building object or landscape, is of highly strategic importance for heritage conservation and regeneration in order to manage the change in a sustainable way, both economically and socio-culturally.

To further demonstrate, two projects are selected for the following case studies, based on the three criteria: first, both projects were completed in the past three years, which should represent the most up-to-dated versions of urban landscape conservation and regeneration principles and approaches from Yorkshire region; second, both projects were initiated and done by Yorkshire local practitioners instead of national or global practice, which should express more specific locality and explain specific approaches to this particular region; third, and most important of all, that both projects approached and transformed very ordinary built field in a heritage context, ranging from not only the ordinary warehouse-to-workplace to the adaptive-reuse of disused hall at the building scale, but also their immediate surroundings at the level of urban landscape. Rather than those specially-proposed typologies in once-in-a-lifetime special commissions backed by strong patronages, these selected projects constitute the everyday fabric of an urban landscape and townscape, and would have more transferability to elsewhere in the Yorkshire regional context.

Albert Works in Sheffield, 2017



Figure 1 Before Regeneration



Figure 2 After Regeneration

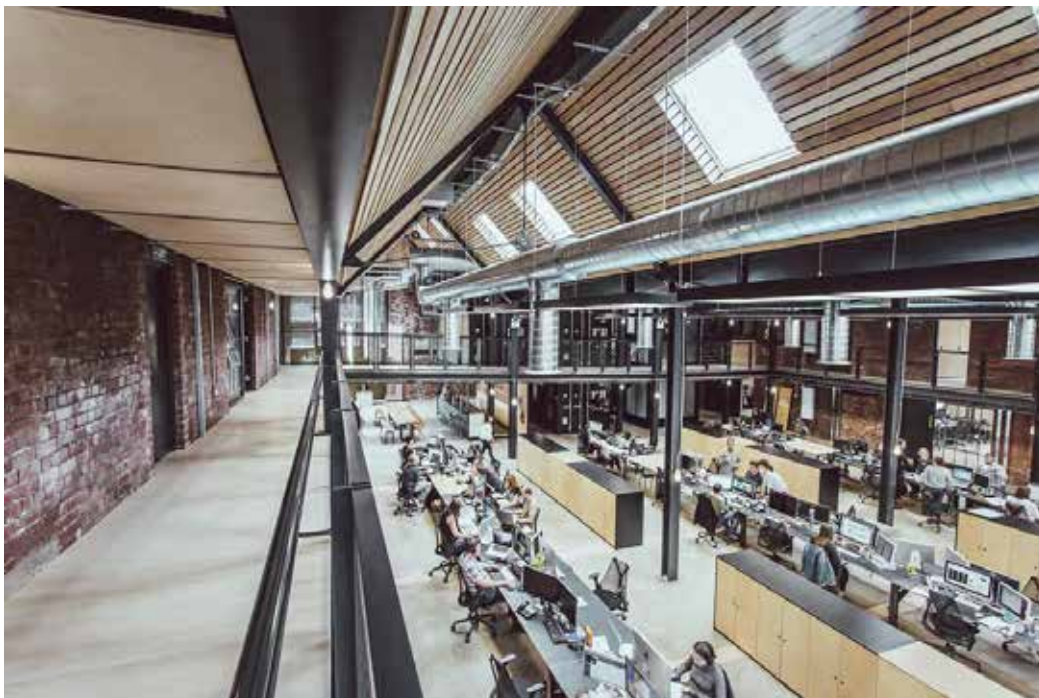


Figure 3 New workplace's interior

In Sheffield, the largest South Yorkshire city, there is a great need and potential to regenerate post-industrial urban landscapes with many derelict warehouses and ordinary industrial buildings. Albert Works can be regarded one of the most successful regeneration projects in the recent decade. Located in the Cultural Industries Quarter, a conservation area designated in 2001, the warehouse building block of Albert Works started since early 1830s mainly for cutlery production (Figure 1). Although identified as ‘buildings of interest’ by the city council’s conservation team, the building had still been disused and abandoned for decades, until its renovation and conversion into a 1500-sqm digital company workplace (Figure 2) from the mid-2010s, done by Leeds-based architectural practice Cartwright Pickard Architects. The conservation policy of Cultural Industries Quarter highlights the high level of repair and recovery in the original building and the flexibility of new developments, in order to prevent the abandonment again. Built upon this foundation, the design team went beyond the contemporary functional fit of the historical structural shell, by reconsidering the role of this site for the city of Sheffield, which occupied nearly a full urban block with two street frontages. An architecture of urban interior – a double-height co-working hall (Figure 3) was realized, as an infill into the existing tight block through new steel structures and timber roofs. It provided a possibility for the new workplace to routinely open house as a social gathering hub for the historical neighbourhoods, in this way carefully sustained the historical social relationship between the original warehouse and its surroundings urban landscapes. In this sense for this heritage fabric, social process and spatial form were aligned within a piece of historical urban landscape. Down to the street level, the street-facing elevations of building block were restored and refurbished in its traditional red-brick construction, preserving the historical memory in link to the two existing streetscapes through sticking to the familiar form and configuration. However, the visual presence of two specific street elevations was articulated in a subtly-differentiated way into a contemporary moment, with a juxtaposition of contemporary brown-coloured metal and dark-coloured glazing with traditional masonry to capture contemporary change in this historical urban landscape. Behind the two street frontalities, the historical authenticity and future reversibility of this flexible contemporary working space (Figure 4) was as much ensured as possible by a series of light-weight plug-in furniture and the reuse of recycled shipping containers (Figure 5), with as less as possible structural touch and permanent link to the existing floors, walls and ceilings. Furthermore, a human-scaled landscape courtyard was designed to preserve the existing industrial chimney, again reinforced the site-specific heritage and place identity through new development and use from the point of view as a whole historical urban landscape. Albert Works has been very well received by its building users ⁹, local community and external visitors that its approach has become a benchmark for the following redevelopment projects in the adjacent plots to the whole historical urban landscapes of the Cultural Industries Quarter of Sheffield.



Figure 4 Preserved existing walls and view connections to the street



Figure 5 Adaptively reuse of recycled shipping containers as plug-in meeting spaces of the red-brick shell

Square Chapel Arts Centre in Halifax, 2017



Figure 6 (left) Townscape of Halifax in 1988, with Piece Hall, Bradley Hall and Tower of church at the centre.



Figure 7 (right) Current streetscape of Halifax, view from the railway station and carpark area, most of the pre-industrial buildings have been well preserved as listed buildings by Historic England.



Figure 8 Competition winning model by Evans Vettori Architects, showing the new Square Chapel Arts Centre re-inhabits the left-over void between the Grade Listed I Piece Hall and Grade List II Bradley Hall buildings.

Located in the West Yorkshire, the town of Halifax had been heavily relied on the textile industry for hundreds of years before the dominant arriving of the industrial revolution. Halifax's greater cultural prosperity can be not only seen from its reputation as the 'Florence of the North', but also its

historical townscape (Figure 6) with two public buildings as its physical manifestation and centre – the Grade I listed Piece Hall built in 1779 and the Grade II listed Bradley Chapel built five years later. Piece Hall is a three-storey building containing as more as 315 individual units, and a central plaza providing market space also for trading pieces of cloth. The red brick building of Bradley Chapel has a typical Georgian front façade, sits adjacent to the key medieval street of the town as one of that sort of gate-way buildings along the street. The fates of both buildings went side by side with the family-based, hand-made weaving industry. Both decayed physically and mentally, and had been borrowed as Sunday school and informal settlements in post-war periods until its transaction back to the local community as an art space by only £25 in 1988. Theatrical and art performances went on regularly from then on, however without any spatial improvements of the buildings’ decaying social status and cultural role for the forgotten town. The situation of this piece of historical urban landscape has not changed until Matlock-based local architectural practice Evans Vettori Architects won an invited competition on this area which succeeded in finding out a lost and potential spatial link between the Piece Hall and Bradley Chapel. Their new design introduction of a new Arts Centre finally reinvented both heritage buildings back to a more welcomed and well-presented historical urban landscape branded for a contemporary Halifax (Figure 7). The team firstly got involved into the renovation of the central plaza of the Piece Hall, then identified a vacant triangle site in between the two listed building (Figure 8). Extensive community consultation then started, alongside with the discussions and meetings with the Arts Council and Halifax local council, to understand the value of the site as a part of historical urban landscape rather than a freestanding base or object. Both as listed buildings, there’s a very strict conservation policy and limited scopes for any renovation or redevelopment on the existing buildings’ interior and external change. The aesthetic, communal and heritage use value in the two historical buildings is so evident that any new contemporary addition would face how to preserve the as-found historical urban landscape without losing its contemporary development potentials. The resolved design from the perspective of historical urban landscape strategically put the new Arts Centre as a spatial linkage between the two listed heritage buildings, physically relinked through several pedestrian accesses and mentally relinked through a single continuous space covered by a single continuous roof. The roof derived its geometry and form from within the triangular site-specific in between two heritage halls (Figure 9), self-supported by three new steel structures in a resemblance of three old trees of the site, but also freeing any additional structural load to two enclosing walls from the two heritage buildings (Figure 10). The existing theatre was carefully refurbished with as much as-found elements conserved as possible; a new 120-seat auditorium was placed and hidden within a podium which also anchored the street pattern of the preserved medieval lane. More than doubled number of local users have been drawn back to this site for regular historical visits, art exhibitions and theatrical performances, or just a cup of tea with families and friends. From the original six founders, a staff of 55 now man the centre with 70 volunteers still coming in to do a shift, just because they want to. The new Arts Centre took £20k in their first opening week – the whole budget for this regeneration project was just £360k¹⁰. Here, the new Square Chapel Arts Centre not presented itself as a contemporary monumental building, but as a contemporary patchwork which was not only stitched into the existing historical fabric but also tailored the fragments between each existing components of this historical urban landscape as a whole. In this way, the sense of place and concept of heritage contexts for this historical gateway area of Halifax’s townscape were carefully maintained and sustainably managed in its most culturally-resilient meaning and approach.



Figure 9 New hall of Square Chapel Arts Centre, view from the renovated upper floor of Bradley Hall



Figure 10 Design regeneration based on contemporary spatial interventions working with the given walls, the left one from the existing Piece Hall and the front one's as-found back elevation of Bradley Hall.

Conclusion

The two selected cases in this paper open up a critical dialogue with the given heritage in the Yorkshire region of U.K through its transformative use for long-term sustainability as a part of an evolving historical urban landscape. The scales, conditions and effects of each case vary, but the design principles and approaches demonstrate a shared consistency towards a heritage-led regeneration with a broader perspective of historical urban landscape. Conservation and regeneration of built heritage and landscapes should be fast forward-looking, rather than merely looking back. It should be a resilient design process of managing change, which would be based on the strategic decision-making with a wider community on the as-found spatial resources and cultural continuity from a broader view of historical urban landscape. The championing of this shifting design principle and approaches in heritage-led regeneration projects should be based on a more evidence-based understanding that culturally-sensitive and resilient design can lead to a better understanding and preservation of the built heritage and landscapes, and can also trigger and direct the positive change and sustainable development of a locally-specific historical urban landscape. There is an urgent need to strike a point of balance, that both the historic authenticity and value and a sustainable future transformation for the built heritage and landscapes are ensured through conservation and regeneration of the historical urban landscape as large, by minimising physical interventions, by branding new strategic identities, and by embedding historical urban landscape as a continuous and constantly-changing whole. Within this fundamental principle and a series of diverse approaches tailored to diverse site contexts and external conditions, a strong counterpoint can be provided to those design forces that became rapidly and blindly involved in the ‘Disneyfication’ and ‘McDonaldisation’ of mass heritage tourism or tourism-led regeneration, hoping instead to readdress fundamental resilience within the built heritage and landscapes towards a historical urban landscape.

Illustration Credits

Figure 1; 2 @ Jaywing

Figure 3 @ Tom Kahler

Figure 6 @ Peter Hollings

Figure 4; 5; 7; 8; 9; 10 @ Xiang Ren



Notes and References

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Umbrellas, Incubators, Mothers and Killers:

Four typologies of relationship between cultural mega-events and small and micro events in Heritage-rich European cities

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Abstract

This paper explores the relationship and impact between cultural mega-events and the subsequent production of other small and micro events held within heritage spaces. As with other types of mega-events, cities often turn to cultural mega-events for their perceived positive externalities and with a desired legacy that leaves a long-term impact on the city. These events generally build up and establish a strong reputation for associated network of actors that, in most cases, keep promoting smaller-scale events in subsequent years. In other cases, larger events crowd out small ones. Yet how do these cultural mega-events and all of their 'infrastructure' relate to and impact newly created or existing local smaller events? Additionally, what are the key impacts of continuous festivalization of heritage spaces in cities?

This paper presents and analyzes four found typologies of this interaction between mega-events and small localized existing or newly created events: "*Umbrellas*," "*Incubators*," "*Mothers*" and "*Killers*." We will consider in depth the European Capital of Culture program – since it has become an important cultural policy implemented across Europe for more than 30 years. "*Umbrella*" events encompass and include many pre-existing smaller events within the cultural mega-event. "*Incubator*" events also utilize pre-existing micro events, but come to enhance and grow them through the increased cultural capital, means and knowledge the mega-event brings. "*Mother*" events lead to the creation of new small and micro events in the city that did not previously exist, while "*Killer*" events have a negative impact on previously existing small and micro events. Finally, the paper theorizes on the mechanisms responsible for these typologies and their significance for urban heritage.

Jones Z., Ponzini D. (2018). Mega-events and the preservation of urban heritage: Literature gaps, potential overlaps and a call from the policy field. *Journal of Planning Literature*, 33 (4), 433-450.

Key words: Heritage, Cultural mega-events, Festivalization, Cultural policy, Policy network



Cultural mega-events and the ongoing festivalization of cities

Cultural mega-events have become an increasingly popular choice for cities to host in the last several decades with the European Capital of Culture (ECoC) being one of the largest and most recognizable (Jones, 2017). For over 30 years more than 50 cities have hosted the event promoting a range of various themes and European identities (Ponzini & Jones, 2015). This and other cultural mega-events have grown in popularity for a number of reasons, but largely due to their reduced costs and lower impact on the built environment in terms of new venues required as it largely utilizes the existing facilities and cultural spaces of cities. In this way cultural mega-events are far more accessible to small and medium sized cities compared to Olympics, Expo or World Cups that have been rejected by many local citizens and city decision makers alike for their ballooning costs and perceived adverse effects (Jones & Ponzini, 2018). This decreasing trend has led to record numbers of candidate cities cancel their bids in recent years, a trend yet to occur in cultural mega-events. The popularity of the ECoC program has also spawned a number of similar spinoff programs that take place at global regional scales as well as within single nations.

One of the earliest spinoff programs was the Ibero-American Capital of Culture first hosted by Bogota in 1991 and has since been hosted by one of the members of the Union of Ibero-American Capital Cities (UCCI, 2019). The privately run American Capital of Culture initiative began in 1998 and has been hosted by one city a year since 2000 across the Americas (Capital Americana de la Cultura, 2019). The program is supported by The International Bureau of Cultural Capitals which is also responsible for the sub-regional Capital of Catalan Culture which began in 2004 in the small Catalan city of Banyoles. Other regional titles include the Arab Capital of Culture that started in 1996, the Cultural Capital of the Turkic World in 2012, the Finno-Ugric Capital of Culture in 2014 and the Cultural City of East Asia hosted by cities in Japan, China and South Korea which was inaugurated in 2014 (Christensen-Redzepovic, 2018). At the national level, City/Capital of Culture events can be found in the UK, Italy, Lithuania, Belarus, Slovakia and Russia. While many of these events are much smaller than the ECoC and are not equivalent in terms of funding or planning, they reveal the mass interest in hosting cultural events to boost the profiles of cities in order to attract investment, tourists and new residents.

Due to the nature of these cultural mega-events, considerations of their legacy can vary quite significantly from other mega-events. Sporting mega-events like the Olympics or World Cup tend to leave behind a very strong physical memory of the event due to the plethora of new stadiums, infrastructure and other built structures created specifically for the event. Meanwhile, much of the legacy of cultural mega-events tends to be more intangible. While there are examples of new cultural containers built as part of ECoCs or quite notably in the 2004 Universal Forum of Cultures in Barcelona, the desired changes or improvements relate to the perceived image of the city, management/governance structures or a new cultural sector that may introduce new uses into previously under used or abandoned areas of the city. One form that these processes can take place is through the ongoing festivalization of cities after they host a mega-event.

There has been discussion of the festivalization of cities within literature from various points of view (Richards & Palmer, 2012). This paper specifically examines the role of cultural mega-events initiating and growing this process as well as the unintended adverse effects it may introduce. The festivalization of cities can be seen as a desirable way to continue and extend the effects of a cultural mega-event past its close. With cities often wanting to establish new founded images based on culture following the event, the ongoing promotion of events and festivals is one such strategy to do this. This approach can also take advantage of existing cultural knowledge learned through the bidding, planning and implementation phases of mega-events. While at a much reduced scale compared to the initial mega-event, this post festivalization phase can easily utilize the newly generated expertise from the mega-event.

This new strategy can have a significant impact on the city, particularly for heritage spaces where a festivalization may introduce much needed new uses or add to the already high stresses from tourism. The paper proceeds by reviewing the existing discussion of the festivalization of cities through small and micro events in literature. It will then go further in-depth into the varying role that cultural mega-events play in these processes by presenting the four typologies: umbrellas, incubators, mothers and killers. These four typologies will be demonstrated through several cases followed by an analysis of the key influencing factors that determine how cultural mega-events can become one or more of these typologies. The implications of these typologies for heritage will then be discussed while the conclusions will identify some ways of working to verify these hypotheses and interpretations through more systematic analyzes.

International discussion on small and micro events

With the emergence of Leisure and Tourism Studies in the 1960s, the focus on events has become an important growing focus of study in more recent decades (Mair, 2012; Mair & Whitford, 2013). Foley et al. (2012) broadly outlined existing literature within the three strains of event management, event policy and event studies. Event management has long enjoyed a great wealth of instrumental studies intent on improving management approaches with a focus on event managers rather than local or national governance levels. Event policy posits events as part of strategies to improve cities and questions what makes events effective policies and what potential goals of these policies should be. Meanwhile event studies investigate broader socio-historic issues and relate to a number of diverse fields from the social sciences and share a link with leisure studies, which began in the 1960s. Getz (2008) defines the specific types of investigations into impacts on economic; social, cultural and political as well as environmental aspects. These overviews do not necessarily take account for the similarities or differences between literature on hallmark or mega-events and small to micro events.

For the most part, similar research has been conducted into small scale events as that of their larger counterparts. As noted by Getz (2008), a number of studies examine the economic benefits and impacts of small event and festivals, experimenting with a variety of methodologies to measure the spread impacts (Antonio Rivera et al., 2008; Baptista Alves et al., 2010; Bracalente et al., 2011; Egresi & Kara, 2014; Saayman & Saayman, 2004). Others have meanwhile focused specifically on small events' relationship with tourism and their ability to attract (or not) tourists (McHone & Rungeling, 2000; McKercher et al. 2006; Nurse, 2001). Meanwhile additional studies have been carried out on a range of social-cultural impacts (Robertson et al., 2009) as well as the sustainability of hosting small events (Small et al., 2005).

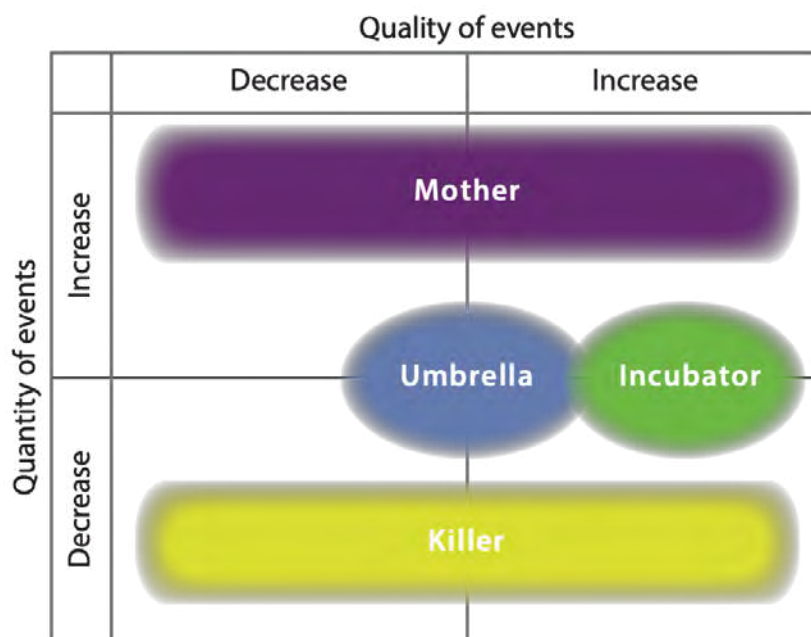
Of these studies with a wide range of research questions, one key point emerges in the study of small events: the importance of their local context. Several studies seem to confirm that small events in more rural areas or smaller towns have the potential to be more successful at attracting visitors and generating economic benefits than in larger cities. Studies conducted in global cities where additional significant heritage offers or other city attractions represent a much greater competition that smaller events have difficulty in remaining competitive (Egresi & Kara, 2014; McKercher et al., 2006). The reasons include the difficulty of advertising and attracting attention due to reduced finances, competition with other cultural offerings or their often clear focus on specific themes such as genres of food, music, film, etc. Studies focused on events taking place in smaller towns/cities found a higher rate of economic return and ability to attract visitors than larger global cities (De Bres & Davis, 2001; McHone & Rungeling, 2000). It should also be noted that the majority of visitors to small events/festivals tend to be more local or regional visitors with very few international visitors (in either small or large cities). Therefore, the impacts and attractiveness of these events should not be considered as being on par with those of mega-events. At the same time, small events and festivals tend to be

more sustainable than their mega-event counterparts due to the usual little investment required on the part of the hosting entity or city (Gibson et al., 2012). The differences in the impacts and effects of smaller events therefore also affects the planning, management and funding of smaller events and a direct transfer of approaches used for mega-events may not be useful or ultimately distracting in the organization of small and micro events (Kelly & Fairley, 2018).

The work by Kelly and Fairley marks an important consideration of the relationship between mega-events and smaller events. Their research focuses primarily on funding models and calls for further collaboration between event management and tourism strategies. However, existing research has not yet considered the cause and effect relationship between mega-events and a legacy of continuing smaller events. Despite the similar strains of research and methods of studying both mega and small events, they are primarily dealt with as separate phenomenon. The potential overlap or influence between one on the other is a gap that this research first identifies and secondly discusses within a specified point of view. This paper is therefore a first attempt to bridge existing studies between small and mega-events by considering the different ways that mega-events can encourage or hurt the continued proliferation of small events as part of its legacy and a consideration for its significance for urban heritage.

4 typologies and key influencing factors:

As noted above, cultural mega-events have become a growing phenomenon over the last several decades, coming to play an important role in the development of cultural policies and programming of cities. While notable for their singular, mass appeal, a key aspect that makes them appealing for cities to host is the potential to initiate long term improvements and changes. One aspect of this is the potential festivalization of the city through a continuation of small and micro events in the years following. The following four typologies have been identified as differing ways in which cultural mega-events can come to affect the ongoing generation of small events: *Umbrellas*, *Incubators*, *Mothers* and *Killers*. Table 1 illustrates these four typologies in their effect on the quantity and quality of small and micro events following the close of a cultural mega-event. *Mothers* or *Killers* focus on the quantity of events and could see either an increase or decrease in quality (however it may be assessed).



Tab 1. Mapping of the four typologies during the post mega-event period

Whereas *Umbrellas* see no significant change post-event in terms of either quality or quantity and *Incubator* types could be classified as a specific kind of *Umbrella* where a marked improvement in the quality of existing small and micro events can be observed.

Umbrella events are those that tend to encompass and include many pre-existing smaller events while hosting a cultural mega-event, but which does not leave a particular long-term impact on these events. The strategy of involving as many pre-existing events within the purview of the mega-event has been adopted by many cities hosting the ECoC and similar initiatives. The ECoC in no way requires the sole implementation of newly created cultural events as part of the year of celebration. In fact, cities are often awarded the ECoC specifically due to the fact that they are considered a 'cultural' city with existing cultural programs and events. Many of the cases that illustrate the other three typologies also implement a similar strategy during their host year in order to implement the greatest number of events during the year as possible. The defining feature of the *umbrella* type is that this grouping of pre-existing events fails to introduce any long-term impact or change. No specific learning is passed along or new networks created between various actors that foster collaboration or which benefit from a shared strategy. In this way the *umbrella* labels any and every event it can as being part of a year of culture, which may benefit the year, but which misses out on a potential long-term legacy. One example of an umbrella event is that of the Maribor ECoC 2012. The program for the year of celebration included various festivals that the city had already been hosting for a number of years and even decades in some cases. Examples include the Maribor Festival, Lent Festival, Old Wine Festival and the Maribor Theatre Festival, all of which have continued following the 2012 celebrations.

In a similar way to that of *umbrellas*, "*Incubator*" events also utilize pre-existing micro events, but come to enhance and grow them through the increased cultural capital, means and knowledge that the mega-event generates. *Incubator* events also bring together and take advantage of pre-existing small events, in some cases occurring for years prior to the mega-event, but which have been improved in some way through the experience and grown as a result in the years following. This learning may take place through a more strategic approach or introduction of cultural policy that was previously lacking. It could also happen through the continuation of the leading agency/foundation following the event. One example of an incubator event is that of the Milan 2015 Expo. While the main program occurred at the expo site located beyond the main urban fabric, a number of events were organized within the city center to coincide with the expo. This program was entitled Expoincittà, which the city of Milan continued to fund following the close of expo. In the four years since, it has gone on to create a database of event venues and sites for small and micro events throughout the city and periphery and now regularly organizes events throughout the year, including themed weeks that celebrate various topics including art, design, architecture, photography, food and many others. Milan previously had a strong tradition of events occurring throughout the year including the Fuorisalone Design Week, Artigianale Craft Fair, Piano Week and others. Expoincittà has been rebranded as YesMilano and has learned from the experience of organizing many events during the expo year, continuing and expanding in the subsequent years. The growth of leisure tourism is an evident ingredient that interested groups are exploiting, which can be seen through the festivilization and disneyfication of central places. Thanks to the institutional system and of information management strengthened through the organization of spread events during the year of Expo, the city has continued to support many small and micro events and increasingly spreading them throughout the territory. This appetite for big and small events and the strength of political constituency can also be seen in Milan's (along with the city of Cortina) candidature to host the 2026 Winter Olympics.

Unlike the first two types that are defined by the strong presence and use of pre-existing cultural events, *Mother* events are those that lead to the creation of new small and micro events in the city that did not previously exist. This is not to say that in *mother* events there were no cultural events existing prior to the mega-event but rather that at least some new

events created as part of the mega-event have gone on with some regularity. A clear example of this can be seen with the Liverpool 2008 ECoC and the success of the Giant Puppets event. The first event took place as part of the ECoC year in 2008 with a series of massive puppets parading through the streets of Liverpool, becoming one of the most iconic and memorable events of the year. It was so successful that the city brought the puppets back to the city in 2012, 2014 and 2018 along with other new cultural offerings. Other examples include the cases of the UK City of Culture Hull 2017 and the Mons ECoC 2015, both of which created organizations that have continued beyond the original event, guaranteeing new offers and long-term cultural events to which industry and tourist lobbies are interested. The continuation of the agency/foundation managing the cultural mega-event past the close of the event is not necessarily a requirement for *mother* events, but it is one of the key factors to be considered and which can make a significant difference.

The final typology to note are “*Killer*” events, which would be those that ultimately have a negative impact on previously existing small and micro events. There can be varying factors that explain such adverse long-term effects resulting from a mega-event. One key issue that can be observed in not just a few specific cases but in nearly all examples of cultural mega-events is the cliff drop phenomenon following their close. Due to the concentration of funding that focuses an extreme amount of resources for a short period of time, once the year of celebration is finished, there typically follows a period of greatly reduced budgets for continued events and cultural programming in the following years. This cliff-drop effect can have a quite severe impact on local inhabitants that go from an extreme period of festivalization to the other extreme of a non-festival atmosphere. Due to the year-long duration of most cultural mega-events, compared to other types of mega-events that last just a couple of weeks, the ECoC program can lead to a rather sudden change in the perception of cultural activity in the city. This effect may be particularly noticeable in smaller cities as compared to larger ones where there may be a stronger presence of pre-existing cultural institutions. This phenomenon can also result from a burnout effect where there is no longer a sustained interest in cultural events, on the part of organizers and audiences alike, following an intense year of activities leading to a loss of expertise (as managers leave to look for other opportunities, again particularly in smaller cities). Typically there is usually a slight reduction in tourism in the first year or two following a large cultural event. However, in recent years it has become more common for cities hosting a mega-event to have a legacy budget for the 2-5 years following the event in order to avoid the collapse effect of the cultural offer and to exploit the innovations introduced during the mega-event. While these legacy budgets do exist and can help in avoiding the drastic cliff drop off effect, these budgets are not always fully implemented as originally programmed as they require a clear legacy program to be already in place and cities are not always willing to continue their commitment to funding such efforts.

An example of a *Killer* event other than through the cliff effect of the event ending can be seen in the case of the 2009 Vilnius ECoC. While an exceptional case due to it coalescing with the start of the international financial crisis, the event underwent significant modifications due to a reduced budget and conflicts with management. In particular, the ‘People Programme’ portion of the event, which specifically highlighted local artists and cultural groups was essentially cut from the year of celebration (McCoshan, et al. 2010). Meanwhile, the more international and larger projects that had already been planned and financed were for the most part kept. In this instance, the local cultural scene was greatly affected, negatively, through the hosting of the event. While the event may not have been solely responsible as it related to much larger socio-economic challenges, it does demonstrate how in certain instances such mega-events can ultimately have a negative impact on the smaller cultural events.

Significance of ongoing small and micro events for heritage

The relationship between built heritage and mega-events has only recently become a field of investigation (Jones, 2017; Jones & Ponzini, 2018), the research into small and micro events

tends to deal specifically with heritage themed events and festivals taking place at festival sights (Coupland et al. 2005; Light, 1996). While there is an important connection between events celebrating local intangible heritage at or in local built heritage, this paper broadens the discussion to small and micro events of a wide ranging nature, heritage related or not. The first question this phenomenon raises relates to questions of authenticity and whether or not such events reduce the authenticity of such places and their connection with intangible heritage. Reducing heritage spaces to mere backdrops for any number of events could risk minimizing their value to that of any other public space in the city. However, on the other hand, from a HUL (Historic Urban Landscape) perspective, such a range of diverse uses and meanings introduced to these spaces through small events could serve as relevant tools to help connect and integrate them with the rest of the urban fabric of the city. Though not explicitly stated as a potential HUL resource (Bandarin & Van Oers, 2012), ongoing small and micro events could present one possible approach to revitalizing and connecting heritage spaces by bringing people to use and interact with them in new ways rather than being seen merely as places of tourism.

Regarding tourism, ongoing strategies of small and micro events likewise present potential threats or opportunities. For cities where heritage sites are already inundated by tourism, their ongoing promotion through these events may only increase tourism and the subsequent threats they bring in terms of overcrowding, loss of authenticity and use, gentrification, etc. Yet events also represent a potential strategy to help reduce pressure on heritage spaces by spreading them to other areas, potentially drawing tourists to less visited parts of cities. This approach could be combined with secondary or lesser known heritage sites as well, as has become common with former industrial structures, to encourage new uses as well as meanings and values for these places. While these issues are likely not the only possible impacts, they highlight the potential importance they pose for urban heritage as they can either become part of strategies to help ease the pressures put on these places while potentially also providing new meanings and uses or risk contributing to problems of over tourism. For these reasons it is valuable to note and better understand these phenomena and anticipate them as one of the possible legacies for cities choosing to host cultural mega-events and to incorporate plans for such events with heritage goals (Jones & Ponzini, 2018).

Conclusions and research perspectives

This article is a first step in exploring an issue that should be further expanded and better understood. We do not exclude the fact that there may be additional types and categories that would be useful to discuss the relationship between mega-events and small events. We are convinced that some issues clearly emerge from this typology of ours and that it is necessary to deepen the empirical analysis with more in-depth case studies and systematic data collection of various dimensions. As defined here, these four typologies focus on the post-event period, but a further expansion would consider the relationship with the pre-event phase as well. The political dimension in particular seems to be an important aspect given that the planning and management of mega-events can strengthen some groups and constituencies as well as create agencies and new actors that influence the following phases both in terms of governance and more generally in defining the political agenda of the city. Even the structure of cultural governance often evolves based on the demands of the mega-event and the years following. Further research could help in pin pointing more precisely the reasons why some cities continue to pursue event strategies following a mega-event while others do not. Such research would provide a clearer understanding of the roles that financing, political changes as well as potential cultural fatigue play in determining how and why local decision makers and stakeholders decide on particular event strategies for their cities.

The localization in space of new cultural life and attractors can have a significant impact on the regeneration of some areas and on their functional and social characterization; these aspects have sometimes been studied in relation to the mega-event and only to a lesser extent

with respect to minor events. An important aspect is once again the political. Considering in a more complex way the evolution of cultural policies and the development of a city downstream of a mega-event, the effects of gentrification and the festivalization of some areas, a question that remains to be asked is who benefits and who pays not only for the mega and small events in the medium term but also for the modification of the city and of the functional and social organization in space connected to the effects of major events. This paper raises these important questions, but calls for continued research and analysis to help answer them.

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Reflections on Individual Memory in the Transformation of Cultural Heritage Cognitive Context

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Abstract: From the perspective of heritage protection, world heritage and national heritage are undoubtedly the carriers of significant historical memory. compare to them our individual memory seems to be small and humble. The material and non-materials that condense human and national memory can be used as cultural heritage. Can the memory be re-recognized from the perspective of heritage protection? Everyone's life should be awed in the long river of history. This article attempts to explore the following three levels of content: First, The wild goose leads to stay a voice, the person leads to stay trace. The Importance of Individual Memory Presentation and Cognition; Second, The context of cultural heritage cognition and its transformation. Thirdly, with the change of cognitive context of cultural heritage, we juxtapose individual memory and major historical memory, and analyze and interpret them as objects. Based on this, supplement the relevant ideas, methods and principles in heritage protection and exhibition. While the historical heritage is recognized, the individual memory is superimposed thus the historical memories with human life.

Key Words: cultural heritage; cognitive context; context change; individual memory; memory superposition

Introduction

As far as cultural heritage is concerned, whether it is material cultural heritage or intangible cultural heritage, there are relevant definitions and evaluation criteria in terms of its form, characteristics and influence. They are undoubtedly the precious wealth left by history to mankind. World heritage and national heritage are undoubtedly the carriers of major historical memories. They mostly symbolize a major historical event or a great person. In the face of cultural heritage, a living individual appears humble and small.

The *Venice Charter* of 1964 mentions that "The essentials of historical monuments include not only individual buildings, but also urban or rural environments from which a unique civilization, a meaningful development, or a historical event can be found. This applies not only to great works of art, but also to some of the more earthy works of the past that have gained cultural significance at any time." From this perspective, the life and memory of each individual should be seen as an artwork. The memory that individuals or groups present in their lives is also wonderful and needs our awe. The recognition of individual memory in the perspective of heritage protection needs us to re-examine.

1. Cultural Heritage Cognition

Cultural heritage is a carrier that embodies significant historical memory. It is a trace left by humans or the country. This trace is for us to trace back and cognitive history, which is also the core of it. We can regard it as a carrier of significant memory or national memory.

The same is true for individuals. It is assumed that a certain space place carries people's lives and memories. When we walk from one place, we leave our figure and traces, when we look back or return to the same place one day. Can we find the traces of the past to connect our memories. When we return to a place where we used to live and grow, this feeling seems to be more intense. We will be curious to find the traces we have left. We try to soothe our hearts through it to seek and capture a sense of belonging. This trace condenses our personal memory, which we can consider as a carrier of collective memory or individual memory.

When we are reading the heritage, we tend to think at a higher level. What we show to us is often a significant memory. This material or immaterial is often linked to a farther point, which symbolizes a country or a nation, they are all great and important, but often abstract and summary. When we face cultural heritage, when we go to read it, we will have a strong sense of distance. Can we resonate as an individual? Whether we can be in it when we read it? Can it make an intersection and connection with our own lives? Hence, the context change of cultural heritage cognition has come into being.

2. Transformation of Cognitive Context

2.1. "Individual" in Context

Cognitive context is a cognitive network constructed on the basis of experience for schematization of a concept. It is the result of cognitive linguistic context, situational context and cultural context. The cognitive context of cultural heritage refers to the cognitive construction network of people in the field of cultural heritage specialty, which has strong universal recognition. People tend to think that cultural heritage is great and important, and put it in a higher position to look at, "individual" is often neglected. The transformation of cultural heritage cognitive context can be seen as a kind of adjustment or change of this cognitive network, that is, to put the life, memory and cultural heritage of individuals in the same important perspective to view and think, and individuals should be respected and awed. As far as heritage protection is concerned, it is not only to preserve and present important historical memories, but also to respect individual memories equally and establish a connection with our lives. Standing in front of today's heritage protection, we should explore the relationship between people and them. From the perspective of heritage protection to recognize individual memory is in the cognitive context of cultural heritage, the transformation of cultural heritage cognitive context is to explore such a relationship.

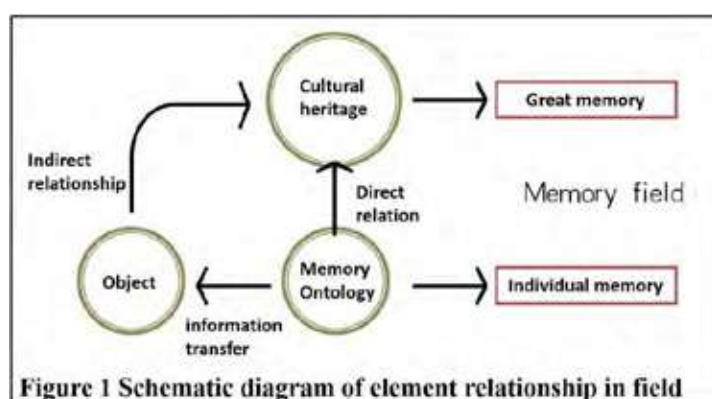
"Individual" is a relative concept, for a group, the individual is one of them, just like in the crowd, you, I, he is one of the individuals; for a larger scope, a certain "group" object can also be regarded as "individual", which depends on the cardinal number compared with it, when the cardinal number is large enough, the object becomes "individual". From the national point of view, "we" is the existence of individuals. "Individual" is not absolutely a quantitative concept. In some cases, it can not be judged by much. Compared with great individual figures, you, me and he are also "individual". Individual is easily forgotten.

Individual memory is small and humble relative to the important memory condensed by cultural heritage. It is often for a collective and individual. Therefore, individual memory is often difficult to be read by others and easily neglected. However, individual memory is strongly related to life and is specific and perceptible. It is a recollection of past life. We can also get a sense of belonging from it.

2.2. Memory Field and Field Relation

Individual memory and important historical memory condensed by cultural heritage constitute a memory field. There is a field relationship between them. In this memory field, there is a direct and indirect relationship between individual and cultural heritage (or a material entity). Major historical memories are condensed by the memories of many related individuals. It is an abstract summary of the memory of many individuals, and symbolizes the individual in an era and an era.

There is a direct connection between the individual (memory ontology) and heritage ontology in the same space-time; in most cases, due to time advancement, the individual (object) in reality and Heritage are in different space-time, at which time the two are mostly indirect. For example, as far as modern industrial heritage is concerned, workers (memory noumenon) who participate in its production and life are directly related to the industrial heritage, while the protection of heritage personnel or tourists are only indirectly related to it as objects; for the heritage with a relatively long history, the individuals who directly participate in it have disappeared, and the direct relationship between individuals and heritage has disappeared. The relationship between modern people and them may only be indirect.



There is a field relationship between individual memory and major memory, as shown in Figure 1. For cultural heritage (material entity), there is a corresponding "memory field". That is, there are overlooked individuals (memory ontology and object) outside the heritage ontology, which are often directly or indirectly related to them. Whether the individual in history

(memory ontology) or the individual in reality (object), they can also be used as a medium or carrier to transmit a certain historical information. The historical information they transmit may be related to themselves and heritage ontology. Many individual memories constitute this memory field. Heritage protection is not only to protect and display the cultural heritage itself, but also to protect and present the memory field associated with it, which is inseparable from individual memory.

Memory fields change over time. It is not difficult to understand that the closer memory more strong, and the farther memory more weak. That is to say, in a memory field formed around a cultural heritage, as time progresses, the memory ontology will gradually disappear, and the direct relationship between the memory ontology and the heritage will become weaker and weaker, and eventually disappear. When the direct relationship disappears and the information transmission from the memory ontology to the object gradually fails, the indirect relationship between the object and the heritage will disappear. That is to say, when the time is long enough, the connection between the reality and the

heritage will be broken, and it is difficult for people (objects) in reality to perceive and read it. In this case, the information available is also very limited. It can be seen that memory ontology plays an important role in information transmission. Only when the relevant memory information of memory ontology is effectively transmitted to the object or the memory information is effectively retained, can the indirect relationship between the object and the heritage be constructed, and the heritage can be more easily perceived by the object. With the development of time, the object tends to be more dominant in information transmission, and the indirect relationship will become more important for the recognition of the heritage.

Presenting individual memory emphasizes both "individual" and its relationship with history. The individual memory presented can be retrospected by the memory ontology and acquired by the object. Reading of the individual memory can close the distance between man and history, and it is more likely to make people connect and resonate with it. The wild goose leads to stay a voice, the person leads to stay trace. Individual memory should be presented and recognized.

2.3. Memory Superposition

Under the transformation of cultural heritage cognitive context, individual memory and major historical memory are juxtaposed to present and reshape the memory field which is composed of them. While historical heritage is recognized, individual memory is superimposed, which connects historical memory with real people's life and makes it easier to be read and perceived.

Memory superposition is to present the individual memory of memory ontology as an important part, and to superimpose the object memory which appears constantly in the course of time. The relationship between human and heritage (material entity) will become stronger and stronger, the relationship between human and heritage (material entity) will become more rich and vivid, and the readability of heritage (material entity) will be greatly enhanced.

3. Juxtaposition of Memory under the Transformation of Cognitive Context

Under the transformation of cognitive context, the display and presentation of national memory and individual memory are the core chapters, which are explained from two perspectives combined with design.

(i) As far as the long-standing heritage is concerned, taking the important historical memory condensed by the central axis of the Great Wall in Sui and Tang Dynasties as an example, this paper illustrates the relationship between individual memory (object) and it, aiming at exploring how individual memory as an object can be juxtaposed and connected with the great historical memory — Let the axis cross our life.

(ii) For modern heritage, Taking Shaanxi old steel mill as an example, this paper expounds the relationship between individual memory (ontology and object) and its relationship, and the display and presentation of individual memory, aiming at discussing how individual memory of ontology is presented in the field, and conveying information to the object — Memory factory

3.1. Let the Axis Cross Our Life.



The city is a living body, and Xi'an, as the ancient capital of the thirteenth dynasty, has a strong readability. Focusing on the axis of Chang'an City in Sui and Tang Dynasties, this paper initiates the thinking and design of the city, combines art and sociological knowledge from the perspective of planning to find opportunities to help people better read the history and reality of the city, so that the disappeared and buried axis and the historical text attached to it appear, so as to make it cross our lives and connect with life. And change people's reading behavior to make our life better.

3.1.1 Historical Background

The past dynasties have left a deep impression on the present layout of Xi'an City, among which the inner historical layers of the present city wall are the most dense. Through the superposition of historical layers, people can clearly realize that the historical memory connected by the axis as the national memory level is very rich. At the same time, we can see that the development and pattern of cities in different historical layers are closely related to the axis, and even have a great impact on the overall planning of Xi'an today. Axis not only affects the development of urban pattern, but also exerts a subtle influence on the life of urban people. As shown in Figure 2.



Figure 2 Axis Background and History Layer Overlay

The author clarifies the specific location of the central axis of Chang'an City in Sui and Tang Dynasties in the cities we live in through the changes of realistic geographical location and historical sites, and then overlaps the historical maps of the Five Dynasties, Song, Yuan, Ming and Qing Dynasties to the realistic cities. It is found that the once 150m wide and 5020m long Zhuque Avenue has been superimposed by urban roads and buildings in reality. In the overlapping of different histories, many memories have been broken or disappeared, among which national and individual memories are inevitable.

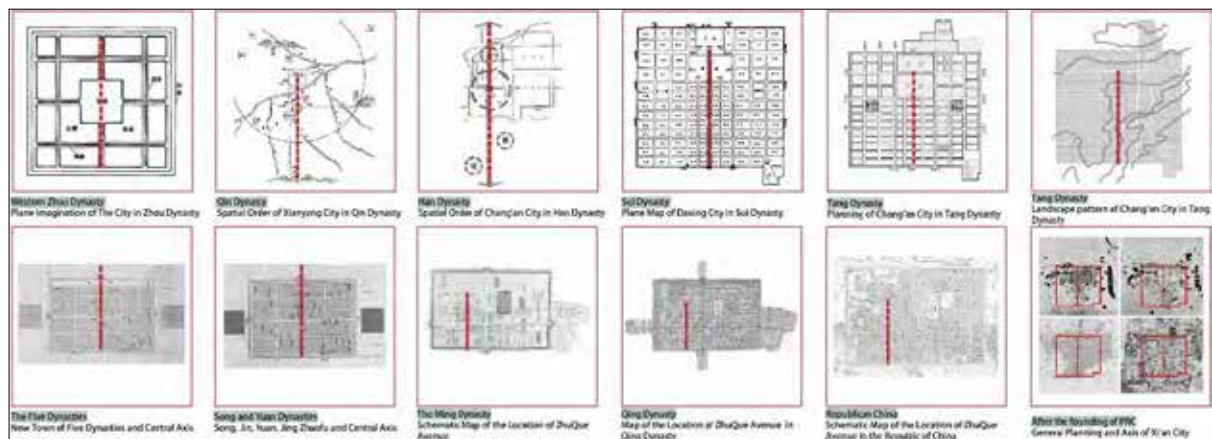


Figure 3 Diagram of Historical Change of Central Axis of Zhuque Avenue

As the ancient capital of the thirteenth dynasty, Xi'an is a famous historical city in the world and the eastern starting point of the Silk Road. From the Western Zhou Dynasty to the Sui and Tang Dynasties, the symmetrical urban pattern developed to the extreme. The axis is the center of Chang'an, which is of great symbolic significance. After the end of Tang Dynasty, the center of civilization shifted and the status of cities declined. Then to the great development of cities after the Republic of China and the founding of the People's Republic of China, cities began to expand on the basis of Ming City, and the central axis of the past gradually lost its former prosperity. As shown in Figure 3.

3.1.2 Evaluation of Historical Elements

The author also evaluates the historical sequence of the material elements (city, square, wall, door, street, etc.) and the non-material elements (characters, events, literature, etc.) that once existed in the corresponding historical position around the axis. As far as the distribution of dots is concerned, it is the history of fragments, that is to say, they remained in the historical layer at that time, did not continue, and were difficult to be perceived, as shown in Figure 4. These historical points appear and disappear in the long course of history like stars, fragments and fragments.

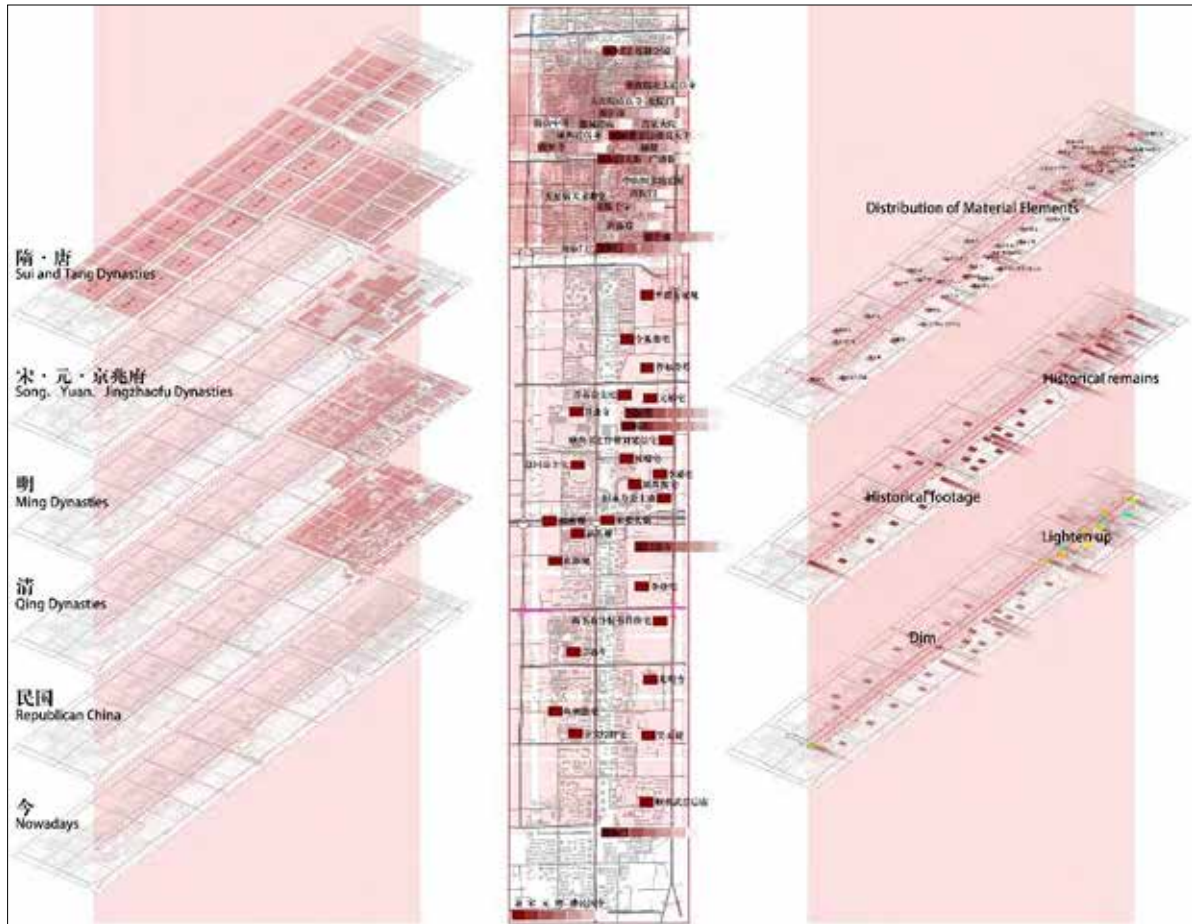


Figure 4 Historical Layer and Element Evaluation and Analysis Map

3.1.3 Realistic Elements

For the realistic elements, the author conducts site investigation on three important nodes on the axis of Chengtian Gate, Zhuque Gate and Mingde Gate. Explain from people's activities:

(i) For Mingde Gate, there is a breath of life on the site of Tang City Wall from morning to night, but people do not know the history. Nobody pays attention to what happened at their feet and beside Yangjia Village.



Figure 5 Mingde Gate Status Photo

(ii) For the Zhuque Gate, the activities under the city wall did indeed take place, but the traces of Chang'an City were nowhere to be found, and people did not think about history.



Figure 6 Zhuque Gate Status Photo

(iii) For Lianhu Park, the place where the Emperor once lived is now a pool of water. People are ignorant of the history of Taiji Palace and Chengtian Gate.

Through site investigation, the author finds that the places on the axis are different, but the cities are the same, and the historical layers are common, but the erosion of nature and human beings has led to the desalination of the axis and the separation of historical heritage and people's lives.



Figure 7 Lianhu Park Status Photo

3.1.4 Design Strategy

(i) Boundary qualification

In the concept of design, first defines the boundary, on the basis of the realistic map, defines the specific position of the central axis of Chang'an City in Sui and Tang Dynasties, and defines the 150-155m wide central axis by two boundaries of East and west. Subsequently, the most intensive eastern boundary intertwined with people's lives is chosen as the leading line to create this "line" in reality, as shown in Figure 8. Finally, the fragmented historical memory and the fragmented Chang'an City of Sui and Tang Dynasties are integrated with the reality by drawing lines, and the boundary is artisticized and presented by means of design.

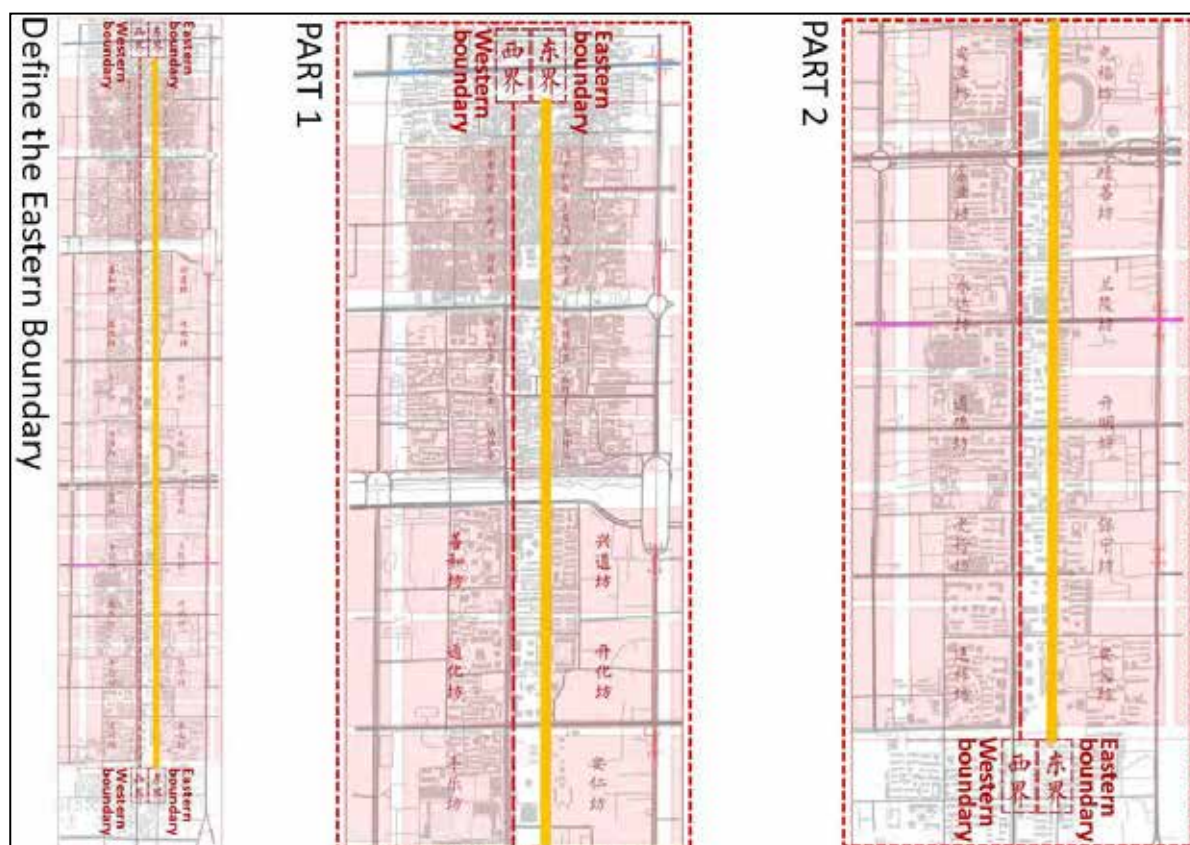


Figure 8 Eastern boundary sketch

Let this thread pass through people's real life, through various scenes. Make people's lives intertwined and present the history that once disappeared.

Through analysis and evaluation, we can find that there are many historical elements on both sides of the axis, but the construction of reality has made most of them fragmented and disappeared. How can these historical elements, namely national memory, be read in modern urban life? In this kind of contradiction interweaving, the author holds the following two points of view: A. To make people re-recognize the fragmented history. B. While preserving the national memory, the individual memory of reality is superimposed, which enables the city to be read and stimulate people's reading behavior. Based on the evaluation of historical elements, historical layer and realistic layer, the concept of "line" integration is proposed. The "line" is used to connect all elements in series, which triggers people's reading of urban memory.

(ii) An Attitude to History

We have no experience of the past history. Inserting a virtual and totally inexperienced central axis and Tang Chang'an City in reality is a great challenge. History is a fragment, or an open or unopened box. It just provides reading opportunities and space. In the moment we enter this box, we will complete a crossing. At the same time, history is critical from a certain point of view, not illusory, thinking about history can hold completely different perspectives, each perspective can continue to deepen. Design itself only provides people with the opportunity to know and understand history, not to render history itself, but as a reminder for people to mark out, show people to think independently, so that history and people's real life contact. To inject new spiritual connotation into the original place

without causing damage or change. To a certain extent, people can resonate with history or find a sense of belonging.

(iii) The Way of Structural Line

A. City Image

This paper focuses on the state of "line" in the city to the perceptible scale, presents it in the way of city image, and makes dynamic city image from the two sections of Zhuque Gate and Little wild goose Pagoda on the axis to express the design. As shown in Figure 9.



Figure 9 City image screenshot

B. The State of "Line"

Through the selection of 50 scenes in reality, the author describes the position and state of the line. "Line" starts from Lianhu Park, crosses Lianhu Park from Chengtian Gate (as shown in Figure 10), then crosses Huifang along Tianjie (Chengtian Gate Street), then crosses communities of different ages along Kaihua Fang (as shown in Figure 11), then crosses Zhuque Community along Xingdaofang, then crosses Xiaoyan Pagoda along Anrenfang, then crosses Second Ring Expressway along Jingshan Fang, and then crosses Yintaicheng along Lanling Fang on Meridian Road. ... The author chooses two interweaving points of life scenes and history to show the state of the eastern boundary from the perspective of human beings, which is also a further expression of the line crossing.



Figure 10 Lianhu Park (Chengtian Gate)



Figure 11 Zhuque Community (Kaihua Fang)

C. Creating "Line"- Behavior Practice

The description of the state of "line" can illustrate that it interweaves closely with people's life and is vivid, and further demonstrates the necessity of the emergence of "line". In order to make people feel the existence of the line, the author selected five typical nodes of Lianhu park (as shown in Figure 12), City wall park (as shown in Figure 13), Zhuque Community, Xi'an Museum (as shown in Figure 14) and the south side of Yintai Ziwu Lu (as shown in Figure 15) to create the real line. The following selected sections record photos for illustration.



Figure 12 Lianhu Park (Chengtian Gate)

Photo Example 1



Photo Example 2



Figure 13 City wall park (Zhuque Gate)

Photo Example 1



Photo Example 2



Figure 14 Xi'an Museum (Anrenfang)

Photo Example 1



Photo Example 2



Figure 15 South Side of Yintai, Ziwu Lu (Lanlingfang)

Photo Example 1



Photo Example 2

We can intuitively feel people's life and reading behavior from these photos. The overall value of this event is to make a historic street in Tang Dynasty fragmented or disappeared coexist with the life of contemporary people today. The emergence of "line" makes life more interesting by adding a little spice. The emergence of "line" really changes people's urban life. The "line" interacts with contemporary life. It juxtaposes individual life with Chang'an City in Sui and Tang Dynasties. The emergence of "line" also changed people's behavior, let people know that when I crossed this "line", I entered the Sui and Tang Dynasties Chang'an City Zhuque Street historical space.

D. Node design

Taking the implantation of 10 nodes as an example, this paper establishes the corresponding reference mode and design template through its text presentation and "line" design method, and establishes the corresponding environment optimization system. The first step is to select the typical nodes, prompt and classify the elements through which the axis traverses, evaluate the different types of space, and then determine the typical nodes and design them as an example. As shown in Figure 16.

The selected nodes are the green space of Lianhu Park, the pedestrian space on both sides of West Street, the public green space of Nanyuanmen, the Zhuque Gate Section of Huancheng Park, the courtyard space of Zhuque Community, the Xi'an Museum, the west square of Shaanxi Stadium, the reading Plaza of Xi'an Jiaotong University and the central green space.

The spatial content of "line" is extremely rich and complex. It can not be presented by only a few nodes. The following scheme is only an example design of nodes.

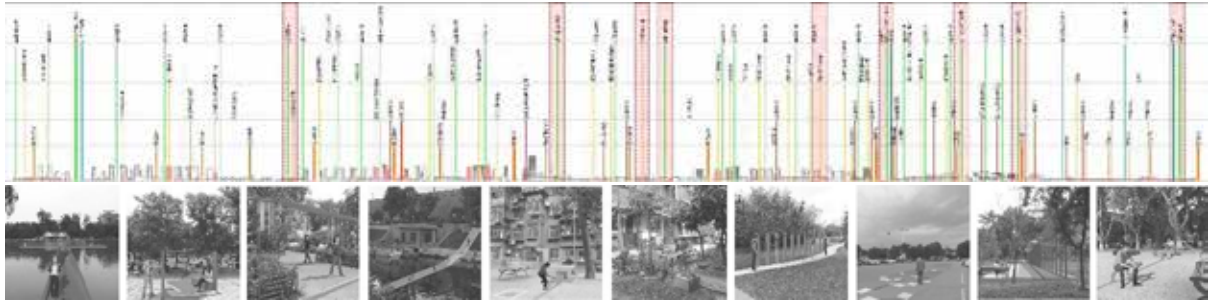


Figure 16 Node Selection and Node Design Diagram

3.1.5 Brief summary

Author does not think this design is complete. What is presented now is just an example. The author through the relevant design of the central axis of Suzaku Avenue, even in discussing such a relationship. Axis does not pass through the city, but through our life. A forgotten historical axis is actually hidden in our life, but it is shielded and buried. The function of "line" is to make this disappeared and buried axis appear and connect with life. "Line" should be passed through our life. The design focuses on the description of real life. Through the "line" implantation, we can give them a new spiritual and cultural connotation through a line, which is otherwise insipid and unrelated. It gives the real life a new thing, enriches the real interest and enhances the participation of the crowd.

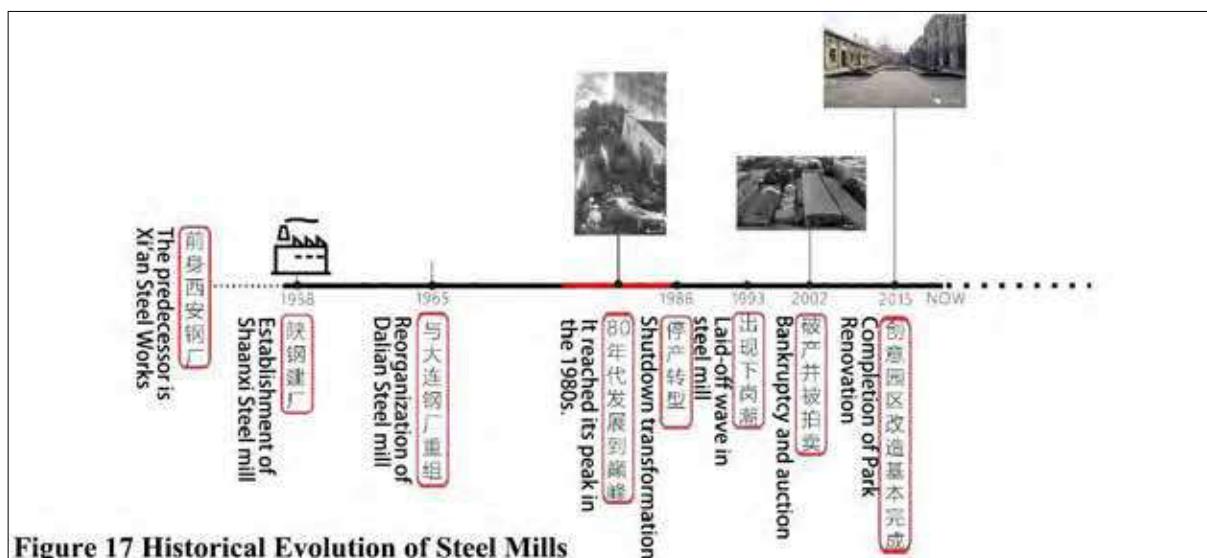
3.2. Memory factory

In the cities where we live today, changes are happening every day, and the speed of urban development and expansion is getting faster and faster. At the same time of demolition and construction, individual memory is perishable. But the city is not a museum, and we can not regard the city buildings as cultural relics to store and display. Industrial heritage is the embodiment of urban history. We hope to preserve the unnoticed architectural remains in the city and excavate the historical memory behind them.

The old steel mill is an industrial site, which carries a memory story of many people. But it was gradually forgotten, so we went to find the story behind the traces of the steel mill, designed to present these texts, let people read the past and present of the old steel mill.

3.2.1 Historical background

The creative park of Xi'an Old Steel mill, formerly Shaanxi Steel mill, was founded in 1958 and reorganized in Dalian Steel Works. It reached its peak in the 1980s and produced a variety of military special steels. But with the country's economic reform, productivity declined, insolvency, and a wave of laid-off. It was declared bankrupt in 2002 and acquired by Huaqing Group. After the acquisition, most of the land in the South was used for residential construction. The remaining land was set up in Huaqing College. The steel wire workshop in the original factory area was retained and transformed into today's creative park. As shown in Figure 17-18.



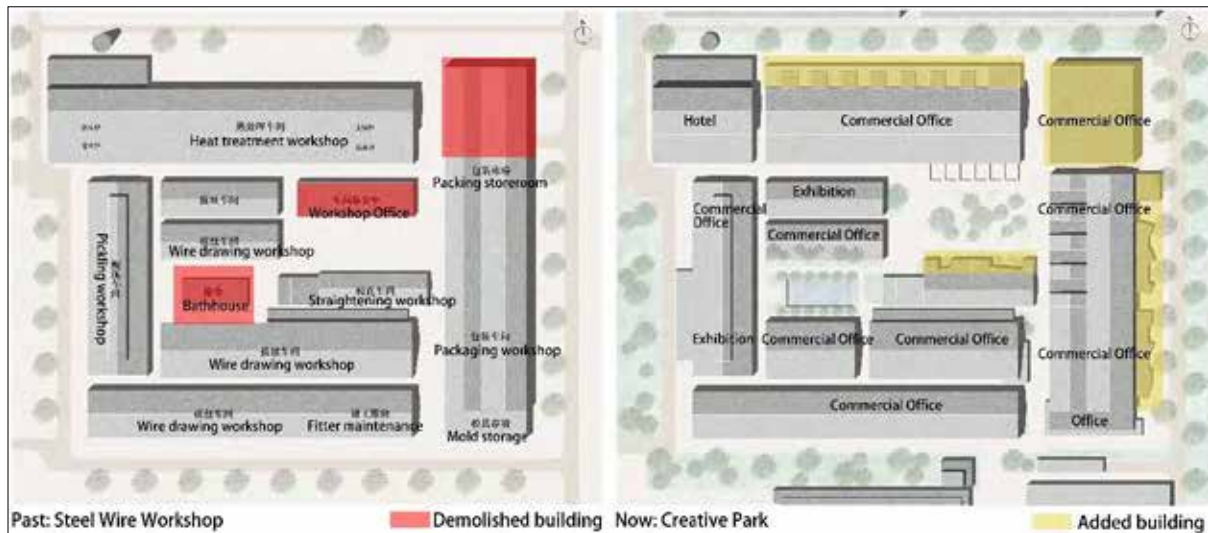


Figure 18 Contrast between the past and the present in steel mills

3.2.2 Elements of History and Reality

(i) Sites and events

For physical entities in the site: buildings, waste equipment, trees, and traces. These things are visible and tangible in the field. At the same time, collecting old photos, objects, newspapers, books, awards and so on, they all bear the memory of the times and individuals, which is what we need to present.

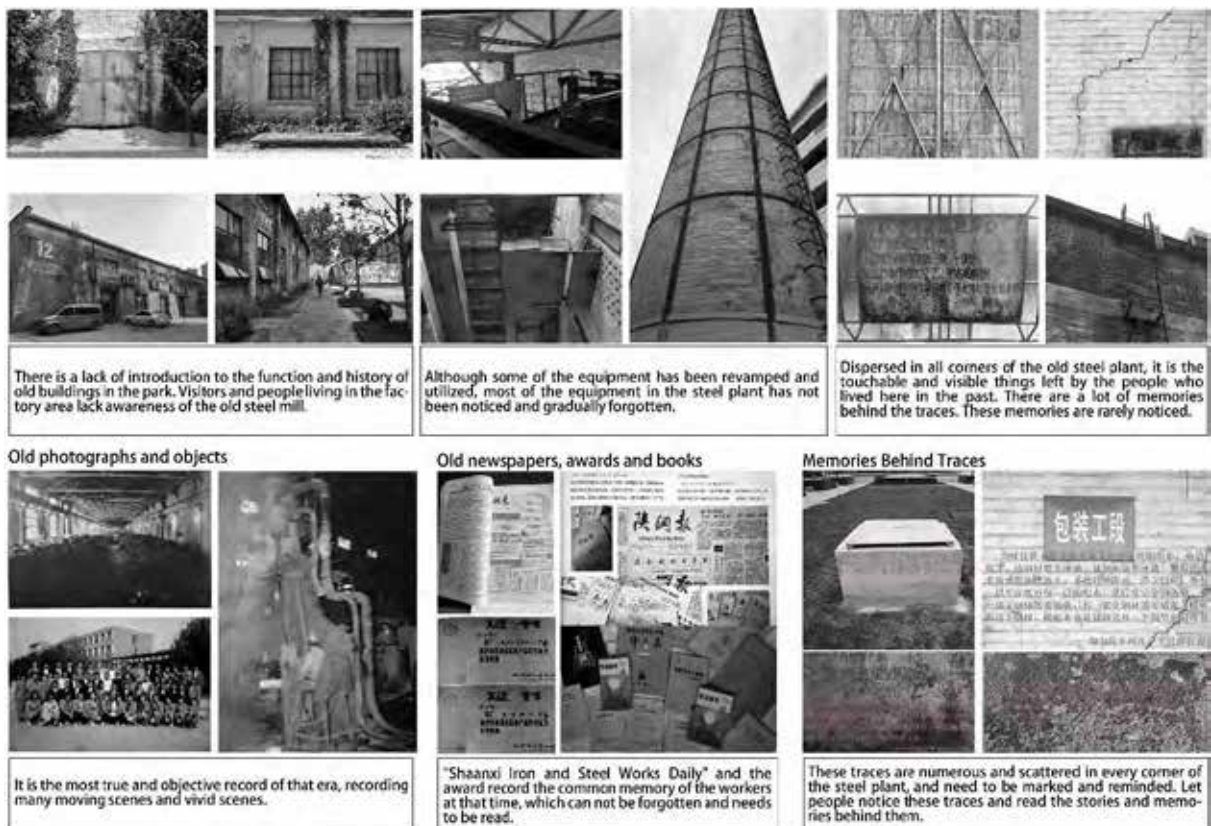


Figure 19 Sites and events

(ii) Traces

For these traces scattered in every corner of the steel plant, they all bear the memory of different people, but they are ignored by people. We have found 102 such traces, which have been endowed with texts through a large number of sociological surveys and interviews. The following figure is an example, as shown in Figure 20-21.

Heritage and people's real life are intertwined, and the memory they bear is easily forgotten by us. It is presented through text mining and subsequent design. Connecting the past memory with the reality, whether the memory itself or the object can be in the same memory field to dialogue with the historical heritage.

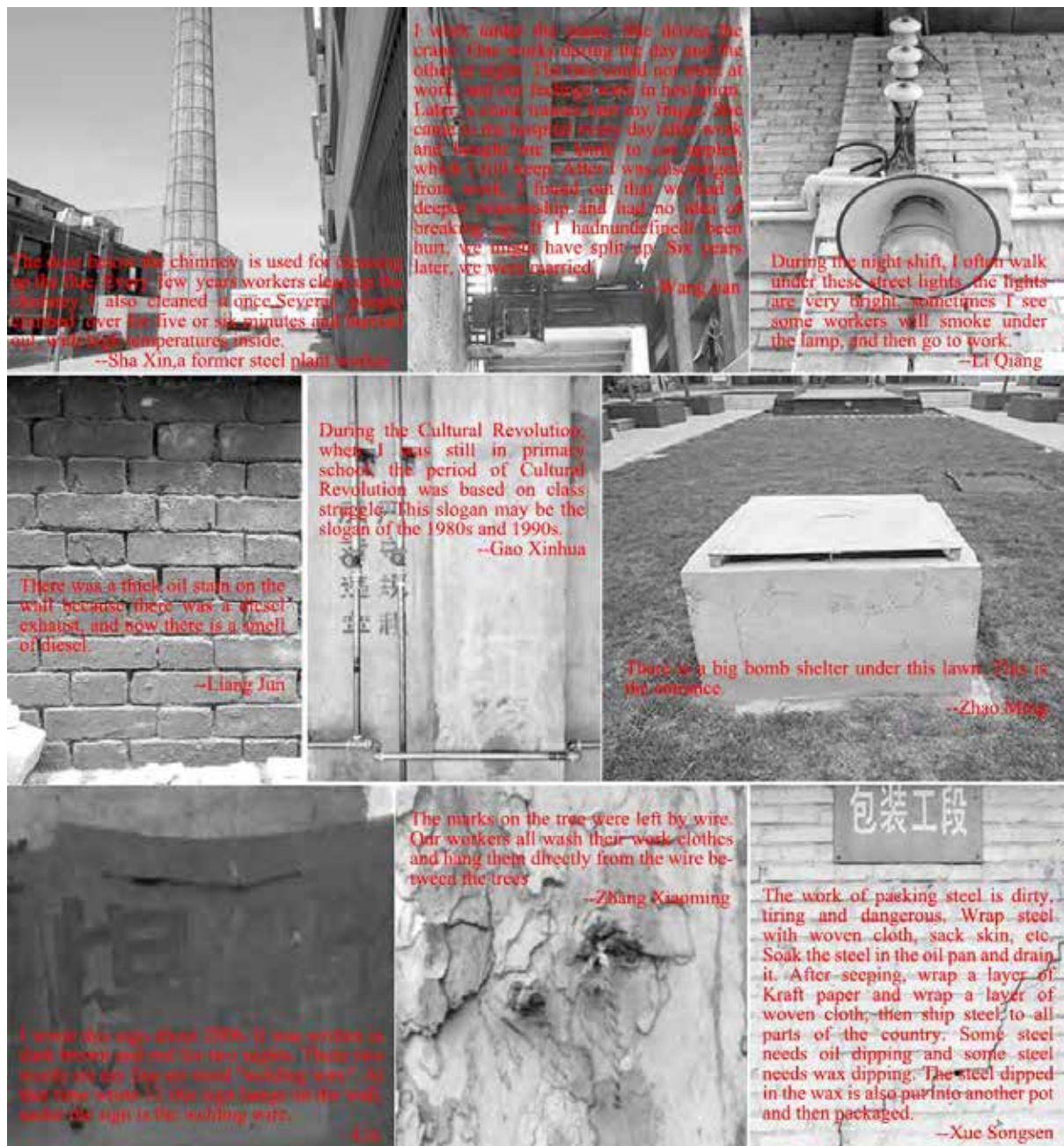


Figure 20 Traces and Text Examples

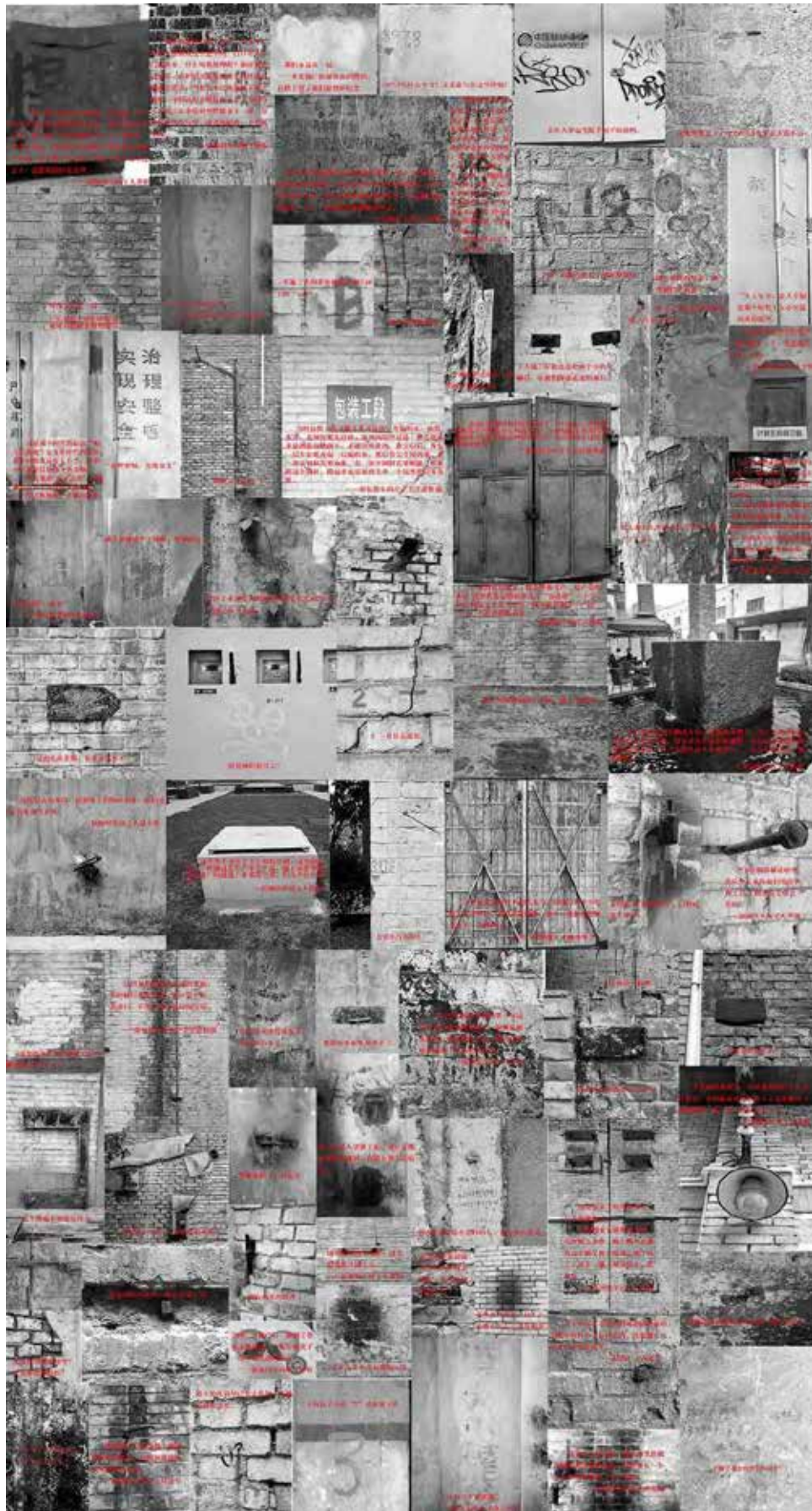


Figure 21 Traces and Text Examples

3.2.3 Design strategy

These traces are scattered in every corner of the steel plant and are particularly dispersed. Through the identification catalogue system, history and reality are connected in series, the red line identification system is used to connect and present the historical elements (as shown in Figure 21), and the yellow line identification system is used to connect the realistic elements (as shown in Figure 24).



Figure 21 Catalogue of Linear Identification of Historical Elements



Figure 22 Sample node design

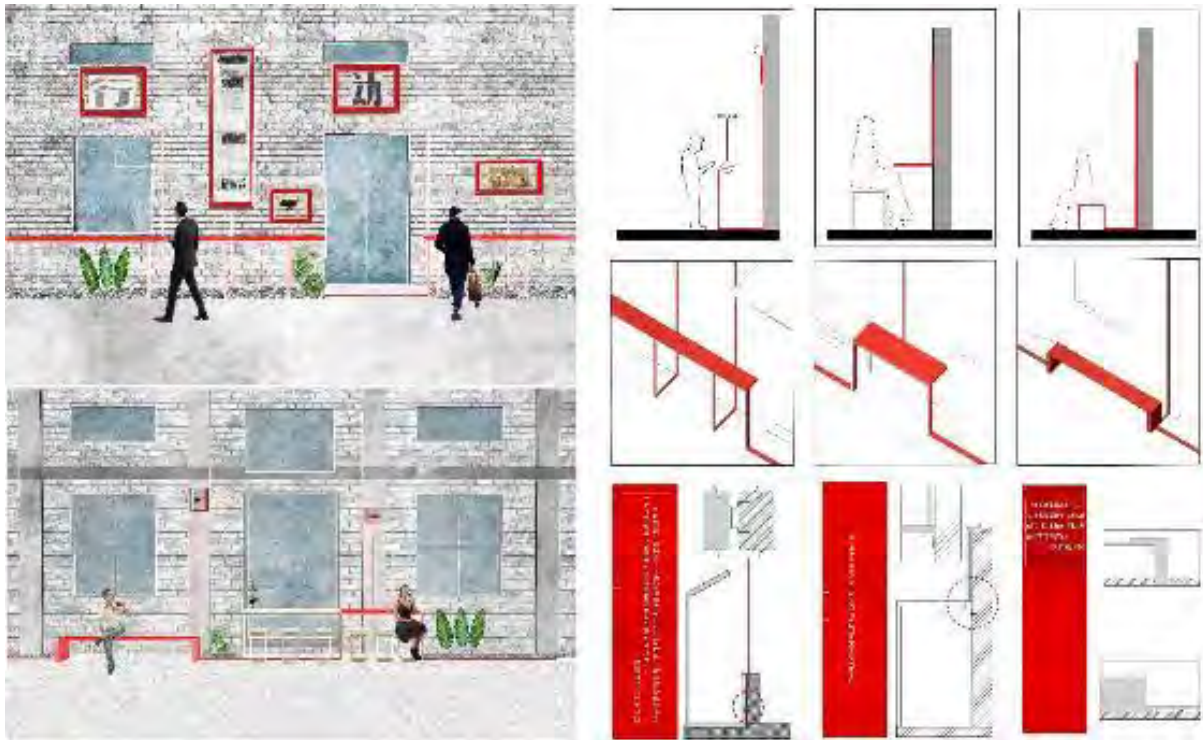


Figure 23 Design and construction of joint as an example

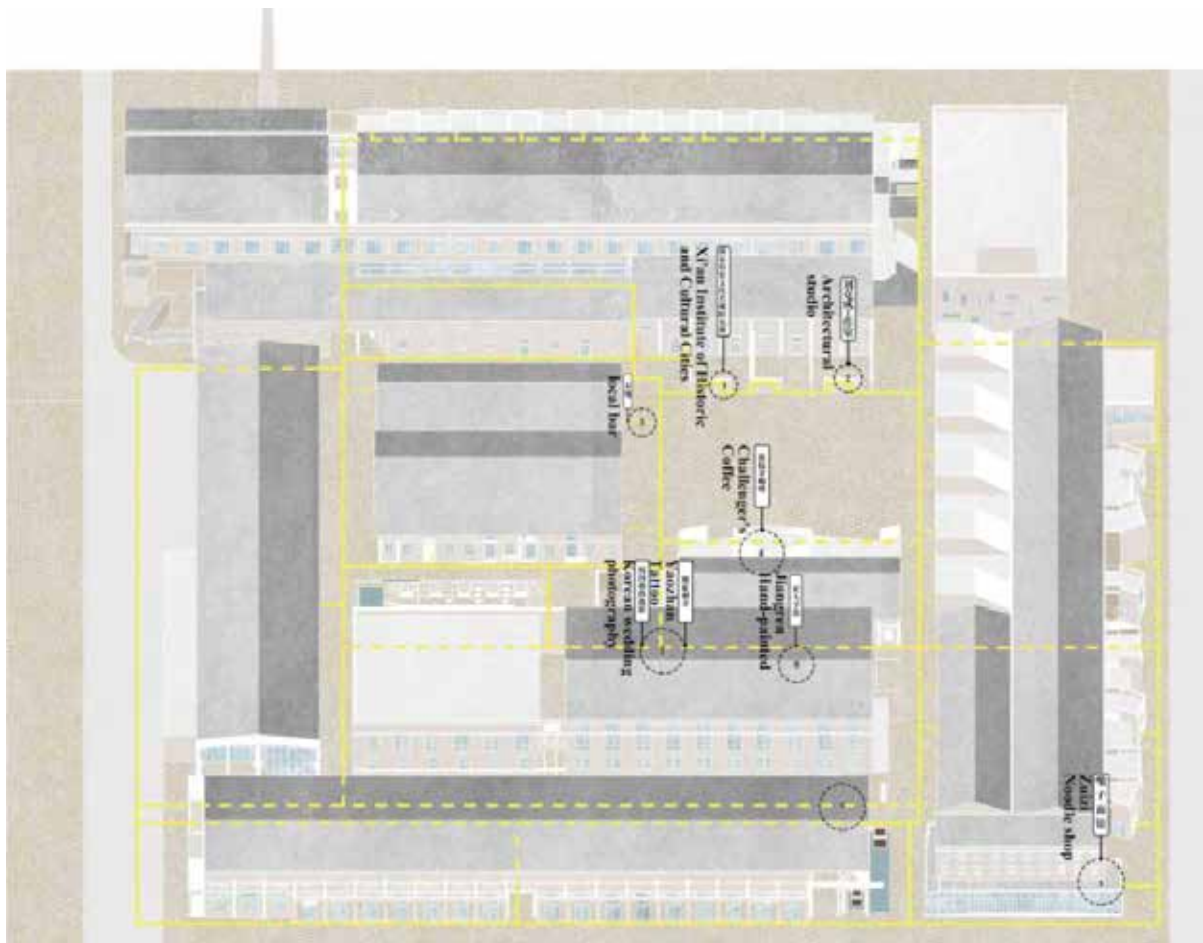


Figure 24 Catalogue of Linear Identification of Realistic Elements

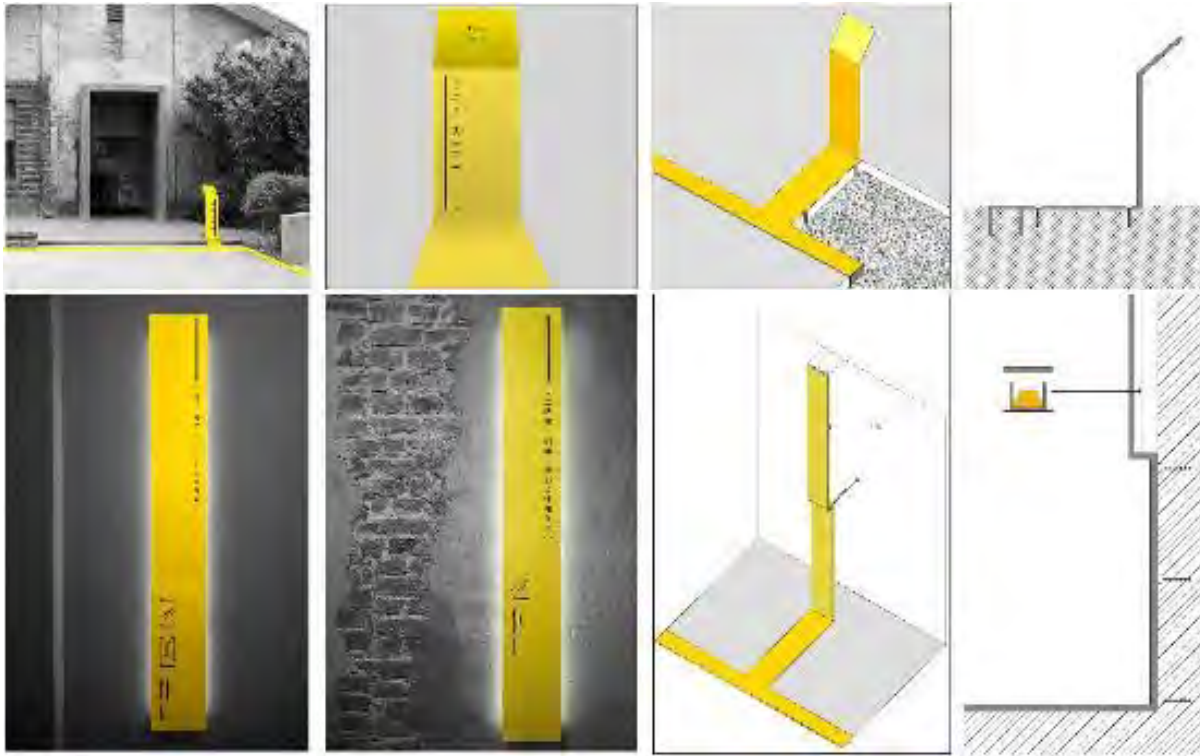


Figure 25 Design and construction of joint as an example

3.2.4 Brief summary

In the process of urban development, many things will be forgotten and discarded, along with the disappearance of our city's memory and emotions. Each individual has his or her own memories of the past. As time goes on, these memories will gradually disappear. Old steel mills used to be factories, with nearly 10,000 people working there. There were many people's memories and feelings. Later, more than half of the factories were demolished, and the remaining parts are now transformed into creative parks. Will Creative Parks continue to exist in the future? We don't know, but we hope to make these buildings warm and emotional by excavating historical memory, and provide others with a model or ideas to solve the disappearance of memory in urban change. Our generation does not forget the past generation, and the next generation will not throw us into the abyss of forgetfulness.

4. Conclusion

Memory superposition makes it easy for individual memory to produce more intersection and strengthen direct or indirect connection with this important historical memory. It is intended to express and strengthen this idea through such design. It is also a criticism of the traditional way of heritage protection to some extent.

From a critical point of view, first of all, we should talk about the recognition of heritage ontology. For the recognition of cultural heritage, professionals naturally need not say much about it. Through archaeological discoveries and long-term research, experts and scholars will have a more comprehensive and systematic understanding of it. However, the way non-professionals perceive cultural heritage will first be based on their own knowledge accumulation. People may have some

knowledge of important world cultural heritage. For most heritage sites, people are in a more embarrassing situation. There is a strong sense of distance between people and heritage, which is often caused by time and space. It is a pity for heritage protection that people will lack the interest to have more knowledge of it and the heritage itself is hard to be perceived.

Through the selection of individual memory and major historical memory, this paper analyses and interprets them from two aspects of theory and design, and on this basis, supplements the relevant ideas, methods and principles in heritage protection and display. The purpose of the design method is to explore a contemporary way and means to integrate historical information into people's lives and make it interwoven with people's lives. This is not only confined to architecture, urban planning or heritage conservation, but also should be interdisciplinary and multi-disciplinary. Under transformation of cultural heritage cognitive context, the emphasis on individual memory is intended to trigger the recognition and thinking of individual memory, and to connect and construct the relationship between individual and heritage through memory. In such a context, we recognize individual memory from the perspective of heritage protection. While the historical heritage is recognized, individual memory is superimposed to connect historical memory with human life.

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Transforming Built Heritage and Landscapes

Emerging New Model of Urban Residential Historical Built-up Area Renewal in China: Five Practice of Urban Renewal in Shenzhen, Guangzhou and Shanghai

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Abstract: China's urban development need to seek a new path, with the putting forward of inventory planning and the deepening understanding of heritage. In this context, a number of cities begin to explore new models of urban development based on the requirements of heritage protection and the demand of old district transformation. The problem is, are these new models balanced, harmonized and sustainable? Shenzhen, Guangzhou and Shanghai are all in the transition after the rapid urban development. "Urban village" in Shenzhen is a kind of old residential area derive from village bypassed by urbanization due to high cost. "The historic and cultural blocks" in Guangzhou face the dilemma stem from the original demolition model. "Lilong house block" shaped up in modernization as a type of grouped residential buildings in Shanghai, facing the high-intensity use. These three kinds of residential historical built-up areas are in urgent need of a new round of urban renewal. Based on this background, Shuiwei village and Yutian village in Shenzhen, Yongqing Lane in Guangzhou, Chunyangli and Chengxingli in Shanghai, these five historic residential built-up areas renewal project, with the goal of heritage protection, livelihood improvement and urban development, take the new models with multi-subject participation, urban space restoration, construction retention, and new functions placement. However, its occurrence mechanism, participants, and results are different due to its own characteristics and local urban renewal laws. This paper analyzes the advantages and limitations of these five models by comparing the background, the characteristics of the objects, the target positioning, the mechanism of occurrence, the operation mode, the results and follow-up works. Then study its rationality and adaptability, hope to provide a basis for the exploration of the future renewal mode of better residential historical blocks.

Keywords: urban renewal; built heritage; historic block; heritage protection

Introduction

With the development of social economy into a transitional period, the development of stocks and the continuous improvement of the sense of heritage protection in the whole society, the transformation of old urban areas in China began a comprehensive transition to organic renewal.

Under the new development background, the new renewal pattern is emerging in the recent history settlement renewal of Shenzhen, Guangzhou, Shanghai and other large cities. These modes are different from the freezing protection or the demolition and construction of new buildings with a high plot ratio, which were widely



adopted in China before. They try to form a comprehensive transformation mode by considering the improvement of people's livelihood, heritage protection and urban function development at the same time.

This paper is based on the question of whether these new development models are balanced, harmonizable and sustainable to meet the needs of value realization in a more diverse, broader and longer-term future urban renewal? As the core problem, through the investigation and analysis of five comprehensive renovation cases in Shenzhen, Guangzhou and Shanghai, this paper discusses the new model of protection and renewal of future residential historical built-up areas and puts forward policy suggestions. [Paragraph]

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1. The dilemma facing China's urban development

The development of Chinese cities begins to enter the stock development stage, which is the main reason for Chinese cities to seek a new mode of urban renewal from "demolishing old buildings and building new ones". As China's economy moves from the "old normal" of pursuing rapid economic growth and industrial-led manufacturing to the "new normal" of pursuing development quality, transformation of industrial structure and transformation of power mechanism. The urban construction of medium and large cities has also shifted from "incremental development" to "stock development". In the previous stage, because of high construction speed, low cost and high construction quantity request, a large number of construction projects can be in space or at low cost operation, in the history of proper such areas are usually distributed in the city, it led to the old city center in the construction of this round of neglected by the government or the development main body. This is reflected in the three cities of Shenzhen, Shanghai and Guangzhou as villages in the city, lilong blocks and historical street districts.

However, after the construction land available for rapid processing is gradually completed, it mainly relies on the fiscal revenue of land transfer fee, the increasingly serious livelihood situation of the old

areas, and the gradually improved sense of heritage protection, which makes the government have to face the problem of renewal and reconstruction of the residential historical built-up areas in the city center.

But these three types of residential historical built-up areas face different problems.

The urban villages in Shenzhen are faced with the problem of the distribution of benefits caused by collective ownership of land property villages. In Shenzhen, village in the city is a village surrounded or run by urban built-up areas within the scope of urban planning or on the edge of the city. Due to China's special land system, the property rights of all land in cities are owned by the state, while the property rights of land in villages are owned by village collectives. At the same time, urban community management is part of the work of the grass-roots government, which is under the unified management of the state, while village communities have certain autonomy, which is managed by the "villagers committee" as an autonomous organization. Therefore, the villagers have the right to distribute, earn and supervise the village collective as an economic organization. Therefore, villagers have the right to distribute, profit and supervise the village collective as an economic organization, which makes the land renewal in urban villages more complicated than other land in ownership.

The main problem of Shanghai lilong blocks is the contradiction between the demand of improving people's livelihood and the demand of feature protection. The lilong blockss in Shanghai were developed and built after Shanghai opened its port in the mid-19th century. It is a modern residential neighborhood with rich inner alleys, connected vertical buildings and high density. They have been largely dismantled in the subsequent rounds of large-scale urban construction, and gradually evolved into "group rental" residential communities with high use intensity, single living function and high population density in the public housing rationing and reform. At the same time, these living communities are faced with old houses, incomplete facilities, hidden safety problems and other living problems.

In Shanghai, lilong block, a lilong house originally designed as an 80-180 square meters house for one family, now is divided into several rooms for 5-8 families with an average area of less than 30 square meters. The more than half of the residential buildings in the lilong district, which were classified as "old-lilong" and closer to traditional Chinese houses, did not have modern sanitation. This was called "toilet problem" in Shanghai, and Shanghai urgently needed to renew lilong district, one of the reasons is the center of the people's livelihood problems in urban situation and international metropolis development goal, under the background of the Shanghai government proposed "before 2020 years, solve city's toilet problem" requirements, prompted the lilong blocks, especially given priority to with the old lilong blocks to search for new renewal mode.

In the last stage, the government's means to "eliminate toilets" was usually to expropriate the blocks, relocate the residents, and build new buildings by demolishing the old ones, which not only solved the problems of people's livelihood, but also benefited the land and urban development. However, in 2015, Shanghai announced the list of the first 119 landscape-protected neighborhoods, including a large number of lilong blocks. In 2017, the list of style protection neighborhoods was expanded, and some of the lilong blocks that have already been transferred to the agreement were covered, and emergency protection was carried out. This also made the original demolition and new construction, and greatly increased the floor area ratio to balance the high demolition costs. The method no longer applies, and

a new protection renewal model is imminent.

The same kind of rescue protection is happening in Guangzhou, where the main problem is the conflict between landscape protection and the development of the city center. In the old central city of Guangzhou, a large number of historical blocks are in the area. A large number of historical districts are located in the old central district of Guangzhou. In 2006, the Enning road district was identified as "contiguous dilapidated houses", which was initiated as the first old city reconstruction project and will be demolished and rebuilt. Under the impetus of the multilateral force, however, the "Guangzhou Historical and Cultural City Protection Plan" in 2007 included Enning road district into the "historical and cultural district", which made the citizens, planning units, developers and style protection work in the next few years. The interior has been saving the transformation mode of Enning road district, and Enning road district has also entered the "frozen" protection. Until 2014, the "Procedures for the Protection of Historic Buildings and Historic Preservation Areas in Guangzhou" was officially implemented, and the relevant regulations were also introduced one after another. In 2016, a micro-reform model suitable for historical urban areas was proposed, which enabled the Yongqing block project in Enning road district to begin. start up.

Generally speaking, when the development situation of Chinese cities changes, these three cities are looking for a new mode of protection and renewal that is suitable for them and can simultaneously realize the three major goals of heritage protection, people's livelihood improvement and urban development.

2. Case study of new protection and renewal mode -Shenzhen, Shanghai, Guangzhou

2.1. Shenzhen - Village in the City Renovation

2.1.1. Shenzhen Urban Renewal Regulation System

Because Shenzhen has a certain degree of autonomy as a special zone, it has its own particularity in the legal system. First of all, Shenzhen has implemented two core policies for its urban renewal work: the "Shenzhen Urban Renewal Measures" and the "Shenzhen Urban Renewal Measures Implementation Rules". In addition, three sets of supporting measures have been issued, namely, "Practice Guidelines", "Special Provisions" and "Interim Measures". "Practice Guidelines" provide guidance for specific practices at various stages of urban renewal, such as guidelines for planning declaration, planning approval rules, technical provisions for planning preparation, etc. The "special provisions" include the recommendation provisions for guaranteed housing, the provisions for innovative industrial accessories, and the measures for the identification of old houses, as well as the provisions on the identification of objects and the requirements for allocation and construction. "Temporary measures" are mainly used to solve the dynamic problems constantly encountered in urban renewal. Two core policies and three sets of supporting regulations jointly guide the specific mode development of Shenzhen urban renewal.

2.1.2. Shenzhen Urban Renewal Basic Modes



There are two basic modes of urban renewal in shenzhen: demolition and reconstruction, and comprehensive renovation.

The urban renewal mode of demolition and reconstruction demolish existing buildings, change the nature of land use, the main body of rights, and the period of use for re-planning. This model mainly meets the needs of urban development, with the "propose urban renewal unit plan—the preparation of urban renewal unit planning—confirmation of the implementation body—land transfer—project construction and construction” as the control process, is similar to ordinary urban construction process, the difference is put forward the concept of "urban renewal unit" as an object to pattern implementation. "Urban renewal unit" mainly refers to the built land with the land area of more than 3000 square meters, the construction quality has serious safety hidden danger, the existing use after the function positioning adjustment does not conform to the planned function, the industry has serious pollution or land use. Different from the general urban construction process, in terms of confirming the implementing bodies, the urban renewal unit demolition and reconstruction project in Shenzhen accepts multiple rights subjects to join or set up a company, and the implementing bodies sign renovation cooperation agreements with village collective economic organizations and units to implement urban renewal cooperatively. This is actually a response to the urban village in Shenzhen, as a unique "residential historical built-up area with collective land ownership" among the three cities.

In this model, there are five main innovation points: first, urban cooperation, hierarchical preparation of five years of special planning, and the definition and implementation of the target strategy and update indicators. The second is to establish a city renewal unit planning system, so that it has the same legal effect as the control detailed planning, reaching the depth of the constructive detailed planning, which is equivalent to separately setting a public interest priority and public participation negotiation for each urban renewal unit. Controlled detailed planning. Third, the government guides and plays a decisive role in the allocation of land resources. The rights subject can implement the urban renewal project by itself, and the market entities can also be implemented separately or jointly. Fourth, innovate the land management policy. The land for reconstruction can be transferred by agreement to the original right holders or market players participating in the reconstruction, and establish different land price standards. The fifth is to emphasize the support for the construction of housing, public facilities and innovative industrial buildings.

The comprehensive rectification urban renewal projects mainly include improvement of fire facilities, infrastructure and public service facilities, improvement of street facades, environmental remediation and energy-saving renovation of existing buildings. Additional facilities can be added as needed and required. The main body of implementation of this update mode is the government department, and the funds are mainly borne by the government, and some of them are borne by the relevant obligee through consultation with the district government. However, the problem with such urban renewal is that external environmental remediation does not solve the fundamental problem, and financial investment is not sustainable.

On the basis of this model, in 2017, Shenzhen issued a "Shenzhen Housing Leasing Pilot Work Plan” and other documents to emphasize the requirements for pilots of large-scale leasing houses through the comprehensive rectification of urban villages, and to provide supporting master plans at the municipal level.

2.1.3. Comprehensive Rectification - Shuiwei Village, Futian District, Shenzhen

Shuiwei village, futian district, shenzhen is a typical case of comprehensive renovation mode. The linneng talent apartment transformed into the first talent security housing community in shenzhen transformed from an urban village. With a planned area of 8,000 square meters, 29 self-built houses of villagers are transformed into 504 talent apartments. In space, it has mainly done some remediation work, including rectifying the external environment and transforming the internal space. The fire protection, municipal supporting facilities, additional elevators and air public corridors were added, and the original urban texture, spatial scale and architectural structure were preserved. The function is mainly residential and commercial, with the commercial space below the third floor, and the above as talent apartments into the policy-supported housing system.

A typical multi-subject participation in the urban renewal project: the Futian District Government initiated and led the Shuiwei Industrial Co., Ltd., which was established on behalf of the villagers' collectives, to negotiate with the property leasing, and the government delegated the market. Shenye Land Investment Development Co., Ltd. is responsible for the renovation and operation of the talent apartment. Shuiwei Industrial Park Co., Ltd. and Shenzhen Commercial Investment Co., Ltd. jointly established Shuiwei 1368 Street Commercial Management Co., Ltd., which is responsible for the commercial space below the third floor. Reconstruction and operation; Futian District Housing and Construction Bureau will lease back the restructured property and distribute the talents of the enterprise. Under this mode of operation, the government has achieved the goal of improving the people's livelihood and improving the urban space efficiency with a subsidy of 30 million yuan and a subsidy of 75 yuan per square meter per month. Shenye Land Company passed the transformation investment of 3,000 yuan per square meter, and its operating expenses for 8 years, got the rental income of 75 yuan per square meter per month, the operation experience of the redevelopment of the urban housing rental project and the subsequent lease priority right. The village collective obtained a monthly rental income of 475 yuan per square meter, 30 million yuan start-up funds for infrastructure and environmental improvement, and the appreciation of community properties. According to the current situation, in this urban renewal project, the government makes multiple subjects obtain the required benefits with less capital input cost, benefiting from the clarity of appeals of all parties, the establishment of the platform of rights subjects and the transformation of spatial rights and economic rights.

2.1.4. Comprehensive Rectification - Yutian Village, Futian District, Shenzhen

Yutian Village, Futian District, Shenzhen covers an area of 17,200 square meters and was launched in September 2017. It is the first stop for Vanke to launch the "Million Village Recovery Plan". Vanke will carry out the project operation in the way of obtaining the lease right of the self-built houses of the villagers and putting them into operation. The mode is mainly for the comprehensive rectification and content operation of the village in the city. The former is mainly to improve the living environment and supporting services. The latter includes the introduction and management of housing properties, as well as the introduction of other industrial chains such as commerce, industry, and education, and profitability through long-term operations.

The main implementation body of this project is Shenzhen Vanke Group, which initiated the project plan, and its Wancun Group contacted the villagers' owners, arranged a series of work such as property acquisition, renovation and reconstruction, operation and management, and other teams such as its park house group carried out follow-up management and operation. One of the reasons why Vanke initiated the project is that the enterprise has the need for transformation in the new urban development environment. Therefore, it exchanges the investment of comprehensive rectification and the cost of property group and operation management for stable rental income and profit of other industries in the later stage and finally achieves the long-term profit goal from the short-term balance of income and expenses. In the process, the villagers increased the value of assets and obtained stable capital gains.

2.2. Shanghai - Shikumen Lilong Comprehensive Reconstruction

2.2.1. Shanghai Urban Renewal Policy

After experiencing the last round of efficiency-based renovation of the old city, Shanghai issued the "Measures for the Implementation of Urban Renewal in Shanghai" in 2015, targeting "the transformation of old districts, the transformation of industrial land, and the transformation of urban villages that have been approved by the municipal government". The region has formed a new urban renewal regulation system with this as the core, and formed supporting documents related to land planning such as the "Shanghai Urban Renewal Planning Land Implementation Rules" and the "Shanghai Urban Renewal Regional Assessment Report Results Standards". In the implementation of urban renewal, planning adjustment, land, construction management, powers and other aspects, as well as the "Shanghai Municipal Housing Comprehensive Transformation Management Measures" and other comprehensive transformation and management of urban housing. At the same time, there are also the "Regulations on the Protection of Shanghai's Historical and Cultural Areas and Excellent Historical Buildings", which stipulates the principles of transformation, the contents of transformation, the management institutions, and the specific implementation procedures and related technical requirements.

2.2.2. Shanghai Urban Renewal Modes

There are three existing renewal modes in Shanghai: old district reconstruction, housing transformation, and development and adjustment of historically remaining Maodi. The main point of the old district reconstruction model is "leaving houses without people", mainly for the scope of the old district reconstruction, planning to determine the areas that need to be sliced or partially protected and functionally updated, and the land reserve can be implemented through "levy without dismantling" "expropriation without demolition" or self-raised funds from diversified subjects can be introduced to organize the implementation of feature protection and renewal. Its problem is that the investment demand is too large, the new function has limited ability to digest, as most of the existing cases are transformed into commercial blocks. The core of the complete set of housing transformation is "retaining the house and retaining the people", mainly for the public housing that is determined by the plan to protect reservations. The government invests in adding supporting facilities and infrastructure, retains the original use function, and removes part of the lease relationship. Carry out a

complete set of renovations to improve the living environment of residents. The problem with this model is that it can only improve the living conditions of residents in a limited way. However, the updated land is easy to fall into the hardening state, and it is difficult to wait for the second round of upgrading, and it will decay again as time goes by and become the problem area of the city. The last model is aimed at "Maodi" which means projects that the government signed agreements with the developers before the requirements for the protection of the city heritage and for various reasons, there projects has been no levy and construct for collection and construction. For such objects, if it is determined that it is necessary to implement the protection of the heritage, the planning and land use demands needs to be update according to landscape protection. However, the problem is that when the land transfer contract is signed, the amount of new construction promised by the government to the developer cannot be realized today. There is a big contradiction between development and city heritage protection. All of the above three models were born to meet the requirements of landscape protection requirements and stock development, but they all have difficult problems to solve, and it is difficult to fully estimate people's livelihood, city heritage protection and urban development.

2.2.3. Housing Transformation - Chunyangli, Hongkou District

Chunyangli is located in Tilanqiao Street, Hongkou District, Shanghai, with a total construction area of 20,762.55 square meters, all of which are public houses and are affiliated to Hongfang Group. In 2015, it was listed as a historic conservation block. By 2016, the difficulty of demolishing a large number of illegal buildings forced Chunyangli to carry out an overall transformation. The Chunyangli renovation project keeps all the households on the people; removes the illegal buildings, protects the buildings by dismantling the old buildings and rebuilt them, each house has an independent entrance and independent kitchen and bathroom facilities, The situation of original multi-family residents live together in a set of lilong house, use a public entrance, and no kitchen and bathroom facilities, shifted to "household sets". One of the different points of the Chunyangli renovation project is that it was initiated by the Tilanqiao Sub-district Office. In cooperation with the Hongfang Group, the Hongkou District Housing Management Department allocated special repair funds to transform 1,181 households with 280 million yuan.

Except for the capital investment, the government's greater investment in the Chunyangli project is the labor cost of the grassroots workers in the Sub-district Office, which in exchange for the improvement of the environment, the protection of the historic buildings and the improvement of the people's livelihood. And after the transforming, these houses through the By the rental company to solve community problems and promote community development. Residents lost some illegally built space, but they received independent kitchen and bathroom facilities and 3-5 square meters area. At the same time, the overall environmental improvement also brought them an increase in the value of the property.

2.2.4. Complete set of transformation - Chengxingli, Huangpu District

No. 8 Block (Chengxingli) in Huangpu District is located in Huanghe Road, Huangpu District,

Shanghai. It belongs to the historic conservation blocks of Shanghai. There are many new lilong and old Shikumen lilong buildings in the square, and the overall texture is complete and orderly. The buildings involved in the renovation pilot are all public houses and old lilong. The project was initiated by the Huangpu District Housing Security and Housing Administration. It was implemented by the Nanjing East Road Sub-district Office and Huangpu Land (Group) Co., Ltd., based on the principle of comprehensive repair, environmental improvement and balanced improvement. Each household is equipped with an independent kitchen sanitation facility while dismantling the illegal construction. Different from Chunyangli, Chengxingli signed a comprehensive transformation agreement for the residents involved in the transformation, and carried out comprehensive environmental improvement and overall comprehensive transformation. At the same time, it signed a lease relationship cancellation agreement with some public housing tenants to release the space to achieve the configuration of independent kitchen, this kind of means is called "subduct households". Which part would be subduct is initially identified by the design plan. The part that terminates the lease relationship is preliminarily determined by the design plan. In the design plan, the parts that are not involved in the transformation and cannot be completely restored can also be voluntarily applied for and considered by the project evaluation group. If the extracted area is not up to the standard, the public signing and soliciting can be conducted. Finally, the lessee who dissolves the lease relationship shall be compensated with one-time monetary compensation.

2.3. Guangzhou - Historic District Renewal

2.3.1. Guangzhou City Renewal Policy

The core of Guangzhou's urban renewal policy system is the "Guangzhou Urban Renewal Measures" promulgated in 2015. On the basis of government control, it strengthens the participation of multiple entities, explores various ways and means of "micro-reform", and pursues comprehensive benefits. Around this core are three implementation methods for different objects, "Guangzhou Old Town Renewal Implementation Measures", "Guangzhou Old Factory Renewal Implementation Measures", and "Guangzhou Old Village Renewal Implementation Measures". In the relevant government agencies, it established the Urban Renewal Bureau in 2015, mainly to formulate policies and regulations, research on innovative methods and organize implementation.

In terms of planning and control, it is divided into three levels: "Guangzhou 'Three Kinds of Old Area' Reconstruction Planning Outline" clearly defines the transformation principles and basic strategies from the overall level, and connects with the overall urban planning, and is responsible for the macroscopic grasp. The three special renovation plans for the old city, the old village and the old factory are controlled from the middle level. In the micro implementation, the transformation plans and guidelines for each plot are included in the control system and form a statutory plan.

There are two basic models for urban renewal in Guangzhou: comprehensive renovation and micro-reconstruction. The comprehensive transformation means the renewal mode based on demolition and reconstruction. The micro-reconstruction refers to the partial demolition and construction of buildings, the replacement of building functions, the maintenance of repairs, and the improvement, protection and activation of the rectification under the premise of maintaining the current construction pattern,

improve the implementation of infrastructure and other methods of implementation. The comprehensive transformation is similar to the demolition and old construction model in Shenzhen, in most cases, the property rights are integrated and belong to the new ownership, the compensation for demolition compensation is large, the investment is large, and the return period is long. However, the new micro-transformation mode enables property right unchanged or collective land to be transferred to state-owned land by paying land transfer fee paid, so as to achieve faster results at a lower negotiation cost and less investment. The transformation mode mainly includes partial demolition and reconstruction, functional replacement, renovation and renovation, and protection and activation.

There is no urban renewal unit in guangzhou, but it adopts the method of "one district, one policy" and takes the historical protection blocks as the unit to transfer the land with conditions, while the historical blocks that are not qualified for transfer are leased. Appropriate attention to the preservation of social and cultural diversity while maintaining the integrity of public facilities and community restructuring while appropriately retaining indigenous peoples. In terms of mechanism, Guangzhou has established a public-private partnership mechanism to set up a construction management committee for the renewal of the community to promote communication and cooperation between the government, developers and society. At the same time, actively introduce market forces to reduce the financial burden. In terms of policies, they explore the phased settlement and small-scale land transfer policies, appropriately support market-oriented behaviors, and consider the mix of functions. At the same time, we will introduce special policies for the renovation of old communities.

2.3.2. Micro-reconstruction - Yongqingfang, Enning Road, Liwan District

Yongqingfang is located in Enning Road Block. Enning Road is the longest arcade-house street in Guangzhou. It was called "the most beautiful old street in Guangzhou". It was built in 1931 and started to be demolished in 2007. However, due to strong social reaction, the progress was slow down. In 2010 the government decided to set up a historical and cultural protection block. In 2012, the "Guangzhou Historical and Cultural City Protection Plan" was completed, forming a superior protection plan. Due to the shelving of the project, until 2016, the neighborhood environment was deteriorating and forced to "freeze protection". In 2016, the pilot project of 8,000 square meters of micro-reconstruction of Yongqingfang was started, which was completed in 2017, and the second phase of the next year started the tender. There are three main development problems facing Enning Road Block: First, land use cannot be completed, and land acquisition and auction cannot be carried out. Second, for the physical space, the environment of the block has become seriously aging because part of residents has removed, and the phenomenon of moving back and continued renting has begun to occur. Third, on social appeals, the demands for improvement of people's livelihood and historical protection are equally strong, which makes the work stalemate.

"Yongqingfang", as the pilot project of the old city micro-reconstruction project in Guangzhou, won the bid by Vanke Group. The space strategy follows the principle of "repairing the old as the old" and implement on the base of retains the original street texture, respecting history and protecting the old city. In terms of functions and formats, the creative and entrepreneurial industrial park with Shared office space, including mass innovation office, education camp, living facilities and other industries. The long-rent apartment (Bo Yu) originally planned is integrated into the second phase of the project.

The social mechanism is centered on "government-led, enterprise-based, and residents' participation". Innovative leasing, bidding and auction--abandoning land bidding and auction, renting and selling, introducing content operators; introducing "build-operate-transfer" BOT Models – reduce government investment, attract social capital to build operations, and transfer 15 years later; encourage social participation – encourage encourage the individual owners who have not moved to update themselves or cooperate with operating entities to update. These three policies enable the unrelocated indigenous people and liwan district urban renewal bureau, which has acquired and stored the relocated property right, to lease the property to vanke company for unified transformation operation and leasing, thus solving the problem of property right decentralization caused by the stalled demolition process.

In terms of input and cost, the government paid early relocation costs, and obtained benefits such as improving people's livelihood, improving the historical and cultural district environment, long-term rental income after 15 years, and property rights of high-quality assets. Meanwhile, vanke invested 100 million yuan of reconstruction fund in exchange for basic balance of income and expenditure within 15 years of operation, brand marketing power brought by important cultural projects, experience advantage of the second phase project, priority lease right after 15 years, and brand growth benefits from establishing cooperative partnership with the government. Among the residents, those who move out get compensation income or rent income, while those who don't move out get the overall improvement of infrastructure and material environment.

3. Problem Remains and Suggestions for Future Protection and Renewal of New Model Development

Shenzhen, Shanghai and Guangzhou, as China's three mega cities, share the same four urban development needs: inheriting historical features, protecting cultural memory; promoting community development and ensuring improvement of people's livelihood; developing leasing business, helping housing supply reform; introducing innovative talents, improve the city's core competitiveness. Under such urban development needs, urban construction must shift to the development of stocks. The renewal model and corresponding institutional mechanisms of residential-type historical built-up areas located in urban centers are also undergoing transformation.

For Shenzhen, the comprehensive rectification of the villages in the city has shifted from the external environment rectification to the internal space transformation and functional adjustment, trying to solve the problem of "treating the symptoms and not treating the problem", but the standard system has not yet been established. It is necessary to combine relevant standards and the characteristics of urban village space to provide supporting policies as soon as possible in terms of fire safety, supporting facilities, relocation and resettlement and interest compensation, and clarify planning objectives and demands. At the same time, the supervision measures of the urban village leasing market need to be improved. The implementation of the renovation and upgrading has raised the value of property assets. The fierce market competition may lead to a rapid increase in rents. Relevant departments should strengthen supervision and curb violations and speculation. Meanwhile, it still has the problem of complicated planning and approval procedures. In the future, it should strengthen the cooperation among various entities, simplify the examination and approval procedures, and improve efficiency.

For Shanghai, there is no clear support and encouragement policy at the policy-level level, and the approval process is complex and strict, and it is difficult to make mistakes. The grassroots government is prone to fear and lack of courage to break through, make the pilot is difficult to carry out. In order to avoid policy obstacles and apply housing repairs; the planning and approval procedures are complicated, and the lack of public space and facilities in the residential-style historical districts has not been alleviated; the "subduct households" are extremely difficult, but if the "subduct households" can not be implemented, the problem of tight living space still exists; the implementation model is not promoted and sustainable, and long-term operation mechanism and management model have not been found; at the same time, lack of special fund support (especially start-up funds) and investment channels, the objective difficulty of updating and transformation is high; profit model and fund balancing mechanism design is lacked.

For Guangzhou, the core problem to be solved is the policy: the planning policy and the management caliber are not clear. At present, the implementation of urban renewal projects is trying to avoid policy obstacles and apply for housing repairs. The policy of small-scale land use transfer is also insufficient, which greatly limits the land use potential of the updated project and the potential for renewal. In terms of implementation management, there is a lack of control and standards for the adjustment and balance of functional formats. Firstly, there is no policy support to convert some residents to non-residents, which is in the gray area. Meanwhile, the transformation project has the tendency of excessive commercialization, which has a certain impact on community living.

Finally, after sorting out the emerging renewal modes of the three cities, we put forward development suggestions for the future protection and renewal modes of the historical built-up areas in Chinese cities, starting from development regulation policy, guidance of social capital, optimization of mechanism mode and emphasis on social governance.

In terms of land regulation policies and mechanism models, we should first make clear the standards, base on the improvement of people's livelihood, make clear how to retain historic building, and deepen the screening of historical building reservation, replacement and demolition. At the same time, the comprehensive transformation requirements and supporting facilities standards should be clarified. Combined with relevant standards and the spatial characteristics of residential historical blocks, the target indicators of eliminating safety risks and improving supporting facilities should be clarified. Then, it is necessary to simplify the program approval process, promote the self-organization of grassroots governments or residents' organizations to provide programs, approve by district governments, and the overall planning and implement by sub-district office.

In terms of capital introduction, public resources and social capital should be introduced, the financial subsidy system should be improved, special support fund policies should be issued, and the market should supervise the follow-up operation.

Most importantly, in the future, we need to explore a more balanced, coordinated and sustainable organic renewal model based on four approaches: multi-player cooperation, balance of economic interests, spatial transformation and functional adjustment.

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Paradoxes of the Italian Historic Centres between Underutilisation and Planning Policies for Sustainability

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Abstract: The paper presents the analysis of the statistical data on population and real estate in 20 small-to-medium-sized cities in Northern Italy and shows a high rate of vacancy of housing and significant shrinkage of businesses and institutions in the historic centres, where urban heritage is concentrated. Given these findings, the paper analyses the official city plans of the cities with the worst underutilisation conditions, to understand how the plans have reacted to the decline of the centre. The result shows the extensive planning and regulation activity has very limitedly registered the phenomenon and failed to propose the empty inner cores as resources to reduce land consumption and recycle valuable assets in a circular economic vision. Combining the statistical data and the findings from the city plans, the paper concludes that Italian historic centres are living paradoxes—a collection of beauty, icon of well-being, model of sustainability, but abandoned—and therefore, the dense regulatory mechanisms that were necessary to conserve urban heritage during the decades of economic and demographic growth must be reframed to implement a circular economy and adapt to new requirements for living conditions.

Keywords: urban heritage; historic centre; regulation; sustainability; city plan

1. Introduction and Research Method

Historic centres are the identity and heritage of Italian cities and have for decades been at the centre of cultural debate and administrative action, leading to extensive regulation activities and planning documents to conserve and restore them [1–9]. However, the interpretation of demographic movements and dynamics of uses over the past 30 years suggest that the effects of the planning policies and regulations on the settlement choices should be questioned because the internationally recognized heritage of the centres, one of the most valuable assets in urban Italy, is underutilized and therefore, devitalized and wasted. The issue of the underutilisation of the historic centres has not been studied in detail considering the long time span yet, even though the survey of the Associazione Nazionale Centri Storici Artistici has greatly contributed [10], its relation with plans and regulations have not been analysed; some literature deals with the problem of the regeneration of the historic centres [11–14], but none deals specifically with the reaction of planning instruments to underutilisation and little public discussion debates it. The research presented tries to fill this void and is the second phase of an on-going investigation.

The first phase of the research analyzed the Census data of 1991–2011 of demographic movements and property dynamics of 14 small-to-medium-sized cities in Northern Italy [15,16]. The findings show severe underutilisation in the city centres and urge to question the effectiveness of the planning approach and regulations. The research method of the second phase involved the following steps:

- We increased the number of cities we investigated to 20 in order to cover the whole of Northern Italy; the same phenomena found in the first 14 cases were found also in the six new ones.
- Selection of the cities to further analyze according to the findings: The cities with the worst condition of vacancy were selected because the phenomenon in these cities is so evident that local planning activity should have tried to deal with the issue; the paper claims the city plans are not the main factor which caused the vacancy, but a mix of socio-economic causes. Therefore, the paper explores how planning activity reacts to the phenomenon where it is most observable.
- Collection of the city plans available in the official web page of the municipalities: The general planning documents and those specifically related to heritage conservation (if any) were collected.
- Analysis of the texts and maps of the plans, both in the descriptive parts (focusing on which phenomena are impacting the city according to the documents and if underutilisation is recorded among them) and in the design part (focusing on what development is proposed, what importance is given to sustainability, which actions are defined for the city centre and what role it is given in the future of the city). The selected cities are in different regions, and every region in Italy has a city planning law. Therefore, the planning processes are slightly different and the documents cannot be directly compared.
- Assessment of the conceptual and practical link between the phenomena of underutilisation and the choices of the plans for sustainability, that is to say if and how the “empty” built heritage in historic city centres is given a role to support the sustainable development of cities in the perspective of a circular economy and according to the International Charters and debate about urban development, which widely promote the connection of built urban heritage and sustainability [17–19].
- Conclusions, both expressed as paradoxes and challenges.

The structure of the paper is as follows: The second paragraph presents the results of the quantitative research about the underutilisation of the building stocks in the historic centres of small-to-medium-sized cities in Northern Italy between 1991 and 2011; the third paragraph presents the results of the qualitative research regarding the planning instruments, which define the future development of the city. The fourth paragraph introduces some paradoxes of the historic city centres, that is to say, the essential characters which should determine the value of the historic core, but fail to do so; these paradoxes should be the starting point for the re-framing of the cultural approach and the policies for the urban heritage, which is proposed in the last paragraph.

Cases of gradual decline over the last 20 years of the historic city centres in small-to-medium-sized cities can be found in the whole of Europe: Shrinkage in population, underutilized stock and diminished importance as places of exchange and congregation are widespread phenomena [20–24]. This paper wants to contribute to the academic and professional debate about this decline presenting the North Italian case, which is relevant because of the great value of its urban heritage, the extensive protection measures applied since the 1960s and it is a place where even centres enlisted in the United Nations Educational, Scientific and Cultural Organization (UNESCO) world heritage are underutilized.

2. Evidence of Underutilisation of the Built Stock in Historic Centres of Small-to-Medium-Sized Cities in Northern Italy

The research analyzed the Italian Census data from 1991 to 2011, the last comprehensive available one, of 20 small-to-medium-sized cities in six regions of Northern Italy: Friuli Venezia Giulia, Veneto, Trentino Alto Adige, Emilia Romagna, Lombardia, Piemonte [15,16]. There is no official classification in Italy of what a small-to-medium-sized city is; the research adopted the range between 30,000 and 200,000 inhabitants, which is pertinent to the dimension of the urban centres in Italy [25–27].

The analyzed cities are Udine, Pordenone, Treviso, Vicenza, Conegliano, Bassano del Grappa, Ravenna, Ferrara, Parma, Modena, Brescia, Mantua, Cremona, Bergamo, Pavia, Trento, Rovereto, Novara, Alba, Alessandria. All their city centres conserve a built heritage of exceptional value, some of them – Vicenza, Mantua, Ferrara – are listed as historic centres in the UNESCO World Heritage

Sites, while some others—Modena, Pavia, Ravenna—have monuments included in the same list. The analyzed cities are a very relevant sample of the urban world of Northern Italy and host almost two million people of whom almost 10% lived in the historic centres in 2011, see Figure 1, Table 1).

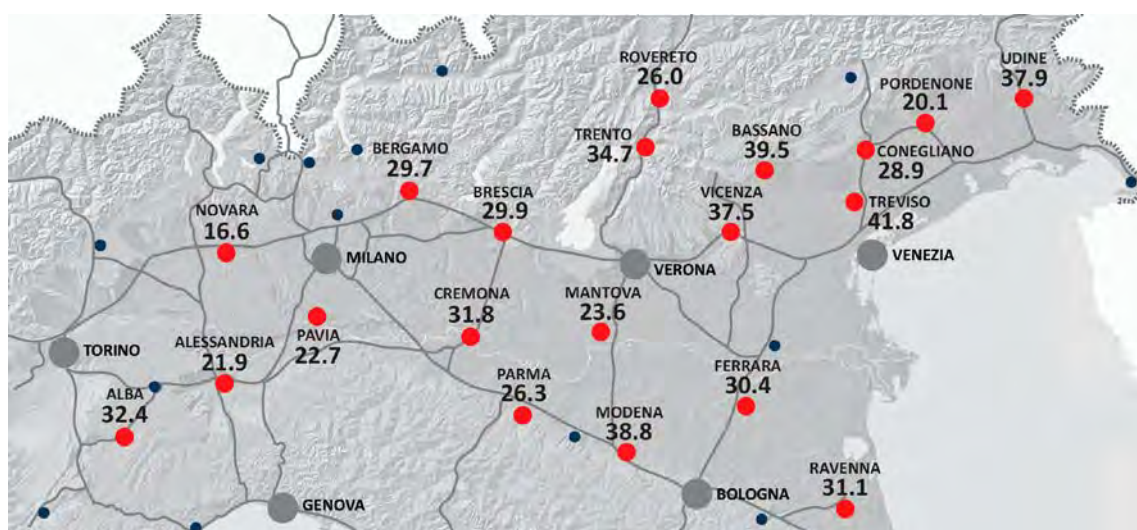


Figure 1. The 20 cities in Northern Italy; the numbers are the percentage of housing units not occupied in the ZTL.

The municipal territory of every city was divided into three areas to obtain specific results and compare dynamics: The inner part of the historic centre identified as the controlled traffic zone (ZTL), the rest of the historic centre defined by the last defensive walls and the rest of the municipality.

The analysis shows unoccupied housing (labelled “abitazioni vuote” by the Census) in the entire historic centre increased on average from 16% to 26% and systematically exceeded the other urban areas where the share of the unoccupied stock increased from 9% to 14.2%. The situation is even more significant in the ZTL: In these areas, the percentage of unoccupied housing increased from 18.8% to 30%.

The vacancy rate in ZTL increases significantly in some cities, such as Udine, Treviso and Modena when compared to the rate of the other historic centres; in Treviso, for example, from 1991 to 2011, the percentage of unoccupied housing reached 41.8%, whereas it was 21.4% twenty years previously. The vacancy does not appear to be related to specific parts of the historic centre but appears to be a widespread process; in fact, in the majority of the centres it does not involve buildings in their entirety and this partial utilisation mitigates the perception of the phenomenon.

The vacancy rate, moreover, does not relate to the degradation of built stock nor is the decline of the population due to neglect: The large majority of buildings in northern Italian city centres, especially those whose heritage is particularly valuable, were largely restored and renovated in the 1980s and 1990s, as were the large majority of public open spaces; therefore, they are an available stock in acceptable conditions.

The value of these empty units has an absolute economic significance; in fact, the sum is 33,775 units out of a total of 130,084 in 2011, with an increase of 17,642 units since 1991. If this empty stock is assigned an under-estimated value of 1000 euros/sqm and an average surface of 100 m² – the average size resulting from the analysis the Census Data for the 20 city centres – it sums up to a value of 3.37 billion euros, 0.2% of the Italian GDP in 2011.

Table 1. Synoptic table of some results from the Census data analysis.

City	Region	Population Outside the Center, 2011	Population Variation 1991-2011 Outside the Center (%)	Population Variation 1991-2011 in the ZTL (%)	Population Variation 1991-2011 in the Historic Center (%)	Unoccupied Units Outside the Center, 2011 (%)	Unoccupied Units Outside the Center, 1991 (%)	Unoccupied Units in the ZTL, 2011 (%)	Unoccupied Units in the ZTL, 1991 (%)	Unoccupied Units in the Historic Center, 2011	Difference 2011-1991 of Unoccupied Units Outside the Center (%)	Difference 2011-1991 of Unoccupied Units in the ZTL (%)	Foreigners in the Center on the Total Residents (%)
Udine	Friuli Venezia Giulia	98,287	1.06	-8.30	-10.23	12.5	7.45	37.9	15.69	2127	5.05	22.21	16.42
Pordenone	Friuli Venezia Giulia	50,542	0.79	-3.87	-3.87	13.1	8.22	20.1	22.66	115	4.88	-2.56	9.61
Treviso	Veneto	81,014	-2.16	-5.41	-11.67	12.39	6.64	41.78	21.39	1344	5.75	20.39	8.48
Conegliano	Veneto	34,428	-3.18	-0.71	-2.92	15.33	8.79	28.87	20.17	203	6.54	8.7	13.09
Vicenza	Veneto	111,500	4.76	-2.11	-4.57	15.27	7.51	37.46	23.17	2097	7.76	14.29	12.36
Bassano dG	Veneto	43,011	4.98	-2.22	-2.22	18.15	9.47	39.5	17.38	743	8.68	22.12	10.25
Mantova	Lombardia	46,649	-12.36	-11.29	-11.58	12.05	4.69	23.58	13.7	2138	7.36	9.88	8.22
Brescia	Lombardia	189,931	-2.68	3.25	1.54	13.08	6.28	29.93	22.47	3013	6.8	7.46	24.41
Cremona	Lombardia	69,589	-2.87	-11.02	-13.66	15.85	5.82	31.82	11.8	3808	10.03	20.02	18.06
Bergamo	Lombardia	115,349	0.76	-21.27	-21.27	13.07	9.63	29.68	20.78	463	3.44	8.9	4.19
Pavia	Lombardia	68,280	-10.54	-11.79	-14.57	8.52	10.35	22.69	25.14	1390	-1.83	-2.45	6.88
Trento	Trentino Alto Adige	114,198	12.41	14.54	14.01	14.35	9.97	34.68	22.92	957	4.38	11.76	10.59
Rovereto	Trentino Alto Adige	37,754	15.32	2.96	8.44	14.57	11.27	25.96	20.39	545	3.3	5.57	19.61
Ferrara	Emilia Romagna	132,545	0.98	-17.84	-21.59	14.3	6.6	30.4	18.08	4560	7.7	12.32	8.55
Modena	Emilia Romagna	179,149	1.31	0.98	-0.22	16.22	8.89	38.81	23.28	3238	7.33	15.53	26.14
Ravenna	Emilia Romagna	153,740	14.23	3.15	-4.48	28.51	29.06	31.14	9.49	1297	-0.55	21.65	12.19
Parma	Emilia Romagna	175,895	5.35	-9.17	-11.02	12.69	7.82	26.33	17.55	3774	4.87	8.78	15.88
Alba	Piemonte	30,804	6.13	-5.64	-5.17	13.9	7.12	32.38	14.86	481	6.78	17.52	12.98
Novara	Piemonte	101,952	0.65	9.19	6.23	7.23	7.45	15.58	26.72	258	-0.22	-11.14	12.36
Alessandria	Piemonte	89,411	0.52	-13.64	-10.25	13.13	7.19	21.87	8.71	1224	5.94	13.16	17.75
Average			1.77	-4.51	-5.95	14.21	9.01	30.02	18.82		5.20	11.21	13.40
Total		1,924,028								33,775			

Notes: The cities selected for the analysis of the city plan are highlighted.

In the 20 centres that were analyzed, the population is decreasing: -20.118 units since 1991, on average -10.35%, but exceeds -20% in Ferrara and Bergamo. This decrease is not directly proportional to the percentage of housing vacancy, and is clearly less relevant; this difference may be related to the deaths of single elderly people who often live in the historic centres and the arrival of foreigners. In fact, despite being almost irrelevant at the beginning of the 1990s, in twenty years, foreign residents have become a significant percentage of the inhabitants of the oldest parts of the city – in Brescia, foreign residents exceed a 24% share of the population, in Modena this share reaches 26% – with an increase of twenty times compared to the figures of the early 1990s.

The abandonment concerns not only residential units but also companies and institutions. The results regarding the companies operating in the historic centres are not homogeneous among the 20 cases and, very often, companies have not decreased in number, but have been re-organized with a significant reduction in employees, decreased by between one-fourth and one-fifth when compared to 1991, with an average decrease of over twenty percentage points (-20.1%).

The results regarding institutions in the historic centres are more clear-cut. The density of institutions in the historic centre – the units per hectare – continues to be higher than in the rest of the municipality, but has suffered a drastic shrinkage, decreasing between two-thirds and four-fifths compared to 1991. The variation in institutions is homogeneous and indifferent to the regional location and the total local units declined by more than 70% (-73.9%) in the twenty years considered. Similarly, the institutions' employees decreased in all cases, with an average reduction of one-third. The average decrease in the rest of the municipal territories is also important, but minor: -58.3% for the local units. This diminution is partly due to the rationalization of office premises following mergers and partly due to relocation in more accessible areas of the city.

The interpretation of demographic movements and property dynamics of the last thirty years in 20 small-to-medium-sized cities in the whole of Northern Italy reveals severe underutilization; original inhabitants have been abandoning the centres, partially substituted by immigrants, enterprises are significantly reduced, and many institutions have opted for new locations. The choice of new locations by households, public institutions and businesses is exceptional as well as paradoxical because the abandonment involves parts of the city that have most benefited from the community's resources for centuries, constantly improving infrastructures and public spaces both in the quality of service and beauty.

3. The Missed Opportunity of Promoting the Re-cycling of the City Centres in the City Planning Instruments

Has the city planning activity considered the underutilisation of the cores? Has it considered it as a problem? The theme is central for the development of Italian cities in this period of urban reuse, when a circular economy and sustainability concepts should be considered. In fact, if the cities' agenda takes on a more rational use of the land through the careful selection of projects which consume land, in particular, affecting the primary sector where there is a concern about food production, and if the regeneration of properties through physical as well as social redevelopment is considered a priority, then the historic centre of Italian cities becomes a fundamental test of adapting a stock of primary cultural, economic and social value to contemporary needs and wishes.

Even though precise numbers for a large sample of cities had not been produced until very recently [10,15,16], the abandonment of the historic centre has been perceivable for several years in Italy. Therefore, it is plausible to hypothesize city planning documents have registered it and proposed to recycle the empty stock, adopting a circular economy approach, which integrates sustainable production as well as better use of resources. To understand the reaction to the phenomenon, the research explored the city planning documents of the cities with the worst condition of not-occupied units in the most valuable part of the city, the ZTLs. The paper claims the city plans are not the main factor which caused the underutilisation, but that it was a mixture of socio-economic causes, see paragraph 4.4 and Conclusions. Therefore, the paper explores how planning activity reacts to the phenomenon where it

is most observable. The selected cases are Treviso, Modena, Udine, Vicenza where, in 2011, the empty units in ZTL reached 41.8%, 38.8%, 37.9%, 37.5% of the total units, respectively, see Table 1.

The documents are available online in the official webpages of the municipalities. The research analyzed if and how the city planning documents react to the underutilisation phenomena, see Table 2:

- if the underutilization is reported;
- if sustainability is among the goals of the city;
- if the built heritage in the centre is considered an asset to exploit and reduce the consumption of land, establishing in this way a direct link between the phenomena and an efficient and sustainable use of resources;
- if innovative rules are established to both facilitate the regeneration process and conserve the heritage;
- if new developments and land consumption are planned.

Table 2. Table comparing the city plans.

	Treviso	Udine	Modena	Vicenza
Region with a City Planning Legislation	Veneto	Friuli Venezia Giulia	Emilia Romagna	Veneto
Number of Inhabitants 2011	81,000	98,000	179,000	111,500
Empty Units in ZTL in 2011 (% Total)	41.8	38.8	37.9	37.5
Empty Units in the Historic Center	2,127	1,344	3,238	2,097
Population Variation 1991–2001 in ZTL	–5.41	–8.30	0.98	–2.11
Type of Plan Governing the City Development	Strategic plan PAT and action plan PI	Structure plan PS and city plan PRGC	Structure plan PCS and action plan POC	Strategic plan PAT, action plan PI, master plan of the historic center PCS
Date of Enforcement of the Plan	PAT 2015, PI? (new adoption 2018, not approved yet)	2012	PCS 2013, POC 2014 (new adoption 2018, not approved yet)	PAT 2010, PI 2013, PCS 1979
The Plan Reports the Under-Utilization of Units in the City Center	Only partially	NO	Yes, since 2006	the plan reports a change in population, not underutilization
The Plan Defines Restrictive/non-restrictive rules for the Transformation of the Heritage	Restrictive (categories of action in compliance with Law 456/78)	Restrictive (categories of action in compliance with Law 456/78)	Restrictive (categories of action in compliance with Law 456/78)	Restrictive (categories of action in compliance with Law 456/78)
Main Goal for the Actions in the Historic Center	Revitalization	Natural shopping mall	Main reference for the development of the community	Open air museum
The Plan Introduces Some Innovation in the Actions for Heritage Conservation to Contrast the Phenomenon of Under-utilization	The 2018 update of the action plan does. Some actions are allowed in the general restrictive approach, such as flexible uses, multistorey parking, tactical transformations . . .	NO	The 2018 update of the action plan does. Some actions are allowed in the general restrictive approach such as improved accessibility, touristic promotion . . .	NO
The Plan Considers the Historic Center as a Relevant Resource to Accommodate the Need of Housing	It is declared, but the center is mostly considered for economic growth	NO	NO	Only partially
The Plan States the Need of Containing Land Consumption for Sustainability	YES	YES, zero growth is the goal	YES	YES
New Developments Planned Enlarging the Existing Urbanized Area	YES	YES	YES	YES
Foreseen Increase in Population in the Municipality Despite the Current Population Decrease or Stability	17%	17%	Information not available in the documents online	13%

The reading focused on some key terms: Underutilization, heritage, centre, conservation, sustainability, sustainable development.

The research analyzed the spatial planning documents because they are the manifesto of the public and the official position assumed by the local governments in recent years: The research produced an

exegesis of the texts and maps which compose the city plans as a critical assessment able to decipher urban planning stories and their coherence with the current reality.

The analysis shows the planning documents in force only recently started to acknowledge the problem and only a few policies were proposed to actively revitalize the centre. The research assumes it as evidence that the concept, tools and procedures of planning and regulatory practice – matured over the course of decades of economic and demographic growth – should be updated to be able to react to the structural changes in Italian society and economics and to the new – however, not really new – urban dynamics and mega-trends.

3.1. City of Treviso, Acknowledgement of the Phenomenon in the Bigger Picture but Late and Limited Action

Treviso, Veneto Region, has 81,000 inhabitants and 1600 inhabitants in the 24 ha of the ZTL in the heart of the city centre [25]. Treviso has a strategic plan, approved in 2015 (Piano di Assetto del Territorio – PAT) and an action plan, adopted in 2018 (Piano degli Interventi – PI) [28,29].

PAT registers some cases of underutilized or unutilized building stock, but does not acknowledge the phenomena of abandonment of the historic centre, which was already evident when the drafting of the plan started. The document which defines how much the city can grow in relation to what already exists classifies only the un-let units as the unutilized stock, assessing it to be 8.5% of the total availability, and declares it is non-recoverable and, therefore, not relevant to answer the present and future demand [30,31].

Despite the general goals stated – intensified requalification of the existing stock and historic and cultural identities as strategic assets for economic growth – and despite the population decrease by 2.16% in the municipality and by 11% in the city centre between 1991 and 2011, PAT foresees an increase in population of 14,500 units, almost 17% of the existing population, and urbanizes new areas to accommodate this increase.

In the strategic actions for sustainable urban regeneration (*ambiti dei programmi complessi*) the historic centre is not included, even though its requalification would require minor urbanization investments compared to the targeted abandoned large areas, twentieth-century complexes in peripheral areas that no longer respond to any use; these are very evident to the inhabitants and represent a problem for the local governments, while the centre clearly does not.

More attention to the city centre is given in the action plan – PI adopted in 2018, see Figure 2. It claims the need for actions for containing land consumption and revitalizing the city centre, allowing more flexible uses, multistory parking in dismissed structures, public-private use of parking. PI almost halves the amount of new residential developments and pursues the return of inhabitants to within the perimeter of the historic centre, and in considering the centre as an asset, PI also mentions the tool for temporary reuse introduced by the regional legislation for the containment of land consumption: To activate a process of regeneration of the abandoned or unused building stock with tactical interventions, waiting for a more substantial and definitive restructuring operation [32,33]. PI is a step forward because it clearly identifies the problems associated with the city centre. However, this action is late and limited considering the significance of the issue.

3.2. City of Udine, neither Acknowledgement nor Action

Udine, Friuli Venezia Giulia Region, has 98,000 inhabitants and 1700 inhabitants in the 38 ha restricted traffic zone [25]. The city planning documents approved in 2012 (Piano Strutturale – PS and Piano Regolatore Generale Comunale – PRGC) do not acknowledge the abandonment of the city centre and, therefore, do not give it a role in the actions for future sustainable development; generally, the plans give a representation of a city without severe problems [34].

Considering the slow demographic trends, PRGC reasonably defines the population in 2025 as 101,666 inhabitants and defines the normal un-let units in the city at 8.8%. Nevertheless, to answer the diverse housing needs, the plan adds 12,270 units to the existing ones, corresponding to a total

population of 117,050 inhabitants (+17%). To answer this future demand, the Piano Regolatore Generale Comunale does not specifically plan the requalification of the stock in the centre [35,36].



Figure 2. Excerpt from the Piano degli Interventi – PI of the city of Treviso, 2018; zoning and regulations of the historic centre.

PRGC mentions the goal of enhancing livability and re-qualifying the most valuable heritage to increase its attractiveness, but proposes some remarks that are unconnected to specific actions. The main idea, which shows some worries about the centre, is to consider the centre as a “natural shopping mall” in order to compete with the extremely successful shopping malls in the periphery, which have been massively draining customers and visitors since the 1990s. This idea proposes to reinforce the core without exploiting its identity, but adopting a model produced for different urban contexts. For this goal, PRGC proposes to enhance the public open spaces for pedestrians, mostly with projects of connections in the centre itself. This strategy seems to be out of focus, as the historic centre of Udine was designed and has always been a place for pedestrians and these connections are already there; in contradiction to this direction, the new local government in 2018 has approved to reintroduce car traffic in the ZTL.

The structural plan confirms the traditional interpretation of the territory around the Udine as a polycentric structure where the city is the most relevant core for its history and extraordinary urban quality; the plan also confirms Udine’s historic centre as the centre of this territory, when in reality, it is in a crisis of representation and vitality with a rate of 39% of underutilized housing units in 2011, a 70% reduction in local units of public institutions, and an 8.30% decrease in inhabitants.

3.3. City of Modena, Early Acknowledgement of the Phenomenon and Recent Attempt to Promote Actions

Modena, Emilia Romagna Region, has 179,000 inhabitants and 8900 inhabitants in the 72 ha restricted traffic zone [25]. The structural plan, approved in 2013 (Piano Strutturale Comunale – PSC), reacts to the underutilisation phenomena impacting the historic centre, a problem studied since 2006 [37,38].

PSC describes the constant transformation of the centre and focuses on two groups of actions, the first related to accessibility, rest areas, garages – declared as very relevant – and the second, to re-generation. For the first, the plan refers to further studies. For the second, it proposes to promote cultural and recreational activities, as well as commercial ones, and also refers to further studies for understanding the residents’ needs. The plan connects the requalification of some areas with reduced land consumption, referring to further specific policies [39].

The action plan approved in 2014 (Piano Operativo Comunale–POC and the related Regolamento Urbanistico Edilizio–RUE) fails to go one step further, that is to say, it neither specifies actions nor adds studies but adopts the usual and well-established practice for conservation: Almost every building in the city centre is subject to restrictive regulations (i.e., the Italian law defining the types of intervention: law 456/1978, art. 31), see Figure 3. In addition to these usual restrictions of transformation, increasing the dimensions of the buildings is always prohibited, as well as the change in use from shops, bars and laboratories into garages [40].



Figure 3. Excerpt from the Regolamento urbanistico edilizio – RUE of the city of Modena, 2013; zoning and regulations of the historic centre.

PSC gives a definition of the historic centre corresponding to the traditional idea of its values: The centre is a reference for the development of the local community, mostly for its public spaces and services which allow the inhabitants to be a community. According to this definition, the plan acts contradictorily: On one hand, it does not claim the recently diminished role, on the other, it includes the centre in the areas where public services are lacking, a new element to remark upon because the centre has traditionally been the place where services are concentrated.

Even if the plans in force do not propose an innovative approach to deal with the problems of the city centre, the revitalization of the historic centre with active policies has been discussed at a higher political level since the first months of 2018 and a new POC was adopted at the end of 2018: Facilities for the residents, improved accessibility and parking areas, economic support and touristic promotion are the solutions proposed.

3.4. City of Vicenza, Some Acknowledgement and Some Action Limited in Purpose

Vicenza, Veneto Region, has 111,500 inhabitants and 3019 inhabitants in the 50 ha restricted traffic zone [25]. The strategic city plan for Vicenza, approved in 2010 (Piano di Assetto del Territorio–PAT), declares a “crisis of identity” of the city centre for some of the reasons explained by the present research based on the interpretation of the Census Data: New, poor immigrants, weak public services, poor commercial supply and inadequate recreational areas [41,42]. To cope with this crisis, PAT suggests to improve cultural, recreational and shopping attractions and tourism and considers the city centre as an “open-air museum”. The ‘museumification’ of the historic space is coherent with the age of the plan

for the city centre in force (Piano particolareggiato per il Centro Storico – PCS), which dates back to 1979 (but was drafted in 1969, see Figure 4), even though it was partially updated in 1988 [43].



Figure 4. Excerpt from the Master plan of the city of Vicenza, 1969; zoning and regulations of the historic centre.

Similarly, PAT declares that the city centre must again become the place of high-quality residences, because the migrant and mobile population, that is increasingly occupying it, will cause its decay. PAT does not recognize in the new inhabitants a possible way to revitalize the centre, nor does it interpret the city centre as one of the “eco-neighbourhoods” which it defines their high-density and potential for regeneration: The main concern about the centre remains the conservation of its beauty and characteristics.

PAT promotes sustainability as a principle for a general urban re-structuring, and it stresses dwelling units must be obtained by re-using and re-qualifying the existing stock. However, the action plan approved in 2013 (Piano degli Interventi – PI) plans to accommodate only 600 of the future foreseen 14,269 new inhabitants in the city centre, while the present research found 2097 empty units potentially available [44].

Vicenza can be considered a paradigmatic example of the well-established approach to conservation in planning – resulting from an extensive technical, as well as conceptual theoretical reflection and definition of practices which goes back to the beginning of the XX century [7,8,45,46] – consciously applied to deal with new conditions without updates or reframed regulations.

3.5. Structural Difficulties and Conservational Approach

Even though the numbers of vacancies are high and the value of the property not utilized seems to be of absolute economic significance, the city plans presented here fail to propose innovative policies to reuse the centre. A further step, i.e., to consider these actions as a way to reduce land consumption and recycle housing stocks, is only mentioned.

The paper proposes that the examined plans express a structural difficulty in dealing with the historic centre within renewed cultural and economic coordinates. “Structural” means pertaining to the long-term cultural and organizational essence of the Italian regulation mechanism for protecting the heritage: In order to be in compliance with the law, regulations tend to deny transformation rather than to define an operational approach, allowing agreement and compensations.

Italian urbanism distinguishes between policies of regeneration based on cultural values – the building type, the permanence, the historical-architectural legacy – and actions based on scientific and technological values – sustainability, de-carbonisation, reduction of energy consumption, etc. This separation is highly inefficient, this is also because, in Italy, the conservational approach is often overwhelming due to the extension of the classification of heritage to essentially everything old [47,48] and the idea that the historic centre – as a whole – is a work of art and, as such, it cannot be changed [49]. The risk of stagnation is increased by the lack of dialogue in Italy between the culture of design and the culture of conservation [50,51].

4. Four Paradoxes of the Italian Historic City Centres

The results of the research show that some paradoxes exist in Italian historic centres. They are part of the most precious heritage of the country, locations of monuments and beauty, guarantee the cultural identity, icons of well-designed open spaces and well-being, and of a high-density and efficient use of land. Therefore, they should be successful but the interpretation of demographic movements and property dynamics over the past thirty years in small-to-medium-sized cities in Northern Italy reveal these positive and advantageous characteristics do not prevent the relocation of the population, businesses and institutions. The critical recognition of these paradoxes – presented in the following paragraphs – should be the starting point for the re-framing of the policies for urban heritage which do not seem able, as the previous paragraph shows, to give a dimension to the problems and react to transformation dynamics.

4.1. High-density and Compactness

The sustainability of high-density settlements has been a widely discussed topic together with the opportunity to drastically decrease land consumption for new settlements [52–55]. The historic centre has used land very efficiently because the settlement is compact and has a high-density: Generally, the centre is many times denser than the rest of the settlements in the municipality (in Udine, Brescia e Modena the inhabitants in the historic centre per square meter are roughly four times as many as in the rest of the city).

Compactness and high density produce also proximity to public services and can support public transportation, which is convenient and accessible because of the concentration of people and activities. It can be said the city centre has the required parameters to be sustainable because it is compact and of higher density, in a word, it has already the main characteristics of an “eco-neighborhood” [56]. But the issue is socio-cultural and related to changed desires for living condition: the heritage value and the human-scale value of the history centre are not enough to attract residents; failing to recognize it is misleading.

4.2. Community Life and Local Identity

The human-scale dimensions and the quality of the public spaces in the historic centre are generally praised and said to guarantee both individual well-being and community life in well-designed gathering places, as very influential scholars have been claiming for decades [57–59], reinforcing this myth in the Italian cities. These physical characters, where the symbols of the local community’s identity are preserved, seem to reinforce the social bonds and cultural identity. The so called “New Urbanism” carefully considers these physical conditions and claims these should be re-proposed for contemporary settlements [60]. The image of the centre as a pleasant place is so anchored that even some shopping malls adopt the forms and dimensions of the traditional open-air historic centre.

4.3. Recurrent Re-generation and Accumulation of Resources or Embedded Energy

The large majority of the built stock in the city centre was built to last, has resisted centuries and was recurrently transformed or adapted to new inhabitants, requests or functions. The high quality of the structures, as well as of some ancient urban tissue, has allowed regeneration and renovation; the Italian Aldo Rossi and Giancarlo De Carlo clearly highlighted these historical and architectural processes and opportunities, well before the idea of sustainable recycling [61–63].

In the old towns, the economy has been circular for the traditionally limited resources and for the great value of the buildings and their location, long-term resilient practices were constantly adopted over the centuries for preserving the assets. Open public spaces were constantly improved and maintained for the community gathering for market, justice, religious events.

Conditions are radically changed and nowadays, possibilities are not considered limited anymore, but the money and energy embedded in the historical structures must be recognized and valued, as well as the regeneration opportunity, to neglect this potentiality when the world is praising recycling and circularity would be a waste [64].

4.4. Vanished Appeal

If, over the centuries, the centre was the preferred and most prestigious location for inhabitants and institutions and the distinction between the centre and periphery was sharp, today the trend has changed. The paradoxes lay in the fact that universally recognized positive characteristics do not impact the choices of inhabitants and institutions today. Even though everyone recognizes the centre's great beauty, even if high-density settlements are praised as one of the best solutions for a sustainable urban environment, even though the surviving community spirit allowed by the centre's spatial peculiarities is considered an antidote against the metropolisation, the past appreciation has vanished and the historic centre is not appealing.

The paper suggests this lost social and economic attractiveness is due to the structural mutations in Italian society and economics, not only since the economic crisis in 2008 but progressively since the 1990s, expressed in urban terms by the phenomena of sprawl [65]. In times of climate change, of circular economy and search for a new ecological balance, where the urban world is a major actor, laws and regulations which govern the urban heritage should face the contradictions the paradoxes pose and be questioned. The research suggests it is urgent politicians and city officials give a different value to the historic city centre; this topic has long been neglected and it is high time the battle for preservation is followed by another battle for the recycling of a stock of primary cultural, economic and social value.

5. Conclusion: A Renewed Cultural and Economic Approach to Recycle the Wasted Urban Heritage for a Sustainable Development

The analyzed city plans clearly show that the challenge of connecting built urban heritage and sustainability is nowadays in Italy not to protect heritage as material facts—a goal already achieved thanks to a rich history of theories and actions—but to safeguard its socio-economic vitality. The failure is due not only to the mega-trends of globalization which re-structure the geography of urban hierarchy but also to the inadequacy of planning tools conceived for different socio-economic conditions.

The city plans show also that the regulation system finds it difficult to adapt to the unforeseeable and generally fast urban dynamics and to renewed cultural and economic conditions. The link between the built urban heritage and sustainability is often claimed in theory, but not taken to the operational level: The empty inner cores are not considered opportunities to reduce land consumption and recycle valuable assets.

In the Italian cultural and economic contemporary context -stagnation particularly affected the small-to-medium-sized cities since 2008- a new set of policies have to be framed together with new planning processes. A renewed cultural and economic approach must also be adopted. This task must

be accomplished in the general frame defined by the guidelines of the international institutions for conservation and heritage but with operational details suitable for the developed Countries [66,67].

The new goals of the city plans should be to:

- survey in depth the phenomenon of abandonment and acknowledge its impact; consider the built stock in the historic centre as an essential asset to balance expansion and re-functionalize the built heritage resources;
- re-define what changes of the heritage can be allowed without diminishing its value; in doing so, the plan must consider if the dense regulatory mechanism, matured over the course of decades of economic and demographic growth, is an obstacle for innovative practices and what elements in the policies prevent revitalization;
- find a balance between “original” residents and the significant presence of foreign people;
- contrast mono-functionality connected to the development of specific services, tourism in particular, in order to rely not only on one source of revenues and maintain residents and vitality.

The future phase of the research will consider cases where the decline of the city centre has been successfully dealt with in Italy and in Europe; this research will not only consider spatial planning documents but how these are part of integrated policies: In fact, the city plan alone cannot solve socio-economic issues. For this goal, the financial mechanisms and fiscal incentives for promoting the conservation of the historic centres and, at the same time, maintaining the inhabitants and the activities in the historic centre will be investigated [68,69].

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Alpine Industrial Landscapes in Transition. Towards a transferable strategy for brownfield transformation in mountain regions.

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Abstract: Since a few decades in many European mountain regions a process of economic restructuring is leading to the decline of traditional heavy and manufacturing industry. The issue of brownfield transformation is therefore becoming a crucial topic in the sustainable development of peripheral and rural areas too, although not yet officially recognized. The complex environmental, economic and social challenges posed by brownfield transformation in mountain areas, added to the structural limitations of marginal contexts as such, require the development of a context-specific, transferable strategy. In this perspective, the Alps, as the most developed mountain region in Europe, can play a key role as a laboratory for brownfields conversion. The first results of this research, which include a comparative analysis of the most representative industrial brownfield typologies found in mountain areas, suggest that an effective and transferable transformation strategy can be successfully developed only if a “landscape approach” based on structuralist planning principles is used. Through the development of an according strategy, the research wants to show that industrial brownfield sites can be positively and constructively interpreted, in the Alpine context and possibly in other mountain regions, as a valuable territorial infrastructure to be reactivated rather than simply a vacant land to be redeveloped.

Keywords: alpine industrial landscape, landscape transformation, brownfield recycling, mountain region

Brownfields in mountain regions – a special challenge

Due to the global structural change in industry since the late 1970s, the transformation of industrial brownfield sites represents one of the major challenges for the sustainable development of urban regions worldwide. Aiming to tackle the unprecedented land use change caused by the decline of traditional heavy industries, different planning strategies and tools have been developed and tested in the last decades (Ferber *et al.*, 2006). From the functional reconversion of vacant buildings and production spaces, also known as adaptive reuse, to the ecological-led conversion of polluted wastelands in post-industrial landscape parks, the issue of brownfield transformation has nowadays become an integral part of urban development plans and programs (Weilacher,

2008, Baum and Christiaanse, 2012, Braae, 2015). The global need to reduce the amount of landscape consumption after reaching “peak soil” (Fritz, 2010) fostered also the search for new strategies and methods.

The transformation of large scale industrial areas in densely populated urban contexts has been already thoroughly investigated (Dragotto and Gargiulo, 2003, Dettmar and Rohler, 2015). By contrast, peripheral rural regions are rarely examined as a setting for brownfield redevelopment. These landscapes are characterized by scarce urbanization, long-lasting structural development problems and in many cases by highly dynamic natural change processes, driven by high relief energy and recently reinforced by the effects of global climate change (Cherisch *et al.*, 2015). High mountain regions, for example, are very dynamic natural landscapes but so strongly tied to their stereotypical rural and recreational image that the presence of heavy industries, and thus of derelict industrial sites, are often overlooked (Nordregio, 2004). However, in many noticeable cases the cradle of a country's successful industrialization can be traced back to the early exploitation and industrial processing of natural resources in mountain areas. The Alps are an excellent model of this development, for example with regards to ironmaking and papermaking in Austria, the production of cement, textile, paper and iron in northern Italy or ironmaking, papermaking and electrochemistry in southeastern France. But the industrialisation of European mountain landscapes also took place in the Pyrenees in France (metalworking, electrochemistry) and Spain (metalworking, cement, textile); the Cantabrian Mountains in Spain (coal mining and ironmaking); the Carpathians in Slovakia (coal mining and ironmaking), Hungary (ironmaking and papermaking) and Romania (coal mining, ironmaking and electrochemistry); the Balkans in Bulgaria (coal mining, metal smelting and textile); the Caucasus Mountains in Armenia (metal smelting and electrochemistry) and Georgia (coal mining). In all of the aforementioned mountain ranges, the development of industry followed a mere functional logic, that is, to prioritize the cost-efficient use of local resources over the distribution to end-markets (Leonardi, 1998, Collantes, 2003). A first locational advantage was related to the on-site exploitation of natural resources and raw materials – such as water flows for mechanical purposes (textile and paper industry, metal forges), mineral deposits (ferrous and non ferrous metallurgy, cement and lime industry) and timber (paper industry and pre-coke ironmaking). A second one, crucial to heavy industries was the direct and costless use of independent generation of hydropower (energy-intensive heavy industries). A third locational advantage was the availability of cheap, and in some cases skilled labour force from the existing low-wage and low-profit agricultural sector. In this way, the industrialization of mountain areas assumed the character of a hetero-direct functional appropriation of existing environmental resources (Raffestin, 1989).

The mono-structure of mountain industry, attached to specific locational factors and highly dependent on external frame conditions, is the main reason behind the continuous deindustrialisation in the last decades (Perlik, 2019). As soon as traditional heavy and manufacturing mountain industries were hit by the growing independence from raw materials and energy sources, and the global reorganization of industry – with the relocation of basic production chains in highly accessible locations or in developing countries –, their inherent lack of resilience was dramatically revealed (Raffestin and Crivelli, 1988, Gebhardt, 1990). Especially in mountain areas, the consequences of the industrial decline in the last decades were severe and far-reaching for the social, ecologic and economic conditions. Not only did many people, often coming from small local communities, loose their jobs, left the region and added to a continuous depopulation of many inner mountain valleys (Bätzing *et al.*, 1996). The closed down factories also pose an enormous problem to mountain regions from an environmental point of view. Due to the specific characteristics of the mountain environment – namely the relevant topographic constraints, the prevalence of extensive semi-natural open spaces and the scattered urbanization – the decommissioning of industrial sites often generates extensive brownfields whose structural network reaches far beyond the core productive facilities and includes the complex system of supporting infrastructures and related functional spaces. It is most remarkable, for example, that most of the typical mountain industries were tightly connected to the complex local and regional water system. In many cases the artificial water systems generated during the industrialisation phase were not only connected as artificial bypasses to the natural water systems, but the industry also changed the natural water regime substantially. From an economic point of view, a major problem of brownfield recycling in such economically marginal

contexts is represented by the imbalance (real and perceived) between the amount of investments required for the entire transformation process and the uncertainty in terms of completion, achievements and returns. The high costs for the site preparation, including environmental remediation and built structures management (either demolition or preservation), are often burdening for small communities which lack of adequate financial and contractual capacities. At the same time, the lack of vision and long-term strategies, or even the conflicts between these strategies (where existing) and their feasibility, keep any potential private investor away from such operations. A further limitation is provided by the restricted range and/or scale of activities that can be really implemented in these sites, given the contextual conditions – low demand, few potential users, scarce accessibility, etc. It is not surprising, then, that the only successful reconversion projects in mountain areas are those related to the adaptive reuse of rather small sites (often less than 1 hectare) of local importance and projects related to the preservation of listed sites or buildings of historic interest (e.g. industrial heritage sites) (Lorenzetti and Valsangiacomo, 2016). Rather successful are also large-scale inner developments in major urban centres, where the pressure for land recycling is higher.

The Alps – a distinguished case study area

Located in the core of Europe, at the crossroad of strong economic regions and dynamic metropolises, the Alps were pushed through a modernization process far earlier than other mountain ranges (Bartaletti, 2011). This caused the emergence of the different forms and cycles of industrial development, leading the Alps to be today one of the few existing mountain regions worldwide characterized by a mature industrialization (Bätzing *et al.*, 2005). At least four industrial development phases since the continental spread of the First Industrial Revolution can be identified (Raffestin and Crivelli, 1988, Gebhardt, 1990). The first phase (1850-1880) was that of the industrial transition (or updated) of pre-existing activities, such as ironmaking, lime/cement production and textile manufacturing. The joint action of new technologies (coke, steam engine) and new transport modes (railway) caused an upgrade in productivity and a spatial concentration of the earlier industrial activities in valley floors and transit corridors. In the second phase (1880-1960), the discovery and spread of hydropower allowed the creation of new heavy industries in electrochemistry and electrometallurgy, which made the “industrial fortune” of many inner and remote valleys. The third phase (1960-1980) was characterized by the rapid and widespread development of light industry in low added value sectors (mechanics, electric appliances, apparels and food). This process, which affected several Alpine and pre-Alpine regions, mainly occurred through forms of decentralized industrialization, such as branch-plants and industrial districts. The last and current phase (1980-today) coincides with the functional and economic integration of the Alpine region with the surrounding metropolitan areas and global networks. In this context, advanced industries in knowledge-intensive sectors are gradually developing in major Alpine agglomerations only, thanks to the high accessibility and the concentration of research centres, business incubators and urban amenities (Perlik and Messerli, 2004).

The current phase, however, is also characterized by the progressive decline and disappearance of the historical labour and energy-intensive industry established in the earlier phases (Gebhardt, 1990). This is clearly reflected in the shift of the secondary sector employment from 50% to 36% between 1975 and 2000, and even further down to 18% by 2016, registered across the Alpine regions (sources: Alpine Convention, OECD, European Commission, FSO). Compared to the national averages of Alpine countries, these numbers show that in the Alps a slightly delayed but equally relevant deindustrialization process is occurring. At present, 289 industrial sites in traditional sectors (ferrous and nonferrous metallurgy, chemical industry, building material industry, textile industry and paper industry) have been identified across the entire Alpine arc (Modica, 2019). Of these, 142 are already closed or downsized (Figure 1). The worst performances are registered in the sectors of textile industry (26 closed sites on 35 in total) and nonferrous metallurgy (24 / 35), while the less affected sector is paper industry (12 / 47). Building material industry, ferrous metallurgy and chemical industry are in line with the Alpine average of about 50% of the sites closed or downsized.

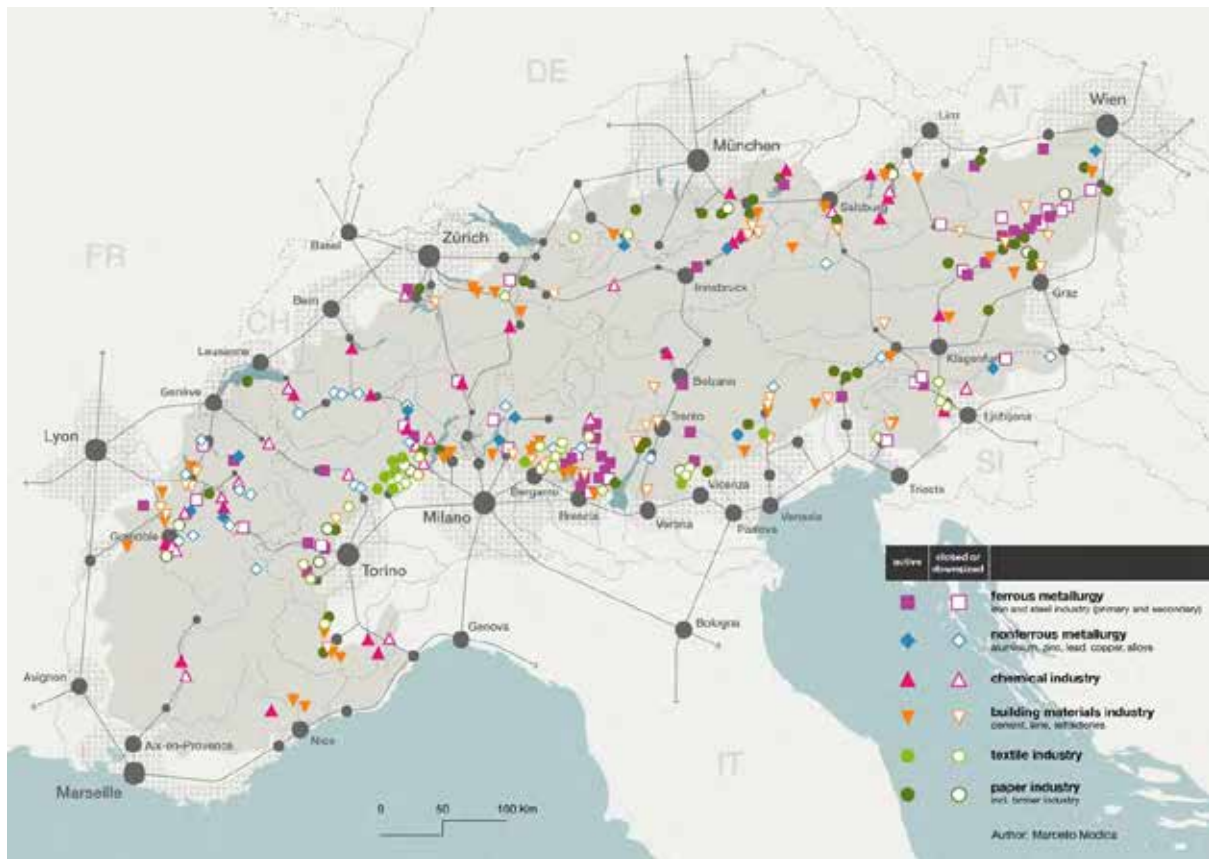


Figure 1 – Survey of large industrial sites in the Alps (elaborated by Marcello Modica)

Given this scenario, it is reasonable to expect that in many Alpine areas the already significant amount of disused or underused industrial sites will tend to increase in the near future. Although not yet officially recognized at the regional planning policy levels and by the scientific community, the management of brownfield sites is currently becoming a crucial issue in the sustainable development of the Alpine region. Three main challenges can be identified in this context:

- environmental regeneration: soil de-contamination from potentially hazardous waste (with expected positive effects beyond the site itself, e.g. in connection to rivers and groundwater), prevention of natural disasters (e.g. flood prevention and landslide protection), ecological compensation (e.g. soil de-sealing and improvement of disrupted ecological corridors);
- economic development: sustainable re-industrialization (e.g. making or reactivating space for small-scale business activities in green economy sectors linked to local nature-based production chains, innovation and research activities and business support centres) and multi-seasonal tourism (e.g. in connection to cultural heritage valorization, artistic events, etc.);
- socio-cultural development: prevention of rural depopulation and social desertification, improvement/sustain of local public services, protection of cultural identities

The Alps are a distinguished case study area not only because of its key position in the middle of Europe and its crucial importance to all six Alpine countries and their neighbours. This central European mountain region is, in fact, a unique socio-cultural complex integrated into a dynamic natural setting that currently transforms

dramatically under the influence of the global climate change (Grabherr *et al.*, 2010). Many of the brownfield sites are located at strategic key positions in the region with regard to the future development of sustainable living environments on a local and regional scale. By carefully combining the solutions to the above mentioned three major challenges at different administrative levels, the recycling of industrial brownfield sites will prove to be essential for the economic, ecological and social consolidation of the Alpine region. In this perspective, the Alps can be considered as a real laboratory (test-field) for brownfields conversion in mountain regions. The INTERREG Alpine Space project *trAILS – Alpine Industrial Landscapes Transformation*, initiated and coordinated by the Technical University of Munich, builds exactly on this vision.

Landscape typologies as result of industry-environment interactions

In order to identify and test potential strategies for the recycling of mountain brownfield sites, an in-depth analysis of the most representative site typologies has been developed as a preliminary cognitive step in the framework of the present research. The selection and analysis of site typologies has been managed in a two-step process. At first, three “groups” of industrial activities have been identified on the basis of the most relevant physical interactions between industry and the mountain environment, i.e. minerals, water and energy. Accordingly, four key production sectors have been selected: building material industry (mineral extraction), ferrous metallurgy (mineral extraction and large-scale hydropower), textile industry (water flow exploitation and small-scale hydropower) and nonferrous metallurgy (large-scale hydropower). A second step consisted in the identification of a specific productive site typology within the selected sector, connected to a basic productive process (function). The assumption is, that similar industrial activities generate similar spatial interactions, footprints and thus landscapes (form). As result, the following typologies of industrial landscape have been identified: cement plants (building material industry), EAF steelworks (ferrous metallurgy), spinning mills (textile industry) and aluminium smelters (nonferrous metallurgy). For each typology, six sites differing by location, status and size have been at first compared morphologically, based on a figure-ground analysis. As soon as the results were available, an on-site detailed analysis of one specific site per sector has been performed. This site analysis consisted in a prolonged site visit (one week) during which the site and the surroundings have been intensively and continuously explored and photographically documented, focussing especially on the spatial characteristics. The following paragraphs describe a brief descriptive synthesis of the four landscape typologies, supported by three representative images from the site visits.

Cement factories

The selected sites for the typological analysis are (Figure 2): Italcementi, Albino/IT – Wietersdorfer & Peggauer Zementwerke, Peggau/AT– Ciment Vicat, Montagnole/FR – Salanit Anhovo, Deskle/SLO – Zementwerk Eiberg, Schwoich/AT – Colacem - Gemonio/IT. The in-depth analysis has been conducted on: Zementwerk Eiberg - Schwoich/AT.

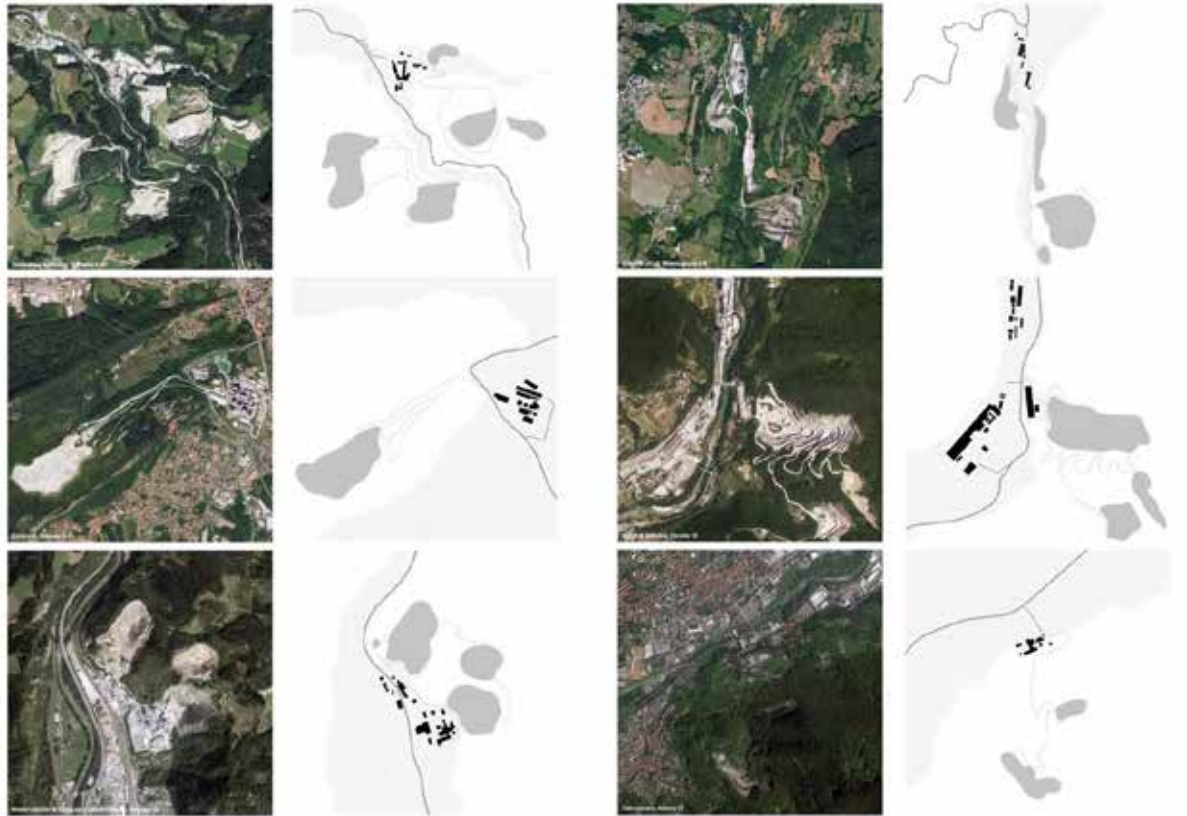


Figure 2 – Cement factories, typological study (elaborated by the author)

The driving force behind cement production landscapes is mineral extraction. The activities are usually organized around a cement production site (the cement plant) and one or more quarries for the extraction of raw materials (limestone, marlstone, clay). The topography is often complex and uneven (Figure 3): due to the location and nature of cement production, cement plants have a strong relationship with both natural topographic features (mountain slopes, depressions/canyons, etc.) and artificial ones (quarrying-related surface alteration). Although the average spatial footprint of cement plants is rather limited and compact (but highly fragmented in many buildings and standalone structures), the inclusion of quarries and quarry-to-factory connections makes the overall extension of cement production landscapes quite remarkable. The ratio between open spaces and built spaces largely favors the firsts, as the only buildings are concentrated in the cement plant site. More than the buildings themselves, which often stand out massive and prominent (Figure 4), are the open spaces the characterizing feature of cement production landscapes. Mineral “used” surfaces – such as paved areas on the premises of the plant, white roads connecting the plant to the quarries and the active quarrying sites – are often integrated with extensive natural/green “unused” spaces – abandoned quarrying sites and interstitial leftover spaces. The complexity of the cement industry landscape typology is at the same time a major challenge and opportunity with regards to transformation. It is a challenge in relation to its large footprint, whose management often requires a multi-scalar and multi-sectoral planning approach. But it is also an opportunity due to the already existing high level of integration of the (former) productive landscape into a wider environmental context. The site recycling potential lies here mostly in the extensive landscape alteration caused by mining activities (Figure 5), which can be turned, through selective renaturation and increased fruition, into new and valuable ecosystem services.



Figure 3 – Overview of the Eiberg cement plant from the Pölven foothills (copyright: Marcello Modica)



Figure 4 – The Eiberg cement plant along the rectified Weißache (copyright: Marcello Modica)



Figure 5 – The abandoned and partially renatured Neuschwent quarry (copyright: Marcello Modica)

EAF (Electric Arc Furnace) steelworks

The selected sites for the typological analysis are (Figure 6): Ugitech-Trimet, Ugine/FR – Monteforno Acciaierie e Laminatoi, Bodio/CH – Ascometal-Winoa, Le Cheylas/FR – Voestalpine Böhler, Kapfenberg/AT – Breitenfeld Edelstahl, St. Barbara im Mürztal/AT – SIJ Acroni, Jesenice/SLO. The in-depth analysis has been conducted on: Ascometal-Winoa, Le Cheylas/FR.

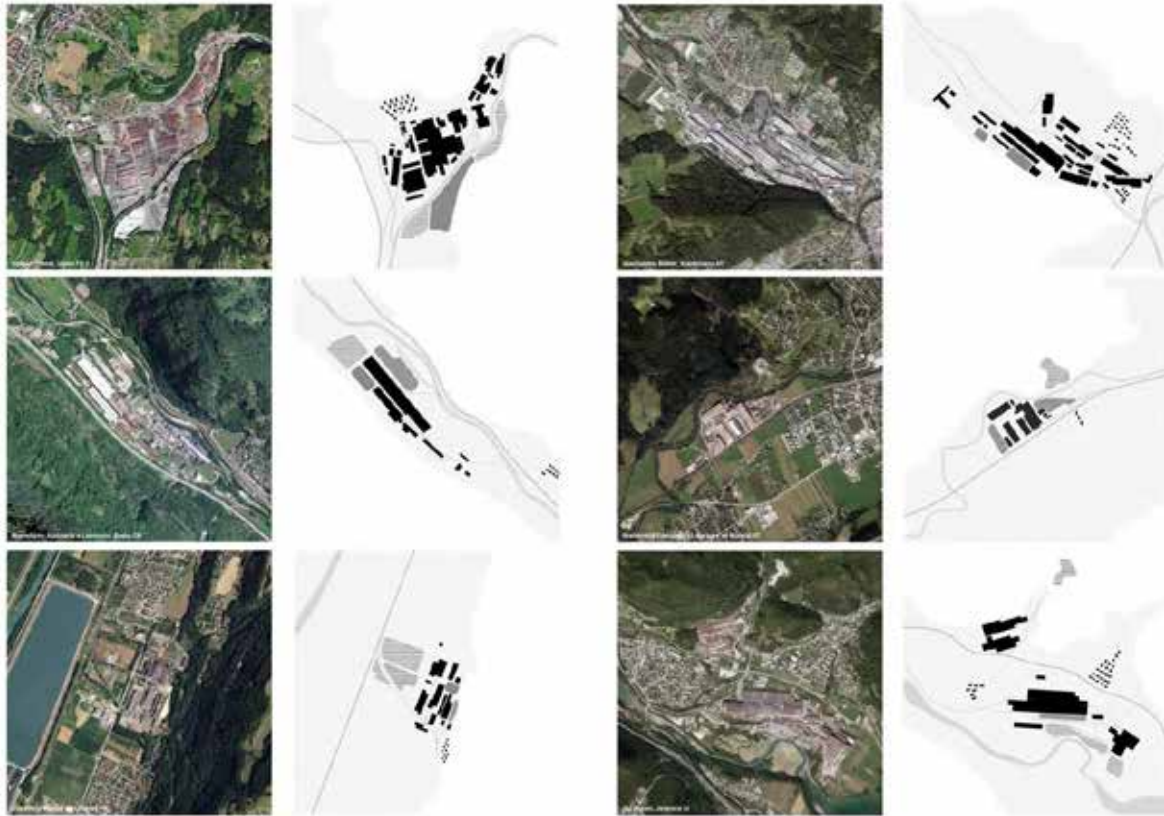


Figure 6 – EAF steelworks, typological study (elaborated by the author)

The driving force of mountain steelmaking landscapes shifted through the time from mineral extraction (iron ore) to the large-scale exploitation of hydropower. This technological upgrade, occurred at the thresholds of the 20th century, caused a major physical transformation of the productive sites, as well as their moving to favorable locations with plain topography and good railway accessibility. The activities are organized around a core production area (EAF site and rolling mills) and several additional “service” spaces for pre and post production activities. Due to the size of heavy production activities here carried on, the average spatial footprint of EAF steelworks is rather big, although the functional proximity between the production phases makes it also quite compact (Figure 7). Built spaces, which are often consisting of huge steel-framed halls with impressive footprints, give structure to the whole landscape, leaving to open spaces a marginal role as mere “extension” of buildings (Figure 8). However, while in the core area the form of open spaces is mainly related to roads and aprons, as physical separation between the buildings, on the edges of the site they increase by size and relevance. In fact, a system of functional wide open surfaces can be usually found in the proximity to the production site, such as large aprons for goods storage and by-product waste dumps (often with severe contamination problems). The stop of production activities and the closure of the site causes the progressive abandonment of these spaces, which are slowly camouflaged within the surroundings through spontaneous

renaturation. The recycling potential of EAF steelworks, however, does not belong either to open spaces and built spaces, but more on the existing infrastructural system represented by the in-out railway network (Figure 9). Although originally designed for production purposes, the complex railway system supporting EAF steelworks can be easily reused and adapted for other activities requiring the same infrastructure, such as logistic platforms or industrial parks.



Figure 7 – The Ascometal-Winoa site in the wide Gresivaudan valley, seen from the Brame-Farine. (copyright: Marcello Modica)



Figure 8 – The former rolling mill halls surrounded by leftover open spaces (copyright: Marcello Modica)



Figure 9 – One of the railway links between the site and the Grenoble-Chambéry regional railway (copyright: Marcello Modica)

Textile spinning mills

The selected sites for the typological analysis are (Figure 10): Cantoni ITC, Ponte Nossa/IT – Zegna Baruffa Lane Borgosesia, Borgosesia/IT – Seilerwarenfabrik, Füssen/DE – Linificio Canapificio Nazionale, Villa d’Almè/IT – BPT, Tržič/SLO – Spinnerei Hämmerle, Feldkirchen/AT. The in-depth analysis has been conducted on: Cantoni ITC, Ponte Nossa/IT.

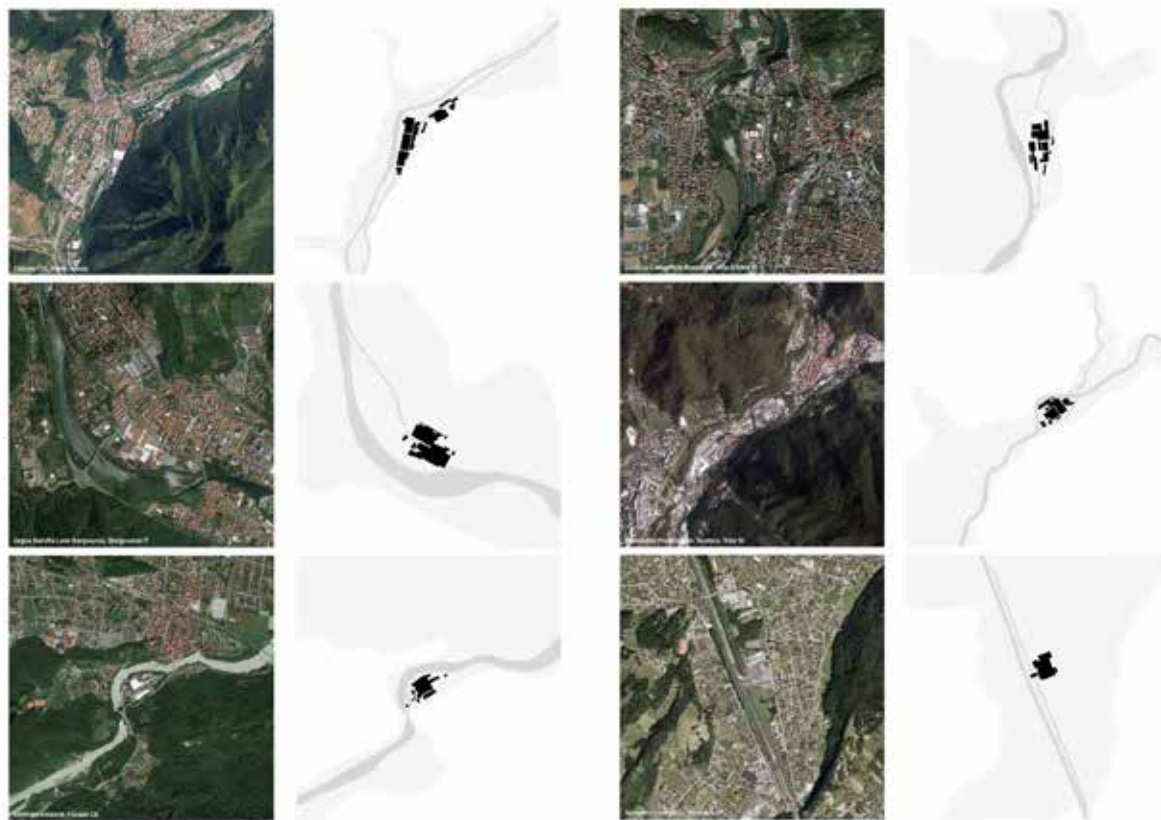


Figure 10 – Textile spinning mills, typological study (elaborated by the author)

The driving force behind textile industry landscapes is water, originally exploited for mechanical energy production and later for electrical energy too (though in small scale). The activities of textile mills, and in particular of spinning mills, are organized in highly compact production sites, usually located in narrow valley floors in direct contact with rivers and minor water courses (Figure 11). In particular, spinning mills are often positioned strategically within meanders or at the entrance of gorges, as the particular topography of such locations (height difference) allows faster water flows. Within the core productive site, built structures are largely predominant over open spaces – often consisting in narrow lanes for small-scale product handlings and pedestrian mobility. The two most recurring building typologies, extensive shed halls and massive multistory buildings, are usually combined in complex and hyper-dense ensembles which literally stands out from the surroundings (Figure 12). However, if the system of artificial water-catchment infrastructures (canals, dams, basins, etc.) is also considered, as it should be, the spatial footprint of spinning mill changes completely. Due to the existing functional and physical linkages between the factory site and the river course, the first can be considered at all effects as an integral part of the river system, and so of the valley floor landscape. The recycling potential of textile mills lies indeed in their waterscapes, a symbiotic combination of built and natural heritage whose transformation might easily be connected to cultural landscape valorization (Figure 13).



Figure 11 – The Cantoni ITC cotton mill in the narrow Seriana valley. (copyright: Marcello Modica)



Figure 12 – Overview of the compact shed halls towards the centre of Ponte Noss. (copyright: Marcello Modica)



Figure 13 – A section of the artificial canal running through the factory site. (copyright: Marcello Modica)

Aluminium smelters

The selected sites for the typological analysis are (Figure 14): Trimet, St. Jean de Maurienne/FR – Novelis, Borgofranco d'Ivrea/IT – Montecatini-Alumetal, Mori/IT – Constellium, Steg-Hohtenn/CH – Pechiney, L'Argentière-la-Bessée/FR – Salzburger Aluminium, Lend/AT. The in-depth analysis has been conducted on: Constellium, Steg-Hohtenn/CH.



Figure 14 – Aluminium smelters, typological study (elaborated by the author)

Aluminium smelters are industrial facilities in which the electrolysis process is used to extract aluminium from its oxide (alumina). The driving force behind aluminium industry is therefore energy, and in the case of mountain regions, hydroelectric energy. For this purpose, aluminium smelters are often located in inner valleys where the higher elevation of reliefs ensure the necessary supply of water (Figure 15). In the first generation of smelters, the necessary hydropower was generated directly into the factory site, while in latest and larger facilities the same was transferred from massive power stations located in the vicinity. The spatial organization of the activities within the productive site is largely dependent from the size of the site itself. Older and smaller smelters have a rather compact footprint, which somehow recalls those of textile mills (with which they also partially share waterscapes), while bigger ones are more similar to EAF steelworks and heavy industrial sites in general. The relationship between open and built spaces is not univocal, being mostly influenced by the location, size and age of the facilities. On average, the open spaces are extensive paved surfaces functionally organized for internal transport and storage purposes, often integrating a basic railway network for in-out goods transfer. A particular feature of large smelters are the long-shaped electrolysis halls, massive buildings with a relative cheap, but highly flexible, architecture, which can be easily reconverted for new production purposes (Figure

16). Compared to the previous typologies, the high heterogeneity of sites makes difficult to identify, for aluminium smelters, a common recycling potential. In most of the cases, however, if the existing buildings are not suitable for an adaptive reuse (e.g. due to their conditions or size), the internal transportation grid (roads, railway) can be used as a "platform" for the implementation of new built structures (Figure 17). Redundant paved surfaces along the perimeter, for example, can be de-sealed, eventually decontaminated and renaturalized as ecological compensation zones.



Figure 15 – The Constellium site and the Rhone (background) seen from the Bietschhorn foothills. (copyright: Marcello Modica)



Figure 16 – The former electrolysis halls. (copyright: Marcello Modica)



Figure 17 – The site internal railway yard and the two alumina silos in the background. (copyright: Marcello Modica)

Towards a common transformation strategy?

The survey revealed that many alpine countries and regions are dealing with the same kind of problems while trying hard to get brownfield transformation projects started and implemented efficiently. Especially the communities affected by deindustrialisation, often rather small and overstrained with planning tasks of high complexity, could solve their brownfield issues more efficiently if a useable and transferable transformation strategy existed. Although the transformation of each single site to a certain extent depends on the specific local context, the typological analysis allowed to identify a specific recycling potential across different sites, sharing the same productive background and landscape structure. If the regional context provides the frame conditions for the economic, environmental and social regeneration of brownfields, their typological specificity already includes the elements for their physical transformation. First test-design experiments (research by design) recently conducted on the selected representative sites, including different transformation intensity from radical to conservative scenario, are proving the validity of this approach.

A transferable recycling strategy for brownfields in mountain areas needs to help activating the full range of potential benefits connected to each single brownfield typology, while considering also the existing contextual limitations. This strategy should be based on at least three key principles:

- **gradualness:** to ensure a temporal “affordability” of the recycling process, a gradual and incremental development, organized around macro and micro phases with clear objectives, boundaries and actors, has to be considered;
- **flexibility:** to ensure an equilibrium between long-term goals and concrete, immediate achievements, a functional “adaptability” of transformation has to be also considered by assigning to specific categories of spaces the same macro-functions (production, leisure, environmental compensation, etc.);
- **inclusiveness:** the strong inter-dependance between the brownfield site and its context (local and regional) requires any potential recycling process to follow a spatial “coherence”, by considering the site and its context as a unique environmental, economic and social system.

To foster the operationalization of such principles, a “landscape approach” based on structuralist planning components is essential. By considering the existing landscape structure of mountain industrial sites as the result of the functional interactions between industry and the mountain environment, a sequence of different but complementary systems of built and open spaces can be easily identified. The integrated and gradual reactivation of these systems, driven by specific contextual economic, ecologic and socio-cultural needs, can help to set concrete and realistic planning milestones in the complex transformation process of mountain brownfields, thus easing its successful completion. Through the development of an according strategy, the research wants to show that industrial brownfield sites can be positively and constructively interpreted, in the Alpine context and possibly in other mountain regions, as a valuable territorial infrastructure to be reactivated rather than simply a vacant land to be redeveloped.

Acknowledgements

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Track 1: Transforming built heritage and landscapes

(Draft)

Built heritage and landscape role in the Rome metropolitan plan

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Abstract: Built Heritage and landscape are long-term cultural and material memories constantly re-interpreted by the contemporaries. Both are considered as fundamental level for local and regional development in the Rome's Metropolitan Plan (Piano Territoriale Provinciale Generale PTPG). The Plan interpret nature, built heritage and landscape as key value that characterize the metropolitan identities. Settlement's transformations in the plan arise from the physical and historical form of the territory and encourage a double polycentrism (Rome and 120 municipalities). One of the general objective of the plan is to reorganize present settlement in made the most of existing patterns rules and peculiarities by using principles of the compact city. The paper would like to point out how built heritage and landscape development have to re-shapes the territories of our dispersal contemporary city.

Keywords: Rome's Metropolitan Plan, Built heritage, Piano Territoriale Provinciale Generale.

Introduction

This paper is part of a research project Between Rome and the Sea: cultural and environmental heritage, sustainable development and active citizenship. The territory between Rome and the sea is one of the most dynamic. The area is defined to the north by the Roman countryside of Maccarese and to the southeast by the Appia park and to the west by the Tyrrhenian Sea, crossed by the Tiber River. From the unification of Italy this part of the territory was made up of swamps and marshes. The main transformations took place at the end of the nineteenth century with the reclamation of the Agro, the location of an industrial (Ostiense) and the opening of the Agency for the Industrial Maritime Development of Rome (Ente autonomo per lo sviluppo marittimo ed industriale di Roma, SMIR). During the Fascist period, the opening of the railway from Rome to Ostia and the construction of the via del Mare gave a strong boost to the urbanisation. Since 1938, the area has been further equipped with the construction of the underground connecting Termini station to the Esposizione Universale Roma EUR neighbourhood, and the opening of the Ostiense railway station. The residential expansion between Rome and the sea will be supported in the post-war years, especially along Via Cristoforo Colombo. In the early sixties, the airport and the Rome-Fiumicino highway were added to the impressive infrastructure system. The strategic position and the infrastructures make this territory particularly attractive for offices. The area is characterized by the discontinuity of the urban settlement. From the environmental point of view, the area is characterized by the presence of two ... Archaeological complexes, such as Ostia Antica and Porto, await adequate enhancement as part of an effective integrated project.

The Research Project Background and Purpose

The interdisciplinary research analyzes the historical and contemporary reality highlighting cultural, environmental, urban values and problems. The aims is to offer a unified reading of the transformations that have taken place in the metropolitan territory in a long-term perspective.



Area of study: its characteristics and problems

Even at the beginning of the twentieth century the landscape of the Agro towards the sea was poorly urbanized: basically agricultural land, marshes affected by reclamation work. From the 1920s, the activity of the farmhands gave impetus to the rural building works and to the land reclamation. The system of canals created for the reclamation served as a basis for the appoderage of settlements. The first informal settlement was the Borgata Saline. In 1913 began the construction of the rural village of Acilia. The urban growth is characterized by discontinuity. Close to the 'historic' city, città storica, there are several neighbourhood such as Garbatella or EUR and important examples of modern architecture such as the INCIS district of Decima, or the social housing (PEEP) complex of Corviale and Laurentino³⁸, other suburbs, such as Spinaceto, Acilia, Dragoncello, Portuense and private neighbourhoods as Magliana, built in a flooding area, or Casal Palocco, built by the Società generale immobiliare, which offered the middle and upper classes a model inspired by the American suburbs, with villas and cottages and a wide range of services and green spaces. The fragmentation of the open territory is due to the urban sprawl that has profoundly modified the characteristics of the morphological-environmental system. The phenomenon is impressive: Isola Sacra, Ostia Antica, Casal Palocco, Infernetto, Dragoncello, Acilia, Centro Gianico, Casal Bernocchi, Vitinia, are a continuum of settlements that thicken along the main lines of connection with Rome, and then dispersed in the territory.

Land consumption is growing steadily: in more than a third of residential areas, the coefficient of land occupation is less than 10%. In the last three decades, public intervention has considerably reduced, while new private neighbourhoods was built beyond the borders of the Grande Raccordo Anulare (ring road). The landscape of the Agro still retains some of its distinctive features. Very important elements of the discontinuity of the metropolitan area are the great environmental systems consisting of the national parks of the Roman coast and Castel Porziano and the regional parks of the Tenuta dei Massimi, Valle dei Casali, Laurentina-Acqua Acetosa, Decima-Malafede. The research group is focused on the 'ordinary' urban heritage those types of residential settlements and landscapes in the Agro, interesting for their diachronic and multidisciplinary character.

Methods

For the purposes of historical reconstruction, the research will be aimed at the recovery and processing of documentary material of cartographic, pictorial, design and photographic type present in National and Local Historical Archives, as well as in libraries, private historical funds, metropolitan and local authorities (General Provincial Territorial Plan). The documentation and interpretation of the natural environment will be carried out from the descriptive point of view. This material will be elaborated in order to give back a diachronic image of the territorial transformations adopting GIS techniques that allow a precise analysis of the present realities. For the settlement system, the diachronic perimeter of the land occupation (PTPG) will be carried out at a detailed scale compared to the synthetic elaborations already present in the literature.

The research will increase the knowledge of different realities of the historical and contemporary city, considering that villages and centers of colonization as the elements that marking the phases of the transformation of the Roman Agro. On the level of historical research, thanks to the still unpublished documentation kept in various archives (such as the Central State Archives, the State Archives of Rome and the Capitoline Historical Archive) it will be possible to investigate economic-financial, demographic and environmental aspects related to the agricultural origins of the Roman suburbs. On the socio-economic level, the research will provide timely data on the selected systems allowing to test relationships and historical and current trends; on the territorial one, it will be possible to trace the theme of the models of settlement development in the different realities; on the environmental one, the selection of appropriate indicators will allow to evaluate peculiarities, differences and criticalities related to the phenomena of urbanization in progress. In terms of method, the research will provide comparative assessments through the development of a system of indicators

that will allow an understanding of the interactions between the different components and the creation of models capable of analyzing complex realities. A comparison with other European urban realities is also planned, which will be useful in the context of local policy perspectives. In the final phase, it is expected to undertake an active relationship with the municipalities that will aim to raise awareness of the citizen, with a hoped-for impact on the policies of management of the reality. The integration between historical-humanistic research and scientific-technological and design research aims to provide a model of territorial analysis that can also be compared at the international level. The importance of some compact city arguments for the project of the dispersal contemporary city.

Objectives and results that the project aims to achieve

The general aims of the project is to analyze - on the environmental, economic, social and with particular attention to historical, urban and settlement aspects – the territory between the city and the sea. The analysis will be aimed first at the acquisition of useful data for the description of the urban realities, including the types of the settlement construction, as identified in the Rome's metropolitan Plan (PTPG). At a later stage it will be possible to make comparative assessments by developing a system of indicators selected using appropriate statistical methods derived from the methods used in ecological modeling. The analysis and processing of data will be aimed not only at the description of the system, but also at the understanding of the interactions between the different components and the creation of models that can create a system able to analyze complex realities. The possibility of a comparison with comparable urban centers - in particular with other European cities - will be evaluated in parallel, thanks to a careful analysis of the literature able to show the dynamics underway. The integration of knowledge is expected to contribute to the knowledge of the territory, in an action that will aim to raise awareness of the citizen, with a hoped incidence in the management policies of urban reality. These operational aspects will be undertaken in the final phase by means of an active relationship with the Municipalities involved and thanks to the models developed both in the analysis of the Roman system and in other international experiences.

The research will allow to increase the knowledge of different realities of the historical and contemporary city, considering that villages and colonization centers have been the first stable settlement nucleus born in the context of reclamation, marking the phases of the transformation of the Roman Agro from territory malarial and uncultivated in urban suburbs. In terms of historical research, thanks to the unpublished documentation stored in various archives (such as the Central State Archives of the State Archives of Rome and the Capitoline Historical Archives) it will be possible to study economic, financial, demographic and environmental aspects related to agricultural origins of the Roman suburbs. On the socio-economic level, the research will provide precise data on the selected systems allowing to test historical and current reports and trends; on the territorial one it will be possible to trace with punctuality the theme of the models of settlement development in the different realities; on the environmental one, the selection of adequate indicators will allow to evaluate peculiarities, differences and critical issues related to the urbanization phenomena underway. In terms of the method, the research will provide comparative assessments through the development of a system of indicators that will allow an understanding of the interactions between the different components and the creation of models capable of analyzing complex realities. A comparison with other European urban realities is also envisaged, useful in the context of local policy perspectives.

The landscapes

The study area is characterized in the PTPG by the presence of two landscapes: Agricultural landscape of the Roman countryside beyond the Tiber; Agricultural landscape of the coastal reclamation Land (PTPG a, 2010).

Agricultural landscape of the Roman countryside beyond the Tiber. The landscape of this undulating plain located north-west of Rome is characterized by an extensive hydrographic network that has shaped the

orography of the area in a system of reliefs and valleys. In the larger valleys there are permanent waterways, often modified by the hydraulic reclamation (Consorzio di Bonifica del Tevere e dell'Agro Romano). Agricultural lands, in particular cereals and fodder are intended for the feeding of livestock farms (cattle and sheep). The morphology is characterized by a plot of small mountains but capable of dividing the territory into flat strips of elongated shape. The wooded areas are limited by agricultural activities, they appear very fragmented and follow the trend of the reliefs. These strips of wood are generally made up of evergreen or two broadleaf trees, mainly oaks. This type of forest represents an important natural reserve for the metropolitan area, hosting numerous plant and animal species.

Agricultural landscape of the coastal reclamation Land. These lands in the past was different. The marshy areas and the woodlands had a wide diffusion in the plain of Maccarese, inhabited and with a low density of rural settlements. These marshy and unhealthy areas was a national problem. The beginning of the reclamation has started in 1880. The agricultural reclamation has started this process of transformation of the landscape (9000 Ha) along the Arrone, definitively removed from the swamps only after the war. The present landscape of this part of the Agro Portuense is characterised by the presence of crops and agricultural settlements important for the metropolitan area. The agricultural production is variegated: it is mainly fruits, vegetables, cereals, fodder and zootechnics products (milk, meat,...). The agricultural landscape of these flat lands is characterized by the geometry of the cultivated plots, the canals and the streets in relief. The alluvial morphology guarantees ideal conditions for the cultivation of fruit and vegetable. Farmers from the northern Italy have encouraged the introduction of new techniques for these lands. Fields are surrounded by eucalyptus and poplar as wind-break and sometimes also rural buildings are characterized by the presence of these trees. This area preserves many archaeological testimonies. Urban settlements where they have fragmented the roman countryside in coastal areas. In the post-war period these marshy areas have been assigned to the farmers. This allocation affected a large area of agricultural land, divided into parcels, averaging 15 Ha. Over time further fragmentation of agricultural funds has been generated and this in some cases has led the abandonment of agriculture and the consequent transformation of the agricultural settlements in constructions.

The Central coast conurbation

The Central Coast conurbation is bounded to the north-west by agricultural land reclaimed (aree agricole di bonifica), to the north by the Tiber and the river plain behind the GRA, to the east of the Castel Porziano farm (Tenuta agricola) and south of the Castelfusano pine forest (pineta di Castelfusano). It is characterized by the three urban settlements of Fiumicino, Ostia and Acilia (located along Roma Fiumicino highway/Via Portuense/Via Ostiense/Via del Mare/Ferrovia Roma Lido/Via Cristoforo Colombo) and from the contiguity with the highway axis Rome-Fiumicino, director of connection with the airport and support of functions of metropolitan relevance (the airport, the interport centers, business and exhibition centres, large shopping centres, etc.) (PTPG b, 2010).

It is consistent the presence of additional metropolitan functions outside or mixed within the urban pattern (two marinas of Ostia and Fiumicino, the intensification area of Acilia Madonnetta, ...). Despite the significant environmental discontinuities (Tiber, River plain, green corridor and Castelfusano pine forest) that stand in between and separate the settlements, the tendency is to form a single suburbs, consisting of a composite patchwork settlement, largely determined by illegal building, where intensification area and manufacturing or commercial activities related to construction are confused in the suburbs and urban fringes.

The trend in local plans (piani regolatori generali PRG) is to establish along the Rome-Fiumicino highway and in the parallel Via Portuense activities of strategic interest, innovative functions related to the logistics, large shopping centers, large residential neighbourhoods. Decentralized along the Cristoforo Colombo, the old public neighbourhoods fit into private neighbourhoods recent or new. Along the coast, the trend in local plans is to develop tourism, boating and bathing, enhancing ports and existing facilities or offering new berths and new

opportunities for coastal accommodation without any coordination interventions in terms of environmental protection, planning, accessibility.

Overall, the relationship between Rome and the sea does not seem to be resolved. At the same time, in the absence of a polycentric organization, municipalities are offering single plots for residential and non residential development. All major problems still remain open: the three urban settlements, the "sustainable" tourism along the coast and in the protected areas, the organisation of the axis of specialised metropolitan functions and the organisation of quality beach tourism in terms of equipment (backward in relation to the coast) and infrastructure (specialised and equipped with interchange points for public transport by rail and road).

City of the Sea (Municipalities of Rome and Fiumicino)

The aim of the metropolitan plan is: the design of an inter-municipal settlement that aims to strengthen the character of the three different neighbourhoods (Ostia, Acilia, Fiumicino), contrasting the tendency of a single metropolitan suburbs from Rome to the sea. In order to achieve this objective, the PTPG redevelops in a differentiated and coordinated way the different parts of the "city of the sea" (residential, seaside tourism, nautical tourism, cultural tourism,...), strengthening the elements of functional integration (road and rail network subway, urban services, seaside tourism services,...), morphological and environmental (coastal environmental system, Roman coastal nature reserve, Castel Porziano and Decima-Malafede, the Tiber river system). At the same time, keeps the "city of the sea" separate from the urban construction of Rome using as discontinuity the natural reserves of Castel Porziano and Decima-Malafede and the Tiber Valley, which in addition to constituting a large environmental reserve, is the evidence of one of the historical landscapes in the Roman countryside. The metropolitan functions along the Rome-Fiumicino highway must be organised in a separated distinct from the "city of the sea" due to the presence of the airport. The plan considers it as a privileged axis of localization for large equipment, very qualified and reinforces this specialization, excluding not compatible use and proposing the organisation of a dedicated mobility.

The plan provides the following guidelines for the design of the intermunicipal settlement structure (see Table TP2).

For the environmental system: to protect and to enhance agricultural areas with residual natural values (green belts) evidence of the historical landscape, in order to use these components giving order of settlement constructions and continuity (see REP) of protected areas (Reserve of the Coast, Tiber River Park, Castel Porziano, Decima-Malafede).

For the morphological settlement system: articulate the intermunicipal city in three neighbourhoods, distinct from each other and from Rome. The metropolitan plan expects the regeneration of the various parts of the 'city of the sea' (consolidated parts: Acilia, Lido di Ostia, Isola Sacra, Fiumicino; recent neighbourhoods along Via Portuense Via Ostiense-Via del Mare, Cristoforo Colombo,...) with interventions on public space, promotion of commercial high streets,... In particular, for the environmental and settlement requalification of coastal settlements the plan identifies a unitary project of reorganization of the settlement for the equipment of the Ostia promenade and some connection between the sea and the railway station. For the Ostia Borghetto - idroscalo buildings that have arisen spontaneously must be gradually replaced by the shipbuilding industry close to the spaces for leisure and cultural activities. For the settlements of Isola Sacra, Ostia Levante, it is necessary the prohibition of caravan deposits, barracks by encouraging the inclusion of areas equipped with small urban services.

For the functional system: to organize strategic metropolitan activities and services in four specialised clusters coherent and linked to the airport, separated by environmental discontinuities (see art. 69 PSM2) and accessible to the metropolitan mobility circuit; to organise the tourism in different models: quality, efficient and value-compatible bathing functions environmental (seafront equipment, nature areas and routes, cycle paths, circuit of

slow mobility,...) which are distinct even if they are related to those of the and to those of culture (routes, areas, etc.) archaeological and historical sites.

For the mobility system: provide for the interchange at Ponte Galeria between the new railway service FR9 (Nettuno-Campoleone-Ladispoli-Cerveteri); organize the road system, specializing in the Rome Fiumicino highway with other dedicated infrastructure to support strategic services (airport, Cargo City, Fiera di Roma, Commerciti,...); organise the metropolitan road network (Via Ostiense, Via C.Colombo) together with the railway system (FM1, FM5-FM6) for the connection of the "city of the sea".

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The Production of Heritage

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Abstract: Urban regeneration is one of the operations through which global cities are tackling the increasing need of housing. Since 2008 redevelopment concentrated on selected urban districts, the reliance on private sector funding favouring 'luxury' developments and a systematic change in property patterns. The most interesting dynamic within this new field of urban exclusivity is the linkage of culture and history to the regeneration process. *Heritage* is a dominant new rhetoric employed in the marketing of these operations, the use of which engages and usurps political and administrative authorities able to facilitate urban development. The inclusion of the *Heritage* agenda concerns the restitution of urban legacies, becoming a selective concept which supports exclusive occupation, opening issues of accessibility and spatial democracy. The recurrence and extension of this phenomenon requires us to reflect on political and economic deviations that the promotion of urban legacy generates, both in terms of its spatial consequences but also in the cultural redefinition of who inherits the city. London and Shanghai are observed as case studies of what is now a global phenomenon, and reveal how the 'production of *Heritage*' becomes a regeneration driver supporting the market economy.

Keywords: heritage; regeneration; neoliberalism; visual rhetoric

Introduction

Heritage is an inheritance that both constrains and increasingly enables development. It is simultaneously a reason for the conservation of some parts of the city and for the demolition of some others, a symbolic asset to be returned to the collectivity and an economic value to be privatized, an image of local identity and an opportunity to tap into the global rhetoric of national representation.

It is argued that the expanding allusion to heritage has an active role in enhancing the economic value of the interventions through culture. The observation of communication strategies and promotional images allows us to understand how the simplification of meaning utilized in advertising development translates into the simplification of inhabitation and our relationship with historic environments and buildings. It is also argued that the 'imaginification' of architecture that passes through the rhetoric of heritage, has practical qualities and spatial consequences which affect the way we can inhabit the city. In particular, a shift towards a form of romantic consumption turns architecture into feelings, creating places that prioritises visual experience instead of practicality. Despite the declaration of a strong character, these spaces, and the images that define and represent them are tensionless, stripped of any form of social conflict or reflection and mediated by a socio-political process.

Two tier cities are taken as case studies to reflect the global diffusion of the trend: London and Shanghai. London has a central role in the network of financial interests linked to real estate, and it has, at present,

one of the fiercest and most aggressive housing markets in the world. Its intermediate (and uncertain) position between Europe and the rest of the world allows some leading trends to be particularly influential. The focus on heritage is linked to the priorities of neoliberal policies which exploit anything bearing a trace of uniqueness and identity in order to optimize value and transform spaces and buildings into a product. Shanghai is used to show how, despite a different background, real estate communication strategies align in these antipodal cities. Shanghai is the financial centre of China, as London is for Europe, and represents a preferential partner for the UK in terms of investments. Its forefront role in the process of urban renovation and its everlasting attitude of rebuilding itself as a global centre render this city an interesting outpost of 'red neoliberalism'. The regeneration of heritage, in this context, is very much part of the modernizing effort of the city, and many redevelopment schemes involve buildings with historic significance. The method used to study the rhetoric of regeneration in London and Shanghai, includes both an analytical approach based on images observation and on field research based on space analysis interviews. The first method revealed how communication strategies are used to select and promote spatial features through images. The second one unraveled the physical consequences of a highly symbolic and monetary approach with consequences on the accessibility and practicability of the city. In particular, the observed case studies suggested how heritage is promoted as an element defining both emotional responses and economic possibilities, and how the projects favoured episodes of exclusion and expulsion in the name of cultural restitution.

Heritage as a regeneration driver

The projects for the city have always been symptomatic of current political and social trends. The rhetoric that guided them has changed, involving for example aims of expansion, the research of a new spatial order and social tendencies (Secchi, 2005). It is argued that references to the past have always been part of the modernizing effort of city building, and that they have now become key regeneration drivers linked to financial operations (Figure 1). With nation states desperately active in promoting viable products for the global market, heritage has grown increasingly linked to branding. The market, eager to differentiate the product in order to sell exclusivity, commodified anything bearing a trace of identity. In this way heritage became a vehicle for economic appreciation. This trend can be observed at the global level: many cities all around the globe, while facing problems of population growth and land scarcity, are busy extracting as much value as possible from on-site resources (Sassen, 2017). Historic legacy is considered one of them, and is increasingly privatized as exclusive good, or bought as everlasting investment. Two effects accompany this tendency. Firstly, the conception of heritage enlarges from the one being referred only to old building to include entire neighbourhoods, modern edifices and cultural practices. Secondly, the restoration of these areas always entails a strong inclination to privatization, where mixed-used projects tends to be exclusive and to kick off gentrification processes. The value of heritage, in the end, becomes inevitability linked to the economic value that these operations involve; and to the extractive activity typical of neoliberal modes of space promotion and production.



Figure 1. Hoarding advertising heritage as a key aspect of the development, Shanghai 2016. Source: picture by the authors.

What needs to be clear is that heritage in itself is not a thing. Rather, «heritage is about the process by which people use the past – a ‘discursive construction’ with material consequences» (Harvey, 2008: 19, Smith, 2006). This means that heritage is a selective concept which does not necessarily involve history, as history would entail a more careful observation of the facts and their implications. Heritage can be easily isolated and rearranged to inform a bespoke narrative. At heart, it refers to «the ways in which very selected past materials and artifacts, natural landscapes, mythologies, memories and traditions become cultural, political and economic resources for the present» (Graham and Howard, 2008: 2). Present concerns, therefore, are the temporal dimension of heritage. Its construction is closely linked to the notion of ‘memory’ which, differently from history, seeks an uncritical relationship with the past (Nora, 1989). If portions of the past can be extracted from a wider narrative and attributed special value, it is easy to understand why certain materials have been selected rather than others. Economic convenience and social privilege are some of the reasons that guide the shaping of material and cultural significance, and its circulation.

Observing these mechanisms reveals how the process of selection has been made, and who is the final beneficiary of a certain interpretation of heritage. As stated by Hobsbawm and Ranger (1983), «we should look at those mechanisms that, deliberately or unconsciously, collaborate in their production. On the one side the marketing strategies that make them readable, the rules that guide planning, and the languages used to convey and distribute an idea of city. On the other side the mechanisms that make these strategies possible, and therefore the market, with its enabling power and its branding attitude». What is at stake is not only the concept of past and the power of history, but also our ability to imagine alternative futures.

London and Shanghai – two tear cities promoting heritage

Europe and China, in particular, are observed as preferential places where the rhetoric linked to heritage has evolved bounded to special political and economic meanings.

London is the preferential case study because of its fierce real estate market, and its role as an international node of financial flows attracting foreign investments. Here, historic buildings are being increasingly appropriated by wealthy groups, and used to mask financial operations with the pretext of urban restitution. This is supported by the making of bespoke narratives that build on the legitimizing presence of history. If we assume that heritage is ‘made’ and not inherited (Graham and Howard 2008),

and that memory «works by reinvesting places with new accretion of significance» (Kearns and Philo, 1993), we understand the pivotal importance in observing cultural narratives.

Aware that the centrality of the European continent is fading, (Indovina, 2015) we interrogate similar mechanisms in other parts of the world. For this reason, China, and Shanghai in particular, have been included in the study. The reasons involve the rising importance of Shanghai as a tier city, the growing attention that matters of heritage and national promotion are acquiring for the Chinese government, and the privileged relationship existing in financial and political terms between UK and China. Moreover, the scale and the speed of regeneration projects in Shanghai, together with a simplified system of rights, make China an interesting place to look at not only as a major overseas investor, but as active realm of practice. Especially after the recent statements of Xi Jinping at the Communist Party in November 2016, it is necessary to interrogate what China is uploading on the global stage of real estate strategies. This can be considered as one of the forefront markets where the process of nation building on the stage of the global economy is more competitive.

Clearly, we need to remember that London and Shanghai are representative of distinctive political and economic systems, which also evolved through intertwined but different paths. The rhetoric used in the two systems are therefore representative of local and national specificities and simultaneously of global tendencies, coming from the need to compete on the world stage of leading economies. The parallels between the two cities concern the mechanisms underlying communication strategies, but also the contents of city marketing. Above all, notions of heritage and memory recur as elements able to drive the success of the regeneration projects, and to assure a high symbolic and monetary value to real estate products.

Battersea power station – London

The project for Battersea Power station, part of the Opportunity Area (OA) of Vauxhall, Nine Elms and Battersea in London, concerns the rehabilitation of the famous grade II* listed power station erected in 1933 in Wandsworth and dismissed in the 1980s (Figure 2). It is advertised as having c. 4.000 new homes, 7 hectares of new public space, 3.174 parking spaces, 8.340 bicycle spaces, 2 medical centres, 2.000 capacity venue, c. 30.000 sqm of community, cultural and leisure space 450 m of direct river frontage 150 shops, boutiques and kiosk, 40 cafés and restaurants, exclusive hotels. Its position, on the west corner of the OA, offers a magnificent gate of access to the project, a square at the end of the Thames Path and a great occasion to glorify the historic building that, more than others, drives the symbolic evolution of the area. Well-known architectural firms were called to deliver portions of it: Ian Simpson Architects are responsible for the apartments, offices and shops called Circus West on the railway-side; Norman Foster and Frank Gehry are inputting the scheme with some mixed-use buildings, called Battersea Roof Gardens and Prospect Place; BIG is designing the Malaysian square at the end of Electric Boulevard; and Wilkinson Eyre is taking care of £1bn refurbishment of the power station, with the rooftop gardens being designed by landscaper Andy Sturgeon. The power station itself will be turned into a shopping center, with three floors of retail (as envisaged by developer David Roche 30 years before), a floor of leisure, a 2000 capacity arena and offices to be partially occupied by the Mac creative quarter. Cafés, bars and restaurant will be placed around the corners of the turbine hall and two additional glassed volumes with 245 apartments will be built on the roof between the chimneys and above the boiler house. Some of these apartments were sold off-plan for almost £4m, and one studio flat was sold in 2014 for £1.5m, which is how much David Roche paid the entire building and the land in 1984 (Watts, 2016: 217).



Figure 2. Battersea power station under reconstruction seen from an adjacent neighborhood, London 2016. Source: picture by the authors.

When it was featured in 2013's Open House London, the architectural festival opening close doors to public viewings, more than 40.000 people queued for hours to have the chance to have a look inside the power station (Watts, 2016). Commonly defined as one of the symbols of English industrial genius, and excellent example of industrial *art deco*, the design of Battersea is inevitably linked to Sir Gill Albert Scott, the architect that authored the red kiosk, or phone box, in turn inspired to traditional architecture. Since the 1980s a number of projects confronted with this legacy, proving how the regeneration of the built environment needs to be observed alongside the regeneration of political, economic and social ambitions which support it. Every time, a renewed context created the opportunities, and then dismantled them. Its functions evolved, different subjects took part in the discussion, national and international interests were involved. The cultural industry, among the others, started to appropriate the building. Pink Floyd, for the launch of the album *Animal* in 1977, hang the famous pig Algie between the chimneys. Beyond the political meanings, this was the first cultural operations –later followed by many others - that contributed to increase its symbolic and representative value of the power station in the eyes of citizens and investors alike. It's not by chance that the Malaysian company currently leading the regeneration project cared about conserving the appearance of the symbolic chimneys, recognizing their 'value' in so much that some renders depict them from the same perspective that was once of the Pink Floyd album cover. However, the anxious aspect given by the contrasting tones and dark shadows (in line with the contents of the album), are replaced by a more pacified version of the landscape, suggesting harmonious and communal feelings.

Other characteristics from the past are recalled with insistence within the project's advertisement. They are presented as proof of originality, showing a mixture of enduring qualities linked to heritage references, and pioneering entrepreneurial experiences representing a «new chapter» for the city. By highlighting the continuity with the past, the promise of reward is almost granted, as suggested by the mentioning of successful moments in history that brought London to prosper. At the same time, the fascination for built and cultural heritage permeates the descriptions. Interiors showing exposed bricks, steel furniture and industrial style windows are countless. By evoking 'Englishness' through the use of symbolic references, the innovative spirit that animated the construction in the 1930s is recalled, and a bridge is immediately built towards the innovative intents that moves the project today. «This was no ordinary Power Station, no ordinary design (...) Sir Giles Gilbert Scott's design of Battersea Power Station turned this immense structure into a thing of beauty» (LIVE brochure). The preciousity of these interiors where «glamour meets industry» is explained by the fact that «an iconic British building deserves the best of British design – the interiors will have an industrial yet luxurious feel» (LIVE brochure). The power station's industrial past become, in this sense, a design bonus. The iconic status

of the power station seems to emanate on the rest of the buildings, transferring its deposited value onto branded buildings in desperate search of looking contemporary. «Battersea Power Station is London's quintessential industrial landmark, built to last on a heroic scale. Its rawness and atmosphere are its authenticity and must drive aesthetic decisions throughout the design process, inside and out, from the word go. Lose this and you lose The Power Station» states point 7 ("Industrial Magic") of the Battersea Manifesto (The Placebook).

Besides than at a formal level, the continuity with the past is evoked also at a functional level: Battersea power station, once a symbol of technological innovation, will host the new Apple headquarter, a campus able to host 1.400 employees. The ameliorative quality of the project is evident: the polluting image of the power station, that fueled the dissents at the beginning of the 20th century, is being replaced by the 'white apple', symbol of the cleaner and most efficient design on the market in the 21st century. Moreover, Apple is in a way, the quintessential incarnation of the contemporary creative industry. Popular, 'different', polished and global. Started from the garage of a creative, it now occupies one of the biggest symbol of power in one of the richest capitals on earth. In the Battersea Manifesto, these new 'respectable dwellers' are presented as «the most valuable firm in the world by market capitalization» who, according to adverts, «will help create a thriving new community on your doorstep» (Powerhouse Magazine 6). This given proof of success accompanies the call for young creatives and independent shops. Images of workers from the 1940's, working inside the turbines of the power station become inspirational models of professionalism and invention. New «local heroes» are now the ones managing the coffee shops, the flower shop, or working as cooks on site. The image of the employee has been polished and substituted by the self-manager in search of creative opportunities. Indeed, the marketing of open possibilities ask for more attentive analysis: the range of opportunities are being addressed and selected to inform a specific image of city, as so have been the people who can access them.

Suhe Creek – Shanghai

A similar operation can be noticed in the Suhe Creek redevelopment – Shanghai, where the new plan aims to recover meaningful parts of the city. The Suhe Creek, a large urban complex set east of Henan Road and North Tiantong Road, along the banks of the Suzhou River, is fated to become one of the most discussed projects in Shanghai in the years to come. Led by state-owned Chinese developer Oversea Chinese Town Enterprises (OCT) and spread along the Suzhou Creek, the project rises on the site once occupied by old *lilong* houses, which have been promptly removed in recent years to make space to the regeneration.

The redevelopment includes 243 apartments on 27 floors, a luxury resort and a 48-storey tower branded by Bulgari, surrounded by lush, Italian-style gardens and overlooking the Bund. Adjacent to the hotel, sits the historic Chamber of Commerce Shanghai Building, a Neoclassical Renaissance building built in 1916 and restored in its former glories by the Italian architectural firm Antonio Citterio Patricia Viel. The same firm signed the luxurious Bulgari complex, while the early 20th century Ewo Packing Factory warehouse was restored by the Italian Kokaistudio – one of the pioneering architectural practices on heritage matters in Shanghai, and author of the lavish Bund18 refurbishment (2004). The urban project is overseen by world-class architectural design team Foster+Partners. The centrality of the creek which gives name to the regeneration project, has both symbolic and practical implications. The site, once home to the first settlements of the city, is now made available to new inhabitants who, it is implied, are moved by the same pioneering ambition of the old ones, this time carrying Bulgari watches instead of fisherman nets. Indeed, Bulgari is betting on brick as a luxury item: «“I like to think at the Bulgari Hotels collection as a necklace and today we added a sixth gem to it, in particular a precious ruby that is the stone that most represents the vibe of Shanghai [...] » stated Jean-Christophe Babin, CEO of Bulgari (CPPluxury, 2018).

The presence of heritage occupies a good part of the Suhe Creek marketing strategy. In particular, traditional concepts derived from Confucianism are exploited to render the project acceptable, and demonstrate how the manipulation of heritage not only involves material features but also cultural ones.

One of the most referenced concepts in the construction of livable spaces in China is “harmony”. The revival of harmony in recent political discourse can be traced to the speech made at the fourth plenary session of the Sixteenth Central Committee of the Communist Party of China in September 2004 by former President Hu Jintao. The subject of the speech was “building a harmonious socialist society”. Confucianism defined harmony as a framework for organising life and maintaining balance at different levels (Wang *et al.*, 2015). At the same time, it has become aesthetic and political doctrine, and this ancient concept can be observed in images used to represent new urban redevelopments. Here, harmony is found in tensionless representations where people meet naturally and conflicts are erased. This is realized, first of all, by excluding elements that don’t match the standard of the advertisement. The promotional video of Suhe Creek by Bulgari is a vivid luxury dream, where the empty hotel is crossed by a combination of rendering and filming cameras highlighting the preciousness of the environment. When diversity is recalled, this is done through the use of history, in this way distancing diversity as something belonging to the past. However, in Confucianism, it is “difference” not blandness that is the «precondition and cornerstone of harmony» (Wang *et al.*, 2015). Harmony presupposes the acknowledgment of difference as a creative tension generated through the interaction of different elements. The energy which sustains harmony is relational; it welcomes strain, conflict, and negotiation (Li, 2008). The images used to promote new developments translate these commitments into detached, homogeneous landscapes where conflict is absent. Harmony is twisted and flattened onto advertisement hoardings to recall an idea of order and beauty able to redress an increasingly unbalanced and unfair landscape (Yu, 2008). The centrality of heritage is clear, as it underpins the visual and ideological rhetoric of the redevelopment project becoming the joint between popular restitution and exclusive appropriation. The Suhe Creek project offers a good example of this. As you enter the marketing suite, a four-meter-long map from the beginning of the century supports your understanding of historical changes in the local area’ urban fabric. There is a short video titled “An historical celebration of Suzhou River”, explaining its role as a water route fundamental to the development of the local built and social environment. The video celebrates the renovation of the area as an act of final restitution. After the first video is a second one. This time for Bulgari. The video claims history as a continuous source of inspiration: a classical statue breaks into pieces and is covered in gold, while a Colosseum transforms into a ring. “Classic is Revolutionary” concludes the movie, not only providing the perfect synthesis of oppositions as a slogan, but also re-establishing a popular term (revolution) as part of a luxury creative genesis. The advertisement includes oppositional elements to the system rather than removing them, and makes the final message even more effective. It links simultaneously to classic style and revolutionary changes, to the past and the future of the city, to shared accessibility and privileged ownership, to preservation and demolition, all justified by the overreaching metaphor of heritage, charged in aesthetic resonance. Heritage is once again at the centre of a revolution, a driver of placemaking able to produce urban and social regeneration alike. On a much more immediate level, the concepts of past, inspiration, and nostalgia through which the Italian brand is made recognisable are successfully used to market the regeneration project and to inform the Chinese notion of harmony. Heritage becomes the language through which “harmony” is established – cleaning, ordering, reinventing a part of the city. This is proved by the advantaged position offered to the new inhabitants who will be able to enjoy «stunning views of the iconic Bund, Pudong financial district and the dramatic curvature of Huangpu River and Suhe Creek» (bdrconsulting, 2018). If in the past the poor fishermen had to immerse their bodies into the water, now the rich new inhabitants elevate up in the sky, where everything can be looked at, and a dinner is a matter of ordering rather than hunting. Harmony ends to be immersive and embraces the environment from a privileged point of view.

In the end, marketing materials show a new notion of ‘harmony’ – visual, instantaneous, natural, tensionless as opposed to experiential, conflictual, reflective and mediated by the economic and social process (Li, 2008; Wang *et al.*, 2015). However, the relationship between what is included in the representations and what is tolerated in the reality, often hide an implicit reference to a given social homogeneity. As Marin (1983) states, the harmonisation of opposites allows to reposition the subjects within a new framework: the authenticity of the pre-existing fabric is advertised together with a pioneering sense of romance and fiction (Klingmann, 2007) in order to create new identities and new urban communities.

The territorial function of heritage

In both cases it can be observed that the references to notions of heritage culture have a ‘territorial’ function: they become the channel through which to communicate, implicitly and explicitly, narrative of inclusion or exclusion. Surely within societies, «various groups insert symbols into the cultural landscape which resonate with their sense of heritage and identity, and which simultaneously incite remembering and mark territory» (McDowell, 2008: 48). In the globalized era, heritage continues to be a tool of selection and claim, but its meaning is more and more related to the financial appropriation of places. The processes of exclusion, expulsion and gentrification that often accompany the processes of regeneration demonstrate how heritage is being appropriated both materially and ideologically by wealthy groups. However, the ambiguity of its rehabilitation, the creation of open private spaces around it, and its familiar aspect, helps securing «the acceptance and even the affection of peoples who might otherwise rebel to it» (Philo and Kearns, 1993: 22-23). The case of Battersea is representative. While the building is ‘given back’ to the city with apartments sold at 19.000€/sqm, the icon of the same building has been included inside the British passport transforming one of the most exclusive operations of the last decades in a democratic symbol of national identity.

The simultaneous creation of a regulatory apparatus to support the regeneration operations feeds the selection. Among the examples, it seems interesting to dwell on the debate concerning the affordable housing in the UK, which imposes strong restrictions on accessibility to the home when London needs around 50,000 new homes per year to meet the housing needs of the population. In 2014, under Boris Johnson, the former Mayor of London, ‘council’ or social housing has been replaced by a new and more ambiguous product: the ‘affordable’ houses. A property defined ‘affordable’ can be sold up to 80% of the market value, unlike the previous council houses that allowed a rent equal to (approximately) 50% of the market value, a threshold that allowed many families to pay rent without being dependent on the so-called housing benefits. To answer the shortage of houses, the current Mayor Sadiq Khan had proposed that 50% of new homes built in London fall within these criteria. However, little after the 2016 elections, the limit was lowered to 35%. The Battersea Power Station masterplan that was approved in 2010, it provided 518 affordable units in three different locations. In 2015, some of these were pushed to their limits of the regeneration area with the excuse that this would speed up the delivery of the project and therefore the sale of the other units. In fact, the least expensive houses were removed. In 2017 Wandsworth Council allowed the entrepreneurs to reduce the number of affordable housing to 386 units (Byers, 2018) giving proof of how the projects of expulsion and gentrification that inevitably seem to cause an aggressive market, need a regulatory apparatus capable of actively supporting it. It is curious to notice how the present scheme recalls another one that was put forward in 1983. The plan proposed a mix of luxury flats, retail, a hotel and a marina. At that time, in the hyper capitalistic 1984, the luxury flats that now dominate regeneration were considered socially unacceptable, and the scheme was rejected as being “substantially outside the brief” because it was giving nothing back to the community.

Similarly, the restitution that granted by the Suhe Creek development is in fact exclusive. It is clear that after the erasure of the old *shikumen* houses, the place will not be returned to its original inhabitants. At the same time, a “harmonious” understanding of the relationships among subjects is applied: the ones competing over land consumption; the ones who structure and the ones who finance these redevelopments, and the ones who simply inhabit them. Obviously, this is not more than a fiction, where the shaping of livable spaces is dragged along by an economic system which selects object and styles as inherited capital from the past, but also selects people as one of the materials to be renewed (Rogers and Darcy, 2014). «One has to go deep into the course of history, understanding the past, this knowledge as a foundation for the future», says a quotation signed Nicola Bvlgari on the billboards. It shows a western woman wearing diamond earrings while posing inside an elegant interior. Other renders, flashy and glittering show the site from the top. The combination of images, swinging between black and white sophistication (Figure 3) and ostentatious shininess represents a diversified communication strategy able to talk to different publics. On the other side of the road, in front of the attractive woman, lays the site of popular *lilong* houses, now demolished to make space to Bvlgari.



Figure 3. Hoardings around the construction site of Suhe Creek, Shanghai 2017. It shows a western woman making up in a living room. Source: picture by the authors.

Conclusions

It is noted that the increasingly frequent allusion to heritage plays an active role in the promotion of value economic of urban regeneration operations. In the era of globalization, the growing need for preserving and promoting "identity", "culture" or "originality" is perhaps the last trick to add value to the landscape of the flattened real estate of global regeneration. The production of narratives related to heritage material and immaterial, it supports the recovery of local and national territoriality, and the value of the same territory is attributed. However, there are risks. Memory as representation risks collapsing the tension between past and present in an eternal present, and to use history as proof of certification and value (Huyssen, 2003). The heritage is restored and protected, assigned to those who can take care of it, and rebranded as an eternal symbol of culture. In this sense, the regeneration projects that call themselves "timeless", "Definitive" and "everlasting", do not contradict the concept of history so much, but testify to the intentions of capital. Thanks to the sense of legitimacy that underlies it, heritage helps protect long-term investments, and for this reason its value becomes more than symbolic: the conservation and promotion practice that concerns it ends to be a practice of safeguarding and promoting its economic value. Accept that the heritage is a highly political process means recognizing its flexible nature in relation to power and in relation to specific material and temporal contexts.

The identification of visual narratives linked to heritage rhetoric as a field of observation, and to economic discipline as a necessary context of confrontation, might contribute to fostering a cross-disciplinary attitude in the field of contemporary urbanism, and to promote specific directions of research. This can establish a set of scientific practices related to the analysis of visual narratives for contemporary urban development. This should consider the plurality of languages and representation as a resource beyond the ones put in place by leading powers. Deconstructing the codes and recognizing the mechanisms that support urban marketing can lead to elaborate strategies of resistance and appropriation. This not only concerns the language as a fundamental tool of democracy, but also its effects on place as the result of specific narratives. Working on alternative images might contribute to build different scenarios of social re-appropriation of both places and the historical narratives building them.

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Developing transformation strategies for Alpine industrial landscapes shown by the Styrian Iron Route in Austria

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Abstract: The Alpine Space is one of the most important industrial regions in Europe. The transformation from manufacturing to service industry in the last decades and the decrease of traditional heavy and manufacturing industry are leaving impressive former productive landscapes of relevant size and complexity, so-called Alpine industrial landscapes behind. The potential value of these landscapes is linked closely to ecological, economical and social challenges in the development of these regions. No significant strategies or programmes for a transformation of industrial brownfields exist currently. The INTERREG project “trAILS ” deals with the topic of industrial brownfields and aims to generate knowledge about Alpine industrial landscapes. It shows how future development paths for these sites can be developed and visualised and thus serve as a basis for discussion, decision-making and planning for the definition of concrete planning recommendations for municipalities. The overall objective of the project is to discuss and develop ways of raising awareness of the strategic development of brownfield sites, a topic that will continue to gain in importance in future. The following contribution focuses on the first project phase, in which a process for developing a transformation strategy was elaborated and tested in one of four pilot regions.

Keywords: industrial brownfields, alpine industry, transformation strategies, sustainable transition

1. Introduction

1.1. Motivation

When thinking of the Alps, most people think of the beautiful mountainous landscape, alpine agriculture, tourism or winter sports. The term “industry” is probably not associated with the Alps by most people at first. Nevertheless, the Alpine region is one of the most important industrial locations in Europe.

Industry in the Alpine region developed mainly in the 19th and 20th centuries, but its importance is still greatly underestimated. Industry in the Alps evolved for a number of reasons, amongst others due to the occurrence of raw materials such as ore or minerals, the presence of a sufficient number of workers or due to the usage of hydropower for production with high-energy consumption. Depending on the local conditions and potentials, different types of industry, such as aluminium, chemical, magnesite, steel or textile industry, originated. (cf. Bätzing 2003: 136ff.)

Another important impact on the development of the industrial sector in the Alps was the development and provision of infrastructure, especially of rail-borne infrastructure. Therefore, from a European point

of view, the Alpine region represents an important trade link from north to south and vice versa. Many European transport corridors lead through the Alps. Valleys with good access to the transport network are then and now important transit routes for the carriage of industrial goods.

As in many regions of Europe, the decline of the traditional heavy and manufacturing industry can also be observed in the Alpine region. The massive mining of raw materials in recent decades has exhausted or even extinguished many of these sources. In addition, the increasing degree of automation in mining and production processes means that fewer and fewer workers are needed in industry. With the retreat of industry, a decline in the population can therefore often be observed.

This process is leaving impressive former productive landscapes of relevant size and complexity behind, so-called Alpine Industrial Landscapes. The potential value of these landscapes in terms of sustainable transformation is strongly linked to Alpine-wide ecological, economical and social key challenges, such as the regeneration and improvement of blue and green infrastructures, the reactivation and upgrade of regional economies and the promotion of local identity and cultural heritage. (cf. trAILS 2018: online)

To use the potentials and to face the challenges that arise within former industrial landscapes, an alpine-wide overview of the location and situation of these sites is needed. Currently no reliable quantification and qualification of industrial brownfield areas exists. Furthermore, no significant transformation attempts or conversion strategies have been developed yet and the awareness about potentials and challenges in connection with industrial brownfields has not been mentioned in previous Alpine development programs and projects. (cf. trAILS 2018: online)

An INTERREG Alpine Space project called “trAILS – Alpine Industrial Landscapes Transformation” deals with this lack of information about industrial brownfields in Europe, aims to generate knowledge about Alpine industrial landscapes and depicts how to transform such sites and how to raise awareness of this increasingly important issue. The motivation is to create overviews, not only across the Alps or on a national level, but also on a regional and local level. At the local level (in the pilot communities), the development of future pathways will enable concrete support in the transformation of brownfield sites and the derivation of concrete planning recommendations for local planning actors.

1.2. State of the Art

As mentioned in the introduction, there is currently neither a general overview about industrial brownfields in the Alpine region nor is the topic sufficiently anchored in regional, national or European policies, legislations or funding programs. Therefore, there are few or no strategies for dealing with industrial brownfield sites at present. One task of the project "trAILS - Alpine Industrial Landscapes Transformation" (see chapter 1.3) is to develop a strategic and transferable process that enables the sustainable transformation of brownfield sites.

It is therefore necessary to place different methods or sets of methods in a particular order or context which, in a first step, allows to locate industrial brownfields on different scale levels and to add selected quantitative and qualitative information to these sites. The methods and information must be chosen in such a way that in a next step, the potentials of the industrial region and the brownfields can be shown, as well as the framework conditions for a transformation of the brownfields.

One method is the visualization of data using GIS and web-based mapping. Different javascript based libraries like Leaflet, Open Layers (two-dimensional) or Cesium (three-dimensional) allow the creation of a web visualization of spatial data. Information can be viewed on different scales and overviews can be generated. In addition, the data can be stored sustainably, transferred and accessed from any location.

As there is currently no database on brownfields and related relevant information such as location, size, type of industry or former use, ways must be found to collect this kind of data. The “Raum+”-method, developed by the Chair of Spatial Development at ETH Zurich, is a method for collecting spatial

information and creating regional and national overviews. This method is essentially concerned with the survey of settlement area reserves in Switzerland. From these overviews, "spatial development strategies and measures for mobilizing settlement area reserves can be developed in a targeted manner" (ETH Zurich, online). These data are collected jointly with cantonal and municipal representatives who have knowledge of the areas. (cf. ETH Zurich, online) This approach could also be applied to the survey of industrial brownfield sites. Who can be responsible for collecting the data is still open. Cooperation between municipalities, regions and federal states as well as planning experts will, however, be indispensable.

Based on these spatial overviews, key areas for the development of industrial landscapes can be identified. Large brownfield areas are quite easy to locate, but small, significant areas can also be identified through a comprehensive, nationwide data collection.

Architectural, urban design methods are suitable for the elaboration of development paths and scenarios after the identification of key areas. The resulting concrete and analyzable visions can be used to examine structural effects and their effects on the local, regional and supra-regional level.

By using the test design method (cf. ETH Zurich, 2013; Schnepper, 2012) and the current methods of future and scenario analysis (cf. Kosow & Gaßner, 2008), concrete and integrated approaches to settlement and infrastructure development and the associated design requirements can be developed. It is necessary to consider these development paths and scenarios on all spatial levels (from the building level to the supra-regional level). A purely superordinate consideration by the preparation of a spatial overview is not purposeful, it needs a concrete and detailed investigation of the local conditions, in order to be able to draw conclusions from the effect on superordinate levels.

1.3. Project overview

The project „trAILs – Alpine Industrial Landscapes Transformation“ is part of the INTERREG Alpine Space Programme 2014-2020 and co-funded by the European Union. The project concentrates on former productive landscapes in the Alps, understanding their ecologic, economic and social regeneration as key priorities for the sustainable development of the Alpine region. The project consortium, comprising academic partners from different universities and research institutions as well as local or regional development agencies from five different countries, aims to generate significant knowledge about Alpine industrial landscapes, and develops and tests concrete and transferable strategies for the transformation of these landscapes. The support of local and regional stakeholders and the active involvement of the local communities are essential for this process. The four pilot regions are Eisenerz in Austria, Borgo San Dalmazzo in Italy, L'Argentière la Bessée and La Roche de Rame in France and Tržič in Slovenia. (cf. trAILs 2018: online)

The paper focuses on the first project phase, where a first process for the development of a transformation strategy was set up and tested in the pilot region Eisenerz.

1.4. Case study region

The Austrian pilot region Eisenerz is a municipality in the northern part of the federal state of Styria. Eisenerz and nearby municipalities are part of the so-called “Styrian Iron Route” region, a region that has been characterised by mining and related industries for centuries. Mining traditions and montanhistorical heritage are of great importance and give the region its identity.

Eisenerz lies in a deep circular valley and is surrounded by the steep wooded slopes of the Eisenerzer Alps and the Hochschwab mountain range, which reach altitudes of approximately 2,200 meters (see Figure 1). The natural environment and landscape in the region have a high value and potential as touristic and local recreation area. A large part of the municipality is covered by nature and landscape protection areas.

Tourism is becoming an important economic sector in Eisenerz for the last years, as the municipality tries to find a new development focus beside the industrial sector. Especially close-to-nature and sports tourism such as hiking, mountain biking, climbing in summer or skiing and biathlon in winter find perfect conditions in Eisenerz.

As shown in Figure 3, the municipality can be reached from Graz via Leoben and Vordernberg, from Salzburg via Admont and Hieflau and from Linz via Hieflau. Difficult road conditions in winter mean that the town cannot always be reached via the southern mountain pass Präbichl. There is an existing railway infrastructure in the direction of Hieflau and further via the Ennstal to Linz, or via Liezen to Salzburg, which is only occasionally used for freight traffic. A rail connection for passenger service does not exist anymore.

The region has been subject to a large population decrease in recent decades as a result of the technological change in industry and various competitive disadvantages due to its peripheral location in alpine terrain. From the early 1970s until today, the municipality of Eisenerz lost two-thirds of its population. The emigration of well-known companies, a lack of education opportunities and jobs, as well as the poor accessibility of the town move especially the younger generations to leave their home. More than 40 percent of the remaining population are over 65 years old. What remains is a shrinking mining city that is struggling with vacancies in housing, trade and industry, the maintenance of social and technical infrastructure and with the preservation of their mining culture and heritage. The municipality has tried to tackle these challenges for many years. Currently a new development strategy and a mission statement are being elaborated.

The industrial pilot site Münichtal, see Figure 2, is located in the northeast of Eisenerz. The area has a size of approximately 150.000 square meters. Parts of the site are still in use by a metal recycling company, but most of the buildings are vacant. They used to be part of an iron blast furnace, a gas power station, an automotive glass factory and an aluminium recycling factory/smelter. Beside the mentioned problems the whole municipality and region has to face, the main challenges in the development of the site are the mix of old and new buildings and their strongly varying quality (some buildings are more than 100 years old with a high architectural value, but derelict, some are modern functional industrial halls). The mix of used and abandoned buildings and infrastructure as well as the complex ownership of the different plots and buildings on the site make a transformation additionally difficult.



(f.l.t.r.) Figure 1: view on Eisenerz and the Erzberg, source: Bwag/Wikimedia and Figure 2: view on the pilot site Münichtal, source: TU München, Udo Weilacher, 2019

2. Methodology

In the following, the applied procedure and the use of selected methods and tools are explained. It should be mentioned that it is not the application of a single method, but the combination of several methods, i.e. the application of a repertoire of methods, that is productive. This must be put together individually depending on the object of investigation and the interest in research (cf. Hübler 2005: 635).

The procedure is basically divided into four steps: the analysis, the formation of possible development paths, the stakeholder workshop with discussion of the proposed development paths and the subsequent development of planning recommendations for the Münichtal industrial area in Eisenerz.

The chosen procedure is a first process test, a kind of experiment, which was carried out in the pilot region Eisenerz. It can be adapted step by step for the other pilot regions if necessary. The aim of the project is to define an approach in all four pilot regions that is transferable to other industrial regions and should be able to contribute to the transformation of industrial brownfields.

2.1 Analysis

In order to get an impression of the local and regional conditions and to evaluate the situation in the pilot areas in a comprehensive way, the analysis covers environmental, social, economic and spatial issues. As a framework for these different analyses, a separate policy analysis is acquired. In detail, the following issues are addressed in the different analyses:

- the environmental analysis covers the analysis of the topographical situation, the landscape, the natural environment and the ecologic status of the brownfield site,
- the settlement analysis contains information about the settlement structure and the existing building stock, the protected and characteristic types of buildings,
- the mobility network analysis covers the analysis of the reachability, the traffic and transport network and the public transport services,
- the supply and disposal infrastructure is analysed through a description of the access to information and communication technology and energy infrastructure, water supply and disposal infrastructure,
- the socio-economic analysis deals with the demographic and economic characteristics as well as the qualitative valuation and perception of the industrial site by the local population and
- the policy analysis contains the evaluation of policy documents of different sectors and administrative levels with regard to their recommendations and strategies for the transformation of industrial brownfields.

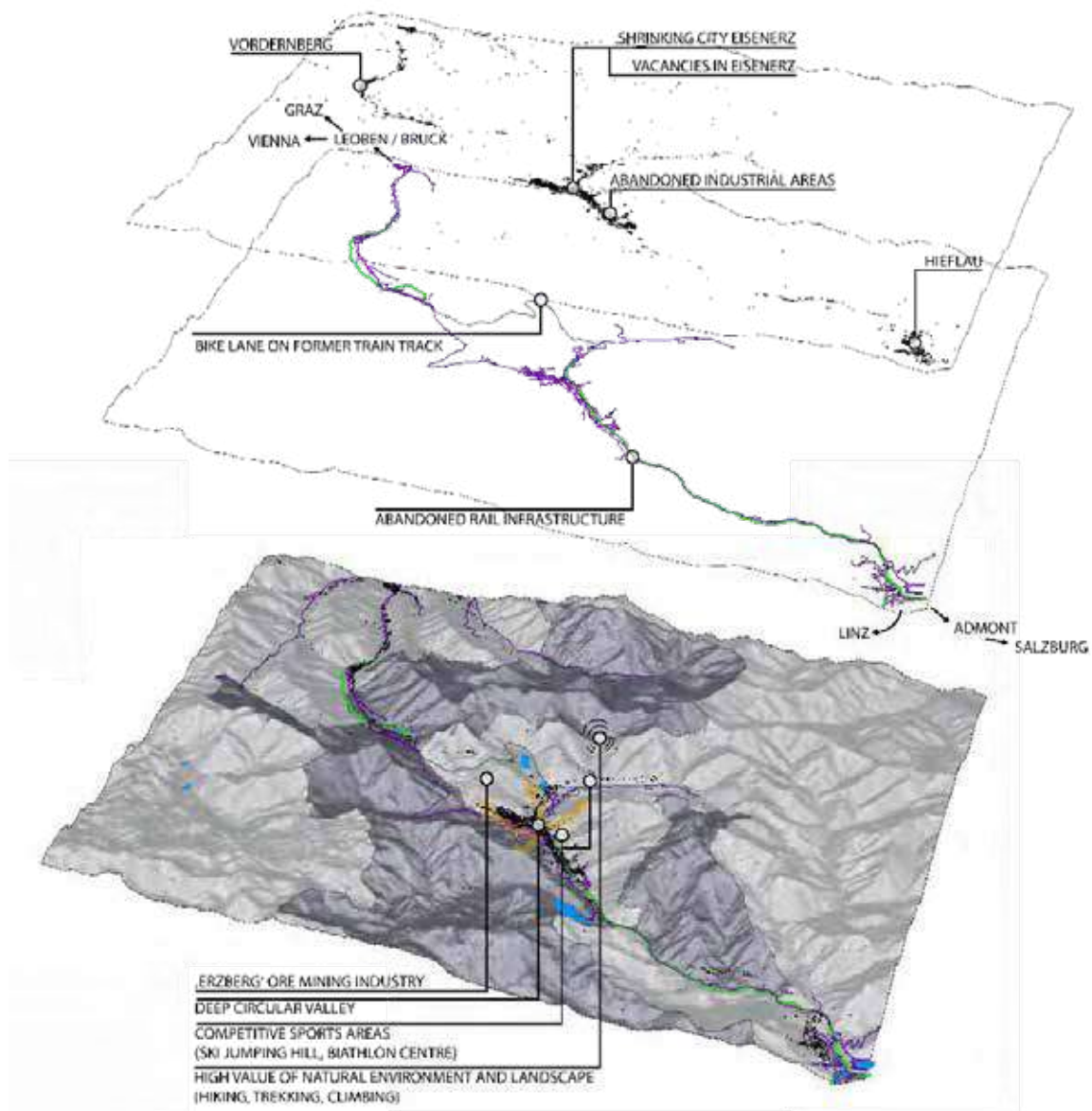


Figure 3: 3D-modelling as method for the spatial analysis showing the valley of Eisenerz and the main challenges, source: TU Wien, Julia Forster, 2019

Beside desk-research on the mentioned analysis topics, on-site research was essential for this first phase in order to experience the local and regional conditions and peculiarities with all senses. First impressions about possible strengths and weaknesses can be perceived, the contact to local or regional actors and the population can be produced and experiences in the participation in the life in the region can be collected. The project consortium visited the municipality Eisenerz and the pilot site Münichtal two times before the development of possible future pathways. Within these on-site researches, a first contact to local stakeholders has been established.

Qualitative interviews and discussion rounds, a visit of the buildings on the industrial site and a strolling around the town served to gather initial information. A photo and video documentation as well as 360° photographs were produced, to reflect and discuss the findings afterwards.

After the analysis of the different topics with various methods, the interdisciplinary team brought all the results together to find out the key problems and challenges (see Figure 3 and chapter 1.4). The project consortium established a first set of methods of different domains. This set should be transferable to all the other regions, but can be adapted in order to address the specific regional/local needs.

2.2 Building possible pathways for future development

Following the analysis phase, various development paths were developed for the Münichtal pilot area. After an initial brainstorming of the project team on possible future uses of the area, two main directions for transformation emerged - "de-construction" and "re-construction" (see Figure 4).

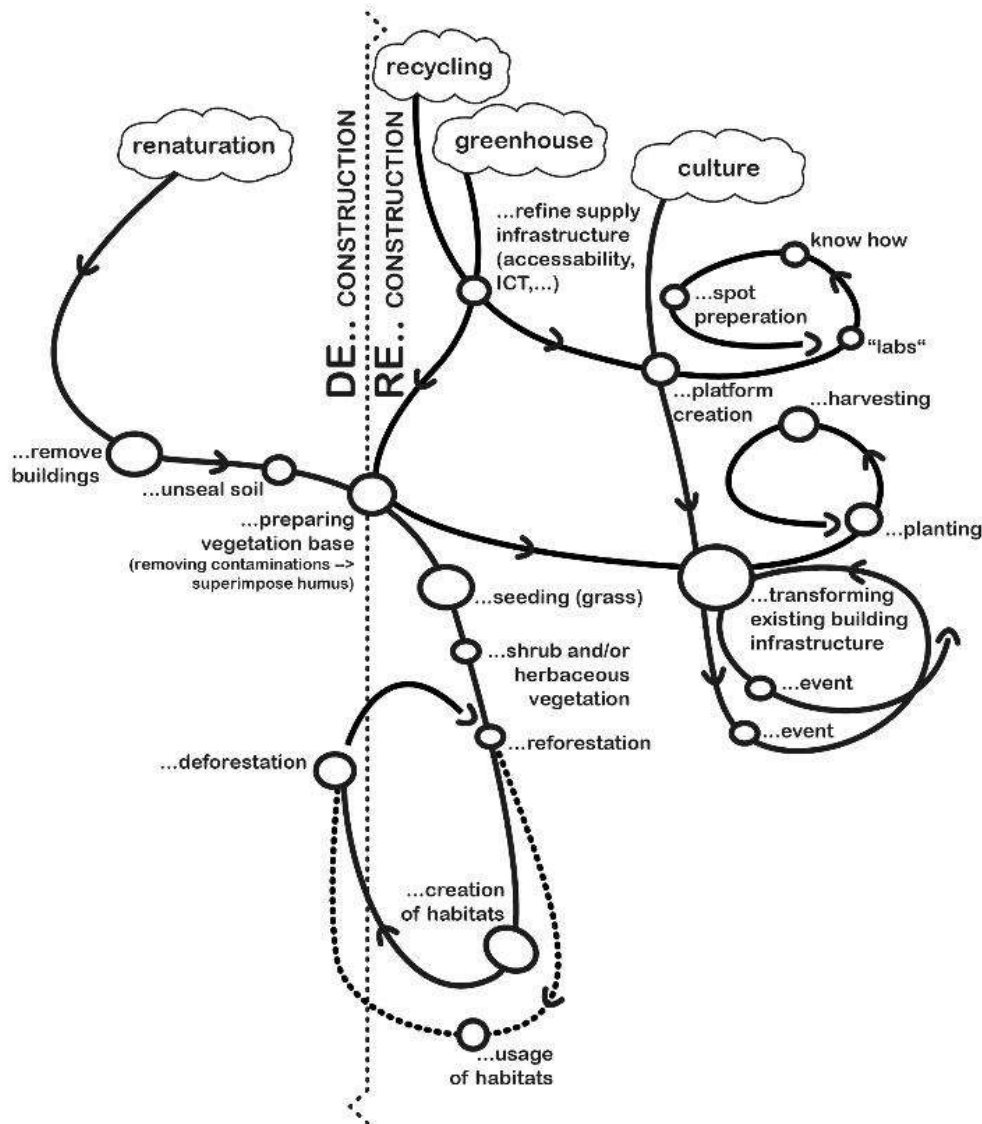


Figure 4: main directions "de-construction" and "re-construction" for the transformation of the site, source: TU Wien, Julia Forster, 2019

Figure 4 illustrates possible pathways within these two development directions for the pilot site in Eisenerz. A precise differentiation within these development directions is not possible. The elaborated pathways rather describe development approaches bridging, combining and interlinking the direction of deconstruction with the direction or single elements of reconstruction (e.g. soil remediation, planting, etc.).

The direction of deconstruction describes a stepwise dismantling of the existing building stock and uses. Thereby the quality of life of remaining residents as well as affordability are important markers for sustainable future developments.

The direction of reconstruction describes new usages and transformation of the existing building stock and the whole area. Possible resumption of former usages or completely new uses might include transformation and adaption as well as addition of buildings and building parts.

After this initial brainstorming and the elaboration of two basic directions of development, the different ideas generated were put into practice on several scale levels - at regional or municipal level, at pilot area level and at building level.

This multiscale approach was an important step in the idea generation process. It quickly became clear which possible future uses in the former industrial halls would be possible and for which the area and the halls are rather unsuitable. The comprehensive consideration made it possible to assess the effects of the future use ideas on the community and region.

The ideas ranged from cultural, tourist and industrial uses to unusual, utopian ideas for use. Here are a few examples: Use of the empty halls as film studios, as production halls for wood-based materials, as art and exhibition halls, as indoor sports centres, as apprentice training centers or as halls for urban farming.

Out of all these ideas and after several discussion rounds and under consideration of the analysis results to the local and regional circumstances, the project team decided to suggest three different pathways for a future development of the pilot site. Some important fundamental thoughts occurred:

- the usage of local and regional resources should be considered - usage of ore, wood, craftsmanship, knowledge
- a connection to the regional education and research cluster should be established to use local knowledge – the site could be a research and education spot with a special focus on product development, product testing and industrial fabrication; focus on special vocational education as complement to academic facilities in the region (Montanuniversität Leoben, FH Kapfenberg, TU Graz – important universities in Styria)
- a focus on processes, products and (local) materials should be given – e.g. processes/products related to ecological energy production, processes/products concerning the building industry,
- a focus on recycling is useful and beneficial - product life cycles, upcycling, re-use of materials within the existing abandoned building stock, research of building conservation technologies - using vacant local buildings as test area, a recycling company is already located on the site
- a focus on interdisciplinary collaboration can be an advantage – use of buildings as co-creation space, shared workspaces

Out of these fundamental thoughts, the mentioned three pathways have been elaborated:

Pathway “Back to nature”:

The photomontages (Figure 5 to 7) show a complete deconstruction of the area towards a near-natural use (meadow/pasture, forest).

Due to the infrastructure installed (pipes, canals) and the previous uses on the site, it can be assumed that extensive soil remediation measures would be necessary for these pathway. Figure 5 shows a variant, where only the buildings are dismantled, recycled and disposed. Existing infrastructures (pipelines, traffic routes) will be retained. Without further measures, the areas will be "reconquered" (within a few years) by pioneer plants.

Figure 6 and 7 show deconstruction variants aiming at a short- to medium-term agricultural or forestry use of the land. For this purpose, the technical infrastructure (pipes, traffic areas) must also be removed and the surface layer be replaced.



(f.l.t.r.) Figure 5: deconstruction with no further measures of renaturation, source: TU Wien, Julia Forster, 2019; Figure 6: deconstruction with renaturation - soil remediation - grassland, source: TU Wien, Julia Forster, 2019; Figure 7: deconstruction with renaturation - soil remediation - forest, source: TU Wien, Julia Forster, 2019

Pathway “Greenhouse”:

The pathway “Greenhouse” opposes shrinkage (in means of the shrinking city) with growth (in means of growing plants). The spacious hall areas on the site as well as good freight transport connections offer potentials for industrial plant breeding and sustainable ecological food production. For example, mushroom cultivation (with the local raw material wood as a carrier material), other fruit or vegetables as well as medical plants and herbs can be produced on an industrial scale. The spacious halls allow controlled conditions of growth and protection against intruders. The supply of water can be ensured via storage basins for slope and precipitation water.



Figure 8: pathway “Greenhouse” - usage of the industrial site as a place for growing plants, source: TU Wien, Julia Forster, 2019

The sewer system is designed for large flow rates. The controllable ventilation and lighting required for optimal growth and predictable harvesting is guaranteed by the existing electrical infrastructure supply. Figure 8 shows the spatial transformation and developments for the outlined approach of industrial agricultural use on the site.

Pathway “Recycling”:

The pathway “Recycling” introduces a new concept dealing with the city of Eisenerz as a living lab for building element recycling processes as well as new technical methodologies for the preservation and renewal of decayed or destroyed buildings (e.g. due to natural hazards). In close cooperation with regional research institutions, the regional construction and timber industries, a competence center and platform for deconstruction, recycling and re-utilization of buildings and settlement structures is elaborated. Figure 9 sketches a spatial concept of the transformation of the analyzed pilot site, creating the spatial environment for the research and industrial platform. Within the “Redesign Eisenerz” concept, a concept which deals with the deconstruction of residential buildings in the shrinking city, already mentioned spots of deconstruction become first living labs. So the city is understood as a source of raw materials as well as a test laboratory to develop procedures and methods for the recycling of building parts/buildings, for the repair of damp/damaged building materials and for the transformation of brownfield settlements into functioning spatial structures. Through these processes, a supra-regional showcase and competence center will be created, which will act as a trigger for sustainable regional value chain.



Figure 9: pathway “Recycling” - using the pilot site and the existing building stock in the city as living lab for research on the recycling of materials, source: TU Wien, Julia Forster, 2019

For the last two pathways, the conceptual integration of the existing institutions for vocational training, education and research within the region is essential for sustainable long-term development cycles. Therefore the existing resources of the region (raw materials, skilled workers, outputs and know-how of regional organizations) are further pathway- overarching drivers in strategic considerations and developments.

These three pathways/ideas for the brownfield transformation serve as a discussion base for the stakeholder workshop. The pathways should build a basis for the creation of new ideas. Topics can be added, combined or removed. The pathways should not be seen as project proposes, but should stimulate the discussion with the local stakeholders.

The approach of building different, in a sense also provocative or utopian pathways is an experimental approach. By testing and discussing the ideas and their advantages and disadvantages for the site, the municipality and the whole region, suitable transformation ways can be found or at least help to find a future direction.

2.3 Involvement of the stakeholders

As mentioned in chapter 2.1, some stakeholders have been involved in the development of the process already during the analysis phase to gain information about the local conditions and challenges in Eisenerz.

To involve the stakeholders more intensively in the development of a transformation process for industrial brownfields, the project team organized a stakeholder workshop in Eisenerz. Important local and regional actors from different professional fields have been invited - representatives of the municipality Eisenerz, owners of the different sections of the pilot site, representatives of the government of Styria, former workers of the site, local planners, regional development agencies, historians, local citizens and students and representatives of cultural and tourism associations. This interdisciplinary mix allows to gain information of various professional and personal backgrounds.

The stakeholder workshop took place in three rounds. The first round was a plenary session, where the stakeholders were introduced to the trAILS-project, the aims of the workshop and the suggested and elaborated transformation pathways.

The second round formed the core of the stakeholder workshop. The participating stakeholders were separated in three groups on three different tables. Each table had the same basic materials for discussion at disposal. The stakeholders have been separated by their professional background and their relation to each other and brought in their perspectives on the topic of industrial brownfields and the pilot site Mönichtal.

On each of the three tables the following main questions have been discussed:

- What do the stakeholders associate with the topic of industrial brownfields? Have they already dealt with industrial brownfields in their professional field?
- Which of the presented pathways were the stakeholders interested in? Which aspects did they like, which not? Which topics/issues did they miss?
- What are their own ideas for the transformation of the pilot site? Which impacts arise with these new ideas for the site, the municipality and the region? Which actors or organizations are needed for these new ideas? Which timeframe can be set for the implementation of the idea?

After the round-table session the participants came back to a plenary discussion, where all the findings and important aspects of the three tables have been presented. The discussion included important topics for the site and the municipality of Eisenerz, local stakeholders and citizens had the chance to talk to each other under the guidance of the project consortium. A fruitful discussion arose, and many of the participants got to know each other for the first time within this workshop - and this is one of the most important results - the “trAILS” project started a discussion process between local and regional stakeholders.

2.4 Planning recommendations

It turned out that the discussion groups on the three roundtables had different foci due to their professional field and interest. One group mainly dealt with the recycling pathway, one focused a bit more on a possible touristic and cultural use of the site, the third group discussed alternative industrial uses.

After a final discussion round the following ideas and aspects, independent from the preferred pathway, can be recommended for the transformation of the industrial brownfield test site in Eisenerz:

- the environmental and touristic compatibility and the ecologically and economically sustainability within the transformation process is the topmost priority
- the usage of local resources (ore, wood, space, natural environment, knowledge) should be forced



- the diversification of economy is necessary - not only looking for big companies like in past days, but trying to attract small and medium sized enterprises can be useful
- the transformation process has to be seen as a long-term development, profits will happen at different times (maybe not in the first years, but after some time the transformation projects can bring profit)
- the unique selling point is the size of the site - the large halls can be attractive for uses that need much space
- a combination of different pathways was seen as good way for a future development - e.g. deconstruct and renature parts of the site, new use for the remaining parts; combine small cultural uses with focus on industrial heritage and industrial use; mix different sectors
- research and education institutions should be seen as an important resource and actor, all kind of future uses can be linked to education (life-long-learning)
- elaborating an investor-brochure was seen as an essential step - the site and the vacant halls need a good marketing strategy and advertisement to call the investors' attention
- an awareness raising process for the local community has to attend the transformation process, only then the acceptability of the inhabitants will be ensured
- thinking of deconstructing parts of the site should be allowed (deconstruction is often seen as the worst-case scenario), because not everything can be preserved for the future - but, characteristic and unique structures should be preserved as they propose a great potential of the municipality/region and give the place its identity
- because of the huge number of owners, it needs a provider or an operator on the site, somebody who coordinates the different actions on the site (umbrella organization)
- the municipality needs an official pathway (currently they develop one) - this clear direction will be helpful for the transformation process too

3. Conclusion and prospects

Some elements of this first developed process turned out as very useful and expedient for the project aim and can be transferred to the other pilot regions.

The set of analysis methods of different domains was useful to get a holistic view of the problems and potentials of the pilot region and site. Different analogue and digital tools have been applied - e.g. statistic data analysis, qualitative interviews, GIS based spatial analysis, 3D-visualizing and -modelling - by using different format for processing the results (words, images, numbers). The on-site research was probably the most important step in this analysis phase. Suitable transformation ideas can only be elaborated after getting to know the local conditions with all senses. A multiscale view on the problems, challenges and potentials is essential to elaborate sustainable and useful transformation ideas. Designing these ideas and concepts can be seen as an essential step in the process - due to this communication base concrete discussion results can be gained.

Many of the analysis elements (see chapter 2.1) can be analyzed in the other pilot regions as well. Due to the interdisciplinary approach a holistic and integrated view on the potentials and problems on various scale levels can be generated. Stakeholders often have just one specific view or interest on the transformation possibilities - investors and owners concentrate on an economically efficient way, the municipality tries to integrate the site transformation in the development concept of the whole municipality, inhabitants have many different ideas but not always the appropriate information about the site. These perspectives can be brought together in an interdisciplinary workshop, like the "trAILS" project has shown. With the expertise of the project consortium and the knowledge of the local and regional stakeholders the necessary information for starting a transformation process can be collected.

It is very important to involve the stakeholders as early as possible in the process. Only then the local actors can prepare themselves for discussing about the topic of industrial brownfields, as most of them do not directly deal with this issue in their daily professional life. The participants of the process have to

be as open-minded as possible and should try to switch in other's perspectives and interests on the issue. It needs a lot of imaginative power to open to the different suggested pathways, as it is sometimes difficult to detach oneself from a worn image. The visualization of the pathways (see chapter 2.3) was a great help within this step.

The project consortium currently develops concrete planning recommendations for the pilot site Eisenerz. These recommendations should help the stakeholders to develop further transformation ideas and projects by assessing the most important information about the local and regional conditions and by using the resources of the newly established stakeholder network.

The described procedure is an iterative process and will be tested in the three other pilot regions of the project "trAILS" in the next one and a half years - always looking back to the previous processes and trying to learn from them and adapting the process components. Although the pilot regions are different in their local conditions and industrial uses, some key criteria can be identified. At the end of the project, a process should be set up, which helps municipalities and local stakeholders to deal with the transformation of industrial brownfields.

At the same time, a prototypical, web-based platform will be developed over the course of the project, in which the locations of the industrial brownfields can be represented on different scales by locating the pilot regions and areas in GIS, subsequently converting them into a geo-json file format and implementing them in the web environment. In addition, important analysis results and transformation ideas can be implemented in different formats (texts, images, numbers, tables or geo-objects in the web map). The platform is password protected and access can be granted at any time. This form of data storage is very sustainable as it is permanent, can be extended at any time and can be accessed from anywhere.

The developed process and the web-based platform should help municipalities and local/regional actors and interest groups on the one hand to deal with the transformation of brownfields and on the other hand to draw the attention of the federal and state governments to the topic of brownfield sites. The project shows how an overview of brownfield sites in Austria and the entire Alpine region can be established and how the necessary technical environment and relevant information can be developed.

The web-based presentation of results enables the transfer of the developed future pathways to other regions. This allows stakeholders in these regions to develop ideas and initiate discussion processes on the future use of brownfield sites too and enables a more sustainable use of industrial brownfield sites and the existing development structures in the sense of economically and ecologically sustainable development.

4. Acknowledgements

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Figure 10: project logo "trAILS - Alpine Industrial Landscapes Transformation", source: trAILS, 2018

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Let's Talk About Change

Experiences from a video exhibition confronting the public with urban and landscape transition by revisiting the original sites of relocated historical museums buildings to view these sites in their current state

Abstract

Between 1985 and 2015, settlement areas in the densely populated parts of Switzerland increased by almost one third. Whereas Switzerland still perceives itself as “Heidiland” (referring to Johanna Spyri’s novel), expected to attract tourists with its beautiful landscapes and charming small towns, the country has been transformed into an urban landscape dominated by conurbations. In the 2010s, several ground-breaking (direct democratic) popular initiatives linked to landscape issues were launched and received the majority of the vote. The will to control further expansion of settlement areas exists and the transformation of built heritage and landscapes is present on the national political stage, but the perception of change is still difficult to express. However, dealing with landscape transition and developing local planning concepts accepted by the people requires talking about change more site-specific.

In 2016, the authors organised an exhibition at the Swiss open-air museum Ballenberg. It presents more than 100 historical farm buildings from all over Switzerland, which had been relocated from their original sites for various reasons, from construction of new residential or commercial buildings to infrastructure projects, and original sites today cover urban, suburban and peripheral locations. Videos of the original sites of 14 selected Ballenberg buildings were produced in order to present these sites of origin as they appear today. The videos, which were presented in the respective museum buildings, confronted the visitors with the historical buildings – still in existence, but relocated – and the current condition of their former sites. A special visitor’s centre provided an opportunity to find out more and to discuss the topic of change with volunteers.

Experience gathered from this exhibition will be presented, giving an insight into the quality of the visitors’ debate initiated by the videos and reflecting on the impact of these findings in dealing with landscape transition in the future.

Introduction

Switzerland is a country rich of mountains, woods, valleys, lakes and rivers. The natural beauty of the landscape and its preservation became a national concern in the late 19th century, which was in line with a wider European movement. In the wake of the industrial revolution, in several European countries the awareness for the protection of historical sites and the conservation of landscapes was risen and finally several national associations were founded, for example in the United Kingdom the *National Trust for Places of Historic Interest or Natural Beauty* in 1895, in Germany *Bund Heimatschutz* in 1904, and in Switzerland *Schweizerische Vereinigung für Heimatschutz* in 1906. This international movement was linked to the new social class of intellectual bourgeoisie that distinguished itself through education in the humanities, literature and science, and was deeply rooted in the idea of the

Enlightenment. The awareness of the beauty and of the peculiarities of landscapes even became a means of identity formation on a regional and national level.

In 1881, Swiss author Johanna Spyri published her famous work of children's fiction *Heidi*, which not only became the fundament for a general Swiss Myth and was translated into many languages, but is strongly linked to this bourgeois movement of landscape conservation.

Switzerland is a comparatively small country within Europe with a comparatively high demographic dynamic, i.e. the total population has increased by 60% since 1960. Linked to the increase of the total population is an increase of settlement areas. In Switzerland, around 85 percent of the population lived in urban areas in 2015 and only 15 percent in rural areas (BfS 2014).

Land use in Switzerland is regularly surveyed by the national area statistics. The first survey took place between 1979 and 1985. Since then, two more surveys have been completed and a fourth survey is available in part. Between 1985 and 2009, settlement areas increased by 24%, increasing their share of the total area of Switzerland from 6.0% to 7.5% (Bundesamt für Statistik 2013). Between 1985 and 2015, settlement areas in the densely populated parts of Switzerland increased even by one third. The development of the settlement was closely linked to the expansion of the transport routes – and this was accompanied by the fragmentation of the landscape.

The separation of building zones and non-building zones (i.e. “landscape”) is one of the fundamental principles of spatial planning in Switzerland. One of the main aims of this separation is the protection of the landscape. The non-building zone is mainly the agricultural zone in which the production of food, but also biodiversity and recreation play an important role. Building permits in the agricultural zones (or more precise non-building zones) are subject to strict limitations, which are laid down in Article 28 of the Federal Planning Act. However, areas occupied by buildings in the non-building zones (i.e., agricultural zones or “landscape”) have increased by 21% throughout Switzerland over the past 25 years. The increase in area is due in particular to buildings linked to agricultural use (farm buildings) as well as detached and semi-detached houses. The number of dwellings in the non-building zones are highest in the rural communities. In the agricultural communities, every fourth dwelling is located in the non-building zones (Bundesamt für Raumentwicklung 2016). Today 590'000 buildings, i.e. 20% of all buildings in Switzerland, are located in the non-building zone. And, what farmers build, can look like an “industrial zone”: for example, large-scale glass houses, horse stables for horse pensions, silo installation. These figures demonstrate that landscape in Switzerland is under pressure. This situation is a result of, first, the fact that the federal planning act was not enacted until 1980, i.e. many buildings already existed when building in the non-building area was finally permitted on the federal level, and, second, the federal planning act has been amended and supplemented several times over the years, with the restrictive regulations being relaxed.

Traditional buildings in non-building zones, which are no longer used for agriculture today, are often very old. They bear witness to centuries of use and form an important part of the architectural heritage. They are of great importance not only for landscape aesthetics but also from a socio-economic point of view. There is currently discussion how heritage buildings could be converted to support the demographic and economic stability of eroding mountain regions (shrinking villages) without risking the loss of historical structures or negative impacts on the landscape (e.g., expansion of traffic infrastructure).

Moreover, urban densification, one of the main goals of Swiss spatial planning, is always linked to building new structures and, therefore, in urban environments affects built

heritage that carries specific information about the history of a location and thus strengthens the distinctiveness and the identity of a place.

Both aspects, i.e. transformation of built heritage in declining rural and built heritage under pressure in the context of urban densification are part of current debates.

Landscape, Landscape Protection and Swiss Identity

In his publication *Houses and Landscapes of Switzerland*, published in 1959, ethnologist Richard Weiss stated that the concept of landscape serves to "relate the village in its manifold ties to man and nature" (Weiss 2017: 316). Weiss regards man as a "cultural carrier and creator" and therefore distinguishes the natural landscape, which is untouched by man, from the cultural landscape, which was and is shaped by man. Already a decade earlier, Armin Meili, architect and pioneer of Swiss spatial planning, demanded in his 1945 publication *Zurich Today and Tomorrow*: "We don't want to let any crowding arise in our country. Switzerland should remain the home of personal freedom" (Meili 1945). Armin Meili's goal in spatial planning was the "decentralized metropolis". With this settlement strategy he wanted to counteract the unintended growth of few large cities. According to Armin Meili, the moderate further development of small and medium-sized towns and the construction of new settlement units separated by green corridors were intended to prevent the undesirable emergence of one huge urban area reaching from Lake Geneva in the west to Lake Constance in the east of the country. Journalist Rudolf Schilling (1975: 663) stated that the idea of landscape protection was of great importance for the development of Swiss federal spatial planning: "The impetus for federal spatial planning and with it landscape protection came from the affront to people's eyes".

In Switzerland, the protection of the landscape was a very early popular concern and in the beginning was mainly related to aesthetical and cultural reasons. In 1962, Swiss voters agreed on a federal constitutional amendment on the protection of natural and cultural heritage and only a few years later, in 1966, the respective act was brought into force. However, the constitutional amendment (1967) and the act (1980) on spatial planning followed comparatively late compared to other European countries because direct-democratic political processes delayed this very complex issue. During the decades of political struggles for a Swiss federal planning law, landscape protection was one of the main drivers in the political debate.

In 2007, a groundbreaking direct-democratic popular initiative was launched on the national level that was entitled *Landschaftsinitiative* (Popular initiative for the Landscape). The initiative answered nationwide protest that came up when in 2004 the authorities of the Canton of Fribourg had reclassified 55 hectares of farmland as an industrial zone in order to attract an US-biotechnology company. This decision by the government of the Canton of Fribourg, which was in conflict with the federal spatial planning law, brought the weakness of execution of legal planning instruments to the public's attention and resulted in a major nation-wide protest.

The initiators of this popular initiative wanted to limit the continuing urban sprawl in Switzerland, the destruction of the landscape and the resulting loss of cultivated land. This initiative dedicated to the protection of the landscape received major support by voters and finally forced the government to revise the then existing federal spatial planning law. This revised law was accepted by Swiss voters in spring 2013. With this revision the limits for further settlement development were appreciably strengthened. After decades of rising public concern on landscape protection – fuelled, among others, by the *Heidi* Myth – finally

public opinion and with it voters' concern on the protection of the Swiss landscape, on the prevention of uncontrolled extension of settlement areas and with it further deterioration of the remaining landscape, became a decisive factor for the future of Swiss spatial planning. Only one year before, in March 2012, Swiss voters had already imposed restrictions on the construction of second homes in Switzerland by voting in favour of the popular initiative entitled "Stop the Endless Construction of Second Homes" that limits the proportion of second homes in municipality to a maximum of 20%. As a result, municipalities (especially in the mountain regions) with more than 20% in second homes are not permitted to build new second homes. On 1 January 2016, the law on Second Homes entered into force. The main goal of this initiative was to prevent further loss of landscape.

In the Canton of Zurich, which is the economically strongest region in Switzerland, in June 2012 another popular initiative called „Kulturlandinitiative“ (Popular initiative for the protection of arable land) on the cantonal (not federal) was accepted. This initiative demanded that the agricultural land should be effectively protected by the canton in terms of total area and soil quality. Though this initiative was accepted by the voters in 2012, in 2016 voters rejected the revision of the Planning and Building Act (PBG) that would have been necessary to ensure that according to the aims of the „Kulturlandinitiative“ an equal area replacement had to take place when arable land is zoned into a building zone.

Again, in 2019 in a nation-wide popular initiative voters rejected the so-called „Zersiedelungsinitiative“ („sprawl initiative“). This initiative had aimed that for each new building zone elsewhere a piece of existing building zone of the same size has to be reclassified to an agricultural zone. Both government and parliament had opposed this initiative, arguing that the 2013 revised Spatial Planning Act already effectively limits further urban sprawl.

Meanwhile, in 2019 a new (second) Landschaftsinitiative (Popular initiative for the Landscape) is launched which again aims to protect landscape from further sprawl. To this end, clear regulations are to be anchored in the constitution. Within the zone reserved for agriculture, the number of buildings and the area occupied by them should not be allowed to increase any further. Construction of new buildings within this zone would thus have to be compensated by the demolition of other buildings.

The background of this second „landscape initiative“ (following the first that was launched in 2007 and that resulted in the 2013 revision of the federal planning act) is that this 2013 revision of the planning law postponed the subject of construction in the non-building zone (e.g. farm houses or glass houses for vegetables, but also horse boarding) to a later, further revision of the federal planning act. However, this second revision of the law has not yet taken place, and, therefore, several environmental associations have launched this second „Landschaftsinitiative“.

In sum, we can state that during the last 15 years Swiss people (respectively Swiss politics and voters) have launched a series of popular initiatives related to landscape protection and the prevention of further uncontrolled urban sprawl. As a result, landscape and heritage issues were very present in political debates and the media.

Perception of landscape in Switzerland

The 2013 study "New Approaches to the Assessment of Landscape Quality" (Bundesamt für Umwelt 2013) is part of the Swiss landscape monitoring program LABES and was conducted by the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL). The landscape monitoring program LABES documents and assesses the state and development of the landscape in Switzerland using various quantitative indicators. These are based on a



comprehensive understanding of the landscape analog to the European Landscape Convention. The indicators therefore record landscape quality both in physical terms and in terms of public perception. The 2013 study is based on several indicators for the perception of the landscape by the population. We will refer here to three of these indicators: (1) "Peculiarity of the landscape" describes whether a landscape stands out from another in the perception of the population due to its specific character and whether a landscape is able to establish a reference to the past. (2) The indicator "fascination" describes the extent to which a person's attention is drawn to the countryside. Fascination contributes significantly to the attractiveness of a landscape, influences the length of stay of people in a landscape and is part of the recreational quality. (3) The indicator "authenticity" describes how landscape elements are judged to be appropriate to the site in terms of their authenticity, for example, regionally significant landscape elements (e.g. cultural monuments, waterfalls) or nationally important symbols (e.g. Matterhorn). For all three indicators, the assessment of the landscape by the population is more positive in the Alpine regions than it is both in the Italian-speaking southern part of Switzerland, which is dominated by narrow valleys with a high degree of urbanization and dense infrastructure networks, and the intensive urbanized Swiss Midland (*Mittelland*).



Magadinoebene, Ticino (Valley in the southern part of Switzerland), © ETH Bibliothek, Com_FC17-6512-001

In Switzerland, there are hardly any places that have not been altered in any way by people and in which no man-made buildings and structures can be seen. Most of these areas are located in the Alpine region. It is therefore not surprising that the perception of the landscape is most positive in the Alpine areas. More general and in line with this differentiation by regions, people who live in an agricultural area perceive the landscape of their own region most positively in comparison to residents of other types of communities. Due to the 2013 study by WSL rural communities are generally perceived as beautiful, and in terms of their complexity and authenticity they also perform well from the point of view of their inhabitants. The landscape is perceived most negatively in suburban areas, i.e. more negative in suburban than in urban areas (Bundesamt für Umwelt 2013).

Moreover, regions that consist of a high percentage of valuable landscapes that are listed in the Federal Inventory of Landscapes and Natural Monuments (BLN) are perceived more positive by its inhabitants than others. The Federal Inventory of Landscapes and Natural Monuments (BLN) describes the most valuable landscapes in Switzerland. Its aim is to preserve the diversity of Switzerland's landscapes and to ensure that the characteristic features of these landscapes are preserved. In these BLN areas, differentiated protection objectives aim the better consideration of nature and landscape values in the decision-making procedures on both the federal and cantonal level (Bundesamt für Umwelt 2013).

This 2013 study shows that the perception of the landscape is closely linked to references to the past and that regions or “landscapes” with high urbanization dynamics in recent decades are perceived negative by the inhabitants. Instead, areas which are classified as “deserving protection” and which are part of the national inventory of valuable landscapes exhibit an above-average positive perception.

Swiss Open-Air Museum Ballenberg and Swiss Landscape

In 1968, a foundation was established with the purpose to bring into existence and to operate a Swiss open-air museum. In 1978, the Swiss Open-Air Museum *Ballenberg* opened its doors and today presents 110 traditional rural buildings from all regions of Switzerland on an area of 66 hectares near the town of Interlaken. Most of the buildings are farm houses, but also stables, barns, blacksmith's shops, a cheese dairy, a brickyard, a sawmill, among others. These buildings that are built heritage are surrounded by vegetable gardens, meadows, pasture, and 250 farm animals ranging from rabbits to horses and oxen. Today the museum is a very popular destination for families, school children and tourists (with an average of 210,000 visitors per year, 20% of them tourists). Together, the 110 buildings and their surrounding are representing traditional Swiss landscape and Swiss built heritage. This museum is deeply rooted in Switzerland's national identity and is strongly linked to the *Heidi* myth.

All the 110 buildings in the *Ballenberg* museum used to be located in very different parts of Switzerland and found a new home in the open-air museum. At their original location, the museum buildings had to give way because their original location was used for new purposes and they had to give way to construction activities. A few of them very pro-actively collected in order to preserve them in the museum. Even though the reasons for moving the building to the museum are quite individual for each house, the *Ballenberg* houses have one thing in common: settlement change, landscape change and new economic activities (for example, industrial or commercial instead of agriculture, or new economic systems, e.g. milk pipeline to a dairy in the valley instead of alp cheese dairy) have left a deep mark on their “biographies”. Their continued existence in the *Ballenberg* museum is closely linked to the fact that the “face” of Switzerland has changed deeply since the end of the Second World War – and will continue to do so in the future.

In 2016 the museum presented as a special exhibition fourteen short films revisiting the original sites of fourteen selected *Ballenberg* buildings to see how these original locations look like today and why these buildings had to be moved from their original locations, providing an excellent illustration of how Swiss settlements have changed over the last fifty years. Both the idea for this exhibition and the implementation of the project came from the authors of this paper who also evaluated the response of the visitors.

The exhibition in 2016 presented the 14 films in the respective house or with an outdoor screen in front of the house if a presentation of the film inside the house was not possible. In the individual films, short sequences were also presented showing the building in its present state in the museum in order to create a recognition effect. The films were conceived in such a way that only original sounds from the original location could be heard, but no commentary. In this way, the films could be understood independently of the language of the viewers, and, as a side effect, the change of noise regimes (compared to the museum that does not allow motorized traffic) as urban location appear louder due to traffic noise). During the presentation of the films as the museum's annual theme for 2016, there was an educational center in the museum where all 14 films were available. In addition, a member

of the museum's staff was present for questions and discussions. In this center there was also additional material available for the 14 houses, which provided maps and pictures and also information about the current situation at the locations or the houses' history. Here, special educational material was also available for children and young people. The films have been included in the museum's permanent exhibition since 2019.

Finding the *Ballenberg* houses' home locations

At the beginning of the project there was the search for the exact former location of the 14 houses. The authors of this article carried out the search for the location and attended the video shooting and consulted the video production, i.e. they visited themselves all the original locations and therefore were able to analyze them with regard to the current state of affairs.

The shooting for the videos at the former locations of the *Ballenberg* houses was preceded by a site visit. Here planning documents and historical photos were helpful to find the *Ballenberg* house's original location. Not in all cases it was possible to determine the former location with the necessary precision based only on the museum archive's documents. This made it necessary to consult further historic references in order to determine the exact original location of the houses. This necessity resulted in an exciting search, which provided interesting insights. Historical aerial photographs were an important aid in this search. As revealing as the historical and current aerial photographs may be for capturing the spatial context and as helpful as they may be for determining the original location, they cannot replace the experience of immersing oneself in the site's reality.

The changes on site since the move of the respective *Ballenberg* house to the museum are particularly radical when it comes to the impact of new built transport infrastructure buildings. In these cases, the visible traces are usually extremely limited. No less than four of the 14 buildings had to give way to traffic infrastructures. For example, the farmhouse from Lancy (next to Geneva), which dates back to 1762. If it would still be in its place of origin, it would now be in the middle of a huge tram depot hall not far from the *Stade de Genève* (sports stadium in Geneva). A maze of highways, railway lines and parking lots hardly give any idea of what it looked like in this place when the *Ballenberg* house was still at home here.

Even in the case of the old forge from Bodio (Ticino, southern, Italian-speaking part of Switzerland), the construction work for AlpTransit's Gotthard base tunnel, a railway tunnel opened in 2016 with a length of 57 km (35.5 mi), has changed this part of the valley so much that no traces of the old blacksmith's workshop can be found. A new "landscape" has been created here dominated by the new railway control center of the south portal of AlpTransit. The Chiasso freight station has taken possession of the old home of the Novazzano estate, which was located here before, but meantime has moved to the museum. Where the building itself once was located, there is now a communal recycling center. Only a small trace remains, as the lowering of the curb still reveals the location of the former entrance to the main building of the agricultural estate. The changes that were caused by the widening of Klausenstrasse (leading to the Klausen mountain pass) in Spiringen that was demanded by modern motor traffic and led to the relocation of a hay barn to *Ballenberg* are comparatively small.





The role played by *Ballenberg* and its houses for Swiss identity is shown by the fact that a copy of a house relocated to *Ballenberg* was erected at the original location in 2 out of the 14 cases. Due to the area needed by the new use, the copies are not located at exactly the same location as the original, but a few meters apart. In addition, in both cases it is not a 100 percent reproduction that was created, but rather slight modifications that took account of their new use in the restoration. The replica of the rope factory Unteraegeri (Canton of Zug) serves as a bicycle shed of a condominium complex. The Wellhausen granary, which once had to make way for a new residential building, was rebuilt by a neighbouring hotel as a honeymoon suite. And while the granary moved to *Ballenberg*, the related mill building in Wellhausen, 200 m away, remained. In Rafz (north of Zurich) no copy was made after the removal of the historical saw building to *Ballenberg*, but today a car repair shop with the same building dimensions can be found here.

With the increase in population and the increasing use of living space per capita, many new residential buildings have been built in recent decades. These can be the replacement of existing residential buildings, but also the new construction of entire housing estates. In Meggen (near Lucerne), the stable barn from the early 16th century gave way to a single-family house area. In Richterswil (near Zurich) a multi-storey apartment building has been erected on the site of the winegrowers' house that was moved to *Ballenberg*. In Unteraegeri (Canton of Zug) where in former times the rope factory used to be, there is now a large condominium estate located very close to the city center. A inner-city housing estate with a total of 100 apartments was built on the former communal maintenance depot in Aarau, which was moved to *Ballenberg*. Here the fire brigade that was closely related to the moved communal maintenance depot is left on the neighbouring area – analogous to the mill building that remained though the granary left Wellhausen. The two latter examples in particular are an example of the aim of the revision of the Spatial Planning Act 2013 for urban densification.

The 110 houses of the Open-Air Museum *Ballenberg* uniquely link Switzerland today with Switzerland's heritage and history. They also provide a glimpse of tomorrow's Switzerland and invite visitors to reflect on building culture and settlement development. With the 14 *Ballenberg* houses and the associated 14 short videos, which show the current situation at the former location of the houses, the *Ballenberg* presents fourteen windows from the rural cultural landscape of represented by the *Ballenberg* museum into today's urban and suburban landscape of Switzerland,. This enables the visitors to directly experience the changes in settlement of the past decades. These windows sharpen the visitor's awareness of the ongoing dynamics of the built environment and built heritage and invite them to reflect on Switzerland's natural landscape, cultural landscape and urban landscape. In this way, the experience of both the landscape and the built heritage during the visit in the open-air museum is not a stand-alone experience, and is not finished when visitors' leave the museum, but by relating the *Ballenberg* houses to the current situation at the former locations the experience gained in the museum also retains its significance in the urban landscape perceived in everyday life.

Building in the museum or historic site	Current situation at the original location
	
Bodio TI – blacksmith's shop	railway control center AlpTransit
	
Aarau AG – communal maintenance depot	Bicycle shed in condominium
	
Unteraegeri ZG – rope factory	Bicycle shed in condominium
	
Brienz BE	
	
Champatsch GR – cheese dairy	Modern cheese dairy with milk pipeline
	
Malvaglia TI	

			
Meggen LU			
			
Novazzano TI		freight yard Chiasso	
			
Rafz ZH – sawmill		Car repair shop	
			
Richterswil ZH			
			
Therwil BL			
			
Wellhausen TG – granary		honeymoon suite	

	
Lancy GE – farm house	Tram depot and repair shop
	
Spirigen UR – barn	Enlarged road to the Klausen pass

Experiences with the museum visitors' perception of landscape and built heritage

In three steps, the response of the museum visitors to the presentation of the 14 films and the topic of landscape change and urban dynamics in the *Ballenberg* museum was evaluated. First, the experience of the museum guides who were in charge of the information center in the museum that presented all of the 14 videos, gave additional information and opportunity for discussion and, in addition, offered museum pedagogy related to the theme addressed by the videos was evaluated. Second, a questionnaire evaluation was used to learn more about visitors' assessment of the exhibition. Third, museum visitors were asked how they perceive Swiss landscape and how they assess the experience of the visit in the *Ballenberg* museum and the videos concerning landscape and built heritage.

When we asked Swiss visitors what landscape means to them, we received the following answers: "landscape means living space", "landscape is the basis for all living", "landscape means to recover from living in the city", "landscape means nature", "landscape means *Heimat*"¹, landscape means recreation", "landscape means fresh air, recreation and time-out". Asked about the impact of their visit in the museum on their perception of landscape and built heritage, they answered: "a visit to the museum sharpens your perception"; "after visiting the museum one notices that in former times the houses were much more embedded in the landscape"; "after a day at the museum, one sees many things differently in the landscape"; "one becomes aware of how the landscape used to be"; "the visit to the museum makes clear that in former times the landscape determined the buildings and that today a building is built and the location is adapted to the building"; "Swiss landscape is controlled by man. There is almost no place left that has not been shaped by man".

¹ There exists no exact English equivalent of the German word *Heimat*. *Heimat* is often translated by „home“ or „homeland“, but both English words do not reflect the aspects of familiarity with a space, of security in a space. To speak with Johanna Spyri's novel *Heidi*: Heidi's *Heimat* are the Swiss mountains. That is where the girl feels well whereas the foreign city of Frankfurt, where her aunt sent her, makes the girl feel sick, homesick. *Heimat* includes an aspect that is related also to identity and mentality.

One fifth spontaneously declared Switzerland as a beautiful landscape, one fifth spontaneously complained about urban sprawl and a deteriorated landscape and one fifth did both, i.e. praise the beauty of Swiss landscape and at the same time complain about urban sprawl. These numbers exhibit the ambiguities people have about Switzerland and its landscapes and built heritage: though the Heidi myth of Swiss beautiful landscape is still deeply rooted, people are concerned about urban dynamics that result in urban sprawl and increasing built-up areas.

The questionnaire, in addition, revealed that the immediate reaction of the visitors to the real built environment found at the houses' original location that was presented by the videos was: "terrible", "depressing", "that's a shame", "how sad to see this change", "what a contrast". One of the guides who was present at different houses during 2016 museum season reported that the impact of the videos was especially high for houses where the change was very massive, i.e. location of the farmhouse in Lancy that now holds the huge tram depot in the middle of multiple infrastructures or the location of the farm house in Novazzano that now holds the freight yard in Chiasso and the communal recycling center next to it. Both are cases where the "banality" of the new urban situation is very striking. More positive was the reaction to examples where inner-city housing was the succeeding use.

Museum guides who had been in charge at the information center in 2016 when the videos were displayed next to or in the museum houses reported that they had many discussions with visitors. Though the main purpose of the information center was to give further information to the theme of urban development and its impact of Swiss landscape and built environment, these discussions with visitors often became very political discussions. Some people even wanted to share their anger about urban sprawl and landscape change, and anger that was not provoked by the exhibition, but an anger they brought with them to the museum. In this cases guides just listened and did not start disputes, but they soon recognized that it was very appreciated by the visitors to be just listened to. Many visitors were especially interested in houses originating from their home region. Visitors that came from one the towns holding one of the 14 houses displayed in the videos were particularly interested in discussing the theme of change and in having additional information.

Conclusion

The protection of the landscape has a long tradition in Switzerland and a series of (direct democratic) popular initiatives concerning landscape protection issues occurred during the last decades. Public awareness of landscape change, but also concern about the built heritage, is therefore relatively high in Switzerland as political debates and the media have extendedly touched these issues. The study on landscape perception carried out in 2013 showed that in particular the inhabitants of suburban regions and the southern valleys (Ticino) that both exhibit urban sprawl view landscape and landscape change in their region very critically.

Reactions from visitors demonstrate that Swiss people are very ambiguous concerning the perception of Swiss landscape. They still praise the landscape's beauty, but at the same time they complain about its deterioration. It seems that the landscape's beauty as an asset of the nation and a main element of Swiss identity is deeply rooted, although the long discourse about landscape deterioration and urban sprawl that was intensified during the last 15 years due to a series of popular initiatives has left its marks.

Without doubt the confrontation of museum visitors with built heritage and today's state of the built environment by using 14 examples that could be experienced by real-world built heritage and videos presenting the real situation at the respective original locations drove people to debate and talk about the transformation of built environments. Especially in case where one of the 14 houses originated from their home region or home town, this talk about landscape and urban transformation was very intense. This talking about urban change was not limited to facts and figures, but included also emotions and even anger. This exhibits, that emotions are essential elements of the perception of the built environment, built heritage and landscape. The visitors' perception of landscape was not only limited to aesthetics, but the evaluation of visitors' response to the *Ballenberg* exhibition made obvious that their perception of landscape is very wide and includes also aspects like livelihood, joy, and identity.

The preservation of built heritage and landscape is a very complex issue that is difficult to perceive and to debate. However, talking about these issues is very essential for a deep involvement that is prerequisite for the further political debate. The evaluation of visitors' response to the *Ballenberg* exhibition has exhibited that real and well-presented example that are drawn from people's home town or home region, i.e. the environment that is very close to their daily life, provoke the most intense debates about heritage preservation and landscape protection.

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The Influences and Implications of the European Capital of Culture on Intangible Heritage: Novi Sad 2021

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Abstract: As one of the most prestigious initiatives through which the European Union aims to promote richness and diversity of its cultures, the European Capital of Culture (ECoC) also holds an enormous potential for promoting urban regeneration and development. The aim of this paper is to examine the influences and implications of this program on the ways intangible heritage has been evaluated, treated and promoted. The focus is on Novi Sad, the capital of the Serbian province of Vojvodina, elected to be one of three ECoCs in 2021. Representing an example of transitional environment, it has experienced a shift from a socialist to a neo-liberal socio-economic framework that triggered a process of quasi-regeneration. However, during the bid for the ECoC title, urban heritage was (re)used as an important competitive advantage and local uniqueness. Both the Bid Book and implementation process have provided an interesting merging of tangible and intangible heritage, in which urban spaces will be used as a setting for promotion of urban brand through selected elements of intangible heritage. Consequently, the place identity was (re)created through images and narratives connected to European, national and local level, integrating place branding strategy, stakeholders (especially community) and urban policy.

Keywords: ECoC, heritage, regeneration, branding

Introduction

Since the launch of the program ‘World Decade on Culture and Development’ (1988-1998), the United Nations’ Educational, Scientific and Cultural Organization (UNESCO) started to strongly advocate for greater contribution of culture in national and international development policies. Along with the rising awareness of its development potential, the notion of cultural heritage considerably expanded in the following decades to encompass more than just monuments and the collection of objects. With the adoption of the ‘Convention for the Safeguarding of Intangible Cultural Heritage’ in 2003 (UNESCO, 2003), UNESCO divided heritage typologies on ‘tangible’ and so-called ‘intangible’

component, which assumes inherited traditions or living expressions, such as “oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts” (UNESCO, 2011: 3). However, contrary to clear division, cultural heritage remained characterized by deep-seated interdependence of its two major components, in which the fragile intangible cultural component became an increasingly important factor for maintaining cultural diversity and ensuring sustainable development in the face of growing globalization (UNESCO, 2003).

Being a supreme international body setting the standards in culture, UNESCO’s policies strongly influenced many other international institutions to start promoting similar initiatives. In 1985 the European Union (EU) responded to these emerging trends with the launch of the pilot project ‘European City of Culture’, transforming it to the project ‘European Capitals of Culture’ (ECoC) in 1999. Since then, more than 60 cities have held this prestigious title, which boosted their cultural, social and economic development. The title has also had a positive impact on the overall quality of life, strengthening the sense of community, attracting visitors and (re)gaining international recognition. During the recent years in particular, the increasingly competitive bid for the ECoC title initiated innovative and integrative approaches to both planning and policy-making of these challenging urban settings, influencing modifications of the outdated methods of heritage preservation, while stimulating public participation.

Due to numerous and diverse benefits triggered by the ECoC program, this European framework has become particularly interesting for urban governments in the formerly marginalized or disadvantaged contexts of ex-industrial and/or post-socialist cities, in need of thorough and effective restructuring. The focus of this paper is Novi Sad, the capital of the Serbian province of Vojvodina, whose identity represents an outcome of recent post-socialist, post-conflict and post-transitional turbulences. Following the fall of state socialism and the breakup of Yugoslavia, the hardships associated with internal conflicts and international isolation aggravated and postponed necessary socio-economic transformation, while international image and reputation of Novi Sad faced rapid deterioration. The conditions for re-inclusion of the city in international trends have been met only after the fall of the socialist regime in the year 2000, along with the shift towards the neo-liberal model of governance. However, planning practice, cultural management and heritage preservation remained characterized by a lack of transparency and quasi-regeneration that mostly aimed to satisfy the needs of the newly established real-estate market (Polić & Stupar, 2015).

The ECoC 2021 candidacy of Novi Sad represented the necessary trigger for reconsideration of its urban heritage as a competitive advantage, simultaneously enabling introduction of inclusive strategic governance on local level, as well as urban rebranding. This paper critically investigates the ways intangible heritage has been re-evaluated, treated and promoted during the drafting and implementation of the so-called Novi Sad European Capital of Culture 2021 project (NS 2021). The methodology relies on analysis of the objectives highlighted in the two most important strategic documents: the new Strategy of Cultural Development and the Bid Book for the ECoC 2021, along with the follow-up in the media and interviews with members of the Foundation Novi Sad 2021 - ECoC.

Novi Sad: Toward the European Capital of Culture 2021

As a response to growing constitutional crises during the recent decades, such as the Brexit or rising nationalist movements, the EU started to advocate for strengthening identification of its citizens through promoting the concept of ‘Europeanness’, which became profoundly present in the EU policy. The concept is based on various cultural instruments and cultural heritage, as a shared legacy of many European nations, aiming to strengthen the sense of communality, unity, and integration, but also for achieving greater cultural coherence (Lähdesmäki, 2014). It operates through the Creative Europe framework,¹ which encompasses some of the most prominent cultural events, e.g. European Heritage days, the European Heritage Label and the ECoC itself.

Along with stimulating the intensive interaction between built environment, historical values and local community, the ECoC program also aims at creating economic growth, encouraging urban regeneration and tourism development, building a sense of community, and developing European connections (European Commission, 2018). Due to a comprehensive set of objectives, it became of particular interest for the newly joined EU member states, burdened by the challenges of assimilation into the new socio-political, economic and cultural system. On the other hand, the ECoC program also gained on diversity, innovation and creativity. The City of Novi Sad, as the first representative of a non-EU country, was proclaimed an ECoC for 2021 during a particularly interesting selection process resulting with a shared title among three European cities for the very first time.² The bidding process led by the urban government of Novi Sad was equally particular. The adopted innovative governance approach assumed the development of the local concept and strategy for sustainable development of the cultural sector while simultaneously working on the candidacy for the ECoC 2021.

Looking upon the experiences of the former capitals of culture, the project NS 2021 was envisaged as the driver of local cultural and creative potentials for development, while fostering urban regeneration, improvement of the city’s international image and tourist offer. Such an approach required reconsideration, re-evaluation and an innovative treatment of intangible heritage, embedded in the new strategies of urban and cultural development. The outcome of these efforts ranged from the strengthening of institutions related to culture and heritage preservation, over the development of cultural and creative industries, the improvement of cultural participation, the decentralization of cooperation, to overall urban rebranding (Foundation NS 2021, 2016).

The context

Resulting from the specific socio-political circumstances, Novi Sad historically holds an outstanding importance in Serbian culture and national identification. It originates from the 18th and 19th century, when the present-day territory of Vojvodina was under Hungarian rule. Serbian immigration from the Ottoman territory to Hungary was encouraged by the special status of a recognized nation with extensive rights, in exchange for providing a border militia that could be mobilized against invaders

¹ Creative Europe is the European Commission's framework program with a budget of €1.46 billion for the years 2014-2020, aimed at supporting the culture and audiovisual sectors.

² Besides from Novi Sad, the ECoC 2021 was awarded to Elefsina (Greece) and Timisoara (Romania).

from the South. However, the absence of a national state during this period rendered Novi Sad to become a political and cultural centre of Serbian minority, labelled as “Serbian Athens” (Aleksov 2009: 277–278). Moreover, the city’s position as a strategic Habsburg military post (Figure 1) made it an important trading and manufacturing centre. The overall importance of Novi Sad further grew after Vojvodina’s unification with the Kingdom of Serbia in 1918, when it became the capital city of the multinational and multicultural province. The rapid industrialization and the rise of urban population started after its incorporation in the newly founded Socialist Federal Republic of Yugoslavia in 1945, when the city demonstrated a more radical urban development model in Central and Eastern Europe (CEE). However, progressive development of Novi Sad, along with a number of other Serbian cities, significantly slowed down during the last decade of the 20th century.

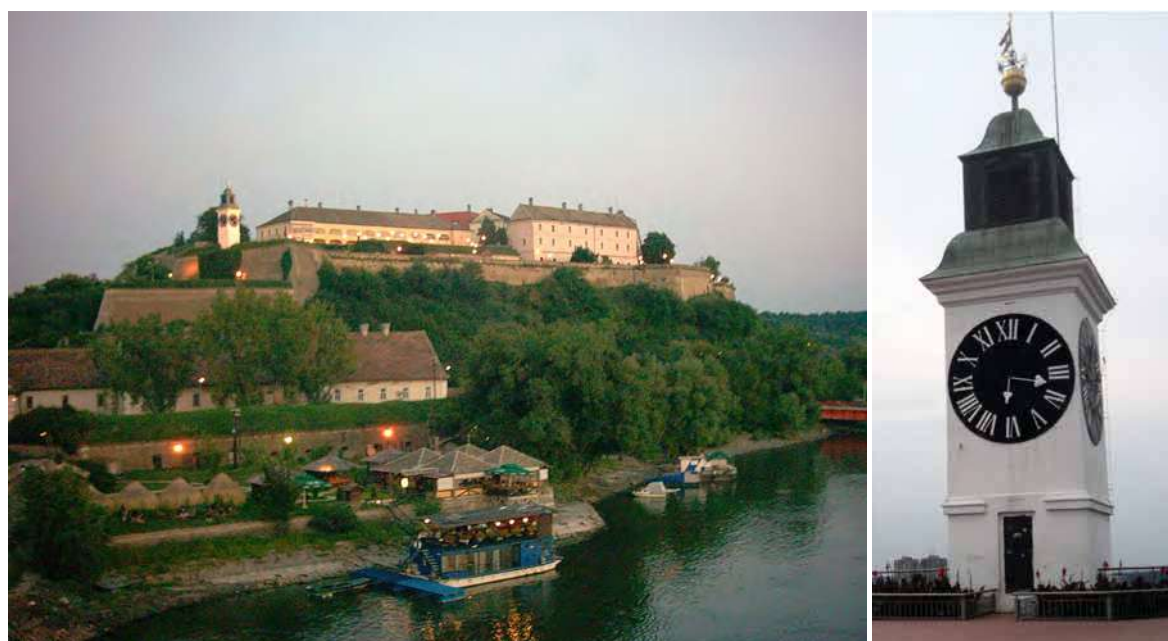


Figure 1.

Novi Sad: historic Petrovaradin Fortress (left) and one of its main landmarks, the clock tower (right).

Photos: Vervin, CC BY-SA (left), Čamprag N., 2016-06 (right).

For most of the countries and cities of post-socialist Europe, the period of extensive and highly dynamic processes of socio-spatial restructuring was the crucial for their free-market-oriented reforms (Stanilov, 2007). However, in addition to the breakup of Yugoslav Federation and the ethnic wars of the 1990s, Serbia was exposed to severe economic stagnation, international isolation and overall marginalization. Instead of dealing with the challenges of post-socialist transition, political elites in Serbia deliberately delayed socioeconomic reforms in order to keep their power (Vujović & Petrović, 2007). The legacy of the former technocratic planning principles thus long remained a dominant option for municipal governments, reflecting itself in rigid planning models (Vujošević & Nedović-Budić, 2006). For Novi Sad in particular, this was an equally difficult period that harmed its former reputation of an international centre of trade, manufacture, industry and culture. Being the second largest city in highly centralized independent Serbia, its urban development was overshadowed by the national capital Belgrade. Furthermore, the city also suffered major physical damage resulting from the NATO bombing campaign in 1999. Besides from human losses, several damaged residential neighbourhoods and the destruction of three iconic bridges over Danube, bombardment of the oil refinery caused severe pollution and widespread ecological damage (Figure 2). As a result, by the end of the 20th century, its international image was shattered by a plethora of socio-political and

economical problems resulting from a decade of wars and political instability, rapid deterioration of national economy, the legacy of autocratic planning and highly centralized political organization.



Figure 2.

NATO bombardment in 1999 left Novi Sad without its iconic bridges.

Photo: Darko Dozet (CC BY-SA 3.0)

The later democratization of the country and the shift of national governance towards the EU integrations finally opened up some new development perspectives. With enactment of the Spatial Plan of the Republic of Serbia 2010-2020 (Ministry of Construction Transport and Infrastructure, 2016), polycentric model of urbanization and regional development policy has been introduced to the national policy framework. This strategy looked upon the dominant development trends of urbanization in Europe and finally improved the chances for balancing functional concentration between urban centres. However, considering that both decentralization and development are generally complex and time-consuming processes, local governance and planning of Novi Sad kept on relying on its already existing assets, such as culture and cultural production.

Cultural development strategy as a prerequisite for ECoC candidacy

Novi Sad became the national candidate for the ECoC title due to several very diverse reasons. First, the city has traditionally been characterized by its multi-ethnic structure comprising around fifteen ethnic groups besides the Serbian majority—Hungarians, Slovaks, Croats, Romani, Montenegrins, Rusyns, Romanians, Ukrainians, Germans and others. Second, the location of Novi Sad on the Danube River, only 70 kilometres northern from the capital Belgrade and its airport, provided many favourable opportunities for its accessibility, development and marketing (Figure 3). Finally, Novi Sad already had a long reputation as a national cultural centre—there are more than twenty active cultural and artistic societies, while the city also hosts a number of important cultural institutions, such as the oldest cultural-scientific institution of Serbia - Matica srpska, National Theatre, Museum of Vojvodina, Gallery of Matica Srpska etc. There is also a range of important cultural events, such as the Sterijino pozorje theatre festival, Zmaj Children Games, International Novi Sad Literature Festival, Novi Sad Jazz Festival, Festival of Street Musicians, and many others.



Figure 3.
Novi Sad: the panoramic view on the city from Petrovaradin Fortress.
Photo: Vervin, CC BY-SA 2.5.

In addition to a range of established cultural institutions and events, the city promoted a new, alternative approach to cultural development, especially after the fall of socialist regime and democratization of the country in the year 2000. The city's cultural and touristic offer has been radically modernized after the establishment of EXIT—a symbolically named cultural event triggered by a student movement that fought for democracy and freedom. Held at the prominent Petrovaradin Fortress (Figures 1 and 4), this event quickly became one of the biggest music summer festivals in Europe. Its official international recognition came with the title of the Best Major European Festival in 2014 and 2018, being one of the most prestigious festival awards in the world (EU Festival Awards, 2014). The skyrocketing success of EXIT has brought Novi Sad back in the international spotlight, causing major shifts in cultural and urban re-branding and marketing (Figure 4).



Figure 4.
Petrovaradin Fortress during the EXIT Festival in 2005 (left) and marketing of the festival in the city centre in 2006 (right).
Author: Aleksandar Kamasi, CC BY-SA 3.0 (left), copyright-free photo (right)

Along with its strategic location and historic significance, a number of existing cultural assets and recent initiatives thus made Novi Sad to become national candidate for the ECoC 2021 bid. However, in order to become eligible contestant and to increase chances for winning, the city government

required a more comprehensive development approach, implying a new cultural development strategy that would comply with the complex EU requirements.

NS2021: a new approach to culture and cultural development

As a consequence of both foreign investments and the process of privatization during the immediate transition period after the year 2000, Novi Sad became exposed to a rapid commercialization of urban space and real estate development. The extremely neo-liberal investment climate initiated uncontrolled construction of collective residential units until 2008, jeopardizing spatial identity in some areas. The former planning framework was not capable of dealing with the needs of the emerging market, resulting with poor quality of urban design, and inconsistent and questionable construction principles, implemented without any consideration of environmental contexts (Balestrieri, 2013; Polić & Stupar, 2015). The shift of urban governance in Novi Sad towards a more systematic approach to urban development planning occurred only a decade after democratic changes. The enactment of the Economic Development Strategy in 2010 emphasized the need to attract more visitors and investors for the overall objective of repositioning the city in the international arena of free market economy (Local Economic Development Office, 2010). At the same time, the necessity of strategic planning in the area of cultural development was recognized. The rising influence of the City Council and the City Department for Culture in the local cultural policy management finally generated concrete aspirations toward the candidacy for the ECoC title. One of the major prerequisites for gaining this prestigious brand, however, assumed a local strategic document that would bring culture and urban development together (European Capital of Culture, 2016).

The procedure of drafting this strategic document was generally based on inclusive, integrative and democratic principles that regarded culture as a public property, with the right to culture assumed as one of the basic human rights. It involved an intensive participative process, which included a large number of administration departments, institutions, diverse civil and private organizations and informal groups. Series of presentations, discussions, and workshops were organized, aiming at achieving an equal representation of stakeholders included in the decision-making process. After the five-year long efforts, the Assembly of Novi Sad enacted the new Cultural Development Strategy for the period of 2016-2026 (City of Novi Sad, 2016), based on a synergy of local, national and EU policy-making levels. The highly diverse and comprehensive tasks spanned from the recognition of current problems, over the definition of directions and priorities, to the determination of implementation instruments and methods. However, what makes this strategic approach even more important is that the process of its elaboration has been conducted simultaneously and in accordance with the drafting of the so-called Bid Book for the ECoC candidacy (City of Novi Sad, 2015).

Although the heritage area of the traditional urban core was luckily spared of harmful interventions during the 2000s, the inherited values and continuity of urban historic areas of Novi Sad have been seriously affected, challenging the vital parts of its urban memory and uniqueness. Fortunately, the academic network of the University of Novi Sad, local NGOs, national minority associations and others timely recognized the importance of intangible heritage in the very early preparatory phases of the Bid Book for the NS 2021 program. Some small-scale research and projects have been conducted even before launching of the open call for the Bid Book, with a few of them later included in the draft. This approach was generally based on the premise that the urban identity and other intangible values should be preserved and emphasized as the reflection of the city's multinational, multicultural and

tolerant character, as well as its strong determination to embrace the future challenges of the 21st century (European Capital of Culture, 2016). Among the six strategic objectives of the strategy finally proposed by the Bid Book, most were focused on establishing participative cultural policy based on intercultural dialogue and internationalization, with a strong spatial reference. The sixth objective exclusively targeted promotion of cultural heritage, underlining the need of protection and inclusion of the public in revitalization process and (re)use. Cultural sector was thus envisioned as the central stage for propelling public participation, intercultural dialogue and cultural identity building, with the final aim to reinsert the city into wider cultural environments by redefining its identity within the challenges of transition, de-industrialization and post-war traumas. Finally, the new brand of Novi Sad was supposed to promote rising optimism, supported by the image of a hub based on services, innovations, software development, gaming industry and series of cultural activities.

The proposed artistic program was equally positioned at the intersection between urban tangible and intangible values, based around the idea of culture as a bridge between people and a reconnection with the specific historical and socio-political contexts. This topic came as a resonance to the historic bridges over the River Danube destroyed during the NATO bombing in 1999, although with a strong focus on reconciliation and reconnection. The central narrative of building bridges thus runs through the proposed artistic program of the strategy, conceptualized in four different groups, and pointing out to intangible cultural values to be preserved and further developed. The ‘New Way Bridge’ deals with the strengths of the city, such as its distinctive heritage and hospitality; the ‘Rainbow Bridge’ points to the city's weaknesses, such as reconciliation and migration, and search for the ways to meet these challenges. The ‘Freedom Bridge’ stresses the innovative potentials of the city, its young and creative industries, while the ‘Hope Bridge’ highlights the opportunities opening up through cultural facilities and public spaces (Foundation NS 2021, 2016). Within each of the ‘bridges’ were the major flagship projects that aimed at converting urban space into a stage for the active or passive brand promotion—e.g. the ‘Moba Project’ or the ‘Peace Chapel’.

The concept of the ‘Moba Project’ was based on participation and development of a sense of belonging, which connotes the volunteering actions of solidarity for revitalization and maintenance of public spaces, safeguarding of cultural heritage, planning and presenting cultural events in local neighbourhoods. The program also used a multifaceted strategy for the transformation of public spaces, used in the ‘Art in Public Space’ and the ‘Small Scale Urban Space’ projects. Additionally, the focus on heritage through the ‘Moba for Heritage’ introduces the idea of people working together on renovating traditional houses, as symbols of joint cultural heritage in multinational environment. It envisages the renovation of a German, a Hungarian, a Slovak, a Romanian and a Serbian house, as an act of enhancing social cohesion and intercultural cooperation (Foundation NS 2021, 2016). On the other hand, the project ‘Peace Chapel’ generally deals with the ideas of peace and reconciliation. As a public event outreaching international audience, the project envisaged use of urban space as a setting for establishing a dialog on the EU future. Urban space was also to be used as a stage for other events targeting international exchange, cooperation and promotion of diversity, such as ‘Bridging Barriers’, ‘Breed’, or ‘My Voice Travels’. Other targeted objectives were reconciliation (‘Fugitives’), collective memory (‘Brotherhood and Unity’; ‘Where were you when the bombing started?’), and (inter)cultural legacy and identity (‘At the Crossroads’; ‘Gastronomic Identity’).

A year after the ECoC title has been awarded, the projects such as ‘Heritage Walks’ and ‘Intellectual Topography’ were launched in 2017 and later developed in various urban neighbourhoods, including

different aspect and time spans of intangible heritage. ‘Heritage Walks’ have got a wider (European) dimension gaining the recognition of similar initiatives within the Faro Convention Network (European heritage community network), while the Association of Architects of Novi Sad (DaNS) initiated new topics focused on the heritage of the Modern Movement (‘Modern Architecture Walks’).

It is also important to notice that the link between intangible heritage and urban space transformations equally held a prominent role in the Bid Book. For example, the biggest cultural infrastructure project, focused on the conversion of a redundant metal factory to the creative urban district, was based on a narrative of a factory as a Chinese quarter, due to the use of abandoned buildings as warehouses for Chinese products during the 1990s. The ideas for its transformation have been developed and evaluated through round tables, documentary film production and numerous studies. The other significant example represents the refurbishment of the old Silk factory in the historic neighbourhood Almaški kraj. Nowadays, it is an active local cultural centre (‘station’) established through the mutual efforts of the Foundation and the association of ‘Almašani’.³ The activities of the association included collecting and presenting local oral traditions and a wide range of intangible heritage, while their contribution was officially acknowledged through the partnership in managing the programs of the ‘station’. Finally, the project of 46 urban pockets, focused on the redesign of small public spaces, also included collecting local intangible heritage, as a part of the competition announcement for the redesign of these places.

Challenges and advancements of the NS 2021 strategy

Following its submission and evaluation, the EC Selection Panel particularly appreciated the prime topics of the Bid Book, such as its diverse focus on inter-cultural dialogue, reconciliation and the art of peace (European Capital of Culture, 2016). Furthermore, its aims and objectives favourably reflected some of the most important international value frameworks in the field of cultural development by UN, UNESCO and ICOMOS (Foundation NS 2021, 2016). Following the decision for Novi Sad to become one of the ECoCs in 2016 (European Capital of Culture, 2016), the local government established the Foundation NS 2021 as a non-profit, voluntary and independent organization (Figure 5). Its aims were clearly set at the implementation of the strategy’s objectives through developing culture, protecting human and minority rights, promoting arts, democratic values, European integration and international cooperation and exchange (Cultural Center of Novi Sad, 2016). However, the Foundation was also facing the challenge to deal with a number of limitations of the proposed strategy that the EU Selection Panel stressed out in its final report (European Capital of Culture, 2016). Among others, the narrow geographic spread of proposed partners, lack of elaborated audience development, and unclear ownership of the strategy within the city council were highlighted (European Capital of Culture, 2016). There was also a lack of the flagship projects, while the proposed aim at building trust and restoration of cooperation between the countries formerly at war was lacking on clear indications for reaching its key objectives. Finally, the bid also omitted integration of the cultural strategy with the city’s urban development plans, while at the same time suffering from an

³ The local community of the Almaš neighborhood.

underdeveloped legacy beyond the place-branding benefits of the ECoC brand (European Capital of Culture, 2016).

Considering a range of intangible socio-cultural values in the core of the NS 2021 program, reaching a high diversity of its objectives seemed to be a rather challenging task. Additionally, the cultural operators and institutions in Novi Sad generally lacked profound experience and expertise in cultural policy making and management (Tomka & Kisić, 2018). As a final result, the updated version of the Bid Book had very little in common with its earlier version, based on which the award has been made. It showed a number of ambiguous, overstated and conflicting views on many of its integral aspects, generally ranging from the approach to the city itself, over the motives behind the application, to the vision of cultural development and means of achieving this goal (European Capital of Culture, 2017; Tomka & Kisić, 2018). The lack of a clear artistic dimension and its general focus on festivals even threatened to harm the cultural quality and integrity of the overall initiative (European Commission, 2017; Jovanović, 2018). As a consequence, the new urban brand of Novi Sad has been promoted and elaborated by further development of the program Novi Sad 2021-ECoC, along with defining new artistic festival platforms, such as ‘Kaleidoscope of Culture’. The major focus of the Foundation’s management has therefore been placed to the shift from the regional brand of the EXIT music festival to some more advanced artistic concepts.



Figure. 5

The logo of the program emphasizing inclusiveness and diversity (left) and the website of the NS 2021 Foundation, stressing out the participative bases of the program (right).

Source: <http://novisad2021.rs>, screenshot, 2019-05-02

Contrary to a number of evident flaws, the NS 2021 strategy still provided a number of significant advancements;⁴ especially regarding the definition of new approaches towards cultural heritage and policymaking. Before the nomination, there were no underlying strategic documents to facilitate the

⁴ According to the report by the panel of independent experts from 2017 (European Commission, 2017), representatives of Novi Sad highlighted that since its designation as ECoC the city already benefitted from increasing investments and tourism flows. Besides, local government invested efforts to increase the participation and involvement of locals, which reached more than 2.000 citizens participating in a wide range of proposals for development of cultural and public spaces, along with development of volunteering platforms (Novi Sad 2021, 2019). The NS 2021 project has been declared of national significance, implying that culture finally became one of the priority topics, while there also seems to be an increased awareness about culture among economic stakeholders.

decision making process, which made the local cultural policy highly bureaucratized and extremely non-transparent. Following the appropriation of planning tools and the re-evaluation of built urban heritage, the new Cultural Development Strategy, along with the NS 2021 program, imposed necessary reconsideration of public participation, as well as of the role of cultural heritage in strategic planning for urban development. Furthermore, different levels of governance—from local and provincial to national and international—were brought together to cooperate on a single project, overlooked by a panel of independent experts nominated by the EU. The strategy thereby fostered inclusion of the extremely complex and diverse composition of stakeholders, addressed their conflicts and interest and advocated for more cooperation with other social activities—such as tourism, education, creative industry or urban planning. The entire approach was shaped by the locally specific issues, driven by the need for (re)creation of place identity through intervening on previously unequal approaches to cultural contents of minorities and marginalized groups, insufficient support to local creative work, or unsatisfactory presence of local artists and contents at international cultural scene. As particularly praised by the EU selection panel (European Capital of Culture, 2016), the comprehensive mapping of the cultural sector in the city was seen as a solid foundation for the implementation of the new cultural strategy and the ECoC program. Finally, one of the most important outcomes represented the reconsideration of urban heritage and its treatment as a competitive advantage, which ranged from the common reuse of formally protected buildings, over the renewal and reuse of utilitarian architecture, to the new interpretation of buildings, areas and urban spaces in promoting intangible heritage (Polić & Stupar, 2015). Therefore, the NS 2021 represents a significant shift away from the former authoritarian, discriminative and elitist approach to cultural policy-making and quasi-regeneration, and a more responsive approach towards achieving the goals of place re-branding and, thus, urban competitiveness.

Conclusions

In the light of increased globalization, the complex and chaotic nature of the processes behind cultural policy-making could be perceived as a growing and widespread phenomenon (Davies, 2016; Roberts, 2010; Tomka & Kisić, 2018). Taking in consideration a relatively particular case of Serbia, its cultural policy could be characterized by a relatively long period of general confusion, manifested by a deviation from the rational policy norm, as a direct consequence of transitioning state and a lack of democratic cultural system (Dukic Dojcinovic, 2003). It even became an instrument of political communication, along with the shift from the spheres of the state and its actors towards the objectives of political elite (Jevtovic, 2015). Although the project NS 2021 could not have stayed immune to some of these trends, influences, and deficiencies, it could be seen as a rather revolutionary endeavour, primarily due to its high level of innovation and inclusion of diverse stakeholders, jointly working on the first genuine effort for a long-term cultural planning in Serbia.

Particularly significant element associated with the NS 2021 project was modernization of national cultural policy-making through introduction of the EU procedures, expectations and ideals (Tomka & Kisić, 2018). Equally important was a holistic and integrative model of urban and cultural planning and development that the project NS 2021 strongly emphasized. However, in the core of this development strategy is profound reconsideration of cultural values for overall place (re)branding. Imposed by the bidding requirements, the new approach to intangible component of cultural heritage was turned into an asset for urban re-branding, as one of the prerequisites for repositioning in the arena of competitive cities. Creative merging of tangible and intangible components of cultural heritage

thereby turned urban spaces into settings for redefinition and promotion of a new urban brand. Furthermore, (re)created through images and narratives connected to European, national and local levels, and subordinated to the values in the core of the ECoC policy, the emerging urban brand integrated the objectives of the place branding strategy, the stakeholders (especially community) and the urban policy. Therefore, it finally demonstrated the real capacity of intangible urban heritage to launch marginalised communities in the arena of competitive cities. Such an approach to recreation of place identity through reconsideration and enrichment of the core cultural values, while taking in consideration the voice of the local community, qualifies the NS 2021 program as a promising model toward reaching the objectives of urban sustainability.

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URBAN DESIGN METHODS OF SHANGHAI TILANQIAO HISTORIC DISTRICT

UNDER THE BACKGROUND OF URBAN RENEWAL

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Abstract :

The Shanghai Tilanqiao Historic District is one of the Shanghai Historical Scenery Reserve area, with Lane as the main building type in this district. Lane is one of the symbolic representations of Shanghai culture, which records the historical information and cultural genes of the city, and is of great significance to the sense of home, identity and belonging of the citizens. With the development of Shanghai city, some Lane buildings in Tilanqiao Historic District have been demolished . In addition, in the lack of public space and living space, residents renovate and expand privately in order to improve living environment. In this condition, the integrity of the community is broken and community life is difficult to maintain. Based on theoretical research and field research, this paper analyzes the spatial characteristics from the aspects of texture, architectural space, street interface and public space, and sorts out the buildings in the Lanes by the typology method. In addition to strengthening the design of streets and public spaces, it attempts to explore the means of achieving functional replacement of old buildings and guiding the form and style of new buildings. Under the premise of protecting the original historical districts as much as possible, it try to reshape the vitality of the area and meet the living requirements of the original residents. The urban design methods explored in this paper are expected to provide useful

information for realizing the regional renewal construction, and play a guiding and indispensable role in urban transformation, maintaining regional vitality, and retaining urban memory.

Keywords:

Historic district, Lane, urban memory, Urban renewal, Urban design methods

The scope of this study is located in the Tilanqiao area of Hongkou District, Shanghai. It was once under the jurisdiction of the former US Concession (later renamed the public concession) and was used by Jewish refuge during the Anti-Japanese War. It is also known as “Little Vienna” . The base is east to Baoding Road, west to Fair Road, south to Changyang Road and north to Zhoujiazui Road, with a total area of about 45.6hm² (Figure 1). In the

area, there are landmarks such as Xiahai Temple, Tilanqiao Prison and Xin'an Auditorium, and a relatively complete Lilong Building Group. With the development of the city, some of the houses in the Tilanqiao have been demolished, and the



Fig.1 Research area

residents have been privately remodeled and expanded due to the need of improvement of living environment. The integrity of the area is undergoing a broken process.

Tong Ming (2014) proposed that a dynamic city should have appropriate

density and scale, maintain sufficient diversity and mixing, and achieve rational organization of the city through multi-scale analysis of overlapping and effective connection of urban texture; Zhou Jian (2007) proposed to use the typology to analyze and study the urban design of Shanghai Old City to realize the reorganization of the spatial form of the block; Deng Hao et al. (2013) analyzed and interpreted the urban morphology through three basic characteristics : scale level, continuity and publicity, and presented the point that the spatial continuity and historical continuity of urban walking in the urban space is an important way to enhance the publicity and democracy of urban space.; Ding wowo (2000) studied the combination design and the group design of the new and old buildings in several cases to explore the basis and method of symbiosis. Yang Yimeng (2011) investigated the social interaction activities and distribution of Lane residents, and revealed the intrinsic relationship between the residential form and public space and people's social interaction activities.

1. Spatial Characteristics

There are some well-preserved lanes in the research area, and the texture of the street is relatively complete. Many modern architectural textures have been implanted around the city (Fig. 2, 3, Table 1). The roads in the range are roughly grid-like, the road spacing is between 150-300 meters, and the average land area is about 3-4 Hectare. As for the width of the road, the roads inside the study area such as Dongyuhang Road, Tangshan Road, Zhoushan Road and Changzhi Road are

narrow in width, generally 10-15 meters, which is in line with the old Shanghai renting (about 50 feet). This standard mainly responsible for life functions. The

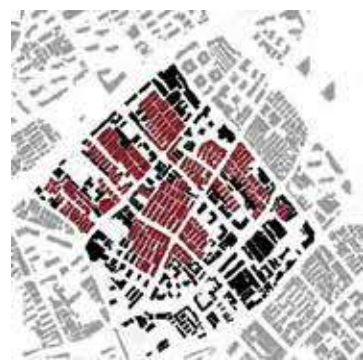


Fig.2 Lane condition



Fig.3 Figure and ground



图例关系		
里弄住宅	双排	
	单排	
新式住宅		

Table1 Texture

Changyang Road and Zhoujiazui Road on the north and south sides are wider, and the width of the red line ranges from 30 to 50 meters, which mainly responsible for the traffic function (Fig. 4). The architectural form is dominated by the old lane, while modern architecture is less. The overall building density is high, and the height of the building is low. Among them, the houses in Lane are relatively short, mostly 2-3 layers, and the building



Fig.4 Road condition

density is large; the height of the newly built buildings are mostly 36-54 meters, and the building density is small (Figure 5). As for the street interface, due to the preservation of old Lane along Tangshan Road, Dongyuhang Road and Zhoushan

Road , the street appearance is more uniform, and the interface continuity is strong on these roads. On the side of the building, different forms of cross-street buildings constitute the characteristics of each Lane, forming a characteristic cultural landscape of old Shanghai. There are fewer public green spaces within the study area, the continuity of the street trees is not



Fig.5 Lane buildings and new buildings

strong, and the greening is seriously insufficient. Due to the high density of buildings and the crowded living environment, there are fewer places for people to interact and communicate, and public spaces are also seriously lacking.

2. Feature Analysis

2.1 Architectural features

The most important building within the scope of the study is the Lane Building. This kind of building is a product of the collision of Eastern and Western cultures and becomes a typical residence with Shanghai characteristics. The interior of the Lane in this study is basically a “fishbone” structure, with one main handle and few support, and the exterior adopts a continuous interface treatment to ensure the integrity and unity of the street facade. As a transition from public space to semi-private space, the cross-street buildings undertake more functions of communication activities. The small patios in front of the house implement the transition from semi-private space to private space.

2.2 The spatial scale and interface

The width of the road within the research area is basically between 10-15 meters. On the streets of Tangshan Road and Yuhang East Road , where the style is well preserved, the street aspect ratio is generally around 1:1, so the continuity and unity of the street are more strong and the space feels good. However, in the section of Anguo Road, the height of new buildings on both sides is more than 36 meters, and the aspect ratio of the streets is between 1:3-1:6 , so the street feels more depressed. On Kunming Road, the south side of the road is the 200-meter gray fence of the Tilanqiao prison, while on the north side is the combination of Lane buildings and 54-meter-high modern buildings. The disordered state and strong contrast of the interface on both sides make the street space's integrity seriously lacking, and the space experience is poor. (Figure 6).



Fig.6 Both sides of Kunming Road

2.3 Height characteristics

The height of the building is generally low in the study area. The high-rise buildings are gathering on the side of Changyang Road, and some of the lane buildings are inserted with high-rise residential buildings. High-rise buildings are mostly located at Baoding Road and Changyang Road, including the Hongkou District Health Building and the Dingli Building. And there are also many high-rise buildings on Anguo Road ,most of which are residential buildings and are more than

40m (Figure 7).

2.4 Building space combination

Some Lane buildings were demolished and new buildings were built in the inner part of the plot, and a combination of two or more different forms of buildings

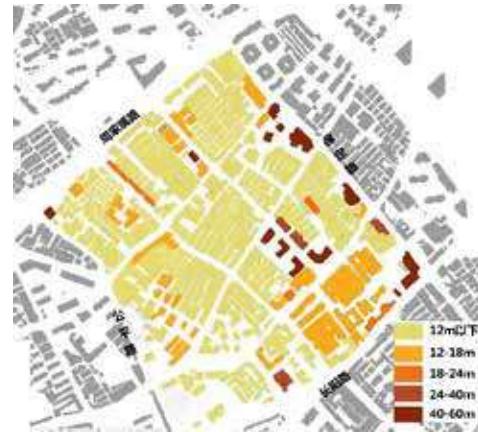


Fig.7 Height partition

appeared in the same plot. In the current situation, there are problems such as poor connection of buildings, huge difference between old and new buildings, and high disparity in height. There is no good coordination and convergence between the old and the new.

2.5 public space

Since the Tilanqiao area is dominated by small-scale neighborhoods, with dense buildings and crowded environments, there is less public space for people to talk and interact. The daily communication space is mainly in the streets and narrow sidewalks, but there is no space for shading and rest on the sidewalks, so the active interactions are difficult to produce here. There is a street green space on the west side of Xiahai Temple. This small area where the elderly are active is already overcrowded, and the space is difficult to meet the needs of the surrounding residents.

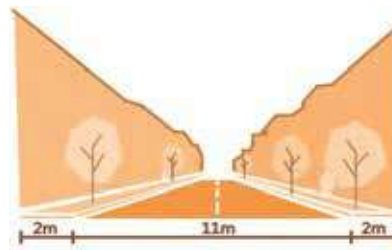
3. Strategy

3.1 Strengthen the design of the street

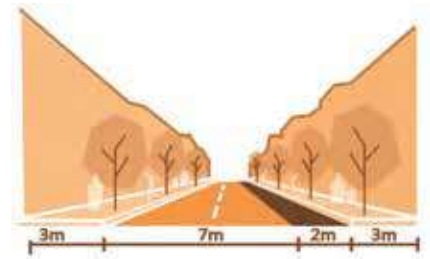
On the road facilities, it is proposed to classify the streets in the area, and divide



Fig.10 (group diagram) Tangshan Road



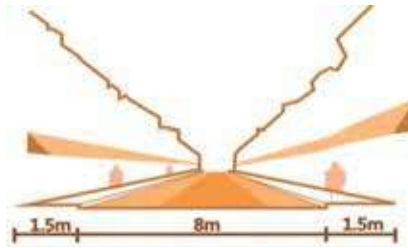
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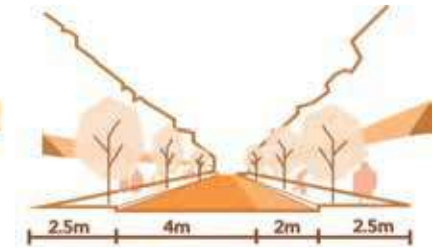
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Fig.11 (group diagram) Yuhangdong Road



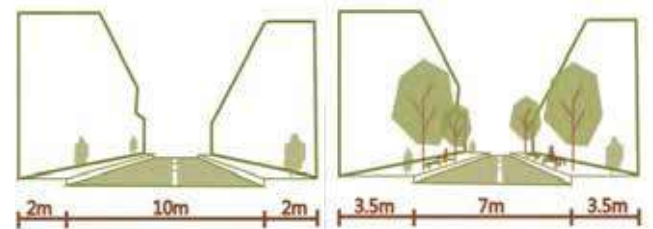
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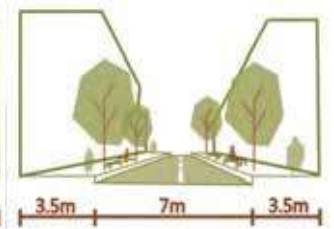
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Fig.12 (group diagram) Baoding Road



Former



Later

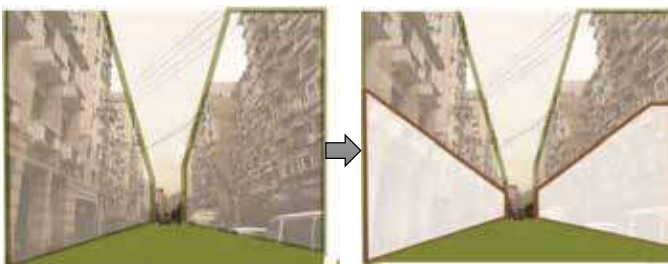
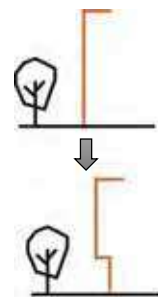


Fig.13 (group diagram) Anguo Road Renovation Proposal



When walking on Anguo Road, due to the over-height buildings of

Rongsheng and Jiulian Community, people feel pressure and tension in walking. Because the street aspect ratio is 1:3-1:6 there, which is far more than the aspect ratio of the comfortable street. It is recommended that the height of the new building be controlled between 10 and 24 meters, supplemented by specific

landscape or architectural design methods to cushion the suppressed space experience (Figure 13).

On the landmark street, as Kunming Road, the road sections are divided into three categories



Fig.14 Classification of Kunming Road Section

for control: perfect appearance section, transitional section, and the open space section (Figure 14). Considering that Xiahai Temple is the landmark building of the region, it is recommended to control the height and style of the building at the junction of Haimen Road and the section of Zhoushan Road when entering Kunming Road. Through different combinations of buildings, space can be retracted and people can be given the hint of entering a special space which can improve the landmark effect of the temple; at the intersection of Tangshan Road and Kunming Road, it is suggested to set up open space and create a landscape to attract people's attention and create a pleasant space experience for people. In front of the Rongsheng Apartment opposite the Tilankiao Prison, it is recommended to set up public spaces and green spaces, combined with the open rest area set by the bottom floor, to alleviate the heavy and monotonous feeling of the prison wall while buffering the negative feelings brought by the oversized apartment building. On the side of the Tilankiao prison, it is recommended to add a street tree or change the surface style of the wall to enrich the street landscape and reduce the

depression and heavy feeling of the current street.

3.2 Control the height of the building

For building height problems within the plot, it is recommended to take the height control of the streets and plots separately. Increase the height of buildings along both sides of Zhoujiazui Road and Changyang Road; retaining the original building height and control the height of Yuhang East Road, Tangshan Road and Zhoushan Road at 12 meters; limit the height of the remaining sections of the plot to 18 meters considering the width of the street and the coordination of the style. As for the internal height control, the height of the intact block is basically controlled at the height similar to that of the original. In the six sections on the north and south sides, considering the landmarks and other factors, the height control of the building is appropriately relaxed at 18 meters, 24 meters and 40 meters (Figure 15).

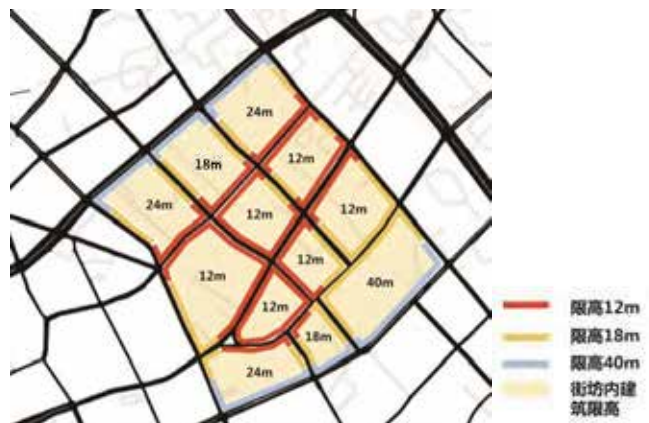
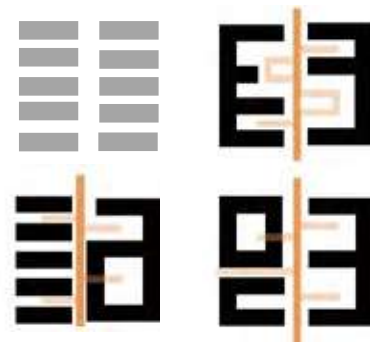


Fig.15 Height Control Advice

3.3 Increase public space

Considering the high density of land parcels, multi-node activity space is used instead of large groups, and more nodes are used to make social networks more dense, so as to promote the exchange of neighborhoods. On the street, it is by widening the sidewalks of the streets such as Zhoushan Road on Tangshan Road, and adding street furniture to provide a rest and cool space to improve public space;

considering the particularity of Lane buildings, the original layout of the building is changed, and some of the Lane buildings are enclosed to create public space which make contribution to the communication within the neighborhood (Figure 16).



Fig,16 Possibility Renovation of Lane

3.4 Coordinate new and old buildings

Currently most of the newly developed buildings in the existing plots are residential buildings. For newly built buildings, efforts should be made to achieve compact and continuous street interfaces, and to ensure the integrity of the streets as much as possible. It is recommended that the newly built buildings should be in harmony with the style of the old buildings, and the transition at the height of the building should be paid attention to,

such as increasing the construction of the podium to visually reduce the impact of the height difference on the

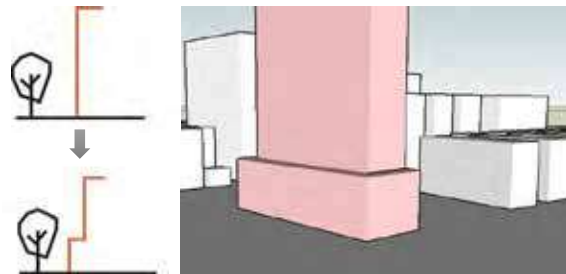


Fig.17 Add Podium

landscape (Figures 17).

3.5 small-scale acupuncture-style updates

For residential buildings with better status, the residential function can be extended, for the buildings that are not suitable for living , they are suggested to be reconstructed and replaced. For these buildings, it is encouraged to create various ways of upgrading without destroying the original texture. For example,

designing the variants of the original texture and performing isomorphic changes under the premise of ensuring similarity to realize diversity in unity.

Summary

This paper starts from the spatial characteristics of the Tilanqiao area, analyzes the problems from the aspects of characteristics of architecture, street interface, height, public space, etc., and then proposes strategies including controlling of building height, increasing public space, street classification design, acupuncture-style updating, etc. These measures are intended to reshape the vitality of the area and meet the needs of the original residents under the premise of protecting the original neighborhood as much as possible. The unique architecture and texture of the Tilanqiao area creates a unique style. Under the inevitable wave of urban renewal, we must consider the particularity of the area, consider the coordination and protection of the style, and preserve the unique memories of the city.

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1_Transforming built heritage and landscapes

In support of global integrated landscape initiatives: Experiences from the Green Heart in the Netherlands

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Abstract. Spatial planning is seen as an important instrument that could support the integrated landscape management (ILM) process. This paper presents the insights derived from important moments in spatial planning history, in the Netherlands, signifying that spatial planning consists of dynamic processes that anticipate and adapt to changes in society. The Green Heart is taken as an example of an integrated planning approach on a regional scale, which is appropriate for integrated landscape management (ILM). During the last 30 years since spatial planning in the Netherlands shifted from sectoral to integral, the role of the national government changed from blueprint planning to stimulating and facilitating planning processes of regional and local authorities. This has provided opportunities for multi-stakeholder platforms to effectively contribute to the spatial planning process. This paper elaborates positive and negative effects of those changes, providing insights in the form of lessons learned, which can be useful for planning processes of integrated landscape initiatives around the globe.

Key words: Landscape planning, integrated landscape management, Green Heart, Netherlands

1 Introduction

Integrated landscape management (ILM) is the process by which managers and stakeholders can plan, implement and monitor actions to support their objectives, including the Sustainable Development Goals (SDGs), on a workable scale. In ILM terms, a landscape is a socio-ecological system that is organised around a distinct ecological, historical, economic and socio-cultural identity (Denier, et al., 2015). Here, we therefore consider a landscape to be a manageable unit on a sub-national scale, such as a province, watershed or economic growth corridor, as on such a spatial scale, the SDGs can be integrated (Thaxton, et al., 2015). Hence, in the ILM approach, the word ‘landscape’ is used to describe a group of stakeholders or a partnership within a certain area — which is very different from what the term ‘landscape’ means in spatial planning.

ILM is suitable for situations of strong interaction between and interdependencies around natural resource use and management. This type of management is often initiated by nature and biodiversity protection organisations; which is why conservation, sustainable resource management, socio-economic development and restoration are integral parts of the ILM framework.

By focusing on multi-stakeholder partnerships, ILM also provides an effective form of collaboration and supports inclusive planning in cases where government capacity is underdeveloped, such as in developing countries. In most such cases, government policies alone cannot resolve trade-offs or mobilise synergies between goals. Stakeholders need to be directly involved in negotiations and commit to incorporating collaboratively agreed strategies and objectives into their own businesses and

programmes (Ros-Tonen et al., 2018). In a landscape approach, stakeholders thus aim to reconcile competing social, economic and environmental objectives.

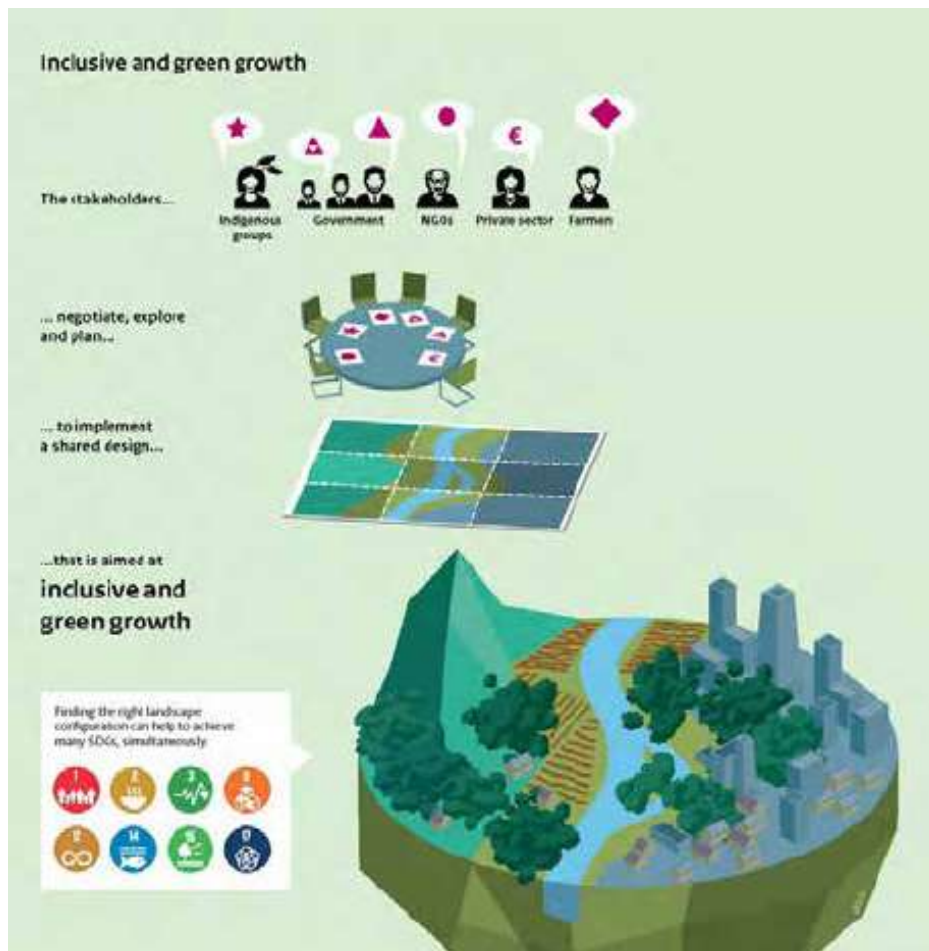


Figure 1. Inclusive green growth aims to achieve multiple sustainable development goals, simultaneously, by finding shared solutions on a landscape level (adapted from People and the Earth, PBL 2017).

Over the past two years, the Dutch Ministry of Foreign Affairs supported a project connected to landscape initiatives in Honduras, Ghana and Tanzania, in which PBL Netherlands Environmental Assessment Agency and EcoAgriculture Partners collaborated. The objective of the overall project was twofold:

- 1) to develop, apply and assess the use of spatially explicit modelling and scenario tools to help stakeholders in integrated landscape initiatives explore strategies aimed at achieving multiple SDGs;
- 2) to learn from the spatial planning experience in the Netherlands and related positive effects that can be achieved within ILM landscape initiatives.

This paper focuses on the second aim. We studied spatial planning in Netherlands using literature, map analyses and interviews. We zoomed in on the case of the Green Heart, because of its unique identity and location in the central part of the Netherlands, overlapping three provinces. This sub-national scale is well-suited for ILM studies, because it allows for stakeholders to more clearly understand the shared interests and impact of specific actions.

1.1 The Green Heart in brief

The Green Heart consists of a predominantly rural area between the four largest cities of the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht) that form a ring-shaped metropolis called the Randstad. To be clear, neither the Randstad nor the Green Heart are geographical names; therefore, they are usually not indicated on a map of the Netherlands. Both are concepts invented by planners.

Although the Netherlands is one of the most densely populated countries in the world, compared with other metropolises around the globe, Dutch cities are rather small (its capital, Amsterdam, roughly has 880.000 inhabitants). The Randstad concept, therefore, in addition to the spatial dimension, also — and much more importantly — has an economic element. By combining the populations and economic forces of the four cities and presenting the region as one large ‘city’, the government hoped to be giving the Randstad a prominent place on the map of Europe and make it economically competitive with other European regions.

The Green Heart was seen as an important contribution to quality of living in the densely populated urban part of the Randstad. In addition to its agricultural function, the Green Heart was also seen as a place of recreation for the Randstad’s inhabitants and of conservation of the green open space that is so characteristic of the Dutch polder landscape.



Figure 2. Impressions of the landscape of the Green Heart.

Source: PBL (upper and lower left); Natuurmonumenten, Ferry Siemensma (lower right)

The Green Heart covers an area of roughly 1,800 km². It is surrounded by the metropolitan areas of Amsterdam (to the north), The Hague (to the west), Rotterdam (to the south) and Utrecht (to the east). In January 2015, 726,541 people resided in one of the 40 Green Heart municipalities, which is a tenth of those living in the metropolitan part of the Randstad area. Today, the agricultural sector uses around

67% of the Green Heart's land area, with its revenues mainly coming from the production of dairy, forest plantations and horticultural products, the last mainly concentrated in and around the city of Boskoop. Ten per cent of the income of people in the Green Heart is being earned in such primary agriculture (Rabobank 2012). The proximity of Amsterdam Airport Schiphol and the Port of Rotterdam, in addition to processing and marketing centres as well as good road and rail infrastructure provide very favourable conditions for agricultural exports.

The Green Heart, similar to the rest of the Netherlands, is a man-made cultural landscape, mostly consisting of polders, below sea level (Figure 2). Seen from the air, it looks like a patchwork of pastures, interwoven with larger and smaller waterways and scattered small cities and villages. On closer inspection, it shows heterogeneity, made up of very different relatively old landscape types, the oldest of which dating back to medieval times (around AD 1100). The Green Heart is still rich in elements of cultural heritage. Especially in peat cultivation areas and along levees, where historical settlements are abundant, we can still find hundreds of well-preserved historical farmhouses. Windmills, sometimes grouped in clusters of three or more, arguably make up the most striking landmarks in the Green Heart, all of which have lost their original function as windpumps. In spite of urban developments in some of the areas over the past years, the Green Heart still looks like the archetypal Dutch landscape, calling to mind the landscape paintings by the old masters, such as Ruysdael and Van Goyen.

2 Spatial planning styles and the Green Heart

Spatial planning in the Netherlands has a long history and has undergone many transformations. In the years after the Second World War, planning involved a top-down, hierarchical perspective, with a focus on government-led land-use planning. This form of planning, which uses prohibitions, is called development control planning, with an emphasis on control (Van der Valk, 2010). Spatial plans of that period were considered blueprints. Most government authorities in the Netherlands, at that time, were organised according to individual sectors (e.g., agriculture, environment, rural development and water) and jurisdictions.

By the end of the 1980s, it was clear that the traditional practice of national government-led land-use planning no longer suited the forces of a fluid and mobile society. The national government, therefore, developed a more flexible development planning style (*onwikkelingsplanologie*). This planning style, although still containing many elements of hierarchical governance, was taking into account the dynamics within society, local implementation, attention for economics, citizen participation, more attention for concrete projects than for abstract plans, and the collaboration between public and private actors (Van der Valk, 2010).

During the 1990s, the role of provinces in policy-making and planning projects increased due to the decentralisation of responsibilities and tasks from the national to provincial government levels. The provinces started acting as mediators between national policy design and local policy implementation and gained a permanent role in planning projects crossing municipal borders. Provinces were actively involved in integrated planning processes, including strategic acquisition of land and high-risk investments in development projects (Van Straalen et al., 2015). Integration was expressed as the main objective, in order to guarantee the success of projects. But, as a result of economic setbacks at the beginning of the millennium, many of these projects have come to a standstill, mainly due to their large-scale, time-consuming, risky, and therefore costly character.

In 2006, the new National Policy Document on Spatial Planning (Nota Ruimte, 2006) was collaboratively published by four ministries and included the concept of integration as an objective of the national government (Ministry of Housing, Spatial Planning and the Environment, 2006). To

implement this objective, ‘integral spatial development’ was introduced as a new planning concept. The integral spatial development had to address several planning issues, including integration, transparency, openness, and participation (Louw et al., 2003; Boelens and Spit, 2006). Citizens, NGOs and market parties became increasingly involved in the planning processes, which gradually led to the practice of network-based governance.

The following sections show how these changes in spatial planning policy affected the Green Heart area.

2.1 Green Heart during the hierarchical planning period

It was during this period of spatial planning that the Green Heart was announced as an iconic Dutch landscape. Since the emergence of the concept of the Green Heart, policymakers, especially those at the former Ministry of Housing, Spatial Planning and the Environment (VROM), were eager to protect the area as a green open space for agriculture and recreation and prevent its further urbanisation. In 1999, the ministry published a report on the development programme for the national landscape of the Green Heart (*Ontwikkelingsprogramma nationaal landschap Groene Hart*), which painted an idyllic future for the Green Heart, where agriculture, nature, recreation and culture were in harmony and reinforcing each other. This political intention was repeated in the Fifth National Policy Document on Spatial Planning (*Vijfde Nota Ruimtelijke Ordening*, 2002). Gradually, the value of the Green Heart became broadly accepted in the society. In 2005, the Council for the Rural Area (*De Raad voor het Landelijk Gebied*), an advisory body of the government, placed the Green Heart along with eight other areas in the premier league of nationally important landscapes because of its rarity and importance for the national identity.

Over the course of time, economic development inevitably led to urban expansion, and threatened to fragment the Green Heart. To prevent this from happening, a series of national policies would lead to a seemingly vague limitation on the area allocated for urbanisation. But because of the large demand and scarcity of land for urban and economic expansion, it took years before the boundaries of the Green Heart were firmly delineated.

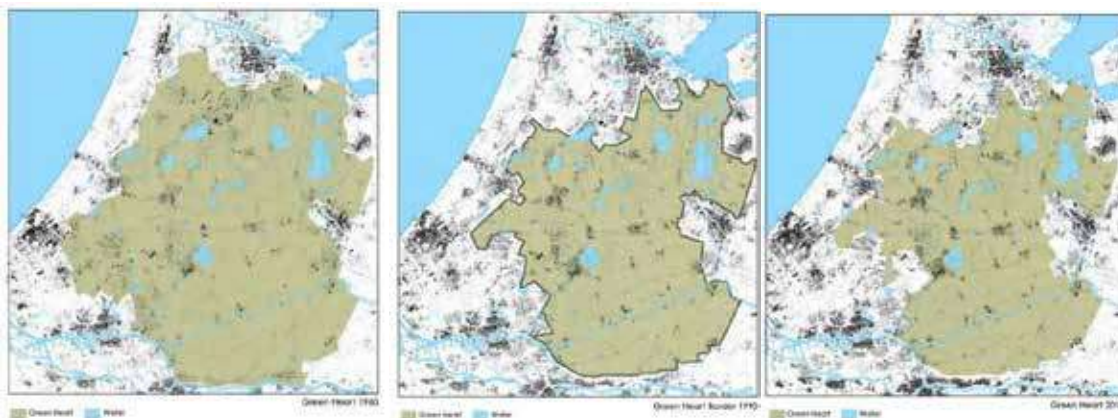


Figure 3. Changing boundaries of the Green Heart: a) indicative boundary; b) delineated boundary in 1990; c) indicative boundary 2017.

The boundaries of the Green Heart (Figure 3) were defined for the first time in 1990, in the Supplement to the Fourth National Policy Document on Spatial Planning (*Vierde Nota over de Ruimtelijke Ordening Extra, Vinex*), and elaborated in the National Structure Plan for Green Areas (*Structuurschema Groene Ruimte*), in 1992 (Kooij, 2010).

With the intention to maintain the openness of the Green Heart, the official Dutch policy, at the time, was threefold: (1) impose restrictions on residential and industrial development within the area; (2) provide alternative space for development in new towns and urban expansion outside the region; (3) improve the quality of landscape and nature within the area itself. For many decades, this combined policy strategy, in which restrictions were combined with development measures, was a successful approach for this vulnerable area. Over the course of time, the general tendency changed towards deregulation, decentralisation and privatisation. The national government dismissed the landscape protection policy and delegated those tasks to the provinces. As the Green Heart is situated in three provinces, this change threatened to reduce the Green Heart to what it had been before, in the 1960s, namely the hinterland of a number of individual cities and towns (Figure 4), each with its own development plans (Kooij, 2010).

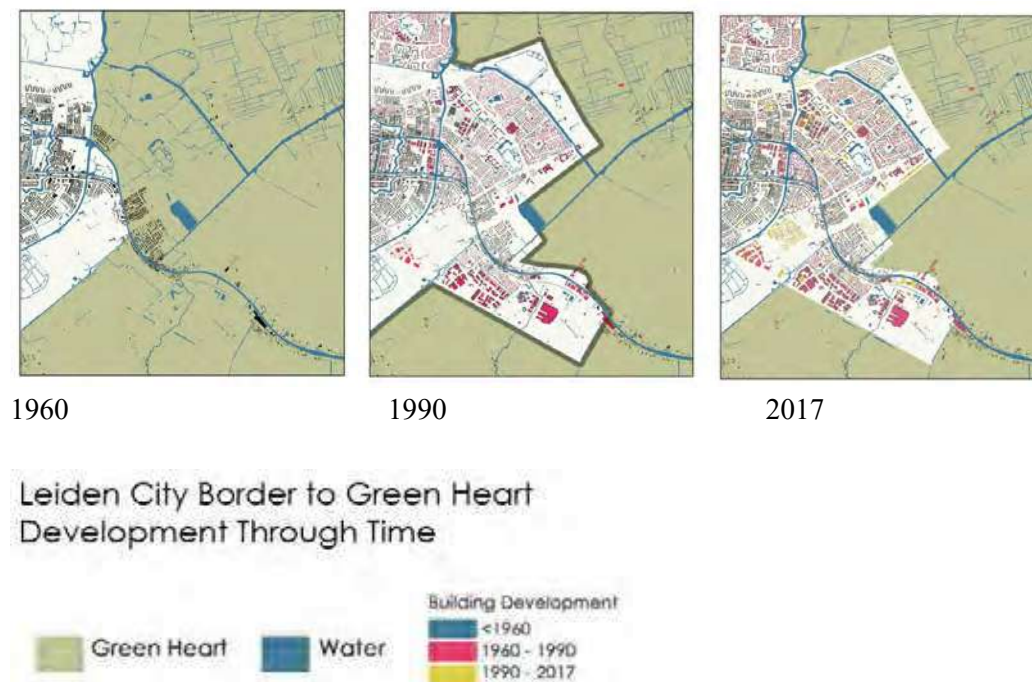


Figure 4. Urban expansion of the eastern side of Leiden, from 1960 to 2017.

Today, the average population density of the Green Heart is around 475 inhabitants per km², certainly not a figure that seems in line with the area's image of a non-urban, open landscape. The rapid growth in the surrounding new towns, however, suggests that the outcome could have been different if there was no policy, at all (Lorzing, 2004).

2.2 Green Heart in the network planning period

Since the beginning of this millennium, spatial policy has been shifting from control and restrictions to a network style of planning. The main consequence of this process was in 2012, when the national government stopped protecting the Green Heart as an important national landscape. The provinces, municipalities and organisations of the Green Heart region had to join forces and find a new way of protecting and promoting the region. This led to the establishment of several local organisations and two regional organisations (i.e. the Green Heart National Landscape and the Green Heart Foundation).

Green Heart National Landscape organisation was formed by the three provinces, five water boards and forty municipalities (Figure 5) with the goal to continue the balanced and coordinated development of the region as whole. The name Green Heart National Landscape was maintained and the Steering

Committee National Landscape Green Heart (*‘Stuurgroep Nationaal Landschap Groene Hart’*) was established (<http://stuurgroepgroenehart.nl/>). The Steering Committee focuses on achieving concrete results with 10 core projects on topics such as settling of peatlands, spatial quality and recreation. The Steering Committee supports the municipalities that take the lead in the promotion; for example, when drawing up plans for the future, generally through knowledge sharing, but sometimes also with financial means.

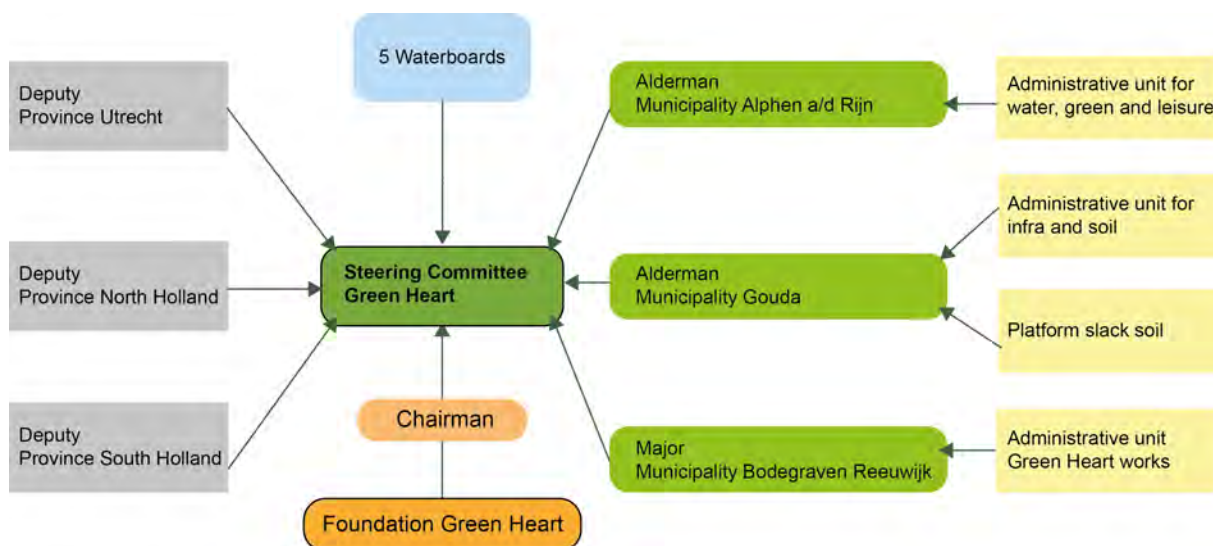


Figure 5. Organisation of the Steering Committee of the National Landscape Green Heart

The second regional organisation, the Green Heart Foundation (<https://groenehart.info/>), is a platform initiated by local agro-tourism organisations, entrepreneurs and farmers. The foundation has a general management, daily management with seven members, and advisory board consisting of ten members. Together with the private sector, NGOs, residents and local government authorities, the foundation counts 250 active rural entrepreneurs and more than 2,500 ‘friends of the Green Heart’.

The National Landscape Green Heart and the Green Heart Foundation collaborate on several levels, the most important common project being the Quality Atlas (www.kwaliteitsatlas.nl), which monitors the core qualities of the Green Heart. Next to those two regional organisations, there are several local organisations that cover various parts of the region and collaborate on certain subjects, such as nature development, landscape protection and healthy agricultural production (www.wijkenwouden.nl; www.vanade.nl; www.anv-santvoorde.nl; <https://anlvgeestgrond.nl/>). One of those organisations, the Green Clover (*De Groene Klaver*, www.degroeneklaver.nl), is described in the following section.

2.2.1 Local initiatives: The Green Clover Association

The Green Clover is a cooperative of several agricultural entrepreneurs that have joined hands with the aim of promoting their way of farming and nature conservation in the area around the city of Leiden. The cooperative encompasses both farmers, dairy producers and horticulturist. From their perspective, the interests of citizens and entrepreneurs, ecological and economic aspects, food and well-being should be equally represented in the landscape. In other words, their aim is to produce healthy food in a way that also benefits the environment. To this end, the association has engaged in several activities; it promotes green-blue services, nature and biodiversity protection and water management.

For the purposes of this study, we interviewed Theo van Leeuwen, chairman of the Green Clover Association and owner of the cheese producing farm De Vierhuizen in Zoeterwoude. Theo is the fifth generation to run this farm since 1800. We asked him about his farm and the association, his past experience with policy changes, and to synthesise his experience in a few messages that could be beneficial to stakeholders in similar landscape initiatives around the globe, for example, farmers in developing countries. This is what he said:

- There will always be farmers who are pioneers, farmers with a vision of change and progress, they take the initiative and others will follow their example.
- Especially in the beginning, the government should support such visions by providing subsidies and facilities, as well as by creating new supporting regulations.
- Various sectors should be treated equally to avoid one dominating the other.
- Combining several farms in an association has many benefits; it increases the range of products and the size of properties, contributing to the development of the whole region.
- Policy needs continuity, so that it cannot easily change the conditions of farming.
- Agreements need to be formally adopted in the long term, so that government changes, such as after general elections, do not influence the processes of cooperation.

2.3 Lessons learned from the Green Heart

The changes in spatial planning styles have left important marks on the Green Heart region as it is today. The period of hierarchical planning made the Green Heart an important area in the Netherlands. This long-term tradition has led to continuation of the protection of the Green Heart even after the national government decentralised spatial policy. Alternative ways of governance were established and many bottom-up initiatives emerged. This resulted in a complex and non-transparent situation, as many larger and smaller organisations supported by various stakeholders interact in the region. Sometimes they overlap and sometimes they have contradictory goals, but all of them in one or more ways aim to contribute to the economic, social and environmental quality of the Green Heart region.

What we can see from this case is the adaptability and flexibility that both entrepreneurs and the government are showing in times of change. Nowadays, active participation and bottom-up actions became a standard in the Green Heart, with many good examples to learn from.

3 Synergies between spatial planning and ILM

Similarly to spatial planning, ILM has many different approaches, entry points, and organisational models. What these have in common is an emphasis on achieving multiple social, economic and environmental objectives within the same large socio-ecological area (i.e. ‘landscape’) over the long term. The transition of spatial planning towards a local process that takes place within a network provides more and more opportunities for taking the specific interests of local stakeholders into account and to design plans that are tuned to the needs and circumstances of individual landscapes. With this transformation, responsibility gradually shifts towards regional and local actors. As illustrated in the previous section, stakeholders in the Green Heart have organized themselves in various connected platforms, in order to effectively influence and participate in the planning process.

This section discusses three potential synergies that could benefit both spatial planning and integrated landscape management — integration, spatial context and stakeholders involvement.

3.1 Aiming for integration

The key concept that connects spatial planning and ILM is that of integration. In general, this can be seen as the balancing of social, economic and environmental interests and objectives. That said, integration can be understood in many different ways; examples are the integration of stakeholders, initiatives or disciplines, or the vertical or horizontal integration of sectoral activities. Interviews with several stakeholders, conducted by Van Straalen (2012), showed that the meaning of integration differs between stakeholders involved in the same planning process or at the same planning level, which makes it more difficult for them to cooperate, integrate policies, or implement policies in an integrative manner.

Despite being complicated, planners and practitioners continue their dedication to integrating objectives and using an integrative planning approach in the Netherlands. In the new National Integrated Environmental Policy Strategy (NOVI), integration is also key, bringing spatial planning very close to the integrated landscape management philosophy.



Figure 6: Development Principle for an Integrated Environmental Policy Strategy (NOVI)

(Adapted by PBL from <http://mijnomgevingsvisie.nl/wp-content/uploads/2015/12/Werkwijze-Atelier-ZZ-Omgevingsvisie.jpeg>)

When looking at NOVI development principles, as shown on Figure 6, the ILM process cycle supporting Inclusive Green Growth (Figure 1) can easily be recognised. Spatial planning could potentially provide an important instrument to facilitate integrated landscape management.

3.2 Importance of local spatial context

One of the results from both ILM and SP is that of physical-territorial change of an area and its land use. When looking at the image on the bottom of Figure 1 and the far right image of the Figure 6, the end result of both SP and ILM processes looks very similar. Spatial impact is another common factor to be considered as a possibility to connect.

An example can be seen in integrated landscape development (*Integrale gebiedsontwikkeling*), a concept that has been used in Dutch spatial planning, over the past years. In integrated landscape development, parties such as provinces, water boards and project developers, are looking for ways to reinforce the various functions of a specific area, such as agriculture, nature, water and industry, with the use of various subsidies and regulations. The reason is often an assignment; elaboration of such an assignment can lead to improvement and/or more integral use of the other functions in nature.

How spatial planning affects space can be seen in the case of the Green Heart, described in the previous section. Another, recent and successful example of integrated landscape development is that of ‘Room for the River’, a flood-risk management programme that involves interventions at 30 locations. One of those is the “Room for the Waal” project in Nijmegen. It is one of the largest and most awe-inspiring projects realised within the framework of the Room for the River programme.



Figure 7. ‘Room for the Waal’ project by Nijmegen www.ruimtevoordewaal.nl/en/room-for-the-river-waal

The river Waal near Nijmegen has a sharp bend and a bottleneck. At high water, the river was unable to cope with the large volumes of water, causing flooding events in 1993 and 1995. To prevent this from happening again and in order to protect the city’s inhabitants against the water, the local levee was moved 300 metres inland and a four-kilometre-long secondary channel was dug. Fifty households had to be relocated as a result of these flood-risk management measures. This created an island in the Waal and a unique urban river park with many possibilities for recreation, culture, water and nature (Figure 7). Three new bridges connect the island to Nijmegen-Noord. The work was finished in the spring of 2016.

3.3 Stakeholder involvement

Integrated landscape management and spatial planning can be carried out in various ways and on various levels of participation. In the example of the Green Heart and Room for the River programme, both the national and provincial governments have taken the lead and sought support in the area.

In many other cases, plans are developed by public-private partnerships. The most bottom-up version of stakeholder involvement occurs in situations when local partners take the initiative and develop a plan which is afterwards supported by the government. In all such cases, recognition of each other's interests and the willingness to cooperate are crucial, and new solutions with broader support of the community can emerge.

The integral approach may entail extra costs, but could also result in many additional social benefits. Sometimes, it directly benefits the parties that are bearing the costs, but sometimes it also benefits others, or the benefits only become clear at some point in the future. This unequal distribution of benefits

is a known obstacle, which at times has resulted in desired combinations of functions not being realised. Formal ways of cooperation, negotiation, compensation and alternative financing constructions can sometimes remove this obstacle.

4 Conclusions

Finally, we can conclude that spatial planning is an important instrument that could support the process of integrated landscape management. Both spatial planning and ILM aim at integrated, combined and shared solutions. Integration, spatial impact, regional scale and stakeholders involvement are the factors that can bring ILM and spatial planning closer together. Similar to ILM, spatial planning nowadays involves various stakeholders who can sometimes have different visions and can see integration in many different ways; which is why integration can have various forms. Nevertheless, we should be aware that, although there are several synergies, there are substantial differences between spatial planning and ILM. ILM is a broad concept that acts in raising awareness, improving discussions and building partnerships. Spatial planning in the Netherlands, though, has long tradition and an established position, and it is supported by legal and financial instruments. In the Netherlands, government authorities are still the most important actors in spatial planning, as they play an important role in managing the competing claims on often scarce resources.

Long-term policy is another important issue in the Netherlands, from the point of view of spatial quality, economic stability and awareness rising. As the Green Heart example shows, strong and long-term policy made it possible for some of the Green Heart areas to develop and/or preserve quality. Long-term conservation policy raised the awareness about the value of the area among citizens and entrepreneurs. From the point of view of the local stakeholders, we learned that stable policy makes entrepreneurs feel economically safe.

From this, we can learn that landscape reconstruction, nature conservation and heritage protection, the goals behind the ILM, will only work within a framework of consistent, long-term policy and financial support, on a high administrative level. Creating an enabling environment that provides a level playing field for all stakeholders is considered yet another important role for government authorities on all levels.

These conditions are difficult to create, even in a country that is as developed and economically stable as the Netherlands. Even here, they only lasted for a certain period of time, and the changing political and economic contexts required finding other ways of dealing with competing interests. It is not very likely to expect that such conditions could be provided in economically less developed countries. There, an ILM approach that aims to find shared solutions seems more realistic. This requires local, regional and sometimes international negotiations between many different stakeholders, including farmers, NGOs, indigenous communities and different levels of government. As we can see from the example of the Green Heart, the multi-stakeholder platform Green Heart functions as an additional layer of governance in the management of the region. This example is fully in line with the ILM philosophy and shows the regional benefits of joined forces and shared responsibilities.

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Built heritage and Agenda 2030. Embedding heritage values in the spatial planning local agenda.

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Abstract: The UN Agenda 2030 is abundantly clear on the intertwined nature of sustainable development, as a combination of socio-economic and environmental aspects. Less explicit emphasis is posited on the role played by culture, identity and history and their contribution to pursue sustainable development. Indeed, the Sustainable Development Goal 11 encompasses strengthening efforts to protect and safeguard the world's cultural and natural heritage. This is measured by the total expenditure per capital on the preservation, protection and conservation of all cultural and natural heritage. However, successful heritage preservation and conservation strategies rest not only on capital investments, but most importantly on how they are embedded in the spatial planning procedures and instruments and on the level of protection they ensure to the existence of the built heritage as such. Failures in recognizing the existence value of heritage assets may cause significant flaws in the governance of preservation, particularly in growing urban areas under the pressure of the real estate market. This paper engages with the complex issue of embedding heritage values in spatial planning local agendas, by instrumentally discussing a purposely selected case study. It is suggested that although heritage values are socially constructed, still the intergenerational justice principle of sustainable development should urge for applying the precautionary principle while dealing with heritage assets, because of their non- replaceable nature. This paper concludes that the existence value of tangible heritage should be more explicitly recognized in Agenda 2030, by incorporating a target indicator allowing to track permanent loss of built heritage. Shifting from the international to the local scale, this paper also concludes that overreliance on the notion of spatial planning as political discourse may pave the way to slippery paths in heritage conservation policies, leading to the permanent loss of non-replaceable assets. It is anticipated that the paper concludes that local planning decisions on heritage conservation should be subjected to the precautionary principle and not being left into the political negotiation domain.

Keywords: built heritage, SDG11, Agenda 2030, spatial planning.

Introduction

Agenda 2030 recognized the notion of culture as ontological root of human identity and as driver for human-centred, inclusive and equitable development, by incorporating it in the newly reformulated paradigm for sustainable development and its articulation in the Sustainable Development Goals. UNESCO lauded as an unparalleled recognition the inclusion of culture within the international development agenda and the Sustainable Development Goals adopted in September 2015 by the United Nations. “The safeguarding and promotion of culture is an end in itself, and at the same time it contributes directly to many of the SDGs. Culture is who we are, and what shapes our identity. Placing culture at the heart of development policies is the only way to ensure a human-centred, inclusive and equitable development.” Heritage is mentioned in the Sustainable Development Goal 11, which encompasses strengthening efforts to protect and safeguard the world’s cultural and natural heritage. This is measured by the total expenditure per capital on the preservation, protection and conservation of all cultural and natural heritage (target 11.4.1: Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)). This indicator is instrumental to measure the target 11.4 (Strengthen efforts to protect and safeguard the world’s cultural and natural heritage) and focuses on the capital investments on heritage, though it does not allow tracking the status of the heritage as such, meaning that the implementation of the Agenda 2030 in the local strategies would not necessary endorse the conservation of built heritage as such. The first part of this paper discusses how current perspectives on heritage values evaluation and the way it is conceptually incorporated within spatial planning practices, may undermine the principles of intergenerational justice and sustainable development. The paper concludes that the existence value of tangible heritage should be more explicitly recognized in Agenda 2030, by incorporating a target indicator allowing to track permanent loss of built heritage. This conclusion is achieved by discussing concepts such as heritage as social construct and participatory evaluation of heritage values. The second part of this paper shows how incorporating the heritage conservation and preservation policies within the conceptual framework of negotiable spatial planning policies and in the political local agenda may undermine the existence value of built heritage. The paper concludes that planning decision on heritage conservation should be subjected to the precautionary principle, because of the irreversibility of actions of destroying built heritage: indeed, whilst intangible heritage can be re-created, once lost tangible heritage is non-retrievable. This conclusion is achieved by discussing a purposely chosen case study, whose lessons can be extended to the larger international community of policy and decision makers, planners, conservationist architects and evaluators.

Heritage as social construct. Challenges to its evaluation in an intergenerational justice perspective

Being considered a pre-condition to successful globalization processes, heritage should be in itself an investment in the world’s future particularly in the local agendas. However, particularly in urban areas interested by rapid growth (United Nations, 2018) the combination of real estate marked pressures and shrinking public resources (Lobao et al., 2018) may induce local governments to prioritise short term local economic goals and immediate financial benefits, to catch up with the needs of a fast pace growing urban population. Because of its non-replaceable nature, heritage holds a specific existence value, benefitting future generations, which also makes its appraisal particularly challenging. Currently, there is a growing body of scholarship and international policies, which tend to emphasize the role of participatory approach on the evaluation of heritage. A review of the literature on evaluating citizen participation processes is conducted by Koorosha et al (2015), including criteria and measures used for such a purpose (Beierle, 1999; Beierle & Cayford, 2002; Bradbury, 1998; Charnley & Engelbert, 2005; Chess & Purcell, 1999; Edwards, Hindmarsh, Mercer, Bond, & Rowland, 2008; Rowe & Frewer, 2000, 2004). The appreciation of heritage values as socially constructed values implies a participatory and dynamic approach to the assessment, which requires methods and tools aimed at capturing them, including a robust and evidence- based stakeholders’ identification process. The Namur Declaration (EC 2015), for example, endorses the promotion of a shared and unifying approach to cultural heritage management, involving all the interested players and stakeholders. However, the adjustment of current evaluative methods and tools to

encapsulate in a systematic manner different viewpoint, is still to be achieved (Trillo & Petti, 2016). This gap is further exacerbated by the difficulties of encapsulating in the sustainability- oriented discourse the intergenerational justice principles.

Indeed, this trend on emphasizing the socially constructed nature of heritage is further sharpened by the shift from the materiality of the built heritage nature towards a more complex appreciation of its constitutional features. The concept of heritage as a product of intertwined tangible and intangible assets has gained international recognition and has been explicitly accepted in the global arena of stakeholders and experts. This shift from the original focus on the materiality of the heritage to a more holistic dimension challenges the traditional evaluation methods and approaches. The concept of tangible heritage is very well consolidated and spans from the individual building to its context. Since 1964, the Charter of Venice clarifies that conservation should encompass not only isolated buildings but also the whole setting: “historic monument is not only the single architectural work but also the urban or rural setting”. International organisations such as UNESCO and ICOMOS further reinforced this concept. In 1965 the Constitutive Assembly of ICOMOS defined as heritage both monuments and sites (art. 3.1): “The term monument shall include all real property, ... whether they contain buildings or not, having archaeological, architectural, historic or ethnographical interest and may include besides the furnishing preserved within them” instead “The term site shall be defined as a group of elements, either natural or man-made, or combinations of the two, which it is in the public interest to conserve”. The definition of monuments and sites was integrated in 1972 by the art 1.1 of the UNESCO’s World Heritage Convention with the third category of “groups of buildings”. In 1975 (Declaration of Amsterdam) the concept of heritage was expanded to embrace historic gardens, landscapes and environment. The 1987 ICOMOS Charter declared the importance of Conservation of Historic Towns and Urban Areas, while Urban Landscapes were incorporated in the possible heritage assets in 2005 (Vienna Memorandum).

Intangible heritage is a more recent concept, brought to the international attention of policy makers and decision makers only in 1994 with the Nara World Heritage Convention, which stated that “All cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitute their heritage, and these should be respected.” In 2001 the UNESCO adopted the Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity, establishing a list of such heritage. The inscription was based on the outstanding value acknowledged “from a historical, artistic, ethnological, sociological, anthropological, linguistic or literary point of view” (Vecco, 2010). Examples of tangible and intangible heritage are shown in Fig. 1 and 2.



Fig. 1-2. Examples of tangible and intangible heritage. Stonehenge. Guy Fakes night bonfire (Author’s photos)

The complex nature of heritage as underpinned in the current scholarship and international understanding, is also reflected in the growing importance that community and participation are gaining in the process for the definition of its significance. The revised Australia ICOMOS Burra Charter (ICOMOS 1999; original document: 1979) introduced the concept of “values-based conservation” and emphasized “significance” as community-based and contingent. The Burra Charter defines cultural significance as aesthetic, historic, scientific, social or spiritual value for past, present or future generations.

Defining value: origin of quality and kind of utility

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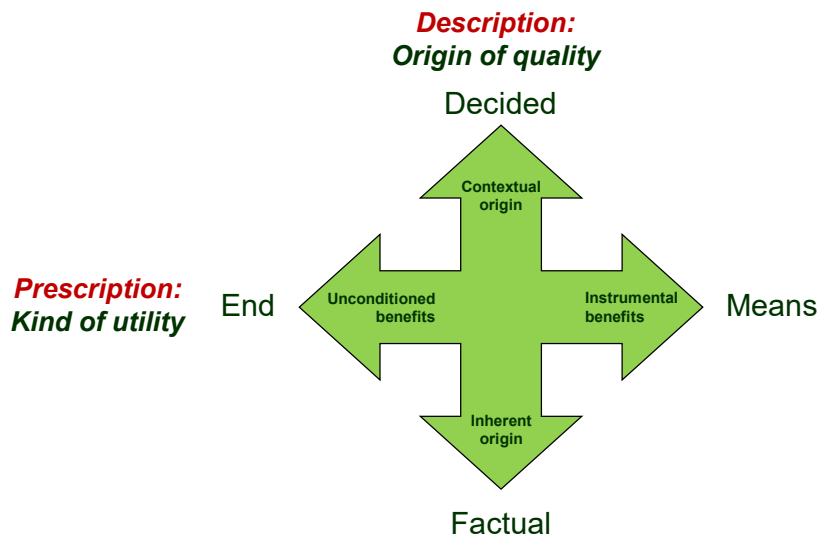


Figure 3. Conceptual framework for the appreciation of the heritage values (Source: Bengs, 2016)

In so doing, assessing the value of heritage is not a merely technical or operational issue (and as such, a problem of methods or tools), but requires a preliminary clarification of the philosophical stance underpinned in the evaluative object. Behind any assessment methodology or evaluative operational tool, the measurement of the value stems from an interpretivist paradigm, that is, who is / are the value givers and what does value mean to them. Traditionally, the evaluative methods for the appreciation of the value of the heritage can be grouped as follows: a) willingness to pay -including for example hedonic prices and travel costs- and b) Contingent Valuation; both can be successfully complemented with referenda, suitable to capture the political implications of the evaluation (Frey 1997). Traditional methodologies for the assessment of the value of heritage support the appraisal through the monetarization of the heritage as an asset for the economic system. This value can be either being captured within the real estate market as a reflection of the added value due to the presence of amenities, or calculated as the costs paid to reach a certain destination, or deducted from systematic surveys administered with a group of individuals (Throsby 1999 and 2001). Not quantifiable values such as the existence value are also a serious matter of concern (Throsby and Hutter 2008). In merely socio- economic terms, both tangible and intangible cultural heritage are considered a significant driving force in the European economy, society and culture, drawing from the rationale suggested by the EC (2015) and considering “Cultural Heritage ... as a special, but integral, component in the production of European GDP and innovation, its growth process, competitiveness and in the welfare of European society. Like environmental protection, it should be mainstreamed into policy and regarded as a production factor in economic and wider policy development”.

Re-casting the concept of heritage protection within the new international framework

More recently, the international debate around the value of cultural value has intensified. The concept of heritage has broadened into notions of local identity, belonging, nationalism, liveability of urban areas and social cohesion (Morais, & Chick, 2008; Jimura, 2015; YuPark, 2010, UNESCO, 2011). On 27th September 2016, the Mahdi's conviction (9 years) by the international criminal court because he helped to destroy shrines in Timbuktu (The New York Times, 2016). The trial was the first at the international criminal court to focus solely on cultural destruction as a war crime (The Guardian, 2016). The deliberate destruction of heritage has become a weapon of war, part of a broader strategy of cultural cleansing that includes murder and persecution of people in the short term, and the annihilation of identities and destruction of social fabric in the longer term. A sadly good example is represented by the deliberate destruction of the Buddas of Bamyán (Fig. 4).

As stated by the former UNESCO's Director-General Irina Bokova in The Hague during the Europe Lecture 2016, "The destruction of heritage is inseparable from the persecution of people. This is why we consider the protection of cultural heritage today as far more than a cultural issue. This has become a humanitarian imperative, and a security issue".



Fig. 4. Buddas of Bamiyan before and after the Taliban deliberate destruction as *idols*. (Source: Wikipedia)

The shift in the concept of built heritage from the ontological sphere of cultural expression to the international law domain of human rights re-casts the notion of its existence value. This latter, originally defined by Krutilla (1967) as *sentimental* value attributed to the *option* value of natural resources, encapsulates a much stronger and wider significance. As a result, the evaluation of the value of built heritage, whose conservation may indeed (and usually does) represent a relevant constrain in the planning practice, should be approached with a more cautious approach, such as the precautionary principle approach. This latter has been adopted by the UN General Assembly in 1982 and subsequently incorporated into various international conventions aimed at protecting the environment (EC, 2000). The principle was launched by the 1992 Rio Declaration, which states: "in order to protect the environment, the precautionary approach shall be widely applied by States according to their capability. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". In consideration of the irretrievability of the decisions concerning the destruction of the built heritage assets as non-replaceable, taking in account the sustainability principle of intergenerational justice, it seems plausible that such a principle applies to the conservation of built heritage threatened by growing and rapid urbanization, by constraining the negotiability of decisions concerning its preservation.

Built heritage and spatial planning. Insights from a UK case study

Though some authors (Pendlebury, 2013; While, 2006) reposition heritage from being perceived as an obstruction to development to being understood as an agent of change, still the reality is far from this abstract concept. Rapid urbanization remains a major challenge for heritage conservation worldwide, and even in most advanced countries, with regard to the issue of heritage conservation and preservation. The second part of this paper elaborates on the principles presented in the previous conceptual framework, by instrumentally discussing an extant case study in the UK. The reasons for which this case has been chosen is that it is a paradigmatic case, representative of an average situation very common in urban context challenged by rapid growth. Moreover, the UK is a country with a very long tradition on conservation and with a solid policy and regulation framework for endorsing heritage preservation, thus flaws in achieving this goal cannot be ascribed to the lack of consolidated procedures. On the contrary, the case study demonstrates that the concept of heritage as negotiable matter within the spatial planning decision making process can irretrievably endanger local identity, cultural diversity and fulfillment of the principle of precaution with respect to the right of future generations to benefit from non-replaceable built heritage. The policy and regulatory framework for the case study is one of the most advanced legislation in terms of built heritage conservation, contextualized in a country with a long spatial planning and

community engagement tradition. The chosen case study is located in a growing urban area located in the North Western part of England, the Greater Manchester Area. This is a post-industrial context, which was severely challenged by the decline of the manufacturer industrial sector and experienced years of struggle and urban decay. However, a combination of economic policies, socio-economic interventions, urban regeneration strategies, allowed this area to regain its leading role in the region and to become attractive, up to the point that it is now challenged by the necessity to provide enough housing stock to a fast-pace growing population. In the Manchester area, a contradictory approach towards the heritage-led urban regeneration emerged during the initial stages of the recent urban regeneration process, well embedded in the debate surrounding the famous landmark Beetham Tower. This was the first high-rise building built in the formerly industrial area of Deansgate-Castelfield, today regenerated with the highest quality construction standards and revitalized thanks to the creation of new cultural and social hubs, such as the Home Theatre and Cinema Center. The architectural debate around the tower was lively, with one author suggesting that the building “torpedoed” the opportunity that Manchester was inscribed in the UNESCO World Heritage Cities list, at a time in which the city was shortlisted in the UK based on its industrial past (Punter, 2010). Today the Beetham Tower is surrounded by tens of high-rise towers, popping up at rapid pace into a skyline of cranes. Heritage conservation and preservation played indeed a relevant role in ensuring an excellent level of quality in the majority of the urban regeneration initiatives of the last 20 years both in the City of Manchester and in other cities of the recently established Greater Manchester Combined Authorities, including examples such as Ancoats, a recently regenerated area rich in stunning industrial architectures, the Northern Quarter, dotted by reused red-bricks historic buildings, and the numerous heritage mills rebirth to a new life as offices and apartment buildings along the extraordinary network of waterways and canals, and related engineering infrastructures. However, still in some case conservation of built heritage is not prioritized. A paradigmatic case is the Chapel Conservation area in Salford, where in the last few years two Victorian buildings have been demolished to leave room for the development of apartment buildings, indeed very high-quality design schemes, but ignoring the presence of two pieces of built heritage that would have increased identity and sense of belonging in the area. This case study is first contextualized within the UK policies on conservation, then discussed through archival data, planning documents and fieldwork conducted over a 4-years timeframe (2015-2019).

Contextualizing the case study: heritage conservation in the UK

Conservation of built heritage in the UK has a long tradition, dating back to the first Ancient Monuments Protection Act 1882, which granted conservation to selected archaeological monuments (Mynors 1999). Interest in monuments conservation stemmed from the Romanticism movement and in particular from the influence of William Morris, who in 1877 created the Society for the Protection of Ancient Buildings (SPAB) to advocate for the conservation of built heritage (Yu, 2008). The current UK regulatory framework on conservation of built heritage rests on three different levels of conservation: Scheduled Monuments; Listed Buildings; Conservation Areas. The definition of monument is stated by the Ancient Monuments & Archaeological areas Act 1979 as: “any building, structure or work, whether above or below the surface of the land, and any cave or excavation; any site comprising the remains of any such building, structure or work or of any cave or excavation; any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof which neither constitutes nor forms part of any work which is a monument within paragraph (a) above”. The significance of monuments stems from their interest, which can be either archaeological (archaeological interest forms a primary source of evidence relating to the substance and evolution of places, plus the people and cultures that made them) or historic (interest in how the present can be connected through a place to past people, events and aspects of life. Monuments with historic interest provide a material record of the nation’s prehistory and history, whether by association or through illustration). The criteria for scheduling monuments refer to different features: period (monuments that characterise a category or period should be considered for preservation); rarity (monuments that are so scarce that all surviving examples that still retain some significance should be preserved); documentation/finds (existence of records of previous investigations); group value (association of the monument with related contemporary monuments and / or those of different periods); survival/condition; fragility/vulnerability; diversity; potential. Owners of a scheduled monuments need to apply for prior written permission from the Secretary of State for Digital, Culture, Media and Sport, under the procedure known as Scheduled Monument Consent or SMC (historicengland.org.uk).

Besides scheduled monuments, listed buildings are those, holding special architectural and historic interest. Listing brings a building under the consideration of the planning system, so that it can be protected for future generations (historicengland.org.uk). The Town and Country (Listed Buildings and Conservation Areas)

Planning Act 1990 includes among its roles being of “guidance of local planning authorities in the performance of their functions under this Act and the principal Act in relation to buildings of special architectural or historic interest”. The institution of the English Heritage (Historic Buildings and Monuments Commission) was owed to compile the list of the most historic interesting buildings, which following their inclusion within the list are defined as “listed” (Campbell, 2001). Listing is guided by the two main criteria: 1) value of the building, 2) period of construction. According to the Planning Policy Statement 15, the principles of inclusion in the List are: (1) Architectural interest: the lists are meant to include all buildings which are of importance to the nation for the interest of their architectural design, decoration and craftsmanship; important examples of particular building types and techniques (eg. buildings displaying technological innovation or virtuosity) and significant plan forms; (2) historic interest: this includes buildings which illustrate important aspects of the nation's social, economic, cultural or military history; (3) close historical associations with nationally important people or events; (4) group value, especially where buildings comprise an important architectural or historic unity; (5) fine example of planning (eg. squares, terraces or model villages). The Planning Policy Statement 15 also states principles to determine the historic interest of the buildings belonging to the categories presented above, considering worthy of listening “all buildings built before 1700 which survive in anything like their original condition are listed; and most buildings of about 1700 to 1840 are listed, though some selection is necessary. After about 1840, because of the greatly increased number of buildings erected and the much larger numbers that have survived, greater selection is necessary to identify the best examples of particular building types, and only buildings of definite quality and character are listed. For the same reasons, only selected buildings from the period after 1914 are normally listed. Buildings which are less than 30 years old are normally listed only if they are of outstanding quality and under threat. Buildings which are less than ten years old are not listed.” Listed buildings benefit from three different level of protection: Grade I (buildings of exceptional importance), Grade II* (particularly important buildings of more than special interest) and Grade II (buildings of special interest). Section 69 of the Town and Country (Listed Buildings and Conservation Areas) Planning Act 1990 defines Conservation areas as “areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance”. The definition of a Conservation area is instrumental to preserve a particular area or neighbourhood, while the listing procedure focuses only on individual buildings. Although some of the buildings in these selected areas may be listed, the importance of the area is stated by its special interest as a whole, which may include factors non related to the buildings themselves like the pattern of the streets and the skyline (Ross 1996). It is a duty of the local planning authority to identify which portions of its bailiwick are worth of protection due to their architectural and historical value (Campbell 2001). It should also establish the local standard to grant during the determination process as they are not prescribed. As the Planning Policy Statement 15 states the local authority in 4.4 paragraph “In deciding whether it is desirable to designate, an authority may take into account the resources likely to be required, not only for the administration of conservation area controls, but also for consultation with local residents and formulation of policies for a new area: without follow-up, designation is unlikely to be effective in itself.” The Planning Policy Statement 15 identifies also some other aspects to take into account for the designation of the areas such as: (1) the historic layout of property boundaries and thoroughfares; on a particular 'mix' of uses; on characteristic materials; (2) appropriate scaling and detailing of contemporary buildings; (3) the quality of advertisements, shop fronts, street furniture and hard and soft surfaces; on vistas along streets and between buildings; (4) the extent to which traffic intrudes and limits pedestrian use of spaces between buildings. The first conservation areas were designated in 1967 and there are now over 8,000 conservation areas in England (<https://historicengland.org.uk/listing/what-is-designation/local/conservation-areas/>). The United Kingdom Government set out its planning policies concerning the historic environment and designated sites for protection and conservation, termed as “heritage assets” in the National Planning Policy Framework (NPPF). The NPPF was published in 2012 and a new version of the NPPF was published in 2018. It defines a heritage asset as “A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing)” (Ministry of Housing Communities and Local Government, 2018, p. 69). Conservation area designation introduces controls over the way owners can alter or develop their properties. These controls include control over demolition of unlisted buildings which requires a planning permission, control over works to trees and restriction on the types of development which can be carried out without the need for planning permission.

Case study discussion and findings

The Chapel Street corridor is a regeneration area in the city Salford, one of the cities included in the Greater Manchester Combined Authority area. It is located at walkable distance from to the city center of Manchester and is partly included in the Salford Central Masterplan, a 20-years regeneration initiative, one of the UK's largest development projects. The Salford Central Masterplan was designed with the goal to achieve “capacity to deliver £650million investment, create around 11,000 new jobs, 197,000sqm of commercial space, 24,000sqm of retail and leisure space, 849 new homes, 390 hotel rooms, new car parking, improved pedestrian and cyclist routes and new public open spaces” (www.salford.gov.uk). The economic impact of this initiative in the City of Salford is of outstanding relevance. During the industrial revolution the area underwent rapid change, the urban fabric was characterized by a tight grid of street and crowded houses. In the 1970s it began to decline and in the mid-1990s population was falling, many buildings were empty and left to decay and social issues arose (SCC 2008a). Due to these initial conditions, it is evident that the successful implementation of the regeneration scheme is particularly welcomed by the local communities and decision makers. The area is indeed rich in built heritage (Fig. 5).

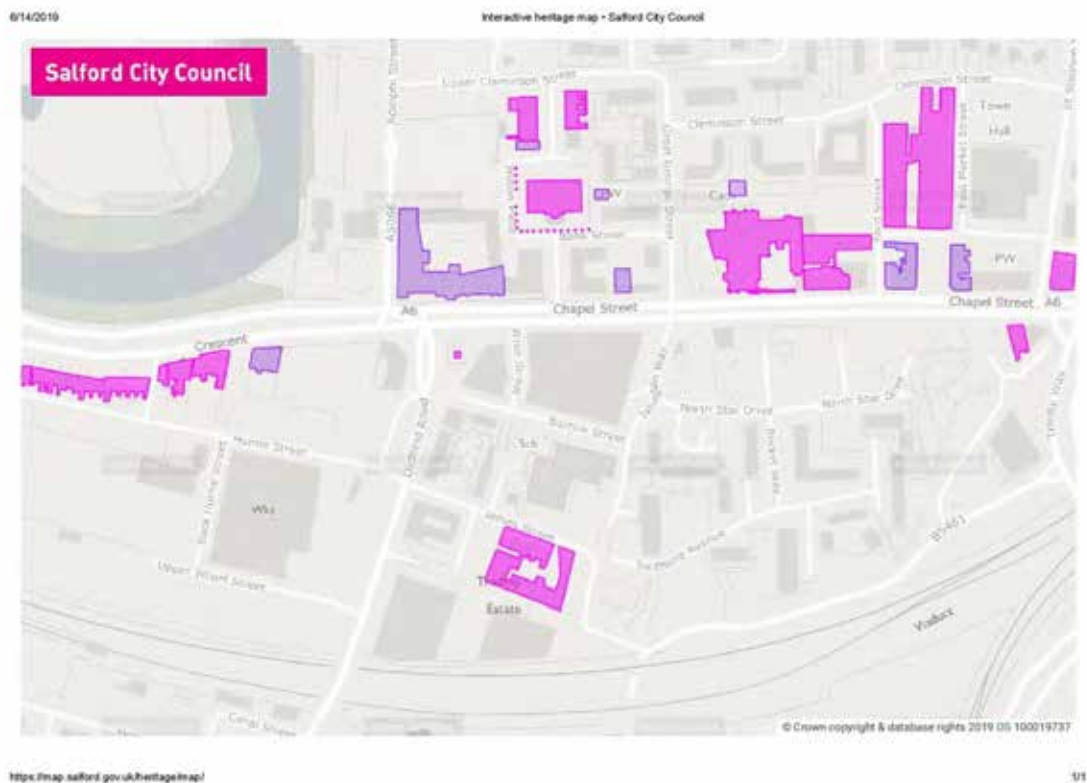


Fig. 5. Listed buildings in the Chapel Street study area (Source: map.salford.gov.uk)

It incorporates Grade II* buildings and conservation areas, including the Crescent and the Adelphi Buxley Square conservation areas (SCC, 2008a and SCC, 2008b). Overall, it is a key- corridor in the urban structure and should play an important role in the definition of the future identity of the local community. However, the approach to the conservation and preservation of built heritage in this area is controversial. The new projects within the Adelphi Buxley Square conservation area (SCC, 2007) have been implemented so far with a high level of consideration for the historical pattern of the urban fabric. For example, Timekeepers Square is a development of 36 townhouses that forms part of the English Cities Fund's (ECf) Salford Central regeneration scheme, which has been awarded multiple prizes including the RIBA North West Awards 2018 (<https://butfress.net/project/timekeepers-square/>). It perfectly fits into the urban surrounding, exploiting the potential of the visual connections between the Grade II* listed churches. On the other side of the Chapel Street corridor, the Crescent Conservation area has been recently challenged by the demolition of a Victorian building,

the Black Horse Hotel, which was recorded in the Crescent Conservation Area Appraisal (SCC, 2008b). The building was deemed not consistent with the regeneration plan by the developer, Fred Done's company, Property (Done) Ltd, consisting in the construction of about 400 rental flats in apartments of up to 22 storeys. The planning permission for the demolition of the building was passed by the Council despite serious concerns were raised by Historic England, the Victorian Society and the residents. According to Salford Star (7th April 2016), a representative of Fred Done's declared that "It wasn't feasible to keep the pub...we didn't want the pub...that was out of our hands". SalfordOnLine (7th April 2016), reported that the Victorian Society said the plans were "a poor scheme... setting a dangerous precedent for inappropriate development in conservation areas everywhere". The pub, built in 1875, was closed since 2000 and was in need of repair, but still remained on the council's own Local List of buildings of historical note. According to InsiderMedia (8th April 2016), a spokesman for the Victorian Society told Insider that the decision was "a disappointing one. As we pointed out in our letter of objection, the great harm that the scheme would cause to the conservation area and to listed buildings has not been justified in planning terms and it fails to comply with local and national policy. The opportunities provided by a site of this size means the loss of the locally listed Black Horse Hotel is entirely unnecessary. In almost every way this is a poor scheme and it sets a dangerous precedent for inappropriate development in conservation areas everywhere." Interestingly enough, difficulties in keeping the built heritage alive in the Chapel street corridor are arising in more recent times, while the initial reluctance to private investments in the area should have been partly overcome by the success of the scheme. In 2013, while the Chapel Street regeneration initiative was still in its infancy, the Old Bell Tower pub had survived risk of demolition, with "developers (who) had hoped to turn the landmark Bell Tower pub on Chapel Street into a residential development but instead fell into a dispute with Salford council" (Manchester Evenings, 2013). In 2016, the demolition of the Black Horse 1875 Victorian pub has been coupled by the Olde Nelson pub, originally built in 1805 and re-built in 1899, closed in 2002 and bulldozed following a "delegated decision" of the Salford City Council. This has happened despite of the fact that when the scheme was launched, the Planning Lead Member and Councilor Antrobus had declared that it was "essential that we preserve as many historic buildings as possible in the Chapel Street area" (Star, 16th June 2016). Antrobus further added that "Good planning means mixing the old with the new. It is essential that we preserve as many historic buildings as possible in the Chapel Street area", echoed by Salford MP Hazel Blears, who was photographed by the pub Salford MP Hazel Blears was photographed by the pub stating "Alongside the vital demolition work necessary to make the area safe, historic buildings and public spaces such as Ye Olde Nelson and Bexley Square will be revitalized and brought back into active use." Regrettably, two Victorian landmarks, one in the Crescent conservation area, another facing the Adelphi Buxley Square, have been reduced into dust to make room for new developments, which still hold the potential for adding value to the area thanks to the high quality of the design, though the decision of demolishing the two pieces of heritage has been made despite the opposition of local stakeholders with specific expertise in the Victorian heritage.

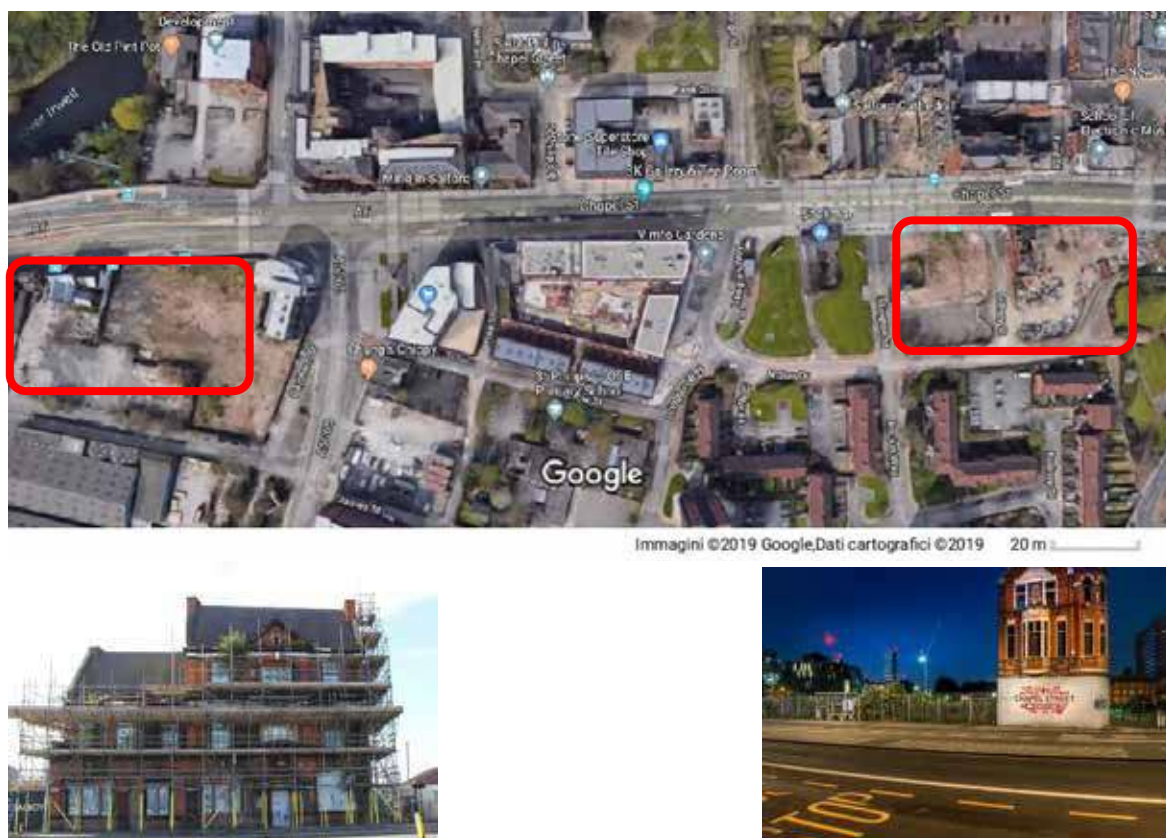


Fig. 6 – 7 - 8. The Black Horse pub (left, source: author's photo) and the Olde Nelson pub (right, source: aboutmanchester.co.uk) before their demolition in 2016 and the building sites on their former location.

Conclusions

Despite of the growing importance that built heritage is gaining internationally, as essential and irreplaceable component of human-centred, inclusive and equitable development, still the implementation of such a strong paradigm is challenged by weak conservation policies at the local level. The implicit recognition of the significance of built environment within the human rights domain seems to be taken for granted in the formulation of the targets of Agenda 2030, which only focuses on the investments in the preservation of heritage but does not recognize the necessity of tracking the loss of built heritage, particularly under the pressure of real estate market and developers. There is an urgency for re-focusing the SDG11 Target 11.4, which should acknowledge both financial efforts on the conservation and preservation of heritage, but most importantly the willingness to retain such legacy for future generations. The first part of this paper widely discussed the contradictions created by the concept of heritage as social construct, whose significance should be assessed through a wide and participatory process, and the notion of heritage as legacy to be preserved for the benefit of future generations. It is suggested that the precaution principle should be applied in the decision-making process regarding built heritage, which is non-replaceable, thus decisions on it are irretrievable. Beside a recognition of the importance of the existence value of built heritage at international level, it would be extremely useful to avoid unnecessary destruction of built heritage under the pressure of real estate and developers, thus, there is an urgency for a reformulation of heritage values and related decision-making process within the local spatial planning agendas. The discussion of an extant case study demonstrated how even in one of the most advanced countries in terms of policies heritage conservation, in the practice this may not be the priority. It is suggested that heritage conservation should be re-casted within the spatial planning policies, by positioning it into a non-negotiable domain, thus allowing future generations to benefit from a non-replaceable asset.

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Who is afraid of transition? Monitoring the impact of transformation on historical rural landscapes as indicator of communities' changing needs

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Abstract: Rural landscapes are a productive heritage. Consequently, these sites can be representative, more than others, of the quantitative and qualitative impact of macro-phenomena related to transition by monitoring transformations acting over them. This heritage is recently at the centre of a strong interest and debate. The challenges posed by a constantly transforming and stressed heritage led to an urgent need, emerged in particular in the last fifteen years, of an integrated approach that could cope with a complex background of issues, such as exogenous and endogenous pressures. However, at first instance, preservation approaches applied over historical rural landscapes focussed on a “crystallization” of these sites, although their intrinsic dynamism. Accordingly, some are the recent management tools dedicated specifically to this heritage, aimed to integrate preservation and planning policies (e.g. GIAHS, FAO). Their effectiveness is based on two main pillars, which differentiates them from previous approaches: first, the direct involvement of communities that have shaped, maintained and inhabited these sites over time, through an examination of newer needs derived from a recent opening to a globalized world; second, the definition of site-specific management plans able to change accordingly to the results of a participate monitoring over time, in the perspective of the definition of a win/win methodology including all the stakeholders involved (communities, agencies, institutions). The paper evidences the contraposition between the “fear” of an inevitable transformation and the potentialities they can generate as indicator of the transition effects on rural landscapes in time. Thus, the development of policies aimed to a dynamic preservation of this heritage must consider an accompanied and mutual support to transition between communities and professionals. To discuss this scenario, a comparison over the application of management and preservation approaches in two rural landscapes sites is given, to outline potentialities and critical aspects.

Keywords: Rural landscapes, integrated approaches, monitoring, dynamic conservation, communities

Introduction

The preservation of rural landscapes has gathered the attention of a growing number of scholars from different disciplines, since the early 2000s (Antrop, 2005; Antrop and Van Eetvelde, 2017).

The reason for this interest from a wide range of sectors lies also in the difficult determination of the concept of *landscape* itself which, as a “polysemous” (Gambi, 2000), “dense” (Varotto, 2018) or even “opaque” (Birks, 1998; Wynard Lion, 2007) term has needed to be adjectivized to delimit its meaning. The origins of the term *landscape* have had an influence over the definition of the concept *cultural landscape* nowadays: the fact that there is not a specific and unique definition might be a consequence of the ubiquitous use implied over the centuries of the word *landscape* in different languages (Meining, 1979, Rowntree, 1996; Taylor, 2009). From the restitution of the concept of *cultural landscape*, detailed by Carl O. Sauer in 1925¹, up to the most recent ones in the context of the preservation of the cultural heritage, which on the international level are identified in the definitions given by the World Heritage Center (United Nations Educational, Scientific and Cultural

¹ “The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape is the result. Under the influence of a given culture, itself changing through time, the landscape undergoes development, passing through phases and probably reaching ultimately the end of its cycle of development”.

Organization - UNESCO, 1992)² and the European Landscape Convention (Council of Europe, 2000)³, substantial differences and implications have rose.

The limit to delineate the meaning of *cultural landscape* in a common and shared definition is reflected also as a first obstacle to overcome in approaching the safeguard and management of such heritage. Being complex and multidimensional, the main challenge is represented by a dualism of sense: on the one hand, a *forced* simplification and *impoverishment* of a multifaceted heritage, structured not only by many components, but also by the relationship intercurrent between them. On the other, the aforementioned presence of several and coexisting factors could lead to a picking approach, which investigates only partially the whole.

For long time, in fact, the anthropic and natural macro-components of landscape have been investigated as separate, taking little into account their crucial interconnections (Smith, 2006); or even, the presence of man and its action over nature has been considered as a critical aspect, “harming” landscape (Marsh, 1872). The origin of such *risk* has then been shifted towards the individuation of changes, transformations and development as main responsible of damage (Antrop, 2005).

Even though the interdependency between anthropic and natural factors is recognized nowadays (Bender, 2002; Lowenthal, 2005; Aplin, 2007), when it comes to deal with the safeguard of cultural landscape is necessary to underline how the theoretical and practical approaches experimented on the international level have led, until recent times, to the development of further critical aspects, part of which can be reconducted to the investigation methodologies themselves, and caused mainly by a scarce integration between the diverse systems and tools (Akagawa and Sirisrisak, 2008).

The framework of issues presented becomes even more evident when facing the preservation and management of rural landscape. This heritage, being productive, is representative more than others of the quantitative and qualitative impact of macro-phenomena related to transition and transformation, given its intrinsic dynamism.

As for cultural landscapes, of which they are part of, rural landscapes face two main criticalities in terms of safeguarding and monitoring approaches and tools. One is represented by the possibility to fall into a “crystallization” (Van der Valk, 2014)⁴ process of investigated sites, in which a “museumization”⁵ of inhabited places implies resultant issues in social, economic and ecologic terms. Second, and consequential, the chance to develop management policies that do not consider the sites as a palimpsest or a process still undergoing, but rather as a “result”. That being so, such dualism has been recognized in literature as a “dilemma” (Van der Valk, 2014), leading to a question: should policies focus on the possible future changes of a site, or rather just “preserving” the past?

The identification of rural landscape as heritage and its preservation. A matter of time

As the definition of the concept of *cultural landscape* as often lead not only to difficulties in developing effective safeguarding policies, but also to a simplification of such approaches, a similar course is occurring regarding the concept of historic or traditional rural landscape.

In this context also, in fact, there is not just one, shared and common definition.

² “(...) cultural landscapes represent the “combined works of nature and of man” designated in Article 1 of the Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.” UNESCO: Cultural Landscapes, Date of access 1/11/18 <http://whc.unesco.org/en/culturallandscape/>,

³ “Landscape” means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;” European Landscape Convention, Article 1 “Definitions”, section “a”, Council of Europe (2000)

⁴ Van der Valk defines “immobilization” with the concept of “landscape mummification”

⁵ The phenomenon of “museumization” is expressed as: “(...) presenting and interpreting cultural groups and their representative tangible and intangible heritage. (...) It has produced stereotypes derived from the past constructions of the Other, such as (...) the freezing of indigenous peoples and minorities in the old anthropological time frames. (...) has been a concern in heritage tourism and sustainable development.” Galla A. and Paulo D., 2016, Museumization. In: Encyclopedia of Tourism, edited by Jafari J., Xiao H. (Cham: Springer)

The main critical aspect, when speaking of which sites can be defined as historic rural landscapes, is not about an *adjectivisation* of the world landscape itself -as occurred in the case of cultural landscape - so as to add a peculiarity to the word and better define this complex heritage; rather, the main issue in defining historic rural landscapes lies in *time*.

In literature, rural landscape is frequently addressed as *traditional* or *historic* (Antrop, 1997, 2005; Torreggiani *et al.*, 2014; Barbera *et al.*, 2014; Brogiolo and Colecchia 2017).

A rural landscape is assigned to the first or second definition by delimiting in which span of time a site has constituted and consolidated its peculiar elements. Two are the issues identified in reviewing the definitions: first, *traditional* and *historic* concepts sometimes overlap (Ludwiczak, 2012), while in certain cases the choice between the two classifications leads to a different identification of sites.

Therefore, a historic landscape cannot be claimed as *traditional* just because it was not strongly stressed by the impact of transformations occurred after the industrial revolution, such as mechanization of agricultural practices or changes in the species cultivated: in fact, there are no rural landscapes which were not affected (even in minimum part) by such processes of change.

The process might be represented both as a sudden event or as a slow modification: the crucial point concerning the determination of being a site historic or not therefore cannot be associate only to changes developed gradually in time, but instead all stages must be considered in the analysis.

As a matter of fact, transformation in rural landscape constantly occur. Therefore, the issue is represented by the delimitation of a time span in which a rural landscape, to be defined as historic or traditional needs to be identified within. Thus, defining a rural landscape within one of the two concepts basing on a belonging era might result in a contradiction, being rural landscapes a process still on going and in constant modification, a palimpsest of individual and collective stories and narratives.

Thus, by choosing a certain segment of time as more significant to be considered or preserved, it comes a misinterpretation in investigation and research: a historic rural landscape must be analyzed as a continuum that includes all the phases of a still lasting process. This reflection is well explained by Renes (2015): in the challenging tentative to define the concept of historic rural landscapes and, overall, what should be considered within this definition, the result often led to a forced simplification of this heritage.

The concept of heritage, in a broader sense, is itself considered a process (Harvey, 2001): the same can be assumed when investigating historic and traditional rural landscape definitions; as landscape is “time materialized” (Bender, 2002), also the meanings associated with it as heritage must not stand still, but rather developing accordingly to changes in context. The IFLA-ICOMOS (International Federation of Landscape Architects – International Council on Monuments and Sites) *Principles concerning rural landscapes as heritage*, as the most recent definition, synthetize effectively the urgency to overcome the question over time and transformations: “*Rural landscapes as heritage are expressions of social structures and functional organizations, realizing, using and transforming them, in the past and in the present. (...) All rural areas can be read as heritage (...) traditional and recently transformed by modernization activities: heritage can be present in different types and degrees and related to many historic periods, as a palimpsest.*” (2017).

That being so, the “dilemma” cited above between preservation of the past or management of change regards the dimension of *time* in a broader sense. Being rural landscapes a *palimpsest* it is not possible to define, or better prefer, which layer deserves more than others to be preserved: and even is critical to delimitate time spans in which a rural landscape might be considered as historical. The choice to preserve only a portion of a landscape, given the fact that it is considered more “relevant” than the whole that composes its context, poses an inevitable contradiction even with the principles stated in the European Landscape Convention.

Preservation policies must therefore include all the transformations and the intertwines that occurred in the past and are on-going today, since it is this intricate network that reinstitutes the complex scenario that has to be safeguarded.

Dealing with change and communities needs in rural landscapes: a review of management and preservation methodologies applied at the international level

At the international level, there are different methodologies that have developed since the eighties of the twentieth century for the preservation and management of rural landscapes, diverse in terms of research realm and specific objectives. The ecological approach, as an example, implemented at first the Integrated Conservation and Development Projects (active for just over a decade until the early 2000s) and subsequently Community based conservation programs (Little, 1994; Berkes, 2003; Campbell and Vainio-Mattila, 2003; Folke *et al.*, 2003; Garnett *et al.*, 2009).

Both the methodologies are centered on the communities that live and manage the rural landscape; the tools express the will of integrate development and conservation policies of the rural sites by involving the population. Another contribution is given by the contractual tools of management and protection of rural landscapes, as Payments for Environmental Services (Pagiola, 2007; Leimona *et al.*, 2008; Wunder, 2005, 2015).

In the field of heritage preservation on a supra-national level, the World Heritage Center (UNESCO) counted (as of 2018) 29 sites that can be identified as rural landscapes listed as World Heritage (UNESCO, 2018). The process of safeguard developed by the World Heritage Center includes criteria to be respected both in the phases of nomination as World Heritage site and in the subsequent periodic monitoring; furthermore, from 2005 management plans are compulsory for nominated sites.

Besides these efforts, today these procedures are still applied on a *recommendation* level, which is independent of the category of heritage examined: moreover, management plans rarely provide specific indications on the criteria for monitoring the changes taking place on the sites examined. Although, during the thirtieth session of the World Heritage Convention (Vilnius, 2006), the need to create a set of indicators that could render the criteria indicated by operational guidelines less *discursive*, emphasizing how “*setting precise but realistic and measurable results and indicators is essential for effective performance appraisal and monitoring*” (UNESCO, 2006) and that a first draft of these indicators was carried out by ICOMOS UK (2006), the development of the criteria was not completed. To date, a set of indicators (although partial) can be found in the management plan compiled for the Stonehenge site in 2009 (Young *et al.*, 2009).

This inclination to the difficult dialogue between site management policies and those more closely related to the safeguard of rural landscapes has only recently been partially overcome, through the identification of operational and analytical methods that comprise a broader spectrum of disciplines and related skills (e.g. preservation of heritage, geography, economy, ecology, archaeology) in a holistic and inclusive perspective of management.

An example is represented by the FAO Globally Important Agricultural Heritage Systems (GIAHS) program, active since 2005. GIAHS foster a dynamic approach aimed specifically to the protection and development of historic rural landscapes, acting on a global level; the program directly involves the population, by using also contractual tools. The community is supported by experts from different sectors in the process: unlike other analyzed methodologies, the GIAHS are articulated on the community that lives and that has created the rural landscape subjected to the program.

In the given context, management plans as GIAHS can represent a significative step forward in terms of definition of policies. Firstly, the system overcomes the concept of historical rural landscapes as an object focusing rather on this heritage as a process: the core of this shift is given by the role of the community in all the steps related to the inclusion of a site in the program, from its individuation to the management after the nomination.

The milestone is represented by a premise: a site should be included in the program only if the nomination process is shared by the community that inhabits it. Such standpoint has one main implication: as the policies are community-centered, the management plan can be adapted accordingly to the developing needs of the inhabitants (Altieri and Koohafkan, 2003; Howard *et al.*, 2008; Boerma and Koohafkan, 2010).

Concerning the presented methodologies, although progress has been made in recent years in the process between the theoretical and practical application of policies, some critical aspects persist in

the effectiveness of evaluation of the different approaches over time. The current methodologies for the protection and conservation of historic rural landscapes, in particular those relating to management plans, although present shareable objectives, appear still unclear in monitoring implemented actions (Alumae *et al.* 2002; Agnoletti, 2014; Palang and Fry, 2015). The risk is that of not being able to monitor the actual implementation of the proposed policies in a timely and effective manner.

Indicators for monitoring transformations in rural landscapes: an overview

Although in the literature well-structured proposals regarding the evaluation of the integrity of rural landscapes have already been advanced, it was found, however, that there is still a relative lack of monitoring indicators over both risk management and the effectiveness of the policies applied.

In order to be able to assess the impacts of transformations and, consequently, indicate and structure which mitigation policies of the phenomena encountered may represent an effective response, an in-depth investigation must be carried out into the sources of statistical data and the information measuring the indicators. In fact, incomplete or unreliable sources can cause an inaccurate assessment of the impact of the phenomenon: the prepared counteraction actions, therefore, can be underestimated with respect to the criticality found.

The usefulness of the indicators is reflected in the restitution of a synthetic meaning: they are developed on the one hand to reduce the number of measurements necessary for returning an "exact state of the art", and on the other to improve the communication of results measurements to end users.

At an international level, the Organization for Economic Cooperation and Development (OECD) developed a set of indicators for assessing and monitoring sustainable development, presented in a first report published following the Rio Conference in 1992. Ten years after the first report, having collected and analyzed the critical aspects in the application of the indicators provided in the first phase to assess rural landscapes, OECD developed a document that gives a framework of the evaluations expressed in different countries (NIJOS/OECD, 2002). Although there are some general considerations important for the implementation of assessment criteria (e.g. quantifiable indicators), the contribution does not show the will to address the indicators towards an analysis on the impact of the phenomena that act on the rural landscape, but rather the assessment is limited to its characteristics.

In the same years, in the European context, following the ratification of the European Landscape Convention (2000) the theme of monitoring the changes and risks (endogenous and exogenous) to which the rural cultural landscape is subjected becomes central.

This has therefore led to the development of new researches: in the Italian context, the first important study is due to the research group of Vallega (2008). By interpreting the text of the ELC and the given definition of *landscape*, the research outlines indicators referred both to objective characteristics of landscape (e.g. natural and socio-economic processes) and to others related to perception aspects. In the design of the indicators, therefore, four reference contexts are taken into consideration: ecological, socio-economic, cultural and institutional.

Concerning the monitoring over UNESCO World Heritage listings, the Università di Torino investigated over nominated rural landscapes sites (2013-2015). In the research, reference is made to the indicators for the evaluation of sites, structured in four categories: economic, historical, socio-economic and managerial (Gullino *et al.*, 2013). The focus of the investigation of the considered sites lies in evaluation of *integrity* concept as defined by the World Heritage Center. Thus, changes are not quantified through units of measurement. The evaluation of the management plans applied to the examined sites is also limited to a comparison made in a descriptive way of the most recurrent phenomena, thus not quantifying the impact of the identified phenomena (Gullino *et al.*, 2015). In the same years the investigation of the Universities of Palermo, Tuscia and Molise led to the definition of a set of specific indicators for the analysis of the transformations of the traditional agricultural landscape (Paesaggio Agrario Tradizionale - PAT). The main difference compared to what was observed in the abovementioned investigation lies in the articulation of indicators that are mostly quantitative and measurable, associated with a specific unit of measurement. By subdividing the

families of indicators into frames of reference for the analysis of the environmental, productive and social and settlement structure, the model consists in analytical system providing a global assessment of the identified issues (Marino and Cavallo, 2014; Barbera *et al.*, 2014). The Italian Ministero delle Politiche Agricole Alimentari, Forestali e del Turismo developed the National Register of Historic Rural Landscapes in the context of the "National Observatory of Rural Landscape, Agricultural Practices and Knowledge", in which a site can be registered only if it corresponds to the parameters of "significance, integrity and vulnerability" of historical rural landscapes, widening the UNESCO criteria. The tool for checking the transformations of historic rural sites in this case is present in the VALutazione Storico Ambientale methodology (VASA): a diachronic reading of permanence derived from data relating to soil consumption (Ministero delle Politiche Agricole Alimentari, Forestali e del Turismo).

Every action has a reaction. A review of changes, transformations and management plans in two rural landscape sites

The sites compared in this section have been selected not only for the similarities they have in the peculiar characteristics of which they are composed, albeit with differences, but also for the consequences of the choices that management plans, practices and regulations at national and supra-national have involved in safeguarding rural landscapes.

Ifugao terraces, in the Philippines, faced issues in the application of management plans and regulation, both developed by the national authorities and the UNESCO. On the national level, starting from the 70s in the context of the so-called Green Revolution, the government adopted actions in order to make the land more competitive on the international market. The main change was the introduction of new varieties of rice, developed to have a higher productivity rate than the traditional ones and, at the same time, to reduce cultivation times. The irrigation system and crops in Ifugao terraces have been managed for centuries on a democratic basis; the traditional system has been built and adapted over time to cope and avoid possible conflicts that could have arisen from the needs of the individual towards the community. This management, which was in charge to the community, went through substantial changes in the last thirty years. Based on a government decision, and subsequent to the effects of Green Revolution, since 80s the National Irrigation Agency (NIA) has taken the place of the collective management of the water resource. The main reform regarded the maintenance of irrigation canals by using concrete, considered more resistant for purpose. In monitoring the process of change, Acabado (2015) reports how the intervention on the canals was already out of order in a short time: concrete structures damaged rapidly, causing interruption in the water system. Analyzing the literature (Hayami, *et al.*, 2000), it is also reported how NIA had already entered into financial and technical difficulties from the 1980s, lacking to maintain the international competitive standards that follow the pressure of Green Revolution.

But Ifugao rice terraces do represent a milestone also in the UNESCO World Heritage list, being the first *cultural landscape* nominated in 1995 (UNESCO, 1996). At that time, the nomination process did not require a management plan for the site to be submitted by the State member (management plans will become compulsory in 2005). If, on the one hand, the listing of the site as World Heritage had the purpose to preserve the Ifugao terraces from the changes imposed by the Green Revolution, which were harming traditional cultivation and the structure of the *Cordilleras*, on the other the nomination acted as trigger for sudden changes. International and domestic tourism rose at an impressive rate; in just three years from the listing, the government asked for assistance so as to prevent changes in land-use, abandonment of cultivations and damages to the irrigation system (UNESCO, 1998). In short time, terraces were inscribed in the *In Danger* list (UNESCO, 2001). After eleven years of efforts and by including the community in the decision process, also by entering in the GIAHS program as pilot site in 2005 (and being nominated in 2011) the site was removed from the *In danger* status (UNESCO, 2012).

A similar path is traced in the *subaks* system of Bali, Indonesia. The cultivation practices of the site are strongly intertwined with traditional ecologic knowledge and religious aspects: the culture system revolves around the rituals based on the philosophical principle of the *Tri Hita Karana*. The whole society is organized in the *subak*: community of farmers who manage and share land and resources,

cultivating rice with traditional techniques. The rituals related to water and the temples voted to it are the foundation of the *subak* itself. It is estimated that there are 1200 *subaks* on the island, and that the water system is managed by about 4000 farmers (Salamanca *et al.*, 2015).

This complex system, as happened in the Ifugao rice terraces, encounter a first crisis in the context of the Green Revolution. A variety of non-native rice was introduced: growing at particularly high rates, it allowed to harvest up to six times more cereal in two years than to the use of consolidated cultivation techniques. Issues rose rapidly: if on the one hand there were benefits, at least from the economic and productive performance, on the other farmers faced for the first-time scarcity of water resources. A second change occurs in the 1980s, when the Indonesian government decides and implements a plan of management of the irrigation network called the Bali Irrigation Project: this program should have improved the canals system. Again, the imposition of new rules and the lack of dialogue between government and the population has led in a short time to the suspension of the program, given that the community showed strong disagreement towards newly introduced practices, which considered water-related rituals partially (Lorenzen and Lorenzen 2005). The position taken by the community derives from the precise rules regarding the management of waters and the rituals associated with them.

Concerning the listing of the site as World Heritage (2012) the path that led to the nomination of the *subaks* and the subsequent management of the site presented some critical aspects. As noted by the report edited by the Stockholm Environment Institute (SEI) (Salamanca *et al.*, 2015), the management plan and the regulations put in place following the appointment of *subaks* in the list had issues in conduct the site through proper management. A cause of the partial failure of the implemented policies is attributable to the lack of a specific approach to the site itself. The development of a management program that, at least initially, is designed to be potentially applicable to very different situations has posed a series of problems deriving mainly from the top-down nature of the method itself.

A further factor that has placed critical points in the relationship between the government and local communities has been the decision to set a “pay per access” to part of the site, setting a ticket to access the World Heritage area. Although this decision could be a possible source of income for the families belonging to the *subak* object of the intervention, the government pronouncement to entrust the management of the tourist infrastructures to an external company has raised strong controversies from the community, felt excluded and deprived of decision-making power. Furthermore, the decision to provide tourist services with only a part of the UNESCO site led to protests by neighboring *subaks*, who fear a substantial economic loss as a result of this fact.

The top-down approach imposed by the government and the agency led to disagreements concerning mainly the exclusion not only of the communities themselves, but above all of their representatives from the assembly. Finally, the inhabitants complained about the absence of guidelines that could effectively explain the correct administration of the site.

In both presented cases, is evident how the application of top-down policies has led to inevitable conflicts and exposure of the inhabitants and landscape to new types of pressure; furthermore, it is shown how transition from a condition to another frequently leads to modifications of which real consequences can be not immediately noticed.

In the context of rural landscapes such transformations can be represented, to cite some examples, by the substitution of traditional cultivations with newer species, or by the introduction of different irrigation systems. Such interventions might be derived from authorities’ decisions, maybe not including the community in structuring policies, even if the population will be like in charge of practically accomplish over the site what was planned.

For example, the appointment of the rice terraces of Bali has attracted international attention to them, having as consequently an unprecedented series of threats (e.g. pressure tourist, economic rivalry linked to land holdings, loss of biodiversity). At the local level, the lack of an inclusive management plan has given site residents a secondary role, causing the progressive loss of the main agent of landscape transformation.

The introduction of non-native species in the crop cycle can lead to decidedly impacting effects on the sites themselves. Since this heritage is so strongly founded on the interweaving of ritual, religious and traditional practices with those that regulate the cultivation of local species, with the timing and the methods that these have followed for centuries, even a minimum change is sufficient to create an unbalance.

If the policies of protection of the site, recognized as heritage, moved in the direction of the conservation and prevention of possible interference due also to the introduction of "new" elements in the landscape, on the other hand the programs of governmental origin with regard to in the agricultural field do not question themselves with the same problems, replacing the native species with modern varieties of culture.

At first, the impact of changes might result in a positive impact to all the stakeholders involved: if the decision of install a more fruitful cultivation could on the one hand increase the production of a sector and result in a more immediate earning for farmers, on the other if not regulated it can lead to the exploitation of fields, causing loss of fertile land and biodiversity over time.

As shown, both the sites were at the center of "power relations": the local economy has found to confront itself with a market on a larger scale, even without the necessary preparation in a rather sudden manner, in which new scenarios for agriculture and, at the same time, new economic sectors that allowed a greater gain in less time than those of traditional rural activity were outlined for the community.

In situations like the ones just described we are witnessing a paradox: an action considered innovative and that aims to be an improvement, but applied without having a deep knowledge of the territory and its characteristics, has an opposite impact compared to the initial intentions.

Some remarks. Who is really afraid of transition?

Given the complex background of investigation methodologies, researches, tools dedicated to the management and safeguard of rural landscape, a main critical aspect emerges. As Renes states, in an effective synthesis "*Landscape preservation means management of change*" (2015): a reflection that implies the consideration of transformations and changes more than a "matter of fact" in safeguarding rural landscapes, but as the continuous action that relates all the components of this heritage.

As shown, policies that tend to an "immobilization" and that do not cope with the inevitable changes in site represent a potential risk themselves. The fear of transition that seemed to have prevented policies to act accordingly to transformations must be overcome in a broader sense, so as to develop preservation and management methodologies that are passible of modification in the whole process that leads to the safeguard of a site, from the policies design to application and monitoring.

Transformations on rural landscapes do not necessarily have, as a consequence, the complete losing of those characteristics and structural elements that represent a site and make it peculiar. Changes imply modifications over a site, sometimes necessary to cope with the needs of its inhabitants, posing new challenges: that being so, policies of management and safeguard must be developed accordingly, through a critical contextualization of the endogenous and exogenous phenomena (e.g. social, economic etc.) that brings transformation over this heritage.

As presented in the two sites analyzed, transition is critical when is managed as an obstacle to preservation, regarding changes only as a harm, rather than a driven of opportunities, and leading to actions that crystallize sites. But rural landscapes are a living heritage: the dilemma then goes beyond the one regarding dynamism and stillness in developing preservation and management policies: attention must be given to the actors that will play a role in this framework, and specifically to the position that each stakeholder will represent.

Paradoxically, rapid changes and their consequences over the social and environmental system constituting historical rural landscapes might act as trigger for the development of management and conservation policies: this could happen when awareness of the intertwines between transition effects and the evolution in the needs of a community rise.

For these reasons it is not possible to read all transformation that constitute rural landscapes as singular events, but rather there is the need of reflecting over the possible multi-level results of decisions. Furthermore, is fundamental that the preservation of rural landscape comprise the whole site, and not only the parts considered “significant” due to the fact that transformations have act less over them.

The dimension of time, then, closes the circle: overcome the dilemma means to consider that each element, relationship and system is destined to transformation, and a successful management plan should adapt accordingly to this dynamism.

In the given context, management plans must overcome stillness when defining policies. Being rural landscape a heritage-process, and in continuous change, it is therefore necessary that methodologies of investigation and programs applied to sites are structured as adaptable, through a management that includes transformations as “backbone” to develop policies.

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Reconstructing public history through European settler and Indigenous heritage and landscape

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Abstract: City planners and civic officials are delving into the implementation of actions for truth and reconciliation following the 2015 report of the Truth and Reconciliation Commission of Canada. Dolores Hayden reminds us that when read as stories of our city-region's public memory, the landscape, with built, natural, cultural, and spiritual dimensions, can tie our individual identities into something larger, a community that has a powerful sense of place. This paper draws on archival research and site visits to understand the built, natural, and cultural heritage on an 11 hectare site in the city of Saskatoon, Canada, that was part of the Plains First Nations territory for thousands of years, followed by the Métis nation, European settler homesteads, later as a leisure space for urbanites in a growing city, then as a retreat for Catholic religious orders of Sisters. For the past 12 years, it has remained closed to the public, fenced off and awaiting re-imagination and re-use by a local conservation organization, the Meewasin Valley Authority. This paper concludes with recommendations on how to use the thousands of years, eras, and worldviews behind the heritage of the site to create a powerful place for urban truth and reconciliation.

Keywords: heritage; city-region; settler; Indigenous

Introduction

The Peggy McKercher Conservation Area (PMCA) is an 11 hectare site owned by the Meewasin Valley Authority (MVA) outside of the built-up area of the city of Saskatoon, but inside its northeast municipal boundary. The PMCA is situated atop the edge of the South Saskatchewan River valley, with roughly 1 km of beautiful river overlooks, at the end of what is referred to as the Small Swale, a native temperate grassland ecosystem intact for over 10,000 years with high biodiversity. Saskatoon's current population is roughly 250,000 people, with large Indigenous (First Nations and Métis), European-settler descent, and diverse international newcomer populations. It is the largest city in the Province of Saskatchewan at the centre of the Canadian Prairies. The MVA is a conservation organization created in 1979 with three partner organizations: the City of Saskatoon, Province of Saskatchewan, and University of Saskatchewan. Its mandate centres on conservation, education, and development for the purposes of protecting the river valley's natural and cultural heritage and enabling public access to it.

The history of European settler society in Canada has been characterized by colonial violence toward Indigenous peoples. A significant part of this process was carried out through the federal government-funded residential school system run by Roman Catholic, Anglican, Presbyterian, and United churches, where Indigenous children were taken away from their families and home communities and taught – often violently – to reject their cultures and communities in favour of aggressive assimilation into a western settler and Christian society. Residential schools began operating in the late 1800s in Canada, and the last one closed in 1996.

Apologies have been issued by the Prime Minister and many church leaders in Canada. The effects of residential schools are multi-generational and reparations for this darkest chapter of settler colonialism will similarly take generations of work. As a way to acknowledge the true actions and impacts linked to residential schools and colonialism, and to try and move Canadian society, and the Indigenous nations within, in a direction of healing together, the Truth and Reconciliation Commission of Canada (TRC) was created. For several years it gathered evidence and facilitated truth-telling and reconciliatory dialogue in communities across the country. In 2015 the TRC released its final report. As peoples, governments, and religious organizations across Canada take steps to implement change according to the TRC guiding principles and calls to action, in view of the truth told by Indigenous residential school survivors, it is critical to create opportunities for constructive engagement between Indigenous and non-Indigenous peoples at the local scale. The local scale is created by unique place histories, relationships, and landscapes that have been witness to and constitutive of public memory, and it is a powerful scale at which to act in order to strengthen the bonds of society.

Using place, heritage, and landscape as a conceptual foundation, this paper examines how Indigenous and European-settler history are layered with the natural and settlement processes at what is now the PMCA site. This is done by appealing to literature and archival evidence relating to four historic phases of use on the site, supplemented by site visits. The archives at the Roman Catholic Diocese of Saskatoon were critical for this research, as were sources held by the MVA, the Local History Room at Saskatoon Public Library, and the Shortt Collection at the University of Saskatchewan Library. This paper argues that the PMCA is a powerful prospective site for heritage conservation, inter-cultural dialogue, and addressing some of Saskatoon's societal challenges relating to co-existence, natural, and cultural conservation. I argue that the strong shared place attachment across peoples and eras, and the environment itself, make this site invaluable for deploying heritage conservation, dialogue, and mutual learning, in the service of active reconciliation.

Conceptualizing place, heritage, and landscape as public memory

The interrelationships between physical setting (materiality, appearance), activities (programming, functions) and meanings (symbols, memories) – past, present and future-oriented – create a sense of place (Relph, 1976). Yi-Fu Tuan (1974) uses the concept of *topophilia* as a way to describe the qualities such as meanings, attachments, or memories that people develop for particular places. Place has a texture created by changing human-environment interactions and social relations over time, giving it depth and complexity beyond what is perceived on the surface (Adams *et al.*, 2001). At the time of European settlement in Canada, across Indigenous territories, newcomers did not typically recognise pre-existing Indigenous places on traditional lands and seek to humbly co-exist alongside them. Instead the colonial processes of planning, private and market-based land title, and homesteading policy and land parceling were directed at replacing Indigenous places with settler colonial landscapes (Nejad and Walker, 2018).

Tuan (2001) uses the terms “hearth” and “cosmos” as a metaphor for how places speak to our dual nature as humans, made up of what our body needs and desires, and what our minds long for and pursue. The hearth is local, warm, cozy, familiar, nurturing. The cosmos is large, abstract, and drives the excitement of exploring the unknown in the world beyond. Having places in our environment that satisfy our need for hearth and evoke the mystery of the cosmos is important for achieving a high quality of life and contentment. The hearth for one person or community might be the cosmos for another, and in this dynamic tension create a richer and deeper sense of place that is multi-layered, textured, where different specific affinities to the layers of place history and characteristics exist for different peoples, but where sufficient common ground drives joint stewardship. Learning how different people(s) experience the same place builds empathy and can strengthen social bonds.

Non-representational theories in landscape and heritage studies have brought new emphasis to the sensual human experiences of smell, sound, feeling, and emotional dimensions of place (Harvey, 2015). When the temporal past and future is kept prominent among affective dimensions which enliven the present, the dialogical

process of heritage conservation among public and experts, and among different cultures and worldviews, has great capacity for social and environmental impact. Dolores Hayden (1995) reminds us that when read as the stories of our city-region's public memory, the landscape, with built, natural, cultural, and spiritual dimensions, can tie our individual identities into something larger, a community that has a powerful sense of place, a shared hearth in the larger cosmos. Our urban and regional landscapes frame the lives of many generations and outlast many lifetimes. Their protection needs to be driven by a strong sense of guardianship, obligation, and reverence.

Rodney Harrison (2013) prioritizes materiality, connectivity, and dialogue in his approach to identifying, understanding, and conserving heritage sites and landscapes, emphasizing the bringing together of people(s) and creating space for different perspectives and worldviews. The heritage landscape and perception of oneself in it changes with the depth of temporality and cultural plurality that becomes subject to dialogue (Harvey, 2015). The nature versus culture, and monumental versus intangible dualisms in heritage discourse limit our ability to understand the actual lived experience in heritage landscapes, and the impact its conservation can have in critical societal change, addressing issues like cultural and environmental sustainability, economic inequality, social cohesion, urban futures, among others (Harrison, 2013; Winter, 2013). Indigenous ontologies have advanced our understanding of the kinship ties between human and non-human animals, plants, and the assemblage of living and non-living elements that make up our environment, expanding the notion of 'social relations' to include these human to non-human bonds (Harrison, 2013; Walker *et al.*, 2013). Trying then to draw lines between cultural, natural, monumental and intangible heritage seems deficient given our evolving understanding of the 'connectivity ontology' that infuses heritage with meaning in the midst of societal challenges like environmental degradation, species extinction, climate change, and fractured relationships between peoples (Harrison, 2013).

Using heritage to promote truth, justice, reconciliation and healing from conflicts emanating from the past, and potent in the present, has been a transformative tool in Northern Ireland (Crooke, 2010). Key to critical and transformative heritage is centring the 'sociality' of creating community, rather than trapping it in historic caricatures (Waterton and Smith, 2010). The dialogical aspect of heritage must be free to create or re-configure the contours of community through appeals to shared causes and interests in the present, and mutual understanding of one another's lived experiences. The dialogical process must be directed at producing a sense of place that is fluid over time, that acknowledges difference as much as unity, conflict as well as cohesion, and affinity in addition to separation among people(s). It must specifically avoid the tempting trap of seeking to patch over complex pasts (Burkett, 2001; Waterton and Smith, 2010).

First Nation and Métis territory – Treaty 6 – Temperance Colonization Society

The Saskatoon region has been inhabited by many different Northern Plains First Nations for thousands of years. The Cree and Assiniboine, followed by the Métis and Dakota, lived and hunted along the South Saskatchewan River prior to settlers of European descent arriving to establish communities in the Saskatoon region during the 1880s (Waiser, 2016). Just across the river from PMCA is a roughly 2.5 km² site called the Opimihaw Creek Valley, located for the past 30-40 years within Wanuskewin Heritage Park. As University of Saskatchewan archaeologist Ernest Walker (2016), one of the principal leaders who sought protection for the site points out, the Opimihaw Creek Valley was a gathering place in continuous use by successions of different First Nations for bison hunting, medicine gathering, habitation, sacred cultural and spiritual purposes as far back as 6,000 years ago (Walker, 2016). "Perhaps most extraordinary is that every cultural group that existed across the Northern Plains throughout the milleniums spent time at Opimihaw Creek" (Walker, 2016, no page). In 1876 Treaty Six was negotiated between the British Crown and Cree, Assiniboine, and other First Nations, setting terms for future co-existence in the Saskatoon region and beyond. First Nation use of the Opimihaw Creek site was overtaken by settler homestead parceling and private property rights, until reclaimed as Wanuskewin Heritage Park less than a century later, through efforts by the MVA and a number of First Nation

and non-Indigenous partners. In 2017 Wanuskewin Heritage Park was added to Canada's tentative list for designation by UNESCO as a World Heritage Site.

The Saskatoon region is a significant part of the Métis nation homeland, emanating west from the nation's heart at the Red River settlement (present-day Winnipeg). Part of this homeland includes the Round Prairie Métis settlement (La Prairie Ronde), which was one of the largest in the territory, roughly 30-40 km south of present-day Saskatoon, and located next to, with close community ties to, the Whitecap Dakota First Nation's reserve at Moose Woods. Round Prairie got its start in the 1850s when about 30 bison-hunting Métis families travelled there seasonally from the Red River settlement, and then in the spring of 1870 settled there permanently (Schilling, 1983; Troupe, 2009). Another important Métis settlement is Batoche, perhaps the most significant single community in the Métis nation's homeland regionally and provincially, and at the centre of the Northwest Resistance in 1885 led by Louis Riel and Gabriel Dumont. It is roughly 90 km to the north of Saskatoon. The historic Moose Woods – Batoche Trail, connecting the Round Prairie and Batoche settlements, was an important route connecting Métis and First Nations communities, and passed through the site that would become Saskatoon. Kinship ties between the Round Prairie and Batoche Métis communities led to them fighting alongside one another during the Northwest Resistance against the Canadian government forces sent to enforce the imposition of Canadian land title over the pre-existing Métis rights in the territory (Troupe, 2009).

Across from the Opimihaw Creek Valley, on the east side of the South Saskatchewan River, were grasslands, wetlands, and forest where First Nations and Métis peoples hunted, among other things. Here the Moose Woods – Batoche Trail passed through the quarter section of land immediately east of the PMCA site. There is a significant water spring on the PMCA site, which appears to be joined to the main trail by a secondary trail (Enns-Kavanagh, 2008). That water spring, referred to again in subsequent sections of this paper, was a likely spot for travellers to stop along the Trail, rest, and water their animals (Enns-Kavanagh, 2008).

In 1881 the Temperance Colonization Society formed in Ontario with a view to creating a prairie agricultural community following the principles of the temperance movement – believing alcohol was largely to blame for social and moral decline – led by a Methodist minister named John Lake. A land grant from the Canadian government which was aggressively pressing for (non-Indigenous) settlement on the prairies meant that after surveying the site in 1882, the first Temperance colonists arrived and settled in 1883 (Figure 1). They travelled by rail to Moose Jaw, and then overland for 250 km to the site of Saskatoon, a site chosen with advice from Chief Wapahaska (Whitecap) from nearby Moose Woods. The small settlement of Saskatoon, originally on the east side of the South Saskatchewan River (now the Nutana neighbourhood), served the agricultural homesteads orbiting it. Broadway Avenue, the main commercial street, overlapped with the Moose Woods – Batoche Trail for the in-town segment of it. During the Northwest Resistance in 1885, Round Prairie Métis and Whitecap Dakota First Nation peoples travelled past Saskatoon and north on the Moose Woods – Batoche Trail to join the Métis near Batoche, passing near to the site of the PMCA and at that time, the new homesteads of Temperance colonists.

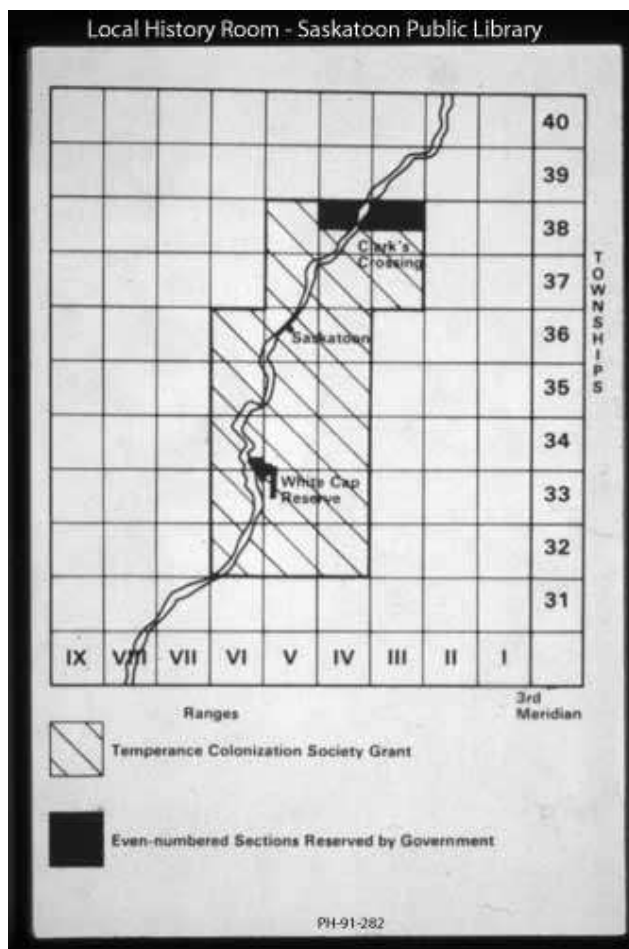


Figure 1: Map of Temperance Colonization Society land grant (Local History Room, Saskatoon Public Library)

The written memoirs of an early Temperance colonist, Barbara (Hunter) Anderson (Anderson and Anderson, 1972) are invaluable for understanding the early relationships between settlers and Indigenous peoples, from a settler's perspective. Her memoirs are all the more valuable for this paper given that her family's original homestead (on the Temperance Colonization Society land grant) was located only a short distance from the PMCA site. The following excerpt gives her view – as a 10-year old girl during her first summer since moving to the region – of the developing neighbourly relationships between settler and First Nations and tells an interesting story of hunting and household trade:

“During the summer of 1884 we were all very busy and on several occasions native Indians called on us. They were very friendly and had we been able to converse with them, would have enjoyed their comments. When they came to the house, they would come in quietly, without knocking, and were pleased when we were surprised. Once an Indian came in when we were eating dinner and Mother offered him the rocking chair to sit in. He sat down very carefully, but when the chair tipped backward he jumped to his feet, quite alarmed, and examined the chair from top to bottom, to see what had made it move. On another occasion an Indian [woman] came to our house, with a great armful of ducks on her arm. They had been hunting ducks at a nearby slough and had been quite successful. The Indians had not been used to having Rolled Oats and were very fond of it, cooked in many ways. They knew Mother had some, and the [woman] made signs to her that she wanted to trade ducks for oatmeal. Mother went to her bag of rolled oats and taking a bowl filled it heaping twice, and then took a small dip into the bag giving her only a little in the bowl the third time. When the [woman] saw this she picked out two of her largest Mallard ducks and a small Teal duck to give Mother in trade. Mother asked her for three Mallards, but she took the bowl and made signs that twice the bowl was heaped up and the third

time only a little in it. Thus the two large ducks and one small one was a fair exchange. Mother agreed and all were satisfied” (Anderson and Anderson, 1972, 57-58).

The first settler associated with the PMCA site itself was John Vance, followed in 1908 by Robert T. Luker, and then passing shortly after to Cleeve William Taylor, a bachelor who built a house on the land in 1909 (Enns-Kavanagh, 2008). All settlers to this point seemed to be short-term and doing little to transform the land, which was notably stony and irregularly configured along the river valley’s meandering edge. In 1916 William R. Hutchins received the patent for the land and he and his family lived there for some time. The Hutchins homestead has a significant heritage imprint on the PMCA site. For context, the population of neighbouring Saskatoon by 1916 was roughly 21,000. While William Hutchins appears to have died before 1936, and his wife Caroline moved away in 1937, what is believed to be their infant’s marked grave is still present on the PMCA site (Figure 2). Buildings from the Hutchins homestead were no longer on site by 1944 (Enns-Kavanagh, 2008). What remains today attributable to Taylor’s and then mostly the Hutchins’ homestead are depressions associated with their settlement of the site, a stone boat (i.e., a small sled with a box on top to haul stones out of the field by horse)(Figure 3), trail remnants linking the site to the Moose Woods – Batoche Trail, and the infant gravesite. The materiality and arguably a spiritual imprint from the Hutchins homestead combine with temporal pathways left from the era when colonial settlement was parceling and privatizing land tenure for homesteaders of European descent, displacing Indigenous communal hunting and patterns of life. Altogether this transitional period created texture to this place that is central to the PMCA’s heritage landscape (Adams *et al.*, 2001; Harvey, 2015) and vital to the public memory of the Saskatoon city-region (Hayden, 1995).



Figure 2: View over South Saskatchewan River from site of Hutchins infant gravesite, PMCA (Ryan Walker)



Figure 3: Stone boat from homestead site, PMCA (Ryan Walker)

The Ranch – a country place cherished by the Lamarsh family (1945-1963)

MacDermid Lamarsh is one of Saskatoon’s oldest law firms and when Archie Lamarsh joined the practice in 1930 the city and province were entering a decade of depression and drought, the most difficult in Saskatchewan’s history. According to his son, Jack, Archie Lamarsh was a farm boy at his core, and though his ambitious law practice in Saskatoon required an urban base, which he and his family had in their home at 314 – 9th Street East, Archie was determined not to raise his family entirely in an urban setting (Lamarsh, no date). Following the difficult economic period of the 1930s, and then WWII, Archie Lamarsh bought from the Hutchins family estate in 1945 the land parcel that had been their homestead since 1916 (Enns-Kavanagh, 2008). By 1945 Saskatoon’s population had reached roughly 45,000 people.

Archie contracted a friend and client of his, a retired Scottish joiner, to build a log cabin which took a couple of years to build at a modest pace, all the while enjoying the beautiful landscape (Lamarsh, no date). One wall of the cabin had built-in double bunk beds; there was a “huge natural stone fireplace and a beautiful pine dining table which could seat 20 people at a time” (Lamarsh, no date). Archie and his family would affectionately call this land outside the city, and the cabin on it, ‘the Ranch.’ Jack’s recollection of his and his sisters’ place-connection to the Ranch in their upbringing reveals the magical impact of this site overlooking a beautiful bend in the South Saskatchewan River with silhouettes of Saskatoon’s skyline in the distance; note also the reference in Jack’s recollection below to the riverbank spring, a persistent feature from the time when it would have been a stop for travellers along the Moose Woods – Batoche Trail.

“We kids came to love the Ranch as my father did. The riverbank provided wonderful hideouts, trails and play areas. We could watch the crows and magpies build their nests and raise their noisy youngsters in the spring and summer. A prodigious riverbank spring was plumbed by my father with an old sunken barrel and stone sluiceways. In addition to providing a bountiful water supply, it attracted all kinds of birds and animals for us to

observe. The river provided fishing for goldeye and periodically we would see a giant sturgeon breach in midstream” (Lamarsh, no date).

To capture some of the beauty of the place, in 1948 Archie asked his client and friend Robert Newton Hurley, a watercolour painter that was rising to fame in Saskatchewan, living in the nearby town of Sutherland (annexed by Saskatoon in the late-1950s), to come out and create a painting of the Ranch (Lamarsh, no date). Jack recalls watching the artist work and enjoying his stories about his own childhood in England, before immigrating to Canada in the 1920s. The Hurley painting became a treasured family heirloom for years afterward in Lamarsh homes.

It would seem that the Ranch was a special nexus of hearth and cosmos (Tuan, 2001) in the sense of place held by the Lamarsh family in the Saskatoon city-region, venturing from their home in one of the most dense and ‘urban’ neighbourhoods in Saskatoon into the nearby regional landscape with a natural setting that inspired awe and a sense of grandness. In 1963 when Archie Lamarsh sold the site to the Roman Catholic Diocese of Saskatoon, it was with 18 years of imprinting between the natural landscape, its non-human and human patterns, material and intangible (Harrison, 2013), building depth and complexity into the texture of this place (Adams *et al.*, 2001). Like the Hutchins family before them, the Lamarshs left the land mostly unbroken and in its natural state, to become similarly inspiring for the next stewards of this site, adding to its place memory (Hayden, 1995).

Maryville – a retreat for congregations of Catholic women religious (1963-1995)

The Roman Catholic Bishop of Saskatoon, Francis Klein, after recovering at St. Paul’s Hospital from an acute heart attack the year before (Robertson, 1982), wrote to the Sisters Superiors of all the congregations in Saskatoon on May 8, 1963, indicating that he had acquired the property that would become Maryville, named after Mary, mother of Jesus (Klein, 1963). The Episcopal Corporation of Saskatoon had purchased ‘the Ranch’ from Archie Lamarsh with the Lamarsh log cabin still on it (Figure 4). Bishop Klein blessed the land (Stengler, 2004) that would be used “so that the Sisters of the diocese might have a place, close to the city, where they could go for a few hours or even days to enjoy the country quiet” (Klein, 1963, 1), an idea suggested to him by Father (later Monsignor) John Robinson. He described the property as “undeveloped”; “[h]owever, there is a club house on it, lots of stone, wild grass, cliffs, some bush and a spring of fresh water” (Klein, 1963, 1). Bishop Klein called a meeting to be held five days later, for all Sisters Superior, each with one companion, to attend a meeting at the new ‘summer resort’ to see it and brainstorm ideas on how to best appoint it (Diocese of Saskatoon, 1963). Roughly 40 Sisters attended. Dinner was served. At that meeting the Bishop conveyed his view that the Sisters, having done so much for the Diocese, deserved a retreat space specifically for them as a thank you, remarking that they rarely get to fully relax and very “seldom enjoy the beauty of nature” (Diocese of Saskatoon, 1963, 1). Also important to this endeavour was the sense that the communities of Sisters were working typically in isolation from one another, and this place was to bring them together. It was for Sisters of all the congregations in the Saskatoon diocese. As context, the nearby city of Saskatoon’s population was roughly 100,000 people in 1963.

Summer fields PHONE 24214

STATEMENT
172 Second Avenue South
SASKATOON, April 9 1963

M Episcopal Corporation of Saskatoon purchased NE 1-14-37-5W3
from Archie G. Lamarsh for \$8,000.00 Cash.
In Account With All adjustments to April 20th, 1963.

MCCLOCKLIN REAL ESTATE LIMITED

CITY PROPERTY OUR SPECIALTY REAL ESTATE, LOANS AND INSURANCE BUSINESSES FOR SALE RENTS COLLECTED, ETC.

April 9 63	To - Purchase Cottage and Land	8,000.00		
April 19 63	To - Land Titles Office - Transfer fee	24.50		
April 20 63	By - Cheque paid		8,000.00	
April 20 63	By - Balance required		24.50	
		8,024.50	8,024.50	

April 20/63
Pd. 24.50
489

Figure 4: Statement of sale – Archie Lamarsh to Episcopal Corporation of Saskatoon (Roman Catholic Diocese of Saskatoon archives)

Incorporating the log cabin (referred to above as a club house by the Bishop) that Archie Lamarsh had built in the 1940s as their central ‘Common Lodge’ at Maryville, each religious community of women was encouraged to have their own cabin built or moved to the site, if they wished. Those that did not were always welcome to use the Common Lodge which, as noted in the previous section, had bunk beds built into one wall, a stone fireplace, and a large table to seat 20 people. At that first meeting they talked about a swimming pool being built shortly, a chapel, a road to the cluster of cabins, water system, gas, and eventually electricity (Diocese of Saskatoon, 1963). Later on phone service was added to some cabins, but at the start, a two-way radio system from the Common Lodge was used. The site was “strictly private for the Sisters use” (Diocese of Saskatoon, 1963, 2). If you imagine at the time, in the early 1960s, Sisters wore full habits and a commitment to modesty made recreation in public places difficult or impossible (Figure 5). A private retreat like this was wonderful, in their view. The minutes of that first meeting with Bishop and Sisters on site sets out a question for all to ponder: “What name should be given to the place? Not a worldly one.” And the site itself, as captured in the closing line of those minutes, “is beautiful....a corner of heaven!” (Diocese of Saskatoon, 1963, 2).

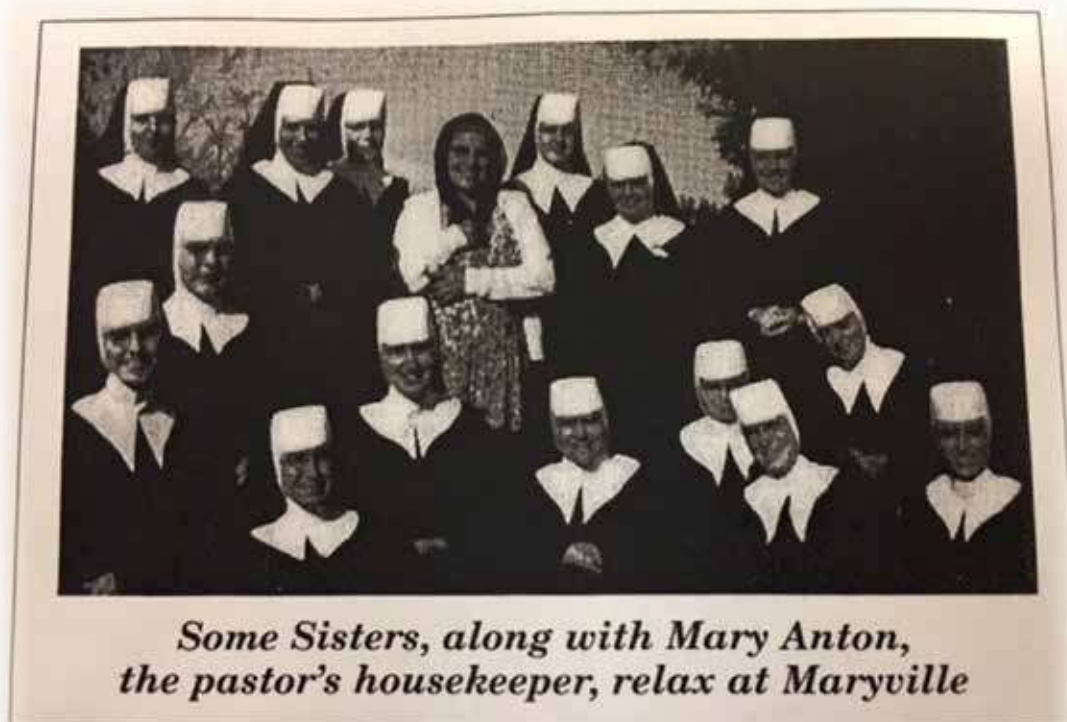


Figure 5: Group of Sisters at Maryville (Stengler, 2004, 40)

Letters and cards of thanks came in throughout the summer of 1963 as Sisters expressed their gratitude and captured some of the initial excitement of the time (Figure 6). The place was referred to variously as a retreat, camp, resort, country house, but did not have a name quite yet. The first suggestion of a name seems to be in a letter from the Sisters of Sion in July, where they suggest “Maryvale” (Edeltrude, 1963, 1). In the letter they note that joy from the swimming pool has “gone beyond all expectation.” In another letter from St. Mary’s Convent (Catherina, 1963, 1), the Sisters write to tell Bishop Klein of “the wonderful evening we spent and how we enjoyed the balmy air and beautiful view of the winding river.” Another note from an older Sister Superior talks about how much the younger Sisters enjoyed the Common Lodge and exploring the natural beauty of the site. By 1964 it was referred to clearly as ‘Maryville’, and in its statement of accounts, you can see that volleyball, basketball, baseball, swimming, and a barbeque were all part of the recreational experience. There were at least 14 religious communities of women using Maryville, some now with their own cabins on the site. There were reportedly six cabins moved onto the site for different congregations of Sisters, plus a chapel, and the Common Lodge built by Lamarsh and his retired Scottish joiner friend (Figure 7). A shower house was built. The Maryville Association Executive was struck, with a President, Treasurer and several other Directors, all Sisters from different congregations in the Saskatoon diocese (e.g., Maryville Association Executive, 1967). And the Executive Director was Monsignor John Robinson. Maryville would typically open for the summer in early June and then close in early September. Three horses were at Maryville for horseback riding, during some years, which was exceptionally popular among some of the Sisters. Time and again, picnics, potluck dinners, sing-songs with musical instruments, Mass and celebrations in the chapel, and organized group events among the congregations of Sisters were advertised and formed the seasonal highlights (Figure 8).

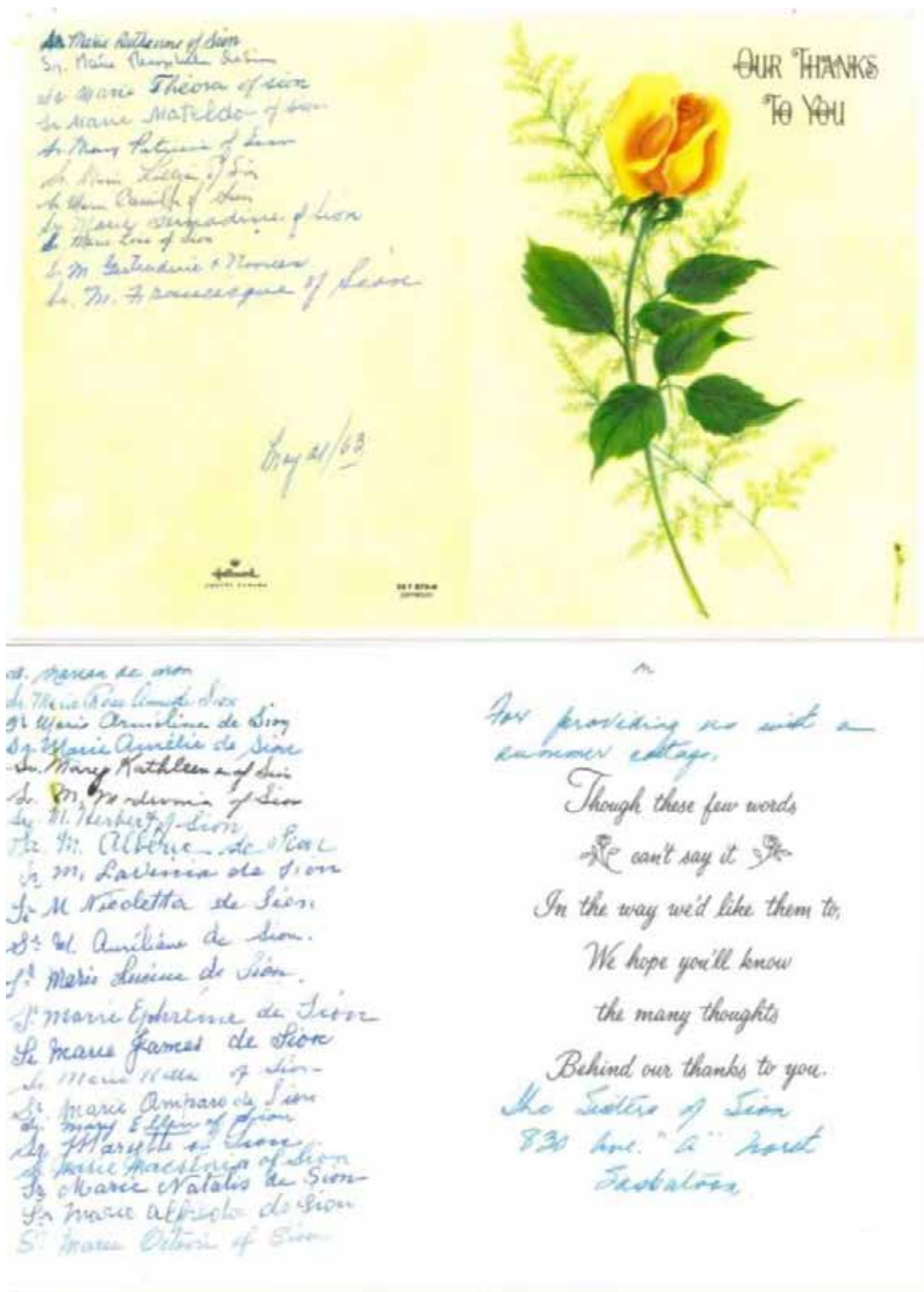


Figure 6: One of several thank you cards/notes addressed to Bishop Klein from congregations of Catholic women religious (Roman Catholic Diocese of Saskatoon archives)



Figure 8: Handbill advertising one of the regular community gatherings at Maryville (Roman Catholic Diocese of Saskatoon archives)

The Maryville Chapel was renovated in 1977, and improvements were made to the Common Lodge in the Spring of 1978 (Diocese of Saskatoon, 1978). In the early 1980s the Sisters of the Saskatoon diocese were growing concerned about the City of Saskatoon's urban expansion plans and how these would impact the Maryville site (Stang, 1981, 2). After some inquiries with the City, they were assured that the growth plans for that northeast area were 25 to 50 years out into the future. The Sisters re-visited the original vision for Maryville from 1963, pondering, now in the 1980s, the prospect of opening it to lay groups for weddings, retreats, and charging for use of the facilities. Invoking the original purpose of Maryville articulated by the now both deceased former Bishop Klein and Monsignor Robinson, and the group of Sisters Superior at that critical first meeting in May 1963, consensus was reached among the current Bishop, James Mahoney, and the Sisters, that Maryville was not set up to make money, and that "[i]t should be maintained as **a summer resort for our sisters**" (Stang, 1981, 2).

By the early-1990s, a high level of vandalism was causing terrible concern and the 1994 season was an important one for taking a big picture look at the future of Maryville. A letter in April 1994 calls for a meeting of the Sisters in the Saskatoon diocese to create "a plan for where to go next" with the future of Maryville (unknown author, 1994). It appears that the meeting resulted in some decisions around actions to be taken because in the late-summer and Fall of that year a trailer was moved onto the site to house a year-round

caretaker, a new garage for storage of site equipment was constructed by the Saskatoon diocese at Maryville (AMEC Earth and Environmental, 2008), the last building to remain on the site, still present in 2019, and the shower house by the pool was upgraded. It seemed that this new investment signalled the renewed determination to keep Maryville as an operating summer retreat for the Sisters of the Saskatoon diocese. But Bishop James Mahoney, who had been a champion of the purpose of Maryville according to the vision of his predecessor, passed away in 1995, and shortly after he died, an administrator of the Saskatoon diocese was put in place to oversee operations of the Saskatoon diocese until a new Bishop was appointed in 1996. Under the temporary diocesan administrator, Father Leonard Morand, Maryville was closed permanently in 1995 during the brief interregnum period between Bishops. The diocese held the land for another 12 years before selling it to the MVA, in March 2007. Father (then Monsignor) Leonard Morand passed away three months after the sale of land to the MVA. Remnants of the basketball court and the grotto for the shrine, which was a statue of Saint Joseph, are present on the site (Figures 9 and 10).

The congregations of Catholic women religious from the Saskatoon diocese were important stewards of this landscape for several decades, and in their enjoyment and care of this environment, created a sense of place at the PMCA site rich with material and spiritual texture (Adams *et al.*, 2001). Part of the heritage of this site is embodied by the immaterial blessing of it, the motivation behind creating a community of congregations here, and the dialogical process of making decisions, revisiting the purpose of this community retreat, and exercising care for it (Waterton and Smith, 2010; Harrison, 2013).



Figure 9: Remnant of basketball court, PMCA (Ryan Walker)



Figure 10: Grotto that housed shrine, a statue of Saint Joseph, PMCA (Ryan Walker)

Toward the conservation of public memory – Applying a connectivity ontology and dialogical process

In 2007 the MVA bought the former Maryville site, by then closed for 12 years, from the Roman Catholic Diocese (Episcopal Corporation) of Saskatoon, aiming to link the site eventually to its network of river valley trails, with interpretive signage, and offer “environmental education and recreational programming that promote conservation and stewardship” (MVA, 2009). In 2009 the MVA named the site after its first and longest-serving board chair, Margaret (Peggy) McKercher. McKercher, a prominent and well-respected community leader in Saskatoon, served the inaugural role as MVA chair from 1979 until 1995 (coincidentally the year Maryville was closed). When MVA purchased the land the resource conservation manager at the time, John Gerstmar, remarked in the Saskatoon StarPhoenix newspaper (2007, A6) that “[i]t’s an absolutely beautiful natural area along the bank. There’s a little bit of disturbance, but really about 90 per cent of it is in its natural state.” The population of Saskatoon was around 200,000 in 2007, and new neighbourhoods were being planned and opened up nearer than ever before to the site, though still a significant distance away.

The concern raised by the Sisters of the Saskatoon diocese in the early 1980s about the risk to the Maryville site from encroachment of urban development was prescient and will materialize over the next decade according to the City of Saskatoon’s growth plan for new neighbourhoods referred to in its University Heights Sector Plan, unless the City’s leadership alters the path of future development. The City has already recently opened a new high capacity roadway and bridge through the ecologically sensitive native grasslands habitat of the Small

Swale and Northeast Swale, not far from the PMCA site. The Province of Saskatchewan has located a right-of-way to build a new Saskatoon Freeway as a city bypass route in roughly 10 years which would also cross the Swale ecosystems. Yet even in the face of these challenges, the PMCA holds out the possibility for a site of great heritage significance for Saskatoon and the surrounding region. Its natural integrity, beauty, and humble human and non-human interaction with the prairie landscape that is still part of a functioning ecosystem intact after more than 10,000 years, has generated a spirit of place worth conserving. The critical role that heritage can play is precisely to jump into the midst of society's pressing challenges, such as the need to build stronger intercultural relationships between peoples, to arrest environmental degradation, and to generally draw clearer connections between culture, environment, history, spirituality, and peoples.

This heritage landscape has been created by the coming together of the land, human activity, reverence, and joy – a stopping point for repose at the water spring, hunting grounds and part of the larger homeland and territory of Indigenous communities, a site where new land tenure laws were imposed by the European settler government, displacing Indigenous peoples, given local effect by the Temperance Colonization Society in their land grant. The PMCA was home to the Hutchins family, cherished and protected by the Lamarsh family, a recreational and blessed retreat for the Catholic Sisters of Saskatoon, and now under the care and stewardship of the MVA, a publicly-funded local conservation organization focused on the South Saskatchewan river valley, protecting and interpreting its (natural and cultural) heritage. As if to come full circle and reconnect more powerfully with the Indigenous culture that forms part of the deepest texture of this place – a foundational element for millennia – the MVA recently entered an agreement with the Saskatchewan Health Authority to have Elder and Métis Knowledge and Ceremonial Keeper, André Letendre, from the Batoche community, conduct Sweat Lodge ceremonies at the PMCA over (at least) the next year.

At a Pipe Ceremony led by the Elder, André Letendre, to start this new relationship with the MVA staff and board of directors in May, 2019, I took away from the ceremony a message of the importance of unifying the region's peoples, worldviews, and futures, in a shared reverence for the 'great mystery' shared by peoples of different cultures. Guided by the societal goals emanating from Canada's TRC, and given the nature of the PMCA's layering of natural diversity, First Nation, Métis, European settler, urban and rural connections, Catholic faith, Indigenous ceremony, and MVA's mission to conserve and educate about the heritage of the river valley landscape, it would seem that a powerful heritage landscape is presenting itself for conservation and interpretation. Guided by a connectivity ontology and dialogical process (Harrison, 2013), an enduring need to conserve the public memory (Hayden, 1995) particular to our shared hearth in the cosmos (Tuan, 2001), and to address our most pressing environment and society issues (Winter, 2013), the potential is great for the MVA to work with Indigenous nations, City of Saskatoon, Province of Saskatchewan, Roman Catholic diocese, and local citizens to protect, interpret, and program the continuity of the site's heritage. At top of mind is that, in doing so "[h]eritage is not a passive process of simply preserving things from the past that remain, but an active process of assembling a series of objects, places and practices that we choose to hold up as a mirror to the present, associated with a particular set of values that we wish to take with us into the future" (Harrison, 2013, 4).

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Sustainable Protection of Chinese Human-Habitat Historical Environment from the Perspective of Transition: Cases Study of Traditional Villages and the Ancient City of Pingyao in Shanxi Province

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Abstract: The title of human-habitat historical environment is awarded to traditional human settlements under specific economic, political, cultural and technological conditions. Such environment has dual attributes of historical protection and community life, and its sustainable protection has an important impact on urban development and resident life. By analyzing the problems in the protection of Chinese human-habitat historical environment. Issues touch on the neglect of community life in protection action, the ignorance of the big environment background in protection perspective, the lack of regional considerations in development strategies, and the implementation force is dominated by the will of the government, as well as the deficiency of dynamic management mode. Then, through in-depth interpretation of UNESCO's proposals on environmental protection of historic cities, drawing on the experience of historical environmental protection in HUL pilot cities, and based on the concept of sustainable development, this paper puts forward the transformation paths of Chinese human-habitat historical environment. This paper focuses on the discussion of the two settlement types of traditional villages and the Ancient City of Pingyao(ACP) in Shanxi Province. The main paths include: protecting objects from focusing on the heritage protection to considering both heritage protection and community life; protecting perspectives from cultural relics protection to protection of urban environment floor; protecting forces from relying on government to multi-force participation of the whole society; and protecting management from static management system to sustainable dynamic planning management. By protecting, renovating and improving the livability of the human-habitat historical environment, the sustainable development of the urban historical environment is gradually realized. The paper is intended to provide experience for sustainable protection of the human-habitat historical environment in China.

Keywords: transition; human-habitat historical environment; traditional villages in Shanxi Province; the Ancient City of Pingyao

1 Introduction

In recent years, the environmental problems brought about by the rapid urbanization process have attracted more and more attention. Among them, the urban historical environment, as a collective memory of human beings^[1], is facing tremendous pressure and challenges. "Human-Habitat Historical Environment" refers to the overall space environment composed of cultural heritage, place environment and community life, which has dual attributes of historical value and community life value. At present, China has entered a comprehensive

transformation stage from traditional to modern^[2], and the transformation and development of China's "Human-Habitat Historical Environment" is an irreversible trend of the times. In this context, "Sustainable Development" and "Historical Urban Landscape (HUL)" have gradually become hot topics in the field of heritage protection in China^[3]. The former requires the protection and sustainable management of existing resources and urban heritage, while the latter, as a holistic and dynamic concept in a new perspective, provides an opportunity for the interdisciplinary exploration of "Human-Habitat Historical Environment"^[4] and a new reference paradigm for the sustainable protection of city heritage in China.

2 Human-Habitat Historical Environment

2.1 Overview of Human-Habitat Historical Environment

"Human Settlement" refers to various types of human settlements and environments in cities, villages and towns^[5]. Among them, "the city is the material framework of daily family and economic activities, as well as an environment of concern for more meaningful actions and nobler impulses of human culture" (Lewis Mumford, 1961). "Human Settlement Science" was founded by Doxiadis and systematized by Wu Liang-yong and others in China^[6] (Figure 1). It is a science focusing on the relationship between human beings and the environment, and also an interdisciplinary group of disciplines, such as geography, environment and economy, which are dominated by architectural science^[7].

"Historical environment" refers to the overall historical environment landscape composed of historical buildings, historical streets and historical context, which represents the human characteristics of the region. While the "Human-Habitat Historical Environment" emphasizes the important role of community life in the historical environment landscape. It is the environmental space created by human beings in the past under specific economic, political, cultural and technological conditions. It has dual attributes of historical protection and community life.

"Human-Habitat Historical Environment" can be roughly divided into two clusters: one is "Human-Habitat World Heritage", whose "outstanding universal value" is so rare that it transcends national boundaries and has universal significance for the present and future of mankind (United Nations Educational, Scientific and Cultural Organization); the other is the "General Human-Habitat Heritage", such as traditional villages, ancient villages, historic and cultural towns and famous villages, historic and cultural blocks and other historical environment areas with "life attribute" and "heritage attribute".

2.2 Transitional Development of "Human-Habitat Historical Environment"

With the acceleration of urbanization in the world, more and more cities are facing great threats. The protection and development of urban historical environment are facing major challenges. The transformation and development of urban historical environment has become an irreversible trend of the times. In this context, the international community has carried out in-depth discussion on the transformation and development of urban historical environment, and eventually issued the "Recommendation on the Historic Urban Landscape" in 2011, forming a new concept of urban historical environment transformation and development - "Urban Historical Landscape", and then extended and promoted the connotation of its methods. Historic Urban Landscape (HUL) is a renewed and dynamic method of managing heritage resources. Its connotation emphasizes the importance of

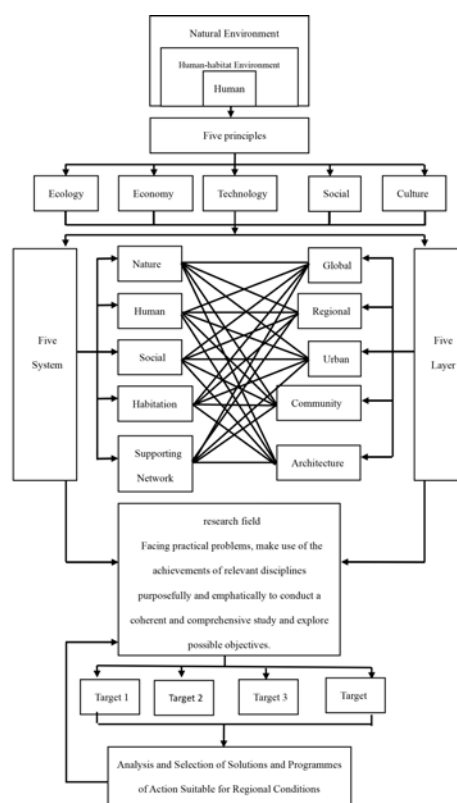


Figure 1. Basic Research Framework^[6].

the sustainable protection and shaping of the historical environment of ordinary daily life landscape, and emphasizes the results of the "layering" a formed by the superposition of other different "layers", such as the natural "layer" and the humanistic "layer".

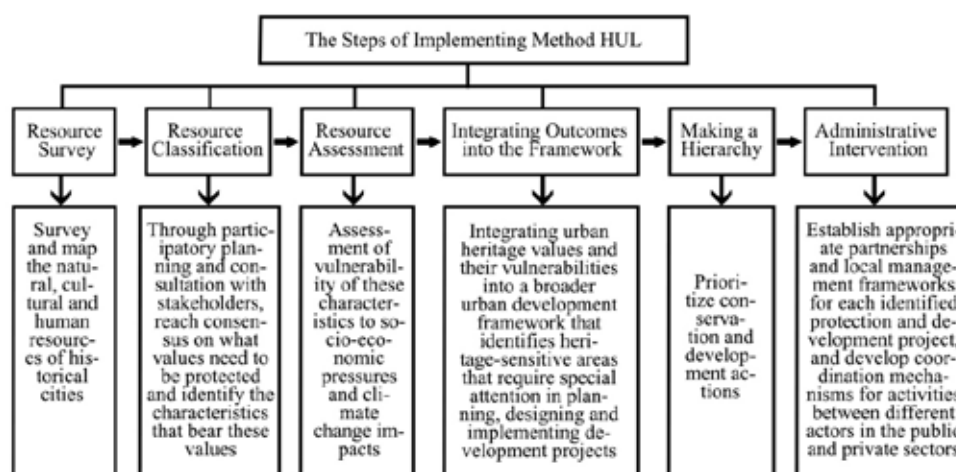


Figure 2. Implementation Steps^[8].

HUL international pilot projects have been actively launched in Africa, Europe, North America, Latin America and the Asia-Pacific region. Up to now, more than 10 cities have joined the project, which has attracted many attentions from the field of international heritage protection. The specific practice of these pilot cities in the application of HUL concepts and methods deserves summary, reflection and reference.

Table 1 Summary of other pilot cities in the Asia-Pacific region^[3]

Country	Ecuador	Tanzania	Australia
City	Cuenca	Zanzibar	Ballarat
World Heritage Site	Yes	yes	no
time	2015	/	2013
Application Scope of HUL	Historic Center and Its Surrounding Areas	Ng'ambo area	Bararett City
Major challenges	Excessive urban development; gentrification; immigration; threat to heritage buildings; tourism challenges; abandonment of modern heritage; real estate investment; transportation; low-quality development and expansion of contemporary architecture	World Heritage Sites Lack of Linkages with Regional Scope; Population Growth Too Fast; Buffer Zone Protection Inadequate; Policy Guidelines Insufficient	Massive population growth; expansion of historic urban areas; climate change
Application of HUL Toolbox			

Public Participation Tools	Cultural Mapping; Seminar on Citizen Participation	Cultural Mapping; Non-material Heritage Mapping; Community Participation; Stakeholder Participation; Vision Conference; "People Decide Planning"; Mutual Partnership	Cultural Mapping; Local Participation; Online Tools (e.g. HUL Portal Network); Advisory Committee; Information Package; Work Camp; Establishment of Heritage Awards; Media Participation
Knowledge and planning tools	Kunka History Center Protection Planning; Background Research and Detailed Research; Basic Information Table; Establishment of Database; Drafting of Proposals	Local Planning (LAP); UL Analysis of Planning Policy Guidelines (PPG); Complementarity of Research and Design; Heritage List	Visualization of Bararete Project; Bararete Heritage Database
Regulatory system	Classified Protection; Handbook of Excellent Practice Cases	National Space Development Strategy; Zanzibar Structural Planning	Bararete Strategy; Bararete Planning Plan; Statutory Planning and Implementation; Heritage Additional Mechanism; Community Participation Policy
Financial instruments	foundatin	Dutch Government Subsidies	Jointly Protect Our Heritage - Subsidies; Bararete Heritage Restoration Fund - Subsidies

It can be seen from the table that the application of the suggested toolbox has been taken into account in the application of the HUL method in the three cities, but each has its own emphasis. In the public participation tools, the production of cultural maps has been used, and different levels of public participation have been added; the establishment of relevant databases has been emphasized in the knowledge and planning tools; and in the regulatory system, the main consideration is the establishment of relevant databases. The application of the overall strategy and the means of hierarchical protection; in the financial instruments, government subsidies and related fund subsidies are the main sources of funds. Through tracking and evaluating the specific application of HUL method in different cities, it can effectively guide the follow-up HUL method related practice projects.

3 The Chinese Human-Habitat Historical Environment from the perspective of the Traditional Villages and the Ancient City of Pingyao in Shanxi Province

"Human-Habitat World Heritage" and "General Human-Habitat Heritage" are two important settlements in the "Human-Habitat Historical Environment". As the saying goes, "Five thousand years of civilization see Shanxi". Shanxi is one of the important birthplaces of the Chinese nation. For thousands of years, our ancestors have created brilliant civilizations in this hot soil and left a large number of historical relics. The typical representative of the "General Human-Habitat Heritage" is the traditional villages in Shanxi Province and the typical representative of the "Human-Habitat World Heritage" is Pingyao Ancient City. There are a series of problems in the process of its protection and development. Although it cannot fully represent the protection experience of all types of Chinese

“Human-Habitat Historical Environment” , its changing trend and challenges are of great significance to the protection of the historical environment of human settlements.

3.1 Overview of Traditional Villages in Shanxi Province

Shanxi Province is located in North China (Figure 3), on the Loess Plateau, adjacent to Hebei in the east, with Taihang Mountain as a natural barrier. The Yellow River in the West and south, facing Henan and Shaanxi, crosses the Great Wall in the north and adjacent to Inner Mongolia Autonomous Region. Its special geographical location makes Shanxi Province a military strategic location since ancient times, and its complexity is changeable. Regional environment, unique location conditions and strong historical background make Shanxi Province a major province of cultural relics in China (Figure 4), known as the cradle of Chinese civilization and the Museum of Ancient Chinese Art. So far, there are 129 Chinese traditional villages and 239 Provincial Traditional Villages in Shanxi Province (Figure 5). Among these traditional villages, the traditional villages dwelling mainly in Ming and Qing Dynasties are the most characteristic and representative. The space layout, architectural features and carving art of these courtyards are of great significance to the study of traditional dwelling buildings in northern China. The historical culture behind them and the social structure formed through historical accumulation constitute a common structure. Shanxi's urban characteristics and cultural connotations. Its complex and changeable geographical environment, unique geographical conditions and strong historical background make Shanxi Province a major province of cultural relics in China, known as the cradle of Chinese civilization and the Museum of Ancient Chinese Art. So far, there are 129 Chinese traditional villages and 239 Provincial Traditional Villages in Shanxi Province. Among these traditional villages, the traditional villages dwelling mainly in Ming and Qing Dynasties are the most characteristic and representative. The spatial layout, architectural features and carving art of these courtyards are of great significance to the study of traditional residential buildings in northern China. The historical culture behind them and the social structure formed by historical accumulation constitute the urban characteristics and cultural connotations of Shanxi (Figure 6-8).



Figure 3. Location of Shanxi Province in China.



Figure 4. The Distribution Characteristics of Chinese Traditional Villages among the Provinces^[9].



Figure 6-8. Photographs of Traditional Villages in Shanxi Province^[11].

Figure 5. Distribution and Types of Traditional Villages in Shanxi Province^[10].

Traditional villages in Shanxi Province, as the representative of "general human settlements heritage", do not have the tremendous impact of tourism brought by the name of "World Heritage", but in the context of rapid urbanization, the deterioration of their natural and artificial environments, the conflict between modern lifestyle and traditional living environment, the tremendous impact of industrialization and urbanization on traditional settlements and the large scale, rich connotation and complexity of the present situation hinder the sustainable development of local architecture and its historical environment (Figure 9-16).



Figure 9-16. The current situation of environmental deterioration in some traditional villages in Shanxi Province.

3.2 Overview of the Ancient City of Pingyao

Pingyao County, located in the central part of Shanxi Province (Figure 17), is a large cultural relic County in Shanxi Province. It has more than 300 historical and cultural relics. Among them, the Ancient City of Pingyao

is the most representative and typical. In 1986, the Ancient City of Pingyao was named "National Historic and Cultural City", and in 1997, it was named "World Cultural Heritage", which is the most well-preserved ancient city in Chinese "Human-Habitat Historical Environment". It preserves the historical form of the county-level cities of the Han nationality in central China during the Ming and Qing Dynasties (14-20th centuries) (Figure 18-19). It has unique defense system features, axis-like functional layout features, street and lane pattern features that continue the ancient Chinese Lane system, space courtyard pattern of traditional northern residential courtyards and a large number of intangible cultural heritage and local traditional cultural practices, Pingyao has rich tourism value because of its unique ancient city cultural landscape, which attracts people from all over the world to come and watch (Figure 20-21).



Figure 17. Location of Pingyao in Shanxi Province, China.

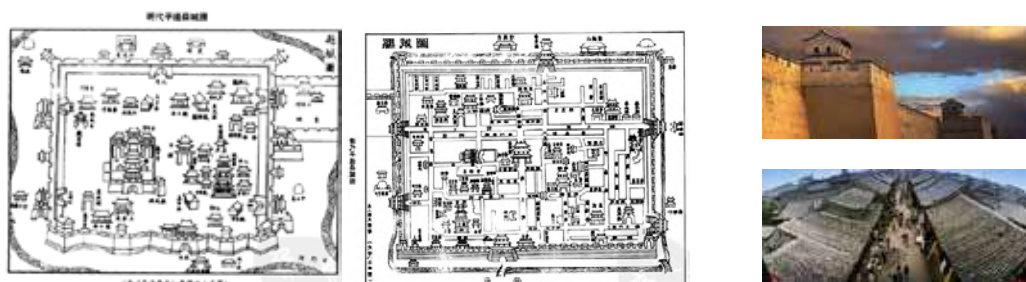


Figure 18-19. Maps of Pingyao County Town in Ming and Qing Dynasties^[12]. Figure 20-21. Pingyao Ancient City Wall and Traditional Residence^[13].

In recent years, due to the development of tourism, Pingyao ancient city walls and public buildings have been well protected by the cultural relics department, but as the background of Pingyao ancient city, many traditional residential courtyards have been damaged, collapsed or even rebuilt (Figure 22-25). Large-scale tourism development has made a huge impact on the historical environment of the ancient city of Pingyao. The loss of the characteristics of the ancient city and the social changes with residents as the core all threaten the authenticity and integrity of the world heritage.



Figure 22-25. Rebuild and Waste of Branch Courtyards in Pingyao Ancient City.

3.3 Problems in the Action of Chinese Human-Habitat Historical Environmental Protection

With the accelerated development of urbanization in China, the phenomena of "constructive destruction", "protective destruction" and "creative destruction" prevail in the development process of human settlements historical environment, which often destroys urban texture, human settlements environment and urban cultural foundation while demolishing historical buildings. "Constructive destruction" has always been a major threat to the protection of urban heritage in China, and some urban development projects violate the protection laws and regulations and related management regulations, causing irreparable disasters to the historical environment; "Protective destruction" refers to the phenomenon of ancient city revival and old street revival, which has emerged in recent years. It has become a large-scale demolition and construction act with cultural signboards. The "human settlements historical environment" is mostly used to develop thousands of uniform commercial tourist sites with cultural packaging. The living needs of the aborigines are not satisfied, and the original social system no longer exists; "Creative destruction", created by the collusion of capital and power, has sprung up like mushrooms^[5]. The main problems in the process of protection of Chinese residential historical environment can be summarized as follows: protection action ignores community life, protection perspective ignores environment background, development strategy lacks regional consideration, implementation force is dominated by the will of the government, and management mode lacks dynamism. The protection of "Human-Habitat Historical Environment" should not solidify the current situation of historical environment, but maintain the harmonious, unified and dynamic and sustainable development of natural environment, human environment, historical environment and community environment.

4 Strategies for the Transitional Development of Chinese Human-Habitat Historical Environment

The HUL method emphasizes the dynamic protection of the urban historical environment from a new perspective, especially provides the overall idea and huge space for the development of scientific development, human development and human-land co-prosperity for the human settlements historical environment in the process of transformation and development. European urban historical environmental protection experience and HUL international pilot project practice experience have important reference significance for the transformation and development of Chinese "Human-Habitat Historical Environment"^[14]. Therefore, in view of the related problems in the development process of Chinese "Human-Habitat Historical Environment", based on the concept of sustainable development and the reference of international experience, this paper puts forward the following transformation path of Chinese "Human-Habitat Historical Environment" according to local conditions.

4.1 Protection Object Transition from "focusing on heritage protection" to "giving consideration to both heritage protection and community life"

The continuity of culture and place spirit (sense of place) based on the HUL method emphasizes the relevance value of heritage protection, especially community value. It is also one of the "5C Strategic Goals"ⁱ advocated by the World Heritage Committee and supported by the international community. Both "General Human-Habitat Heritage" and "Human-Habitat World Heritage" have dual attributes of historical heritage and community life. Therefore, in the process of protection, we should not only consider the authenticity of historical heritage and the

integrity of historical environmental quality, but also pay attention to the continuity of residential life and the continuity of local sense of place. The HUL method emphasizes the importance of economic, social and cultural factors in promoting the formation of historical environment, focuses on the importance of ordinary daily life for urban landscape, and attaches importance to the role of ordinary residents in the formation and protection of human settlements historical environment.

Urban planning has the responsibility to protect the city's historical features and space spirit. The old houses and ordinary daily life of ordinary residents are the direct records of the city's public history and the basis of maintaining social relations network. Governments at all levels, especially local governments, have the responsibility to protect the city's public history and collective memory, and actively carry out field surveys, economic assessment, policy formulation, planning and implementation, and encourage public participation.

4.2 Protection Perspective Transition From "Single Protection of Cultural Relics" to "Protection of Urban Environment Base Plate "

The HUL method emphasizes the construction of an all-round and multi-level heritage protection system. From the perspective of transformation, the sustainable protection of Chinese "Human-Habitat Historical Environment" should establish an all-round and multi-level protection system starting from "point", connecting with "line" and forming a "face", which is a protective base plate. Starting from "point", which required to protect the authenticity and integrity of cultural protection units, historical buildings, industrial heritage, ancient and famous trees at all levels; connecting with "line", which emphasizes the continuity protection of historic and cultural blocks, historic walls, traditional villages, streets and lanes, and important river systems, with lines crossing points and lines forming planes; forming a "face", which refers to the protection of the whole urban environment base plate, extending the protection to the level of regional human environment and natural geographical environment, and continuing the cultural context of the times. The drawing of cultural maps in HUL method emphasizes the comprehensive investigation of "points", "lines" and "all-round". On this basis, the priority order of heritage protection and development can be determined through the participation of all parties in the evaluation, so as to promote step by step and protect the heritage in an all-round way.

In China's existing "cultural relics protection unit - historical and cultural cities (towns)" protection system, the operating mechanism of the environment base plate is not mature, while paying attention to physical space protection, we should also pay attention to the integration of the basis of environmental resources. The environmental landscape in the historic city of human settlements is the basis of its "historic" presentation. Combing and incorporating the natural landscape into the heritage protection system is also very conducive to the management of the government.

4.3 Protection Force Transition from "Depending on the Government" to "Multi-Forces Participating in the Protection of the Whole Society"

The HUL method emphasizes the participation of multi-stakeholders and advocates the establishment of a platform for social participation. In the process of sustainable development of " Human-Habitat Historical Environment "in China, we should not only attach importance to the active control role of the government as a "tangible hand", but also give full play to the role of social forces as an "invisible hand". By combining the favorable elements of all sectors of society, data collection and analysis of urban historical environment are carried out in various aspects, so that stakeholders can clearly define the important value of urban cultural heritage, and then formulate a variety of long-term feasible mechanisms, such as government-led, citizen participation and so on, so as to promote the comprehensive protection of diversity in urban historical environment. The model of "multi-force participation in the protection of the whole society" builds a comprehensive platform in line with the environment of heritage sites and social activities, facilitates effective dialogue among different subjects, and at

the same time meets the protection needs of various sectors of society. It is an important force for the sustainable protection of Chinese "Human-Habitat Historical Environment".

4.4 Protection Management Transition from "Static Management System" to "Sustainable Dynamic Planning Management"

HUL method pays attention to the importance of urban historical context continuation for urban historical environmental protection. In the Recommendation on the Historic Urban Landscape, it emphasizes that "the urban historical environment is the accumulation of values created by the connecting cultures and existing cultures in history, as well as the accumulation of traditions and experiences" ⁱⁱ, while recognizing the "dynamic nature of living towns". The HUL method encourages urban development and renewal, but emphasizes a dynamic and sustainable planning, which actively plans the sustainable development direction of the city according to the current situation of urban development, urban characteristics, urban historical value and so on. As Kevin Lynch said, "Managing and effectively utilizing the changes in historical sites for present and future needs is better than a rigid respect for the sacred past." The core of urban planning management is to effectively manage "change". It is neither fixed nor laissez-faire. Its key point is to take full account of the diversity and sustainability of historical cities. At the same time, it is necessary to improve the protection system, relevant laws and regulations, planning standards and urban planning system at all levels, and explore the dynamic and sustainable mechanism of planning protection management.

5 Conclusions

The method of urban historical landscape (HUL) not only emphasizes the protection of heritage itself, but also integrates and expands the elements of natural landscape, community life and regional conditions, which greatly enriches the scope and methods of historical landscape protection. Therefore, only when the environmental base is guaranteed and the development strategy covers a wide range of perspectives, such as broadening the object of protection, dynamic management, and the participation of the whole people in practice, can the sustainable protection and transformation of the "Human-Habitat Historical Environment" be finally promoted. It provides new experience for China's sustainable protection strategy in protecting objects, protecting perspectives, protecting forces and protecting management, and provides new ideas for improving the livability of "Human-Habitat Historical Environment" and realizing the sustainable development of urban historical environment.

Endnotes

- i. "5C strategic goal" is to enhance the *credibility* of the World Heritage List, ensure the effective *conservation* of the World Heritage Site, promote the effective *capacity building* of the States Parties and heritage sites, promote public awareness, participation and support for the protection of the World Heritage Site through *communication*, and strengthen the role of *community* in the implementation of the World Heritage Convention.
- ii. Article 8 of the *Recommendation on the Historic Urban Landscape*: Urban historical landscape is a city area created by the accumulation of cultural and natural values and attributes in history. It goes beyond the concept of "historical center" or "whole", including a broader urban background and its geographical environment. Article 11: The method of urban historical landscape aims at maintaining the quality of human environment, improving the productive utility and sustainable use of urban space while recognizing its dynamic nature, and promoting social and functional diversity. This method combines the goal of urban heritage protection with the goal of social and economic development. Its core lies in the sustainable balance between the urban environment and the natural environment, the needs of present and future generations and the historical heritage.

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TRANSFORMATION OF ROADS' FEATURE PROTECTION: STATUS AND FUTURE THINKINGS OF SHANGHAI'S FEATURE- PROTECTED ROADS: BASED ON THE CASE OF YUYUAN ROAD IN SHANGHAI

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Abstract: During the decades of the formation and development of historic roads in Shanghai, the urban connotation has different traces in different times. Feature-protected roads are one kind of urban heritage because they have the characteristics of urban form and urban culture. However, in the process of protection, the work of protecting feature-protected roads has been confronted with certain difficulties due to the imperfection of the theory and the technology. This paper tries to answer the question what are the realistic problems and dilemmas faced by the feature-protected roads under the background of rapid development and transition of the city? And what aspects should be focused on in the protection work? It combs the basic characteristics of the relevant planning of Shanghai feature-protected roads and analyzes the requirements of the management and control of feature-protected roads in Yuyuan Road Historical and Cultural Area and the status of its protection, aiming to explore the highlights and problems in the protection process. Finally, this paper tries to put forward the optimization direction aiming at the problems in the protection work, which can provide the protection of historical landscape and the continuation of cultural tradition under the concept of shareable development.

Keywords: feature-protected roads; Yuyuan Road in Shanghai; planning control; protection status

1. Introduction

Shanghai is one of the national historic and cultural cities. It has rich history and culture, gathers many excellent modern buildings and revolutionary histories, and forms a unique urban style. In order to strengthen the protection of style and features, in July 2002, Shanghai promulgated *the Regulations on the Protection of Historic and Cultural Areas and Excellent Historical Buildings in Shanghai*. In 2005, it completed the protection planning of 12 historic and cultural Areas in the Central City and *the Planning for Landscape Protection Road in Historic and Cultural Areas in Central Shanghai*, as well as identified 144 landscape protection roads and streets (hereinafter referred to as landscape protection roads) in each historical and cultural area.

This paper attempts to start from two aspects: related planning control and actual protection situation of landscape protection roads, briefly combing the basic characteristics of Shanghai landscape protection planning

and trying to take Yuyuan Road (West Section) as an example to analyze its problems in related planning control and actual protection situation, in order to obtain and understand the highlights and problems in protection work of Shanghai landscape protection roads.

2. Brief Comment on the Planning and Management of Landscape Protection Roads in Shanghai

2.1 Overview of Management, Planning and Research of Lane Protection Road

The author sorted out the policy documents directly related to the style and features of roads : the *Opinions on the Planning and Management of the Style and Features Protection Roads (Streets) in Shanghai* (hereinafter referred to as "*Opinions*") which approved by the Shanghai Municipal Government in 2007 put forward the specific requirements including management mechanism, management requirements, planning basis and procedures, planning content, control elements and other aspects for landscape protection roads. This normative document would remain valid for nearly 10 years. In 2015, the Shanghai Municipal Government issued the notice of the *Municipal Government on Extension of the Validity Period of the Notice of the Municipal Planning Bureau Approving Some Opinions on the Planning and Management of the City's Landscape Protection Road (Street) by the Shanghai Municipal People's Government*, which clarified the guiding role of the "*Opinions*" extended to April 2020.

The planning related to landscape protect roads are as follows: ①the *Protection Planning of Historic and Cultural Areas*"(2005) for each area; ②the *Planning for Landscape Protection Road in Historic and Cultural Areas in Central Shanghai* (2005) approved by Shanghai Municipal People's Government; ③the *Planning for Landscape Protection Road* (after 2007) which some districts of the central city have already compiled. Among them, planning ① is the core of the landscape protection system, with the regulatory detailed planning as the carrier of the protection planning, and the main results are the planning text, instructions and drawings. Planning ② determines 144 landscape protection roads in 12 historic and cultural areas of the central city and carries out the overall planning and protection of "original flavor". 64 of them are classified as "*first-class protection roads*" and the other 80 as "*two-four-class protection roads*", which require detailed protection planning and strict protection of landscape protection roads. Planning ③ is a detailed and constructive planning for a particular landscape protection road under the guidance of the above two planning, which deepens and refines them. However, the project still remains in individual districts and hasn't cover all the landscapes and roads.

The research related to landscape protect roads are as follows: (Guo Jian, 2008) probes into the planning work of landscape roads, and analyses the difficulties, ideas, technical contents and interactive connection of management in landscape road protection planning combining with practice. (Hou BinChao, 2008) analyses the process of determining the road for the protection of Shanghai's scenery and the characteristics of the protection work and puts forward some suggestions on how to further promote the protection of historic street landscape and strengthen the function of public activity space on streets. (Sha Yongjie, 2009) takes Wukang Road as an example to study the history and protection planning of landscape protection roads and explore the protection planning mode at the level of constructive detailed planning combined with the protection comprehensive renovation project of Wukang Road. (Sha Yongjie ,Wu Jiang, 2013) studies the comprehensive protection planning of some streets of Hengshan Road-Fuxing Road historical and cultural landscape area in Xuhui District from 2011 to 2013, and probes into the deep problems of design management and implementation. Since then, Shanghai-style cultural writers have paid more attention to the style and road, describing the style and road in the form of literary works (Chen Danyan, 2014).

To sum up, the time of compiling and approving the planning, issuing the management documents and concentrating on the related research is 2005-2009. Since 2010, the implementation and management process of

the planning has been the main task. However, up to now, the normative documents have not been translated into laws and regulations, the protection planning has not been fully covered, and the related research is still less.



Figure1: Scope map of 12 historic and cultural areas in central Shanghai (Source: planning for landscape protection road in Xuhui District, Shanghai)



Figure2: Distribution map of landscape protection roads (streets) in central Shanghai (Source: Self-drawn by the author)

2.2 Main Characteristics of the Planning and Management of Landscape Protection Roads in Shanghai

2.2.1 Incorporation into the Heritage Protection System

The establishment and protection of 144 landscape protection roads have been incorporated into the planning and management system of Shanghai historic heritage protection in. The determination of landscape protection road has perfected the three-level urban historical heritage protection planning and management system established in Shanghai, which combines the key protection (excellent historical buildings) - street landscape protection (landscape protection road and street) - regional protection (historical and cultural area).

2.2.2 Classified management and clear focus

The historic backgrounds and the surrounding conditions of landscape protection roads are different, resulting in the different landscape situation. While 144 landscape protection roads have been identified, four-types landscape protection roads have been classified and corresponding protection and management requirements have been put forward. The environment of each scenic area in the central city is complex and the difference is significant. So, classifying 144 scenic roads and putting forward corresponding key requirements of protection and management is the basis for the long-term development of the work. They are very in line with the principles of classification of heritage protection.

2.2.3 Protection planning has limited coverage and its legal status needs to be upgraded

In the actual investigation process, the author found that although *the Opinion* has been published for more than 10 years, but so far most of the historic and culture areas have not carried out landscape protection road planning within. Taking Yuyuan Road historical and cultural area of as an example, its scope spans Changning and Jing'an districts, the section in Jing'an district has worked out *the detailed planning of North Maoming Road and Yuyuan Road in Jing'an District* for the eastern section of Yuyuan Road. However, the detailed protection planning of the section in Changning district has not been carried out so far.

2.2.4 Focus on top-down and neglect residents' participation

Street is closely related to people's life as a transportation and public activity space. The functional characteristics along the street and neighborhood communication mode are the source of vitality of the landscape protection roads. However, the protection of both regulatory and revision levels is based on the planning authorities, ignoring the use of residents around the landscape roads, and adopting a top-down planning model. Such practices often lead to the gradual replacement of residential functions and the relocation of aborigines, leading to high-end, personalized commercial stores and gradually separates from the consumption level of aborigines. The original life was replaced by a strong commercial atmosphere, the authenticity of history is left just with "empty shells".

1. Current situation of landscape road protection -- A case study of Yuyuan Road (West Section) landscape protection road

3.1 Research Objects

The historical and Cultural District of Yuyuan Road is one of the 12 historic and cultural areas in the central Shanghai, transforming from the residential area of the middle and high level citizens of ancient Shanghai. Though it has undergone a hundred years of vicissitudes (in 2018, held various commemorative activities of "Centennial Garden Road"), its residential function is still the main function and has the corresponding public service function. The historical and cultural area spans Changning and Jing'an districts. On the whole, Yuyuan Road and other historic protection roads are like the space skeleton, linking four cultural and conservation units and 46 excellent historical buildings.

The protection plan of Shanghai Yuyuan Road Historic and Cultural Area locates its protection goal as "restoring the original senior residence and matching landscape function of Yuyuan Road historic and cultural Area, strengthening the existing public service functions such as education and administration, and forming a relatively simple but closer to the overall function orientation of the historical prototype". The whole plan takes Yuyuan Road as the core carrier to build life functional spindle. In the historic and cultural areas has five identified landscape protection roads (see Tables 1 and 3 for details) and each road has corresponding protection requirements (see Table 2 for details).

Road name	Origin-destination	Planning road grade	Current Width (m)	Adjust the red line (meter)	Classification of Landscape Protection Road
Yuyuan Road	Changning Road-North Urumqi Road	Secondary trunk road	15.2	Maintain the original form	Third-type
Wuyi Road	Dingxi Road-Yan'an West Road	Access road	20	20	First-type
Zhenning Road	Xinzha Road-Yongyuan Road	Access road	12-15	20-24	Third-type
North Urumqi Road	North Urumqi Road-Yongyuan Road	Access road	12.2	18-24	Third-type
Wan Hang Du Road	Kaixuan Road-Hua yang Road	Access road	12	20	Fourth-type

Table1: List of roads protected in Yuyuan Road historic and cultural area (this paper takes Yuyuan

Road as an example) (Source: protection planning of Yuyuan road historic and cultural area,

translated by the author)



Classification of Landscape Protection Road	Features	Protection requirements			
		Road width	Building Protection along the road	Other protected objects	Control index
First-type	Protecting buildings and preserving historic buildings along roads are distributed centrally, and their features are obvious. The roads maintain historical width and basically maintain the original spatial scale.	No widening.	Strict protection of protecting and preserving historic buildings along the road. The general historic buildings whose scale and style are basically in harmony with the surrounding protection and preservation of historic buildings should also be mainly preserved, renovated and repaired.	Courtyard, greening, ancient and famous trees, distinctive wall, pavement, street furniture, street trees, etc.	Building height, volume, style, color, form, width, retreat distance, building spacing, etc.
Second-type	There are a certain number of protected buildings and historical buildings along the road, and a certain number of other buildings and development plots.	Generally, keep historical breadth and original scale.	Conservation buildings and historical buildings along the road a should be preserved.	—	Height, volume, style, form, width, distance and space should be coordinated with the surrounding historical buildings.
Third-type	There are a certain number of protective buildings and historical buildings along the road, but the proportion of protective buildings and historical buildings along the road or on one side is small.	It can be properly broadened according to the planning of the width of the red line, the protection of buildings along the street, the preservation of the location of historical buildings, street trees, greening and other factors.	A small number of protective and preservation historical buildings which are in contradiction with road widening can be treated by displacement, partial demolition and opening of arcade buildings according to building protection requirements. The ratio of height to width of planned streets should be close to the original proportion of streets.	—	Appropriate control of building height, style, scale, retrogression distance and spacing of development blocks along the road.
Fourth-type	The distribution of historic buildings along the road is less, but the road grid, scale and alignment of the	—	—	—	—

	road have certain characteristics.				
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Table2: List of classified protection requirements for Shanghai landscape protection roads (streets) (a case study of Yuyuan Road historical and cultural area) (Source: the author sorted out according to the *Yuyuan Road historic and cultural area protection plan*)

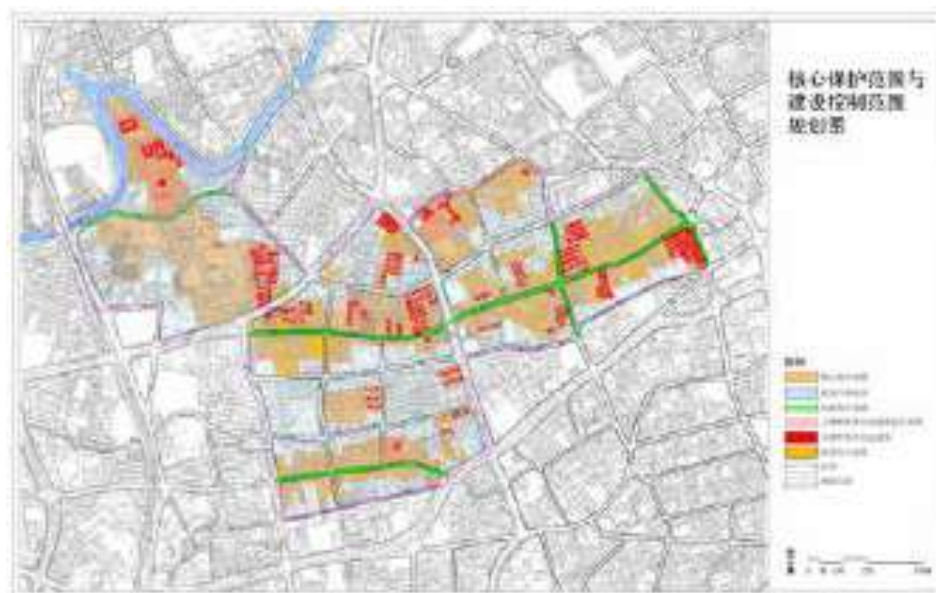


Figure3: Planning map of core protection scope and construction control scope of Yuyuan Road historical and cultural area (green one is landscape protection road) (Source: the *Yuyuan Road historic and cultural area protection plan*)

Yuyuan Road is divided into three sections according to administrative boundaries and roads: eastern, western and middle. The western section between Changning Road and Jiangsu Road belongs to Changning District with a total length of 0.91 km. Changning District has not formulated the landscape road protection plan at the level of constructive detailed planning for the western area. At present, the protection of Yuyuan Road landscape road (the western section) is mainly based on the historical and cultural area protection plan and *the Opinions*. According to *the Opinions*, the whole neighborhood section shouldn't carry out construction, repair and renovation activities due to the lack of protection planning for road.

The author makes a field investigation on Yuyuan Road (West Section) and the buildings along the street and tries to review the existing problems of the relevant protection planning through the analysis of its protection status.

The research area determined by the author is the envelope range of buildings along both sides of Yuyuan Road. The main section of the road is 15.2 meters wide, two-way lanes are about 9 meters wide, two sidewalks are 2.5 meters wide and plane trees are planted on both sides. Among them, there are 6 excellent historic buildings in Shanghai, and about half of them are protected buildings and historic buildings. In the whole length of the north-south interface of the street, the business interface accounts for about 61%, mainly clothing, banking and catering functions; the residential interface (including 17 entrances and exits) accounts for about 19%, mainly in the form of fencing; other public service interfaces (nursing homes, youth palaces, police stations, kindergartens) account for about 17%; other interfaces or those underdetermined functions due to the construction are about 3%.



implementation of the requirements of landscape protection, brings about the actual "*protective damage*" to the landscape.



Figure 5 The landscape of the street elevation after "package" renovation (Source: Author's self-photography)



Figure 6 Renovation details (1) (Source: Author's self-photography)



Figure 7 Renovation Details (2) (Source: Author's self-photography)



Figure 8 The landscape before the renovation of the street façade (Source: Baidu Street View Map)



Figure 9 Distribution of the same remediation method (green is the remediation point in the figure) (Source: Self-drawn by the author)

3.2.2 the disorderly refraction environment of street facades above the second floor reflects

insufficient guidance and participation of residents in protection

The main type of land used on both sides of Yuyuan Road is residential land. Therefore, in implementing the protection planning of landscape roads, some considerations have been made to achieve the balance between environmental improvement and meeting the needs of residents, such as setting up air-conditioning external hood for residential buildings from the second floor to above. But in the investigation, the author found that a large number of air conditioners were not hanging freely according to the requirements (Figure. 10). In addition, the disordered wire network, the additional drainage pipe and other problems also seriously damaged the street style, and even drilled holes in the wall to facilitate the access of lines (Figure. 11) and pipes. In the aspect of window updating, most users use silver aluminium alloy window frame to replace the original dark red grid window frame (Figure 12).

This reflects the problems of both residents and managers. On the one hand, it is not the residents that ignore the impact of these practices on quality and beauty, but they lack expertise and skills, platforms and mechanisms for communication and coordination in the process of updating and are unwilling to bear excessive expenditure to

maintain their appearance. On the other hand, managers often pay attention to the form of protection work in place, but usually neglect the supervision and guidance in the implementation process. For example, there is little tracing after setting up the shield, so that the residents who are lack of protection awareness destroy the appearance after installing the external aircraft.

In fact, the effect of indoctrinating the concept of protection to the residents is often far from expectation. A better way is to learn from France's experience in urban heritage and development of residential areas, and to encourage residents to fully participate in the work of landscape protection by using incentive policy of "carrot + stick" as incentive and punishment, so as to better "live regenerate" the historical heritage.

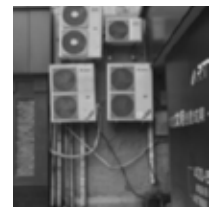


Figure 10 Air-conditioned External Aircraft that not Suspended in Required Position (Source: Author's self-photograph)

Figure. 11 Disturbed wires and pipes (Source: Author's self-photography)

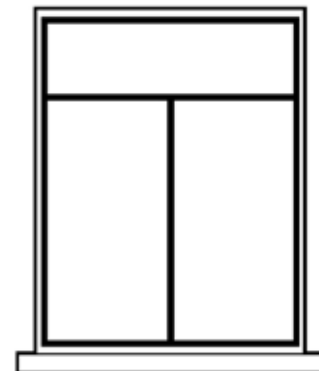
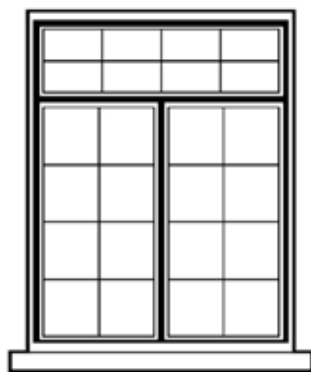


Figure 12 Original dark red window frame (Source: Self-drawn by the author)

Figure 13 Silver Aluminum Alloy Window Frame (Source: Self-drawn by the author)

3.3.3 Random repetition of architectural renovation reflects the lack of relevant protection rules and irregular approval process

During the author's investigation, Yuyuan Road staged an aesthetic saliva war about the random and repeated facade modification. In pursuit of the concept of new fashion, a street art gallery employs overseas designers to transform the bottom facade of No. 1173 Yuyuan Road with flat black and white lines as the main elements (see Figure 15 for details). From the protection plan of Yuyuan Road, we can see that the building is classified as other buildings and the requirement of such buildings should be reconstructed or demolished, reconstructed or constructed in harmony with the features of historical and cultural area. The facade renovation of such buildings should be in harmony with the surrounding features.



Figure 14: The surrounding features of Fiu2 Art Museum (Source: Author's self-photography)



Figure 15: Fiu2 Art Museum after its facade renovation (Source: Sina Microblog)



Figure 16: Fiu2 Gallery Facade Restoration (Source: Author's self-photography)

It can be clearly seen that the facade style of the exhibition hall after renovation is obviously inconsistent with the surrounding features (compared with Figure 14), which seriously violates the planning requirements. Therefore, only a few days later, it will be required to rectify and restore its original appearance. The method of restoration is to use coatings to cover the newly modified coatings and complete the restoration in color. The head of the gallery declared that :“ The administrative procedures were complete and legitimate, and the streets and media were accepted. However, when an individual passed by accidentally, he would negate the effectiveness of the previous administrative procedures because he wanted to mobilize administrative power.” Regardless of their weak awareness of landscape protection in the transformation activities in the historic and cultural areas, if what they say is true, there are indeed irregularities in the process of examination and approval. The right of approval for the construction in the scenic area is in the competent planning department of Shanghai. Obviously, "street acceptance" doesn't have any effect on the transformation activities in the scenic area. The irregularity of the examination and approval process leads to the repetition and arbitrariness of building renovation, which should not be paid by the shopkeeper only.

Another problem reflected by the phenomenon is the lack of Yuyuan Road landscape protection planning mentioned above, and the delay in compiling relevant protection rules, which makes the competent authorities lack detailed and effective basis for approval. The details of judging "harmony" and "disharmony" of landscape and features should be further clarified in the protection planning. It is suggested that a "positive list" be established for coordinated transformation of style and features, and that objects such as pillars, doorways and steps be listed as elements that must be retained as they are, so as to materialize the unalterable objects and avoid repeated acts of destruction, such as those that are restored after the completion of the approved transformation scheme.

3.3.4 Priority of road capacity transformation reflects the difficulty of coordination among multi-authorities, which can not meet the deep-seated rehabilitation of neighbourhoods.

At present, according to the planning requirements, the width of Yuyuan Road (West Section) is maintained at 15.2 meters except for the widening of the roads at Jiangsu intersection and Dingxi intersection of Yuyuan Road at both ends. According to the location of the red line in the road system planning of the protection plan of the historic and cultural area, the intersection of Yuyuan Road in Jiangsu Province is widened reasonably. While the red line requirement of Dingxi intersection of Yuyuan Road in the planning is expressed as the one-sided widening of the north side (position ① in Figure 17). However, in the actual investigation, it is found that the traffic situation is complex due to the intersection of the three lines at the road intersection. In line with the principle of giving priority to road capacity, the ② section of the road is also widened. The non-motorized lanes are located outside the red line of the road, which violates the regulatory requirements in comparison with the planning.



Figure17: Red Line Map of Road Planning at Dingxi Intersection of Yuyuan Road (Source: the author draws his own picture according to the protection pla)



Figure18: reasonable broadening of ① (Source: Author's self-photography)



Figure19: irrational broaden of ② (Source: Author's self-photography)

Due to the particularity of both traffic functions of landscape characteristic, it is necessary to coordinate and balance the opinions of multiple authorities in the actual protection process. Municipal landscaping, environmental sanitation departments and transportation departments have played a certain role in the related work of renovating landscape roads, but they have different emphasis on the renovation work, and even conflict with each other. Irrational renovation behavior is prone to occur in the case of poor coordination and lax auditing. However, the protection of landscape roads has been incorporated into the heritage protection system. Regulations and repair regulations are the carriers of protection work and have legal effect. Any construction activities in scenic areas need to ensure the principle of "priority of protection" according to law. It is urgent to promote the renovation work led by planning departments and participated by many departments. Therefore, the planning and protection of landscape roads should be more comprehensive, and the protection of landscape roads should be taken as a grasp to promote the deep revival of neighborhoods.

4. Discussion on the Optimum Direction of Landscape Road Protection

4.1 Perfecting the compilation of protection planning and upholding the protection according to law

In terms of laws and regulations, it is necessary to speed up the incorporation of the requirements for road protection into the legal system and enhance the legal effectiveness of protection. In terms of planning, in the context of the increasingly detailed control system, the formulation of landscape road protection planning can be combined with urban design, giving full play to the flexibility and participation of urban design, and enhancing the rationality of decision-making. On the basis of improving protection planning, we should adhere to the principle of priority of protection according to law.

4.2 Cross-administrative cooperation and multi-sectoral consultation

Landscape protection roads are often not confined to a single administrative region. Due to the limitation of administrative boundaries, protection planning is divided into sections. The protection planning of landscape protection roads should carry out cross-regional cooperation and work out jointly so as to avoid the occurrence of different treatment situations. In addition, we should understand the particularity of landscape roads as historic heritage and solve street-related issues through multi-sectoral consultation.

4.3 Government guidance, residents involvement, making full use of flexible measures of market

The first problem found in the survey is due to unreasonable intervention by the competent authorities, while the second problem is due to inadequate intervention and inadequate guidance. The government should explore the flexible role of market mechanism in urban heritage protection under the condition of protecting public interests and strictly abiding by the bottom line of urban heritage protection and be a good rulemaker and supervisor. The government should neither dominate the implementation nor the neglect of destruction, transform the identity and establish a consultation platform instead so that willing residents and competent institutions can cooperate. May be PPP model is a good choice to achieve a win-win situation of style protection and quality improvement.

4.4 Promoting the concept of protection and drawing lessons from advanced international experience

By using advanced theories and methods such as "historic urban landscape" and making a more detailed study of historic and cultural landscape areas and road protection, protection planning based on research can be elaborated. It is important to combine the needs of protection and development to face the dynamic management of urban heritage. And drawing on the advanced protection experience of foreign countries to form a landscape road protection system with Shanghai characteristics.

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PA03

Urban design for
multilevel planning

What role do urban policies play in enhancing the satisfaction from neighbourhood open spaces in mixed-use city centres: Lesson from Auckland

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Abstract

Mixed-use neighbourhood and intensification have been widely identified as a positive urban strategy after research showed how this policy benefits the city and public, underpinning the concept of sustainability. In countries with well-established urban growth strategies, governments encourage people to settle in city centres as a mixed-use neighbourhood by considering new high-density residential development in this area. However, the design quality of these areas influences the residents' satisfaction within their neighbourhood. Providing quality open space is one of the main influencing factors of satisfaction however, spatial elements of these qualities are yet to be developed.

Auckland is the largest city of New Zealand and over the past 60 years, its City Centre has become increasingly populated and diverse (Auckland Council, 2012b). According to the Auckland Plan 2015, Auckland City centre will be one of the main residential centres of the city, and subject to this population increase (Auckland City Council, 2018). To cope with this demand, Auckland's urban documents such as Auckland Masterplan promotes a compact city with a high-density residential area which can be perceived as a neighbourhood by the residents. Therefore, regarding the main vision of Auckland Plan to be the most liveable city in the world, considering residents' needs and experiences, planning and designing open spaces is highly challenging.

This paper presents the approaches to the open space in Auckland City Centre. The central question of this research is how residents' viewpoints are coordinated with the relevant urban documents. To answer this question, content analysis of the main and relevant urban documents have been conducted. This research raises the issue of urban policies and the role this plays in the residents' satisfaction with their neighbourhood open spaces.

1- City Centres are a neighbourhood under the growth management plan

The growth management approach is coming back to the city and looking at the city centre not just as a commercial zone. Review of the city plans under the growth management programs shows how city centres are seen as a neighbourhood and how they are prepared for having more residence in this area. While providing quality urban open spaces to meet

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the resident's demands is one of the main plans of some of these report, neglecting these elements of neighbourhood satisfaction can be seen in others.

For example, a report published by City of Toronto (2014) entitled "Trends, Issues, Intensification, Downtown Toronto" explains that recent population trends, where residents are looking to live in city centres at increasingly diverse life stages, has resulted in the need for new brownfield developments to prioritise a dynamic mix of housing and workplace types. In 2013, City staff and consultants of Toronto undertook an extensive consultation process with residents of condominium buildings across the city. The feedback from the residents showed that "there was a clear overall impression that services and infrastructure were not keeping up with development, and there was a need to better coordinate development with the requisite infrastructure and services". One of the comments shows that there are more demands for proving places for people (and dogs) in the public realm – parks, open spaces, sidewalks, etc. The report also shows how the design of downtown Toronto is influenced by feedback from the residents(City of Toronto, 2014). A report of this nature couldn't be found for Auckland.

Vancouver is another example from Canada that has a mixed-use downtown. According to the Vancouver Council website, Places for People Downtown is a planning project that started in summer 2017. They "launched a summer engagement campaign and an online survey to better understand the public's thoughts and attitudes toward public space in Downtown Vancouver" to achieve a well-designed downtown for the general public (City of Vancouver, 2018). This emphasizes what a topical and timely piece of research this work could be for Auckland.

Centre.City.Plan (2007) is the plan for the Calgary downtown in Canada. This report explains how a shift has occurred in Calgary towards having a more livable city during both day and night times. The report explains that "The liveability of the Downtown should be reinforced by supporting residential developments and associated amenities that will generate day and night activity" (p.36). The Plan has policies to support the refurbishment of older existing buildings and the integration of new residential and mixed-use developments because it is considered that this approach results in high-quality public realm outcomes (Land Use Planning and Policy-Planning, 2008).

Plan Melbourne 2017-2050 also shows that the City of Melbourne is looking at the development of its city centre as a good area for providing more housing choice for residents. One of the key goals of the plan is to provide "housing choice in locations close to jobs and services" (p.9). One of the main strategies to achieve this goal is to "facilitate well-designed, high-density residential developments that support a vibrant public realm in Melbourne's central city" (p. 9; Victoria State Government, 2017). This Plan lacks detail about how this can be achieved and in this way is relatable to Auckland where this type of implementation information is lacking.

Sydney is another example from Australia. 'Sustainable Sydney 2030' has ten strategic directions. "Housing for a diverse population" is one of the ten directions and explains the priority of having more diverse residents in central Sydney (City of Sydney, 2008). Again, explanations of how this can happen and the role of open spaces are at times lacking from the strategy document.

2-2- Importance of considering subjective design quality of neighbourhood open spaces for making a liveable city

In a similar vein to the mentioned examples, the growth management approach in Auckland's city centre as a commercial zone has shifted towards a focus on delivering a liveable downtown neighbourhood. New community associations have been established to focus on this process (such as Splice community group and Auckland City Centre Residents' Group – CCRG) and talking about the quality of life of residents living in the city centre has become an increasing research priority in Auckland (Carroll, Witten, Kearns, & Donovan, 2015)

Over the past 60 years, Auckland City Centre has become increasingly populated and diverse (Auckland Council, 2012b). During 2015, more than 5000 people moved to Auckland City Centre with approximately 34,000 people now living in this area (Tapaleao, 2016), having been drawn by its location, ease of access to amenities and affordable houses (Auckland City Council, 2015). To cope with this demand, the Auckland's plans such as Auckland Masterplan promotes a compact city with a higher density residential area (Auckland City Council, 2016; Auckland Council, 2012b; Auckland Regional Growth, 1999). However, the compact city paradigm could be a threat to the existence of open spaces. More research is needed into how open spaces in downtown neighbourhoods function and can continue to be prioritized as intensification remains ongoing.

Auckland council desires to make Auckland the most liveable city in the world (Auckland Council, 2012a) while Satu and Chiu (2017) by reviewing the literature show how the concept liveability is defined by the experience and evaluation of community from their living environment. Therefore, the experience of residents of Auckland City Centre is really important to achieve the main goal of Auckland Council to be liveable. Liveability is a multidimensional concept which the geographical aspect of this concept is known as the urban quality of life (Satu & Chiu, 2017). There are two main streams of research in the study of quality of urban life, including objective (a measurement which considers the actual situation and numbers) and subjective (a measurement which considers satisfactions). Various scales have been seen in the quality of urban life studies including region, a city as a whole, neighbourhood and dwelling (Marans, 2015). Therefore, Satisfaction with the neighbourhood as a socio-spatial unit (Allen, 2016; R. Chaskin, 1997; Sharifi, 2016) can improve the quality of life of residents.

Many factors can influence neighbourhood satisfaction, and these factors have been seen in urban and another field of studies. The neighbourhood is a socio-spatial concept (R. J. Chaskin, 1997) and neighbourhood public open spaces are one of the urban design elements influence

chance of neighbourliness as one of the main factors of subjective quality of urban life, well-being and neighbourhood satisfaction in neighbourhood context (Grannis, 2009). This urban element has been seen in physical factors that affect the neighbourhood satisfaction although some time in different form such as naturalness, openness and green area (Ferreira, 2016; Leslie & Cerin, 2008), (natural) open space (Amérigo & Aragones, 1997; Mohit, Ibrahim, & Rashid, 2010; Yang, 2008), public space (Mee, 2010; Yang, 2008), recreational space (Addae-Dapaah, 2008; Mee, 2010), outdoor park (Florida, Mellander, & Stolarick, 2011), urban space, or shared public space (Yang, 2008). However, open space contains three main aspects including perceived, conceived and lived space (Lefebvre, 1991). Therefore this research is focused on the experience and evaluation of open space in the scale of the neighbourhood as an effective factor that influences liveability and quality of urban life. Knowing users experiences are really important in urban design and planning as although it can depend on psychological situation of users, structural situation is also involved in the perception process (Bratina, 1997).

2-3- Urban policies, urban documents and the missing place of objective factors in Auckland urban documents

Achieving high-quality design is the main goal of urban policies and documents. However, it seems that the role of these disciplines has not been considered enough in neighbourhood satisfaction area, especially related to achieving design quality in neighbourhood open spaces. Carmona (2014) argues that urban design should have a holistic approach to all activities that influence the outcomes and place. He argues that “urban design projects are rarely subjected to a post-occupy review in the way that buildings are, and almost never is a systematic view taken across the entire process of creating or recreating places” (p. 4). Madanipour (2006), advocates the multi-dimensional perspective that needs to be considered during the design process which is not just focused on the single area. This dynamic approach let us record the individual voices, besides considering the context to propose more practical conclusion.

Auckland is the biggest and the fastest growing city in New Zealand with 1.66 million population (Stats NZ Tatauranga Aotearoa, 2017). Over the past 60 years, Auckland City Centre has become increasingly populated and diverse (Auckland Council, 2012b). Auckland City Centre Masterplan (2012) the population of residents in Auckland city centre will grow from around 27000 people in 2012 to 45000 people in 2032 while the statistic shows that the population growth exceeds this prediction in 2017 (OurAuckland, 2017). The location, ease of access to amenities and affordable houses are the main reason for choosing this area (Auckland Council, 2015a).



Figure 1. The location of Auckland City Centre (Google map, 2019)

Mixed used city centre has become a desirable strategy after research shows how this policy can benefit city and public regarding social, economic and environmental (J. Grant, 2002; J. L. Grant & Gregory, 2016; Jacobs, 1961; Talen & Koschinsky, 2014). This strategy leads to downtown residential development and increasing settled residents in city centres. In the same vein, Auckland City Centre Masterplan (2012) recognised this urban area as the Auckland city centre instead of CBD, to make a place to live, work and play (Auckland Council, 2012b, 2016a; Auckland Regional Council, 1999a). This area has been defined by the motorways and the coastline (Figure 1ure) which followed by the present research the initial boundary. Therefore, Auckland Masterplan promotes a compact city with a higher density residential area (Auckland Council, 2012b, 2016a; Auckland Regional Growth, 1999) which makes this area distinctive from other parts of Auckland.

While the compact urban forms need more urban design consideration to keep the residents' satisfaction within their living areas (Hur, Nasar, & Chun, 2010; Kearney, 2006; Mouratidis, 2017), more tendency toward the suburbanisation policies in Auckland, led to decline the spatial condition of Auckland City Centre (McArthur, 2017).

In this research archival research is conducted to review the legislative and governmental policies related to open spaces in Auckland, especially Auckland City Centre. This data is in form of text and, web-based, available online in Auckland Council's website limited from the initial plans related to these space from 2012 to 2016 (almost the time that the research has been started). Choosing these documents were the result of consulting with experts and engaged people in the process of urban design in Auckland. The reports include:

- The Auckland Unitary Plan (2016)
- City Centre Masterplan (2012)

- Parks and Open Spaces Strategic Action Plan (2013)
- Open Space Provision Policy (2016).

All of the above documents were available free for the public on the Auckland Council web page and can be seen in two parts including statutory and non-statutory documents. Currently, the only statutory documents relevant to the open spaces in Auckland in Auckland Unitary Plan (OP) (2016). Open Space Provision Policy, which is non-statutory document has been eliminated from the research, as it has mentioned that the “open space provision in the city centre is primarily guided by the City Centre Masterplan.” (P.38).

The Auckland Unitary Plan

The Auckland Unitary plan operative is launched in 2016 which follows the national goals and plans of New Zealand and will guide Auckland's future over the next 30 years. Auckland Unitary Plan can be seen in both scales of the regional and urban plan as it has shown where, what can be constructed in the Auckland region. The plan is underpinned by a zoning system and defined in fourteen chapters. In chapter H, relevant to zones, H7, is about the open spaces which explain the possible activities in open spaces considering the environmental conditions. Overall, Auckland Unitary Plan has more concern about the height of the building and their visual effect on the special characteristic area of the city centre. While it is not very clear about the quality of the apartments. However, sometimes it is mentioned that the quality of these places is important and it is important to make clear the boundaries of public, semi-public and private space. But obviously, it does not explain how this (design) quality can be providing and how the plan involves in encouraging the developer to consider this quality in the design.

Auckland Unitary Plan encourages more residential development in the city centre especially for providing passive surveillance at night. However, chapter relevant to this part of the city named “H8 Business- City Centre Zone” which is not in line with the mixed-use nature of the area. Furthermore, the quality of these land use and type of development are not granted for residential development. The only rule which should be relevant to provide the neighbouring space for residents is the bonus floor area policy. This rule started on And it is not too many researches about the efficiency of these space. However, research by Dempsey and students at the University of Auckland shows that most of these spaces are not opened or welcoming for public and does not benefit them. While it also increases the price of buildings considering providing nice building lobbies.

Chapter I, in Auckland Unitary Plan is also about the special locations where their own special rules must be followed. I203 is about the City Centre residential Precinct that identified four residential precincts in Auckland City Centre including Emily Place, Whitakere Place, Myers Park and Scotia Place. It explains that for having a good standard of residential amenities, the Auckland Unitary Plan is going to provide more quiet spaces with good access to the amenities in these four mentioned areas.

Auckland Unitary Plan is more clear and strict about residential development in other zones. For example, in most of the residential zones it is clear that the developer needs to provide some outdoor spaces while it is not compulsory for residential development in the city centre.

City Centre Masterplan (2012)

Auckland City Centre Masterplan is a place-based plan that released in 2012 with the aim of making the Auckland City Centre more appropriate and safer for family, pedestrian and environment. This plan will guide Auckland's city centre future over the next 30 years. Value of the open space is one of the ten vision of the plan. However, there are other visions that could be relevant to open spaces such as public life. The plan has been reflecting the defined vision in eight different areas in city centre. There are most focused on connectivity and making some safe spaces by decreasing the number of cars and adding a new light rail in the city centre. The plan has been defined in three episodes including 2012-2022, 2020-2032 and 2025-2042. Therefore, it is very soon to assess the success of the plan. However, what can be seen is that, while Auckland City Centre masterplan predicted 45,000 residents in the city centre by 2032, the new statistics show that the number of residents living in this area has already (2018) exceed. Furthermore, being more details, the residents are not directly involved in the decision making process and design of any areas as they are eliminated from the mentioned partners of the plan.

Parks and Open Spaces Strategic Action Plan (2013)

This plan aims to show what needs to be done for park and open space networks in Auckland city Centre for future 10 years and follow the Auckland Plan. Like Auckland Plan, the park and open spaces are defined in seven groups including Hauraki Gulf Marine Park, regional Parks, Wild and remote places, natural Area, benched, volcanic cones, local parks and civic spaces. As can be seen, the definition is showing that the plan is more focused on natural open spaces and the urban open spaces are limited to civic spaces and local parks. By looking at the definition, it seems that the open spaces in city centre are just limited to civic spaces. Civic spaces include civic squares, town centres and stress and the plan mentioned that these spaces are usually forgotten while they improve connection and linkage. Therefore, considering the definition, these are not spaces for sitting and spending time.

As such the other policy documents, it seems that Auckland City centre is not included in these documents. While it seems that the policies have not been developed enough in a practical way and it is not clear how the “open space network” will be identified and developed through the urban and regional area. In summary, this plan can be seen as a political plan. Therefore, the lack of a place-based plan can be seen.

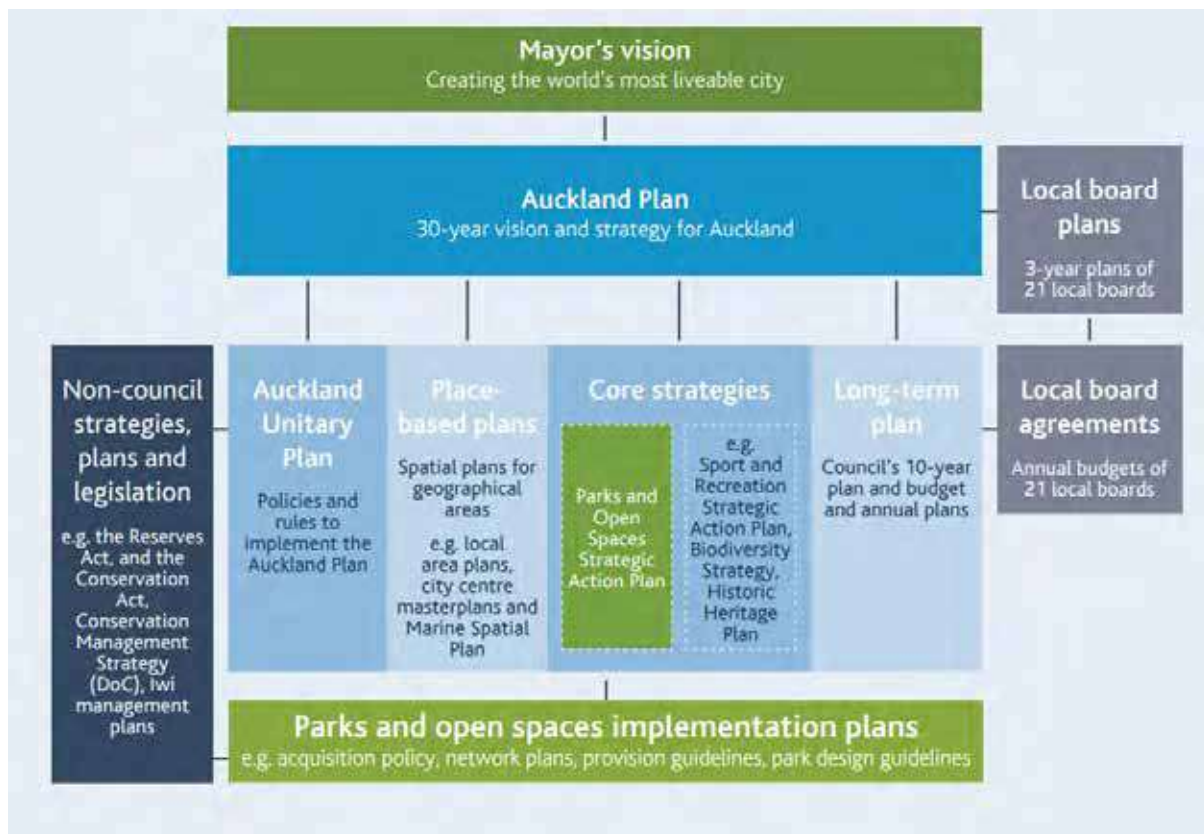


Figure 2. Relationship between the Parks and Open Spaces Strategic Action Plan and other strategies (Auckland Council, 2013)(P.13)

Discussion

This paper aims to show how urban policy influences neighbourhood satisfaction through the design outcomes. Auckland Council gave attention to the open spaces especially recently. However, most of the urban tools are in policy level and focused on the natural open spaces (which are different from urban and neighbourhood spaces).

In the case of Auckland City Centre, the area is more sensitive comparing another part of the city to urban open spaces planning as the values of the land is higher. Commercial developments and market's power try to shape the form of the city in this area and eventually influence the amount and quality of open spaces. This issue can change the experience of the residents from their living environment.

Although research has been done by Auckland Council to improve the physical design of urban open space (Auckland Council, 2013, 2015b, 2016b), they usually have considered the top-down approach to the open space planning strategies as it has not been seen in the statutory documents. These urban documents have not conduct subjective studies about how current users experience these spaces. However, recent research has indicated that existing open spaces do not meet the needs of inner-city residents(He, 2015; Splice, 2016). This issue leads to a number of problems for residents, including social isolation (Carroll, Witten, & Kearns, 2011; Chile & Black, 2015; Owen, 2016).

Additionally, the result of the survey has been done in Auckland City Centre shows that the most concern of residents living in Auckland city centre is their involvement in the design and maintenance of open spaces in their neighbourhood (A. Razno, 2019). However, looking at the policies shows that, while always engaging people was the main concern of the policymakers, as the design of the open spaces is completely depends on the developer, these engagements are not always possible.

It is possible to argue that, despite policy attempts at developing liveable open spaces, issue in urban spaces emerge as an outcome of less-controlled processes in planning occurring as a series of policy absences and ambiguities. Additionally, while there were recently some urban design projects such as Lord Freyberg in Auckland City Centre that has been designed by involving children in the process that has been done by Massey University and Auckland Council in 2017, it seems that for having more liveable city, which is the main goal of Auckland Plan, stricter and clearer urban documents need to be provided. Recognizing the role of urban design and residents, and involving them in the project relevant to open spaces, is something that directly influences the outcomes and quality of the spaces. More research needs to be done to find out the tools that can be used to encourage more public involvement in urban project in Auckland.

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Opportunities, innovation, and legitimacy in Public-Private Collaboration. Lessons from French practices

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Abstract: The debate about urban regeneration is coping with the spreading of public-private interactions and new geographies of powers. Thanks to a lexical shift from Public-Private Partnership to Public-Private Collaboration (PPC), the research aims to investigate these approaches to urban transformations and, analyzing the features of French best practices, outlines innovation's potential of such experiences. Four cases were studied as an advanced form of PPC for city-making, with widely recognized high-quality outcomes. The shift to PPC opens to a discussion on multilevel planning, in order to find a balance between reduction of public finance, need of urban renewal for collective services and public spaces, role of private stakeholders; collaborative urban transformations deal with privatization and regeneration, gentrification and inclusive social transformations, (neo)liberal city and public city. In this work, practices' features are translated into clusters of indicators to deconstruct the complexity of urban quality. Through the checklist and the following evaluation process, PPCs in urban regeneration can be enhanced through the link between decision-making processes and the urban quality of the outcomes. The whole work aims to obtain practical guidelines for urban planning and design, providing insights for policymakers and urban design practitioners to define performance metrics for PPC.

Keywords: Public-Private Collaboration, Urban regeneration, Urban Quality, France.

Introduction

The socio-economic, political, institutional and normative changes that shaped most of the European cities in the last 30-40 years produced the insurgence of new relationships between public decision-makers and private stakeholders, new geographies of power that influenced the approach to projects and practices of urban transformation. These relationships developed within an idea of state and public action that has been changing through the years. Namely, following the 2007/2008 financial crisis and the increasing welfare state and democratic representation crisis, the development of these new forms of interaction pointed out the need for a deep reconsideration in urban transformations' governance, mostly about the outcomes of public-private actions on the cities, both from a spatial and a social point of view.

Forms of interaction among public and private players, usually defined as Public-Private Partnerships (PPP), were, at first, conceived to implement specific types of operations, mainly infrastructures or facilities (Sagalyn 2011, EC 2004). Gradually, PPP tools have been used in various fields, not always in a proper way. In fact, these tools very often revealed to be unfitted for urban regeneration or (re)development; it has proven to be more difficult to intervene in existing cities, because of the complexity of land ownership and land value, layered urban fabric and functions, uses and symbols.

With these premises, many cases of urban regeneration PPP could be labeled as a failure, because of flaws in public-private interaction, or lack of long-term planning; all conditions strengthened by the scarcity of public and private resources in the aftermath of the crisis. But still, there are some practices strongly innovative in the dynamics underpinned a variety of different players and movers; most of PPPs advocates point out the

efficiency of PPPs even with their demanding and complex strategies; in these approaches could be found the innovation key to build a new paradigm in urban transformation and (re)development.

Talking about actions on the consolidated city, the complexity of urban transformation drove us into an investigation on correlation between decision making and actual outcomes, on balance between public and private stakeholders, and on the definition of public interest and output's quality, beyond financial and economic evaluations. But regeneration and redevelopment are now an uncertain field for PPP. It is easy to use PPPs to build and manage projects that guarantee an economic return for the operation (as toll infrastructures or services provision and facilities), while it is difficult to design public-private procedures for projects without a clear economic return, where the public interest plays a major role, and the private investors are involved with a bigger degree of risks. It could happen that public decision-makers settle down to compromises in order to attract private stakeholders. Therefore, the risk is to implement market-driven strategies, losing the potential of innovation of complex and multifaceted project approach.

These are the starting points for this work, aiming to define suitable innovations to improve and strengthen the opportunities within the public-private relationship in order to obtain more quality in urban transformation processes. The research question can be expressed as followed: which public-private processes toward urban transformation of the consolidated city produces the best performance in terms of outcomes' urban quality, with specific attention to spatial outputs and effects on the public realm?

In this paper we discuss the potential of a different approach to the study of Public Private (re)development as a different pace for intervention on the existing city, to build a more just and equal city. We suggest a lexical shift to go beyond the ideological bias that marked the reflection on PPP in the past. Then, we present a reflection on urban quality and how it could be framed and evaluated. The rest of this paper focuses on the lessons learned from four French cases studied. We presented the use of indicators useful to highlight patterns for effectiveness and quality. The conclusions set a series of principles to be followed to achieve good performances and quality in urban transformation on the existing cities.

The need for a lexical shift

It was crucial to identify an alternative approach to the common form of public-private relationship, by exploring new definitions of the issue as Public-Private Collaboration (PPC). Market and planning, public and private, have been seen as faces of the dualism that characterizes urban studies. Since the 80's, the ideological, political and economic background has deeply changed. The term Public-Private Partnership referred to operational agreements to implement infrastructures, facilities, and urban transformation; transactional model spread in parallel with the rise of neo-liberalism: in literature and, afterward, in public debate, language and ideologies overlapped.

Theoretically, and etymologically, choosing the term *partnership* could refer to a large family of tools and different approaches; but through the years, the word gained a non-neutral meaning and interpretation, connected with public-private dichotomy (Linder, 1999). The dynamics between public and private are investigated as if, when one of the sides gains ground, the other one is supposed to lose (and this interpretation is sustained both from PPP's advocates and their opponents). Speculative discussion on this topic can be interpreted in two ways: on the one side, the ideologization of the analysis connected with the debate on neoliberal city (Le Galès, 1995; Sagalyn, 2011, Swyngedouw Moulaert Rodriguez, 2002, Mirafteb2004); on the other side, the distress in analyzing rigorously processes that are heavily influenced by social and institutional environment. Beyond that, there is a group of studies that consider the PPP as a kind of cure-all procedure, useful to deliver infrastructures, services and urban transformation in a post-crisis and post-ideological world (Hodge, Greve & Boardman 2010.) In the various national frameworks, terminology and taxonomy mirror

specific approaches to theory and practices. There are several terms used for these dynamics, each one is an expression of different meaning and interpretations.

In this work, it was necessary to adopt a language that allows a holistic approach to practices' analysis, beyond the ambiguity. A term to balance neutrality (to go over ideologies) and a broader look at an in-depth investigation on urban transformations, as a complex issue; for this reason, we suggest to use the term *Public-Private Collaboration*.

Usually, a collaborative process is intended as a network interaction, hence, out of a strong hierarchy; in other cases, the adjective refers to the development of bottom-up practices: in informatics or in the new economy, collaborative networks are peer-to-peer networks or open-source software. Nevertheless, the term "collaboration" is used in urban studies too, with diverse meaning following the interpretation of decision-making patterns. Patsy Healey, with her seminal book *Collaborative Planning* (1997), talks about planning as an interactive process, an activity derived by governance and interaction within a players' network. Her strategic spatial planning is an alternative to the mainstream 80's theories, in which strong importance of economics and market-led theory contributed to broaden inequalities, and urban regeneration was above all focused on attracting investors and money; therefore quality was an output of private investment rather than a goal of urban policies. Strongly rooted in the study of power balance, social interactions, and communication, Healey define the research on Collaborative Planning as a comprehensive thought on the role of communities, and therefore relations, in improving social economic and environmental policies at a regional scale.. It's important to study power relationship, global economic changes of paradigm, institutional design and so on, but at the same time to search for a way to give tools to the practitioners about how to act and manage complex transformations. Hence, *collaborative* is referred to the integration between strategies in planning and spatial dimensions of urban policies. In the introduction, Haley states that "(...) planning systems and practices, (...) have their power and justification in the role they play in helping the political communities of places work out how to manage their collective concerns about the qualities of shared spaces and local environments(...)." (pages 3-4, 1997). Bovaird (2004) uses the term *collaborative* referred to the interaction between public and private: Collaborative Partnership is the best form of PPP in order to solve complex issues through good governance and beyond business agreements. Collaborative partnerships are based on participation, transparency and communication with all the stakeholders in order to create trust, accountability, equity, social inclusion, fairness and ethics, just and innovative procedures to enhance the performances, competitive fairness, leadership and coordination.

In our research, *collaboration* is meant as a sharing of knowledge and expertise, with a focus on communication, accountability, and transparency within the players' network. Collaboration is about agreements between players that couldn't be able to implement processes, projects and urban transformations by themselves. Collaboration is on a different level from competition and concurrence (as ideas strongly connected with market logic, and commonly associated with PPP). Actions and interests can define synergies that produce a different outcome from the simple sum of actions and competences. When we talk about PPP it's important to understand who makes what in the urban development, what kind of gain and how everyone can pursue their own goals (no matter how the goals are defined). When we talk about *Public-Private Collaboration*, instead, it's important to understand who decides and defines the goals, what kind of interest it's at stake, and through which synergy (how the interests and the goals are defined, by whom) while looking at the broader outcomes following the accomplishments of said goals in the mid- and long-term.

Namely, Public-Private Collaboration is about the relationship among a network of stakeholders built upon integrated complex processes with the effects both on the physical transformation of the city and on the socio-economic issues, with the proposition of a model of development and growth that connect redistribution with market logic. Subsequently, examples in urban transformation with this focus can be defined as "collaborative urban transformation". Hereby, we are not suggesting the development of a new taxonomy of planning and

development tools, opposite to PPP; the aim is to suggest a different interpretation, beyond ambiguity but with complexity. *Public-Private Collaboration* defines an approach to public-private relationship and comprehends various kinds of tools, PPPs too.

Issues in the definition of urban quality, a choice of useful indicators

Defining guidelines to improve PPC needs the establishment of performance metrics that investigate the complexity of the issues and take into account the legitimacy of such public-private interaction. One important aspect is the evaluation of the outcomes, and therefore the definition of urban quality. Another important aspect is the accountability of the players involved, through the search for the public interest. We tried to connect these two issues. The definition of what is public interest it's at the core of the definition of urban quality. Public interest, or better "general interest", is the conjunction of multiple different interests, not always in opposition.

But urban quality is more an evocative idea than a descriptive and normative definition. It is important to pinpoint urban quality's features that could link outcomes with upstream urban transformations' processes. As we have defined PPCs as tools to overcome complex problems, the evaluation criteria can't be framed only in efficiency or partners' ability to accomplish tasks and to follow agreements. This means that PPCs need to be focused on better quality of life, and therefore urban quality, for citizens and city users (Bovaird, 2004).

The legitimacy of decision making is an overarching issue and crucial theme, in order to define quality: we needed to build a shared theoretical framework, through diagnostics of the problems to whom the transformation and planning, either strategic or not, would answer, through adaptability, resiliency and multifaceted approach. Outcomes of urban transformations are or should be, the answer to what has been defined as a public issue, paying attention to citizens' needs and demands. The creation of new urban qualities in the existing city is the main feature that marks complex urban transformations, which are no more aimed only at growth but at adding values to resources already contained into existing cities. This demanded improvement follows five Lynch criteria along with the two meta-criteria of efficiency and justice. The interaction of five dimensions, vitality, sense, fit, access, and control, with the overarching framing into the meta-criteria, puts the oversight of procedures and practices on the spot in the study of the relationship between processes and outcomes. Given the complexity and diversity of urban projects, the main design framework is based upon public spaces and public facilities that shape every single project within the bigger strategy.

The importance of public space quality in urban production originates from the specific idea of society and of what livability is in the city. Livability and urban quality are values that need to be shared by communities and groups as an expression of the particular cultural and theoretical framework. There is not just one answer to the search for quality, and it is no easy to find a working approach, without creating a conflict arena, as different communities could have unmatching issues. Trying to define what urban quality is could be a wicked problem, and sometimes the pursuit of urban quality creates more problems. With our framing, we can say that urban quality is the ability to answer to territory and community concerns. When an evaluation method is used to explain and legitimate decision maker, evaluation allows defining what public interest is and communicating to citizens, users and constituency.

This overarching search for a wider definition of urban quality is part of the evaluation of PPC outcomes outside economic efficiency and competitiveness. A multifaceted approach and specific focus on public realm have been used to define and shape the goals of collaborative transformation, highlighting the correlation with variable and parameters of decision making and network building as framed in the lexical shift to Public-Private Collaboration. As urban quality, general interest is not an absolute value but is related to framework and diagnostic of the urban issues. Not underestimating the complexity of the issue, we built the research process in order to find a clear and working method to evaluate the performances and analyze the added value to the redeveloped city toward a better quality of life in the urban spaces. We used the case study to define

characteristics and problems within different procedures, in order to draw a system of comparable variables; features in urban production that allow reading the urban transformations in relation to the added value of PPC.

Thanks to the cross reading of variables and outcomes, it was possible to define patterns that link process' quality and outcomes' quality. Said relationship with a focus on players interaction, allowed to read the outcomes as dependent variables connected with collaborative processes. Usually, evaluation protocols for complex processes are multi-criteria matrixes that need a huge variety of parameters and indicators that are not always easily applied. Therefore we have defined a simplified set of variables in order to be used also to define ex-ante the conditions needed to improve actions and the prerequisites to attain good quality in the outcomes.

In the first cluster, about *independent variable* within the process, the value scale from 0 to 10 is defined so that higher values coincide with a higher synergy among the actors and bigger consideration of general interests. A particular specimen is in the parameters related to the risk allocation, in which the balance between values matches with a higher synergy.

The six variables could be articulate in further sub-parameters, in order to better describe features needed to highlight development patterns. The main thesis is that these areas of interest should be taken into a bigger account if we want to build effective collaborative processes and quality in urban transformations.

Time framing and duration: time framing is an element that defines the structure of the project. It is articulated in two different values. Flexibility, about the inner characteristic of the project, and the capacity to evolve and improve as the time goes by. The strategic frame instead is about the links between the projects with a bigger picture, timewise and space wise.

Responsibility and public oversight: about the role of public agency in the definition of general goals, as a subject that guarantees broader protection of public interest.

Selection of players and their role: Player network is analyzed in two aspects. Selection of private players is useful to analyze the role of economic factors and quantitative evaluation in the building of players' network. Negotiation and participation are about the role of other players and stakeholders, such as citizens or civil society in the players' network and building of a strategic frame.

Land management: The use and ownership of land can follow merely financial issues and bargain logics or can be used as a tool to involve a complex network of players and complex management of the project.

Risks allocation: that is a peculiar item where the balance in the values usually describes a higher synergy. In order to describe better balance, we separated private risks from public risks.

Control and coordination: the capacity of oversight agency to use available tools to manage and control each operation and project.

In the outcomes cluster, named *Forms and outputs*, urban quality is defined through simple items, in order to easily define the quality of each aspect. In this set too, we used a scale from 0 to 10, where the bigger value describes the higher quality of the outcomes. The results of the urban redevelopment are described through six items, a checklist that allows to easily evaluate them.

Goals-outcomes consistency: it concerns a more complex evaluation, connecting the overall outcomes with the goals set at the beginning of the urban transformation decision-making and process. The evaluation paid particular attention to the outputs in the public sphere.

Public space: this is both a qualitative and quantitative evaluation, dimension and role in the general strategy of the project are evaluated.

Accessibility and mobility: in this case, it is important the enhancement of infrastructural services thanks to the project implementation.

Urban fabric and architectural quality: This indicator analyzes mainly the urban form and it is organized in four different parts. Density is about the operation as a whole, and it's strictly connected with the dimension of public space. Urban design quality it is connected with the neighborhood identity and image, and innovation in urban fabrics. Similarly, architectural diversity and quality measure the experimentations and search for technical innovation in every intervention.

Facilities, urban function and neighborhood's identity: the subdivision of this point is functional to identify the usage value of the new neighborhood with a focus on mix of use, housing stock, and supply of public services and facilities at the local or metropolitan scale.

Externalities and other outcomes: the project is evaluated in relation to the urban environment in which is framed. We analyzed the connection with surrounding urban fabric (therefore on a spatial and local basis). On the other side, we highlighted the overall effect on the city on a general basis.

A short overview of practices

France experienced practices on complex urban transformations since post World War II, shaping a network of players, institutions, roles, and expertise in a constant evolution of decision making and implementation processes. Since the '70s, *Projet Urbain à la française* is a term that describes a well-established approach to urban redevelopment: there was a significant shift from the construction of new public housing (even with the demolition of ancient neighborhoods) to interventions on the existing city, in order to update urban fabric and give back to the citizens under-used parts of the city, because of de-industrialization. French planning tradition is based on regional economic planning, a collaborative and integrated approach; it became more and more important during the devolution process, with its new institutional governance delegated to local administration, therefore with a change in public agency scale. Even considering this change (influenced by EU policies) public power maintains decision making control to oversight and defines the space for the private players. Also, it shows that giving importance to economics in urban transformation doesn't always mean letting too much space to financialization in urban dynamics.

On these bases we have chosen to study cases with an interesting players' interaction, defining a triangular relationship among practitioner (planner, architects, and experts), developer and public agencies. It's the network that drives real estate developments, and it works easily in thriving markets while it struggles in recession cycles. We have chosen the implemented projects, in order to analyze and evaluate the outcomes of the studied processes. We investigated players' role, public movers (central or local agencies, other public or social players) and private investors (developer, construction firms, funders) in order to point out connections and interdependence between the type of collaboration, players' role, outcomes, and output.

In this work we are shortly presenting the main features of the four cases¹. The diversity of the cases was important to generalize the highlighted patterns. Confrontation-wise, we paid attention to the time-framing, the use of the traditional planning tools into the French system, the Zone d'Amenagement concerté (ZAC) even if

¹ Please refer to the doctoral thesis "Collaborazioni Pubblico-privato e qualità delle trasformazioni urbane. Condizioni riferimenti e possibilità" to learn more on the case studies (Ariani, 2017). Other information about the cases can be found, among other references in scholar publication and official reports and documents (see the references).

with innovative keys, and the location in underused and distressed areas of the city. Each case gravitates around the idea of experimentation, in processes, procedure, and urban morphology. In table 1 we present the main data of each project.

Table 1 Practices Data

Project	Paris Rive Gauche	ZAC du Chaperon Verts. Arcueil	Ile de Nantes	Cité internationale de Lyon
Dimension	136ha	5,4 ha	337 ha	35 ha
Time-line	1991-2030 expected	2006-2018	1999-2030 expected	1985-2008
Main players	Paris Municipality SNCF (French National Railways) SEMAPA (semi-Public planning company) State arrondissement (local district) Caisse des Depots et consignations	Communauté d'agglomération Val de Bièvre ANRU Caisse des Dépôts et Consignations Logement Foncière SADEV 94 TVK Architectes	Nantes Municipality Nantes Métropole SAMOA Atelier de l'Île de Nantes : Arch. Chemetoff (phase 1), Arch. Smets-Depuyts (phase 2).	Lyon Municipality Métropole de Grand Lyon Renzo Piano Building Workshop SARI-Compagnie Générale des Eaux SERL (Société d'Equipeement du Rhône et de Lyon) SEM de la Cité Internationale
Venture	Public. Paris Municipality	Public: Communauté d'agglomération Val de Bièvre	Public: Nantes municipality (main role played by the Mayor) .	Public: Lyon municipality (main role played by the Mayor)
Strategies and goal setting	Public players, big role of experts	Public, with a strong role of experts, local semipublic planning agencies and planners	Public, with a strong role of political strategy and capital	Public, with a strong role of experts, local semipublic planning agencies and planners
Collaboration type	ZAC for the whole area, and specific procedures created for the main project's nodes	Traditional ZAC within a national renovation program	Strategic framework lead by the public. Each different area of intervention delivered through specific development processes	Traditional ZAC within a national renovation program
Participation and concertation	No participatory processes, only information and	Strong participation in each project phase to define main	Strong participation in the early stages of the process	Strong participation in each project stage to define

	consultation	design issues		main design issues
Funding	Starting funds were public (through the SEMAPA capital). Then the financial balance was granted by traditional ZAC land transfer mechanism and private investors	Public starting funds (through the SEMAPA capital). Afterward, financial balance granted by traditional ZAC land transfer mechanism and private investors	Public starting funds. Long term financial balance granted through land transfer and fiscal revenues. Some of the project where market-driven once the development mechanism enhanced the area.	Public starting funds. Then the financial balance was granted by traditional ZAC land transfer mechanism and private investors
Land ownership	Mainly owned by SNCF	Mainly publicly owned	Fragmented land ownership, private and public	Mainly publicly owned

General principles and expected goals could be summarized as follows:

- *Paris Rive Gauche*: rehabilitation and requalification of an industrial fringe through the mending and physical reconstruction of the urban fabric. A new meaning for an important portion of the city with functional mix and land use variety set by the establishment of (public and private) service and facilities at an urban, metropolitan or regional scale.
- *Arcueil Chaperon vert*: rehabilitation and requalification of a distressed public housing district through physical opening up of the urban fabric and support of use and social mix. Organization of public national funding (Program national pour le Renouvellement Urbain, PNRU) together with attractiveness for private funders and developers.
- *Ile de Nantes*: regeneration and requalification of a big industrial fringe and the working class neighborhood developed in close relations with the former shipyards and industries. The project is based on the creation of a cultural and institutional framework at the city scale, thanks to the promotion of a new urban identity and city marketing. Incremental transformation based on consensus building, pervasive intervention on public space, and more generally sustainable development and creative and cultural economics city as main tools to enhance the area.
- *Cité Internationale de Lyon*: Regeneration and requalification of an underused area through services and facilities at the national and metropolitan scale, to create a pole of attraction in the area at the border of the city. Private investors' involvement through experimental procedures, aiming to be a model to be used in future projects. Strong political power that started a city marketing strategy to put Lyon on the urban European network radar.

Using the parameters presented in the previous chapter, it's possible to briefly describe the cases as in the following tables and then evaluate each item to pinpoint the main patterns.

The first series of tables (table 2-5) describe the independent variables for each practice.

Table 2 Paris Rive Gauche independent variables

Variables	Paris Rive Gauche
Time and duration	The project is organized in various subsections, developed through the years, with the capacity to adapt goals and procedures to the evolving conditions
Responsibility and public oversight (goals)	The goals are defined with public oversight, through the role of SEMAPA, initially a Single Purpose Vehicle. The real estate market, though, played an important role as the main tool to guarantee financial balance
Selection of players and their role	The private players, developers, funders, and construction companies are selected on an economic basis through public bid. There has been some exception with direct procurement process. While the planners were chosen through competitions, architect and designer were chosen by developers (as the project was part of the bid)
Land management	Operation's financial balance is based on land market, so it was influenced by real estate market. Recent tools try to control speculation. At first, the public agency had to face big initial funding for urbanization costs, forecasting to balance them selling and allocating land.
Risk sharing	The risk was mainly taken by public players. Private stakeholders followed market logics.
Control and coordination	<p>Projects are designed following the "Cahiers des Charges" tools drafted by planners and coordinating architects (one for each subsection, and then more specific ones for each lot and building). They are validated and controlled by SEMAPA and Paris Municipality. This allowed a specific focus on urban scale design features. In the most recent documents, there is special attention to sustainability. In land-disposal agreements, datasheet and Cahiers des charges, with minimum performance and feature for each parcel, in term of architectural quality and relationship with the urban context, are attached.</p> <p>The building license is granted upon the respect of such technical features.</p> <p>The public realm is designed directly by public authorities.</p>

Table 3 Chaperon Vert Arcueil independent variables

Variables	Chaperon Vert Arcueil
Time and duration	Short term implementation because of the low complexity of the intervention
Responsibility and public oversight (goals)	Oversight was strongly public, thanks to the participation to a national regeneration program for public housing
Selection of players and their role	The private players, developers, funders, and construction companies are selected on an economic basis through public bid, using traditional procedure within ZAC. Public stakeholders played the main role in the whole operation
Land management	Operation's financial balance is based on land market of privatized parcels, so it was influenced by real-estate market. Traditional procedures were enacted.
Risk sharing	The participation to the national program controlled the risks upon public players. Private developers were subject to market rules, within a clear procedure and sure outcomes thanks to public commitment.
Control and coordination	Projects are designed following the "Cahiers des Charges", tools drafted by coordinating architects (specific for each lot and building) attached to concession agreements. The main focus was on formal aspect and urban fabric defined by the masterplan. Building retrofitting on public housing was implemented by public players, therefore without the need for a specific control.

Table 4 Île de Nantes independent variables

Variables	Île de Nantes
Time and duration	Project meant for a long duration, organized in different phases that involve the whole intervention area (all the island). Incremental planning approach to the project favors the organization in the long term.
Responsibility and public oversight (goals)	Oversight coordination and control entrusted to the public agency SAMOA, single purpose vehicle. A strong political capital moves the whole project.
Selection of players and their role	Private players and investors are selected through negotiation procedures based on quality and sustainability. Designers' choice is jointly made by SAMOA and developers.
Land management	The land management is a policy tool, used by the SAMOA to plan and control specific projects. But it's not the only one, as a lot of parcels are private
Risk sharing	Negotiation and transactional procedures allocate the risks evenly between public and private. Positive outcomes of procedures are guaranteed through the follow up by the public players.
Control and coordination	Technical operative tools like the Cahiers des Charges are the results of negotiation with private developers and are discussed and drafted during the tender procedures There is a specific focus on sustainability, but also on the functional mix and building density index (usually lower than the ones defined by the higher planning documents). When developers are the owner of the land they are not required to talk with the public agency, but only negotiation grants the positive outcome and the building permit release.

Table 5 Cité Internationale Lyon Independent variables

Variables	Cité Internationale Lyon
Time and duration	Evolution of the project during the time was not expected but due to external causes (mainly economic)
Responsibility and public oversight (goals)	During project development and implementation, oversight and control were taken over by both private and public authorities. Project consistency and relationship with public decision makers were granted by SEM Cité Internationale, small public authority specifically created for the project
Selection of players and their role	Players were chosen mainly by economic criteria. Renzo Piano Building Workshop was the main designer and accountable for the urban project, chosen by political decision-makers and responsible for the quality and consistency of the project.
Land management	Land management was at the core of the transactions to involve private stakeholders. This strongly influenced the mix of uses.
Risk sharing	Due to the strong role played by private stakeholders, they took most of the risks.
Control and coordination	Renzo Piano drafted the Cahier des Charges, the main tool to coordinate and control the whole operation; this granted the consistency of the project. It was a well-defined preliminary design, attached to building permission contractual agreements. Furthermore, it was required by the public authorities that RPBW was the main designer of every building, in order to guarantee quality and consistency. For this reason, further controls weren't required.

Similarly, we applied the same analysis on the outcomes of each case, following the Forms and output set... They are summarized in the following tables (tables 6-9)

Table 6 Paris Rive Gauche dependent variables

Forms and outputs (dependent variables)	Paris Rive Gauche
Goals-outcomes consistency	General goals at the city scale were the constant of project development. Subsections goals were mainly related to physical, spatial and architectural issues, and they evolved during the time
Public Spaces	Dimensions: Green public spaces are small compared to the whole area. Public space is mainly at block scale or connection and sidewalk but it was also implemented the requalification of Seine's docks.
	Functions and uses: The lack of big public space is balanced by the spreading of public facilities. The university campus in Massena subsection has the biggest and most equipped public spaces
Accessibility and mobility	The area is well located in relation to the city, with strong public transit infrastructure implemented within the project
Urban fabric and architectural quality	The dense urban fabric is based on traditional Parisian Boulevard plot, made by compact block. Some experimentation in urban design was implemented in Massena subsection (Portzamparc's Ilot ouvert). There is a great amount of high-quality building and landmarks
Facilities, urban function and neighborhood's identity	There is a good balance among, housing, directional building and public facilities that were developed during time. The mixed housing policies were not helped by the retail and offices building that favor gentrification. A network of metropolitan scale functions and facilities was put in place as one of the main goals of the project.
Externalities and other outcomes	The operation created a new metropolitan pole in the Parisian East sector. On the con's side, the neighborhood is producing gentrification processes

Table 7 Chaperon Vert Arcueil dependent variables

Forms and outputs (dependent variables)	Chaperon Vert Arcueil
Goals-outcomes consistency	The project reached the goals of redeveloping the public housing neighborhood through physically opening up the area and creating a social mix with private investments
Public Spaces	<p>Dimensions: The requalification of the central square is the core of a widespread system of local-scale public and green spaces. The system is linked with an inter-municipality linear park</p> <p>Functions and uses: Public spaces are for the neighborhood's dwellers. Focus on connections between spaces and with surrounding neighborhoods.</p>
Accessibility and mobility	There was no new public transit infrastructure within the project. Nevertheless, the spatial opening up of the neighborhood improved the pedestrian accessibility
Urban fabric and architectural quality	Densification and public spaces' requalification improved the overall urban quality and perception of the neighborhood. Public housing was improved through energetic retrofit, while the private building attained to high-quality tech and sustainability goals.
Facilities, urban function and neighborhood's identity	Mainly housing, with the improvement of local facilities and retails. The mixed housing stock favors the social mix and improved the neighborhood's identity
Externalities and other outcomes	The neighborhood opened to the surrounding areas, beyond the public housing stigma. The project is part of a bigger transformation within the Grand Paris metropolitan plan

Table 8 Île de Nantes dependent variables

Forms and outputs (dependent variables)	Île de Nantes
Goals-outcomes consistency	The general goal was to transform an underused area in a competitive and attractive node in the city, and it was overall achieved. The specific goals and steps have been defined incrementally and with constant feedback.
Public Spaces	<p>Dimensions: The public spaces are widespread across the area and big parks and green spaces have been developed in the island's edges and in general the project redeveloped all the docks. The intervention area, with new buildings and development, is marked by special attention on public space, while this aspect is overlooked in the older parts of the area</p> <p>Functions and uses: Public spaces are the focal point of the development project. Universities and landmark artworks, as well as thematic park, are the main identity of the neighborhood.</p>
Accessibility and mobility	The new light rail train infrastructure was the starting point of the whole project. Nevertheless, the infrastructure is not sufficient yet to cover all the area
Urban fabric and architectural quality	In the industrial fringes and underused areas, the project established a strong densification, of buildings and uses. The incremental approach to the project allows layered and diversified urban design. Building and public spaces are designed with high architectural quality and a strong focus on sustainability
Facilities, urban function and neighborhood's identity	It's a big project on a wide urban area, partially urbanized; therefore in the area, there is already a big variety of uses. The project improved the diversity of uses and mixed housing development. To improve the role of the area, the project developed a network of metropolitan scale facilities and infrastructure, both public and private, connected with knowledge economy and creative cluster
Externalities and other outcomes	Due to the huge dimension of the operation, the project developed a new metropolitan pole. At the same time, the improvement in competitiveness started some gentrification process.

Table 9 Cité Internationale de Lyon dependent variables

Forms and outputs (dependent variables)	Cité Internationale de Lyon
Goals-outcomes consistency	The general goal was to define a model in urban project procedures, but this goal was neglected because of the peculiarity of the procedure that couldn't define a general guideline. The functional mix has changed to follow the evolution of players network
Public Spaces	<p>Dimensions: most of public spaces connect the buildings, such as pedestrian central axis and the big public plaza. The big park along the river, besides being within the area of intervention, is not well connected with the main project. Just outside the area, there is a historic public park that adds value to the area.</p> <p>Functions and uses: The central pedestrian street is the focal point of the spatial development and of the urban design.</p>
Accessibility and mobility	New light rail train has been developed, the public transit infrastructure was crucial in project development.
The urban fabric and architectural quality	The financial balance of the project was granted by intensive development. Renzo Piano was the designer of all the main building and of the overall urban design. This approach granted architectural quality but not as much diversity
Facilities, urban function and neighborhood's identity	The functional program is very simple, centered on hospitality, conferences and commercial sector, the main focus of the business center. To balance the uses, there is some housing too.
Externalities and other outcomes	New metropolitan scale business center had some effect on the role of the city in the European network. Because of location and uses, the neighborhood is still isolated from the rest of the city

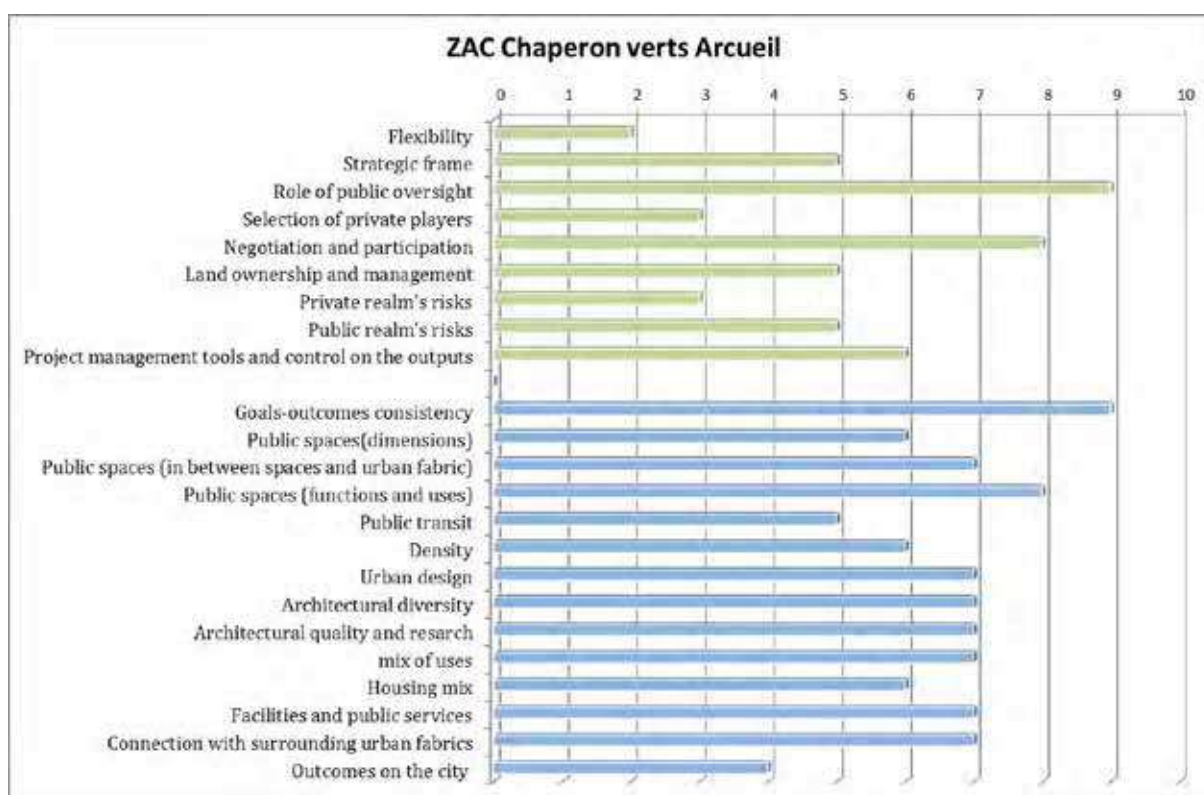
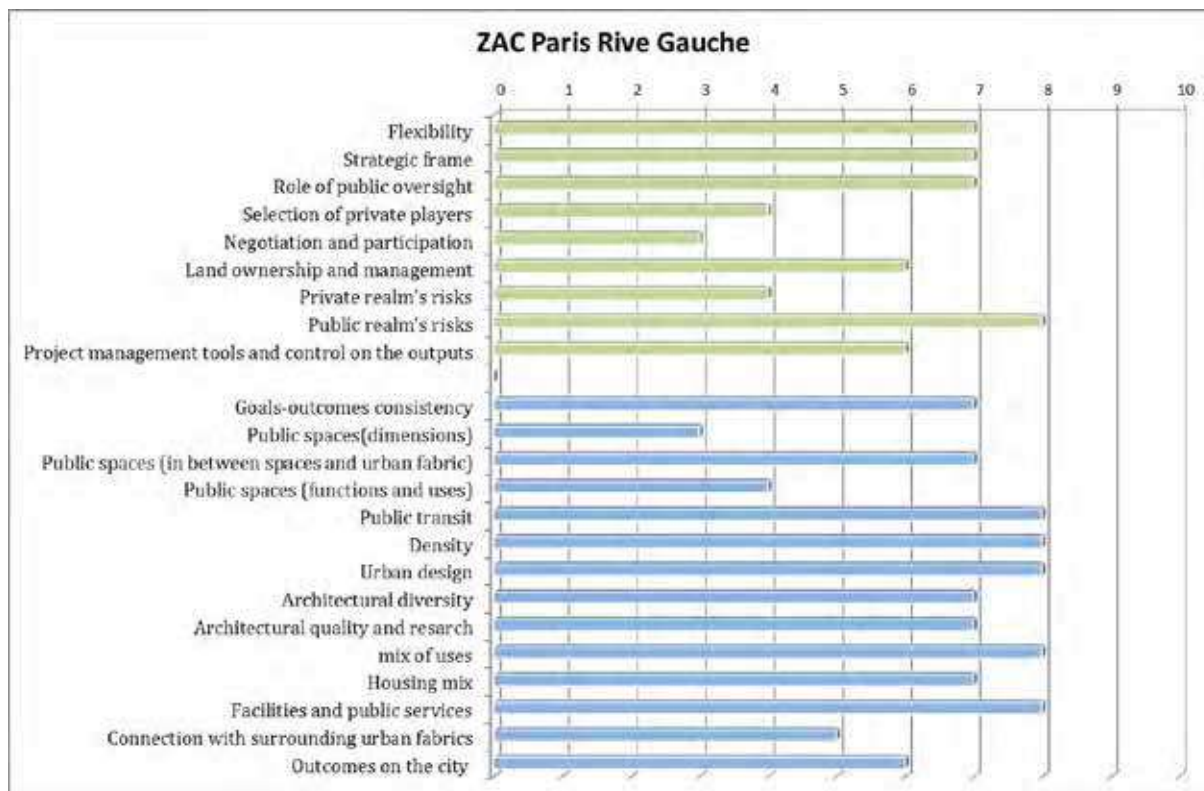
Comparative analysis and pattern definition

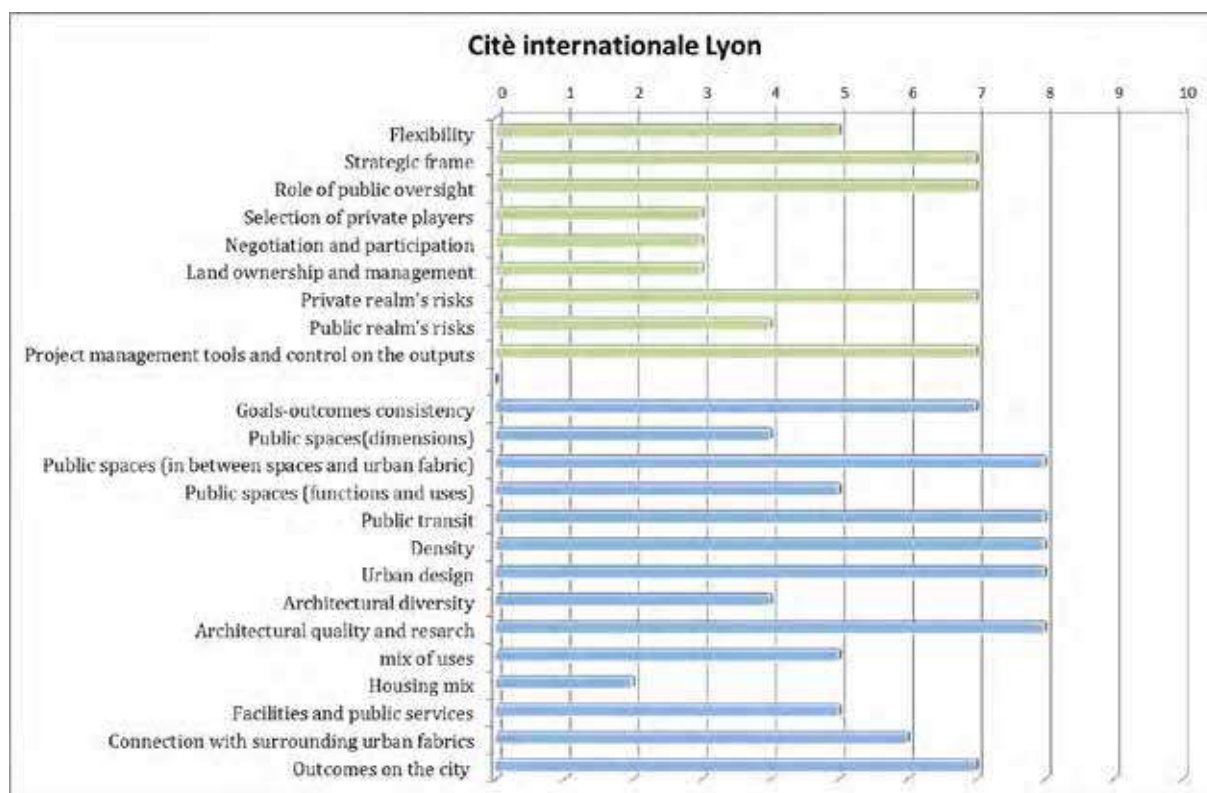
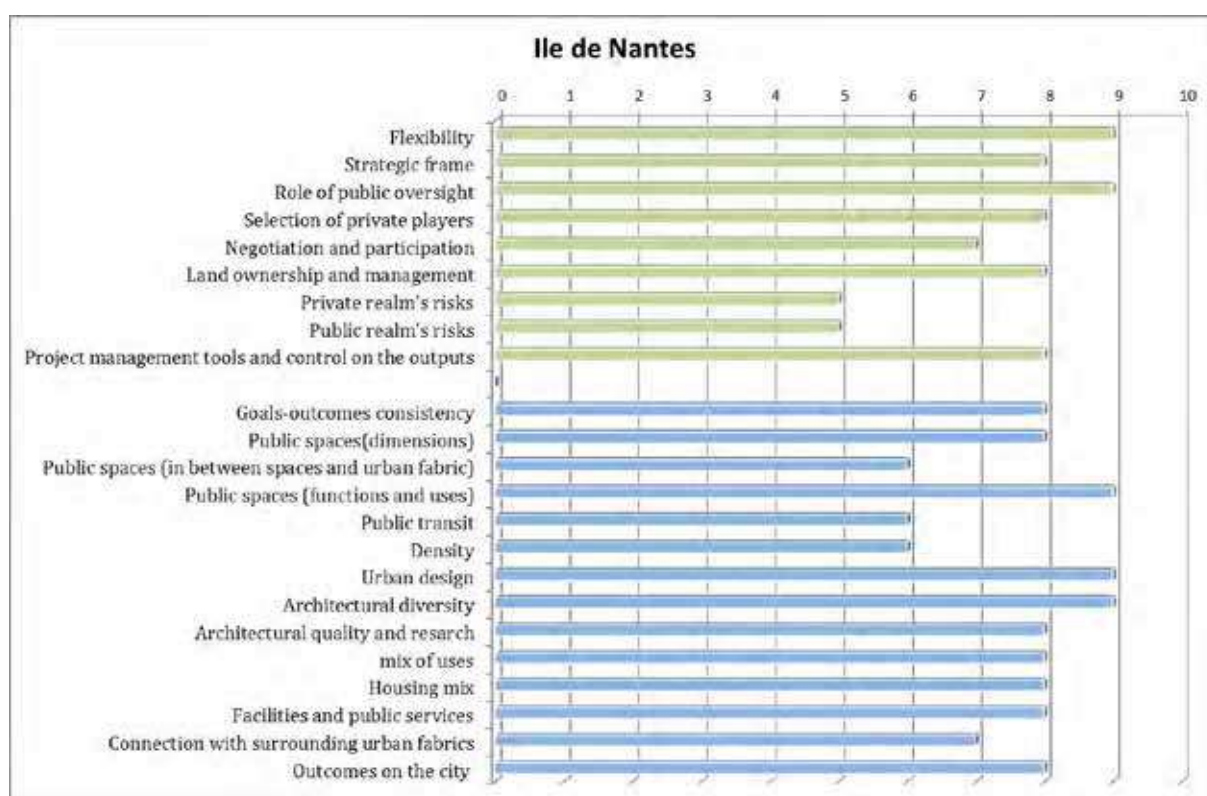
In the following tables, again we analyze each practice through the independent and dependent variables, this time proposing an evaluation of each item in order to frame them in the comparative studies with the use of indicators and variables. The processes are read as independent variables that shape the PPCs, while the outcomes are dependent variables so that this model can highlight the main patterns.

Parameters			ZAC Paris Rive Gauche	ZAC Chaperon verts Arcueil	Ile de Nantes	Cité internati onale Lyon	EVALUATION CRITERIAS
VARIABLES	Time and duration	Flexibility	7	2	9	5	project adaptability in the time framing (0= min, 10=max)
		Strategic frame	7	5	8	7	project assimilation within long term strategic frame, at metropolitan or regional time (0=irrelevant, 10=essential)
	Responsibility and public oversight (goals)	Role of public oversight	7	9	9	7	Public oversight relevance in goals' definition (0=min, 10=max)
	Selection of players and their role	Selection of private players	4	3	8	3	players' engagement rules in transformation processes (0=solely economics, 10=solely qualitative)
		Negotiation and participation	3	8	7	3	relevance of negotiation and of participatory processes in project's definition (0=irrelevant, 10=essential)
	Land managment	Land ownership and management	6	5	8	3	purpose of land ownership leverage (0=solely economics, 10=complex project management)
	Risk sharing	Private realm's risks	4	3	5	7	Fair distribution of business and financial risks (0=only at public players' expens, 10=only at private players' expense)
		Public realm's risks	8	5	5	4	Fair distribution of business and financial risks (0=only at public players' expens, 10=only at private players' expense)
	Control and coordination	Project management tools and control on the outputs	6	6	8	7	Public oversight's capability on outcomes ' quali (0=none, 10=high and well-structured in complex procedures)

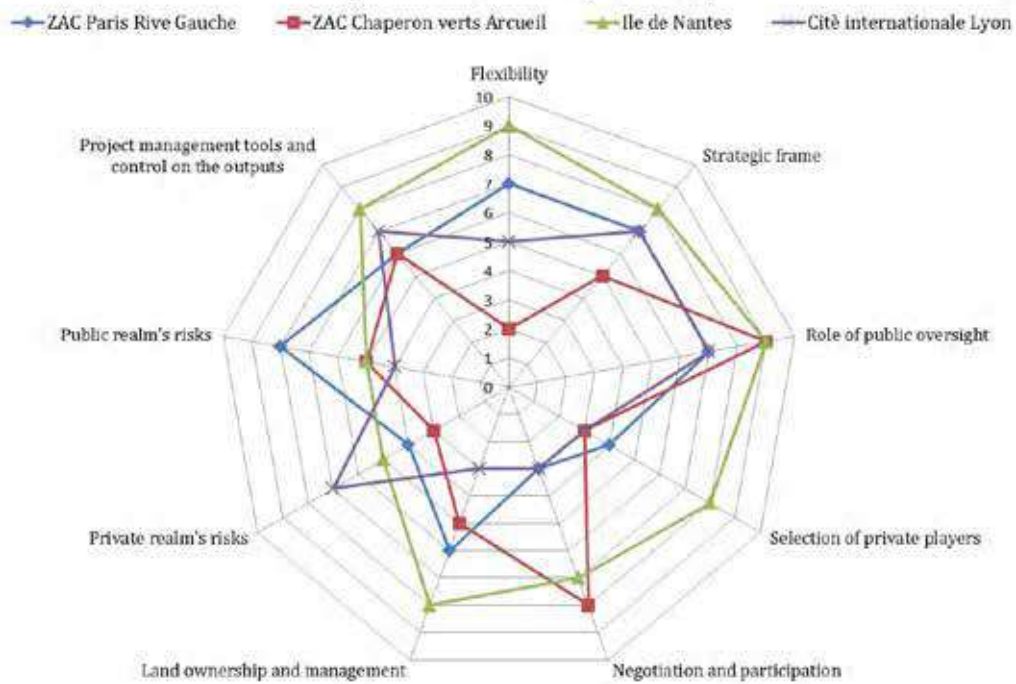
Parameters			ZAC Paris Rive Gauche	ZAC Chaperon verts Arcueil	Ile de Nantes	Cité internationale Lyon	EVALUATION CRITERIAS
Forms and outputs (dependent variables)	Goals-outcomes consistency	Goals-outcomes consistency	7	9	8	7	Consistency between goals and final outcomes (0=min, 10=max)
	Public spaces	Public spaces (dimensions)	3	6	8	4	Extension of public space in relation to the whole intervention's area (0=small, 10=big)
		Public spaces (in between spaces and urban fabric)	7	7	6	8	Quality of small spaces and connective areas (0=low, 10=high)
		Public spaces (functions and uses)	4	8	9	5	Relevance of public spaces in overall project quality (0=irrelevant, 10=essential)
	Acessibility and mobility	Public transit	8	5	6	8	Increase in infrastructures for public transit (0=none, 10= high)
	Urban fabric and architectural quality	Density	8	6	6	8	Urban density and balance after the implementation (0=low, 10=high)
		Urban design	8	7	9	8	Urban design quality (0=low, 10=high)
		Architectural diversity	7	7	9	4	Research on architectural innovation and diversity (0=low, 10=high)
		Architectural quality and resarch	7	7	8	8	Technical qualties and innovation in architecture and built environment (0=low, 10=high)
	Facilities, urban function and neighborhood's identity	mix of uses	8	7	8	5	urban quality due to mx of uses (0=low, 10=high)
		Housing mix	7	6	8	2	diversity in the housing stock and distribution of public housing,market rates and other housing solutions (0=low, 10=high)
		Facilities and public services	8	7	8	5	Relevance of infrastructure, facilities and public service in the definition of the project and implementation (0=low, 10=high)
	Externalities and other outcomes	Connection with surrounding urban fabrics	5	7	7	6	Risk fo speculation and negative externalities on the housing market due to the implementation (0=high, 10=low)
		Outcomes on the city	6	4	8	7	outcomes on the overal urban environment (0=extremely negative, 10=extremely positive)

This evaluation led to some graphical synthesis that made clear some of the patterns that we will use to define the general guidelines for a better Public-Private Collaboration. We can read each case, highlight the strength and weakness, and we can also easily compare the four practices and suggest some ideas on what works better in French planning tradition.

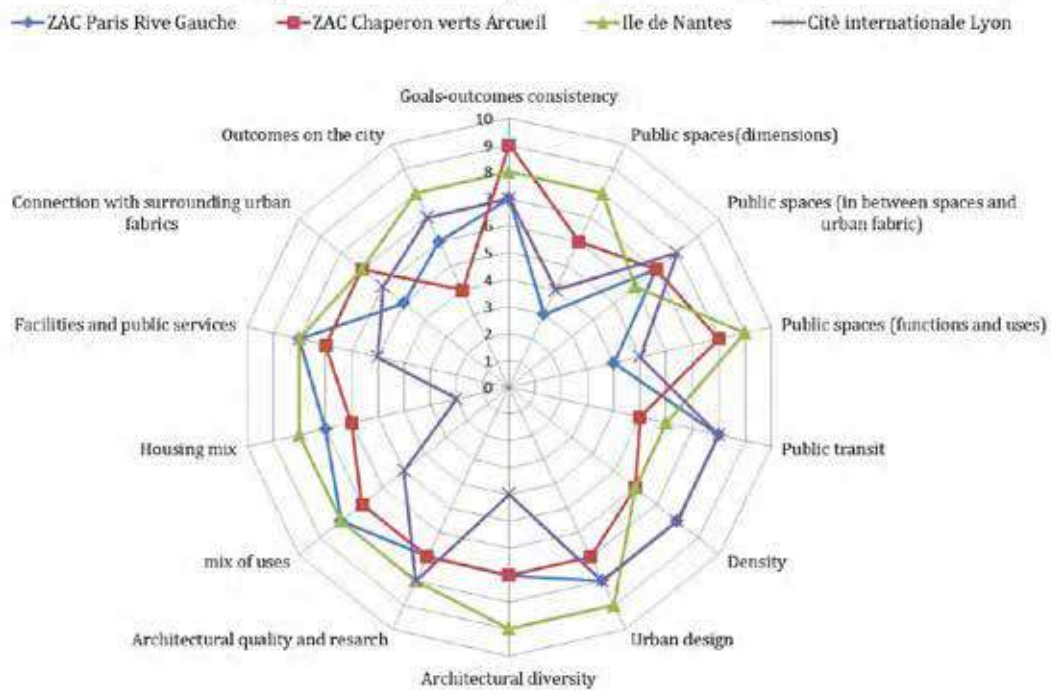




Independent variables (processes)



Dependent variables (forms and outcomes)



Public realm as a whole, including transportation, facilities, and accessibility, reached good quality in all the projects. Anyway, traditional ZAC procedures, as Paris Rive Gauche and Cité Internationale de Lyon gave a less prominent role to public space in the project's concept; it happens because the land ownership is mainly market-driven and aimed to financial balance. Nevertheless, we have observed that urban design and small-scale public space is still important, helping the real estate market. Arcueil and Nantes showed an effort in participation since the early design stages. In these cases, public space has a main role in the project and in the construction of neighborhoods identity.

Public oversight is central in all projects, even if interpreted in different ways; there is a general consistency between goals and outcomes. Every project is designed within a bigger strategic framework, space-wise and time-wise, regardless of dimensions and complexity of the projects. There is no linear correlation between public-private risks allocation and the importance of public oversight. That means that the definition of public interest can be a framework within which private actors can play a role and enjoy the advantages.

A better collaborative process matches with general outcomes' quality. In Nantes, inclusive processes and participation is the main part of the collaborative process and it shows in most of the outcomes. Even less inclusive examples, as is Lyon was possible to reach a good evaluation and excellence for some specific parameters. The role of the *aménageur*, the subject that plays a pivotal role among public and private stakeholders, it is different in each case, but it is crucial in influencing the implementation of private development projects through tools and documents as *Cahiers des Charges* and *Fiches de Lot*. The use of such tools matches the general strategic approach and translates principles and goals into working projects.

Urban form and its design, architectural quality and research on urban design reach good quality in all of the four projects, even if it is not possible to find a specific correlation with single indicators, and we can assume that these results are consequences of different processes.

To sum up, the strengths and opportunities highlighted by these patterns allowed to translate what we've learned from the case study into the guideline to improve collaborative urban transformation.

Public-Private Collaboration potential

The city is public, or it's nothing. The city is public beyond the false opposition between public and private, and the private actions within a collaboration process have to be traced back to a general idea of public interest. The city is public to the extent that public action brings back private action to the goals that the city defines for itself. With this key, it's possible to say that Public-Private Collaboration is an inherent part of the production of the city.

Mandates and agreements with private stakeholders have always been part urban growth. The private development is an opportunity even when it doesn't aim to give back something to the public city... The private development is a trigger for urban regeneration and the pursuit of public interest. Thanks to public steering, it is possible to go beyond public-private dualism and economic competition's logic. Project's quality is in the mix between public and private interventions: this allows risk sharing too. When this happens there is no simple offsetting but complex dynamics that favor the achievement for shared quality goals. If the private take the risk, the outcomes will comply with quality standard, to be sure that the invested capital will return, and with a gain.

From the case studies, it was possible to define the following general principles, in order to connect strategies with practices in urban development. It is a general exposition that can be a starting point for the definition of guidelines to translate the peculiar French planning practice in other contexts.

Multitemporality; multi-layered timing in transformation as an opportunity. Talking about multi-temporality means look at the duration, the time needed in urban transformations, as potential, and not as a negative

externality. In the eye of the private investor, the economic revenue, due to selling or renting estates, is the main priority, and the sooner the better. The public actors should move in a different time frame: the effort is to support a wider transformation and to make a change in the city, and not only in view of the short term polls feedback. Multi-player urban transformations need to put together the short term pragmatism of the free market with the public policies, which usually need a long term to be fully developed. As is space, time is a frame but also a tool that needs to be used and interpreted to coordinate and define planning and design stages of an incremental approach, by highlighting priorities, evaluating feedback from halfway outputs, improving the outcomes' quality. Multi-temporality can be an opportunity when it pairs with a multi-player asset and connects with background adaptability, where a clear definition of the players' roles allows the adaptation of plans and design to the evolution of the environment and urban context. Project's adaptability, even within consistency in the answer to demands, is the working face of multi-temporality as an added value to the project.

Public Oversight and shared responsibility. A public oversight and control it's a necessary, but not a sufficient, condition to coordinate private interests, create experiments, search for identity, production of a good quality city, where public and private could interact in synergy. Market and planning are not always forces meant to collide. The legitimacy of the control is given by the pursuit of public interest, therefore PPC can be a place for debate and confront, where bargaining logics will leave space to deliberation. To avoid the prevalence of market-oriented dynamics, it's important to define the goals clearly and to allow negotiation and consultation in every development's stage, and put together conflicted issues in order to create opportunities. There are multiple layers of control, and oversight: starting of the project, land ownership, land use, project management, control of the outputs. Anyway, purely top-down control and decision making could be against PPC multi-player approach; responsibility reallocation is necessary for the public oversight to gain resources and expertise, in exchange for an environment favorable to the development of private interests. Deliberation, rooted in the idea of debate to pursuit a shared decision beyond the purely quantitative idea of majority, aims to be a space to find an agreement between criticality, rather than erase conflict (that is natural when many players are involved).

Responses consistency with needs demands and issues from the citizens and the territory. PPCs should be able to systematize the interests of involved players, framing them in a bigger picture, picking up the complexity of redevelopment and regeneration processes as well as players' expertise and resources. With PPCs, it's possible to change the point of view: in the definition of the final goals, operations in the public interest are object of negotiation. In this way, financial balance is a precondition for the feasibility, not the final goal. Hence, it's important to analyze the influence of private players, that usually are developers and construction management firms as well as banks and investors, big stakeholders not always transparent enough, and whose interests are not always linked to the general interest frame that should be pursuit by public sector agencies.

Clear goals' identification. Considering the search for consistency, the final goals of urban transformation should be identified without ambiguity, highlighting how PPC implementation can contribute to their achievement. Well defined goals are not opposed to the need for flexibility inherent in multi-phased, multitemporal project development. On the contrary, clear goals within a broader frame allow space for adaptability and changes in each project action during a long multi-temporal process. Consistency is guaranteed by the oversight of the project, keeping market-based actions within the public interest ratio. The more the process are complex, the more is important sharing strategies in order to achieve general interest's objectives, So, goals become the linking element between strategic and operational dimensions. Goals' explicitness brings to identify more easily the technical features and procedural steps that each project need to fit in the general frame. The clear goals, result of shared and complex processes, are useful both to identify the oversight responsibilities and the evaluation of the good outcome of the processes. When goals are consistent and clear it is possible to communicate and share them with players and user; goals are crucial to assess the effectiveness and accountability of CPPs.

Framing these approaches in a more complex picture and highlighting the connection between processes and outcomes can be the enhancement element for a good PPC implementation. These approaches could be interpreted as boundary objects, connections between public and private areas of interest, in order to design a frame where conflict among paradigms, interests and quality's definitions can be rebuilt and interpreted to innovate. The world is changing, and we need to look for a different interaction between public and private, within the search for new sustainability in a changing society. Giving that PPC is going to stay, as one of the main approaches, and maybe the most natural in the production of the city, we think that we should go radical in the form of collaborations. We suggest applying this evaluation method to more cases and practices, to highlight more patterns, and to confront the potential within different countries' tools box. We strongly believe that this methodology of evaluation can be further enhanced with a broader comparison within a large set of experiences, best and worst practices in Europe, in order to build a comparative basis to learn how to do better and what to avoid in order to build a more just city.

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Rome Capital Region: reasons and scope of a different prospective

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Abstract: New geographies of urban development have been emerging, as a result of the interplay between global driving forces and local socio-economic and institutional conditions. In Central Italy, the influence of the city of Rome has gone beyond the administrative limits and of the Daily urban system traced on the basis of commuting flows. The urban geography of Rome has, no longer, a radial structure, new spatial and functional interdependencies are emerging in a vast and low-density city-region, expanded even beyond regional borders. This paper presents first results of a research carried out by the University of Roma Tre commissioned by the Lazio Region, whose aim is to investigate recent urbanization processes in the city-region of Rome under the above-mentioned perspective, adopting a multiscale approach, critically referred to international studies on the regional dimension of urban development, with an intentional mix of quantitative and qualitative methods. Since “conspicuous changes” are now emerging from a series of tactical and opportunistic assemblage, our aim is to underline the need of a renovated multi-level governance, to address the transition from assembling to agencing in terms of a more equal distribution of social and economic opportunities within the regional space.

Keywords: City-region; Multilevel governance; Assemblage; Agencing.

In the last twenty years, a plural reflection on transformations that have gone through the category of the urban opened up a new perspective over the regional and post-metropolitan scale of urbanisation. The reorganization at regional scale can no longer be looked at through static interpretive lenses, being configured as a process a dynamic of decomposition/recomposition of relationships between economy, society and territory, driven by the combination of inter/supranational forces and local factors. As highlighted by Brenner and Schmid (2014), polarization and extensive urbanization coexist in a continuous process of urban re-writing, through processes of differentiation and standardization of the territory, implosion and explosion affirming new forms of urban life and types of spatiality (Balducci *et al.*, 2017, p. 18).

Similar dynamics occurred in the regional area of Rome, later than in the northern part of the country where a regional polycentric structure already emerged in the Sixties (Moroni 1969, p.11-15) and was deeply analysed in relevant well-known studies (Lanzani and Pasqui 2011, p. 39-40). On the contrary, the new territorial dimension of urbanization in the Roman area - arose from the joint impulse of a real-estate cycle started in the 1990s and of the economic reorganization influenced by national and international drivers - is so far partially unexplored. As a result of a centrifugal process of inhabitants

and activities, the urban system is nowadays extended at a large scale (on first approximation, within an area of 100 x 80 km) and reorganized through corridor dynamics along the transport backbone. Moreover, the influence of Rome has expanded on an even wider area that goes beyond physical boundaries of the conurbation and the perimeter determined by daily movements between home and workplace. Flows of people, goods and knowledge are spread in a basin extending up to Umbria and Abruzzo, where six million people live, work and spend their free time.

Need for a different descriptive-interpretative model. Rome is a city in transition, going through a particularly complex phase of change. The weakening of its function of political capital, which so far determined the economic and social base of the city, necessarily leads to reflect on possible actions of contrast to the decline (Tocci, 2015; Caudo, 2017) and measures to accompany the transition towards a new phase (Coppola and Punziano, 2018). However,

«Rome as Capital City has not managed, until today, how to go beyond the idea of a big city which attracts a large number of civil servants and inhabitants who need houses» (Caudo, 2018)

It's therefore necessary to abandon this dominant perspective that has leaved in the shade what happened outside the city. The regional dimension of urban development has become the proper area for the interpretation and the governance of change. This is the reason of an ongoing research commissioned by the Lazio Region and carried out by the University of Roma Tre, whose first results are presented in the following paragraphs.

Metropolitan Core and Capital Region: a needed distinction

From the metropolitan Core... A decades-long tradition characterizes studies on the delimitation of urban systems based on physical and functional integration between contiguous territories. The plurality of criteria that can be used to define metropolitan areas, due to the different possibilities of conceptualizing "territorial interdependence" (Calafati, 2014, p. 5), leads to different outcomes. In the Roman case, however, there is a convergence around the delimitation of a *metropolitan core* whose shape and dimensions are to a large extent superimposable with those of the Province¹.

	Area kmq	Municipalities n.	Population 2011 *1000
Provincia di Roma (+)	5.363	121	3.997
FUA Eurostat (*)	6.165	159	4.066
Metropolitan Core (#)	6.607	171	4.146

(+) Legal population, Census Data. (*) Eurostat data, reported in Istat 2017, p. 316 (#) Our elaboration, on Census data

Table 1. ISTAT data 2011 processed by the authors

... to the Capital Region. Starting from a study by Paolo Veneri and Rafael Boix (2009) - based on criteria for the delimitation of metropolitan areas which, although being referred to systematic commuting, are more sensitive to the interdependencies on the macro scale - we have extended the field of observation to include the functional areas of Viterbo, Terni, L'Aquila and the local labour systems of Rieti and Avezzano². The use of mixed criteria was necessary to circumscribe an

¹ According to the 65-2014 law, the metropolitan city administrative boundaries coincide with the former province limits.

² Rieti and Avezzano are small cities not considered in FUA (Functional Urban Area) delimitation. However, being located in mountain areas, they play a significant role – under a socio-economic point of view – for a large

appropriate area for investigating the quality of the economic and social relations with Rome, even if the delimitation of a precise boundary escapes univocal determinations (Balducci *et al.*, 2017 p 18).³ In our work, we define as “Capital Region” this new framework within which fruitful relationships with Rome can be unfold and governed.

	Municipalities n	Area kmq	Population 2011 *1000	Density ab/kmq
Rome (inside the motorway ring)	1	345	2.100	6.000
Rome Municipality	1	1.287	2.617	2.030
Province/Metropolitan city (NUTS3)	121	5.363	4,353	810
METROPOLITAN CORE	171	6.607	4.146	630
Lazio Region (NUTS2)	378	17.232	5.892	340
ROME CAPITAL REGION	471	22.132	5.935	270

Table 2. ISTAT data 2011 processed by the authors



Figure 1. Metropolitan Core, Dynamic metropolitan area of Rome, Capital Region.
ISTAT data processed by the authors

number of municipalities (both fall within the larger 10 out of 661 local labour system in Italy, according to ISTAT).

³ ISTAT proposed the identification of 35 “Functional region” to investigate “the consistency of relations and exchanges between Italian cities” (ISTAT, 2017, p. 99). The functional region of Rome is largely superimposable with the Capital Region, with the exception of Terni, aggregated to Perugia. This divergence is representative of blurring borders. *Dynamic Metropolitan Area* method, proposed by Clusa and Roca and adapted and tested by Paolo Veneri and Rafael Boix (Veneri and Boix 2009) in a comparative study between Italy and Spain, presented at IERM in 2009. The DMA can be seen as an *in-between* space.

Rome Capital Region: the overall strength

About half of the population of the Central Italy⁴ live in the Capital Region. Since 1951 until today, the number of inhabitants increased by more than 2.5 million, equal to 75% of the overall increase recorded in the six Regions of the Central Italy. Consequently, the weight of the Capital Region increased from 36.5% to 46%. Within the Capital Region, the weight of the population of the municipality of Rome from 1981 to 2017 remains almost unchanged (2.8 million), while the greatest growth is recorded in the *metropolitan core* (from 3.7 to 4.5 million), witnessing a strong process of counter-urbanization.

From an economic perspective, in the Capital Region:

- more than half of companies of the Central Italy (500,000) have settled;
- the added value of the production (DARA, 2104, p.88) is higher than the Italian average, being the Province of Rome is the third metropolitan city by added value per capita (31.415 Euro, in 2014) and the second by total added value (134 billion Euro, in 2014);
- key productive sectors (biomedical, aerospace, telecommunications), having a high level of innovation/internationalization (Unioncamere Lazio, 2014, p. 19-20), deny the image of a capital city flattened on public sector and mass tourism;
- international logistics and trading players located relevant centres because of the advantages linked to the barycentric location along the North-South ridge and in the junction between the Tirrenian and Adriatic sides.

Distinctive outlines: three profiles of urban development

Rome Capital Region is not comparable with other Italian metropolitan areas. The interplay between the geographical and settlement features configures a rich and diversified space, totally peculiar, articulated in about twenty-five geographical sub-regions (Almagià 1966) and as many settlement systems (Menichini 1996) combined together. In the perspective of urban development, some profiles are particularly relevant: the emergence of an imperfect polycentrism, the consolidation of urban clusters influenced by dynamics of corridor and junction, the structuring of non-linear geographies reflecting complex spatial-temporal relationships.

Imperfect polycentrism. Although the low degree of urbanization (8.4%) and density of population (less than 300 ab/kmq), Rome Capital Region is characterized by the presence of a significant number of medium-sized cities (46 municipalities with more than 20,000 inhabitants), consolidated in recent decades and distributed in equivalent number between the metropolitan core and the Capital Region. This polycentric structure can be qualified as “imperfect”, because of the dominant role of the central pole within the functional region (Fardelli *et al.*, 2017, p. 107) and due to gaps in provisioning high and differentiated supra-municipal services detected in half of the cases.

Municipality inhabitants	1951	1981	2017
> 100.000	1	2	3
50-100.000	2	4	10
20-50.000	13	27	33
Totale	16	33	46

Table 3 Capital Region. Number of municipalities per class of Inhabitants.
Istat data processed by the authors

⁴ Central Italy is one of the 5 NUTS1 statistical group of regions, and it encompasses Toscana, Marche, Umbria, Lazio. By dividing Italy in three parts, geographically speaking, Abruzzo and Molise can be considered part of Central Italy.

Corridor dynamics. Next to this urban structure, sparse and imperfect, new settlements - specialized for the large distribution, the *loisir* and the logistics - interest both main industrial poles, planned in the Seventies within the framework of industrial development policies for the Southern Italy, and minor industrial zones planned at municipal level and afterward adapted to encompass new functions. A well recognizable logic of corridor, intended as an urban development dispositif (Garavaglia 2017, p. 59-62), pushed the reinforcement of the regional urban system along the internal axis Orte-Fiano-Valmontone. The national motorway network is here also the backbone of regional transport and, at one time, allows to serve the local catchment area and to reach the central-southern area (especially the Neapolitan area, almost equivalent in terms of population compared to the Roman one). The interplay between the new geography of specialized settlements, concentrated in valley floors and coastal plains, and the old structure of historical settlements along the consular and ridge roads, shape new territorial figures (see Figure 2), whose traces are visible from commuting lines (Vazzoler, 2016), although not representative of important non-systematic flows of goods and people.

Non-linear geographies. Over a time period of forty years, Rome experienced a decrease of 800,000 inhabitants in the central areas, compensated by population growth in peripheral districts. The *Raccordo Anulare*⁵, conceived as the external ring around the city, today constitutes an intermediate axis of the *metropolitan core*, considering that 2.000.000 people are living inside it, and almost 2.500.000 outside. Without questioning the weight and role of the central city, the regional territory can no longer be interpreted using linear descriptive models based on the dichotomy centre/peripheries. Spatial patterns of inequalities and vulnerabilities do not follow univocal trajectories, both within the *metropolitan core*, as well as in the *Capital Region*. Moreover, interpretations based on the contrast between central cities and rural areas, or on the hegemony of urban elites (D'Albergo and Moini, 2011, p. 5-27), have to be flanked by opposite reflections over the weak influence of Rome, inadequate to counterbalance local socio-economic fragilities.

The Capital Region as network of productive systems

According to a Censis-Unioncamere report (2010), companies and employees in the manufacturing, logistics, wholesale trade and high-tech sectors are concentrated in 13 clusters, whose formation and development is determined by a sum of interacting factors:

- consolidation of territorial supply chains (agri-food, boating);
- localization of large companies (mechanics, aerospace, pharmaceuticals);
- direct relations with the metropolitan area and with the supra-regional territory as a potential catchment area (wholesale, logistics);
- institutional initiatives (ICT, High-tech).

Recent researches (DARA, 2017) confirm that the *metropolitan core* constitutes the heart of a more extensive and solid productive system, involving industrial sectors in external counties (Latina, Frosinone, Rieti and, beyond the Lazio's borders, L'Aquila). For pharmaceuticals or advanced mechanics (aerospace), the trans-regional and metropolitan dimension produces relevant advantageous synergies for innovation and internationalization. Hence, the presence of a relevant number of small and medium-sized cities and dynamics of network connecting local production systems to advanced research and service centres concentrated in the central city, configure the Capital Region, at least potentially, as a *supercluster* (Scott, 2001). Therefore, the perspective of the Capital Region can be intended as a means to pave the way for new forms of collaboration between Rome and its regional territory, overcoming the limits of local development and the distortions of metropolitan polarization.

⁵ Grande Raccordo Anulare (GRA) is the common name of the motorway ring of Rome, built in the Sixties.



Figure 2. 2011 Commuting flows not towards Rome, and production clusters
Source: University of Rome Tre, based on Istat and census-Unioncamere data
Extract from Rome Capital Region– Research Report.

Towards an intentional assembling

Spatial territorialisation and the dialectic between opportunistic practices and inertial forces. The previous overview to the Capital Region is aimed to spatialize overall trajectories of change. Looking at a lower scale, substantial transformations directly related to the socio-economic reorganization mainly appear as physical reconfigurations and functional adaptations of the material legacy of previous cycles of urbanisation: national motorways (urban and regional commuting), specialised industrial settlements (tertiarization and recreational use), urban fabrics (repopulation of historic centres, abandoned farms and touristic apartments on the coast), agro-forestry land (productive intensification/extensification, diversification/fragmentation), natural areas and heritage (tourism-oriented functionalisation). These transformations, considered individually, appear as site-specific outputs produced by tactical initiatives, promoted by families or companies, looking for the maximum benefit achievable in the short period and on the given conditions. Public infrastructures and land-use regulation, both established decades ago⁶, perform more as constraints than as drivers of development. The dialectic between opportunistic practices and inertial forces produces implicit adaptive strategies (not discussed, nor evaluated in the public arena). As briefly above illustrated, due to their path-dependence, they don't seem able to counteract territorial fragilities and inequalities, nor to fully dialogue among each other, nor to contribute in a synergistic way to accompany the economic transition.

From assemblage to "agencing". From a more theoretical point of view, these dynamics can be interpreted under the Deleuzian lens of assemblage (Deleuze and Guattari 1980). Moving through assemblages seems to be the dominant condition of the action: inertia and conditionings alongside

⁶ About 60% of municipal land-use plans were approved more than 30 years ago (Regione Lazio, internal survey).

uncertainty and movement in relation to external forces determine a specific space-time condition, pushing towards “short-sighted practicalism and expediency” (Hillier 2011, p. 504). As highlighted by Hillier, the movement from assemblage to *agencing* (intended as a process by which various entities are inter-connected and put in motion) is strictly related to the awareness about “opening-up or closing-off” potentialities.

Despite the importance of the transition from assembling to *agencing*, the domain of short time is persisting. Therefore, a question remains as to the specific capacity of spatial planning to address long term issues and strategic choices. The long duration has not disappeared, but the search for founding elements of permanence and persistence doesn't appear sufficient to give a real, pro-active role to spatial planning. This is why the greatest challenge lies in the capacity to act in the intermediate space between short and long duration, tactics and strategy, need and desire: a space full of contradiction and therefore of possibilities (Gabellini, 2018).

Within this framework, Roma Regione Capitale can be seen as an initial hypothesis to move on in the “zone of indiscernability” between “a form-that-is-no-longer and another form that does-not-yet-exist” (Hillier 2014, p. 514). At this stage, the main research focus is the setting of metaphorical images, giving an overviewed and differential vision, aiming to formulate proactive hypotheses about the future as a basis for the activation of new trans-scalar policies, capable to reconnect local diversity to the ambivalent characters of metropolitan polarisation. In the following steps, the main aspect to investigate is linked to the relationship of macro-level structures and micro-level movements and to the concept of scale, both as a capacity to read the transformation moving between the complexity and fragment, and as a meaning line capable of proceeding for socio-spatial-temporal concatenated jumps rather than being conceived as expansion.

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Exploring IBA Basel – Assessing the impact of trilateral cooperation and the resulting perspectives for the post IBA period

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Abstract: The International Building Exhibition IBA Basel is a non-formal planning instrument to improve cross-border cooperation and planning processes between Switzerland, France and Germany. The aim of IBA is to overcome territorial barriers of trilateral coexistence to enhance the quality of life in the region. As a catalyst of regional development, on-ground IBA projects seek to revitalize the spatial quality and improve the adoption by its users. Institutions, planners and civil society actors collaborate in the cross-border development and implementation over a period of 10 years. The outcome of the IBA process will be presented in an exhibition venue. Thus, scientific foundation, provided by an assessment that is based on a survey among involved actors, will substantiate the impact of initiated processes. The evaluation is supported by interviews and focus-groups that foster awareness for future challenges in the post IBA period. IBA may generate a remarkable leverage effect to regional development within the agglomeration, which is measurable on three interdependent levels of processes: activation and networking of actors, planning activities and projects and trilateral quality of space and life. A scenario for comprehensive development beyond the year 2020, would be an ongoing process of intensified exchange and cooperation across the region.

Keywords: International Building Exhibition IBA Basel, regional development, planning instrument, process evaluation

1. Introduction

The International Building Exhibition (IBA) takes place in the context of the trilateral agglomeration of Basel in Switzerland. IBA Basel was launched in 2010 with the aim to strengthen cross-border cooperation and development in the trilateral region. IBA is an ongoing process of 10 years of regional development, which is about to complete its last phase and finishes with the final exhibition in 2020 in the Vitra Design Museum in Weil am Rhein, Germany. In this regard, IBA Basel commissioned a scientific accompanying research in late 2018. The research is meant to substantiate the exhibition with scientific knowledge and at the same time, enables IBA makers to learn from a long process of development in the trilateral region. The final report will evaluate the IBA process and allows IBA Basel to give recommendations for the post IBA period to its partners and peers. This paper provides an overview of history, structure and process of IBA Basel in the context of trilateral development. Moreover, it highlights ongoing scientific research and the mixed-method research design. We will emphasize the research motives and introduce the heuristic model, which outlines the base for the impact assessment. The scientific questions respond to three hypotheses, which correlate with the levels of impact of IBA Basel. The paper presents insight as well as intermediate findings of early phases of exploration and quantitative research in 2019. Furthermore, it outlines preliminary results and underlines challenges for the post IBA period. Finally, the purpose of this paper is to introduce and disseminate the IBA format to a broader international audience, thus it lays emphasis on the significant characteristics of IBA as non-formal planning instrument.

1.1 The trinational region of Basel – 50 years of cross-border cooperation

The trinational region of Basel encompasses 250 cities and municipalities in the regional territory of the states of Germany, France and Switzerland. Nearly one million people live in the trinational agglomeration, about 60.000 of them are cross-border commuters (Trinational Eurodistrict Basel [TEB] a, n.d.). The city of Basel is located on the north-eastern border of Switzerland and the southwestern border of Germany adjacent to France. The border lines of the states overlap in the river Rhine in its border triangle.

The cross-border cooperation in the region of Upper Rhine is exemplary and has a long history (Wassenberg, 2015, Storbeck, 2016). It was initiated by local stakeholders in the city of Basel and resulted in the foundation of the first framework of cross-border cooperation, Regio Basiliensis, in 1963. However, this development enabled a more or less pragmatic cooperation (Storbeck, 2016). In the year 2000, the states of Germany, France and Switzerland institutionalized the cooperation and signed the Basel Accord which contained the agreement on cross-border cooperation (Trinational Eurodistrict Basel [TEB] b, n.d.). In the same year, the neighborhood conference was founded, which published a resolution in 2004 to schedule the formation of an Eurodistrict in the agglomeration of Basel. Finally in January 2007, the Trinational Eurodistrict Basel (TEB) was founded. TEB is an association with 80 participating municipalities and regional administrative bodies, which fosters cross-border cooperation to strengthen the regional cohesion in the agglomeration (Figure 1). The association consists of political and various professional committees (Trinational Eurodistrict Basel [TEB] c, n.d.). Ever since its foundation, TEB is eager to intensive cross-border cooperation in the trinational agglomeration. TEB aims for regional cohesion in a strong economic area and a high quality of life and livable environment for its citizens. In 2011 the TEB founded the office of IBA Basel 2020, which took over important themes of TEB and carried them on in three different fields of action: landscape spaces, urban spaces and living together (Trinational Eurodistrict Basel [TEB] b, n.d., IBA Basel b, n.d.).

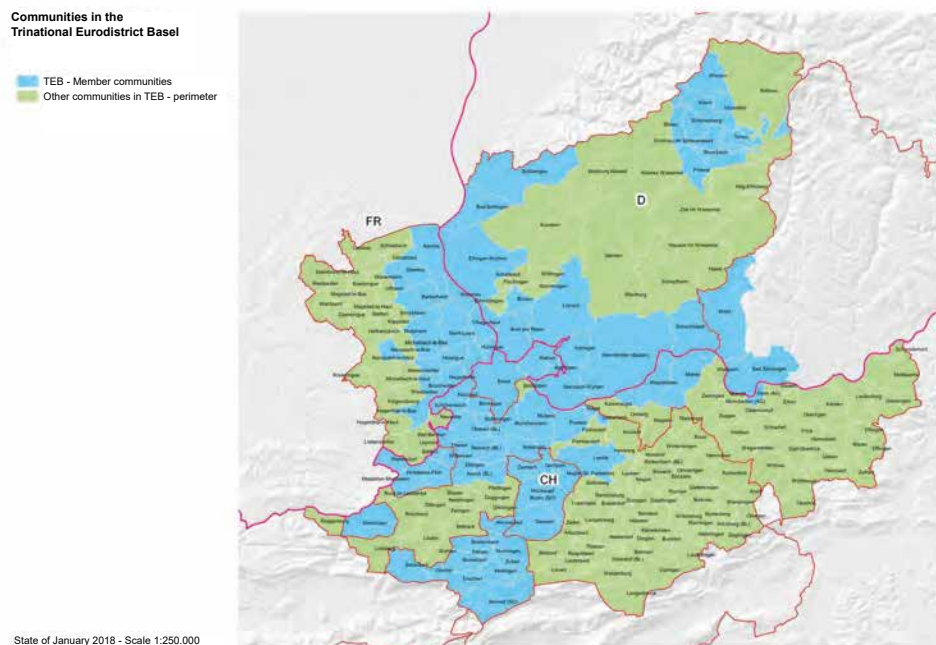


Figure 1: Trinational Eurodistrict Basel with member communities and others (Source: <https://www.eurodistrictbasel.eu/de/ueber-den-teb/unser-gebiet-und-unsere-mitglieder.html> translated by author)

1.2 IBA as a non-formal planning instrument

In Germany, the format of an IBA dates back to about 120 years of history. Originally applied to a delineated area with a focus on architecture and urban design, like in the case of the famous Weissenhof Estate from 1927 in Stuttgart, the instrument has been continuously developed and increasingly disseminated in particular within the last 20 years. IBA is supposed to address relevant future issues, which demand a shift of paradigm. Such issues are negotiated and solutions are developed in specific local or regional settings, which possess exemplary international relevance. Beyond the objective of exhibiting architecture and urban space, IBA has more and more progressed into a process-oriented format, which is supposed to trigger innovation in local and regional planning institutions and settings. IBA provides for a state of exception that may overcome existing rules and regulations in a planning period of 10 years of time (cf. IBA Memorandum, 2017). The format is outstanding and incomparable in the international scene. Very few formats which provide for a similar condition of a laboratory and a bottom-up approach can be identified (Reicher *et al.*, 2011). The unique characteristics of IBA constitute on the open approach for innovation and experiment, and the linkage of top-down and bottom-up development.

With the most recent IBAs in Germany and in adjacent European countries such as IBA Emscher Park, IBA Fürst-Pückler-Land, IBA Hamburg, IBA Stadtumbau, IBA Basel, IBA Heidelberg, IBA Thüringen and IBA StadtRegion Stuttgart, a broad variety of IBA practice has evolved. Yet, IBA is no mandated or licensed instrument, but can be declared independently by local and regional stakeholders with very divergent topics and concepts. As a consequence, every IBA is different and the very open format is continuously refined from one IBA to another. In any case, three strong pillars of IBA can be identified: Firstly, IBA is a planning process over a period of mostly 10 years. Secondly, IBA enables change by developing specific projects. Thirdly, IBA exposes its results in a final exhibition, which provides a common goal for all IBA partners from the very beginning (cf. feasibility study City of Munich: Landeshauptstadt München, 2019 / Figure 2).

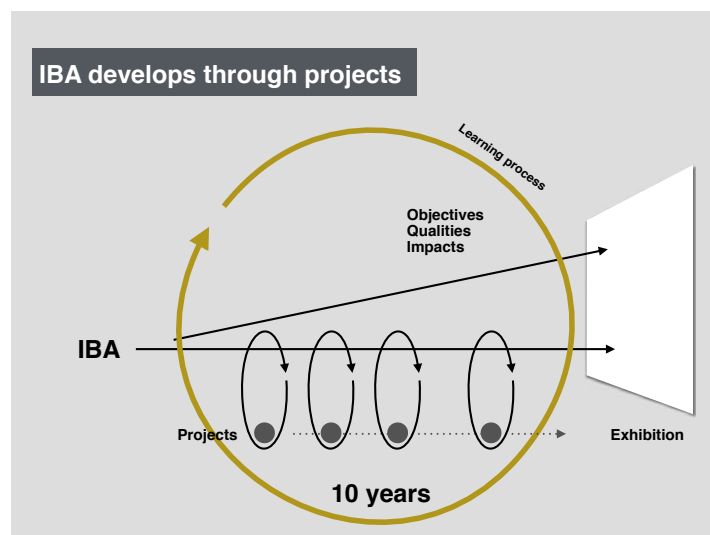


Figure 2: IBA as 10-years learning process throughout projects (Source: Förster and Petrin 2018)

The combination of these three pillars provide a coherent understanding for the specific IBA approach. Within the exceptional state of 10 years, projects are developed and continuously qualified. Under the umbrella of IBA, these projects follow a process of learning and innovation that simultaneously stimulates an overall learning for all IBA partners. The exhibition sets an ambitious goal at the end of that process. At the same time, IBA is an operational unit that delivers active project development, a communication and networking agency that brings together its active and operational participants, and an umbrella brand for the targeted marketing of its results (Landeshauptstadt München, 2019).

1.3 The IBA Basel process

The TEB decided to borrow the IBA format from the German planning context in order to intensify and enhance the cross-border cooperation within the region. IBA was anticipated to work as a catalyst to increase visibility of cross-border relationships and establish new multinational networks (Jann in Neuhaus and Marti, 2013). It was hoped that tangible projects would intensify and speed up joint urban and regional development at all sides of the borders. So far, the TEB primarily dealt with institutional and structural issues hardly visible in everyday life. With the launch of IBA Basel, the open call for projects invited all kinds of regional stakeholders to join the IBA process. This process took unprecedented efforts of communication between trinational actors.

The inauguration of IBA Basel 2020 was in mid-October of 2010 and initiated its bottom-up approach with a public call for projects in April 2011 (IBA Basel e, n.d. / Figure 3). This call released over 110 project proposals which were reviewed by the scientific IBA board of trustees in September 2011 by means of the established IBA criteria. The board gave recommendations for further processing of prequalified proposals and about 40 of these projects were presented again in November 2011 to institutional partners and the wider public in an open IBA forum. These projects were further developed in close cooperation with IBA. The first project show took place in 2013 and a three weeks exhibition was implemented from October until November with 43 IBA projects (IBA Basel e, n.d.). In 2016 an interim presentation took place and nominated 32 projects to remain on the agenda of IBA Basel.



Figure 3: Timeline of IBA Basel (Source: Author, following IBA Basel e, n.d.)

Starting from the interim presentation, IBA projects were structured in three fields of action: landscape spaces, urban spaces and living together (IBA Basel a, n.d.). In the course of the development remaining projects were partly categorized in project groups, for instance the Aktive Bahnhöfe and the IBA Rheinliebe. The groups should optimize and intensify the cooperation of IBA projects. All of these projects are going through the development in the 10-years IBA process, 18 of them are currently certified in the labellisation procedure of 2019. The final presentation in 2020, however, will exhibit the whole process of IBA Basel – with a broad spectrum of projects from the very beginning and a prospect for future-oriented goals and ideas.

IBA Basel is a special case in different aspects: IBA addresses a regional scale of cross-border nature with spatial, cultural, administrative and political barriers. The agglomeration of Basel, however, is a comparatively rich and growing region – in sharp contrast to other regional IBA processes that addressed painful structural change in shrinking regions as in the case of the Ruhr Area or Lusatio. As a consequence, a weak sense of urgency to cooperate beyond borders was a constant challenge in the IBA Basel process. Moreover, the IBA process was not equipped with a reliable financing over the 10 years period, but had to manage the uncertainty of three consecutive funding periods.

2. Research motives, heuristic model and leading questions

In the following sections, we explain our motives and hypotheses for the impact assessment and present the relevant research questions. Furthermore, we are going to highlight the importance of the research for comprehensive reflection of preceding years and the set-up of the post IBA Basel period. The research underlines an acknowledgement for benefits on enhanced regional development triggered by the non-formal planning instrument IBA.

2.1 2020 – A moment of reflection

In its 10-year process, IBA Basel activates actors, facilitates networking and supports projects with cross-border relevance. Based on this definition, we suggest that the relatively weak planning instrument of the IBA may generate a remarkable leverage effect to regional development within the trinational agglomeration. This effect can be identified already during the IBA process. It could be reproduced in the region, when initiated IBA projects become part of the spatial structure and are incorporated in future modes of practice and everyday life.

At the near end of the IBA Basel process it is time to reflect upon the initiated projects and moreover on the perspectives for involved actors in the post IBA period. The ongoing process of intensified exchange and cooperation across the region would be a major scenario for comprehensive development in the post IBA years. Thus, the attempt to push the IBA process far beyond 2020 has to start as soon as possible. It needs to foster the appreciation for the soft dimensions of multilateral networking, trust building and knowledge sharing beyond borders. The holistic reflection of this process can provide focused knowledge and consolidate an understanding of added value to the development of the trinational region. The integration of involved actors in this reflection is crucial for its results, hence the consistent update of the IBA process becomes more likely.

2.2 Understanding IBA Basel as structure and process for regional development

The general impact of IBA Basel on regional development can be examined when the structure of IBA is clearly sketched and its effort is translated into process. Our basic understanding of IBA Basel in its support for cross-border regional development was inspired by the St. Gall Management Model (cf. St. Gall Management Model in Rüegg-Stürm and Grand, 2002 / Figure 4).

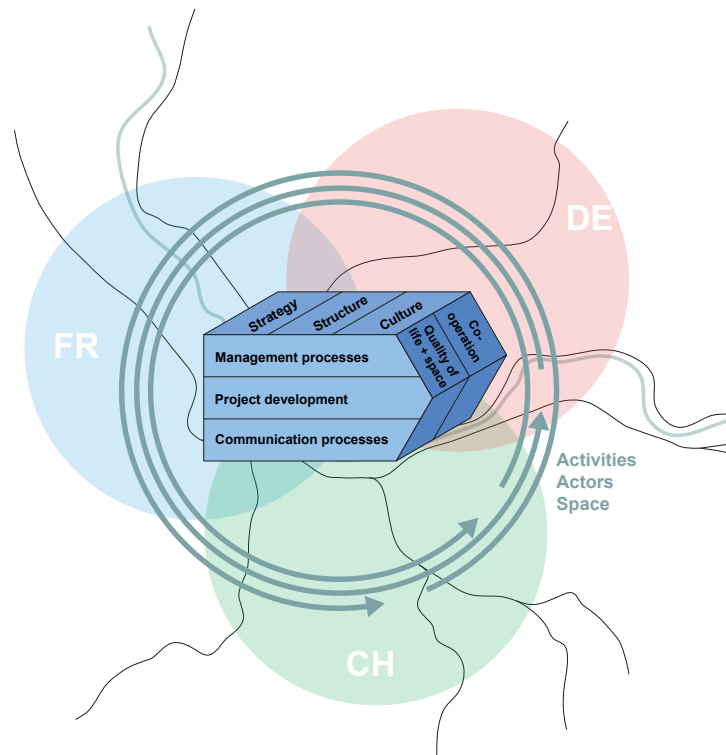


Figure 4: Basic understanding of IBA Basel as trinational development process inspired by the St. Gall Management Model (Source: Author, inspired by Rüegg-Stürm and Grand, 2002)

IBA works as input in trinational regional development and can be identified in the interrelation of structure and process. IBA takes effect through its structuring factors: (1) strategy, (2) structure, (3) culture. Overarching objectives of IBA – such as project-based cross-border regional development – are formulated and pursued to

enhance the development capacity of trilateral space. The strategy provides information about spatial topics and concerns, forms of communication and cooperation of actors, as well as the estimated added value to the quality of life. It informs about the design of planning and development processes. Through IBA, structures and rules are established to achieve the objectives defined in the strategy. These include approaches to link actors across borders in order to trigger change in jointly handling and managing spatial planning and development in the trilateral region. IBA creates a new culture of cooperation and provides a stimulus for new planning culture in three states and their associated regions and communities. IBA promotes processes to increase quality and excellence of projects. Therefore, the quality of equal communication and cooperation between various actors plays an important role. The culture of cooperation disseminates beyond IBA across trilateral space.

In addition to the structuring factors, IBA takes effect through processes. On the level of management processes, IBA strengthens coordination of important committees and decision-makers in politics, of administration, as well as of important private-sector and civic actors. The implemented coordination, consultations and presentations help to identify common goals and to match programs and action. In doing so, the motivation and legitimation of the IBA process are continuously consolidated and developed. Through project development, IBA participates in specific plans and implementations. The projects are the operative core of IBA Basel. These projects are facilitated through IBA in content-related, personnel and financial matters. IBA provides advice, introduces trilateral knowledge, links actors around projects and embeds local and regional projects in a trilateral context. The processes of communication of IBA promotes projects and management through public relations and internal networking. IBA accomplishes formats and opportunities for communication that go beyond the possibilities of local actors. The three structuring factors of IBA processes and structures are in complex interaction with each other. They further develop during the 10 years of time. The processes of planning and development around IBA projects are the core of the operative activities of IBA Basel. Nevertheless, IBA projects should not be considered insolated, yet embedded in strategy, structure and culture, as well as management and communication processes of IBA Basel.

2.3 Levels of impact of IBA Basel and research questions

Until today IBA Basel covers a process that becomes visible, on the one hand, by development on lived space, and on the other hand, by enhanced cross-border cooperation with intensified planning activity. The impact of IBA Basel on the improvement of trilateral quality of life, can thus be visualized on three levels of impact: the networking of actors, the planning activities and projects, and the trilateral quality of space and life (Figure 5).

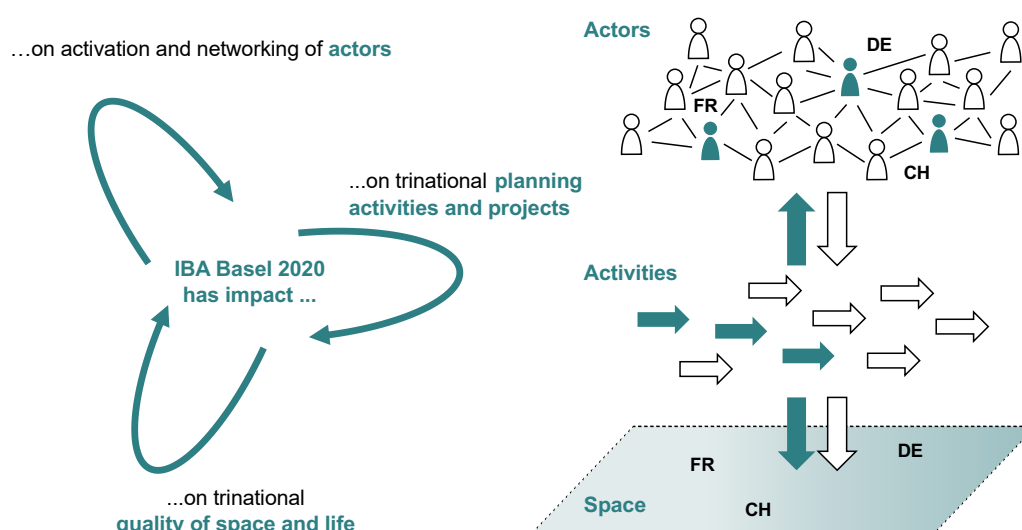


Figure 5: Three interlinked levels of impact of IBA Basel: Activities, actors, space (Source: Author)

The levels of impact are interdependent in their operational progress and build on each other's structure. They profoundly influence and affect each other's outcome in regional planning and design. Although these levels are substantially interlinked throughout the process of each IBA-project, they are basically separated in the design of the research to comprehensively identify the impact on each level. Accordingly, in the course of structuring a research design to measure the impact of trination cooperation and projects of IBA Basel, we have developed hypotheses and research questions for each level of impact. The three hypotheses and corresponding research questions outline three complementary perspectives for reflecting on the impact of the IBA process.

a) Activation and networking of actors

In a period of 10 years, the IBA process brings together various actors of the trination region from politics, public administration, the private sector and civil society. The networking among actors, the activation of new networks and the facilitation of consisting cooperation are the basis for continued impact of IBA beyond the year 2020.

Research question: How does IBA Basel – in its role as a regional development process through projects – contribute to the activation and networking of actors in the trination agglomeration?

b) Planning activities and projects

IBA projects, with their preliminary guidance and planning, complement other ongoing planning activities, programs and projects. They enhance them or even initiate new plans. Thereby IBA operates through own projects, yet the impact of IBA is also determined by the role of projects in the trination landscape of planning and projects.

Research question: How does IBA impact other planning activities in the region? How are IBA projects interlinked with other planning activities in the trination space?

c) Trination quality of space and life

Along with the IBA projects and their embedding in the landscape of trination planning and projects, involved and affected actors link their concepts and expectations for the transformation of trination space, and thus for the trination quality of life. IBA effectuates new spatial qualities in the context of trination planning and projects, which can be measured ex-ante from the perspective of participating actors. IBA will become tangible for the users of space, if the trination quality of life will be enhanced noticeably.

Research questions: What kind of concepts of enhanced quality of space and life in the trination agglomeration are linked by involved actors with activities and projects of IBA Basel? Which project contribution in the landscape of trination planning and projects is provided by IBA for the enhancement of quality of space and life in the trination agglomeration?

The three hypotheses and corresponding research questions are closely linked to our heuristic model. On this basis we have operationalize the questions in order to assess the impact of the IBA Basel process. Thus, in the following section, we will introduce our systematic approach to collect data from the perspective of participating actors.

3. Development of a method to measure the impact of trination cooperation and projects

In this section, we introduce our methodical approach to assess the impact and evaluate the process of an IBA. Building on the outlined conceptual frame, the leading methodological question for the research project is the question of how empirical access can be gained on input and impact of IBA Basel. The research design is based

on the underlying concept that impact can be assessed, firstly, by the starting point of projects, and secondly, by the perception of participating actors. We suggest these two central starting points for the empirical work.

3.1 IBA projects as starting point of the impact assessment

The impact is assessed on the basis of IBA projects as the operative core of IBA Basel. The projects ensure political and public legitimation for the whole process through tangible output. It becomes visible that IBA is partly development of planning principles and concepts, it is making and doing. We have developed an action mode for IBA projects and their planning processes to be able to comprehend the underlying dependencies (Figure 6). The figure illustrates how (IBA) projects are influenced by the facilitation of IBA, a network of actors and finally other planning activities and projects. At best, planning activities and projects initiate and influence each other and are visualized on ground in tangible results.

This conceptual model highlights the hypothetical impact of IBA in the modes of operation within its projects. From this perspective, the contribution to existing and new projects and their impact on planning activities around projects can be surveyed. The resultant further planning activities, the activation and networking of actors and the anticipated impact on trinalational quality of space and life can be assessed. These levels are measured and evaluated for all projects. Besides the synopsis of activities, actors and space, statements can be made for single projects.

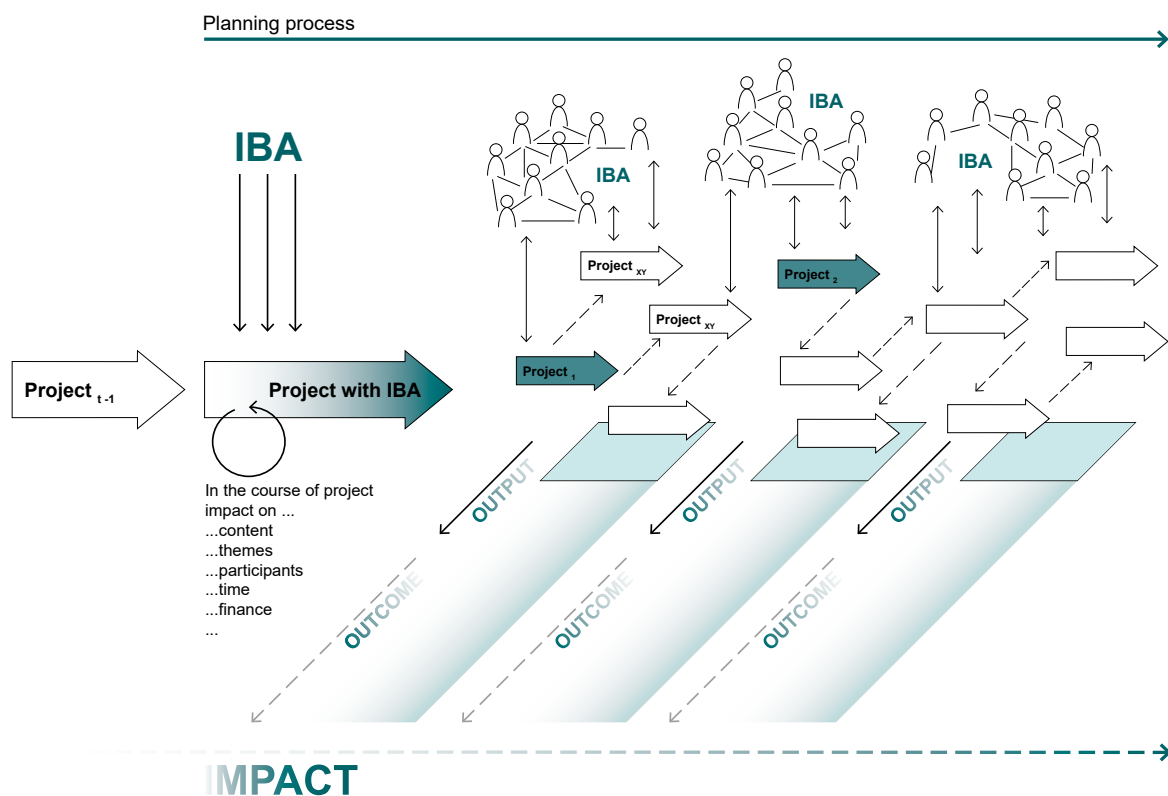


Figure 6: Assessing the impact of IBA Basel based on the action mode of IBA projects (Source: Author)

3.2 Assessing projects through the perception of participating actors

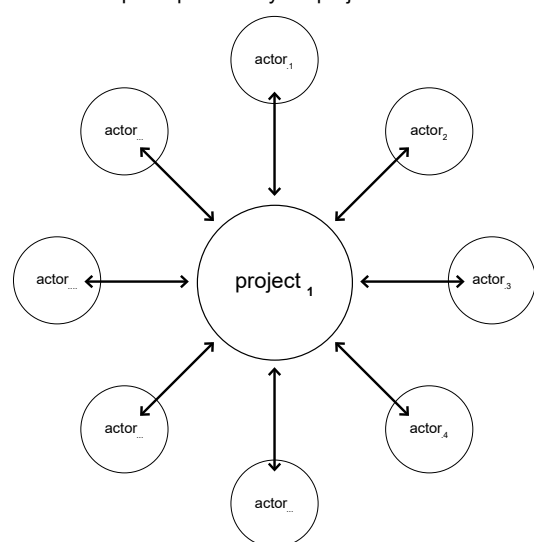
The second starting point covers the perception of participating actors on IBA projects (Figure 7). Input and impact of IBA on the individual IBA projects are assessed through perception, perspective and estimation of participating actors. An online survey for participating actors creates a consistent data base for quantitative research. The intermediate results of the survey will be discussed in focus group workshops with involved actors. Thereby,

actors are encouraged to complete the common reflection and, at the same time, they are activated for the coming exhibition year. Other than that, a reconstruction and assessment of the process and impact of IBA projects would not have been feasible in a similar time frame. We set emphasis on a process-related evaluation considering and including participating actors.

Actors around project

Multitude of actors perspectives on project

1. Actors vary in project
2. Kind of participation varies in project



Actors appear and disappear, are not stable in time

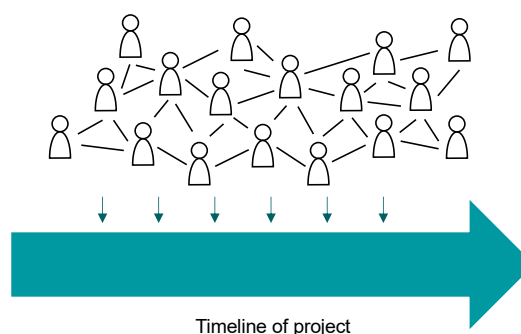


Figure 7: Assessing IBA projects through the perception of participating actors (Source: Author)

The modes of operation, which are originating in the outlined starting points, significantly underline the structure and process that is embedded in the IBA Basel period. We have sketched a starting point, the acquisition by IBA and the future course with its possible outputs and outcomes (Figure 6). The before mentioned impact levels of IBA – actors, activities and space, helped to accomplish the actor-related approach for the assessment of impact (cf. Figure 5). IBA projects and participating actors are the focal points on which we have built up the core of empirical data collection through a mixed-method approach.

3.3 Mix of methods

The research design for the impact assessment of IBA Basel is based on a mixed-method approach that includes an online survey, qualitative interviews and focus group discussions. The data collection will provide scientific foundation, which will be integrated in the final exhibition and will set up part of the exhibition's content. The online survey was conducted among participating actors of (selected) IBA projects. The evaluation of results is further supported by interviews and focus groups. These methods can cover gaps in the research and, at the same time, they provide the opportunity to foster awareness among actors for future challenges in the post IBA period. In the following, we outline the multiple steps of the empirical study – first steps, that have been taken so far, and next steps for the following phase of research.

The IBA laboratory:

Very first insights into IBA projects have been gained through a master course. This format offered students an IBA laboratory to research on single case studies (IBA projects) and go through a joint reflection of these projects. In doing so, students explored the added value and impact of IBA Basel from the perspective of their projects. They travelled to Basel to talk to participating actors and learn about (internal and external) processes of IBA

Basel at first hand. In comparing the projects, we received an impression of the broad range and individuality of IBA projects and their capacity to achieve output, outcome and impact in the IBA process.

Online survey of participating actors:

The online survey of participating actors is based on the previously mentioned structure, which is inherent in the IBA process. Actors were invited to answer a set of predefined questions for selected or multiple IBA projects. Their involvement in several projects, planning activities and cooperation was inquired to learn about networks in the IBA project landscape. Participants were asked to estimate their individual role, as well as the role and contribution of IBA Basel, in the course of the project. They further were able to evaluate the complexity of the project and its general achievements. Additionally, in accordance to the three impact levels of IBA Basel, participating actors had the opportunity to evaluate the project's contribution to the trination quality of space and life. They were asked to identify important and new actors for (trination) cooperation in the selected IBA project and to indicate previous, parallel and further planning activities around the project.

The analysis of data from the online survey will enable us to identify networks of actors, to map related projects and activities, and to sketch anticipated change of trination quality of space and life. The connections, intersections and interrelation of these levels enable us to indicate the impact of IBA.

Focus group workshops:

The focus groups build the intersection between the data collection and evaluation. They will deliver new and consolidated knowledge and enable us to validate preliminary findings. The focus group workshops will be conducted in three divergent constellations: the internal sight, the external sight and the fore sight. The internal sight will be composed of operational IBA makers, who substantially sustained the IBA Basel process. The external sight will assemble a selection of experts, partners and peers to foster the perception on IBA as the non-formal planning instrument. The foresight group will come together to illuminate future prospects and challenges to develop ideas inspired by trends of the IBA region.

The aim of the workshops is to reflect on findings of the online survey. We presuppose that the discussions will enable us to obtain an in-depth understanding for preliminary findings and, at the same time, enable us to gain clarification to validate the latter. From this perspective we will be able to draw further conclusions for the input to the final exhibition. We can use meaningful contents derived from the discussions in the focus groups to underline coherences of the IBA Basel process. Moreover, the reflexive focus group discussions could deliver conclusions and impulses for initiate further development in the post IBA period.

Qualitative interviews:

The qualitative interviews with selected participating actors will be implemented during the phase of the focus group workshops. The aim is to close research gaps, which presumably emerge in the analysis of results of the online survey. The interviews, if conducted with thoroughly selected partners, will deliver reliable contents for filling missing information and missing links to maintain a coherent picture for the evaluation of the IBA process.

The multi-step empirical study for the impact assessment of IBA Basel is still in process. The first step was the IBA laboratory with students, which was finished early this year. The second step was the online survey with participating actors, that was recently closed for evaluation. The preliminary findings of these steps, can lead us to valuable insight for further shaping the focus group workshops and designing the guided interviews. Both will be conducted in autumn 2019. In the following section, we give insights into results of the first methodological step of assessing IBA Basel.

4. Preliminary Results: Learning from IBA Basel projects

We can draw preliminary results from the IBA laboratory, where master students carried out in-depth analysis and reflection on selected IBA projects. The research highlighted, that from its office, IBA Basel offers a common label and supports projects in various roles and forms: through consulting, networking, coordination and communication. The agency and the label IBA are able to make different contributions and to influence the content and procedure of IBA projects. What effect does IBA have on the content of a project and its progress? 13 students of RWTH Aachen University investigated this question in the research laboratory for selected IBA projects. The students derived metaphors from their findings and visualized the contribution and impact of IBA Basel within projects in 3D planning models. Although, the models express different metaphors for individual projects, they deal with similar contributions of IBA in several projects. In the following we have identified three main aspects that can be described exemplary on selected IBA projects.

4.1 IBA networks, projects and participating actors

IBA projects are processes in which various actors from different spheres such as politics, administration, private sector, civil society work together. IBA accompanies its projects from their office with project managers, who act as contact persons for all actors. Where necessary, new contacts – including cross-border relations – are established to network with stakeholders. This is exemplary in the projects IBA KIT and 3Land:



Figure 8: Planning models for the projects IBA KIT and 3Land (IBA KIT: Viktoriya Nikolova, Christiane Schubert; 3Land: Melanie Heinz, Jeremias Klug).

IBA KIT (Figure 8, left) is a tool to activate unutilized public space in the cross-border region. Containers serve as basic modules. They are used in diverse ways to increase quality of life in selected areas. The containers are adapted to its individual function and location – some of them are permanently installed, others are constantly changing locations. Thanks to IBA Basel the mainly local functioning ‘KITS’ are bundled into an overall concept. By strengthening communication and exchange between involved actors, IBA Basel initiates a mutual learning process, which in turn, results in high quality projects. The students’ work highlights this contribution of IBA as a ‘guiding track’ on which actors can move between the projects.

In the case of 3Land (Figure 8, right), students identified a bundling of several projects and actors through IBA. The cross-border district with jobs and housing for 20.000 people is build along the river Rhine in the border triangle between Basel (CH), Huningue (F) and Weil am Rhein (D) on an area of more than 400ha (IBA Basel b, n.d.). Many smaller projects are part of the on-site development and a corresponding number of actors are involved. In this project, too, IBA's contribution is bringing activities and actors together – with the aim of strengthening networking, communication and cooperation.

In the process of 10 years of IBA Basel, it is valuable to develop and apply procedures that initiate and activate the described networking. Especially the IBA KIT can be understood as supportive method and tool for the whole process. It differs from other projects due to its flexibility and adaptability.

4.2 IBA functions as stabilizer in projects and processes

IBA Basel influences the timelines of projects, since it supports projects in coping with challenges and difficulties. The two examples in need for such contribution are the projects motoco and Zoom:



Figure 9: Planning models for the projects motoco und Zoom (motoco: Camille Leclerc, Madita Fislake; Zoom: Friederike Bobenhausen, Denise Knauer)

Motoco is a creative and cultural project that started in the old spinning mill of the DMC district in Mulhouse (F) in 2013. By converting a factory into an open idea laboratory for artists and creatives, motoco is experimenting with new working models (IBA Basel c, n.d.). The planning and implementation process for motoco is characterized by the network and cooperation of various actors. The students' model represents the process as a tower from the bottom up with the involved actors as colored 'building block' (Figure 9, left). IBA Basel (blue) forms an essential module in this tower with a stabilizing effect in the procedural structure and network of actors.

Zoom (Figure 9, right) set itself the target of mapping the whole area of IBA Basel from the point of view of youngsters and children by 2020. Therefore, young people were asked to draw pieces of the map, that should be digitalized and afterwards become a puzzle. The resulting plan of the region should reflect the needs of these stakeholders (IBA Basel d, n.d.). "Without the IBA, the Zoom project would not have taken place like this", the students learned in an interview during their research project. In reflection, they understand IBA Basel as a framework: Without the various 'ingredients' of the project and process, such as idea, actors, commitment and know-how, organization, planning and financing, the map basis or further materials would fall apart.

We can conclude that IBA helps to initiate and motivate to start and continue projects that are full of risk or free from any bias.

4.3 IBA provides orientation for projects and their progress

IBA advises, coordinates and supports projects with its expertise. In addition, the labeling process with several criteria developed by IBA Basel defines standards of content for IBA projects and their milestones in the timeline. This can lead to changes in the content and orientation of projects, as it can be seen in Polyfeld Muttentz and Neue Mitte Grenzach:

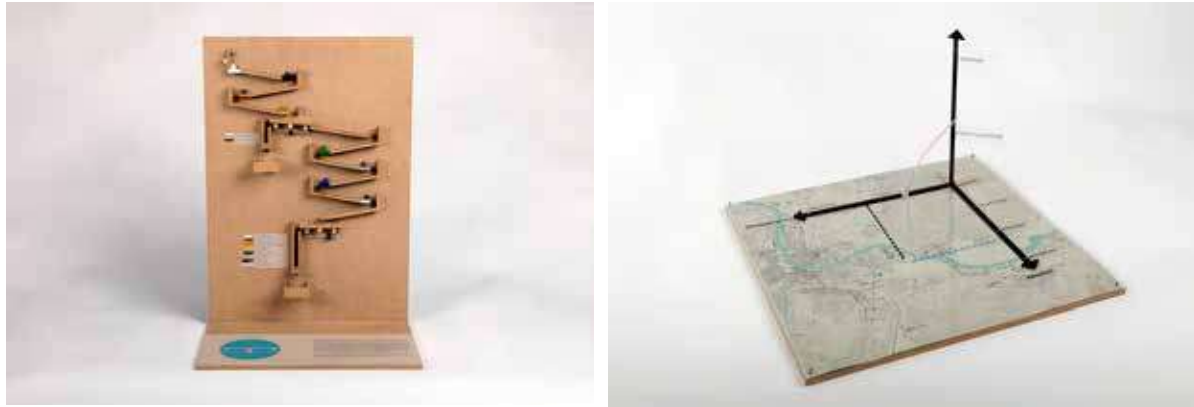


Figure 10: Planning models for the projects Polyfeld MuttENZ and Neue Mitte Grenzach (Polyfeld MuttENZ: Carina Engler, Chiara Erhardt; Neue Mitte Grenzach: Lina Wahdan).

In MuttENZ in a district of 34ha, which is nowadays industrially used – the Polyfeld MuttENZ, a sustainable and mixed district is to be built. During the IBA Basel process it was tested, which measures of social sustainability could be implemented in an urban planning project. For this purpose, traditional urban planning was combined with bottom-up participation processes. Due to the labeling process IBA specified criteria referring to content and milestones of the process. Thus, in this project – as well as in other labeled projects – changes in content were initiated and project developments were influenced by IBA. The students' model expresses a marble run in which the marble runs through the multi-level process of the project, relating to various stages of consulting and qualification by IBA. IBA Basel is represented as a steering element that triggered another direction for the Polyfeld MuttENZ at the time of nomination (Figure 10, left).

The metaphor 'coordinate system' illustrates that IBA indicates directions (Figure 10, right). It refers to the project 'Neue Mitte Grenzach' – the revitalization of the town center of Grenzach Wyhlen (D). A redevelopment area near the station will be developed in order to enrich the existing town center with businesses, residential use and public spaces. New mobility connections structure the area and help to connect the old town center with the station and the river Rhine. The inclusion of the station and riverbank into the planning concept made it obvious that the project became part of the project groups Aktive Bahnhöfe and Rheinliebe. IBA Basel served as coordinator and provided clarification and orientation regarding definition, content and progression of the project.

This shows that IBA Basel helps projects to clarify contents and to set structures in complex planning and development processes.

5. Outlook: Perspectives for the post IBA period

Although the research project is currently ongoing – in particular the evaluation and interpretation of the online survey have not been completed yet, we can already draw first conclusions and learn for the post IBA period.

As delineated in this paper, the transformation of an entire region was initiated by the 10-year process of IBA Basel 2020. It should be an indisputable fact, that it is worthwhile to continue this prospering process in order to further develop the region and thereby increase its quality of life and space. As mentioned at the beginning, the attempt to push the IBA process far beyond 2020 has to start as soon as possible. Therefore, on the one hand, the achievements of the process should become visible and be displayed in the final exhibition. On the other hand, the development and growing-together of the region, with its improved qualities, should become visible for its residents and users in everyday life. This results in the following future tasks.

Ensure the quality of cross-border regional development through a follow-up institution

There is a need for a successor institution that continues the core tasks of the IBA office. Among other things, these include: existing and new formed networks of actors that maintain intensified cross-border exchange; further elaboration of tools in order to support the regional development – for instance the IBA KIT; ongoing support of IBA projects until their completion; formation of additional project groups – to develop or strengthen fields of action and topics that respond to future trends in regional development.

Proceed the pool of experiences of the IBA process

IBA gained experiences during the 10-years process from which a follow-up institution can benefit in the post IBA period. IBA has achieved skills, not only in regional development and project management, but also in soft dimensions such as multilateral networking, trust building and cross-border knowledge sharing. It would make sense if this pool of experience was captured to be passed on through a conscious change management.

Bring transformation to life

Exhibiting the different IBA projects in the Vitra Design Museum in 2020 is not sufficient enough – the region needs to become perceptible for its users. IBA is considering how the development and growing-together of the region with its improved qualities can be experienced by the public, since some of the IBA projects are still in the development process and will not become finished before 2020. In this way, a challenge for the post IBA period is to bring transformation to life – unfinished IBA projects should be supported, pushed on and made perceptible during their realization process.

Bring the regional scale to the general public

Until today, IBA Basel is known in the professional sphere, yet general public and media have less knowledge about IBA. This is one of the reasons, why IBA wants to address users in the year of presentation and in the post IBA period. There is a need for a media and communication concept beyond the final exhibition and the year of presentation, which also goes beyond the presentation of individual projects. Through this strategy, target groups should be clearly addressed and invited to experience the region as a whole. An ambitious and yet desirable result would be, if awareness of a 'home region' emerged.

The research project is not finished yet. The next step is to generate results from the quantitative online survey. The results will then be reflected in order to gain a deeper understanding of a) the surpluses of the IBA process and b) of the improvements made commonly in cross-border regional development. Three goals are pursued for further work on the impact assessment of IBA Basel:

Firstly, a scientific basis for presenting results and impact of IBA Basel in the final exhibition needs to be created. Secondly, participating actors of the IBA process need to be involved in the common reflection and, moreover, need to be activated for the year of exhibition. Thirdly, motivation to continue the trinational communication and cooperation process in the post IBA period needs to be increased on the basis of research results.

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The role of Participatory Planning methods in the development of public spaces: A systematic case studies review on Sustainable Urban Governance

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Abstract: Urban Design and Planning worldwide have long been criticized for their lack of meaningful public consultation and participation in the process of shaping our built environment. Currently, the existing practices of consultation and participation are within the confines of council meetings, complex form filling and survey reports that often carry little weight towards the decisions made by the planning authorities; the latter are increasingly seeking for ways to encourage meaningful public participation in urban development decisions. This paper presents a systematic literature review on sustainable urban governance vis-a-vis participatory planning, in an effort to consolidate, evaluate and critique the various approaches on involving the public in decision-making process in relation to urban form in general and public space in particular. The literature/case studies presented are referenced across a scale of degrees of participation, referring to a range of influence that participants have in the decision-making. In its two extremes it can be viewed as no participation, where designers make assumptions of users' needs and requirements, and full participation, based on user-defined criteria of quality. The evaluation of many participatory research practices is somewhere in between the two extremes, focusing more on design with the users. However, the given theoretical process, might provide an insufficient degree of realism that designers need to cope with, due to time and budget constraints. If it is to remain grounded to the practice of design, literature should be able to cope with barriers, and seek understanding beyond its conceptual approaches.

Keywords: participatory planning; urban development; sustainable urban governance; public participation

Introduction

“Participation is a general concept covering different forms of decision-making by a number of involved groups” (Wulz, 1986). Participatory design is based on five fundamental points. First, *politics* in terms of people who are affected by a decision should have an opportunity to influence it; second, *people* in terms of being experts of their lives and having an influential role in design; third, *context* in terms of situations; fourth, *methods* as being the means of users to gain influence; and fifth, *product* in terms of the final goal of participatory design. The empowering quality of life that participatory design is meant to offer is hidden within that final goal (Halskov and Brodersen Hansen, 2014). Throughout the literature, participatory planning can be organized through three main themes

consisting of varying approaches: 1) motives of deciding to engage in participatory design, 2) degrees of participation that may occur, and 3) types of participants who get involved in terms of networks and scale.

In the 1960s and 1970s, the primary motivation of participatory design was linked to “the democratization of work life” (Schuler and Namioka, 1993, p. 251). It emerges as a reaction to the “mismanagement of the physical environment” (Sanoff, 2006, p. 140) and as an attempt to improve the quality of design and planning. Today the democratic and pragmatic efforts of participatory design seem to be shifting perspectives (Sanoff, 2006). Sanders et al. (Sanders, Brandt and Binder, 2010) argue that before someone attempts to customize participatory tools and techniques, they should firstly be able to understand the purpose and context of participation. Even though participatory literature offers a plethora of approaches, the core motivations of participatory researchers and practitioners have been identified and clustered in the following three areas: a) ethics (democracy), b) curiosity (theory), and c) economy (pragmatic) (Bergvall-Kareborn and Stahlbrost, 2009).

The degree of participation refers to a range of influence that participants have in the decision-making resulting to the final product. The level of participation that is required is a matter of ‘subjective intention’ (Andersen *et al.*, 2015). In its two extremes it can be viewed as no participation, where designers make assumptions of users’ needs and requirements, and full participation, based on user-defined criteria of quality (Bergvall-Kareborn and Stahlbrost, 2009). The degree of participation can also be described as indirect or direct (Ives and Olson, 1984). In reality, the evaluation of many participatory research practices is somewhere in between the two extremes, focusing more on design with the users (Bergvall-Kareborn and Stahlbrost, 2009). However, the given theoretical process might provide an insufficient degree of realism that designers need to cope with, due to time and budget constraints. If it is to remain grounded to the practice of design, literature should be able to cope with barriers, and seek understanding beyond its conceptual approaches.

In order to address the issue of balancing theoretical proposals with the constraints and practicalities of design, a systematic review of case studies of participatory design projects was undertaken with the aim of responding to pressing questions regarding criteria to establish how effective participation is implemented and evaluated in real-life contexts. Specifically, this paper addresses and discusses what the state-of-art offers to respond to the following questions:

- How much participation is enough?
- How much commitment is reasonable?
- How can the participants be engaged in the process in the long run of participatory design?
- Should the reasons of participation be ethical or financial?
- How can multiple views and incentives be coordinated in participatory dialogues?

The criteria of what qualifies a participant is considerably broad (Schuler and Namioka, 1993). Usually there are many types of participants taking the form of individuals or groups, interacting either in face-to-face sessions or in online environments (Sanders, Brandt and Binder, 2010). The literature indicates that the types of participant involved are decided based on the scale of the project, the scope and the context in relation to place and time. However, it can be argued that the way participants are perceived by researchers is segmented (designers and participants as separate groups) rather than a collective (designers and participants as part of the same group). This raises questions regarding how different participants interact with each other and how their views impact on decision-making processes. Recent literature suggests that participants are not stand-alone subjects, but part of social

networks (Andersen *et al.*, 2015). Viewing participants as networks (designers, users, stakeholders together), who are always partially integrated in the process and have the ability to cluster and interact, might provide the potential to displace the research focus and shift the participation paradigm.

This paper presents initial findings from part of a systematic review of literature on participatory planning which is being undertaken for the project Sustainable Urban Governance through Augmented Reality (SUGAR). The project aims to develop innovative best-practice protocols and guidelines on sustainable urban governance and, specifically, public participation through augmented reality. The research presented within the scope of this paper focuses on participatory planning approaches to decision-making for the design of public spaces. As this research aims to address effective participation in real-life design contexts, this part of the review focused on case studies. It also intentionally excluded interventions using solely or mostly ICT and augmented reality (though case studies comprising a level of technology use were considered) – this is a core element of SUGAR and the related literature review on these aspects is to be published elsewhere.

The methodology to carry out the systematic review and the analysis of the selected studies is described in the next sections. The findings from the studies on the effectiveness of various methodologies are presented and key issues are discussed according to themes emerged from text analysis of the literature. Conclusions are then drawn in relation to the questions we aim to address, summarizing key messages of the state-of-the-art regarding the strength of the current evidence, existing gaps and where future research should focus to support effective participatory planning.

Methodology for systematic review

The literature search was performed through the following databases: Web of Science, ProQuest, Social Science Research Network, RIBA Library Catalog, JSTOR, and EBSCO Art & Architecture Complete. Both peer-reviewed and non peer-reviewed articles were searched for through the search terms ‘participatory design’ and ‘participatory planning’. Results were filtered by selecting the relevant subjects/topics pertaining to the field of the built environment. These varied substantially between databases and ranged from architecture, urban studies, cities and development studies to social sciences, public administration, planning and sustainability. Only English-language articles were included in the search, which yielded well over 300 articles. A small number of articles were not accessible and once duplicates were excluded, a manual selection was done to identify the most relevant articles based on title of the article and topic of the journal or conference proceedings in which the article was published: attention was given to selecting articles which related to the urban environment, included case studies and were not explicitly focused on technology. A final set of 85 articles was selected for review; at the time of writing this paper 35 articles (30 peer-reviewed and 5 not peer-reviewed) had been reviewed, most of them case studies and a few reporting reviews of literature and methods of participatory planning.

The articles were analyzed using QSR’s NVivo 12 Pro software for qualitative data analysis. The articles were read by a single researcher and relevant text coded according to emerging themes. As the subjects of participatory planning broadly fall within the field of (applied) social sciences and the great majority of articles’ methodologies fell within the qualitative type, it was considered not appropriate to perform a statistical meta-analysis. As suggested by Davis *et al.* (2014) for certain research questions, meta-analysis is not necessarily the best tool, if suitable and acceptable evidence comes through research strategies which do not include experimental research or randomized samples. In these cases traditional narrative review, best-evidence, thematic or interpretive syntheses enable a broad review and provide the basis to answer specific questions. It was therefore decided that the most appropriate

method for the analysis of this type of primary research was ‘thematic synthesis’, a type of thematic analysis of primary research adapted for use in systematic reviews (Thomas and Harden, 2008). Accordingly, all selected studies were entered verbatim into NVivo software. The first stage of the synthesis was to identify the findings of primary studies by extracting key concepts from the full text – it was sometimes difficult to identify these and summaries of findings as qualitative research is characterized by varied reporting styles where findings can be located in different parts of the text and labelled in different ways. In some cases, additionally to ‘findings’, ‘results’, ‘discussion’ and ‘conclusions’, findings were also placed within the description of the case studies or the activities undertaken. Text describing the case studies was also coded for reference purposes, text from literature reviews and syntheses of specific topics reporting other primary research was also coded to provide additional evidence material. Furthermore, text referring to the methodologies used for participatory activities was also coded in order to collate information about the amount and types of available methods and tools.

The second stage of synthesis involved comparing nodes of codes in order to assess how much overlap there was between different themes, running word frequency queries of codes in order to identify issues of particular relevance within themes and display these as word clouds to visualize them for reporting (queries were limited to 50 words with a minimum length of 4 characters). The frequencies were compared between codes to assess if similar issues were relevant to more than one theme; when the most recurring word featured in more than one theme, these were grouped together to generate word clouds. By combining the results of these analyses it was possible to develop descriptive themes comprising the evidence related to concepts directly addressed by the primary studies: the benefit of these is that they focus the evidence on one particular concept which can provide a framework when planning and implementing participatory initiatives.

The final stage was that of making inferences to answer the review questions based on the evidence collated through the search, coded through text analysis and reported through descriptive themes. As with all synthesis of qualitative analysis, this is the most difficult and controversial stage, since it is dependent on judgment and logical reasoning of the researcher. Within the scope of this study it was not possible to use more than one reviewer to make inferences independently in order to cross-check and validate this – it is a limitation of this study and the authors aim to address this in the next phase of Sugar’s review process.

Findings

The first and foremost finding at this stage of the review is that while globally there has been a paradigm shift toward participatory planning, there is still a scarcity of detailed reports and critical assessment of what constitutes effective participation (Andersen *et al.*, 2015) and no consensus as to how to achieve inclusivity and participants’ sense of ownership over outcomes (Leyden *et al.*, 2017). The concept of co-creation within the field of participatory design has been used for decades, but its positive impacts are not necessarily self-evident (Lundström, Savolainen and Kostianen, 2016) and it is not always clear what and how much community groups, especially in contexts of low resources and high inequalities, can gain from participatory processes (Refstie and Brun, 2016; van Holstein, 2018).

The definition of ‘participatory development’ by the World Bank’s Learning Group on Participatory Development – “a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them” – is sometimes used as a benchmark for ensuring and assessing participation in interventions (Ngah and Zulkifli, 2014). Many other definitions exist which focus on somewhat different aspects of the process: the inclusion of all levels of society in

decision-making (Bonilla, 2009), the continuum of activity in communicating and engaging with the public (Kotus, 2013), the openness and multiplicity of the process (Manzini and Rizzo, 2011), its and its transformative and innovation potential (Manzini and Rizzo, 2011; Refstie and Brun, 2016). Existing definitions indicate that participation per se, the process and outcomes are the core features of successful participation; although inclusivity is given consideration, the extent and level of participation are not given much attention. The exception to this can be found in a specific theoretical framework to participation based on Actor-Network Theory. This does concern itself with ‘practical’ aspects, but in order to directly argue that how many, who, how and how often participants are involved is irrelevant because participation is a matter of concern rather than a matter of fact – as such, participants act directly and indirectly as components of networks and participation occurs aside of designate activities and is an existent aspect of the whole process: no form of participation is ‘superior’ to others, therefore there is no gold standard for it (Andersen *et al.*, 2015).

Acknowledging these premises, the authors of the present paper aim to give an overview of existing methods and of the evidence relating to key issues around participation. There are three main types of participatory planning: formal (or bureaucratic) participation, action research, and community-led or community-driven participation. Formal participation is led and implemented by state agencies or local authorities, normally as a legal requirement of planning legislation; it tends to involve classic methods of consultation such as surveys, meetings, hearings and sometimes workshops. This type of participation is the one that is most subject to criticisms of ‘tokenism’ – the undertaking of participatory activities purely to tick off legislative requirements. Such criticisms tend to be frequent when the public’s suggestions are not taken up (Zhou, 2018), are dismissed as uninformed (Al-Nammari, 2013) or market powers ultimately direct decision-making (Turan, 2018). Action research is usually led by academic institutions implementing interventions with the aim of simultaneously pursuing impact, change or innovation through participatory practice and producing research findings to inform the project and to develop understanding of the process (Sanoff, 2012). Community-driven participation is, as the term implies, led by the community itself, embodied in more or less formal organizations taking up an issue or devising an intervention through campaigning initiatives or practical projects which may, at some point, require contact and involvement of the authorities. While these are often deemed as being more inclusive and their informal methods can be highly successful, concerns are also raised as to the true nature of inclusiveness if the groups involved are not representative of the wider community, have specific interest or are not accountable for their actions (Hou and Rios, 2003). While all these types of participatory actions can apply to different scales, from the single, small regeneration or design project to metropolitan strategic plans, local and smaller-scale projects are often the domain of action research and community-led activities. Participation in large-scale and strategic consultative processes are normally still the domain of bureaucratic participation - a notable exception being the activities of REDWatch (Rogers, 2016).

Along with the variety of approaches to participatory planning comes a wider range of methods and even wider set of specific tools. The main methods retrieved from the literature so far are presented here with a brief description and summary how they performed in the case studies reviewed; it is not an exhaustive list of all individual tools discussed in the literature – many studies include and assess a variety of individual classic consultation tools – rather this list highlights methodological strategies which can embed a number of tools.

1. Change by Design (Frediani, 2016). This methodology was used as part of ASF-UK project of informal settlement upgrading in cities in Brazil, Kenya and Ecuador. It involved two-week workshops in each city using audio-video techniques to capture residents’ experiences and aspirations. The author states that that the workshops supported communities to negotiate

alternative solutions and influencing government authorities in engaging with participation and supporting upgrading schemes. They conclude that this method is most successful at mediating diverse interests (rather than conflict resolution) and at fostering learning and action towards urban social justice.

2. Charrette (Lundström, Savolainen and Kostianen, 2016). This methodology is a collaborative planning and negotiation process; in the case study reviewed, it was used for the renovation and conversion of a university campus lunch restaurant redesigned to become a learning space. Charrette workshops are highly structured and facilitated involving drawing, creative and hands-on tasks. The authors conclude that this method is successful in embedding user perspective in design and provided a positive impact on the resulting premises, but not every part of the project was successful as some of the objectives for the new design were not achieved.
3. Informal Activities (Hou and Kinoshita, 2007). Rather than a methodological strategy, this study looked at a set of informal participatory activities that took place in Kogane, Japan, to assess their success in comparison to formal processes which took place in Seattle, USA. The authors acknowledge that many of the informal techniques developed by communities, such as walking tours, design games and social events, have already been incorporated into formal processes. Nevertheless, they are worth of attention because they show to help overcome limitations of formal participation and negotiate difference. Animated interactions, experiential learning and spontaneity were the key factors in developing trust between stakeholders.
4. Iterative and Recursive Prototyping (Erixon Aalto, Marcus and Torsvall, 2018). This methodology was applied in the Albano Resilient Campus Project in Stockholm in order to produce knowledge and operationalize concepts of resilience and ecosystem services. The method involves a recurrent series of workshops with design sessions in between; the design outputs from each session are explored through generative matrix models to provide information of the potential performance on the proposed design and thus input into the next iteration of prototyping. Comprehensive narratives were used throughout the design process to offer alternative views of socio-ecological processes. The authors conclude that the process is effective in introducing communication and feedback, generating questions and re-examining problems. While it did not necessarily provide solutions, it enables actors to identify points of conflict and convergence, but can sometimes function in an excluding manner for actors entering the process in later stages.
5. Local Economic Development (Majale, 2008; Bonilla, 2009). LED is a process in which local people from different sectors work together to stimulate commercial activity to achieve a sustainable economy. It is characterized by the development of long-term public-private partnerships, the fostering of social networks, the mobilization of endogenous resources and a focus on a defined territory. In the case study reviewed of slum upgrading in Kitale, Kenya (Majale, 2008), it was shown that labor-based methods presented many advantages to participation in slum upgrading which can support sustainability through job creation and income generation. The author, however, points out that for such methods to have long-term impact, they must be accompanied by other activities such as training and capacity building. In a second case study of the Cordoba-Orizaba region, Mexico (Bonilla, 2009), the method was found effective in achieving consensus among stakeholders and agree strategic objectives for a common vision for the region. The author, however, points out that in this context, the methodology is subject to uncertainties at implementation stage due to mainstream political and economic culture, which does not legitimate participatory planning.

6. Participatory Rural Appraisal (Halkatti, Purushothaman and Brook, 2003; Sharmin *et al.*, 2013). PRA is an approach for shared learning between local communities and outsiders used to assess resources and skills, identify issues and propose solutions. This method was specifically developed for rural areas, but it has been tested in urban contexts as some of its tools, are applicable to all environments. A benefit of PRA is that it does not require technical knowledge to collect data, as such it can be easily implemented in a variety of contexts. It the uses statistical tools to prioritize problems and identify their causes and effects. In the case study of Hubli-Dharwad (Halkatti, Purushothaman and Brook, 2003), PRA was successful in helping communities define and present issues and develop action plans; it was also used as an evaluation tool to compare the situation before and after intervention. In the case of Monipuripara (Sharmin *et al.*, 2013), it was found effective in fostering understanding between local people and outsiders, as well as easy to implement. However, when proposed solutions could not be implemented by the community itself, success rests with resources and commitment of local authorities and was thus not guaranteed.
7. Personal Construct Theory (Dayaratne, 2016). PCT was used a s framework for developing techniques to understand how people see and value their places. It was applied in housing project in Haputale, Sri Lanka. Within these framework sorting and location tasks were carried out with residents and they were deemed successful in directly informing design, rather than just producing a set of issues or priorities for the architect to take into account, and achieving a closer correspondence between the way people conceptualized their space and the space that was eventually constructed. No shortcomings or difficulties with the methods used are reported in the case study.
8. Role Playing (Valladares, 2017; Turan, 2018). Role playing is a specific tool which was used as part of participatory activities in the neighborhood of Gowanus, NY (Turan, 2018) and in self-help house building and renovation projects in Old Havana, Cuba (Valladares, 2017). It is a tool that is used in a variety of fields and embedded in participatory activities along with other methods. However, it is worth mentioning on its own as the evidence from the Cuban case study highlights this a particularly powerful tool to facilitate engagement, despite the fact that the evidence from the Community Architect Program in Havana displays mixed results with residents from more favorable socio-economic circumstances benefiting more than low-income groups.
9. Scenarios (Celino and Concilio, 2010; Chakraborty, 2011). Structuring scenarios were used to manage participatory activities to develop a long-term plan for the Delta of the Po River in Italy (Celino and Concilio, 2010); these scenarios are meant to evolve together with the decision system and aim at envisioning multiple possible futures rather than converging into a single solution. As these can continually evolve, they provide a good basis for long term engagement and may enable the selection of a preferred scenario over another. However, the authors point out that they may not work in all planning situation as the scenarios might not be under the control of relevant authorities. When scenarios were in used in the Washington Metropolitan region (Chakraborty, 2011) they were found to be valuable in capturing issues for the future and creating awareness and knowledge – they have the potential for both quantitative analysis and feasibility testing, but also for engagement and generation of alternative objectives through qualitative methods. The author points out that the analytical process had limitations because of oversimplifying assumption and limited numbers of indicators, but the outcomes were still successful and provided a foundation to achieve tangible benefits.
10. Urban Living Labs (Puerari *et al.*, 2018). There are several definitions of ULLs, but these are generally understood as combinations of several tools to co-create solutions taking place in real, physical environments. A series of ULLs with different characteristics, aims and locations taking

place in Rotterdam in the Netherlands were evaluated and were found to contribute significantly to production of local knowledge and were effective instruments in bringing different actors together and developing potential solutions to specific issues. However, as ULLs are usually set up with a specific purpose they do tend to be successful for a particular case at the scale at which they were set up to work, but they might not necessarily be transferrable or able to impact on a larger scale or beyond those stakeholders directly involved.

11. Visual Mapping (De Vita, Trillo and Martinez- Perez, 2016). This ‘traditional’ methodology was adapted for use in the case of Belfast by developing a taxonomy of urban elements to capture existing and hidden conflict. This adaptation was thought of also with the potential to support community planning in any rehabilitation project. The authors found that adding the taxonomy to this method refined in such a way that made more effective for used in contested places such as Belfast.
12. Working Group (Al-Nammari, 2013). While WGs are used as a tool in various processes, in the case study reviewed of the Talbiyeh Refugee Camp Improvement Project in Jordan, it was used as the key method: an open forum where visions for improvement were developed and results of activities and interventions discussed. This particular project was fraught with limitations and failed implementations of agreed solutions due to its specific context of power-relations amongst stakeholders. Nevertheless, the author suggests that it can provide a step forward towards democratization of planning practices in contexts where participatory planning is rarely practiced.

Regarding the analysis of key issues in participatory planning, comparative diagrams of codes highlighted specific strong overlaps between themes, which were similar to common word frequencies. Based on these analyses the descriptive themes comprising evidence from related issues are presented below.

Creation: level of participation, level of commitment and reasons for participation

Level of participation in successful participatory projects ranges widely depending on the size and scope of interventions, its aims and objectives and the type of activities planned. Successful activities might have from as little as 20 participants (DiSalvo *et al.*, 2012) to over 100 organizations (Chakraborty, 2011) and over a 1000 attendees to final project events (Manzini and Rizzo, 2011).

Analysis of themes overlap reveals that level of commitment is directly dependent on level of participation, something which is perhaps intuitive as commitment cannot be gained unless participation is achieved first. Evidence shows that a physical and visible space where activities take place is a very strong factor in achieving participation and engagement (Puerari *et al.*, 2018). This does not diminish the potential that ICT tools may have to foster engagement, but the evidence from the reviewed case studies is mixed as to their impact with some showing very little engagement (Kotus, 2013), others a reasonable level of activity (Turan, 2018) and still others being highly successful (Rogers, 2016).

Most studies reveal that they primary and most powerful reason for participation is to develop a solution to a problem that affects them (Manzini and Rizzo, 2011), achieving their goals and aspirations of a better environment (Turan, 2018; van Holstein, 2018) and accessing needed resources (Al-Nammari, 2013). However, certain specific stakeholder have intrinsic economic reasons for participating (Leyden *et al.*, 2017) or may simply have a legal mandate to do so (Halla, 2005). It also has to be noted that while financial incentives were clearly not the main reasons for participation, the lack of such direct incentives may hinder participation, commitment and ownership over the outcome

as well as causing conflict and resentment among participants in contexts of high disadvantage and socio-economic inequalities (van Holstein, 2018).

The word cloud for this theme (figure 1) reveals how the goal of creating something is the key factor in participation; stakeholders, actors, people, groups and communities given the opportunity to be involved in projects, activities, place-making, and social innovation through an appropriate process motivates them to participate and commit to design solutions to critical issues.



Figure 1. Word cloud for codes: level of participation, level of commitment and reasons for participation.

Process: coordination of multiple views, inclusivity, long-term engagement and sustainability

There are two main approaches to coordinating multiple views in participatory planning: that of allowing for multiple perspectives and conflicting interests to coexist, such as in the cases of scenario building or iterative prototyping, or that of trying to achieve common agreed objectives as in the case of LED. Clearly, as the word cloud for this theme reveals (figure 2), process is the key factor in how multiple views are coordinated. Scenarios seems to be effective in developing long-term views rather than addressing pressing needs. However, implementation and long-term engagement more directly relate to commitment on the part of authorities to truly include participants' views in plans and to the success of the events and people's sense of ownership over solutions, than to the methods used for the activities.

Throughout the literature achieving broad participation from the early stages of the project was seen as a key factor in achieving inclusivity and long-term engagement. Using specific strategies to maintain collaboration during all phases of a project, especially when it seems that participants have less to say, was recommended in the experience of some researchers (Lundström, Savolainen and Kostiaainen, 2016). In order to achieve inclusivity certain groups, such as women, youth and the poor should be

analysis of bias and limitations. In light of growing diversity and complexity of urban environments community-led actions often seem to have less limitations than formalized practices, but as previously mentioned these can also come with their biases (Hou and Kinoshita, 2007).

Reports of bias in Western case studies are less frequent, although these do exist (Luck, 2018; Puerari *et al.*, 2018), but as the reviewed literature often does not mention or assess this issue, consideration might be given to the fact that in Western, wealthier contexts assumptions may be made that bias is less frequent and is thus assessed to a lesser extent.



Figure 3. Word cloud for codes: bias and limitations.

Conclusions

As presented in the analysis, turning back to some of the research questions: level of participation, level of commitment and reasons for participation really rest with the creative power of interventions to deliver solutions. This is regardless of the type of participatory action, whether it is bureaucratic, action-based or community-led. Appropriate processes must be developed in order to coordinate multiple views, ensure long-term engagement and sustainability of projects; in order for this to happen inclusivity is key, not just in terms of variety of groups involved in the process, but also with regards to the extent to which their views are taken into serious consideration, embedded in plans and finally implemented. Bias and limitations can be mitigated through active inclusive practices, but strong leadership and political will are the key factors in minimizing bias and reducing limitations (Gedikli, 2009), especially at implementation stage.

Motivation to participate should and most often is related to aspirations, desired outcomes and a variety of social benefits which people, community and groups can gain through activities. These are proven to be the most powerful forces to gain participation, commitment and long-term engagement. Therefore, while financial incentives are not usually a necessity and are unlikely to improve the process and outcome, they should be considered in cases where including disadvantaged populations may be problematic and in contexts of high inequalities.

So far, the literature presented no case studies with a specific focus on public space, but the methods reviewed are applicable to a variety of urban settings and case studies comprise scales which include public spaces. It may be that there is scope for further specific research on public spaces, especially in light of the fact that physical and visible space is a very strong factor in engagement. While we have not yet focused on the issue of how participatory processes are linked to sustainable development and sustainable urban governance, there are indications that scaling of activities from small, local projects to frameworks development and regional planning may be a way to achieve transformative sustainable impacts. This is a next step for our research along with completing the review of the existing literature search and expanding the search through Google Scholar. Validating inferences through separate assessment by different researchers and combining this review with that of the literature on the use of technology in participatory planning are also important steps to achieve a comprehensive review and address its current limitations.

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Living Apartment Buildings in Ankara and Their Relation with the City

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Abstract: Innovative buildings, with their design aspects, functions and environmental relations, can enrich urban areas spatially and functionally. This study explores inner-city apartment buildings in Ankara that adapted a similar approach to Le Corbusier's Unité d'Habitation (dwelling unit), and analyzes how they have contributed to their surrounding area. Le Corbusier's approach to city planning involved geometric forms. In his works on city planning, dwelling is the fundamental element. One of his well-known contributions in this regard is Unité d'Habitation. Besides its architectural features, a remarkable aspect of this model is its communal spaces. It is more than an apartment building; where he emphasized a communal lifestyle along interior streets and on the roof. The emptied ground floor and roof garden allow a social environment for users, and these spaces interconnect with nature. A similar approach was adapted by a few cooperative housing initiatives in Ankara during the 1950s-1960s period. It was a period when cooperative housing was largely implemented to respond the housing need of working population. The examples in Ankara are still well-known with their architectural styles and functional aspects. This study focuses on some of them, designed and constructed in the same period. It analyzes the morphological and functional features at street-scale. The study does not propose this approach or similar ones as a solution to all contexts, but it highlights how an architectural approach can interrelate to the urban level with its communal spaces, and open areas at ground and roof levels, and contribute to urban life in spatial and functional terms.

Keywords: apartment building, morphology, street-scale analysis

Introduction

Physical volumes, open areas and ensemble of relationship between them are the main elements of urban morphology. Such volumes, or architectural elements, can sometimes act as significant landmarks, images or nodes in cities: Some regular functional buildings, such as residential buildings, may become a landmark or part of the urban image, as they have strong visual or functional relations with the surrounding urban setting with their design qualities. Their layout, orientation, position on the plot, and architectural features can enrich the urban setting.

This study focuses on some apartment buildings built in Ankara in the 1950s and 1960s, which followed a similar approach to Le Corbusier's "Unité d'Habitation" (dwelling unit), with the aim of displaying their roles in the city and representing their design connections with the surrounding physical setting through a street-scale analysis.

The cases undertaken in this study, as Unité d'Habitation, are elevated from the ground on columns (pilotis) and comprise open common spaces both at ground and roof levels. They are worth analyzing, as they are interacting with the urban environment with their open and semi-open spaces, which are perceivable from outside. These spaces are walkable and livable and act as common places for residents. Moreover, the architectural style of these residential buildings gives them a distinguishing effect. The examples that resemble the Unité d'Habitation model in Ankara are

mainly cooperative housing initiatives, as this model allows users to socialize in common spaces. The study portrays the design aspects of these initiatives basically with regard to their street-scale perception, and analyzes how they have gradually contributed to their surrounding urban setting aesthetically and functionally.

Housing Morphology in Ankara

Spatial organizations of dwellings can be quite different in different periods, cultures and societies. Societies reflect their characters in their dwellings. Different dwelling layouts produce diverse morphologies in cities (Sungur and Çağdaş, 2003). In addition, façades of dwellings also identify the quality of urban environments to a great extent. The aesthetic and innovative approach to façades can raise the quality of urban environment (Basa and Şenyapılı, 2006).

With regard to different dwelling types, Gökçe and Chen (2017) identify five morphological periods in Ankara:

- *1923–1950s: The Early Republic Period*
There was a housing shortage after the 1st World War. Garden City dwelling type was seen as the ideal style for the city. Apartment buildings emerged, too.
- *1950s–1980s: Modernization Period*
With rapid migration to the city, construction of informal houses remarkably increased. Meanwhile, apartment buildings became widespread and replaced the garden houses. The apartment lifestyle was widely adopted by the community.
- *1980s–2000: The Liberalization Period*
Housing production declined. Besides, there was a significant decline in the ratio of slums. Housing cooperatives were established. Gated communities were launched.
- *2000 to date: The Contemporary Period*
Urban regeneration was introduced and became widespread. Gated communities have increased. Mixed-use housing developments are also widely constructed at present.

Before the 1950s, the common housing type in Ankara was single detached housing (Figure 1, Çalışkan, 2015). Two successive plans, namely the 1924 Plan by Karl Lörcher and the 1927 Plan by Herman Jansen, determined the development of the city in this period. The Jansen Plan, which was attained through an international planning competition, proposed low-storey, detached housing areas and low-density development for the city. Consequently, single or low-storey detached housing identified the urban image and morphology of the pre-1950 period in the city (Çalışkan, 2015).



Figure 1- Main housing morphology in Ankara before the 1950s (Çalışkan, 2015)

The years following the 1950s saw a remarkable increase of population in Ankara. As the city had grown more than predicted in the Jansen Plan, a new international planning competition was organized in 1955 to attain the new city plan. The winning plan was designed by Raşit Uybadin and Nihat Yücel, which proposed a homogenous city packed within the municipality boundaries (Günay, 1992, 34). The plan, like the previous one, maintained the growth of the

city towards the south of the existing city, namely towards the Kavaklıdere and Çankaya districts, and opened up the western corridor for growth.

The subsequent Law on Flat Ownership (1965) allowed more than one ownership within one single plot, which led to the dominant dwelling typology in Turkish cities, mainly composed of apartment buildings (Figure 2, Çalışkan, 2015). The Law, therefore, marks a turning point in terms of housing production that defines the new image of Ankara streets. Three- to five-floor apartment buildings were allowed in different districts. Low-storey garden houses of the early Republican era were largely replaced. The most common typology after 1950 was the reinforced concrete, multi-storey apartment building, which changed the city's traditional image (Ultav, 2019).



Figure 2- Main housing morphology in Ankara throughout the 1950s and 1980s (Çalışkan, 2015)

Actually, multi-storey apartment buildings were not new to urban dwellers in the midst of the 20th century. Particularly in Istanbul, the 19th and early 20th century apartment buildings in various styles were present. However, throughout the 1950s and 1960s, the above-mentioned Law led to widespread production of apartment buildings mainly by housing cooperatives, individual developers, and mass housing companies, parallel to the rapid population increase. This led to the repetitive production of this building type (Gürel, 2009).

The cases elaborated in this study were produced by housing cooperatives, when the apartment-type dwellings started to expand in Ankara. A study by Ürey (2012) indicates that between the years 1948 and 1962, housing production was mostly led by cooperatives in Ankara, which occupied 60% of total housing production. The total number of cooperatives were 391 in this period, 184 of which were in Ankara (Cengizkan, 2000, cited in Ürey, 2012). Meanwhile, the number of building permits given for apartment buildings raised gradually from the 1950s onwards, while those for single houses diminished (Table 1).

Year	Single Houses	Apartment Buildings
1954	1500	279
1955	1049	341
1956	1037	330
1957	726	473
1958	440	846
1959	263	418
1960	89	622
1961	132	644
1962	66	799
1963	358	481
1964	85	575

Table 1-Number of Building Permits given for Single Houses and Apartment Buildings between 1954-1964 in Ankara (Akin, 2007)

Design Aspects of Apartment Buildings and Dwelling Morphology

In the 1950s and 1960s, the apartment signified modern living. Architects, following the socio-economic trends in larger cities, attempted new architectural styles in apartment buildings to support the modern lifestyles of families (Güney, 2008). Their plans were mainly for nuclear families. The new housing areas that started in the 1950s were remarkably different than the traditional parts of the city. It was a period when Turkish architects were impacted by international trends. They followed the international style, and formulated the plans of their buildings upon prismatic forms. Architects and builders embraced apartment buildings as integral to urbanization, modernization, and higher living standards. These buildings can be seen as outputs of architectural modernism, which regarded the simple look as a sign of civilization (Gürel, 2009). The design of apartment buildings depended on geometric forms, leading to a homogeneous morphology in housing areas (Aykut, 1998). Güney (2008) identifies that, like traditional Turkish houses, apartment buildings also have an outward-looking configuration.

The apartment buildings of the period, consequently, were largely characterized by multi-storey, rectangular masses. As plan layouts reflected geometric and orthogonal forms, the ensemble of these masses composed homogenous streetscapes in residential areas. These buildings, in a short time, constituted the main morphological style in the metropolitan cities (Güney, 2008). The façades of buildings produced throughout the 1950s and 1960s displayed simplicity and rationality (Tapan, 2007, cited in Suoğlu, 2009). Bozdoğan (2016) states that the façades of the period were treated as a form of modern decoration, an orthogonal grid to be filled with glaze, brick or plastered geometric elements.



Figure 3- Façade decoration example



Figure 4- Façade decoration example

The apartment buildings produced throughout the 1950-1980 period, i.e. the second morphological period as identified by Gökçe and Chen (2017), compose a repetitive streetscape in residential areas. The modernist approach to building design and identical setback distances in plot arrangements led to a homogenous solid-void relationship on residential streets.

Different Design Attempts for Common Living

The cases elaborated in this study are located in the Kavaklıdere and Çankaya districts, all of which were produced by housing cooperatives. They are Hayat Apartment Building (1957), Cinnah 19 Apartment Building (1957) and İş Bank Apartment Buildings (1962). The residential buildings produced via housing cooperatives assumed different typologies, either in the form of several apartment buildings on a block or one single apartment building on a plot. The examples in this study refer to both types. The cases investigated are almost aligned on a linear axis starting from Kavaklıdere, following a major inner-city boulevard to the south and ends up at Çankaya (Figure 5). The Uybadin-Yücel Plan, as mentioned before, supported the development of the city towards the south, i.e. towards the mentioned districts, and the morphology of these districts developed with this plan.



Figure 5- Location of the cases (Google Earth image)

Residential areas and buildings are significant components of the urban image. Different housing typologies compose different streetscapes and urban patterns. The relation of a residential building with the surrounding urban area can be described with regard to its own design features (its form, its façade, its entrance, its open/semi-open components), its position and orientation on the plot (the relation with the plot), and its relation with the masses and open spaces that surround it.

The design approaches followed in all three examples are similar to Le Corbusier's approach to dwellings. As known, Le Corbusier's approach to city planning involved geometric forms, regularity and standardization. In his works on city planning, dwelling is always the fundamental element. His well-known research and practical contribution in this regard is Unité d'Habitation. Besides its architectural features, a remarkable aspect of this model is its communal spaces. It is more than an apartment building; rather, a "vertical garden city", where he emphasized a communal lifestyle with public uses along interior streets and on the roof. The building is designed like a vertical neighborhood, with a rich community life, while still having privacy in apartments (<https://www.archdaily.com/85971/ad-classics-unite-d-habitation-le-corbusier>).

This study notes to the model's ability to provide a social environment for its users and interconnect with the surrounding urban setting: The open plan and free façade aspects of the model, the open ground level, and the roof

garden can be seen as components of Unité d'Habitation that provide these interactions. The freed ground and roof garden are places for both communal uses and connection to nature. Obviously, there are many other design approaches to dwellings that emphasize communal life, and provide connections to the surrounding urban space. The study focuses on this model and illustrates it in the Ankara case, as they are well-known architectural examples in the city.

A Street-Scale Analysis of the Cases

Residential buildings comprise private realms, but when they are aligned along a street, they compose a streetscape for the eyes and perception of the public. A streetscape is, therefore, a transition space between the private and public realms. Public and private spaces cannot work independently, rather, they complement each other (Bentley et al, 1985, cited in Songülen 2012). The transition space that they compose together is an interface between internal and external areas. As the public have the right to look at buildings and share some symbolic possession, the owner of a dwelling has some right to view the external realm and exert their influence on the common space. Consequently, the relation between the public and private spaces in a streetscape is an important determinant of its character (Tucker et al., 2005).

To evaluate how the chosen apartment buildings contribute to the townscape and urban image, a street-scale analysis is conducted with regard to the dominant features of the residential streetscape. Plot is one of the fundamental elements of urban form, the pattern of which depends on property boundaries. The individual plot, together with its building or buildings and open spaces, is the smallest unit in a city. The characteristics of this unit define the urban form, its shape and density, as well as its actual and potential function over time (Moudon, 1997). A row of plots, placed next to each other along the same street-line forms a plot series (Conzen, 1960). This series is the matter of street-scale analysis. The street-scale analysis in this study first focuses on the plot arrangement, arrangement of buildings in the plots and access patterns from the street to the private entrances as adapted from Gökçe and Chen (2017). Additionally, housing type, number of stories, building codes and façade view are also analyzed.

Hayat Apartment Block

Hayat Apartment Building was designed by Emin Halid Onat, one of the pioneers of modern architecture in Turkey. He designed it through an inclusive approach, where the cultural, artistic and social needs of a family could be met within one building, i.e. similar to the Unité d'Habitation model. It was constructed on a 5000 sqm-land by the Hayat Building Cooperative in 1957 (Şumnu, 2017).

The building is taller compared to the other residential buildings in the block it located on. Originally, the building was designed with a roof garden that would contain a cinema and a club. However, this level could not be built due to inadequate budget. The ground level is freed and the building is elevated on pilotis (Figure 6). It consisted of four shops, a patisserie, a hairdresser's shop, an office and a nightclub (Şumnu, 2017). The nightclub was active throughout the 1960s and 1970s, which attracted many citizens of Ankara (Resuloğlu, 2014).



Figure 6- The Hayat Building lifted from the ground on pilotis
(Source: Social media page for the building)

Hayat Apartment Building is still a residential building. Its central location at the junction of a major commercial street and an urban park gives it a distinctive effect in the city. In its vicinity there are some landmarks of the city, together with which it contributes to the urban silhouette (Figure 7).



Figure 7- Hayat Apartment Building in the urban view with other landmarks

Street-Scale Analysis

The Hayat Apartment Building is located along a major boulevard of the city, which accommodates commercial and business uses. The plots on the building block are not at same sizes as they host buildings for different functions. Nevertheless, buildings are located on these plots with respect to identified minimum setback distances. Hayat Building, meanwhile, is located in the midst of its plot. Five plots were merged and the building is settled towards the middle of the merged area, allowing a large public open space at the front and back (Figure 8-9). The access to the private realm is not directly from the street, but after this open public space.

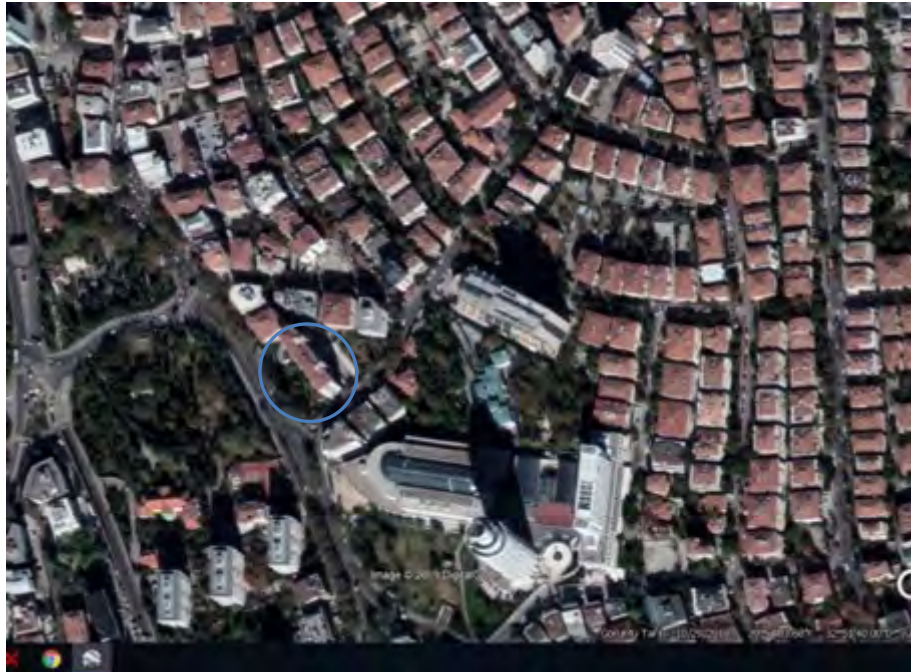
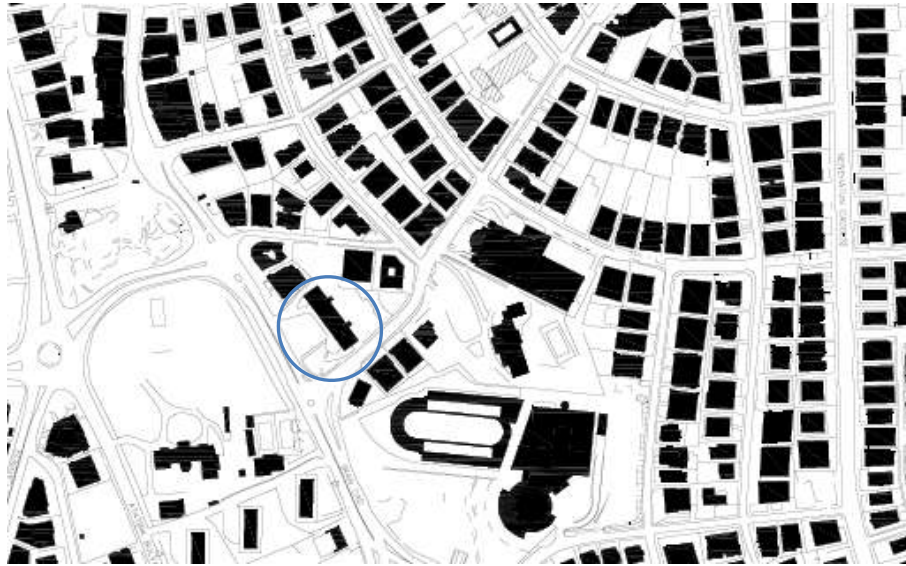


Figure 8- The urban morphology of the area, with Hayat Apartment Building using the plot different than other residential buildings (Google Earth image)



Figure 9- Rear façade and garden

The residential buildings in the area are constructed as detached buildings. The Hayat Building is a prismatic apartment building with 7 stories and ground level. In accordance with the modernist approach, its façades reflect simplicity. The only decoration is at the back façade, i.e. gridded openings obeying the simplicity approach of modern architecture.



Figure 10-Façade decoration

Because of the budgetary limits, the roof level could not be built, which would provide a scenic relationship with the urban setting. Still, the ground level shops and open areas in front of them are interrelated to the public realm. Besides, the position of the building on the plot, its large façade and height contribute to the urban image in a strong way, which makes it one of the landmarks of the area.

Cinnah 19 Apartment Building

The Cinnah 19 Building, which was named after the Cinnah Boulevard, was constructed for the Workers' Cooperative of Directorate of Ports in 1957. It is treated as an experimental building even today. The Cooperative was established by the engineers and architects of the Directorate, and constructed through the loans provided by the Workers Insurance Institute. The architect paid attention to daily social practices, therefore aimed at creating gathering places in the building (<https://www.arkitektuel.com/cinnah-19/>). Like the other two cases, the building is also lifted from the ground with pilotis. There is a pool, a bar, a fireplace, sunbathing places, a shower bath, locker rooms, and toilet at the roof

level, and a garden at the ground level (Figures 11-12). The places at the roof level were conceived for interaction among neighbors and with the surrounding urban environment. This level is no longer in use.



Figure 11- Pool and fireplace at roof level



Figure 12- Garden at ground level

The architect Nejat Ersin mentions that what he aimed was to handle the project in a different way than the cooperative buildings that had been built so far in the city. He, himself, also worked in the same Directorate as the chief of the

Office of Architecture. The future residents of the building, his colleagues, encouraged him to design an unconventional apartment building, which should be different than the existing ones produced through housing cooperatives (Interview conducted with the architect, <http://dergi.mo.org.tr/dergiler/4/553/8277.pdf>).

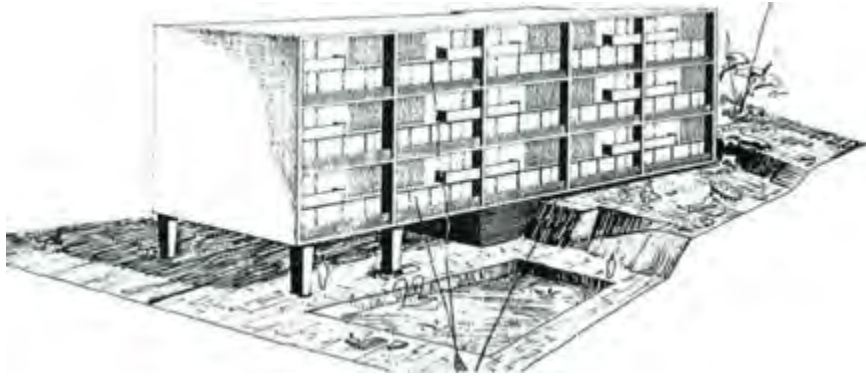


Figure 13- Cinnah 19 Apartment Building
(Source: <https://www.arkitektuel.com/cinnah-19/>)

Street-Scale Analysis

The plot arrangement on the Cinnah Boulevard has a rectangular form with almost identical sizes and identified setback distances. The buildings facing the boulevard were designed and built as residential apartment houses in prismatic forms. Ground floors of the buildings are for commercial purposes. The buildings have direct access to the sidewalk and they have private gardens behind them. They are purely aligned along the Boulevard.

The residential buildings in the area are all detached buildings. The height of Cinnah 19 is the same with the ones next to it, although there are 3 floors over the ground level, and 2 floors below it. Untypically, the façade of the Cinnah 19 was not oriented towards the main street, but to the adjacent plot. The idea was to integrate the semi-open places of the building with the urban view. The apartments have connections with the surrounding urban setting, since their doors open to these semi-open balcony-like corridors. (Figure 14-18).



Figure 14- Orientation of the building (Google Earth image)

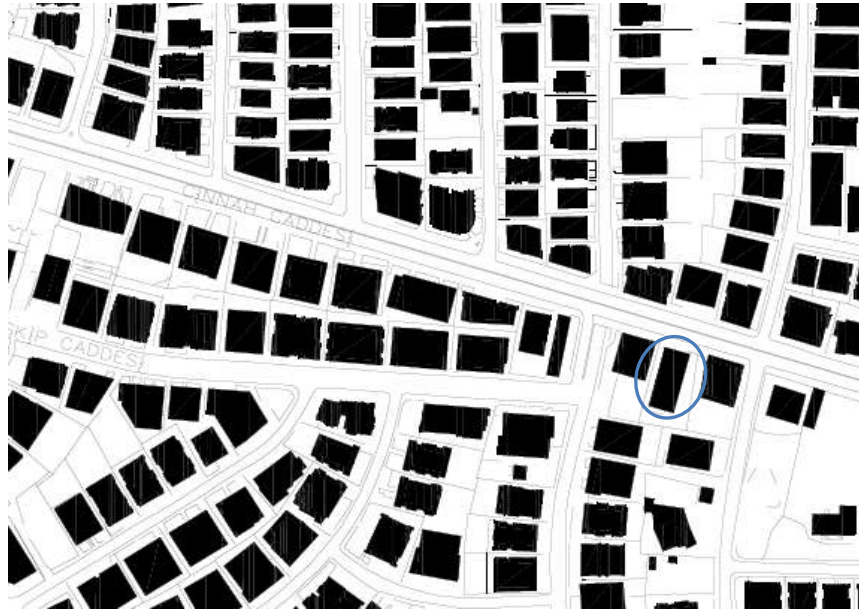


Figure 15- The residential morphology of the area, the main façade of Cinnah 19 converted to the side.



Figure 16- The main façade converted to the side



Figure 17- The rear façade, the roof garden



Figure 18- Semi-open corridors blending with the surrounding urban setting and nature

Ersin explains that he was inspired by Le Corbusier, Oscar Niemeyer, Lucio Costa, Edward Durrell Stone, among which Corbusier's housing blocks particularly interested him with regard to duplex apartments in a residential building. He aimed at creating equal living conditions for the residents. He was motivated by the housing complex in Marseille, as the building provides the dweller cozy flats and a comfortable way of life. In the façade design, he was inspired by Stone, who used white concrete grills in his buildings. In a modernist simplistic way, Ersin applied this idea as rectangles on the façade (Interview with the architect in URL: <http://dergi.mo.org.tr/dergiler/4/553/8277.pdf>).



Figure 19- Façade design of the building



Figure 20- Relation with the street, entrance of the building

İş Bank Buildings

The İş Bank Apartment Buildings were led by the İş Bank Civil Servants Building Cooperative. They are composed of 10 blocks, which were designed in three different types in 9 stories, ground and roof levels. They were located in three building blocks next to to each other (Figure 21). The architect Kadri Erkman paid close attention to the solid&void relationship on the block, and the vacant area between the buildings was conceived as a common place to be used by dwellers (Şumnu, 2017).



Figure 21- İş Bank Apartment Buildings

(Source: <http://sivilmimaribellekankara.com/YapiDetayi.aspx?anah=264>)

Street-Scale Analysis

The plot arrangement of the neighborhood has a rectangular form linearly arranged along the streets. The rectangular plots have almost identical sizes to host buildings of similar sizes. The buildings are all apartment houses in prismatic

forms, located on the plots with respect to setback distances and leaving semi-public open spaces in front of and behind them. They are all detached buildings purely aligned along streets.

The plots of the İş Bank Apartment Buildings, however, were merged to attain a communal space for the entire buildings of the cooperative initiative. The 10 apartment buildings are gathered in 3 building blocks next to each other. The buildings are located in accordance with the setback distances in the neighborhood, however, the way buildings come together is quite different than the others in the neighborhood which creates a dynamic solid&void relationship. They are positioned in a way to create common open places in each building block (Figures 22-24).

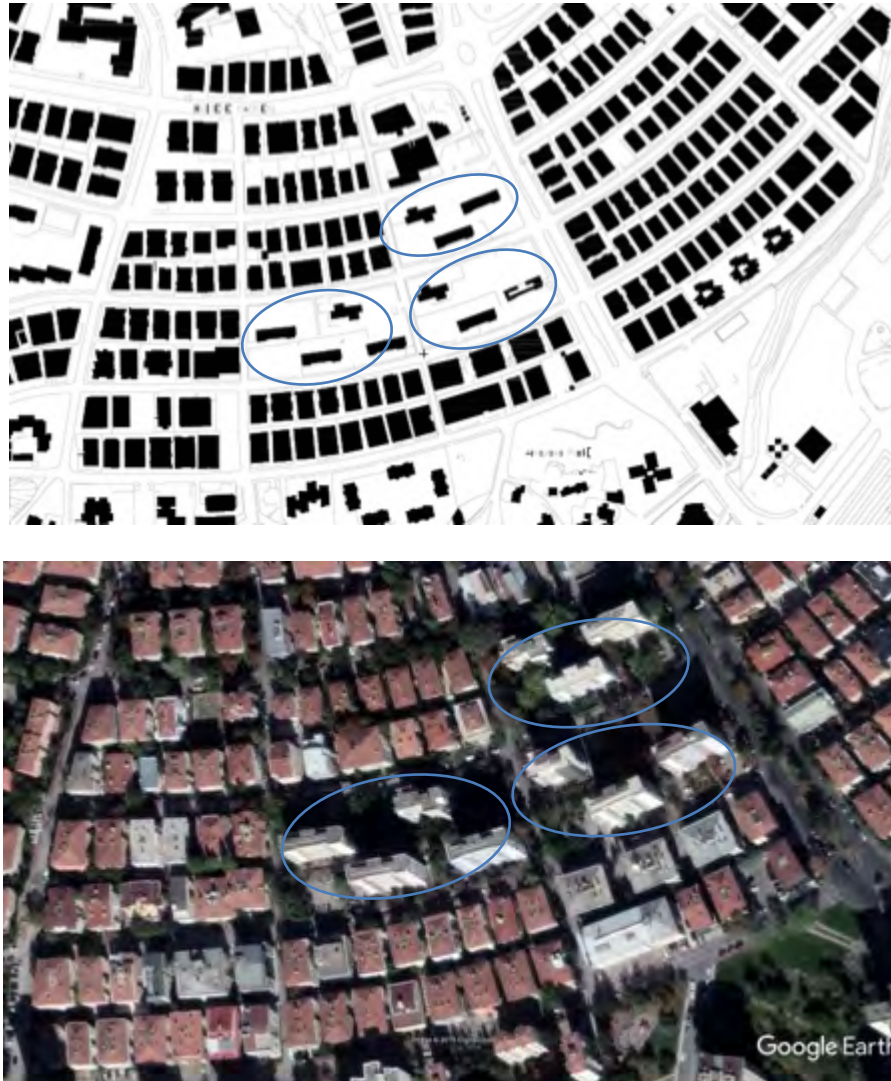


Figure 22- Plot and building arrangement (Google Earth image)



Figure 23- Open places for common use



Figure 24- Building entrance, relation with the street

Besides the green spaces between residential blocks, there are common places also for the dwellers in the individual blocks. Apart from being prismatic masses, the design of buildings is rather different than the others in the neighborhood following a Corbusian style. They are lifted from the ground as in the case of Unité d'Habitation, and ground levels are designed as open, semi-closed and closed common places (Figures 25-27). At the ground level, there is a closed area comprising a fireplace around which the dwellers could come together. The walls of the area are glass providing visual interaction with outdoors (Şumnu, 2017). At present, the ground levels of six of the blocks have been transformed to commercial spaces like patisserie, kindergarten and so on (Sudaş, 2010).



Figure 25-The buildings are lifted from the ground with pilotis.



Figure 26-Open space for common use at ground floor, creating visual continuity.





Figure 27- Open and closed social places at ground level, blending with the surrounding landscape.

Likewise, there are open, semi-closed and closed spaces at the roof level as common places. The roof gardens have been used for party organizations and sun-bathing purposes (Sudaş, 2010). The design of the roof garden comprises intensive use of greenery.



Figure 28- Roof level
(Source: Sudaş, 2010)



Figure 29- Silhouette of the apartments in the urban setting, roof gardens

Conclusion

Different dwelling layouts produce diverse morphologies in cities. This study has portrayed the development of apartment building typology in Ankara particularly after the 1950s, which were mainly characterized as multi-storey rectangular masses. These buildings, in a short time, constituted the main morphology of residential areas. The study has then discussed how different design approaches to housing within a streetscape can contribute to the urban image, and exemplified it in models similar to Unité d'Habitation. The study does not propose Unité d'Habitation or similar models as a solution for all contexts, however, as it inspired later generations in urban design and architecture, it portrayed the approach that the model has offered for communal life.

Plot is one of the basic elements in the overall morphology of cities, which are given definite urban codes in development plans, i.e. type of land-use, building codes, etc. This paper has illustrated how a design research on a residential plot can interconnect the internal and external spheres of a residential building, and contribute to the social life of its dwellers. The three cases are known as significant architectural elements in the city: Cinnah 19 is still a residential building, but it has also become a significant niche for artistic uses. There are art galleries, architecture and design offices in the building. Meanwhile, Hayat Building has become a landmark in the urban scene although it is a residential building. Ground level is used by private shops with the semi-public open spaces. İş Bank Buildings are in a residential area, and the way the plots are used provide larger green spaces for its users compared to the other dwellings in the area. Moreover the terrace level has strong visual connections to the urban scene, it allows the users to enjoy the external urban environment.

All these cases have interactions with the urban environment with their open and semi-open spaces, which are perceivable from outside. Besides, the design approach followed in these buildings gives them a characteristic effect, which distinguishes them then the others in the townscape. These cases have shown a design research for enhancing communal life within the residential building itself, and integrating with the urban and natural environment. They illustrate how design relations within the plot, transition from building to street level, and interactions with the surrounding area can enrich the urban setting.

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Research on renewal of leftover spaces based on multi-actor planning

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Abstract: Leftover spaces in cities are becoming a global issue. Having undergone significant changes in historical, spatial, political and socio-economical aspects, the number of leftover spaces has been increasing year by year. Now cities are facing the challenge of integrating them into their urban fabric. This research first focuses on worldwide cases that show the current approaches to re-use these leftover spaces, and then systematically classifies them according to their multi-actor planning strategies. The classification includes: diverse models (top-down, bottom-up, public-private partnership) by engaging with different actors at various levels of participation. China has its own urban renewal rules and policy system. Influenced by factors such as its state structure and economic system, China and the West have many differences. Based on the case classification that provide a worldwide overview and the real condition in China together with its existing needs, this study develops “City 360” platform as a democratic, multi-level planning tool and an innovative method to tackle the following problems in leftover space renewal process: simplification resulting in social inequality, information imbalance, resources/funds shortage and diversification encouraging urban complexity, inclusive planning. “City 360” turns the process of leftover space renewal from an urban simplification into an urban diversification, and responds to high-level challenges. Having integrated multiple actors into a participative process creates collaborative urban governance, which can balance the power among state, society and market, and maximize the cooperation in between government, private sector, community self-governing organizations, volunteer organizations and residents. This innovative, inclusive multi-level planning tool helps integrating development resources, promotes the vitality in developing urban communities. It aims creating a new level in Chinese urbanization, which has started with “traditional governance” and transformed into “multi-level governance”. The goal is now “traditional governance” to “governance” to “good governance”.

Keywords: Leftover Space, Multi-level Governance, Multi-actor Participation, City 360

1. Introduction

In late 1980s, when Thomas Trancik has first referred leftover spaces in his book “Finding Lost Space”, he was describing them as spaces “*that are in need of re-design, making no positive contribution to the surrounds or users*” (Trancik, 1986, p.3). Over years the issue of leftover space has not only generated series of definitions in worldwide (“*cracks in the cities*” (Loukaitou-Sideris, 1996), “*vacant lands*” (Pagano & Bowman, 2000), “*in between spaces*” (Hajer & Reijndorp, 2001), “*spaces of uncertainty*” (Muller and Busmann, 2002), “*slack spaces*” (Worpole & Knox, 2007),

“zombie properties” (Silverman, Yin and Patterson, 2013), but also comes in different aspects in contemporary cities. Their contribution to their surroundings and users varies in different cases, as contrary to what Trancik limitedly described three decades ago.

Spatially speaking the scale of a leftover space range between the building, plot, block or even to the neighborhood scale (Azhar & Gjerde, 2016). This can be so interpreted that, these spaces can take place in between, underneath, around or top of the buildings. They can be publicly or privately owned, but they can be also no man’s land that left abandoned for years. The examination of the leftover spaces has shown that they vary not only in forms, locations or their property types, but also in aspects that trigger them to happen. But why has the number of leftover spaces been increasing in recent years?

To answer this question is anything, but simple. It is only clear that leftover spaces are products of significant changes that cities have undergone in historical, spatial, political and socio-economical aspects. That’s why in a German city a leftover space can be a potential tool for opening new discussions to address urban shrinking (Dubeaux, Cunningham, Emmanuèle, 2017), but on the other hand the same spaces can turn an economic fallacy for a neighborhood in USA into an effective financial strategy to flourish again (Forbes, 2012). In UK, for example, leftover spaces can be developed to evoke the property owners that stuck into current real estate policies (The Guardian, 2018). Or in Kuala Lumpur they can trigger series of public space activities by transforming the “unsafe” into “livable” as Jane Jacobs emphasized the importance of the need “eyes upon the street” decades ago (Zaman et.al, 2012). All these cases from various parts of the world show that leftover spaces can be conceptualized in different locations with diverse motives and aims. Although they may have different political and socio-economical systems, the global perspective of this issue has a great potential to offer possible interactions between cases when it comes to realization.

China, on the other hand, separates itself from other countries regarding the ways of dealing with leftover spaces. China has its own urban renewal rules together with its own urban policies. Given to its state structure and economic system, it is clear that China and the West have many differences. However, recent economic reforms and drastic shifts in the structure of Chinese government allow us to think about the possibilities to envision new levels of participation and communication in urban planning.

This paper aims to investigate new planning strategies, which can be developed by engaging with different actors and levels of participation in order to integrate leftover spaces into urban settings of Chinese cities. First, it focuses on worldwide cases that show the current approaches to re-use these leftover spaces, and then classifies them as models according to their multi-actor planning strategies. These diverse models include top-down, bottom-up, public-private partnerships and collaborations, which bring together government, private sector, non-profit organizations, academia, artists and locals. By linking this assessment of case studies with Chinese urban situation, the paper focuses on the current climate in China in terms of dealing with increasing number of leftover spaces. Following that this paper introduces the project “City 360”, which aims creating a new level in Chinese urbanization by integrating multi-level planning tools in the light of analytical interpretation of worldwide cases.

2.1. Literature review

Having critically analyzed the current approaches in the literature, it is seen that the main focus has been mostly on the ways of reusing leftover spaces by emphasizing its design elements. But in the absence of constructive planning tools together with the participation of multiple stakeholders, only design itself may not be sustainable. In order to reveal the critical role of participation and communication at various levels, this literature review focuses on a historical overview of transforming / governing leftover spaces in cities.

In 1998 Barry Wood looked at four European countries in terms of approaching leftover spaces and their development. Although the study was conducted nearly three decades ago, he concluded his study something very global by noting, “the causes of vacant land are clearly seen to be changing, and most importantly not declining” (Wood, 1998). Based on his study, the emergence of leftover spaces could be driven by suburbanization, deindustrialization, migration, inefficient allocation of goods and services in city (Wood 1998; Bowman and Pagano 2000). In the context of Europe, by the 1980s the populations of European cities, where the industry had dominated for years began to decline. According to Haase et. al, approximately 40% of European cities were losing population and experiencing de-densification, which let the emergence of leftover spaces (2014). During mid-80s in Germany there were about 25 million square meters, 22 million were in Britain, 10 millions in the Netherlands and in Italy about 6.4 million brownfields were listed as vacant (Errigo, 2013).

Given the fact that the traditional planning tools in Europe has been zoning and master planning, which meant big financial capital and non-flexible process of implementation, managing leftover spaces in modern world needed innovative strategies (SUC, 16). Instead of having a concrete plan, it is seen that transformation of a leftover space could adapt itself over the process, with the participation of users and other stakeholders. Transforming the abandoned Cable & Wire Factory district (KDAG) in Vienna, for example, has started in 1998 with the aim of creating a new and improved image for the district and finalized in 2007 by becoming one of the good examples for changing the understanding of managing vacant spaces (Pamer, 2007).

Meanwhile in Germany dealing with these leftover areas in cities has taken place much later than acknowledging them. In 1994, Firebrace in his book “Jasmine Way” mentions, “*The existence of these vacant spaces has never been officially acknowledged. On the city map they were covered over with fictitious streets, reflecting of the shame that Berlin is not like other cities with their respectable centers*” (Firebrace, W., 63-66). In 2006, 14,4% of Berlin's urbanized areas was classified as “vacant spaces” (Colomb, 2012). Given the fact that Berlin among other German cities found itself in a big financial burden after World Wars, these vacant areas needed to be not only acknowledged but also developed. 2001-2003, a group of architects and urban planners, known as Urban Catalyst, has started to investigate the potential of transforming these vacant spaces as temporarily. Berlin was one of their case studies and in 2007 together with city officials in Berlin they have initiated a conceptual plan by emphasizing high social and economic value of leftover spaces for the city (SenStadt, 2007). In other words, they emphasized the image of Berlin as a “creative city” by revitalizing these leftover spaces for short-term uses.

Years later, as one of the biggest urban projects in Germany, Hafencity, came to the attention. The country had been suffering from deindustrialization since mid 1980s and that's why this huge port

area needed to be developed in a way that the needs of residents should be fulfilled. Hafencity began as a master plan, which was very familiar to European traditional zoning and planning tools. However, in 2010 a revision on eastern district of the project took place, where it has been originally determined for a concrete development. The city officials have decided to leave the space open to temporary and innovative uses in the light of local needs (Urban Catalyst, 2013). Once again, the renewing the leftover spaces for temporary use by taking the local needs seriously became an urban strategy for a city.

Starting from 1960s in United Kingdom the issue of leftover spaces has developed differently than other European cities. Under severe housing crises, the “Squatting Movement” which refers claiming possession without being owner of area started in London first and then spread to other boroughs (Bosetti, 2018). Given the fact that 30,000 people lived in squatted accommodation in UK for years, it would be not wrong to say that the aim of using leftover spaces became a part of urban history (Bosetti, 2018). A current report shows that across the city the vacant lands, which were left abandoned for six months and more reaches up to 2,700 hectares (Sullivan, 2018). Having underestimated the risks of leaving the areas empty and lacked of effective planning tools to improve the quality of space becomes the main reasons to end up the raising numbers for leftover spaces across the country (Bosetti, 2018). Although UK has also acknowledged the fact that renewing leftover spaces brings many improvements into city life and city economy, still there are some challenges to tackle. According to this report from 2018, it is seen that city officials has to step in by engaging the role of “mediator” and begin more effective to convince the landowners about the potential of re-using these spaces as “meanwhile spaces” (Bosetti, 2018).

While Europe has been dealing with its vacant spaces by implementing more “dynamic” and “effective” urban planning tools, USA on the other hand, needed to deal first with the diversity of its leftover spaces, which came into different types and characters in all over the country (Pagano and Bowman 2000). Cities such as Detroit, Michigan and Baltimore, Maryland have been going through similar post-industrial phase, as many European Cities in mid 80s. However, the issue of leftover spaces was also very vivid when it comes to growing cities such as Phoenix Arizona, which has had 43% land vacancy after its population increased by 55% (Pagano and Bowman 2000). The biggest challenge for USA has been the necessity to deal with each city with its own rates of population and land area growth by analyzing its abandoned structures and asking customized questions (Pagano and Bowman 2000).

According to a current inventory of vacant land and structural abandonment in United States conducted in 2016, the most commonly referred reason for increases in vacant areas is the lack of reinvestment of capital. Suburbanization and deindustrialization were following as the leading causes of vacancy since 2000 study by Pagano and Bowman (Newman, Bowman, Kim, 2016). The 2016 Study also shows that the main reasons of decreasing leftover spaces are linked to growing local economy and city policies to reuse them (Newman, Bowman, Kim, 2016). Acknowledging leftover spaces as a potential to create a growth in local economy has been gaining ground in some American cities, such as Chicago. It is seen that traditional ways of generating this growth by providing tax incentives for new business, are no longer financially viable, instead “locally inspired” public spaces, which generated for the quality of life shows that it has a real effect on local economies (Forbes, 2012). Place making Chicago, for example, have been implementing temporary projects to turn

leftover spaces of various neighborhoods into community gardens or art exhibitions together with Metropolitan Planning Council and local residents (Placemaking Chicago, 2018).

Another good example is an organization named as 596 Acres in New York City. The organization defines itself as a community land access advocates, who believe that residents should have a say over how or who use the lands in their neighborhood (596acres). One of their projects was about turning a vacant lot into a community garden, where local residents can socialize in a community space (Kennedy, 2014). The initiative itself sounds not so unfamiliar for New Yorkers, given the fact that in the United States during economic fallacy and two World Wars, gardening in vacant lots was one of the efficient ways to create less depressive environments especially for unemployed people (Drake and Lawson 2014). However in this case the most valuable contribution of this initiative is to provide a “mediation” service for locals, who has difficulties to reach the right information and right people in city government agencies (Kennedy, 2014). In other words, this initiative fills the gap between urban policies and the local residents in a way that both government and other non-profit organizations have certain challenges to manage.

The issue of vacancy in Japan differs from Europe and USA. Except the metropolises such as Tokyo, Osaka and Nagoya, Japanese cities have been facing population loss for the last decades (Sakamoto et. al, 2017). The migration from small regional cities to large cities with the aim of having better opportunities and rapid economic growth were two main reasons for an increase in vacant land in the country (Sakamoto et. al, 2017). At political level the role of local governments in Japan has becoming very prominent, when the central government implemented the decentralization process at local level and lately most of Japanese local governments took legal actions to push the owners of vacant properties for an appropriate management (Takamura, 2015). It starts with creating a council authorized by central government in order to identify the vacant areas and its owners. Then the process continues to obligate the property owners to take an action to refurbish these areas. In the cases of not finding the real owners or not seeing any action from owner’s side, the local government has right to demolish or refurbish by its own terms (Stroud, 2015). Although the local governments receives more power over urban development, civil society was still weak and fragmented in a way that it had little influence on urban issues that concerns locals (Sorensen, Koizumi, 2009). In response to top-down central planning, which put more priority on economic growth rather than quality of life, the role of community building or in other words “town building” became more dominant on developing urban neighborhoods in Japan. Regarding vacant, leftover spaces in urban settings, community groups together with local residents and non-profit organizations have started to take actions in order to reuse these areas for the benefit of neighborhoods (Sorensen, Koizumi, 2009).

As similar with some Japanese cities, many African cities have been also rapidly urbanizing, yet the pace of their planning is still behind the city growth (Haas, 2018). As cities grow, such as Kampala, they don’t show the type of density that a productive city requires, but low-rise buildings and great urban sprawl (Haas, 2018). As a result of that, many African cities have been tackling the issue of leftover spaces, which remain for years unbuilt and undeveloped. The reasons of this emergence can vary. In some cases unclear ownership can be the main reason, why the land is being left as undeveloped. The urban land can remain also vacant to produce speculation for its price or the reason can be simply the lack of financial resources to properly develop them (Haas, 2018). Lately in Kampala it has been considered to tax these vacant lands in city at a higher rate in order to encourage the property owners for a further development (Haas & Kopanyi, 2018). This means, if there is still no

development after a certain time period, the city can legally reclaim the land. Although there are some good examples in the world, such as Bogota, where this kind of taxation works in favor of efficient use of land, the reasons why these leftover spaces have emerged in the first place and the motivations of developing these spaces for users need to be deeply analyzed (Haas, 2018).

China, on the other hand, has been dealing with its own urban transitions under the influence of its politics and economy. In China urban land belongs to the government, as a means of production by Chinese socialist state planning. Urban economy, on the other hand, has been controlled by state-owned initiatives, which were strictly controlled by the state (Zhu, 2004). This central planning, which has dominated the country for almost 30 years, has transformed into more compact and market-oriented planning as a result of the economic reforms and institutional change in 1980s (Lin, 2009). The decentralization in economy has led also a political decentralization, which means more financial power to municipal local governments (Chen, Gao, Chen, 2016). In the meantime, Chinese urban growth has begun to accelerate dramatically as a result of new economic reforms and the “open-door policy” in 1978, which aims to utilize foreign investment and engage in international trade (Chen, Gao, Chen, 2016). All of these developments and the rural to urban migration in the country have a big impact on shaping the Chinese urbanization process. Urban expansion or in other words “urban sprawl” correlates with economic growth very strongly in China. It means that local municipal governments are having strong motives to promote the economic growth by using land leasing as a tool to generate revenue (Fang, 2016). This desire of local governments to increase the amount of buildable land by converting the land from farmland without any compensation can be seen as a main driving force of urban sprawl in China (Fang, 2016). As a result of this process, it is not a surprise to see that China has been also dealing with vacant, leftover spaces, which remained as undeveloped for years. And developing these spaces based on needs of local residents comes not as a first priority under the current political influence. The politically centralized planning system in China is in a way very fragmented, complex and overlapping among different agencies at different levels of government (Evans, 2004). In other words developing an area means a competition between these different agencies and that means the whole process lacks users’ input. To be able to reuse these leftover spaces for the benefit of users requires a change in current Chinese planning tools.

2.2. Models of action for renewing leftover spaces

The literature review leads us following models regarding the renewal of leftover spaces. In the light of global overview on this topic, each of these managing/planning models is developed based on different intentions and execution patterns regarding its various needs and organizational structure. Considering this global categorization together with Chinese context, understanding these models sheds light on new possibilities in Chinese urban planning tools and new lessons to learn in governing leftover spaces in China.

Community driven model:

Community driven model for renewing leftover spaces in cities can be initiated, when a community or individuals in a neighborhood identify an unused, leftover space as an unproductive, unutilized, or in some cases criminal to the neighborhood (Kremer & Hamstead, 2015). Transforming such spaces needs some additional tools or third parties to make the process of evaluating the land potential easier. Non-profit organizations, for example, play a crucial role to provide contextual information to

individuals or communities by using online mapping platforms or organizing local gatherings (Kremeretal, 2015) (Figure 1). The initiatives from USA, including 596 Acres or Better Block, can be seen as good examples to encourage locals to integrate more into developing process of vacant lands in their neighborhood by providing needed materials or guidance. In these examples, it can be also seen that the focus is mostly on short-term developments, which refers temporary use or in other words “tactical urbanism”, which means “*low-cost, minimum effort, temporary interventions that improve the livability and aesthetics of local neighborhoods*” (Lydon, & Garcia, 2015). Taking the example of Japan, the power of “community” can be the main driven force for developing vacant spaces in city by considering the real wishes and problems of local residents. The cooperation between the communities and the government does not only improve public efficiency, but also reduces the burden on the government by solving tasks. In this process, residents have gradually deepened the relationship between each other because of their high level of participation and self-determination, and can cultivate a team belonging to the community itself, and play a virtuous circle (Kikusawa & Kondo, 2017). Without formulating any “end result”, which has been very uncommon in any traditional city planning tools, creating livable spaces with the participation of community has become one of the important models for reusing leftover spaces in cities.

What can be reflected on China in terms of managing leftover spaces in urban settings is to acknowledge the changes in understanding of urban management. As Urban Catalyst, a group of architects and designers from Berlin emphasizes, now “*the focus is not on urban design, but urban use* (Urban Catalyst). What that means in our contemporary cities is to let the decision of how to use vacant areas to local communities, in other words actual users. And very different from top-down planning tools, the main aim is not push people to follow certain master plans, which were mostly prepared in favor of economic growth rather than quality of life, but to create an interactive platform, where all the stakeholders can meet, discuss and decide together.

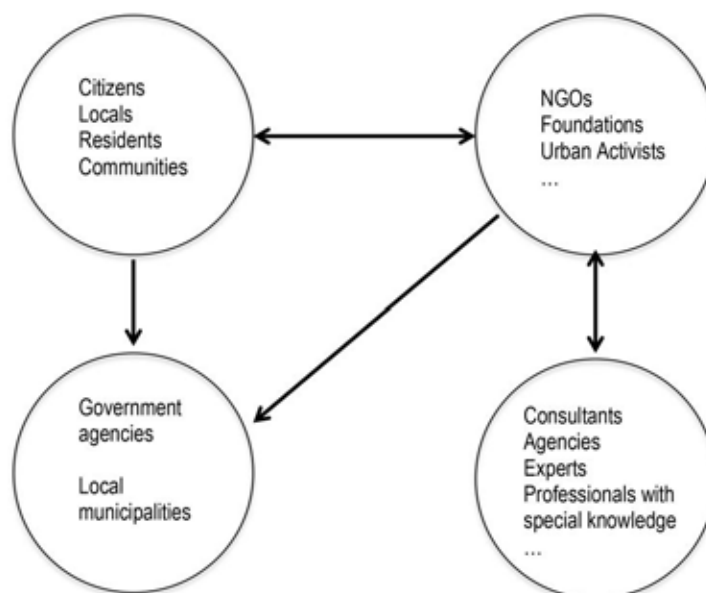


Figure 1. Community driven model

Source: Author

Government driven model:

Government driven models have become very common strategy in managing leftover spaces, especially in Europe. Based on the current examples of this model, it is seen that the scale of the projects extends and time of usage is mostly considered as long term.

The planning process happens, where government takes the role of “mediator”, rather than “decider”. Given the fact that the traditional planning tools as master plans have been applied in Europe for years, dealing with leftover spaces with an innovative strategy can be considered as a big step. This paradigm change in development of leftover spaces can be seen in many other current projects in Europe, which have been initiated first by government and been delegated to various agencies, non-profit organizations and related foundations. And for these projects the government was playing not the role of decision maker but the role of “mediator” in between various organizations, agencies and local residents. This role of mediator can be also interpreted as an “enabler”, where the government starts enabling the communication between different parties and stakeholders (Figure 2). And in some cases the government enables the impact of property owners by helping them financially in order to manage their vacant lots (Urban Catalyst). Hafencity in Hamburg, where the government decided to leave the space open to temporary and innovative uses in the light of local needs (Urban Catalyst, 2013) or Urban Living Lab initiative in Amsterdam, which creates a platform to connect multiple stakeholders from multiple organizations and expertise, while the users play an active role as co-innovators in the process can be good examples to understand this new role of government (Westerlund & Leminen, 2011). This planning model basically ensures not to let government dominate the planning decisions by providing top-down projects, which is mostly not prioritizing the needs of local residents and let residents or in other words “users” to play an active role.

The most important input from these examples for Chinese context can be the balance in “intervention” of governments. Although government agencies/city officials seem to be initiators for those long-term big scale projects, it is clear that the aim is not to dominate the process in a way that they might compromise the “multi-actorness”. The cooperation between residents and various organizations together with urban experts/professionals becomes a vital element in order to sustain planning process.

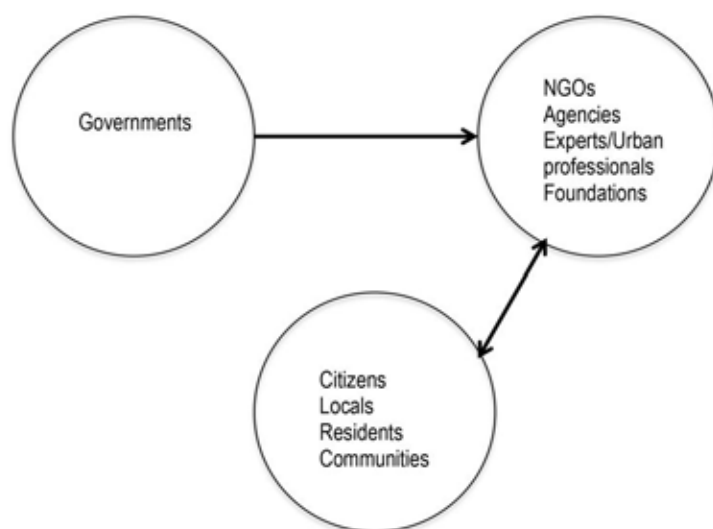


Figure 2. Government driven model

Source: Author

Artist/Designer/Architect-driven model:

In this model of renewing leftover spaces in cities, the main initiator happens a local artist, designer or an architect as a local resident or urban activist, who concerns about his/her neighborhood (Figure 3). It can be a temporary action to reuse the vacant lots in city, as in Berlin, where this “temporariness” becomes an urban strategy to promote the city. For example, Spacebuster, an art project from Raumlabor, aims to explore the qualities and possibilities of vacant lands in city (Raumlabor). It is a mobile inflatable structure – a portable, expandable pavilion, which creates a space for almost 80 people and organically adjusts itself to its surroundings (Raumlabor). This womb-like space created by artists becomes capable of transforming any one of the cities’ inhospitable, abandoned, leftover spaces into a gathering place. On the other hand, this model can refer a long-term action, which aims not only to reuse leftover spaces in favor of locals, but also to change the character of a neighborhood. In the case of Cohen Alley, in other words Tenderloin National Forest in USA, an artist, who was later supported by locals, citywide and national organizations aimed to turn crime filling leftover public space into world’s smallest “forest”. The process took almost 9 years to complete but with this initiative, over the last three decades, this dead-end alley that once stored dumpsters has been transformed into a thriving arts space (Hulkower, 2012).

What it can be reflected on China is to acknowledge the impact of designers, artists and experts, who has knowledge to provide contextual information and guidance to develop leftover spaces by collaborating with local residents and communities.

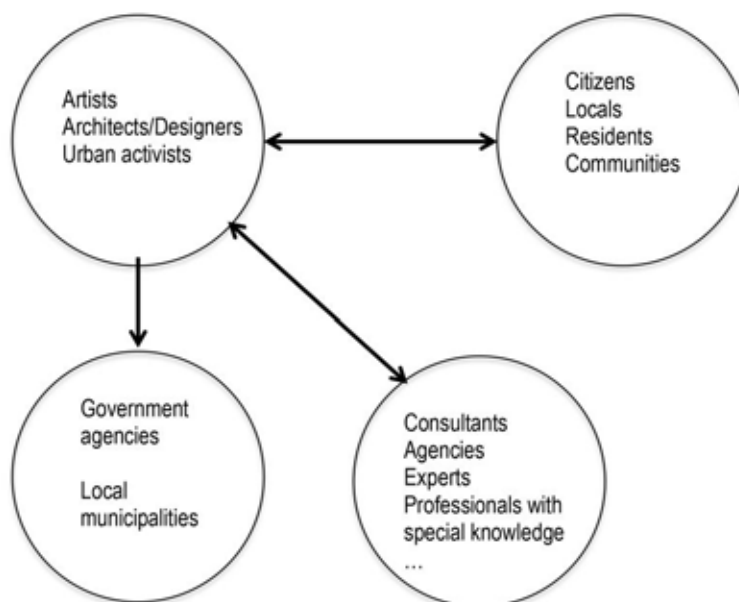


Figure 3. Artist/Designer/Architect driven model

Source: Author

3. China mode

In the light of above case analysis and classification, this part presents first the problems that China faces, and latter a suitable model that the country can adopt in terms of dealing with leftover spaces.

3.1. Problems in the process of China's leftover space

(1) Power conflicts between the state, society, and the market

China has promoted community governance for more than 30 years (Fulong Wu, 2003). Resident autonomous organizations and voluntary community organizations are maturing, and enterprises are also improving the level of public services. The enthusiasm of community residents to participate in community governance is improving. However, in the current process of leftover space renewal, the power allocation of the powers of the state, society and market is not standardized

(2) "No distinction between political and social organizations"

As mentioned in case study, there are many subjects that can participate in the process of over space transformation, which is seen worldwide. However, in China, street offices and neighborhood committees are two different entities that represent the country and society. The street office can be understood as a grassroots government and belongs to the state dispatching agency. The neighborhood committee is an institution formed by the people's self-government or democratic management. In Chinese cities, the community exists in the form of a neighborhood committee, which is an autonomous organization of residents and accepts the leadership of the street office.

However, the government has led most of community renewal. The street offices overcharge a large number of work in the neighborhood committee. It also indirectly leads to fewer participants (Liu Zekun etc,2018).

(3) Lack of entire process renewal

China's current leftover space renewal model has a long process and a long period of time. The participants in each stages are different and the information transmission efficiency is low. After the completion of renewal, there is a lack of follow-up supporting service tracking. And the continuity after renewal is poor.

3.2. Problems of actors in China's leftover space renewal

3.2.1. Supply side cannot function

Government departments, private departments, designers, community self-governing organizations, volunteer organizations, university students, etc.

(1) National power represented by the government and the neighborhood office

For the grassroots city managers, updating the leftover space actually faces a relatively contradictory situation. On the one hand, the higher-level government has issued tasks, and the grassroots managers are willing to solve the problem; on the other hand, they lack professional knowledge and lack

communication channels with professional designers. At the same time, due to issues such as the annual budget approval process, they also face the problem of limited budget and cost control (Li Xiao, 2018).

(2) Social forces represented by community self-governing organizations, volunteer organizations, and university student service teams

At present, the cultivation of volunteer organizations participating in community governance in China is not in place because government departments and officials have become accustomed to “governing by government” (Zhouxiang, 2017). Volunteer teams and public service groups are unable to communicate with residents in the community, enter the neighborhood office to communicate with staff, or coordinate the work of different departments.

(3) Market forces represented by designers and the private sector

In the process of updating the leftover space, on the one hand, developers still tend to take orders for large-scale projects instead of small projects like leftover space. On the other hand, the designer's information source is not sufficient. On this basis, the designer is not satisfied with the project itself and the entrusted income.

In the face of the above problems, information gaps between multiple parties have led to inefficient communication and unsatisfactory results. At present, some large cities in China have a certain foundation for the use and transformation of leftover space, but there is no deliberation.

3.2.2. The demand side (resident) opinions are not fully heard

The autonomy of the four types of participation increased in the following order (Table 1): mandatory participation, guided participation, spontaneous participation, and planned participation, and the impact on the formation of community communities was weak to strong (Yang Min, 2007). During the current period of leftover space renewal in China, public participation is still in its infancy stage, staying in the stage of mandatory participation or non-participation.

Participation content [□]		Participate in the decision making process [□]	
		NO [□]	YES [□]
Public issue [□]	YES [□]	Mandatory participation (welfare participation) [□]	Spontaneous participation (recreational participation) [□]
	NO [□]	Guided participation (voluntary participation) [□]	Programmatic participation (equity participation) [□]

Table 1. Types of Urban Community Residents Participating in Community Governance

Source: Yang Min. Community as a unit of national governance [J]. Sociological Research, 2007 (4).

It can be seen from the analysis above that in the process of renewing leftover space, each subject faces various problems, further deepening social inequality, information imbalance, resource/finance shortage, and causing various subjects to be unwilling to participate (Yamazaki,2019).

4 city 360

The general conclusions that can be drawn from the cases (1) the coordinated management of urban communities should promote the development of community non-profit organizations; (2) effectively enhance the participation of community residents; (3) broaden community governance Source of funding.

4.1. Project

Faced with this, we creatively proposed a full-process leftover space renewal plan--city 360(Figure 4) based on the core value of 360-degree repairing the city and created a knowledge sharing and business platform -- city 360 platform to provide services in the community. City 360 team has built a knowledge sharing and business platform -- city 360 platform to provide services in the community.



Figure 4. City 360-a democratic, multi-level planning tool and an innovative method

Source: Author

City 360 platform (Figure 5) has several prominent features, such as upload on the spot, design guidelines, database and product library. Using GIS technology, users can upload photos to the platform, submit transformation requirements in real time and make specific positioning. The team integrated to create the design guidelines of leftover space, from aspects of safety, green, vitality and wisdom, which the output design is based on. Database refers to a large number of design drawings, most of which come from the resource database of Tongji university. Through parameter screening, suitable schemes can be quickly found out. The product library is a collection of fabricated building fittings that the team researches and develops, which will be described later.



Figure 5. City 360 platform based on big data and artificial intelligence

Source: https://www.city-tech360.com/city360_web/

The platform, whose main forms are website and WeChat applet, can play a role in every stage of transformation. In the early stage of the renewing process, the platform can match the subjects of the leftover space renewal online, provides them with communication channels, and identifies the needs of the transformation. In the design stage, the introduction of artificial intelligence technology enables the realization of intelligent design. After several simple multiple-choice questions (Figure 6) finished, the platform can immediately output design drawings that meet users' requirements. During the bid evaluation stage, residents can vote on the proposal through the platform (Figure 7) In the later process of construction and use, each participant can also continuously supervise and track the transformation through the platform (Figure 8). City 360 did the following work.

With artificial intelligence, anyone can design their own distortion space

Artificial intelligence design

Using the artificial intelligence method to automatically design the scheme that Party A wants, the designer can directly design according to the design scheme of artificial intelligence to improve the design efficiency

Design your own deformed space transformation program

Select Distortion Space Size

How many times the existing space is distorted?

☐ Largest (100-200%)
 ☐ Medium (20-100%)
 ☐ Smallest (10-20%)

Select Distortion Space Form

What is the shape of the distorted space?

☐ Line
 ☐ Surface
 ☐ Solid

Select Distortion Space Properties

What is the main function of the distorted space?

☐ Commercial space
 ☐ Residential space
 ☐ Public space
 ☐ Office space
 ☐ Entertainment space

Choose the design service life

How long will the distorted space be used?

☐ Less than 10 years
 ☐ 10-20 years
 ☐ 20-30 years
 ☐ More than 30 years

Selecting zero space

How many zero spaces are there?

☐ None
 ☐ Several

Select Distortion Space Location

Where is the distorted space located?

☐ Urban Center
 ☐ Urban Edge Area
 ☐ Suburban Center
 ☐ Suburban Edge Area
 ☐ Rural Center
 ☐ Rural Edge Area
 ☐ Waterfront
 ☐ Airport
 ☐ Station
 ☐ Park
 ☐ School
 ☐ Hospital
 ☐ Government Office
 ☐ Religious Site
 ☐ Cultural Site
 ☐ Sports Site
 ☐ Industrial Site
 ☐ Commercial Site
 ☐ Residential Site
 ☐ Public Space
 ☐ Green Space
 ☐ Water Space
 ☐ Sky Space
 ☐ Underground Space
 ☐ Other

Select the environment where the distorted space is located

What is the surrounding environment of the distorted space?

☐ Natural Environment
 ☐ Urban Environment
 ☐ Rural Environment
 ☐ Other

Select the function needed to distort the space (multiple selection)

What is the function of the distorted space?

☐ Shopping
 ☐ Living
 ☐ Working
 ☐ Playing
 ☐ Learning
 ☐ Other

[Submit the design](#)

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Figure 6. Simple Multiple-choice questions on City 360 platform, which assists Community autonomy

Source: https://www.city-tech360.com/city360_web/



Figure 7. City 360 APP generated plan map for residents to vote

Source: https://www.city-tech360.com/city360_web/

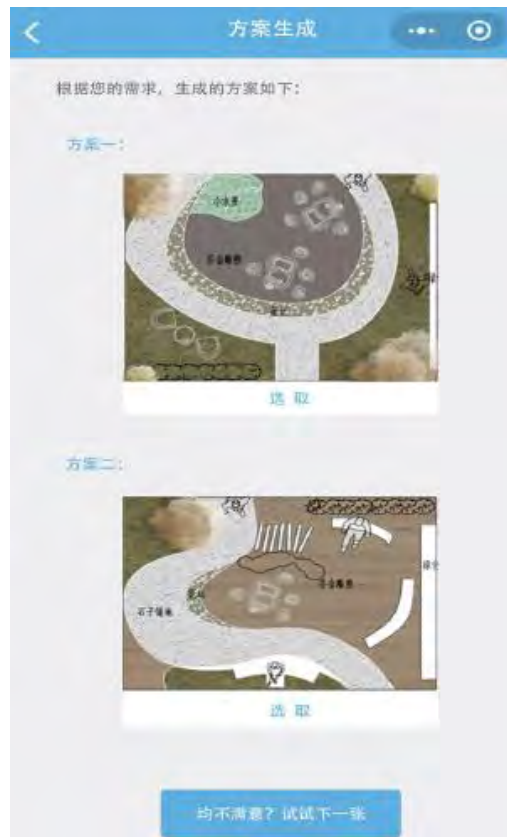


Figure 8. City 360 platform assists whole process of leftover space renewal

Source: https://www.city-tech360.com/city360_web/

4.2. Project Innovation

(1) Full-process services

City 360 creates a full-process service on activating leftover space and proposes an innovative business model with reference value to the industry. City 360 will transform the entire process data and feedback data into the database, and continue to follow up on volunteer activities and internships in the space.

(2) Introducing artificial intelligence

Considering the cost limitation, time limit and professional limit of the leftover space modification, City 360 introduces artificial intelligence technology in the design process. Combining with the existing cases and using the structured processing, the method forms a self-contained database for machine learning, so as to realize an intelligent design process from the input of the transformation

scenario and the transformation requirement to the output transformation scenario, which brings more possibilities for leftover space.

(3) Assembled environmental protection modules

While providing full-process services for transformation, City 360 independently developed a number of building assembly molds (see Figure 9), materials and finished products for use in leftover space transformation.

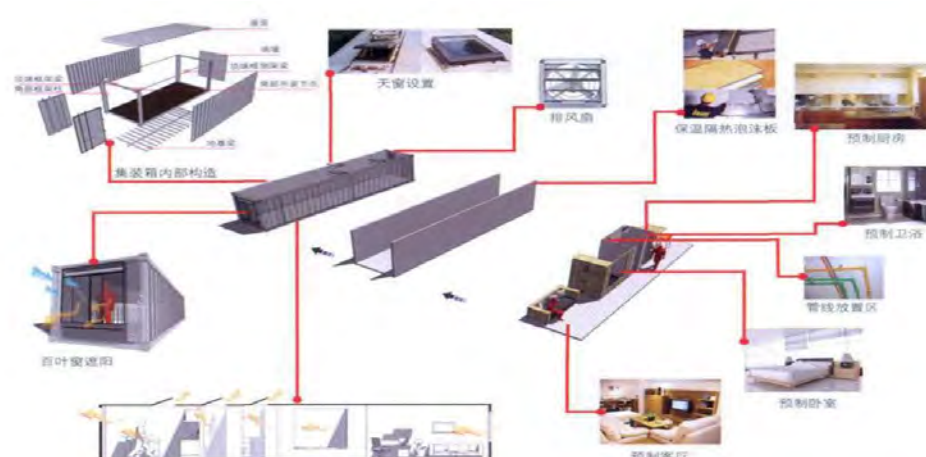


Figure 9. Application of prefabricated building products

Source: Author

(4) Improving employment

City 360 creates a teaching application scene in the whole process of transformation, introduces college students into social practice, and helps college students understand the industry situation, cultivates the professional quality of college students, and promotes the goal of adapting college students' talents to meet social needs, thus improving the employment quality of college students.

(5) Multi-actors cooperation

The full-process service described by City 360 is actually an innovative cooperation system that conforms to "Government-Industry-University-Institute collaboration". It is a systematic cooperation of production, learning, scientific research and practical application by the government, users, enterprises, universities and scientific research institutions. (Lei Xiaoping *et.al*, 2012)

4.3. Multi-actors participation

4.3.1 Power balance

China is shifting from a "strong state-weak society" system to a "strong country-strong society strong market." As an auxiliary force, City 360's starting point is from a public welfare perspective. It mobilizes the enthusiasm of the corresponding stakeholders, maximizes the needs of all parties,

alleviates the conflicts of interests among the multiple subjects, realizes the coordinated management of the community in the three dimensions of government, society and market, and jointly strengthens community building and promotes the integration of community resources.

4.3.2 Cooperation between multi-actors

From the perspective of successful experience, the leftover space update mode has been transformed government independently responsible by the early period, into multi-actors collaboration between the government, community self-governing organizations and non-profit organizations. (Wang Chenghui, 2018)

The leftover space renewal involves multiple interest groups, such as government, street offices, designers, and local residents. These groups have different demands for space. (Xu Leiqing etc, 2017) City 360 acts as a non-profit organization to integrate multi-actors cooperation (Figure 10).

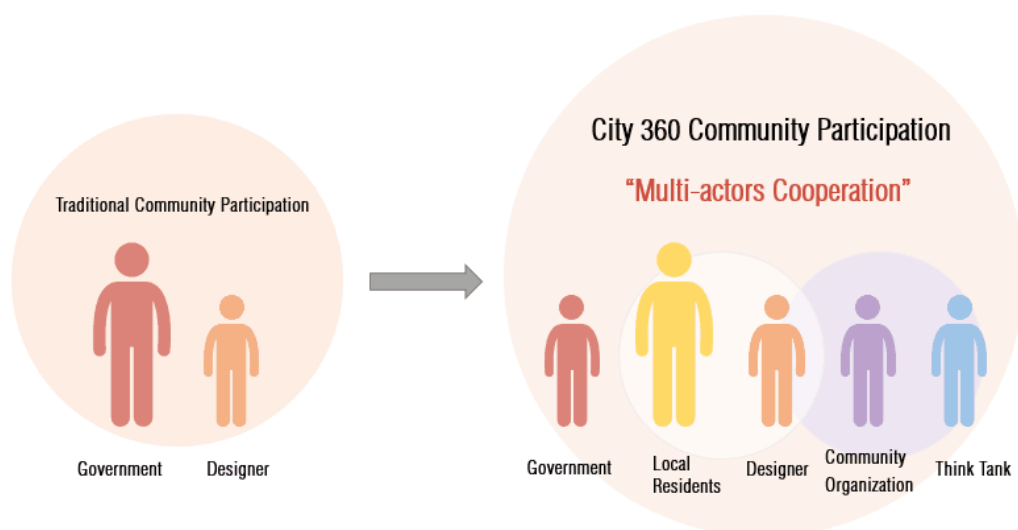


Figure 10. City 360 Community Participation

Source: Author

(1) National power

The City 360 team platform assists the grassroots city managers in contacting the designer team and checking the project, while this model can also introduce competition from the construction team to reduce costs. In this way, the city 360 team has played a very good role as the third party, allowing the grassroots government to get the desired design and service to the people in a short time and low cost.

(2) Social forces

The commonweal of the City 360 is not only reflected in the service of residents, the renewal of the city, but also in the platform of the university, serving on the students. The company team introduced the college student group into the role of “designer”. At present, the company has carried out a series of small-scale community renovation activities. On this basis, joining the strength of student volunteers will also help foster community self-governing organizations and foster volunteer organizations. At the same time, the platform also helps to create a teaching application scene, serving the teaching and research, and is highly praised by teachers and students (Figure 11).



Figure 11. Fosters community volunteer team to work with local residents in Xuhui, Shanghai

Source: Author

(3) Market forces

The City 360 can match the designers to the projects they want to do, and promote designer's work in the community to raise awareness, and get the opportunity to continue working with government agencies. In addition, through cost control, designers can also get a reasonable reward. It is a win-win situation for designers to improve their visibility and reduce costs while increasing visibility.

4.3.3 Resident satisfaction

Community residents are highly praised in the renewal of completed projects. At present, City 360 has realized the process from mandatory participation to guided participation, and is continuously implementing spontaneous participation of residents. Through the above series of simple and feasible methods, the team is not only strengthening the public participation awareness, so that they are willing to participate in the activities or affairs of the distortion of the space transformation, but also gradually exert their supervision role on the community public decision-making, to finally achieve the ultimate goal -- community autonomy (see Figure 12).



Figure 12. Spontaneous participation of local residents in Yangpu, Shanghai

Source: Author

5. Summary

City 360 promotes multi-actors integration in the whole process of leftover space renewal, ensuring the technical and economic rationality of project operation. The government can get out of the heavy project management. While reducing the financial burden for the government, the choice of designers and design teams is broadened. The whole process introduces college students to participate in the design, improve the practical skills of college students, and realize the integration of production and education. At the same time, the team assisted in the establishment of a residential hearing system to promote residents to become the main body of distortionary space transformation and urban governance. The city 360 team public welfare project is used as a carrier to stimulate the vitality of social organizations. Through this series of practices, the problem of proactive discovery is finally achieved, and the city is refined and intelligently managed (Figure 13).



Figure 13. City 360's Full-cycle Logic

Source: Author

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City as a transformational tool. The infinity cities of Ivan Leonidov

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Abstract: During late '20s and early 30's, the debate on the masterplan of Moscow, on its architecture as the capital of the Workers' Promised Land and, by extension, on the form of the new Socialist City (*Soc-gorod*) transformed this metropolis into the largest urban laboratory of the 20th century. Two were the main positions: "urbanists", such as Sabsovič, who still believe to achieve the formal control of the urban entity implementing industrialization, territorial planning and the *engineering of individual existences*; and "disurbanists", such as Okhitovič, who at the contrary conceived city as a superstructure of the bourgeois-capitalist modes of production, made obsolete by the Bolshevik revolution and that, as such, should be overturned. For "disurbanists", the collapse of the city inherited by Czarism should have been implemented by dissolving the city in a new territorial form, using to this purpose the new infrastructural network planned (or better dreamed...) by Soviet Power (cars, trains, airplanes, airships, spacecraft!). The city would no longer have a form but would have to be reduced into pure process, directly derived from the Kuzmin's "daily life program", defined by the distances for commuting to the production sites, designed by the sinusoidal diagrams of the circadian rhythms of workers and by the "industrialization" of their sleep-rest-works periods. The Socialist City is founded on a brand new dimension: its scale is related to the continental extension of the Soviet Union, to the horizon of the steppes, to the industrial compounds strategically dispersed all over the U.S.S.R territory. During the years 1928-30, Ivan Leonidov (1902-1959) conceived an idea of city sprawled across the entire Soviet Union: an *infinite* urban structure, innervated by industrial zones, residential compounds, public buildings, ready to colonize the whole nation. The goal was a city-nature hybrid, unlimited but endowed by the measure given by an orthogonal ribbon grid conceived as a geographical dimension rather than a geometrical form of urban planning. A *centuriatio* that potentially went from Moscow to the Urals, a *linear* disarticulation of the American Jeffersonian grid, an "all program and no form" plan - as Rem Koolhaas would say - that was tested in the competition design for the new industrial town of Magnitogorsk. Or, in an alternative version, Leonidov's city becomes a *network*: its nodes are institutional buildings whose distances are calculated on the basis of the power of the radio signals that connect them (project for the Social Club of a "new type" versions A and B).

Keywords: Ivan Leonidov, Constructivism, Socialist City, Soviet Architecture

Introduction

I would like to discuss the work of Ivan Leonidov in the context of his own time, his visions for a future for the city and the landscape (and the city *as* a landscape) of the Soviet Union. A future that seemed at hand, so far from the *leap forward* and the wellsonian science fiction of Krutikov¹, for example. A project for the future, at the same time so visionary and so prophetic that it still seems to be contemporary today.

Between 1927 and 1934, before his career would be so abruptly interrupted, Leonidov worked with great accuracy on buildings and urban designs that could have turned in architectures the transformations occurred in the Soviet Union: buildings as embryos of a New World that promised a different and more rewarding way of life (*byt*) for both the working class and the Soviet establishment.

¹ Georgii Krutikov (1899-1958) was a Soviet architect who famously designed Flying Cities orbiting around Earth and connected by single seat astro-planes.

For Leonidov, buildings and city are conceived as great *transformative tools* of the individuals and society (and of society through individuals...) and this mutation takes place through absolute and pure architectural forms. Forms and spaces of architecture as a technical aspect: scrutinized not only for the resolution of the very serious contingent problems that also afflicted the *homo sovieticus* (as *kommunal'ka*, the forced cohabitation of several families in the same apartment, mass literacy, sanitation of urban areas, supply of infrastructures and services, anthropization of an immense territory), but by means of a new definition of physical and relational structure, with the aim to reorganize work, daily life, education, rest, city and nature.

In few, famous projects, Leonidov operated a radical rewriting of functional programs and therefore of the space of buildings (and of the space between buildings) which is still avant-garde today. He was guided by the faith in architecture and by a sort of an exterior light (a humanitarian socialism, "hedonist" and planetary? The beauty embedded in the motion of the Universe? The principle of "art as a construction of life"?) to conceive the composition and the daily functioning of these architectures. Like any *exalted rationalist*², Leonidov worked to overcome the conventions, even those that have settled in the few years in which Modern Architecture has been already operating in its Functionalist format.

Leonidov's projects are *objects of fantastic reaction* (Quilici, 1975), visionary but rigorous architectural machines, defined with great typological, distributive, constructive and urban precision [Figure 1]. His radical architectural program is mainly achieved by the means of Technique, constantly displayed in his designs.

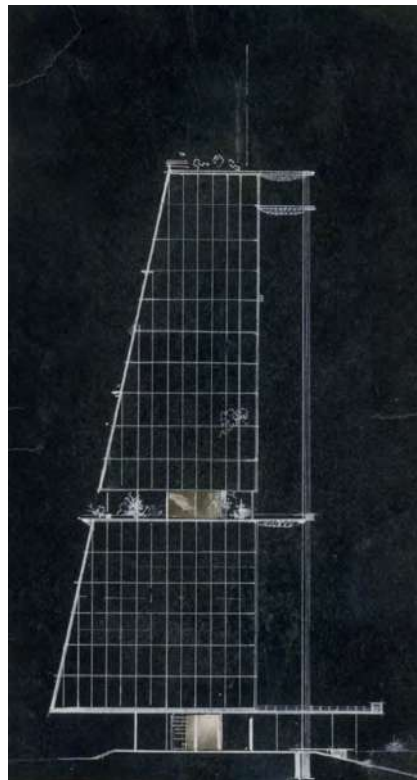


Figure 1, Ivan Leonidov, House of Industry, 1928

After 1917 Technique is the conceptual tool chosen by the Bolsheviks to redeem the destiny of Great Russia and to transform it into an global industrial power. It is considered as a banner for the libertarian implications they saw in it ("the liberation of work") and it becomes the formal language of this

² For a definition of *Exalted Rationalism*, see Rossi A., 1967, Introduzione a Boullée. In: Boullée E.L., *Architettura. Saggio sull'arte* (Padova, Ita: Marsilio), 7-24.

"mystical" phase of the revolution. It is intended as an instrument for agitation and propaganda, a vehicle for information and calls to arms, a raw product for artistic experiments: the agit-prop trains, the posters and photography of Rodčenko, the cinema of Ejzenštejn and Vertov, the walking megaphones of Klutis, the huge urban installations of El Lissitzky and Tatlin, the people's theater of Mejerchol'd, the experimentation on language of Majakovsky. The first generation of Constructivists architects - the Vesnin³ brothers, for example - maintained a 19th century idolatry for Technique, a reminiscence of an industrial century that this extreme part of Europe has never known. For Leonidov, on the other hand, Technique is never just a constructive effort or adornment for a Socialist heraldry, but is a defining point of view on architecture. The collimation between compositional and constructive techniques is the way to completely redefine the relationship between purpose and form of buildings, between their meaning and the life of men, between architecture and city. A relationship between architectural composition and technology, between formal experimentation and the technical level of the Soviet construction industry that remained unresolved, and that would be later the main cause of the prompt eclipse of the avant-garde party in the Soviet architecture, of its implosion under the weight of the demands of the forced industrialization and the command that architecture must serve solely as assembly line in the construction of Socialism.

Leonidov's point of view stands in antithesis both to the formalism of the avant-garde and to the socialist realism, which basically converged on one point: the liberation of the arts from capitalist superstructures to make them immediately understandable by the masses. In Leonidov the research on abstraction and on the functioning, in many ways still unknown, of *new buildings for a mass society* generate a broader conceptual depth that does not allow us to select only formal aspects to the detriment of ideological reasons. Leonidov, who during his career will realize only one project, produced a series of architectural and urban designs of such paradoxical realism to be able not only to become the iconological heritage of every Modernism but also to trigger a debate that continues today on the transformation for the city of Moscow as well as for any other contemporary metropolis.

The city of steel

Moscow becomes the new capital of the Union of Russian Federal Republics on March 5, 1918, a decision whose strategic objective is to move the main government offices from the maneuvering area of White Armies. The city immediately became the point of accumulation of the main avant-garde groups that, having abandoned the Petersburg orbit, began to gravitate around some institutions like the VChUTEMAS and the InChuK⁴, real incubators of a production that ranges from cinema to photography, to the production of everyday objects, to graphics, to painting, to architecture, in the wake of the Bauhaus, just founded the year before in Weimar.

The city that emerged from the "war communism" (1918-1921) is an immense shattered village, a city of wood rather than stone with still strongly rural features: a monumental center, which has its symbolic focus in the fortified citadel of the Kremlin, then the vestiges of orthodox power, some *Modern* buildings (*Modern* is the regional variant of *Art Nouveau*), the production complexes, expelled towards the radial routes of the city, in the midst of a boundless village of wooden *isbas*. A metropolis where the epic of the capital of a new world must be built, made possible by the embryonic accumulation of urban capital and the repopulation generated by the *Novaja Ekonomičeskaja Politika* (New Economic Policy, NEP): it is the *transition city*, between *ancien régime* and Socialism (De Magistris, 1988). If during the years of the "war communism" Moscow had become a gigantic and temporary theater of shambolic urban scenographies, the NEP years saw the making of a whole series of new metropolitan centralities, a widespread network of buildings that must represent the tangible and daily symbols of Bolshevik modernization through the collectivization of culture. These *ganglia* of the Soviet establishment draw a new topography of power that overlapped with the ones inherited from Czarism. The mystique of the "capital of Socialism" is built either through the monumentalization of localized

³ Alexander (1883-1959), Leonid (1880-1933) and Viktor (1882-1959) Vesnin were among the most influential architects of the first wave of Russian avant-garde.

⁴ VChUTEMAS are the State Superior Arts and Technics Workshops founded in 1920 in Moscow, InChuK is the Institute of Artistic Culture founded by Vassilij Kandinskij in the same year.

urban junctions (clubs, for instance), or through large complexes (*ansambl'*) that mixed infrastructural nodes and bureaucratic institutions, appearing as colossal propaganda and symbolic machines. These dense complexes on a metropolitan scale must be immediately recognizable, visible from every part of the city, incarnating the image of the power and the "weight of the State". The skyline of the capital becomes a precise technical question many architects like Ivan Leonidov, Alexander Vesnin and El Lissitzky⁵ dealt with.

The dazzling revolutionary Moscow of the NEP is the theater and the field of forces within Leonidov organizes objective data and give them form through peremptory architectures actively working to expand the material and psychic dimension of the metropolis and to draw it on another scale, the territorial one, necessary to weld countryside and large productive entities to the destiny of the city.

Leonidov correctly identifies in this overlap, physical rather than ideological, the only possibility of survival of the Soviet collectivist utopia: the city as "a sublimated acropolis" of countryside made productive by industrialization.

This is the meaning of the colossal dimensions of the Lenin Institute [Figure 2], of the Narkomtjažprom complex, of the Palace of Culture of the Proletarsky district, of the plan for Magnitogorsk. The architecture becomes, together with the airships, the airplanes, the flying machines of Krutikov, the Tatlin's *Letatlin*⁶, the tool to fill this *big emptiness*, to fill the space of Soviet Russia with a new civilization. The city is therefore transformed into a potentially infinite artifact and its space in a void furrowed by the orbits of buildings that with absolute geometric shapes measure the Earth's surface and define the space-time continuum (which therefore excludes the pre-Einsteinian and premodern distinction between interior and external spaces) of environments for residence, for education, for physical education, for the continuous training of the individual through work.



Figure 2, Ivan Leonidov, Lenin Institute, 1927

Architecture for a New World

The architecture of worker's club is therefore one of the cornerstones of the design reflection of Leonidov (as well as of the others Constructivist architects). They are the *social condenser*, the palaces of the new ruling class, the "aristocrats of proletariat." In 1928 Leonidov designed two futuristic projects for a "new type" clubs (version A and B). The intersection of activity required by this new ganglion of

⁵ Lazar El Lissitzky (1890-1941) was one of the major modernist artist, actively working as painter, sculptor, graphic designer and architect in Russia, Switzerland and Germany.

⁶ The *Letatlin* is a human powered flying machine invented by the Soviet artist Vladimir Tatlin (1885-1953).

the socialist society cannot be confined to a single building (as it happened in Melnikov's⁷ or Golosov's⁸ work), but becomes a *pavillion* system (a memory of the native village?) including vast areas of industrially cultivated land, botanical gardens, zoos, laboratories for scientific research, sports and outdoor communal equipments, mass theaters, airports, gigantic television screens (he also invented a term - *televizde* - in 1928!) that broadcast newsreels and films, amplification systems that do not transmit music but fragments of discourses and background noises, in a surprising anticipation of both the *musique concrète* and the *found voices* of Eno and Byrne [Figure 3].

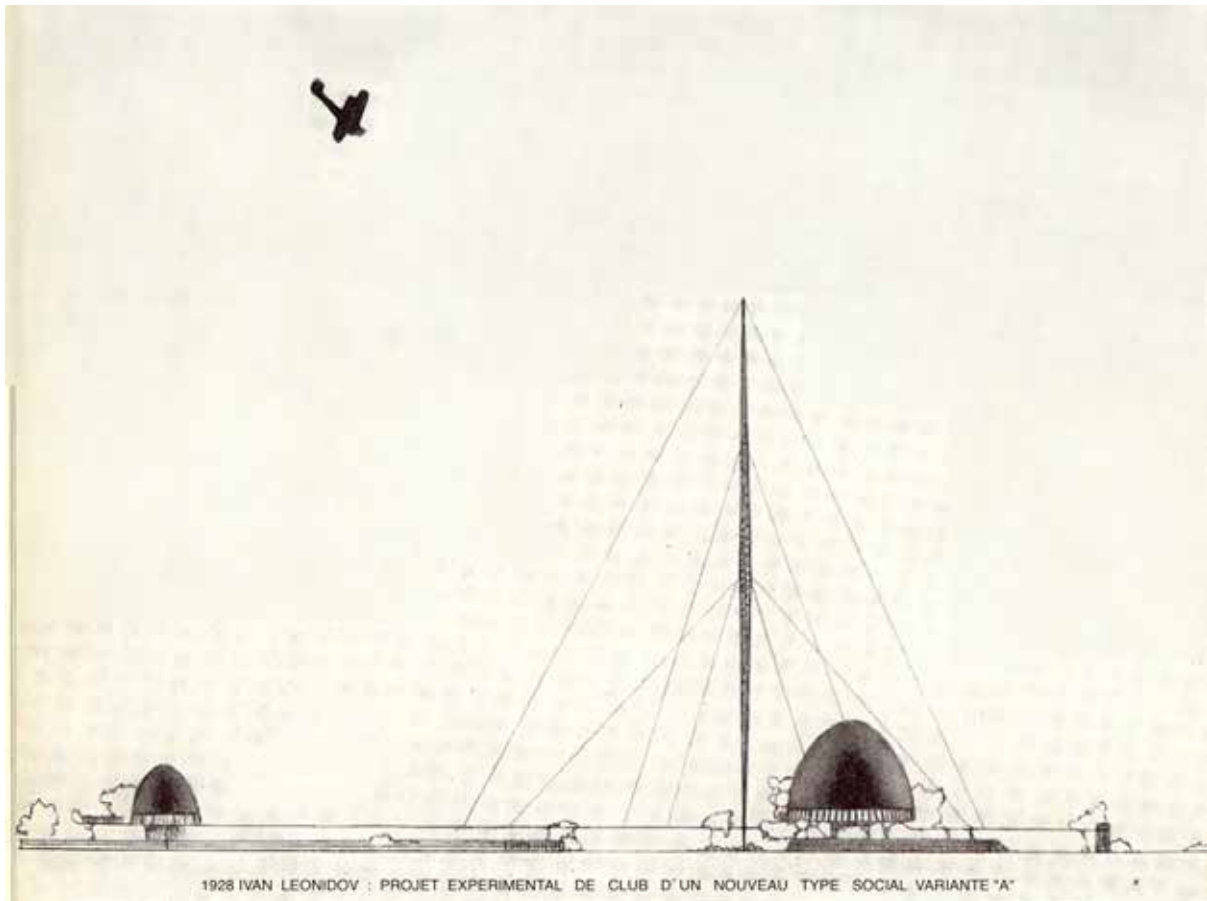


Figure 3, Ivan Leonidov, Social Club of New Type version a9, 1930

The buildings around which the landscape design revolves are large ogival glazed structures that clearly looked at the Moscow Planetarium designed by Baršč and Sinjavskij⁹ in 1927, within which flexible spaces are organized to host conferences, politics meetings, scientific demonstrations, libraries, swimming pools, gyms, greenhouses. The club has become a widespread system for a rarefied, territorial city, in which spatial relations have dissolved into a new perceptive and psychic paradigm placed between phenomenal spaces and diagrams and which aims at “a general reorganization of consciousness”. A new city, sparse but large as the whole country, connected by an *immaterial infrastructure*: a net of radio receivers in a sort of precognition of what a *smart city* is: “Each building appears as a node that bears significance equal to its potential for cultural dissemination and reception. The curves of the diagram identify cultural centers with transmitters of electro-magnetic signals, suggesting that Leonidov understood culture – or cultural organization – as no longer a problem of

⁷ Konstantin Melnikov (1890-1974) was one of the most famous Constructivist architect, he designed several masterpieces as the U.S.S.R pavillon at the Paris Exposition of decorative Art in 1925.

⁸ Ilja Golosov (1883-1945) was a Soviet architect of the first Constructivist wave, author of the famous Zuev Club in Moscow in 1928.

⁹ Mikahil Baršč (1904-1976) and Mikahil Sinjavskij (1895-1974) were both Constructivist architects.

absolute space and distance, but rather as a function of signal strength. The points in Leonidov's diagram elide the difference between the club as material architecture and the club as site of immaterial media exchange. [...]. With his club, Leonidov sought to embed Soviet culture within a new logic of social, spatial and media relations. In doing so, he articulated a distinct position within architectural constructivism, one that addressed not the organization of material and space but rather the organization of media networks and their spatial consequences" (Anderson,2013) [Figure 4].

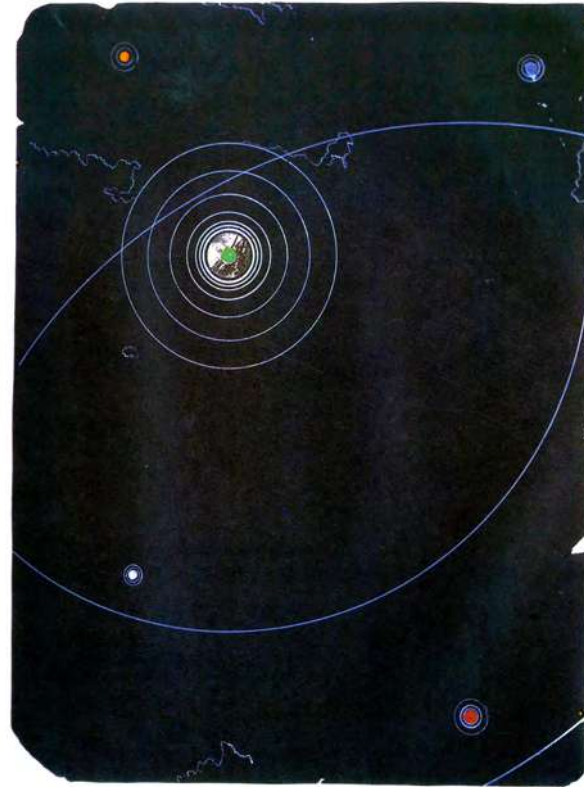


Figure 4, Ivan Leonidov, Social Club of New Type, 1930

But even those lush, abstract systems in which architecture is constricted are never self-referential objects, they are deformed by the links with the other urban facts they intercept: the Palace of Culture of the Proletarsky district and its planimetric grid rotates to accommodate in the lay-out the ancient Simonov Monastery, the Lenin Institute finds its alignment in one of the Muscovite radials, the Narkomtjažprom (Minister of Heavy Industry) weaves a series of almost musical relations with the positions and proportions of the monuments that gather inside and around the Kremlin citadel. The Palace of Culture is a part (the origin?) of an infinite city that ranges from Moscow to the Urals. It is basically a *superclub*, it has accesses to a range of technologies producing a sensorial experience equal to that of a contemporary rock show: lights, over-amplified sounds, cut-up images on giant screens, rotating stages, bridge, cranes, mobile walkways, all props taken from the research of the Futurists and the Productivists for the stagecraft during the first years of the Revolution [Figure 5].

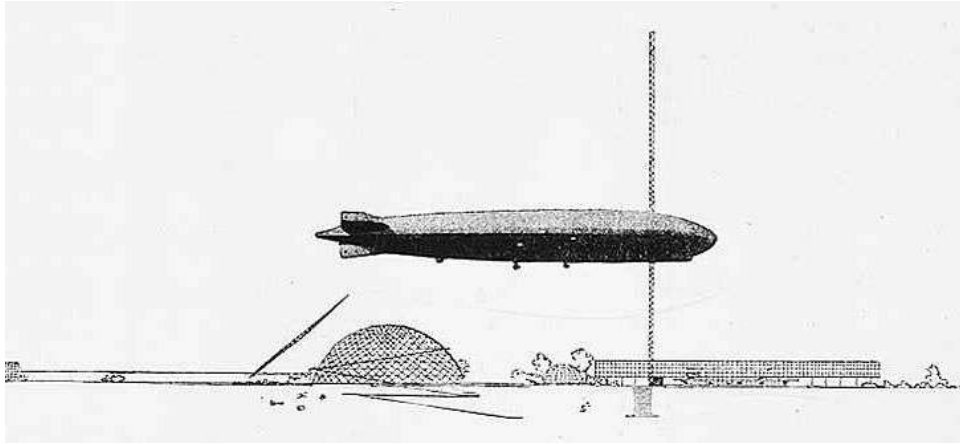


Figure 5, Ivan Leonidov, Palace of Culture of the Proletarsky district, 1930

The complex is located in a large lot in the southern suburbs of Moscow, occupied in part by the Simonov monastery, which Leonidov doubles and divides into four consecutive squares of 240 m side, each organized around a building that determines its use. A pyramid is the sport building: a large gym, a swimming pool with an artificial beach, gardens and terraces for heliotherapy. A semisphere shaped in iron and glass acts as an auditorium for mass manifestations. It is the anti-Bolshoi, as stated in the liner notes accompanying this projects: thanks to the variable configuration of the slabs and the seats as already experimented in the Total Theater by Gropius and Piscator (1929) and in the building designed by Mejerchol'd and Barkhin¹⁰ (1930). A giant truss serves as a mooring for airships and a radio mast, a long bar on *pilotis* is designed to accommodate scientific laboratories and a library [Figure 6].

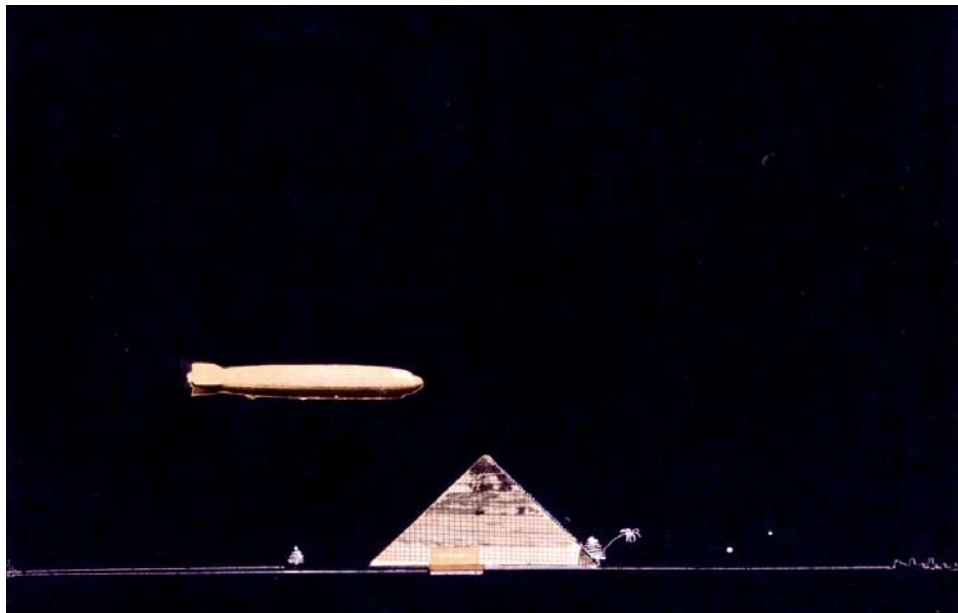


Figure 6, Ivan Leonidov, Palace of Culture of the Proletarsky district, 1930

¹⁰ Grigorij Barkhin (1880-1969) was a Soviet architect, famously working with the theater author Vsevolod Mejerchol'd for an experimental theater in Moscow in 1930-33

It is a rarefied system of buildings, yet another composition of Platonic solids, whose innovative conception has remained intact. His program already included food and energy self-sufficiency, the continuous view of avant-garde films, educational documentaries, newsreels, sports commentaries which were to replace the folk dances and classical ballets, military songs and hymns of the *kolchozij* in the training of Soviet citizens. Connections are ensured by aircraft, the only means of moving in the immense Soviet country, education is based not so much on the great Russian literary tradition, but on scientific-technological training and physical education, on the pragmatic productive use, almost in a physiocratic way, of the land, that is a fundamental part in the composition of this complex.

The infinite city

If the Russian avant-garde was able to design the many utopian variations of the Socialist City it was also always able to propose pragmatic and progressive alternatives to the problems of the real city.

The "war communism" has depopulated the capital (almost halving its population) and left its building stock and infrastructures in a state of obvious degradation. During the NEP the condition of overpopulation that had characterized the last Czarist phase took its toll. The debate on the urban figure, the *grosseforme*, of Moscow and its architecture and, by extension, those of the new Socialist City transform this metropolis into the greatest urban laboratory of the twentieth century.

For "disurbanists", such as Okhitovič¹¹, the city as we know it is a superstructure of bourgeois-capitalist modes of production which should be demolished. It will no longer have a shape but will be reduced to a pure process, which arises from the "graph of daily life" elaborated by Kuzmin, from the sinusoidal diagrams of the circadian rhythms of workers, the distances for commuting to the places of production and the "industrialization of rest", such as the SONnaja SONata, the Melnikov's "sleep factory" or the holiday resorts of Sokolov¹².

A principle gathered from the 1930 project for the "Green City" of OSA, coordinated by Ginzburg¹³ and Baršč. The objective is the *destruction* of Moscow: decentralization of all production complexes, deportation of the entire population along the axes connecting the capital to the new industrial towns, prohibition of building within the urban perimeter, demolition of unhealthy neighborhoods, transformation in equipped parks of all the free areas available, reorganization of the 17th century Moscow in a gigantic theme park in which some duly isolated monumental ensembles emerge (the Kremlin, the Arbat, etc.) as well as new collective complexes dedicated to culture, rest and research.

If the Capitalist City is the urban formalization of relations of productions rendered obsolete by the Bolshevik revolution, the Socialist City cannot take back either its axes or its forming modalities, it must indeed overturn them. Starting from the relationship between nature and buildings, up to a general rethinking of its dimension which has to deal with, in order, the continental extension of the Soviet Union, the new infrastructural level, the production units strategically scattered from Leningrad to Vladivostok.

In Leonidov's work the real city (Moscow, Magnitogorsk) and the planned one overlap: the first is not only a scenographic background, the second is not only a design, together they are a unique dialectical reality equipped by the new architecture and whose material is an *expanded void* that seems to aspire to a cosmic dimension, that "space as a non-material coagulant" (Quilici, 1975). An avant-garde point of view on architecture and city pursued through the use of all modern techniques related to transport, communication, image, construction, composition.

In Ivan Leonidov's vision, Moscow becomes the nucleus of the celebratory centers of the administrative buildings in which the Soviet power is articulated (great isolated complexes, ancient and modern: the Kremlin, but also the ministries, the Palace of Soviets, the headquarters of the great cultural institutions),

¹¹ Mikahil Okhitovič (1896-1937) was a Soviet sociologist and urbanist who led the current of disurbanists. Executed by NKVD during the Great Purgue.

¹² Nicolai Sokolov (1904-1990) was a Soviet architect. He designed the socialist version of SPAs and holiday communal resorts.

¹³ Moisej Ginzburg (1892-1941) was a Soviet architect, one of the masters of Russian Constructivist. He designed one of its famous building, the communal house NARKORFIM in Moscow in 1928-32.

from which an infinite, ribbon-like urban structure, innervated by industrial areas, residential neighborhoods, public buildings, prolonged itself throughout the Soviet Union, colonizing that boundless territory.

The objective is a city-nature, unlimited but endowed by the measure given by a *centuriation*: a geographical dimension rather than a geometrical-urban pattern. A system that potentially goes from Moscow to the Urals, a linear disarticulation of the Jeffersonian grid, a "all program and no form" plan - as Koolhaas would say - which is concretely tested in the design for the new mining town of Magnitogorsk [Figure 7].

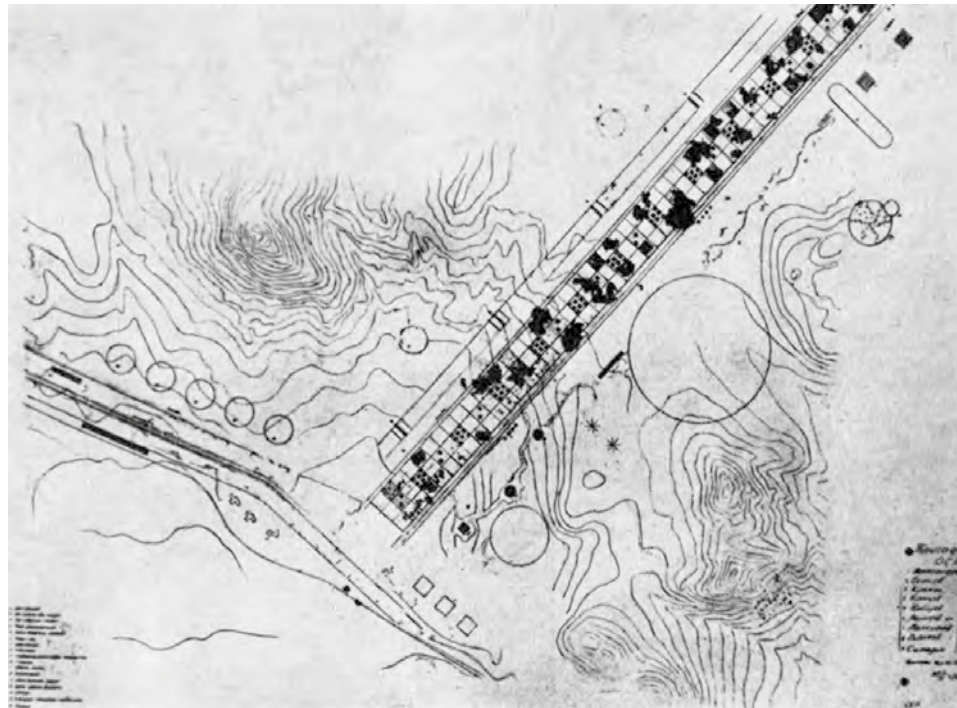


Figure 7, Ivan Leonidov, Plan for Magnitogorsk, 1930

A competition – won by the May Brigade, the group led by the former Frankfurt chief architect - in which the various trends operating in the USSR on the project of the *Sov-Ggorod*, the new socialist city, confronted themselves. Leonidov proposed an organization based on the repetition of large square meshes equipped with large collective buildings, industrial centers, towers for apartments and low houses. Even for these lodgings the principle of the collective housing is enforced: small cubicles for individual rest that converge in a large collective environment equipped with tea rooms, gardens, spaces for physical exercise. A libertarian, pre-hippie commune rather than a *Dom Kommuna*, a less militarized version of the contemporary experiments on the residence of STROIKOM (Building Commission of the Russian Republic) led by Moisej Ginzburg.

Ensuring an advanced level of housing is one of the main objectives of all the researches on architecture and the city of the first Soviet era. For Ivan Leonidov, before being a "living machine", the house is an exact device for the construction of a new life: it must allow individual rest and at the same time maximize the moments of collective life; must have the necessary intimacy for people forced into years of *kommunal'ka* and at the same time be the first cell of collective organization of society (a "laboratory of communism"); it must be recognized as a home by the recently urbanized masses and also have all the comforts of bourgeois residences; it must be technologically advanced but also economic and buildable in a short time by unskilled workers, it's a tool that can transform the worker of a Communist state into a "new man", built to allow the transition from a bourgeois way of life to a socialist one, which in this most extreme examples presupposes the dissolution of the family and the collective care of children [Figure 8].

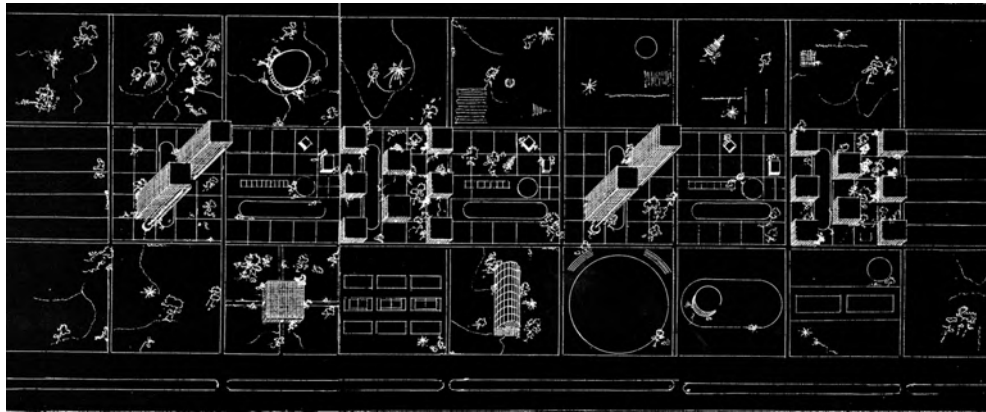


Figure 8, Ivan Leonidov, Plan for Magnitogorsk, 1930

But it is on this ideological issue that the main failure of Soviet radical architecture (and of the Soviet system) is consummated: the nation born from the October Revolution is not able to produce a significant discontinuity to the housing crisis of the Czarist era, even when its masters produces some significant prototypes.

Those buildings and programs for Moscow designed by the Soviet avant-garde at the turn of the 20s and 30s of the 20th century seem to return continually, almost subliminally, to the fabric of our daily experience. Russian vanguards have spread their effects throughout the 20th century and are prolonging their extraordinary fascination even in the new one. Especially from the point of view of architectural and urban design. It could be useful to reflect on how some great contemporary urban landmarks have introjected some icons of the Constructivist period. In London, for instance, where Renzo Piano's Shard is modeled on a section of a Leonidov project, while Anish Kapoor's Orbit Tower is a clear tribute to Tatlin's Monument to Third International. Architectures that have not been able to build Moscow as the capital of the Soviet Nation and instead return to build other cities, as has often happened in urban history for buildings of such symbolic and evocative power.

A collection of projects that gives us the image of an *alternative* Moscow, of a great collective project for the construction of the city and its architecture once confined to the world of urban visions but capable of configuring - from their architectural figure to their historiographical "aura" - a plan for a "analogue Moscow", transforming it into a modern and cosmopolitan metropolis, while recording the dramatic changes in Russian history of which it was the theater.

Reflecting on these projects means guessing how Moscow would have changed, in its morphological features, in its urban dimension if, in one of the many sliding doors of history, it had been built by the vanguards and not by the realsocialist classicism that redesigned its vast sectors in the following years. A process of alternative construction of the city which actually, though in a latent form, has always been in place, because the architectures of Leonidov, Lissitsky, Mel'nikov, the Vesnin brothers had clearly predicted axes, themes and issues that the development of this great Eurasian metropolis would eventually have ended up facing in the following hundred years.

As if they were architectures so meaningful that somehow managed to deform space and time.

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2 - Urban Design for Multilevel Planning

Participation and Communication: Changsha Children Friendly City Planning, Design and Actions on Multiple Levels

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Abstract: The main social contradictions in China have been transformed into the contradiction between the people's growing need for a better life and the unbalanced and inadequate development. Citizen engagement on planning and design need to be boarder and deeper. Introverted, "top-down" ways are transforming into more open, communicative and participative approaches. In the making of CFC process, Changsha has gradually explored a set of method and tools in multi-level planning and design, which embeds communication and participation into three-levels: macro, meso and micro. Planning and design now pay more attention to each individual citizen in the city than to the abstract population indicators in the past. It is becoming a more open and democratic process, so that citizens have more ways of communication and participation. This paper hopes Changsha experience will be helpful to more communicative and participatory planning and design in the future.

Keywords: Participatory planning, Children friendly city, Changsha

1. Introduction

President Xi Jinping pointed out in the report of the 19th National Congress of the Communist Party of China (CPC): "As socialism with Chinese characteristics enters a new era, the main contradictions in our society have been transformed into the contradictions between the people's growing need for a better life and the unbalanced and inadequate development." The unit of Chinese society is family, in which children plays a central role. Many families' needs for a better life revolve around children. With the increasing level of urbanization, more and more Chinese families live in urban environment. Whether the city is "child-friendly" directly affects the life of every family, and is closely related to the "sense of happiness" and "sense of acquisition" of people.

In 1989, the Convention on the Rights of the Child was promulgated, which proposed that "children's rights" should be the core element of urban development. In 1996, UNICEF and UN-Habitat jointly proposed the International Child-Friendly Cities Initiative (CFCI), which integrates children's needs into urban planning and becomes an important guiding document for the creation of child-friendly cities. Since the launch of CFCI, more than 870 cities around the world, including London, Seattle, Copenhagen and Buenos Aires, have been certified by the International Secretariat of Child Friendly Cities by 2015.

At present, China is at the initial stage of the child-friendly city making. Increasing numbers of cities in China have begun to explore creation of child-friendly city, such as Beijing, Nanjing, Shenzhen,

Hangzhou and etc., as seen in Figure 1. In 2016, Changsha launched the creation of child-friendly city in an all-round way. Taking this as an opportunity, Changsha city improves the overall quality of urban living environment and attempts to construct integrated mechanism of reaching consensus, co-construction and Co-governance of government, community and the market. Changsha's child-friendly city creation aims to make the urban built environment more "temperate", urban governance more "people-oriented", and people's "sense of happiness" and "sense of acquisition" be comprehensively enhanced.

Public participation in urban planning has become an important part of urban planning development in western society since the mid-1960s. Public participation in urban planning is regarded as a basic right of citizens. In the process of urban planning, it is necessary to involve the broad masses of urban citizens, especially those affected by the planning content, in the preparation, discussion and decision-making process. Planning departments must listen to various opinions, and reflect them as much as possible in planning process and planning action. A truly comprehensive and complete public participation requires that the public be truly involved in the decision-making process of planning (Arnstein, 1969).

In the context of the overall transformation of the domestic society in China, urban planning communication and participation are also becoming an important part of urban planning development. Taking Changsha Children Friendly City as an example, this paper reflects the current situation of participatory planning in China, provides references for more urban communication-participatory planning, design and action, discusses and exchanges with international urban planning experience.

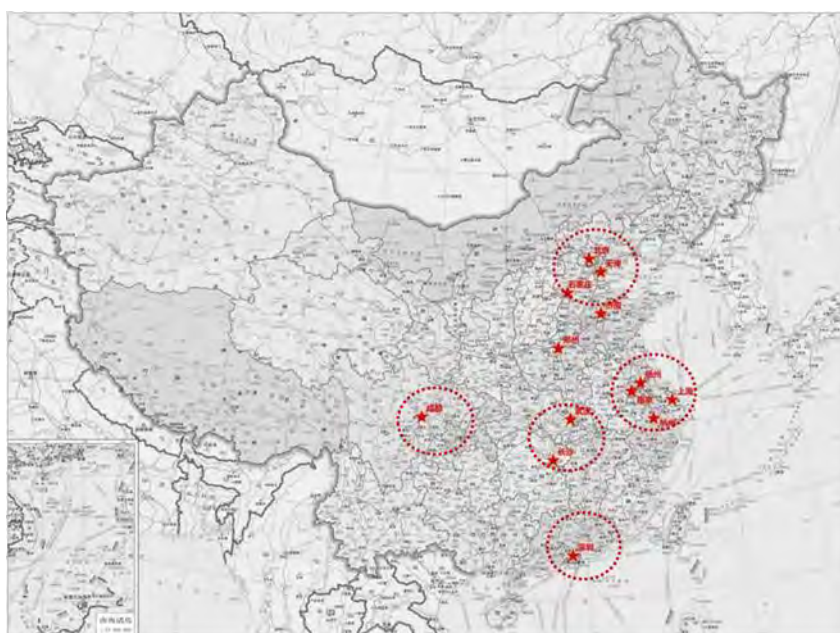


Figure 1 Chinese Cities in making of "Children-Friendly-City"

2. Children-Friendly-City making: Changsha's pattern

In the context of China, government, as the leading force of society, play an important role in guiding urban development. In the process of Children-Friendly-City making in Changsha, government also plays a leading role in initiation and organization.

Children-Friendly-City (CFC) making in Changsha is with characteristics of multi-dimension, multi-subject and multi-level.

(1) Multi-dimension: policy friendliness, space friendliness and service friendliness. Each dimension corresponds to a number of thematic actions, and each action contains a series of specific tasks.

(2) Multi-subject: creating a children-centered, integrated government, social institutions, communities, schools and families joint force, and establish a child-friendly "children plus" governance and service system.

(3) Multi-level: led by planning department, to create a multi-level planning system incorporating Children-Friendly goals, with introduce citizens (especially children) into planning and design actions at macro, medium and micro levels to communicate and participate into the overall process.

2.1 Multidimensional Children-Friendly Action

Children-Friendly-City (CFC) making in Changsha covers three dimensions: policy friendliness, space friendliness and service friendliness. The three dimensions correspond to a number of thematic actions, each of which contains a number of specific tasks. As seen in Table 1, Figure 2.

Policy friendliness is implemented in three aspects: urban strategy, policy evaluation and formulation, and child participation. Urban strategy refers to Changsha's declaration of Children-Friendly-City to the United Nations, which is an initiation to lead all aspects of CFC making activities.

Space friendliness is implemented in four aspects: demonstrate space system, education space system, living space system and traveling space system. The experiment and demonstration of children-friendly space system are carried out on the scale of urban and block space system, which contains "one demonstrate city area" and "two demonstrate blocks".

Service friendliness is implemented in three aspects: children's social welfare guarantee, public education service guarantee and children's friendly propaganda and promotion. The three actions correspond to health, education and culture respectively. Children-friendly cities not only attach importance to the shaping of physical space, but also pay more attention to all aspects of children's urban life, which are aimed to fully guaranteed and promoted.

Table 1 Action Plan for Changsha CFC making (2018-2020)

3 Dimensions	10 Themed Actions	40 Tasks
Policy friendly	CFC Creation Action	1. CFC Action Plan Framework; 2. CFC Declaration
	CFC Policy-making Action	1. Research on supervisory evaluation system; 2. Analysis of children's rights and interests 3. Guidelines for the design of CFC Space
	CFC Participation Action	1. Children's Conference Training; 2. Children's Friendly Logo Design; 3. Developing Children's Tour Map; 4. Children's Participation Framework
Space friendly	CFC Demonstration System Action	1. To Build a Demonstration District; 2. To Build Two Demonstration Blocks
	CFC Education Space Action	1. To Make 12 CFC Schools and Promote; 2. Kindergartens' Special Planning; 3. Compile Changsha Research Practice Map and Children's Contact Book; 4. CFC Reading Space Demonstration and Promotion
	CFC Living Space Action	1. CFC Parks Pilot and Promotion; 2. To Create CFC 15-minute Living Circle; 3. To establish 200 Maternity Room; 4. CFC Public Space Demonstration and Promotion
	CFC Traveling Space Action	1. To make 50 love & care zebra crossing line; 2. improve children's safety alarm system; 3. purify surrounding environment of the campuses; 4. establish CFC community protection mechanism; 5. CFC school path demonstration and promotion
Service friendly	CFC Welfare Action	1. Improve children's vaccines supervision and service systems; 2. Optimize children's health care resources; 3. Improve children's medical security level; 4. Improve protection mechanism for vulnerable children; 5. Strengthen child health care services and management; 6. Improve children's nutritional status ; 7. Establish community centers for women and children; 8. Promote child-friendly Enterprises
	CFC Education Action	1. Guarantee Children's Equal Right to Education; 2. Optimize the Internal and External Environment for Children Learning and Growth
	CFC Propaganda Action	1. CFC Promotion Action Framework; 2. Children Safety Guardianship Plan; 3. Initiative of Creating Child Friendship Cities; 4. Multi-dimensional Promotion of Children Friendship Cities; 5. Child Rights Protection Knowledge Training and Legal Promotion



Figure 2 Framework of Vertical and Horizontal Coordination Model

2.2 "Children +" Governance and Service System

The construction of child-friendly city needs not only the government's advocacy and organization, but also the formation of a multi-governance service system of multiple social subjects. In the process of building a child-friendly city, Changsha formed a "children plus" governance service system, which takes children as the center and integrates five main parts as government, community, family, school and institution. As seen in Figure 3.

The refinement and implementation of tasks in themed actions require the coordination and cooperation of government departments in horizontal and vertical way.

Horizontal cooperation reflects in the actions led by specific department and collaborated with the relevant. For example, the Municipal Education Bureau is in charge of policy-friendly action; the Municipal Planning Bureau is in charge of space-friendly action; the Municipal Women's Federation is in charge of service-friendly action; and the Ministry of Propaganda is in charge of news and press.

Vertical coordination reflects in the transfer of responsibility from municipal government level to district and county government level. The implementation of district and county, street and neighborhood committees is deepened and refined layer by layer.

The vertical and horizontal division of responsibilities of government departments was clearly and publicly stated in the Declaration Plan and Three-year Action Plan for Children-Friendly Cities of Changsha (2018-2020).

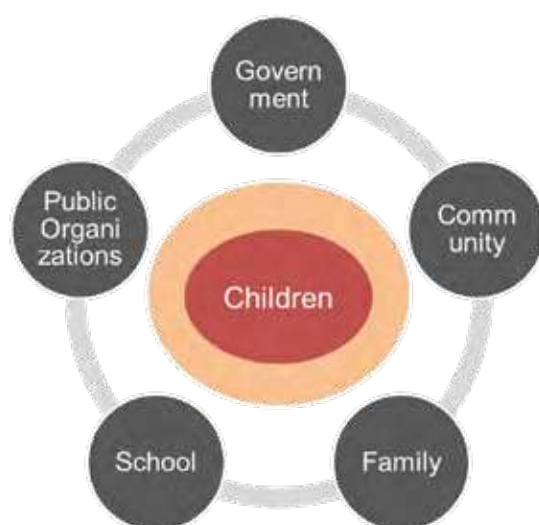


Figure 3 "Children +" Governance and Service System Framework

2.3 Planning System Incorporating Children-Friendly Goals

In the Children-Friendly-City (CFC) making in Changsha, the planning department took the lead role in implementing the concept of children-friendly at all levels, in order to achieve "space-friendly" at spatial level. The multi-level planning with goals of "child friendliness" and "space friendliness" firstly dismantle the overall goal from the macro, medium and micro levels, and then implement the specific objectives at the corresponding levels. As seen in Table 2.

At the macro level, the first step is to reach a consensus on the "children-friendly" value, which is the basis of public policy formulation, so as to facilitate integration of children-friendly-related public policies into planning system. The related planning documents involves Changsha 2050 Strategic Plan and Changsha City Master Plan (2017-2035).

The two plans are with their own emphasis. In the process of compiling the Strategic Plan, a variety of public participation activities have been carried out, especially in children-friendly city and senior-friendly city special reports. "Happy Community Action" has become one of the eight key actions in short term. In Changsha City Master Plan (2017-2035), a strategic transmission system of "Goal-Strategy-Indicator-Action" is constructed. The strategy of "creating a friendly city for children and the elderlies" is one of the "better home" strategic objectives.

At the medium level, contents in the macro-level planning are linked up and deepened. Specific goals are to implement the planning facilities allocation, with care for children, elderly, disabled and other vulnerable groups, and enhance the "sense of gain" of people, Such as the "15-minute life circle planning", "kindergarten and schools special planning" and etc. Plans set conceptual indicators, such as the "15-minute life circle planning" proposed that "400 15-minute life circles should be delineated in city central zones", "primary schools/kindergartens should be included in the necessary matching projects, within 2 years basically meet the requirements for each living circle, and it is included in the performance appraisal task of district and county governments and departments.

At the micro level, it undertakes the upper level plans and implements strategies into the built environment. The micro level goal is to improve spatial environment, as well as to construct effective participatory methods and a fair benefit distribution mechanism on spatial level. Involved Specific plans and design actions include "pilot micro-renewal of children-friendly school districts", "design competition for child-friendly micro-space renovation", "love & care zebra crossing belt" (children's safe travel facilities upgrade) and etc.

In Changsha Children-Friendly City Declaration Plan and Three-Year Plan of Action (2018-2020), the dimension of spatial friendliness has launched four thematic actions, respectively aiming at children-friendly demonstrative space, children's education space, children's living space and children's traveling space:

(1) The children-friendly demonstrative space action includes six specific tasks, including the construction of the child-friendly demonstrative district, the construction of the demonstrative blocks, the promotion of the children-friendly communities citywide, the construction of the 20 demonstrative schools, the construction of the demonstrative parks and the construction of the children-friendly reading spaces.

(2) The children-friendly education space action includes the special kindergarten plan, the children's urban research practice map and children themed address book.

(3) The children-friendly living space action includes building children's 15-minute life circle, achieving 100 maternity care rooms, child-friendly SNS platforms and community (village) women and children's centers.

(4) The children-friendly traveling space actions include: completing 50 schools' "love & care zebra crossing belt", improving children's safety alarm system, purifying school surrounding environment, and building children-friendly school paths.

Table 2 Planning System Incorporating Children-Friendly Goals

Multilayers	Goals	Realated Plans
Macro-level	To reach a consensus on the value of "child friendliness". To become the basis of public policy making, and integrate into the planning system.	Changsha 2050 strategic Plan
		Changsha Master Plan (2017-2035)
Medium-Level	Implementing the allocation of facilities. Caring for children, the elderly, the disabled and other vulnerable groups. Enhancing the "sense of acquisition" of citizen life.	Planning and Construction of 15 Minutes Life Circle
		Special Planning for Kindergartens and Schools
Micro-level	Create humanized built environment. Forming participatory planning methods. Improving the mechanism of spatial benefit distribution.	Pilot Micro-Renewal of CFC Campuses
		CFC Micro-space Renovation Design Competition
		Love & Care Zebra Crossing Lines

3. Children's Communication and Participation in Multi-level Urban Planning, Design and Action: Changsha's Experience

In Changsha experience in children-friendly city making, every link is inseparable between the multi-subjects of society and government departments. Communities, families, schools and institutions are not only the "acceptors" and "responders" of government policies, but also the "actors", "organizers" and "direct beneficiaries" of specific events. Communication and participation are not only goals at all levels, but also the key way to achieve them.

3.1 Macro-level

At macro level, in the stage of reaching value consensus and laying down basic goals for public policy, the government departments led to carry out the "up-down linkage" action strategy to combine the upper design with the bottom action. As seen in Figure 4, Figure 5.

In the part of upper design, government directly increases opportunities of opening and communicating with the citizens in the policy formulation process; in the part of lower action, the city's media industry expertise has brought into play, and the planning authorities, cooperated with

relevant departments, organize a series of urban activities in which the citizens could be enrolled in, and take the activities as the carrier to enhance the public participation, awareness and sense of identity. The concept of children-friendly has been paid attention to in the early stage of making plans, and the communication and participation mechanism has been implemented into the policy making process.

In the upper design, planning authorities took the lead in compiling Changsha 2050 Strategic Plan and Changsha City Master Plan (2017-2035), which provided the overall framework of children's friendly value consensus from a policy perspective. Planners go deep into urban public venues, and disperse online and offline questionnaires, make interviews, host symposiums and other forms of public opinion surveys. Those contents provide plans solid and credible basis.

For example, in Citizen-oriented "2035. My Dream in Changsha", "Golden Idea" Collection for Changsha Master Plan, 170 proposals from citizens were received, covering strategies for urban development, community and public services, and etc. The first prize of the individual group came from a clerk of Changsha Local Chronicle Office. According to the nature of his work, he puts forward a plan with rich cultural characteristics of the city.

The periodical results of the planning are publicized through Internet, and the city planning exhibition hall is taken as a carrier, to integrate the expert discussion part into the "urban open course" for the public. The activities expand the two-way communication between managers and experts into the dimension of social openness. Open class introduce Q&A session, so that the citizens could participate in dialogues with experts and the government.

Through participation and dialogues, citizens could better understand the process and connotation of planning. It also promotes the government to get more feedback from the public in the early stage of the planning framework formation.

At bottom level, the planning department jointly organizes social activities horizontally with government departments and agencies, relying on various forms of organizational committees.

For example, activities such as "Discovery of Star City", "Children Friendly City LOGO Design Competition" (Children's Independent Design, Designer Collaboration), "World Children's Day", "Children's Tour Map Workshop" and a TV program "Playful City" with children as the main participant.

Contents of activities is centered on the city theme. On the one hand, collecting public opinions through the activities constitutes an important part in the compilation of the master plan. On the other, through the activities to enhance public awareness, understanding and participation, the platform mechanism of communication and participation is constructed.

The "Discovery of Star City" campaign for teenagers in the whole city was co-sponsored by Hunan Daily Newspaper Group and Hunan Provincial Committee of the Communist Youth League, Changsha Urban and Rural Planning Bureau, Hunan Daily News Training Center and Changsha Municipal Committee of the Communist Youth League, and sponsored by the Organizing Committee of Little Journalists of Hunan Daily. Activities are not only an important part of public participation in

the preparation of Changsha General Plan, but also one of the actions of Changsha to create a child-friendly city.

In 2018, "Discovery of Star City" provides a platform for primary and secondary school students to know about Changsha city, to understand Changsha and participate in the future urban planning of Changsha.

Under guidance, about 700 "young urban planners" went to enterprises and institutions, such as the National Supercomputer Changsha Center, Yuanda Group and Changsha Public Security Traffic Police Detachment, and then formed the urban development report of Changsha City in the eyes of young people, and submitted it to the Changsha General Planning Compilation Unit and the Municipal Planning Bureau.

Through the "Discovery of Star City", children's views and opinions are collected as widely as possible and integrated into the framework of master planning.

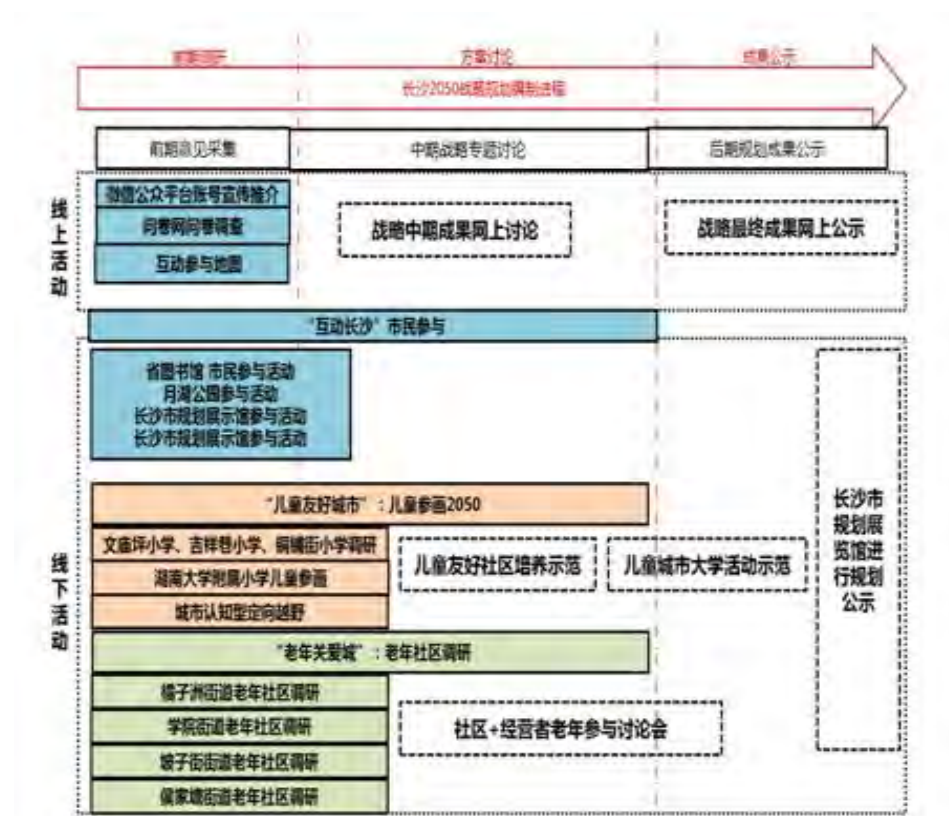


Figure 4 Framework for Public Participation in Strategic Plan



Figure 5 Children's Communication and Participation Activities at Macro-Level

3.2 Medium-Level

Medium-level content is the concretization of macro-level content, and the goal has spatial significance.

The overall path is to form a value consensus at the spatial level, pay attention to specific vulnerable groups in the process, advocate fairness and justice in resource allocation, and then implement spatial resource allocation based on the spatial value consensus, including facilities indicators, built environment and other levels.

Medium-level framework incorporates the communication and participation of children groups, which can effectively and accurately capture user needs, effectively reflect the problems to be solved in the

current situation of space, and jointly seek effective solutions that can be implemented. As seen in Figure 6.

Children's communication and participation can effectively improve the quality of planning content. For example, in 15-minute life circle planning, through communication and participation, can more accurately collect the status of life circle facilities configuration and use. If the indicators of educational facilities such as primary schools and kindergartens are reasonable, are there any problems in the actual use process?

For example, special planning for kindergartens and primary and secondary schools, through communication and participation, planners could further truly understand the real needs of kindergarten primary and secondary school settings from the perspective of children and family. How important is the school front space? What kind of space do parents and children need for parking, waiting, and etc.

Medium-level activities are carried out within the framework of master plan, generally in the form of "workshops", which follows the technical process of "organizing workshops - online and offline research - children and parent consultation - forming planning results".

For example, in the process of making special plans for kindergartens and primary and secondary schools, the research subjects of "Guidelines for Children Friendly Campus Planning" and "Symposium of Safe, Fair and Fun Children's Microspace" have been carried out jointly with professional institutions and universities.

At the same time, planning authorities continue to seek opportunities to communicate and cooperate with multi-sectoral institutions of education, health, transportation, primary and secondary schools, families and other subjects. Activities have been carried out such as "SNS Research of School Path", "Mind Mapping Workshop", "Little Planner Workshop" and "Children Friendly Microspace Symposium".

Relying on the Planning Information Center, the "SNS Survey of School path" builds the platform of "Changsha Mass Planning Map" and conducts research for school teachers, parents and students.

The respondents logged on to the "Mass Map" through Wechat, placed virtual map pins on the maps of home and school, and drew the location of high frequency stopover points in the routine routes and routes to and from school.

The information center collects the research data of Wechat in the background, forms an analysis report, submits it to designers, functional departments and social organizations, and forms the basis of bus route planning, slow-transportation system design, safety management regulations and other aspects.

"Mental Mapping Workshop" relies on cooperation with pilot primary schools. Let the teacher organize the planner to enter the campus classroom. Planners prepare the base map on paper and lead the children to draw the hand-drawn map of the school and the surrounding areas together.

First, planners introduced the content of the background map to the children, and let them establish a preliminary relationship between the drawings and the living space. Then ask the children to circle the most interesting places, the least liked places and the most feared places on the map. Legends are uniformed, black triangle represents safe and willing to stay area, red triangle represents dangerous zone.

The limited samples collected show that black is mostly distributed in the areas where crowds gather frequently in communities and parks, and red is mostly distributed in the intersection space of pedestrians and vehicles such as roadways and intersections.

"Little planner workshop" is in the design of "themed painting" and "wish note" session to encourage children to participate.

Cooperative Primary School integrates "theme painting" into the content of art lessons and encourages children to draw the ideal urban landscape. "Wish note" encourages children to write notes to express their views on the space of life, such as the most frightening things on the path to school, the best place to go, etc.

The school collects the results of painting and notes to planners, and planners analyze and sort out the results, and find that there is a strong correlation between aspirations, ideals and opinions. After that, the planner corresponds these related opinions to the specific space and gradually puts forward "problem list", "proposed solution" and "proposed project".

The "Children Friendly Microspace Symposium" includes a broader range of people, including children, relevant government authorities, industry representatives and Designer representatives. In children's group, the Hunan Organizing Committee of Xinhua Little Journalists organized more than 30 small journalists to attend the meeting.

During the symposium, videos of places commonly used by children are played. Children's delegations, industry delegations and Designers' delegations are invited to discuss the "friendliness" and "unfriendliness" of the space in videos. Consensus and suggestions on children's friendly space design are formed through presentations, debates and summaries. The activities result are compiled into the "Children Friendly Space Consensus" and "Symposium Pamphlet".

The results show that children's growth stage and physiological conditions are special, so that children's demands for space are also special, which cannot be fully covered by adult observation and logical judgment.

For example, some children respond that "the friendly part is that the community service center are painted in nice colors, but the natural light is insufficient, we should open more windows." It shows that some children's needs and perceptions of natural light are stronger than those of wall decoration. Some adult-led children's space renovation often overlooks this point.



Figure 6 Children's Communication and Participation Activities at Medium-Level

3.3 Micro-level

Based on the macro and meso-level, a multi-level value consensus and framework construction have been formed. The micro-level is more focused on the design and transformation of the micro-level

material space, as well as making corresponding decisions and implementing actions in the process of deliberation.

Activities carried out at this level include "10+2 pilot transformation of child-friendly campus", "child-friendly micro-space transformation contest" and "love & care zebra crossing". The micro-level communication and participation is more targeted. As a user group, children are directly involved in the whole process of reform design, project decision-making and post-implementation evaluation. As seen in Figure 7.

For example, "Children Friendly Microspace Rebuilding Competition". Organized by the competent planning department of the government, it is aimed at collecting safe, interesting and convenient public space schemes for children-friendly cities for planning and design groups and design colleges with independent legal persons in the city.

It advocates that urban planning and construction should be examined from a height of one meter, and that cities with temperature should be built, and that children's friendship should be realized for all. The team will choose the public space that children may use within one hectare of urban area to rebuild. After nearly a month's solicitation, 65 contest schemes were received. Many teams independently adopted the design method of children's communication and children's participation.

For example, the first prize team project "The design and transformation of children-friendly public space in Osmanthus Park", the team leader is also the initiator of "Mother and Female Planner Society". In the early stage of the formation of the design scheme, we carried out a preliminary base investigation on the combination of parent-child play links relying on the mother and female associations.

Through careful observation of parent-child activities and children's activities in the process of investigation, this paper puts forward a set of detailed problems and coping strategies in children's friendliness in parks. In the process of the formation of the program, we constantly communicate with the children group and get feedback from the children. Finally, a competition design scheme approved by both parents and children has been formed.

After the deadline for submission of the scheme, the Planning Bureau summarized all the contest schemes, determined 50 entries through the internal evaluation preliminary selection, and selected 20 entries into the expert evaluation process.

Through the expert review meeting, 4 out of 20 excellent works were selected to enter the public selection process. On the day of the mass election, four design teams of the selected works came on stage to present the contents of the works, and the "small voters" were on the spot to vote for each other. After that, nearly 300 primary and secondary school students went to the stage to vote in turn and evaluated the winning order of four works.

"Expert reviews mainly select works from technical and design perspectives, while mass reviews select works from aesthetic, experiential and child interest perspectives." Introduction by the person in charge of the competent department.

After the selection, the Planning Bureau reported the final results to the Changsha Municipal Committee and municipal government, and communicated with the district committees and the district governments. It tried to transform these good creative designs into practical results through micro-transformation, so that children's participation and decision-making could be changed visibly.

Actions at the micro level often do not involve the "big demolition and construction" of urban space, but through subtle transformation and fine management to achieve child-friendly at the spatial level.

The micro-specific changes in material space and management methods are the most direct part that can be touched and felt by families and children as users. This puts forward higher requirements for the fine governance and meticulous design.

Communication and participation at the micro level need the cooperation of two aspects. On the one hand, design professionals play an active role in the process of design, bringing children's communication and participation into the whole process of design; on the other hand, planning management departments need to establish a framework and platform to facilitate the common deliberation and decision-making of all subjects.



Figure 7 Children's Communication and Participation Activities at Micro-Level

4. Conclusion

In the context of China, government agencies, as the leading force of social development, play an important role in guiding urban development. In the process of building a child-friendly city, urban development is not only for the general public, but also for the growing children. Planning and design processes need to be highly communicative and participatory, so that citizens, as more dynamic subjects, can fully integrate into the urban development process.

On March 12 this year, director of Child Protection Department of UNICEF Office in China, and his delegation visited Changsha to explore the establishment of a child-friendly city in Changsha. The construction of Changsha children-friendly city is in progress.

The declaration of child-friendly cities is not an end, but a part of the development of people-oriented cities. The purpose is to make the society form more value consensus through communication,

participation and a series of urban events, so that the development of the city takes into account efficiency and fairness, and pays more attention to everyone real people.

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Urban design for multilevel planning

A Multilevel Urban Landscape Measurement for Zoning Control – A case study of Gushan Kaohsiung in Taiwan

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Abstract: The zoning control in Taiwan is a legal regulation on land that emphasizes binding land use and density rather than landscape shaping of neighborhood, place, district etc. The current system of zoning and urban design guidelines in Taiwan lacks the perspective of urban landscape and results in high similarity of building and street-block's fabrics. The purpose of the study is to provide perspectives of urban landscape, architecture, street-network configuration for enhancing the ability of zoning control and urban design guidelines to describe and control urban form in Taiwan. This article firstly presents quantitative measurements to describe urban form and activities in the scales of streets, plots, blocks, and places. Three measurements are Choice measure of Space Syntax, building density measure by Spacemate, and land-use mixture level of Mixed-use Index (MXI). The data is obtained from the field survey into the detail of building form, uses of every floor, gross floor area of each land parcel of study area, Gushan District, Kaohsiung City, Taiwan. The result supports the information of building density, choice measure, land-use mixture levels in the scales of cadastral land parcels, blocks and places. The measurements and comprehensive classification from the overlay analysis help urban design guidelines of zoning control with the landscape perspective.

Keywords: Spacemate; Space Syntax; Zoning control; Urban Landscape

Introduction

Zoning control of urban planning is one of the most important legal tools that influence urban landscape. It is formulated in the regulations and urban planning regulatory documents under the relevant urban planning system in Taiwan. It mainly emphasizes binding land use and density instead of landscapes shaping in neighborhoods, places, and districts etc.

The current system of zoning and urban design guidelines in Taiwan lacks the perspective of urban landscape, and it results in high similarity of building and street-block's fabrics. Besides, it doesn't think about the relevance between urban physical environment elements (Lin, 2017 ; Ku , 2018). For example, in terms of land use intensity, Lu, Yueh-Tung (2017) proposed that the intensity of development for a zone decided by Taiwan's planning departments is mainly based on the width of the surrounding roads, no matter what kind of zones it is. When the surrounding roads are wider, the intensity of development is higher. And that means high floor area ratio and more allowable uses. It is a kind of planning thinking based on building management, and it does not take into account the spatial location, activity characteristics, configuration of infrastructures, development potential, and other physical environment elements of the area.

Urban design is also a part of zoning control in Taiwan, and it is implemented in urban renewal areas, land readjustment areas and specially designated urban design areas. However, most of Taiwan's urban design regulation documents are abstract concepts and lack the process of constructing a vision of the urban landscape. A urban design guideline is mostly presented in the form of text and partial drawings under a detail plan. The

urban design regulation lacks a more objective, direct and comprehensive way to be understand the landscape atmosphere of a neighborhood, place ,and district. That makes it difficult to grasp and discuss the overall spatial vision when planners draw up a detail plan and the principle of urban design in the local(Li, 2011). In addition, Taiwan's zoning control lacks the multi-scale discussion. Most of the regulations of zoning control, including the land use, allowable use, floor area ratio and building coverage ratio, are regulated in a block rather than a building lot. Taiwan's development mode is based on each cadastre, and a block usually has several cadastres in the most of regions excluding some big blocks in readjustment areas. That difference between the units in zoning control and development mode in Taiwan leads to the highly similar urban landscape in blocks.

Moreover, urban landscape includes the active landscape and the physical landscape. Hu and Yu (1984) proposed that from the point of view of *The Spirit of Place*, the active landscape is the soul of a place space, while the landscape of the physical environment is the body and skeleton that governs the soul. As a result, when we describe the urban landscape ,we need to analyze both physical landscape characteristics and the urban activities. And the compact development of the city makes vertical development a present and future trend, but the zoning and urban design regulation mainly discuss two-dimensional urban functions and tolerance without considering the impact of vertical space uses on urban landscapes.

Overall, the current system of zoning and urban design in Taiwan focuses on binding land use and building density. On the other hand, the system develops and analyzes the urban landscape respectively by independent fields of urban activities, buildings, landscapes, transportation, and so on(Yang, 2009). It is hard to shape the overall image of the city with the regulation and analysis of the separate elements. The purpose of the study is to provide perspectives of urban landscape, architecture, street-network configuration for enhancing the ability of zoning control and urban design guidelines to describe and control urban form in Taiwan. The study also shows the comprehensive results of overlapping the landscape characteristics in the scales of cadastral land parcels, street blocks and district areas, and the analysis can help urban design guidelines of zoning control with the landscape perspective.

Therefore, this study attempts to analyze the urban landscape of the Gushan District of Kaohsiung City in Taiwan from the perspective of quantitative urban landscape indicators at the cadastral land parcels, street, block, and place scales to understand the interaction between the elements of the urban physical environment and activities. Then it can help urban planners and designers grasp the overall living space of the city and understand the combinations of the elements of urban landscape at different scales. And it can be discussed what kind of landscape is shaped by the different levels of the diversity of vertical space activities.



Figure 1 Location map of the study area
(the left is the area of the Gushan District ; the right is the study area)

Studies and Perspectives of Shaping Built Environment

1. Built Environment Characteristics

The most extraordinary thing in the city is not that their morphological composition is so different, but that elements of their composition is so the same(Hillier, 1996). These elements that form the urban landscape are what this study would measure, analyze. The following discussion is about the elements of urban space and urban landscape in the views of urban morphology and new urbanism.

From the point of view of Conzenian School, one of the main schools of urban morphology, Conzen (1960) proposed the term *townscape* as the subject of his research, analyzing the three-dimensional form of urban space by three systematic components: town plan, building fabric and pattern of land and building use. *Townscape* is called as *landscape* now. The townscape comprises the three components that are defined below. Town plan is the most spatially ‘encompassing’ of the three components, and it has become an integrated method named as Town-plan analysis(Oliveira, Marat-Mendes *et al.*, 2018). Town-plan analysis investigates the patterns of streets, plots and buildings. *Building Fabric* can be analyzed and discussed by age, building type, construction materials, height and architectural style. *Land and Building Use* is generally considered to broadly recognizable categories such as residential, commercial, industrial, institutional, recreational activity or stand vacant. It shows the most small-scale spatial heterogeneity within the townscape. The three components of essential townscape elements form the physicality of the townscape. It is emphasized that the difference in stability or persistence between elements. As time go by, due to the difficulty in reorganizing and changing the ownership, the street is the most stable element, which refers to the urban street space between a block and a block. The second one is a plot. It can be divided into smaller plots by subdivision over time, or aggregated to form the same size as a block. Land use is the least persistent over time(Caniggia and Maffel 1984).

And the Italian architect Saverio Muratori (1963) proposed the *operational histories* as the basic theory of his architectural design to study the *types*, *organisms* and *urban fabric* for cities of different periods. Gianfranco Caniggia, who inherits the philosophy, continues Muratori's research with *typology* which takes the building

type as the root element of the urban form. And then the philosophy contribute to an important school in urban morphology which apply *typo-morphology* to study urban landscape, such as Giancarlo Cataldi, Gian Luigi Maffei, Maria Grazia Corsini, Paopo Maretto, and Giuseppe Strappa. Most of them continually use this concept to study urban patterns in Italy and other places(Moudon, 1997).

Combining the ideas of the main schools in urban morphology for elements of urban landscape, there are some important elements as follows. Conzenian school mainly uses streets, plots, architectural structures, and land use as the main elements of the study, and Muratorian school emphasizes the types of buildings in order to study the urban patterns in different periods.

In addition, under the wave of new urbanism and rationalism, more and more scholars discuss that the formation of urban space is closely related to the diversity of urban activities. They believe that the diversity of urban activities helps shaping good space of a city. Jane Jacobs (1961) proposed that urban streets and the surrounding land use constitute the urban space. The diversity of land use is important for the quality of urban public life and improving urban vitality, and it also stimulates the vertical development of the physical environment. Strict and single land use can make urban life disappear (Jacobs, 1993; Hoek, 2008). Following the context, the concept of compact city has also arisen. It has a great impact on urban design, emphasizing the importance of mixed use, high-density development, and development of mass transit to the city.

Integrating the aforementioned the ideas of urban morphology and new urbanism, this study considers that the elements of urban landscapes include streets, buildings, land uses.

2. Measuring Urban Forms

Besides, there are some researches about urban landscape by measuring some indexes. Space syntax , Spacemate and Mix-use Index are the most common methods to use in researches of urban landscape. Space syntax combines scientific analysis with people-oriented concepts, spatial analysis method based on spatial topology. Lots of researches use it to analyze the spatial configuration, connection of road network, space potential, etc. It is used to explain how human and architectural space are connected and the influence of space on social relationships and behaviors. It also classifies the space with spatial logic and establishes rules for the conversion of roads and passages into axes(Hillier and Hanson, 1984;Hillier, 1996).

Spacemate is a 3-dimensional spatial matrix The researches on Spacemate are mostly to discuss the different proportion of negative space and positive space. Spacemate focuses on various types of density on the urban block such as Floor Space Index (FSI), Ground Space Index (GSI), Open Space Ratio (OSR), and the number of floors (L). Spacematrix is a method created by the same people as spacemate. It has one more analysis than spacemate, and that is network density (N).

Burton (2002) believes that the mixed use of land should provide a variety of facilities and services in terms of urban functions. For urban residents, the mixed use of land should be a way of using land facilities that can accommodate both living and employment (Jacobs,1961).

Some studies discuss the combination of quantitative landscape analysis tools, such as Space Syntax, Spacematrix and Mixed-used Index (MXI) as a set of quantitative assessment tools for urban design (Ye and Van Nes, 2014). That has been applied to the assessment of urban design schemes in related research(Ye, Yeh *et al.*, 2016). There are not many studies about discussing urban form in Taiwan by using a method of combining spacemate(or spacematrix), space syntax, MXI. Lee (2016)uses Spacematrix and space syntax as two research methods to discuss urban forms in different periods. That replaces traditional research in urban morphology. With quantitative analysis methods, it can help planners to understand the urban form under the more diverse and faster development of cities now. The results of the above two case studies explain the relationship between

the socioeconomic status and urban form of a certain place. And the results help planners to observe the changes in urban density in different periods and learn the speed and shape of urban development at that time.

Methods

1. Conceptual Framework

Looking at the above studies about measuring urban forms, this study uses a conceptual framework as seen in Figure 2 that analyzes the urban landscape through quantifying the elements of *streets*, *buildings* and *land use*. This study would discuss about the individual results of three elements in the cadastral, streets and blocks scales for the study area. Then it shows the integrated results of the three elements and different forms of places.

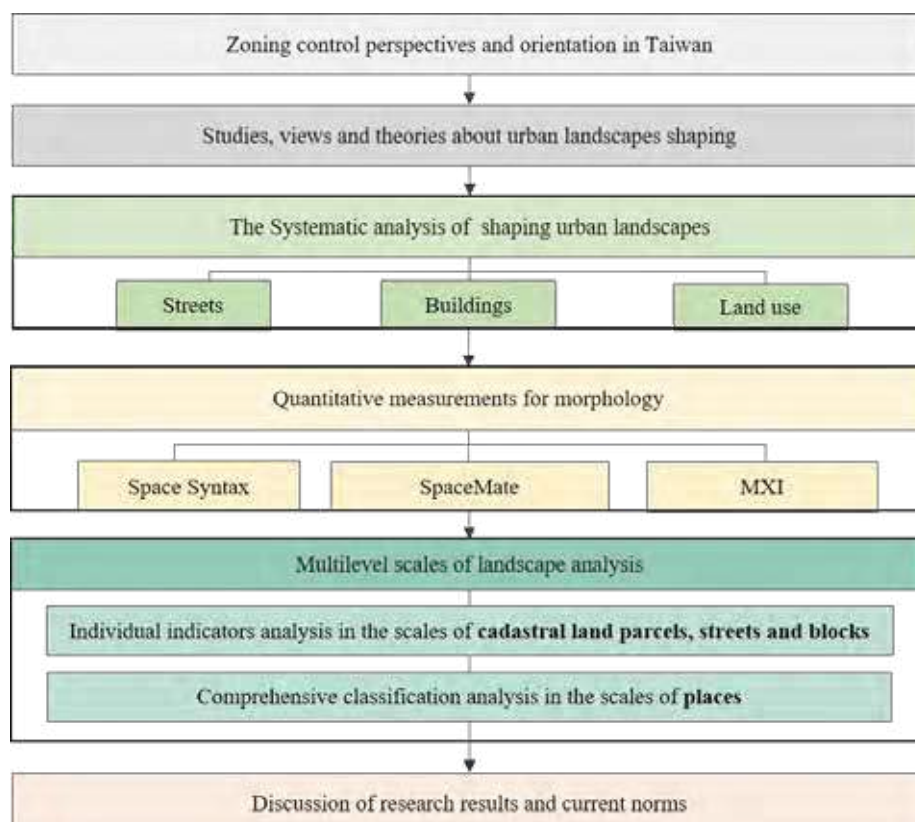


Figure 2 Conceptual Framework

2. Space Syntax

Space syntax is the architectural analysis theory developed by Professor Bill Hillier at University College London in the 1970s. Combining scientific analysis with people-oriented concepts, spatial analysis method based on spatial topology, he develops a set of indicators that can explain the spatial configuration. It is used to explain how human and architectural space are connected and the influence of space on social relationships and behaviors. It also classifies the space with spatial logic and establishes rules for the conversion of roads and passages into axes(Hillier and Hanson, 1984; Hillier, 1996).

Hanson (1999) discussed the forms of residential buildings in different eras with Space Syntax, and then Alasdair Turner assisted in the development of DepthMap software that integrates all the theories and techniques of spatial structure, increasing the production of visual graphics, speeding up the calculation, and automatically drawing Axis diagrams, etc. After the software emerged, Space Syntax is widely used in the researches in the architectural or urban scale(Huang, 2017), and become one of the main quantitative methods for studying Urban Morphology.

In this study, the choice which's indicators of Space Syntax focuses on measuring the extent of use of the road network. Hillier and Yang *et al.* (2012) pointed out that the *Integration* represents number of turns for selecting the another node as the destination from the starting point. *Choice* represents the number of times for the node being selected in all movements. These two indicators are both essential elements for measuring spatial mobility potential. Space Syntax can reproduce the moving characteristics of people in space. The areas where the integration or choice are relatively high are the locations that are easy to reach and pass in the space, but these values do not represent the actual distance (Hillier and Hanson, 1984).

The values of Integration and Choice are based on the least length, fewest turns, or the least angle respectively to calculate the shortest path. Choice is more suitable to reflect and predict human movement patterns (Peponis, 1989; Turner, 2016). In addition, Turner (2016) proposed that the angular segment analysis algorithm shows a better correlation with observed vehicular flow than the standard axial analysis and block-distance measures. Because this study will explore the relationship between land use patterns and street activities, it uses choice as a measurement for this area. Simply speaking, choice is to calculate the number of times for a node being selected, and therefore choice can also seen as the ability of a space to attract people. In general, most urban activities choose the shortest topological path, being calculated based on the total angles of the turn to reach the destination. This study uses the segment map which is converted from the road centerline of the local road network map of Gushan District, Kaohsiung City as seen in Figure 3 to calculate choice by angular segment analysis. The result of choice is recorded in the Cadastral map of the study area as seen in Figure 4 in the scales of cadastral land parcels.



Figure 3 Route Map of Gushan District, Kaohsiung City



Figure 4 Cadastral map of the study area

3. Spacemate

Spacemate is a quantitative method derived from the request of a typical post-war urban suburbanization in Amsterdam, the Netherlands. It assesses the density of buildings in the urban space. The density of buildings and building types are used to evaluate the urban environment during the process of planning and designing. They affect the various aspects of urban planning (Berghauser Pont and Haupt, 2005). Spacemate is a classification of regions of different urban forms by four quantitative indicators : Floor Space Index (FSI), Ground Space Index (GSI), Open Space Ratio (OSR), Layer (L). It is worth noting that the above indicators use the actual Floor area ratio and building coverage ratio rather than the ratios of legal regulations. The four indicators are placed in the 2-dimensional spatial matrix. According to the values of these four indicators, the study divides the matrix into sub-regions to represent different urban forms. That can help to understand how different combinations of four indicators of urban building density will form the urban form and create the classification of the built environment.

In this study, the data processing of Spacemate calculation is divided into the building density and building type. The building density of this study is adopted Floor Space Index (FSI), Ground Space Index (GSI), and the number of floors (L) as indicators for quantifying building density. The types of building are divided into three types: point type, strip type and block type. The buildings of point type are such as single-family building. The buildings of strip type are such as terraced houses. The buildings of block type are such as high-rising buildings. In addition, the analysis is divided into two scales: cadastral land parcels and blocks. The indicators and purposes are different between the analysis in two scales. The analysis in the scale of blocks is used to overlay the MXI and Space syntax results while the analysis in the scale of cadastral land parcels is used as a reference for observing detailed urban patterns.

Table 1 The data used for spacemate analysis

Analytical scale	index	Value/type	Data processing oriented
blocks	Floor Space Index (FSI)	FSI = floor area of all buildings in a block divided by the area of a block	Building density
	Ground Space Index (GSI)	GSI = The area of all buildings in a block divided by the area of the area of a block	Building density
cadastral land parcels	Average number of floors (L)	L = The total number of floors of all buildings in the a land parcel divided by the number of buildings in a land parcel	Building density
	building types	point type/strip type / block type	Building Type

4. Mixed-use Index (MXI)

The concept of compact city is on the rise with Mixed-use Index (MXI) to study the urban type, urban design, urban activities. Some studies use the elements such as work, residence, facilities as the main classification, and each plot can be comprehensively judged by the degree of mixed-use (Ye and Van Nes, 2014;Ye, Yeh *et al.*, 2016). The further analysis of the degree of urban spatial vitality, urban development, and urban types with the overlapping analysis of MXI and other morphological quantitative indicators. Besides, using Shannon's diversity index (SHDI) to determine land use diversity is a method of calculating the values of the entropy based on the concept of the biodiversity in ecology. The method has been used in land in recent years to judgments on the diversity of the land uses(Frank, Sallis *et al.*, 2010; Dhanani, Tarkhanyan *et al.*, 2017).

In order to judge the mixed use of urban land in Taiwan, this study is based on Taiwan's land use survey classification and actual observations. And the land uses is classified into residential, commercial, productive, infrastructure, and other use.

Table 2 The contrast between the classification of this study and Taiwan's land use survey classification

Classification of Land use in the study	Taiwan's land use survey classification
Residential (R)	Residential
Commercial (C)	Business
Productive (P)	Manufacturing, warehousing
Infrastructure (I)	Institutions, schools, health care, social welfare facilities, public facilities, environmental protection facilities, cultural facilities, park green space, leisure facilities, road related facilities
Other use(O)	Vacant land, religion, funeral, other construction land

This study explores the entropy of land uses. Zhang (2007), Frank and Pivo (1994), Cervero (2004), and Song and Knaap (2004) used the entropy of land uses for the studies of mixed land use. The more uniform and disordered the system is, the larger the representativeness is, and the larger the relative entropy is. The more systematic the system is distributed, the smaller the representativeness is. And the smaller the relative entropy value is. The significance of the entropy value on the block scale is the proportion of the land use in the blocks. The larger the entropy value, the more uniform the distribution of various land uses. The more mixed types, the more diverse urban activities occur in the spatial scale of the street. The entropy formula is below.

$$-\sum_{i=1}^n MXI_i * \ln MXI_i$$

Where i represents the different land use classifications of blocks

Calculate the entropy values of the various blocks and classify them through the number of times distribution maps through ArcGIS as a way to judge the degree of mixed use of the blocks.

Multilevel scales of landscape analysis and result

1. Analysis of urban landscape at the scale of streets with Space Syntax

The result in the block scale of Space syntax is as seen as Figure 5. The study calculates choice by the road network map via DepthmapX. In this study, the result of the road network is divided into eight categories according to the number of times as seen as Figure 6. The red lines in Figure 5 mean that there are highest values of choice on these roads such as Zhonghua 1st Road and Mingcheng Rd. The two roads are both the main road that can fast be passed through and get to other regions as seen as Figure 7 and 8.



Figure 5 Angular choice analyses of the study area with Space Syntax

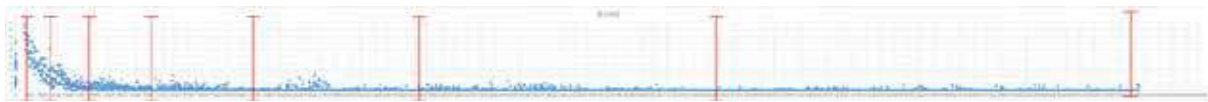


Figure 6 The distribution map of the choice value of the road network



Figure 7 Zhonghua 1st Road



Figure 8 Mingcheng Rd

2. Pattern of urban landscape at the scale of cadastral land parcels

The landscape at the scale of cadastral land parcels can be discussed by the results of Space Syntax, spacemate, and MXI. First, the study uses the result at the scale of the streets of the Space Syntax as seen as Figure 5 and outputs the result that contains 8 levels of choice values to ArcGIS software to overlap with the Cadastral map. Number 0 is the lowest level of choice value while number 7 is the highest level of choice value. The choice values of the segments are as the basis for coloring each cadastral land parcel. The result of Space syntax at the scale of cadastral land parcels is as seen as Figure 9. The land parcels by the highest level of choice values are colored red. It's obvious that the large plot of land where Kaohsiung Museum of Fine Arts is located and the land parcels on both sides of Meishu East 2nd Rd and Mingcheng Rd are also red.

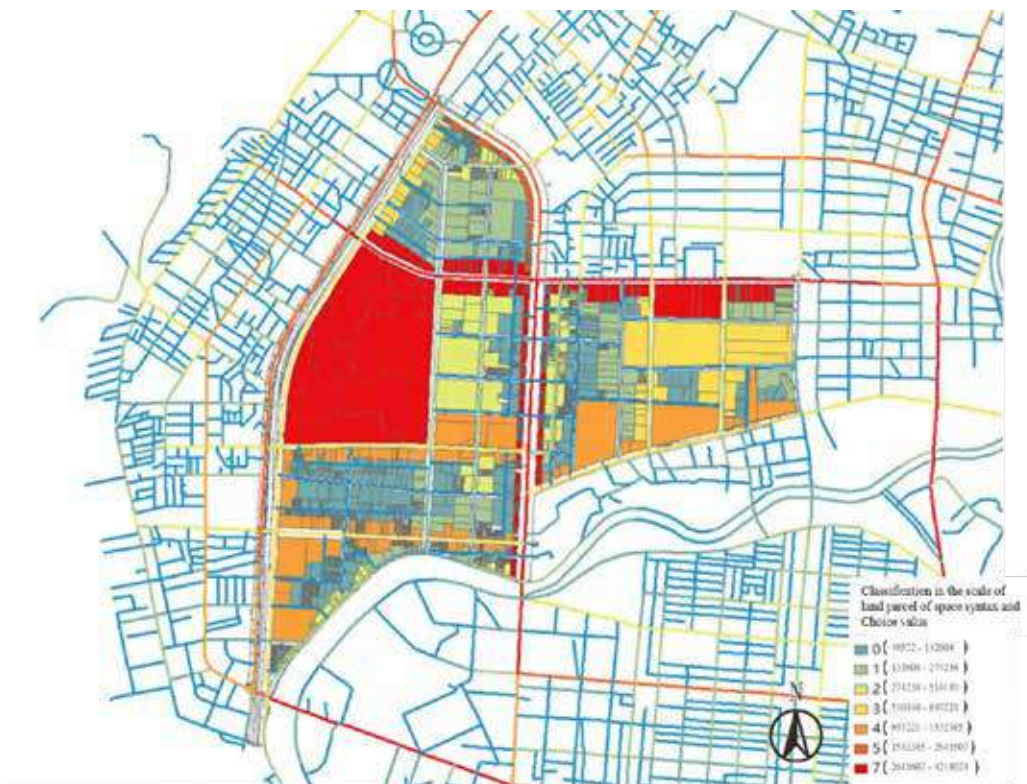


Figure 9 The result of Space Syntax by calculating choice values in the scale of cadastral land parcels

The analysis of building density uses the average number of floors of buildings and building types in each cadastral land parcel. The number of floors is divided into low level (0~2 floors), medium level (3~9 floors) and high-rise level(over10 floors), according to the common building forms in Taiwan.

There are three categories based on the building types. The building types are divided into point type, strip type and block type, as seen as Table 3. The buildings of point type are such as single-family building. The buildings of strip type are such as terraced houses. The buildings of block type are such as high-rising buildings. In this study, the value of the open space and vacant land is listed as another category. The Table 3 shows the building density categories which combine the 3 types of building forms and 3 categories of the average number of floors of buildings.

It can be seen as Figure 10 that the open space and vacant land are mainly distributed on the east side of the study area, and Aozihdi Forest Park and its surroundings form a distinct distribution of the building density as seen as Figure 11. The northwest side of the study area is dense, and the numbers of floors of buildings there are basically over 10 layers as seen as Figure 12. So the map shows a clear dark color for the high building density.

Table 3 Building Density Categories

Building Density Categories	Basis of Classification
High (3)	medium level with the strip type, medium level with the block type, high-rise level with the block type
Medium (2)	medium level with the point type, high-rise level with the point type, high-rise level with the strip type
Low (1)	low level with the point type, low level with strip type, low level with the block type
Vacant land and open space (0)	no buildings

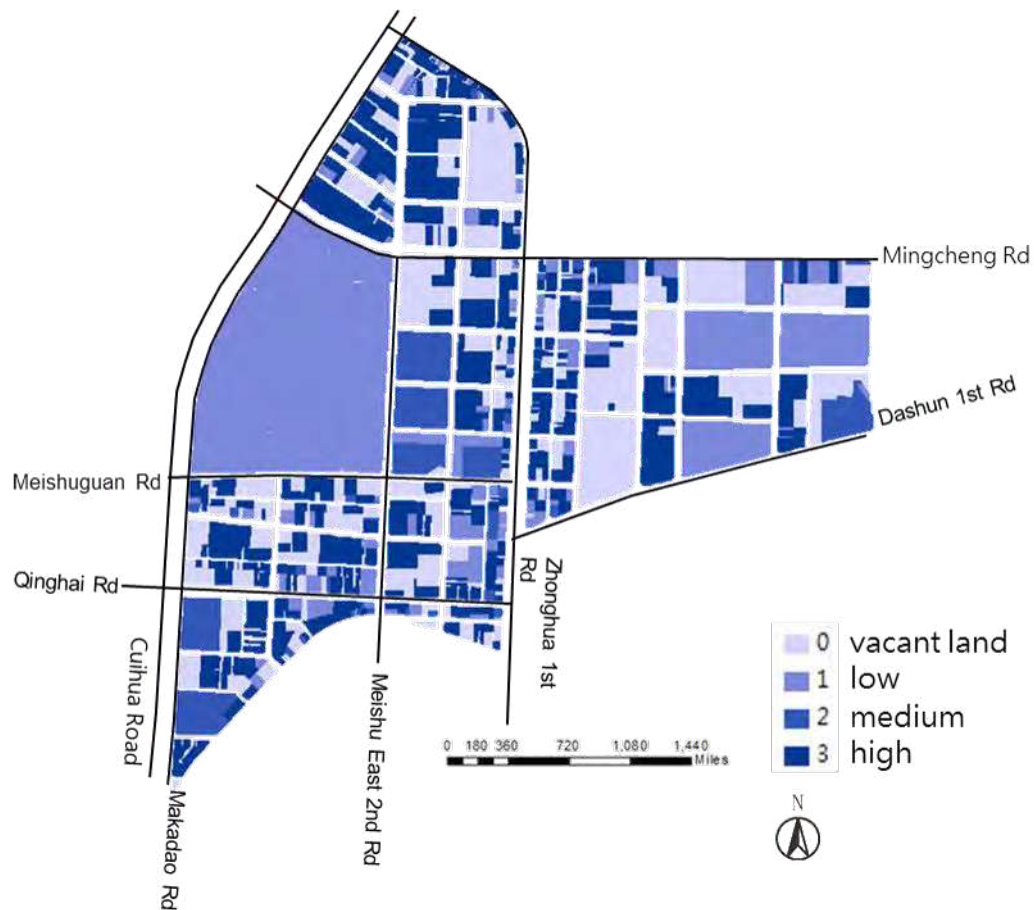


Figure 10 The distribution map of building density categories in the scale of cadastral land parcel



Figure 11 Aozihdi Forest Park and its surroundings



Figure 12 The northwest side of the study area

The result of MXI at the scale of blocks shows below. I (Infrastructure) is obviously the largest category of the main use category in the study area, such as the main park, art museum. The second is the R (residential) category because there are many residential buildings in the study area. Even if the first floor of some buildings is for commercial use, the main use is residential. P (productive) is concentrated in the southern half of the study area, and its use mainly in warehousing and manufacturing. O (other) is based on the use of open space or vacant land.

The distribution of mix-use levels in Figure 13 to 18 below can be seen that the proportion of different vertical uses in the scale of cadastral land parcels. Then the main land use of a single parcel is known. Most of the parcels beside the main roads and parks are mixed-use, and there are usually commercial or infrastructure use in the low floors in those parcels. According to the survey data of this study, the distribution of different land uses

on each floor can be colored on several maps. Those maps can become the reference of the database when planners reformulate or adjust the local plans for urban design and land use control in the future.

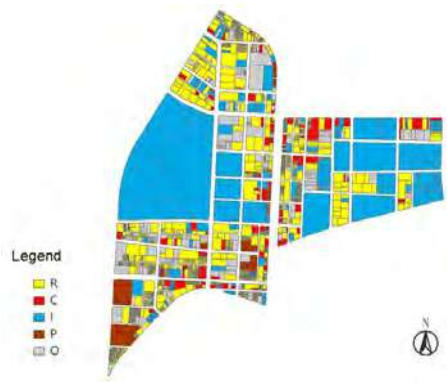


Figure 13 Main land use distribution map at cadastral scale

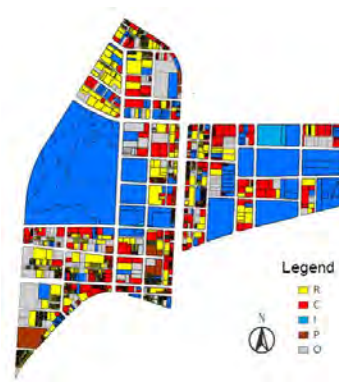


Figure 14 Distribution map of land use status on the ground floor

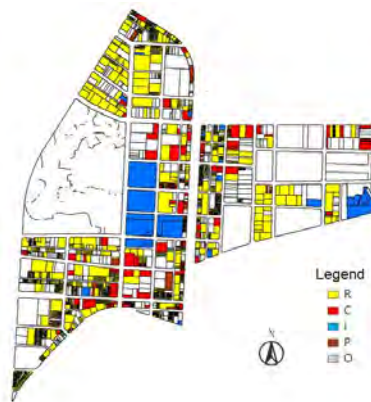


Figure 15 Distribution map of land use status on the 2nd floor



Figure 16 Distribution map of land use status on the 3rd floor

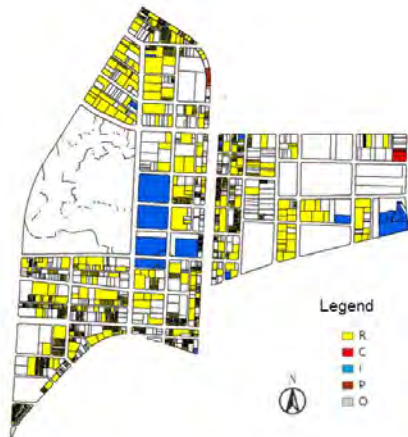


Figure 17 Distribution map of land use status on the 4th floor

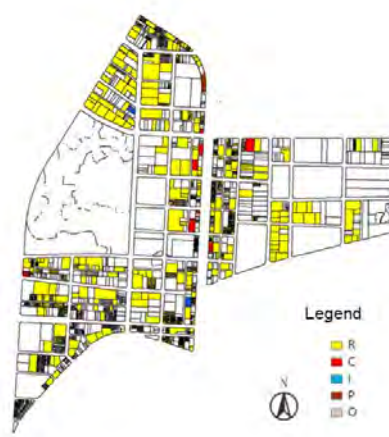


Figure 18 Distribution map of land use status on the 4th floor above

3. Pattern of urban landscape at the scale of blocks

The landscape at the scale of blocks can be discussed by the results of Space Syntax, spacemate, and MXI. First, the study selects the highest choice value surrounding the blocks as the basis for coloring those blocks as seen as Figure 19. Compared with the actual local development situation, the result shows that the areas with the highest choice value are indeed highly developed than the other areas with a low level of choice. The road network of

the area with the lower value of choice mostly serves the neighborhoods and the communities. The blocks surrounding by the roads with the highest choice value are usually highly developed, while those with a lower value of choice are mostly surrounded by residential buildings.



Figure 19 The result of Space Syntax by calculating the value of choice at the scale of blocks

The results of Spacemate at the scale of blocks are based on the analysis of the indicators such as the average Floor Space Index(FSI) and Ground Space Index(GSI) of each block. The indicators are used to describe the different spatial density distribution of blocks. The FSI is the description of the influence of the elevation of blocks on the urban system, and the result is as seen as Figure 20. FSI corresponds to the actual floor area ratio, and the GSI corresponds to the actual building coverage ratio in the built environment. Through the scatter map and the actual observation of the types of the blocks, the study divides the street blocks into five types such as low building coverage ratio with low floor area ratio, medium building coverage ratio with low floor area ratio, medium building coverage ratio with medium floor area ratio, medium building coverage ratio with high floor area ratio, and high building coverage ratio with low floor area ratio.

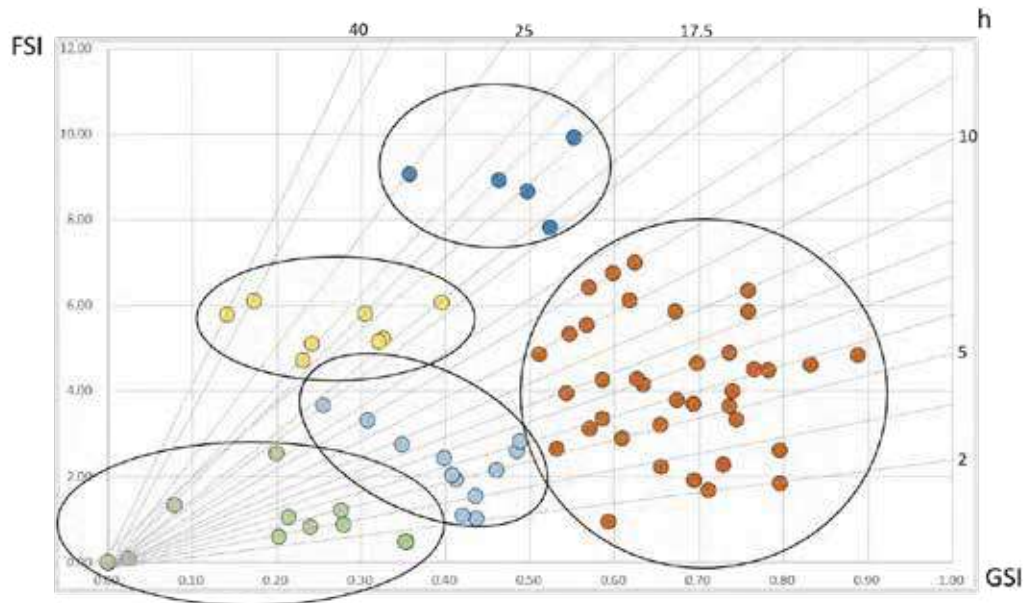


Figure 20 Spacemate classification matrix in the scale of blocks

Through the above five classification results, the spatial distribution map is as seen as Figure 21. Within the scope of the study, the blocks beside the river which is located at the southernmost part of the study area are mostly with high building coverage areas. The followed areas are by the two sides of Zhonghua Road. The areas of low building coverage ratio with low floor area ratio are distributed around the Kaohsiung Museum of Fine Arts and near the Forest Park.



Figure 21 Spacemate classification map in the scale of blocks

On the other hand, the result of MXI in the scale of the blocks shows below. According to the distribution map of the entropy value of blocks as seen as Figure 22, the study divides blocks into five levels, which represent low mixed-use, medium-low mixed-use, and medium mixed-use, medium-high mixed-use, high mixed-use.

Through the above five levels, the spatial distribution map is as seen as Figure 23. The high mixed-use blocks are distributed in Zhonghua 1st Road and Mingcheng Road along the street segments. Due to some undeveloped areas and the existence of two large green open space in the study area such as Kaohsiung Museum of Fine Arts and Aozihdi Forest Park, the low mixed-use is obviously distributed around them.

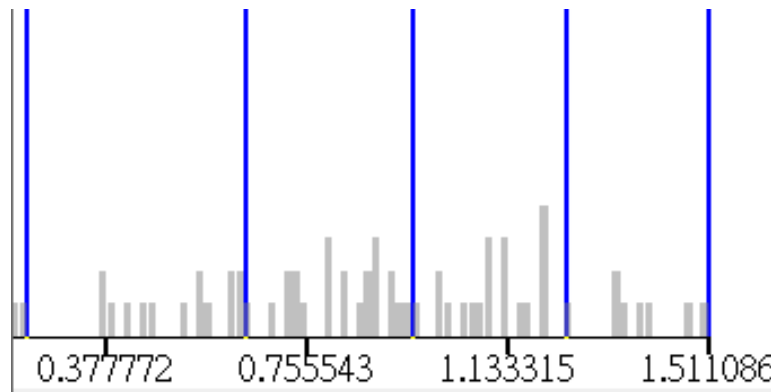


Figure 22 The distribution map of the entropy value of blocks



Figure 23 The spatial distribution map of the entropy value of blocks

4. Comprehensive classification analysis in the scales of places

Combining the results of the previous individual indicators, this study combines those results to classify different types of places. Blocks and road networks are relatively difficult the landscape to adjust in a short-term,

so the study combines the results of the three quantitative methods at the scale of blocks to analyze the regional potential and mixed development by using the choice of the road network as main reference basis of classification.

The study area is firstly divided into high potential, medium potential, and low potential by choice values of the road network, then obtaining the final classification through combining the level of development and attributes of blocks. The classification as seen as Figure 24 includes six sorts like low-potential area, single-land-use development medium-potential area, and mixed-use development medium-potential area, low-development high-potential area, medium-development high-potential area, high-development high-potential area.

High-development high-potential areas are mostly with the high level of choice values, building density, and mixed-use. As seen as Figure 25, buildings in the area are mostly over 10 floors and have over one kind of land use excluding residential use. And they all face main roads in the study area. The FSI and GSI values of medium-development high-potential area are mostly higher than low-development high-potential area. As seen as Figure 26 and 27, the difference between the two areas is the actual building coverage ratio.

It's clear that there is the buildings in mixed-use development medium-potential areas are mostly three- or four-story terrace houses and have commercial or other uses on the ground floor while the buildings in single-land-use development medium-potential areas are mostly the same use on every floor, such as residential use, as seen as Figure 28 and 29.

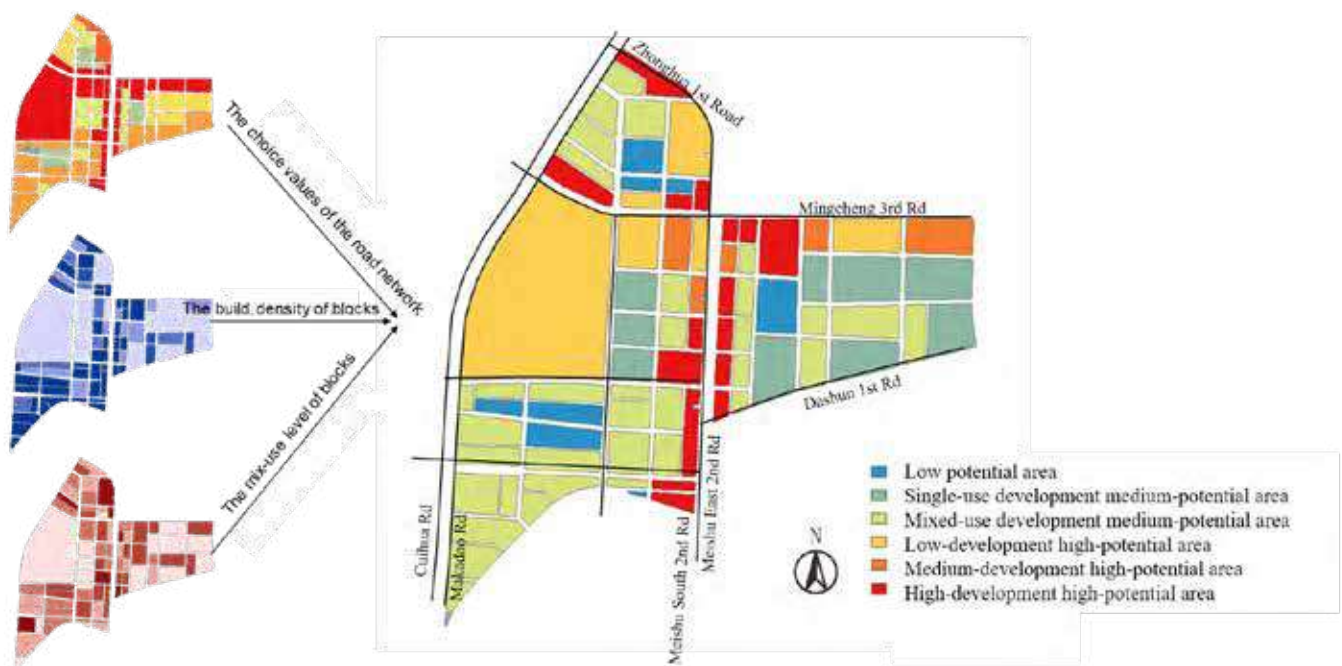


Figure 24 Development level map



Figure 25 High-development high-potential area



Figure 26 Medium-development high-potential area



Figure 27 Low-development high-potential area



Figure 28 Mixed-used development medium-potential area



Figure 29 Single-land-use development medium - potential area



Figure 30 Low potential area

Discussion and Conclusions

The purpose of the study is to provide perspectives of urban landscape, architecture, street-network configuration for enhancing the ability of zoning control and urban design guidelines to describe and control urban form in Taiwan. At the scale of the streets, the result of choice value of Space Syntax can be used to describe numbers of times that roads are passed through for. Most of lands by the roads that have high choice values are highly development, and the landscapes on them are tall buildings and commercial shops.

From the perspective of cadastral scale, it can be understood the relationship between land use of each cadastral land parcel and the neighboring road network in the analysis of the more detail scale. And that can help planners to formulate a more detailed plan on land. The results of Space Syntax, building density, the land use survey at the scale of cadastral land parcel, as seen as Figure 9, 10 and 13, show that the roads with the highest choice values are mostly the main roads in the study area. That means that the plots beside those roads have high development potential and more diversity of land use. Conversely, road segments with lower choice values are more suitable for residential use. In the future, it may be suggested that the lands by those roads can be planned for more suitable landscape.

The analysis of landscape at the cadastral scale can tell more precise details than the analysis of landscape at the scales of blocks and places. Compared with the true landscape, the result at the scale of blocks may be a little distorted due to the average values for all land parcels at the same block. However, it also needs to have an overview for the whole landscape when planners make the zoning control and urban design guidelines. Analysis at the scale of blocks is useful for zoning control and urban design guidelines in Taiwan now because the related

regulations of zoning control and urban design guidelines are mostly based on conditions of blocks and streets either than cadastral land parcels.

As mentioned in the previous literature, the urban landscape includes the active landscape and the physical landscape(Hu and Yu, 1984). The comprehensive classification analysis at the scales of places is important for completely grasping the landscape of each place in a region. For example, the low-development high-potential area mostly faces the main roads and filled with open spaces, one-story houses, or just undeveloped vacant lands. The area may be a kind of places that are flexible to adjust its zoning control and urban design guidelines to let it develop faster and suitable for its context. Through the comprehensive analysis at the perspectives at the scale of places, it can be known the shapes, the diversity of activities, and potential of the place.

There are two limitations to this study. One of the limitations encountered is that it's impossible to obtain the latest cadastral map, road network map, digital topographic map which are published in the same year. And the existing land use survey results record only the main use of land. There's no record of three-dimensional land use. Therefore, the three-dimensional pattern of urban activities cannot be accurately described. Another limitation occurs when performing the Spacemate analysis. The shape and area of buildings on the digital topographic map are not accurate due to the incomplete registration of construction or illegal construction. So this study takes lots of time to measure the actual area of buildings.

In addition, the study is based on the empirical investigation of in a readjustment area in Kaohsiung that revolves around the art museum, which is an important regional infrastructure. Relatively speaking, the result should be different from other urban areas, such as CBD and suburbs. Therefore, the future research classification criteria can be decided by the conditions of locations.

In the end, the development approach in Taiwan is based on cadastral land parcels. There are different architectural forms for each construction project of the different developers. Although this study has conducted three systems of landscape indicators such as *streets*, *buildings* and *land use* surveyed by the scales of cadastral land parcels and blocks, the final analysis results are based on the block scale. The analysis based on the block scale is carried out to understand the urban landscape of the places and blocks. The future study can use the construction project of the same developers as a unit to conduct quantitative landscape analysis, and compared with the project that belongs to other developers and locations. Then that can help to understand the urban landscape of different actual development bases more clearly and directly.

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The Role of Climathon® in the challenge of Multilevel Ecological Planning

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Abstract: The paper explores through the lens of participatory processes the growing movement of Climathon®, understanding their potentiality in innovating urban planning. Climathon® are expressively collaborative design events, aimed at developing solutions to tackle climate change at the urban level. These events represent ‘safe arenas for experimentation’ where multiple levels of knowledge, institutions, resources and actors, are systematically involved in the development of ‘urban climate change experiments’ to increase resilience and foster the ecological transition of cities. Through documentary research and semi-structured interviews, the paper analyzes two European case studies, from the genesis of the challenge to the outcomes, to understand their degree of participation and inclusiveness, which forms of partnership and incentives make the ideas come into action, who are the actors and stakeholders involved, how charges and benefits are distributed, and how does Climathon® fit into local and regional planning. By reading the process beyond the products, the paper explores if these co-planning moments, if properly linked to the overall planning process, could represent a new form of ecological planning made of small incremental parts, foreseeing their replicability on regulation and decision-making practices.

Keywords: Climathon, urban resilience, co-planning, ecological planning

1. Introduction

To cope with the ongoing ecological and climate crisis (UN Environment, 2019; WWF, 2018; Steffen *et al.* 2018) and accelerate societal bottom-up contribution to the achievement of global Sustainable Development Goals, Agenda 2030 needs to refer strongly to local contexts and policies and to a multiplicity of small incremental actions. As confirmed in the European Urban Agenda (2016), in this context, urban institutions are invested of the crucial role to tackle global issues with new methods (Barresi and Pultrone, 2018) aimed at fostering urban resilience. Resilience, is here understood as a perspective and attitude (Gabellini 2018) that modifies and mobilizes planning practice, in reaction to shocks and stresses and in a process of continuous adaptation.

In this process, the contribution of participation as a foundation principle for “building resilience” (Stockholm Resilience Center, 2014; Biggs *et al.*, 2012; Folke *et al.* 2005) is widely recognized (De Boer, 2009), but the question raises difficulties because of the contrasting dimensions of scale (bigness vs. smallness), timing (long-term view vs. short term achievements) and different levels of knowledge (remote science vs. near knowledge and first hand experience) involved, between ecological and participatory action (Hester, 2007). The challenge for participation, according to

Hester (2007), is to put in place design capabilities that embrace the different social and ecological geometries, because ecological democracy “can shape distinctive and resilient cities” (*ibid.*). Against this background, we are witnessing increasingly frequent attempts by public administrations to involve systematically multiple levels of knowledge, institutions, resources and actors, in the development of the so-called ‘urban climate change experiments’ (Castán Broto and Bulkeley, 2013). It is the case of the participation of the Municipality of Bologna and of Lisbon to the organization of Climathon®2018, a 24-hour hackathon for climate action developed by EU EIT (European Institute of Innovation & Technology) Climate-KIC platform. Both the two European cities have undertaken a process of re-orientation of urban policies towards a resilience perspective, building space for experimentation on environmental issues. These experimentations are locally anchored but transversely oriented towards global issues, adapted to each referring context.

Through documentary research, semi-structured interviews and conversations with key players, the paper aim is to analyze, through the lens of participatory processes, the Climathon®2018 event in Lisbon and Bologna, analysing their differences and contact points, and its position with respect to the urban planning and the connection with the collaborative framework and the policies adopted by the cities, exploring their potential and limits in innovating urban planning. In order to draw this comparison, it seems necessary to start from the excursus of multilevel planning framework and the available tools that the cities are implementing to begin the transition towards resilience.

2. Bologna and Lisbon: multilevel planning frameworks for urban resilience

Bologna recent history shows the trajectory of the city’s urban planning and environmental policies intertwined with a holistic view of a collaborative city (Ostanel 2017; Massari 2018). This vision have seen a formal consolidation since 2014, with the approval of the “Regulation for collaboration between citizens and administration for the care and regeneration of urban common goods”. Thanks to the collaboration with Urban Center Bologna (now Fondazione per l’Innovazione Urbana - FIU), the city has been experimenting thematic neighbourhood laboratories (*Laboratori di Quartiere*), places of discussion on central issues for urban transformations (environment, reuse of buildings, welfare, urban regeneration) that have contributed to “increase the effectiveness of public action on the territory, promoting a broadened governance” (Evangelisti 2009). The thematic and place-based laboratories are the devices through which Bologna is currently aiming to connect the level of the practices with the macro policies. In 2006, the adherence to the Aalborg commitments for the implementation of Local Agenda 21, integrates collaborative policies in a framework of sustainable development. The opportunity to put the new approach into practice in the field of sustainable development and climate action was provided by the preparation of the SEAP - Sustainable Energy Action Plan (2012), a voluntary plan whose assumptions are based on collaboration between actors, local stakeholders and urban planning. Through the definition of a ‘protocol of understanding’ for the implementation between the Municipality and local stakeholders, the SEAP provides a formal commitment and sharing of objectives for the implementation and monitoring of actions. In 2015, Bologna adopted another voluntary tool, the BLUE AP - Local Climate Change Adaptation Plan (2016) that defines strategies and objectives starting from the current climate situation and prescribes the actions necessary to achieve them. The Adaptation Plan interacts with urban planning leading to the progressive adaptation of existing planning tools, in which it transfers certain environmental measures making them applicable. The two voluntary plans are necessarily based on collaboration

between actors, involving specific stakeholders on environmental issues, in project-oriented processes.

These devices were included in 2017 in the “Bologna Resilient City” vision, defined by the Deputy Mayor for Urban Planning and Environment Valentina Orioli as «primarily a slogan, within which we wanted to bring attention to the issues of mitigation and adaptation to climate change, and stress the need to tackle the issues in an increasingly coherent and structural urban planning framework». The effectiveness of the strategic choices of this vision passes through forms of democratic co-management (Allegretti and Herzberg 2004) of public resources, including the Participatory Budget (PB). PB in Bologna has been experimented since 2017. It entails the direct management of a portion of the municipal budget by the citizens, to finance a series of projects organized in different neighborhoods, previously defined through a path of co-planning on a territorial scale. The process foresees the direct selection of the co-designed proposals through an online voting, from which priority projects are elected to be realised in the following year. In 2017, the amount of one million euros of the municipal budget, has been set aside for 2018 and 2019 to be allocated to the Participatory Budget, while for 2020 the figure has been doubled. The process, saw more than 1,800 citizens participating in the co-planning events in both editions and respectively 14,584 and 16,348 people voting on-line for the realisation of the projects at neighbourhood level.

Lisbon was the the first capital in Europe to sign the New Covenant of Mayors for Climate and Energy in 2016 and will be Europe’s Green Capital in 2020. Many are the steps that the city took in the past decade to become a “Green, Smarter and Sustainable City” (Application Form for the European Green Capital Award 2020) encompassing: Lisbon’s SEAP (2010), managed together with Lisbon E-Nova, local energy agency that regularly organizes thematic public meeting with stakeholders (municipalities, NGOs, public entities, companies, students of higher education and professionals of the sectors under analysis); the Lisbon Strategic Charter (2010-2024) that starting from the city’s major challenges such as depopulation, vulnerability to natural events and loss of biodiversity, established three main objectives of ‘City regeneration’, ‘Climate change adaptation’ and ‘Connectivity of green spaces’; the Master Development Plan (PDM) 2010-2022 (2012), that was the result of a public discussion around 6 key sustainable questions and focuses on viable sustainability and local solutions, moving from zoning to block and street planning management; Lisbon 2020 Strategy (2013) that highlights the priority area of Low Carbon Lisbon; the Lisbon Climate Adaptation Plan (2017) that was the result of the national project ClimAdaPT-Local (2015-16), and the Lisbon Biodiversity Action Plan (2015-2020).

The development and implementation of these voluntary and mandatory planning tools is deeply rooted in the great efforts that the Municipality of Lisbon puts into participatory governance as a municipality’s strategy (Green Surge Project). This strategy has brought to an increase of the degree of participation in recent years, thank to several informative and participative actions connected to the *Lisboa Participa* platform portal (*Na Minha Rua Lx*, a portal and an app to signal necessity for intervention in green and public space; *LisBOAidea*; *Lisboa Debate*, a virtual and physical space of discussion around the city’s decisions; *Lisboa Aberta* for accessing the city’s open datasets) and that is well represented by the Participatory Budget (Orçamento Participativo Lx) process, one of the most successful experience of this kind in Europe so far. Started in 2008, Lisbon was the first European Capital to implement the Participatory Budget and today it represents a central forum for public decisions of the City of Lisbon. Lisbon’s PB chose from the first edition to recover a central aspect of

co-decision and not merely of consultation (Allegretti and Antunes, 2014) of the famous original model of Porto Alegre (Brasil). Through the online platform *Lisboa Participa* or during the several assemblies held each year, any citizen or non-governmental actor can present an idea for the city in the form of a project, that is then submitted to technical evaluation and public consultation, voting and implementation. The city commits 5% of the overall city's spending budget to the realization of the most voted ideas. During the 2017/2018 PB edition, the city invested 2.5M€ to realize 15 winning projects voted by more than 37.000 people, among 434 proposals adapted into 128 projects during the phase of technical analysis and public consultation.

This overview of urban planning and citizens participation in Lisbon and Bologna, shows a substantial consolidated tradition of the two Municipalities of using participatory approach in decision-making and collaborative action to face urban and environmental issues. Against this background, the contribution intends to analyze one of these actions, the Climathon® 2018 for each city, by reading the process from the genesis to the preliminary results achieved, to understand their degree of participation and inclusiveness, which forms of partnership and incentives make the ideas come into action, who are the actors and stakeholders involved, and how does Climathon® fit into local and regional planning, exploring their potential and limits in innovating urban planning. The analysis was carried out through semi-structured interviews with Valentina Orioli, Deputy Mayor for Urban Planning and Environment of the Municipality of Bologna, Valeria Barbi - Eu Projects, Climate change and Sustainability Coordinator for Bologna Foundation for Urban Innovation (FIU), and Francesco Rocca - Project Manager of Impact Hub Lisbon.

3. The performance of Climathon as safe arenas for urban climate experimentations

Climathon® is a global 24-hour marathon, aimed at finding solutions to climate change challenges through co-design¹, developed by EIT Climate-KIC, one of the eight Knowledge and Innovation Communities (KIC) created in 2010 by the European Institute of Innovation & Technology², to accelerate the transition to a zero-carbon economy. Climathon® is meant to be an action to catalyse innovation and encourage fresh new thinking from beyond the mainstream (*ibid.*) and a format that cities or other organizations interested can use, simply by applying to host the event on the official website. It originates from Hackathons, a popular format in technologists and makers communities during which a group of developers come together to challenge each other for a fixed amount of time, allowing participants to exercise creativity and to “maintain the code” (Taylor and Clarke, 2018), and in particular from Green Hackathons, a series of international coding events addressed to broaden participation and collaboration among ICT developers and sustainability practitioners and researchers (Zapico *et al.* 2013). Climathon® is nowadays taking the shape of global movement: it ranged from 20 cities involved in 2015 to 114 in 2018, 15 of which only in Italy.

As other Hackathons, Climathon® are moments of intensive and collocated collaboration (Trainer, Kalyanasundaram *et al.* 2016) during which participants with different backgrounds (ICT, environment, economics, technology, social etc.), skills (creatives, developers, designers, entrepreneurs, institutions' officers, technicians etc.) and levels of knowledge (university level

¹ According to the official event's website “Climathon empowers citizens, cities and local economies to come together to develop local solutions to climate challenges” (www.climathon.climate-kic.org).

² A body created by the European Union in 2008 to strengthen Europe's ability to innovate and formed by a community of more than a thousand partners among universities, research centers, companies including SMEs (www.eit.europa.eu).

students, researchers, decision makers, stakeholders, interested citizens, etc.) come together in a playful way to co-design solutions to tackle climate change in their city or region. The format proposed by Climate-KIC encompasses moments of information to introduce the topic, team building, brainstorming and networking among participants, experts and ad hoc stakeholders related to the challenge, training on business tools and presentation skills (business model canvas elements, pitching etc.), relax (yoga lessons, caffè and lunch break, movie screening, art performing etc.). The location also plays an important role, as often the event happens in appealing modern architectures (e.g. coworking places, innovation centers, museums) or original locations (renewed industrial buildings, former silos). As described by one of our respondents (Valeria Barbi - FIU) «Climathon® is not only a respectable scientific event, but is meant to be also a fun social event that focuses on the engagement on the climate change theme in an informal way». The working groups, often formed impromptu, challenge each other for a prize, which is typically the access to an incubation programme, following a strict timetable. This urgency, together with the competition, helps creativity to burst, while the awareness of the contemporary happening of the event in other cities of the world and the importance of the goal invests the participants of a sense of commitment and proud³.

Even if Climate-KIC does not refer openly to the word “participation” or “participatory design” in its Climathon® communication, many elements make these events a form of participatory activity (Taylor and Clarke, 2018). Namely, the tools employed such as team building activities, visioning or backcasting and design thinking methods, stakeholder needs’ analysis and dialogue, informal setting, action planning and prototyping, and other properties such as enlightening different kinds of knowledges, mutual understanding and learning, building trust and a sense of community (Lorenzo, 1998) which are typical outcomes of participatory processes.

In this respect, Climathon® represent ‘safe arenas’, where the participants, through co-design and ‘open innovation’ approach (Chesbrough *et al.* 2006) are allowed to ‘experiment’ and discuss openly, imagine and develop and eventually realize creative and innovative solutions, to global adaptation and mitigation issues. However since Climathon® deals with complex issues affecting a wide and diversified public, it seems necessary to critically understand the established format, the tools used (mainly business oriented) and the selected objectives, as well as its position with respect to other ongoing participatory and planning processes, to improve their degree of participation consistent with their mission and consequently their ability to increase the resilience of the urban contexts in which they are implemented. The following interviews, while outlining the Lisbon and Bologna case-studies, helped to analyze Climathon®.

4. The cases of Lisbon and Bologna

The 2018 edition of Climathon® took place on October 26th, with each participating city scheduling the 24 hours start and end, according to necessity. For the City of Bologna it was the third edition organized by FIU in partnership with Climate-KIC and the Municipality, and it took place in the headquarters of Urban Center Bologna (former name of FIU) at Sala Borsa. In the words of Valeria Barbi the decision to participate Climathon®, besides their membership in Climate-KIC, was due to «the theme [that] allowed us to combine not only an important and actual issue, such as sustainability

³ The analysis of the concrete development of Climathon® contained in this paragraph is based on the descriptions of Climathon programs around the world displayed in the official wes site, on the answers of our respondents and on the direct participation of one of the authors, namely Viviana Lorenzo, to the 2017 edition of Climathon® in Bologna.

and climate change» but also to practice «participatory processes, or citizen engagement, which are another of our core activities». FIU policy for participants' engagement in the event was, as Barbi reports, «to leave the participation very open, we have not identified specific targets (companies or subjects with particular preparation) as often happens in Hackathons addressed to a technological target. Neither we have set any age limits» and this paid in terms of diversity of participants, with a good gender balance.

The Municipality of Bologna was an active partner of all three editions, contributing to the event by setting the challenges and providing technical content. The challenges launched during the events, concerned issues related to the Adaptation Plan (Climathon®2016), the use of satellite data from the EU Copernicus project to increase urban resilience (Climathon®2017), while the third year (Climathon®2018) the challenge was linked to an ongoing municipal participatory process, the *Laboratorio Aria* (Air Laboratory), that provided the main theme, with the explicit request to participants to further develop the Aria App, one of the outcomes for the process, enriching it with more interactive features.

In the words of Barbi, the solutions that emerged encountered some obstacles, due to the lack of a clear follow-up path, in some cases left to the initiative of individual participants and partners, but also due to the peculiarity of the process and topics that characterize Climathon®. Barbi reports: «When we talk about Climathon®, and therefore of issues more closely related to climate change, it can be more difficult because the theme is very complex, more easily understandable for experts rather than citizen, who may have an awareness of the problem, but not related immediately to daily life [...] and because the projects that are born [in Climathon®] are also more difficult to achieve [e.g. sustainable mobility] and are complex to be managed immediately by a public administration». Despite the difficulties, in the words of the Deputy Mayor Orioli, the interest of the Bologna administration in taking part to the organization of Climathon® «lies in the exemplary value of this event and in its international resonance: the Climathon® allows to focus attention, for a limited amount of time but in a very intense way, because of its global repetition, on issues related to mitigation and adaptation to climate change and innovation through the use of technologies. It is therefore a 'climate experiment' very useful also for the dissemination of knowledge and awareness on environmental issues».

For Lisbon the decision to participate to Climathon® for the first time, came from a private initiative of a researcher. The Municipality of Lisbon was then involved through the intermediation of the local division of Climate-KIC. The team included Francesco Rocca of Impact HUB Lisbon, a local coworking space, part of a larger international network of spaces for entrepreneurs and social innovators. In the words of Rocca, the main reason to participate to Climathon®2018 for Impact Hub, was «a strong alignment between our strategy as agents for sustainability and supporters of environmental and social projects here in Lisbon and Portugal, and the goals of Climathon®, e.g. to work for solutions to local problems identified by the municipality».

The challenge for 2018 concerned smart management to reduce plastic and food waste in the city of Lisbon, and was proposed by the Municipality. Rocca reports: «The winners would have the possibility to develop their idea by being incubated here in Impact HUB for the following three

months and to do networking at the Web Summit⁴, and then the city intention was to implement the idea through the Orçamento Participativo. [...] In practice, this did not happen because the projects were all at the ideation stage and did not go ahead because of limited time or low interest from participants, mainly international students». This aspect is underlined also for Bologna by the Deputy Mayor Orioli, which confirms that «the resulting proposals are interesting for the Administration, but in general they need to be deepened to be effectively implemented in policies and public action», and that nevertheless «promoting a synergic approach between actions, processes and events around a key theme, allows to analyze the problems with greater depth, multiplying the points of view and the answers that the administration can put in place, also together with citizens, associations and other stakeholders».

In the opinion of Rocca, the success of the event relied in the flexible format provided by Climate-KIC and in the enabling space of ImpactHUB, and mostly in the relationships of value that arose among the participants and partners, rather than in the production of solutions: «One of the projects that won the membership here, C., became part of our team of coworkers [moreover] establishing relationships with the Çamara [...] and having the possibility to collaborate with them on other projects, was useful. But there was not much follow-up». One critical point for Rocca in Lisbon, was the substantially voluntary nature of the event and the lack of clear commitment and responsibilities of the partners in the follow-up phase, which prevented continuity in the process after the event.

Similarly, what Barbi in Bologna sees as positive in proposing this activity to citizens beyond the implications within the public administration or the realization of the project itself, is «to give life and organize events [...] that are however fundamental from an educational point of view, because they enter the negotiation process on climate change [for which] in the last United Nations conferences, there was a call to the direct participation of citizens, because it was understood that the real change comes from below. And in my opinion, events like the Climathon® are notably functional for this».

5. Conclusions

Based on the interviews and research carried out, the conclusions reflect the considerations of the authors and the necessarily specific visions of the interviewees. From the planning and policy excursus reported, it seems clear that both cities are putting in place many efforts to address in a more structured and normative framework, issues related to environment addressed through participatory approach, to tackle climate change at the urban level. While comprehensive environmental planning becomes necessary in face of urgent action to tackle climate change, Lisbon and Bologna have started to implement informal confrontation and collaboration moments that go further the typical forms of citizens' consultation on environment issues (e.g. Agenda21 forums), towards more active engagement forms such as public-private partnership (e.g. the SEAP protocol for both cities, *Bologna Città Resiliente* Call for proposals), co-management of common goods (e.g. Regulation for collaboration ... of urban common goods and Bilancio Partecipativo in Bologna, Orçamento Participativo in Lisbon), and thematic urban/neighborhood laboratories (Laboratori di Quartiere and Laboratorio Aria in Bologna) in settings that could be considered 'safe arenas' for developing 'urban climate change experiments'. In both the case-studies, the possible integration with successful

⁴ Winners of Lisbon Climathon® won also a ticket for Lisbon Web Summit 2018, the largest event in the world relating to the sector of new information technologies and the internet.

existing Participatory Budget processes, could represent an asset to legitimate and realize these ‘experiments’ while reinforcing the link with overall urban and environmental planning.

Climathon® can therefore embody ‘safe arenas for experimentation’ that embrace both local and global dimensions (Hester, 2007) and involve multiple levels (Walker *et al.* 2004) of knowledge, institutions, resources and actors, for which codified planning and design tools could result overstructured. As for the metaphor of “the path and the forest” (Lanzara, n.d., pag. 52-53) this sort of ‘project-action’, between design and prototyping, could mean for urban institutions to be able to experiment “local sequences that make sense” (Lanzara, *ibid.*) for complex problems, before proceeding further. This consideration resonates with the aptitude of ‘agile innovation’ (Wilson 2011) to create space for experimentation and learning, where top-down approaches are no longer sufficient to meet contemporary challenges, including rapid reactions to needs and fast assessment of the impact of the solutions, to avoid the risk of incurring into irreversible disruptions when moving in uncharted territories.

With regard to the inclusion and integration of Climathon® in local and regional planning, Ass. Orioli states that Climathon®, as a punctual ‘climatic experiment’ can be oriented to «offer specific answers to a theme or a problem treated through environmental and urban planning». However, because these process remains isolated from the very reasons of the planning overall process, only if effectively connected and integrated they can have a complementary role with respect to the actions implemented through planning. These considerations open the possibility for such interaction tools to represent portions of a new form of ecological planning made of small independent and incremental parts (Alexander, Ishikawa and Silverstein, 1975; Alexander, 2004), foreseeing their replicability on other regulatory planning procedures and decision-making processes.

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2_Urban design for multilevel planning

Interdisciplinary Methodology for rethinking the urban layout via Multi Criteria analysis and indicator application

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Abstract: Since the 1990s, due to exponential urbanization, the approach of urban and landscape architecture has been facing new challenges and as a result has been changing rapidly. The ever progressing development of contemporary metropolises has led to a rethinking of the structural composition of human settlements. These days the focus is no longer only on meeting the needs of expanding cities, but finding a suitable method to govern the transformations of existing structures. This paper aims to renew the idea of contemporary city spaces, considering also the requalification of existing urban infrastructure. The main focus of this research is a future configuration of urban infrastructure in twenty years from now, when urban mobility will have developed and be much more sustainable. For this purpose, a range of indicators will be used on the economic, functional and social level that can direct the regeneration of such structures by proposing them in a defined urban morphology and a – depending on those surroundings - flexible system of values. The intention of this interdisciplinary group's collaboration is to develop a multi-criteria method to support the design process of said urban layouts. Following the analysis of urban structure data collected from an area in question, qualitative and quantitative indicators will be identified through a series of strategies. They will then be subdivided by macro-topics such as environment, economy and social life, which serve as main “pillars” of the system. Due to its key role in urban infrastructure, the mobility macro topic intersects the other pillars and will be the main topic of our research. By way of balancing the four macro-topic variables, three different solutions will emerge: a solution of equilibrium, a naturalistic solution and a metabolic solution. A reality based exemplary case study will explain the process as a whole, emphasizing the individual steps.

Keywords: Methodology; analysis; indicators; green technologies;

1. Introduction

Contemporary cities are complex systems in which society, economy and environment interact. As an organism today's city responds to the unstable condition of its components and its process of 'metropolisation' is becoming unhealthy and unsustainable. Citizens are not identifying themselves anymore with the urban and natural spaces they live in. That process has disrupted the city as a place

of living, segmenting it with fences, restricting the collective life, further compromising the environmental balance, without offering suitable places to encourage the inclusion of citizens within their own city, moving towards an society of individuals, devoid of cultural identities and collective memories, moving towards a social implosion in the private space that discredits the urban public spaces. The paper aims to explore how urban planning and architecture can contribute to promote public health and well-being via the improvement of public and cultural urban spaces.

Barcelona has promoted an urban research about re-thinking the main infrastructure of the city: how will “the ring” of Barcelona present itself in twenty years? In October 2018, Barcelona CTPA, an association composed of professors and students from six Catalan architectural schools (ETSAB, ETSAV, La Salle, IAAC, ETSA Reus and the UIC Barcelona School of Architecture) and further international university institutes, organized a hackaton for rethinking the Barcelona city's ring highway as an urban public space. With the support of municipality and region of Barcelona, the event, “Des-cobrir Les Rondes”, has involved multidisciplinary skills, in a multi-level approach: citizens, urban planners, architects, designers, professors, students, administration etc.

2. Urban analysis

To achieve a working sustainable urban model, an integrated process has to be followed. New structural and operating references have to be devised to accompany the transformation of a complex urban system. Biosphere and ecosphere must coexist. The vision on future urban development combines environmental, socioeconomic and morphological points of view. In today's scientific debate Urban transformations replace Urban expansions (Campos Venuti and Oliva, 1993). The analytical approach of urbanism is becoming the re-thinking of pre-existence structures of cities: places of identity for citizens, places of environmental mitigation, places of social and economic development, a creation of new relations between all these different factors (Ricci, 2005).

2.1 “streets” as structural urban component

The case of “Des-cobrir Les Rondes” was an opportunity to develop this new kind of approach: the integration of the infrastructure's life cycle in the ever changing city life. With this initiative, Barcelona joins the reflection on the future of circular highways that have already been developed by other cities such as Paris and Amsterdam. The case of the Ronda in Barcelona, a fast-flowing road ring that is a nodal element of urban mobility, represented an opportunity for an in-depth reflection on integrated interventions. These roads are being questioned as they no longer solve the problem of traffic congestion due to their inability to absorb the traffic in the central area. They have been designed exclusively for private vehicles and not for public transport. In the modern and contemporary architectural debate, the role of the street has always been of a central importance. This is observed in the work of architects from Cerdà, Berlague, Garnier, Stubben, Unwin, Le Corbusier, Lynch, Kan up to Leon Krier, Bohigas and Koolas (Rykwert, 1982). This urban component is referring to different meanings. Streets can be the definition of margins or the places of connections. They can metaphorically represent the inner relationships of today's society or places of disconnection. Streets can be green boulevard as well as places of pollution, networks or borders. The street itself is a structural component of the city which deserves a discussion for its characteristic of being a place of oppositions.

3. The hackaton as a tool of urban exploration

At 37 km in length, the hackaton path of “Des-cobrir Les Rondes” was structured with various stops in different parts of the Barcelona highway, where the participants tried to reflect, discuss, and

propose new visions for this infrastructure. The ring highway crosses many districts of Barcelona of different social status, urban structure, and orography (the Catalan capital rises on a plain inserted between the Mediterranean Sea and a mountain system to the north and it is bordered by two rivers laterally). The different stages have seen the design intervention of different university teams in order to propose interventions for different parts.

The area of Les Roquetes, a suburb north-east of the Catalan city, offered the UIC team and the researchers of Sapienza University of Rome a field of reflection on the requalification of the contextual infrastructure. The selected area has been chosen to focus the analysis on a particular road Ring section of Barcelona: its intersection with one of the main roads, Carrer Julia, which divides the area in four different neighborhoods. The urban analysis of the ring's path was articulated in three different phases. The first step was to recognize the different functions in the area, services and residential tissues, and above all the abandoned and interstitial area, taking care of morphological urban dimension. The second step was to analyze the connection between the most relevant services and public areas, such as the neighborhood market or the public green areas. To understand their area of influence two circles were drawn, according to the historical dimensions of the Cerda's urban square matrix, 100 meters from one another, highlighting the socio-economic dimension. The mobility system was analyzed along with this phase identifying Passeig Valldaura as a structural element of the area: being parallel to the Ring, it intersects Carrer Julia and the main road Avingua Meridiana. The third step was the analysis of the environmental system: the orography, the hydrography, the agricultural surroundings areas as well as public and private green areas.

The urban analysis aims at building quality and quantity assessments in order to evaluate the students' projects according to specific and scientific indicators. From the student's researches two main approaches have been outlined: the metabolistic and naturalistic one.

4. Metabolistic Approach

The Hackaton Des-cobrir Les Rondes aims to re-think the ring infrastructure as a driver of sustainable urban development to enhance social, economic and ecological resources. The purpose of the future vision about "Las Rondas" is to get to the concept of sustainability as defined in the Burtland report (WCDE, 1987) "A sustainable development meets the needs of the present generations without compromising the possibility to satisfy the futures one's". The Metabolist method reads the city as a natural and complex organism. The critical development which affects the environmental ecosystem has to be stopped. The Urban Metabolism has to solve "un-sustainable settlement processes" (Tiezzi et al., 2007). Contemporary cities represent a fundamental change in human settlement patterns and entail a dramatic transformation of the physical environment (Hosier, 1993). Cities and metropolitan areas, occupying the 2% of world's land surface, use over three-quarters of world's resources and discharge similar amounts of wastes to the environment (Baccini, 1997; Barles, 2010; Giradet, 1996).

The hypertrophy (Carta, 2015) of urban development clashes today with an economic and environmental crisis that requires a development of new paradigms. Reading the city as a living organism is the base of urban metabolism proposes, a complex system within which ecosphere and biosphere interact. "Metabolism", according to its medical meaning, is the phenomena of chemical transformations that take place in cells of eukaryotic and prokaryotic organisms in a coordinated and finalized way, to which many enzymes and intracellular multi-enzymatic systems cooperate. Metabolism's main functions are: to obtain chemical energy from the degradation of nutrients rich in energy, from the environment or from solar energy; to convert nutrient molecules into the basic precursors of cellular macromolecules; to form proteins, nucleic acids, lipids, polysaccharides and other substances using these basic precursors; to form and to degrade biomolecules necessary for specialized cell functions (Treccani). The abstraction from the medical comprehension of the phenomenon applied to the urban and metropolitan transformations identifies proactive strategies as main functions: to produce the energy and materials necessary for the demand of urban life through the use of biotic and abiotic resources (Longhi, 2016) existing within territorial system; to regenerate

through the conversion of places and infrastructures into areas of production of goods and services designed to ensure the biodiversity of the urban system; to recycle "technical nutrients" by inserting them into the urban production cycle since the waste by disposal or by use; to reduce waste elements, polluting gas emissions, introducing the concept of circular economy and short supply chain, thanks to the position and strategic distribution of different urban functions.

A system afflicted by a pathology of urban blight, strictly connected to the chronic demographic increase, is a system destined to extinction. The responsibility to define a strategic vision, able to use resources to produce the energy needed to generate and regenerate itself, is the new paradigm that we are now required to follow. The "slow" metabolism of contemporary cities, capable of assimilating and producing energy through a huge environmental impact, is ending resources without providing for their renewal: "every aspect of urban life weighs heavily on the planet's overall biological balance" (Ricci, 2013). The new metabolic paradigm proposes proactive policies to generate new opportunities related to the quality of urban life. The main actions are therefore that of reducing the environmental impact, the production of green energy, the production and maintenance of biodiversity through the increase of services, products, protected areas, urban food production. The purpose of urban metabolism is to anticipate unwanted events based on present signals, analysing the directions of the various flows of energy, water, nutrients, materials, waste, and quantifies the entrances, exits and parts stored in urban regions. In the early 1970s, the analysis of material flows through urban ecosystems was also promoted by UNESCO, with a program (Man and Biosphere, MAB) aimed at studying natural and social processes in an integrated way (Unesco, 2010). A very well-known index is the ecological footprint (Wackernagel and Rees, 1996) which measures environmental pressures determined by anthropic systems, expressing the "quantity of nature" necessary to support the metabolism of people, cities, regions, nations or anthropogenic systems (Cagnoli, 2017).

5. Naturalistic approach

The features assumed by the design of green spaces in the contemporary city, are the architectural-cultural products of past eras, where modernity and post-modernity have left strong residuals in a framework of unconnected and divergent approaches. Nowadays, with the affirmation of the new values of green in ecological culture, it is necessary to shift the focus of attention from the individuality of the 'interventions' of environmental requalification, to the overall picture of the different natural systems as a synthesis of physical and formal representation of places (WU, 2014). Linking green infrastructures to the other infrastructures of public space (blue and grey), means that they can either overlap, generating tree-lined avenues or green castings, or determine nodes of connection among different public spaces (for example a complementing pattern of green, blue and grey textures in public space).

The main goal is to develop a "green system" that structures the landscape from morphological and functional point of view. To realize such green system as a natural network, it is fundamental "to guarantee the coherence of the regional open space system" for each element of the system (green plots, green belt, rural crown, green band), some intervention strategies (Sdrif, 2013). The common denominator of all strategies, is constituted by the reticular ridges of the urban infrastructures (the threads that make up the great rope of infrastructures). The infrastructural lines can become, in fact, the great public spaces of the future as dynamic elements, fundamental for the city, whose ductility is necessary to the urban system. With this in mind, a new perspective on infrastructures is fundamental; current uses give them an important value: they are accumulation basins where human traces and collective memories are stratified over time; it is the city's facilities that need to be integrated into a new urban concept, rather than being judged to be inadequate to the city. Hence the idea of exploiting the green (naturalistic system), blue (water system) and grey (street system) infrastructures as tools at the basis of green planning. Compared to traditional infrastructures (grey infrastructures) conceived with a single purpose, green infrastructures have many advantages (Yeang, 2009). The use of green infrastructure can provide social, economic and environmental benefits, such as the absorption of excess water caused by heavy rains and the reduction of floods, the mitigation of the phenomenon of

heat islands in urban areas, energy savings, the creation of spaces and habitats for wild flora and fauna, and the spread of places for outdoor relaxation with consequent improvement of health and well-being of citizens (Suškevičs *et al.*, 2017).

6. Matrix creation process

This paper highlights the naturalistic approach in line with Landscape's values to guide the urban transformations.

a. Pillars

The latest city planning approaches to urban analysis recognizes three main pillars for identify the opportunities and vulnerabilities of urban areas. This is according to the sustainable development goals announced by the Urban Agenda of the European Commission (Urban Agenda, 2016): Environmental System, Social System and Economic System. Far off from a standard urban analysis, the methodological approach puts into effect a complex procedure of investigation, with the purpose of formulating a general rule that could be valid for different cases. The method follows four different steps: the first step is to observe each individual system using quantity data on the existing conditions; the second is creating different assessment ranks belonging to each type of pillar; the third is to choose two evaluation assessments suitable and common to all the three main pillars; the final step defines these steps, rules and guidelines regarding the "where" and "how" to develop urban projects must be established. This translates into a set of coherent operations aimed at enhancing the green spaces and together with the redevelopment of the landscape, promote the public space (streets, squares, parks, gardens), improve circulation and accessibility between newer neighbourhoods, and ensure the continuity of agricultural land (Spens, 2003).

b. Indicators

In order to create the "Naturalista" matrix, it must be made clear witch aspects of nature the term is actually referring to in this context. Due to centuries of cultivation and exploitation, there is almost no area in Europe untouched by civilization (Assunto, 1994) and more importantly the fact that the site in question is an important inner-city area, the possibility of "returning" to nature, even a renaturation (Clemént, 1991) - in the sense of it being recaptured by nature - is out of the question. However, answering this question is of major importance for the function of the developed matrix.

The analysis-based objectives have to be described precisely, in order to have a clear mapping of the resulting strategic "tools", which might comprise very physical i.e. technological solutions as well as more process oriented or social courses of action. Wherever possible, the question or task itself should be formulated independently of already known solution strategies, which is one reason that makes interdisciplinary working groups so valuable (Lehmann, 2010). The possibility of seeing the same objective from different professional perspectives qualifies the immediate search for a solution. For a collection of possible strategies in the field of "nature" that can respond to corresponding indicators from the analyses, first of all the above-mentioned question of the kind of nature and thus also its significance for the future development of the city has to be discussed. This represents one of differences of the method presented to others already in use: Having determined – via the urban analysis - the need for green space and the rededication of an available urban space as a possibility, the solution found by the different professionals can be very divers and give way to a innovative creation influenced by all participants. As an answer, there might not be only the obvious solution of a city park as a recreational area. In thinking that way it might be possible to create (even possibly required) free green space, but this could at the same time enhance the contrast between city and nature even more. Instead, the implementation of nature and nature-based technologies as part of the citizens daily life could be further developed, maybe even including elements previously unknown or perceived as separate from human life (Austin, 2014). This way, the permanent inclusion of a concept in the development of a society is ensured.

The special element in this case is the combination of the search for a conversion of an existing structure, which in its present use is considered obsolete in the future, into an element or a symbol of something inherent to humans - nature. Another noteworthy fact regarding this aspect is that natural elements have always been a desirable part of the environment of human dwellings (Benton-Short and Short, 2008).

Building physics or ecological aspects such as the improvement of the urban climate through regulation of temperature, retention of rainwater, reduction of noise and particulate matter pollution, or also a possible improvement of the carbon dioxide balance, have already been researched a lot and are still topic of ongoing studies. According to the study “Cities alive: Green building envelope” - performed by Arup in 2016 - covering many of these technical issues (Pauli and Scheuermann, 2013), the “most important” finding is that “green infrastructure, irrespective of where it occurs or how much space it covers, always elicits positive responses from people, because it is an aesthetic asset and an asset perceived as an improvement of the quality of life” (Pauli and Scheuermann, 2017).

c. Assembling the Matrix

Once the importance of integration has been recognized as such, there are a number of ways to bring about the presence of green or nature in the city. In this example, various variants of public and private green spaces, environmental or urban climate influencing elements were included as well as didactic, productive or transport related aspects. Depending on the desired scale or level of detail in planning, these strategies can then be further developed with the help of qualitative as well as quantitative assessment and with the same principle of sequential interdisciplinary analysis. When the strategies found are confronted with actual technologies, the options on new combinations grow, enabling innovation and thinking outside known paths. If desired and for a further deepening of the topic, an optimized and especially adapted use of technological possibilities for the site can be found such as an application of the various variants of roof or facade greenery, rain-, gray- or blackwater management, the countless and currently daily evolving possibilities of urban farming and distribution, or novel modes of mobility solutions, to name just a few.

At the building scale, the “Naturalista” matrix proposes passive bioclimatic solutions for the technological environmental requalification of the existing built heritage: the building system is in harmony with the surrounding environment and tends to use the natural thermodynamic and fluid-dynamic flows; it uses the material and immaterial physical forces coming and available from the micro-environment (Tucci, 2006): sun, water, wind.

Among the main solutions that can be considered implementable in the field of energy consumption of the building: the naturally ventilated building envelope, the buffer zone, the solar greenhouse, the bioclimatic hall, the insulating or capturing glasses, green roofs, green facades; in the field of indoor air quality: natural ventilation system, ventilation chimney, indoor greenery; in the field of total water consumption mainly the collecting rainwater system. The proposed solutions are based on analysis related to building orientation / lightning conditions, climate zones, solar / thermal analysis and technological analysis.

7. Data Visualization and information design

Today society, our countries, our cities even our houses can be considered as a data factory that produces a huge pool of information: the ubiquitous information society (Hanna and Peter, 2011). The necessity to show an information, a piece of life, and idea, could be traced back to the petroglyphs during the paleolithic era – this attitude is essential to human behavior. Books, monitors, computers, smartphones and so forth are just the natural evolution of this aim to communicate. In ancient times, information was circumscribed to “finished artefact” – such as books, while today’s interface is often a sort of screen. Every information must be clearly communicated to be useful, using the right tools and visual language. Data design and information design are the key to understand and share a

complex structure of information to the widest possible audience. Understanding the importance of the research developed and described in the previous paragraphs, the data visualization has to be considered from an aesthetic point of view, but most importantly as key to explain archive the research goals.

The entire research process of “Des-cobrir Les Rondes” has been visualized by three different typologies of graphic panels, each of them characterized by specific communication goals.

The 3 macro categories of panels are:

the Methodological Panels

the Approach Panels

the Scenario Panels

Methodological Panels

This category is composed of 3 main panels, each of them focused on a point of view of the main analysis (social life, environmental, economy). The aim of these visualizations is to explain and clarify the logic workflow of the entire research via a structure of the information that allows everybody to understand the methodology of the process.

The composition layout includes 4 banners of contents (named from A to D) linked to each other according to the logic of consequentiality and sense of reading from top to down.

A Banner defines - by tables and graphics – the amount of data, taken from different sources, used to understand the phenomena of the examined topic. It is helpful to take a general overview of the problems emerging from the Rondas.



Fig. 1. A BANNER – analysis of the actual situation

B Banner (see fig. 2), starting from the analyzed data of the context, it shows the qualitative indicators and the relationship with each other, considering the topic analyzed. The graphic pattern use is a flow diagram scheme.



Fig. 2. B BANNER – Indicators

C Banner (see fig. 3) is the section of the panel used to describe the process implementation matrix, by a horizontal graphic development in order to clearly identify the "before and after" comparison defining what are the key points for a reasonable strategy. The different indicators are visualized by a gradient of black shapes.



Fig. 3. C BANNER – Matrix

D Banner (see fig. 4) represents a visual concept scenario using the graphic technique of the axonometric view - admittedly abstract and non-figurative. The three incremental strategy visions displayed are the result of the intersection of the data taken from the analysis and through the application of the matrix. These scenarios represent the extreme perspectives of the topic.



Fig. 4. D BANNER – Scenarios

The Approach Panels

The second category of panels represent two of the possible approach strategies: metabolic and naturalistic. These data is graphically designed using a flow grid – as seen in the methodological panel – banner B.

The structure allows the identification of the difference between the two strategies and explains the approach and implementation in order to achieve the goals.

Scenarios Panels

The last panel (see fig. 5), is the final combination of the research process carried out by the methodological panels. In this case, the abstract scenarios are upgraded by the "real" data, balancing the topics: environmental, social life, economy.

From an aesthetic point of view, the panel presents three horizontal banners of equal size and kind of contents - described as E banner indistinctly - tracing its origin from the visual style of elaboration of Banner D into the methodological panel, and aims to represent a complete reading of the phenomenon analyzed in the research.



Fig. 5. E BANNER – Example of one scenario

Each E Banner describes how – by a non-figurative abstraction point of view – a city could change if the applied strategy focuses more on increasing public and social activities, rather than environmental issues. The data shown remains easily understandable thanks to the use of the same visual language.

Conclusions

The working-method developed was successfully applied in this and should be usable in many other areas due to its generic basis. In any subject of application, an objective analysis of the circumstances is essential, especially for the development of innovative solutions in areas with a large number of influencing factors. The advantage of a interdisciplinary group is evident as soon as the research's results demonstrate new combinations of sustainable visions to remodel urban components. Different

solutions meet the various necessities of the everlasting society's metamorphosis, in a necessary dialog with the hosting landscape. A "strategically obsolete" infrastructure, like the "ring" in this example, can be actively reintegrated into the city body, creating a newly defined urban space. Different scenarios, elaborated through the multi-criteria analysis and qualitative and quantitative indicators, are proof of the potential of this type of component in a strategic urban development. The multidisciplinary team was the cornerstone to create such a number of different solutions.

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Collaborative processes and spatial planning: the national spatial planning policy in Portugal

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Abstract: As Patsy Healey (1997) argues, the growing interest in public participation and the rise in more collaborative governance processes in spatial planning since the 1960s is evidence of the efforts made to overcome the weakness of the representative model, as well as foster communication among multiple stakeholders, so as to respond to the growing expectations and needs of citizens. Faced with less direct intervention in society and the economy by the State, building a more participatory democracy that coexists and enriches representative democracy is crucial. In Portugal, public planning policies are relatively recent. The guidelines and strategic options for territorial development are outlined in the National Programme for Spatial Planning Policies (PNPOT). Recently (2017-2018), the PNPOT was reformulated, with the intention of defining the spatial planning and development strategy and designing the new action programme for Horizon 2030. The proposal was open to a period of public discussion and was then submitted to the Portuguese parliament for possible approval. This study intends to explain the levels of governance and collaboration in the development of this national programme.

Keywords: collaborative planning; spatial planning; public policies; PNPOT

Introduction

The political and academic agenda has increasingly been focusing on and intensifying the debate around public participation and the growing number of collaborative government processes in spatial planning policies and practices. However, this debate is not new. In the 1960s, given the acknowledgement of some shortcomings in the representative model and a very hierarchical, vertical and centred State, the importance of engaging citizens in planning and decision-making processes was reiterated to enable the design of more inclusive policies that met the needs and expectations of the population (Davidoff, 1965; Healey, 1997). But little changed at the end of the 20th century. In the 1990s, government decision-making continued to be hierarchical and centralised, and discussions on the State's modus operandi came into the spotlight. A new form of a public administration was needed, driven by governance policies, which help shape the State's new role and new conception of intervention, encouraging more flexible and open procedures (via different forms of public

participation, involving a network of different public and private players). This led to a paradigm shift, from government to governance (Ferrão, Tulumello, & Bina, 2015; Stoker, 1998).

Collaborative and governance processes became key to designing public spatial planning policies (Ferrão, 2014). By engaging different stakeholders (citizens, policy makers, technical experts and other stakeholders) one fosters knowledge sharing, social learning and civic and institutional empowerment. The inclusion of citizens in the process can certainly produce better outcomes than the traditional processes that are usually envisaged in legislation. Thus, today, to enhance the democratic inclusion of citizens in more collaborative and smarter governance processes, there is greater acknowledgement of the importance of public debate and the promotion of citizenship (Allmendinger, 2017).

In Portugal, the spatial planning policy is relatively new, which explains the lack of an adequately widespread and autonomous academic and business community (Ferrão, 2014; Marques, Veneza, & Maia, 2019). It is a country where Community policies have a considerable influence given the scale of public investment involved, leading to significant public exposure and development thereof. Spatial planning is a national policy and, therefore, is attached less importance in the political debate as it is only funded indirectly by Community policies. Moreover, traditional planning values are still deeply ingrained in civic culture when it comes to territory, due to the country's recent and rapid urbanization (Marques et al., 2019).

The guidelines and strategic spatial development options in Portugal are outlined in the National Spatial Planning Policy Programme (PNPOT). This instrument is key for designing building the pathways that connect the various levels of spatial planning, as it must ensure consistency in sectoral policy interventions in the territory and define the general guidelines for the other land management instruments (LMI). In drafting these instruments, participation and collaboration between the various stakeholders must be envisaged and taken into account at the outset, from forming the task force to discussing the draft bill in the National Assembly.

In August 2016, Portugal initiated the amendment of the PNPOT, which was approved in 2007. This paper is a brief discussion of the key points in the participatory and collaborative processes carried out. To this end, twenty interviews were conducted with key players in the process to critically reflect the way in which the work was organised. Participation highlights and the dynamics of collaboration are also included. PNPOT 2007 assessment documents and those drafted during the amendment process thereof were analysed (minutes of meetings and public debate sessions, public discussion weighting documents and various technical documents), as were video recordings of public hearings held by the Assembly of the Republic at different points during the drafting process.

1. Conceptual framework

1.1. Participatory process in spatial planning

Since the 1960s, there has been greater interest in public participation and an increase in the number of more collaborative governance processes for spatial planning. It is an attempt to make up for some of the shortcomings in the representative model and to address the need to connect the multiple

stakeholders in order to meet the growing needs and expectations of the citizens (Davidoff, 1965; Healey, 1997).

The State's decreased direct role in society and in the economy, and the historical shortcomings of an overly hierarchical, vertical and centralised political power, reflect the need for "smarter planning" in favour of a more participatory and collaborative democracy that enriches representative democracy. This means shifting from standard decisions to designing more efficient and effective public policies, based on principles of more centralised, responsible and transparent public and land management, where "citizens play an active role in the decision-making process for public policies" (Davidoff, 1965).

There is greater acknowledgement of the importance of public debate and the promotion of new civic processes to enhance democratic inclusion (Allmendinger, 2017). A democracy that should be better informed and enlightened, enabling each citizen to be heard and well informed, as only thus will they be able to participate and understand the decisions to be taken, having the power to act and be an effective member of society (Arnstein, 1969, 1975; Davidoff, 1965; Verba, 1967).

In terms of designing public spatial planning policies, in Portugal, as stated by João Ferro, "collaborative spatial planning processes must become a form of governance" (Ferrão, 2014). Engaging citizens, members of government and other players and interest groups in discussing and considering spatial planning processes fosters the sharing of information and knowledge, social learning and civic and institutional empowerment. Involving citizens in the process can produce better and more suitable outcomes.

The more dynamic the collaborative processes and the greater the concurrence between experts, policy makers, civil servants, different players and citizens, the more efficient spatial planning policies and practices will be (Davoudi & Strange, 2009; Ferrão, 2014). Hence the importance of enhancing civic education processes and the building of civic communities to strengthen ties between the State and its citizens, based on a culture of a more active civic engagement in government affairs and in safeguarding the public interest as regards spatial planning (Peel & Lloyd, 2007).

However, people don't trust in the political model today, which discourages participation and collaboration. On the other hand, dissemination of information and knowledge about development interventions is lacking, alongside society's poor territorial culture (ordinary citizens, political leaders, technical experts and academics). All this weakens citizenship and contributes to further shortcomings in civil society's engagement in the design of public policies (Davoudi, 2012).

1.2. Spatial Planning Policy in Portugal

The Portuguese Constitution enshrines spatial planning as a public sector function, a primary task of the State, and, therefore, it is essential that citizens be clarified as to the concept of spatial planning and the importance thereof. It is essential that civil society be shown that spatial planning does not serve merely for technical assistance in land management, but rather, most importantly, it is a practice underpinned by a set of values that must be part of the national development plan (Ferrão, 2014; Gaspar, 2014).

In recent decades, Portugal has made significant progress when it comes to spatial planning practices and culture, particularly in terms of legal frameworks and active participation in the process of European harmonisation. However, published studies on this process are still lacking (Ferrão, 2014; Gaspar, 2014). In this regard, Ferrão (2014) states that in public policy, spatial planning “is a doubly ‘weak’ policy: its mission is weak, given the discrepancies between the ambitious goals and the conditions to achieve them, and it is weak when it comes to the adverse effects of other policies, given its vulnerability to negative impacts” taking into account spatial planning goals and principles. Portugal’s spatial planning policy is relatively new and prematurely discredited. The technical and scientific community is also very fragmented, although it is seeking to strengthen interdisciplinarity, which itself creates conflict and leads to difficulties of convergence (Campos & Ferrão, 2018).

The infancy and shortcomings of spatial planning in Portugal reflect the poor territorial culture of a part of society, both of citizens and of institutions. A spatial culture ingrained with values, rules and practices based on a “traditional administrative-bureaucratic and technical-rational” still predominates (Ferrão, 2014). These characteristics are of greater concern as this poor territorial culture is combined with a significant traditional spatial planning culture. All this leads to barriers in developing attitudes, competences and practices capable of placing spatial planning at the heart of the national development model. Portugal, therefore, still finds itself in what many authors call “disorderly land-use” (APA, 2008; Baptista, 2008; Ferrão, 2014; Schmidt, 2008).

Ferreira (2007) believes that this situation is related to “accelerated urbanization in recent years”, which is reflected in rapid material, economic, technology and communications changes in Portugal that were not accompanied by a change in mindset. As such, the author recognises that “the Portuguese people do not have an adequate notion and understanding of territorial values. And they mistreat the land. Drastic changes in the way the Portuguese people view, design, use and transform land are needed”. Significant changes are, therefore, required both as regards instruments and planning procedures that implement the “transition from a plan culture to a planning culture”, which expects a greater sense of “culture of territory” from stakeholders (Campos & Ferrão, 2018; Ferrão, 2014; Pereira, 2009).

Until the end of the 20th century, Portugal did not have a clear national spatial planning policy or a regulatory instrument for public spatial planning policies that coordinated land-use, that promoted the engagement of society in designing a public land policy and that promoted a civic planning culture.

2. The National Spatial Planning Policy Programme (PNPOT)

“A well-organised country requires the population to internalise a planning culture. Portuguese spatial planning thus relies on the enthusiasm of technical experts and politicians, as well as the contribution of all citizens.”

(MAOTDR, 2007)

2.1. PNPOT: overview of the process

The Portuguese spatial planning system is regulated by the National Spatial Planning Policy Programme (PNPOT). This Land Management Instrument (LMI) defines the goals and strategic land development options, as well as the national land-use model. The PNPOT is also the reference framework for regional, intercity and municipal spatial planning programmes and guides strategies that effect domestic territory (for mainland Portugal and for the archipelagos of the Azores and Madeira)¹.

The PNPOT was created by the Basic Law on the Spatial Planning and Urbanization Policy of 1998 with the purpose of providing the country with an instrument aimed at defining a forward-looking, cross-cutting and integrated vision of spatial planning and development. Creation of the PNPOT further aims at promoting the coordination and interaction of public sectoral policies on a spatial basis.

Drafting of the PNPOT was only decided in 2002 by the XIV Constitutional Government of Portugal. The final document was approved by the Assembly of the Republic on 4 September 2007, following an extensive period of public debate and consultation, which involved public authorities and representatives of civil society (who sat on the Advisory Committee) (Gaspar, 2007). Once this process was concluded, the implementation stage began, effective between 2007 and 2013. The Portuguese Government (through the Directorate-General for Territorial Management - DGT) is responsible for assessing implementation of the PNPOT and for creating a monitoring indicators system for the action plan and drafting spatial planning status reports (prepared every 2 years)².

In terms of assessment, the PNPOT influenced and hindered spatial planning policies, particularly at regional level, as the design and implementation processes for Regional Spatial Planning Programmes (PROT) in Portugal were based on it. However, during the implementation of the PNPOT, nothing was done in terms of monitoring and assessment, which demonstrates that Portugal still does not have a consistent culture of monitoring and assessing the system and LMIs. It continues to focus primarily on drafting and approving plans rather than reflecting on planning itself. Moreover, during implementation of the PNPOT, engagement of all players was not consistently promoted and a

¹ Basic Law on the Spatial Planning and Urbanization Policy (Law no. 48/98, of 11 August), which sets out the basis for the spatial planning and urbanization policy and creates the PNPOT.

² Basic Law on the Spatial Planning and Urbanization Policy (Law no. 48/98, of 11 August); Resolution of the Council of Ministers no. 76/2002, of 11 April, which determines the drafting of the PNPOT; Law no 58/2007, of 4 September, which approves the PNPOT; General Basic Law on the Public Land, Spatial Planning and Urbanization Policy (Law no. 31/2014, of 30 May).

commitment between stakeholders was not actively encouraged, given the need to implement the Programme's spatial strategic goals.

The PNPOT was only assessed in 2014, when the effective period of the 2007-2013 Action Plan ended (DGT, 2014). Within this scope, several players were consulted and a number of recommendations made for the future, of note: i) the importance of developing strategic spatial benchmarks to improve coordination between the various land management instruments and intensity integrated land-use approaches; ii) the need to develop spatial benchmarks for sectoral policies, namely as regards utility and public services of general interest; iii) the importance of having a governance structure to monitor management of the implementation and operation of the PNPOT (Marques, Veneza, & Maia, 2019).

In August 2016 (Figure 1), the government decided to amend the document in force³, taking into account the drafting of a new action plan for 2030. Amendment of the public spatial planning policy arose due to the need to create an operating, monitoring and assessment system capable of stimulating the implementation of policy, guidelines, directives and measures. Thus, the PNPOT should be considered a strategic benchmark for the territorialisation of public policies and the planning of spatial investments financed by national and Community programmes.

Work to amend the PNPOT was carried out based on a collaborative system of civic and institutional participation. Under technical, scientific and political coordination, the PNPOT was drafted by a large technical team with more than 60 members, including people from the department of national territory, universities and regional coordination committees. Several ministries also collaborated in this process, nearly 40 representatives from the various areas of the Portuguese Government (Focal Points systems), who engaged in multi-sectoral consultation, bringing and debating different views and ways of designing the territorialisation of sectoral policies.

An Advisory Committee, comprising approximately 20 representatives from civil society and businesses organisations and trade unions, associations, professional bodies and Portuguese city and parish associations, also collaborated on the amendment of the PNPOT, bringing to the process the problems and concerns of civil society as regards spatial planning. Thus, over 20 months, a team of about 120 people cooperated continuously, holding more than 150 thematic or cross-cutting meetings (Figure 1).

The PNPOT is a Diagnosis document (DGT, 2018a), focusing on spatial interventions between 2007 and 2017 as a means to update analyses carried out in the preceding PNPOT and taking into account change factors (climate and environmental, socio-demographic, technology and economic changes). It ends with a summary of the major spatial planning issues, reflecting the scientific and technical analyses carried out and the views of the technical community and those of civil society.

The technical and scientific analyses were carried out as a collaboration between producers of scientific knowledge (University of Porto and University of Lisbon) and the technical teams from all

³ Resolution of the Council of Ministers no. 44/2016, of 23 August, establishing the strategic guidelines for the amendment of the PNPOT, through a collaborative and decentralised system based on focal points and an Advisory Committee.

Ministries (most notably the Ministry of the Environment, Ministry of Agriculture, Forestry and Rural Development, and the Ministry of Planning and Infrastructure). The analysis of the perception of spatial planning problems was based on a survey sent to representatives of scientific, technical and political communities (of note, local authorities, city and town councils and parish councils), and to a significant number of institutions representing the corporate and professional world, and society at large (this topic is discussed further below).

The interviews conducted for this study revealed that design of the strategy and action plan to support strategic spatial development goals (DGT, 2018c) was underpinned by active cooperation from the network of focal points (as previously mentioned, a team with different sectoral views). This team designed a Spatial Agenda, divided into 50 Policy Measures, arranged into areas of intervention (Nature Domain, Social Domain, Economic Domain, Connectivity Domain and Spatial Governance Domain) and into Spatial Systems (Natural System, Social System, Economic System, Connectivity System, Urban System and Critical Vulnerabilities), to help boost the effectiveness of the Plan or to improve implementation of spatial policies.

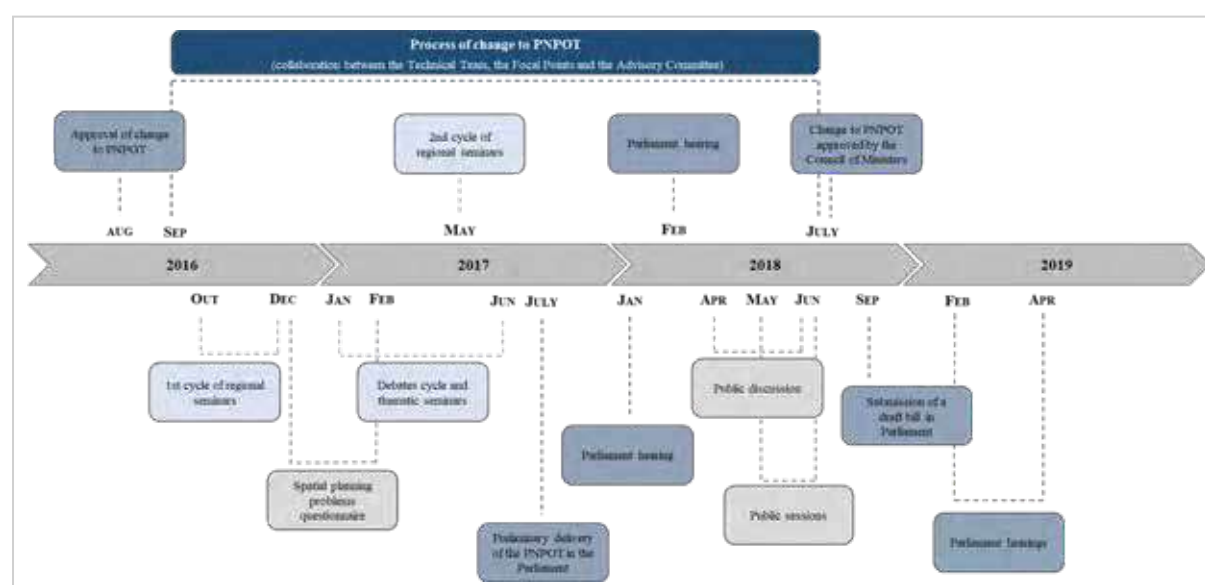


Figure 1: Timeline of the PNPOT amendment process (2016-2019).

Source: Prepared by the authors, based on interviews conducted during the PNPOT amendment process.

In political terms, the process was monitored by the Assembly of the Republic. In January and February 2018, political leaders and technical experts were invited to a public hearing held by the “Environment, Spatial Planning, Decentralisation, Local Government and Housing” Committee, which monitored the implementation of this LMI. These initial hearings were aimed at clarifying and discussing methods to be used in the planning process and to share some information from the initial spatial assessments. Special attention was given to the perception of spatial planning problems, based on the results of the aforementioned survey. Other meetings with representatives from different ministry departments of the Portuguese Government were also held during the process, in which topics specific to their respective areas of expertise were discussed. In mid-July 2017, a preliminary draft of the amendment was submitted to the Assembly of the Republic such that political and

institutional consultation could continue, and the final version drafted, and subsequently submitted for approval (Figure 1).

2.2. PNPOT: to what extent was it a participatory process?

According to the directives of the White Papers published by the Commission of the European Communities (2001) and the Committee of the Regions (2009), the widespread participation during the entire policy process (from design to implementation) will help instil greater confidence in the final outcome and in government arenas (EU, 2001, 2009; Vale, 2007).

The planning process must be participatory, democratic and decentralised. To this end, it is crucial that several opportunities for interaction between all stakeholders be promoted throughout the process (Gaspar, 2007; Healey, 1997). As Gaspar (2007) argues, this effort to strengthen participation and engagement between the various stakeholders must first take place among the team coordinating the process and only then can it be extended to “external” stakeholders, whether ordinary citizens or operators from public or private sector organisations.

Based on these assumptions, the results of the interviews conducted allowed the authors to determine that during work carried out to amend the PNPOT, several public consultation initiatives aimed at civil society were promoted, as well as intersectoral consultation processes. Some of the initiatives are then summarised and an initial assessment is made.

2.2.1. Consulting civil society

Engaging citizens in the design of policies is based on the assumption that all those who are affected by a particular decision should also be given the opportunity to participate in taking the respective decision (Marques et al., 2019).

Just a few months after work began, a national questionnaire survey of the Portuguese population’s perception of spatial planning problems was created, in a dynamic analysis between 2007 and 2017. Based on the 24 spatial planning problems identified in the first PNPOT (Figure 1), the population was questioned (between December 2016 and February 2017) as to the extent to which each of the problems previously identified had been resolved or had worsened.

The respondents were also invited to indicate new problems or problems that had not previously been identified. Published online by central and regional departments of the Central Government, metropolitan areas and intercity communities, municipalities and parishes, business associations, professional bodies, trade unions, higher education establishments and research centres, the survey was widely disseminated and was completed by 7,298 individuals. Worthy of note is that 29% of respondents work in public administration and 23% are linked to universities and research centres. A total of 40% of respondents stated that they are involved in an activity related to spatial planning and/or development (DGT, 2018b; Marques et al., 2019).

The majority of respondents considered that the severity of spatial planning problems has not changed since the first PNPOT (2007), failing to see what has effectively been achieved with this public policy. There is also no apparent awareness of the impact of the design of several sectoral policies, many of which were established at European level. On the other hand, the absence of a spatial

planning monitoring system and the lack of spatial information were highlighted as significant barriers to land management.

Nine problems stood out in negative interventions (exacerbated problem), particularly soil degradation and the risk of desertification, depopulation and demographic and socio-economic disempowerment. As for the more positive changes (resolved or mitigated problem), most noteworthy are water quality degradation and the poor management of water resources, uncontrolled expansion of urban areas, carbon-energy intensity, significant dependence on imported primary energy resources, the lack of external visibility of economic functions, and the lack of resources and basic technical skills for spatial planning.

To keep citizens permanently engaged in the process, the PNPOT online platform was designed (<http://pnpot.dgterritorio.pt/>), where information on the status of ongoing work, seminars, debates and other events held was published, in addition to other documents (reports and legislation).

2.2.2. Promoting thematic and regional public discussions

In keeping with the plan to pursue a participatory process that promoted several opportunities for interaction between the stakeholders involved in the process and society, more than 20 thematic public debates and seminars were held. In an extended consultation processes, key to spatial assessment and designing the spatial strategy, these sessions were attended by a significant number of technical experts and specialists from the different spatial planning areas – geography, engineering, architecture, urbanism, among others –, as well as political representatives and representatives from civil society. It was an interdisciplinary and multi-level discussion.

At the end of 2016 (Figure 1), the first of two cycles of regional discussions were held at the offices of the Regional Development Committees and where matters related to the climate crisis, the urban system, the circular economy, landscape and tourism were discussed. These were primarily of a sectoral nature and brought together specialised experts from different regions of the country.

The second cycle was held in 2017 and focused on the territorial changes that occurred over the past 10 years. This session identified the need to take a forward-thinking approach to the climate crisis, demographic changes and to the dynamics associated with technological change and with the ocean as a resource.

The first half of 2017 also saw several discussions held between experts and thematic seminars, promoted and held by different Portuguese institutions and associations. Public debates were organised by *Associação Portuguesa de Geógrafos* [the Portuguese Association of Geographers], *Associação Portuguesa dos Arquitetos Paisagistas* [The Portuguese Association of Landscape Architects] and *Instituto da Conservação da Natureza e das Florestas* [the Portuguese Institute for Nature Conservation and Forests]. These thematic sessions focused the discussion primarily on three major concerns: what are ecosystem services and how to organise them; demographic trends and the social and spatial impacts thereof; and technological challenges and their impact on the economy.

At the end of the six-month period, a national seminar was held to discuss forward-thinking spatial planning, where several keynote speakers brought insights from the past and designs for the future of spatial development, and discussed key issues for the coming decades: socio-demographic dynamics,

territorial impacts of the climate crisis, assessment of water resources, economic outlook, among other issues.

2.2.3. Promoting a participatory discussion of the proposal

Public discussion, although an intermediate form of participation for citizens (Healey, 1997), in an instrument the scale of the PNPOT, is worthy of note due to the huge number people that comprise the panels and are involved therein (Vale, 2007). In compliance with legal requirements, the PNPOT was put to public discussion between 30 April and 15 June 2018 and the following put to consideration by the citizens: (i) proposal for amendment of the PNPOT (Strategy and Spatial Model, and Action Plan); (ii) opinions issued by the National Territory Committee and the Advisory Committee; (iii) the Assessment report which underpins the strategic options.

During this period, nine public discussions were held countrywide to promote greater dissemination and discussion of the documents as well as greater citizen engagement.

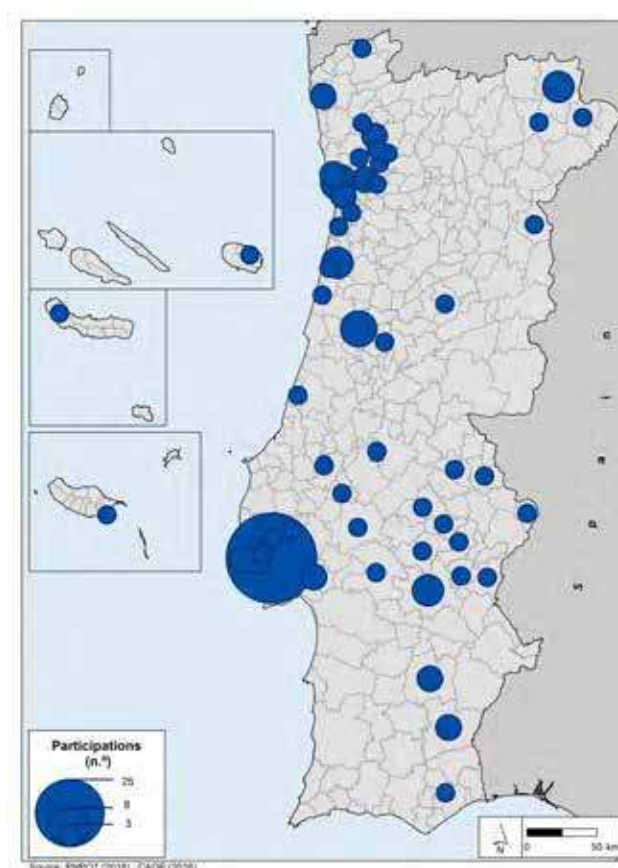


Figure 2: Contributions during the public discussion of the PNPOT, per municipality.

Source: Adapted from the DGT. (2018b). PNPOT | Amendment. Public Discussion - Weighting Report. Technical proposal for the amendment of the PNPOT. 13/07/2018.

The significant participation of organisations representing the sectors and territories, civil society organisations, technical experts and citizens in the public sessions, nearly 1,000 participants, enabled

the debate to be held and the collection of a wealth of input to improve the content of the documents under consultation. The involvement of civil society during the period of public discussion is also reflected in the number of written contributions made, over one hundred, submitted from across the country (Figure 2). According to the Public Discussion Weighting Report (2018), active participation was primarily by municipalities (38%) and private individuals (33%), particularly those with higher education (95%) (DGT, 2018b). Territorially speaking, participation was greater in the municipalities located in the north-west of Portugal, in the metropolitan area of Lisbon and in the Alentejo region.

Taking into account contributions made, all information in the documents that were put to public discussion was either improved or substantially revised. As regards the weighting of contributions made, most were welcome (11.1%) or partially welcome (57.4%), whereas 22.2% of contributions were deemed to already be included in the documents and only 1% of contributions were considered unwelcome (DGT, 2018b) (Figure 3).

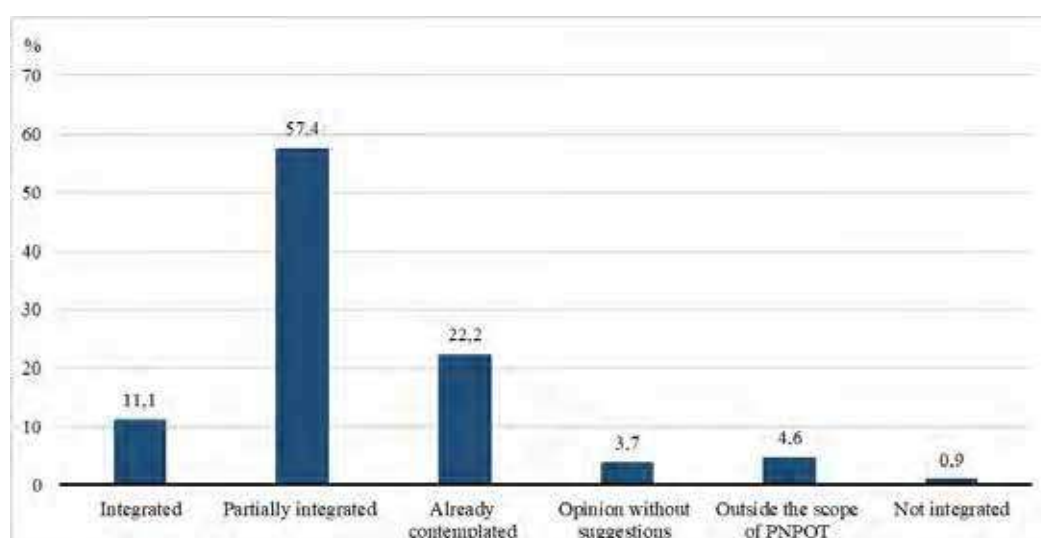


Figure 3: Weighting of the contributions made during the public discussion of the PNPOT.

Source: Prepared by the author, based on information from the DGT. (2018b). PNPOT | Amendment. Public Discussion - Weighting Report. Technical proposal for the amendment of the PNPOT. 13/7/2018.

Analysis of the information from contributions made during the public discussion, included in the Public Discussion Weighting Report, highlights that the majority of participants agreed with the contents of the documents (67%), making only suggestions for improvement or minor changes. This analysis identified a few aspects related to the concerns and different views of citizens as regards territorial culture and challenges in spatial planning.

First, concerns related to the ability to implement the governance model envisaged in the PNPOT are highlighted, in particular as the guiding strategic framework for financial options and coordination with the National Investment Programme (PNI) and the next Community framework. The need to boost interaction between the various areas of public policy governance, focusing consultation on the challenges in spatial planning, is also emphasized. As regards the urban system and territorial organisation, society pointed out the importance of cooperation between regions, prioritising network organisation by empowering territorial subsystems. The importance of services of general interest and

investment in the development and quality of regions is also stressed. Stimulating connectivity between the various areas continues to be a major concern.

In short, citizens are being made aware of the enhancement of strategies and policy measures to address some current issues: the urban hierarchy, the country's different levels of infrastructure development, the protection of environmental resources (water and forests), economic competitiveness and improvement of spatial knowledge. The primary focus is on investment and the importance of Community funding, setting aside issues related to the operation, monitoring and assessment of the proposed measures.

On 14 July 2018 (Figure 1), the final version of the documents was approved in an Extraordinary Council of Ministers, with just a few changes requested. The task assigned to the technical team is expected to be concluded at the end of July. The final version of the document (now entered as a draft bill) includes the weighting of the Public Discussion and the outcome of the Council of Ministers. The draft bill was submitted to the Assembly of the Republic in September 2018 for consideration by the different parliamentary groups, which will vote in favour of or against the bill. This is an unusual procedure in Europe, as Portugal is one of the few countries that submits public spatial planning policy for consideration by the Assembly of the Republic. The authors, therefore, believe that it is a procedure that validates the policy measures included in the Action Plan, as they are not only approved by Government officials, they are also endorsed by the parliamentary groups. Approval of the PNPOT in the Assembly of the Republic enacts it as law.

2.2.4. How the Assembly of the Republic promoted participation

Consideration of the PNPOT draft bill by the Assembly of the Republic was, once again, incumbent upon the Committee that oversees the implementation of the LMI. In addition to work meetings and the discussion between its members, public hearings for discussion between the various representatives of civil society and the scientific and technical community were also held. Thus, between February and April 2019, five hearings were held, attended by approximately 20 organisations (civil society and business organisations, trade unions, regional coordination departments, universities and research centres). At the end, the scientific coordination body was heard, followed by the policy coordination body.

An analysis of video recordings provided by the Assembly of the Republic⁴ highlights the ambiguity of the perception of citizens and a somewhat lack of information and territorial culture. The large number of representatives from institutions heard demonstrates the difficulty or inability to combine different topics and develop macro narratives of key spatial planning issues. Testimonials were, primarily, an individual or sectoral view of the problems, often falling outside of the scope of the LMIs, and there were rarely views focused on aligning interests. In the end, several contradictions, territorial cultures and a general lack of awareness of challenges faced were apparent.

⁴ Available at: <http://www.canal.parlamento.pt> (accessed in May 2019).

Conclusions/Final Discussion

Since the beginning of the 1990s until 2011, spatial planning in Portugal, with its ups and downs, developed positively, that is, it went from simply regulating land use and rental policies, to adopting a more strategic and forward-thinking approach. This outlook is, primarily, related to public regional development and environmental policies (most notably the Basic Law of Spatial Planning and Urbanization (1998), the drafting of the PNPOT (2007) and a few PROT). However, since 2011, faced with the economic crisis, positive development stagnated and spatial planning was no longer considered as important as other public policies. This step backwards came at a cost as a result of several factors, in particular: (i) the emergence of spatial planning as an independent domain, historically very recent; (ii) the lack of an adequately widespread and autonomous academic and business community; (iii) Community policies have a considerable influence given the scale of public investment involved, leading to greater public exposure (Ferrão, 2014; Marques & Veneza, 2013; Marques et al., 2019).

In Portugal, the guidelines and strategic spatial development options are outlined in the National Spatial Planning Policy Programme (PNPOT), approved in 2007. Recently (2016-2018), the PNPOT was revised, the process of which is summarised herein. Pursuant to law, and under technical, scientific and political coordination, at the beginning of the process a technical team was put together which, together with a Focal Points system and the Advisory Committee, drafted the Programme's documents (Assessment, Strategy and Spatial Model, and the Action Plan).

Work was conducted by a large team of more than 120 people who cooperated on a continuous basis (over a hundred meetings, dozens of workshops and thematic consultation seminars and debates were held, in addition to hearings held, at the end, in the Assembly of the Republic). Ministries of the Portuguese Government worked in collaboration towards the territorialisation of the policy measures included in the PNPOT Action Plan.

Public participation in the process was also significant. Interview data shows that, during the work carried out to amend the PNPOT, several public consultation initiatives aimed at civil society were promoted, which saw significant involvement. A questionnaire survey of the Portuguese population's perception of spatial planning problems was conducted, which was answered by over seven thousand people. A PNPOT online platform was designed to keep citizens permanently engaged in the process.

Public discussion is one of the legal requirements for participation required for public policies. During this period, public discussions were held countrywide. An analysis of the results reveals significant participation in the public sessions of organisations representing the sectors and territories, civil society organisations, technical experts and citizens, nearly 1,000 participants in total in public sessions and a hundred written contributions with proposals and suggestions.

Following approval of the PNPOT in the Council of Ministers, the draft bill was submitted to the Assembly of the Republic for consideration by the various parliamentary groups. To this end, public hearings for discussion with different representatives of civil society and the technical and scientific community were also held.

Thus, generally, assessment of the PNPOT amendment process is positive as regards the collaborative and participatory process carried out. The concerted effort between the technical team, focal points

and Advisory Committee contributed towards ensuring the final proposal was technically, scientifically and politically sound, as a result of successful cooperation and the sharing of knowledge and lessons learned. Similarly, the period of public discussion (through public sessions and written contributions received) was key to improving and consolidating the final documents. The final discussion and approval by the parliamentary groups of the Assembly of the Republic will enact the PNPOT as law.

However, pressing political agendas and the need to approve the PNPOT in time to influence the preparation of the new Community framework accelerated the process and prevented citizens from understanding the complexity of the documents drafted. The participation of civil society is essential in the learning process and in building the population's territorial culture.

Therefore, in the future, citizens must be encouraged to engage in identifying and solving problems, and in meeting territorial challenges. Spatial planning in Portugal is still not co-creation, the result of significant interaction between the State, civil society, the private and third sector, in a constructive and collaborative process. Society still does not interact or come together around a set of values and consensus. As such, public policy measures for spatial planning should seek to empower society to build these values and consensus, and create environments conducive to processes that effect change. The role citizens play is vital, not only to identify problems, but also causes and possible solutions (Marques, et al. 2019).

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From Traditional Neighborhoods to Urban Enclaves: An investigation on the residents' perceptions of their residential territories*

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Abstract: The significance of spatial proximity in terms of social relations and access to resources have diminished in the recent era while near home environments are still vital components of urban space since they form the secondary territories of urban residents after their homes and constitute the majority of the urban built environment. Albeit, existing residential fabric is under the threat of fast-paced transformations while recent developments emerge in the form of insular subdivisions and residential enclaves. In this context, this research aims to examine the residential environments not through the conventional planning techniques but from the 'insider's perspective'. Hence, the research investigates how urban residents perceive their residential territories in the recent era within different spatial layouts. The extent and content of perceived territorial unit as residential territory, as well as territorial landmarks and also territorial gaps are examined within the scope of the research. In this regard, a comparative case study is conducted in two districts of Ankara, Turkey namely Kavaklıdere and Çukurambar. The results reveal both the consistencies and idiosyncrasies in residents' definition of their residential territories and reveal significant insights for the future planning and design of residential environments.

Keywords: residential environment; human territoriality; resident perception

Transforming Residential Patterns from Traditional Neighborhoods to Urban Enclaves

The significance of spatial proximity in terms of social relations and access to resources have diminished in the recent era while near home environments are still vital components of urban space since they form the secondary territories of urban residents after their homes and constitute the majority of the urban built environment. Although people rather use multiple territories in the recent era with the advances in mobility and communication technologies, near home environments still have a distinct position in daily life and importance in terms of quality of life (Banerjee and Baer, 1984). Yet, as a part of urban restructuring processes to address globalization, intercity competition

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and requirements of post-modernity, urban residential patterns and therefore territorial cognition at the scale of residential environment has transformed significantly.

Today, in the production of residential environments, the form of continuous fabric such as in the traditional neighborhoods has left its place to cellular developments and residential enclaves in the form of gated communities and mass housing developments based on economic segregation which neglect the basic principles of sustainability, livability, quality of life and sense of community for the sake of economic progress. In other words, *facility-based organization* of residential areas has left its place to *home-based* ones which in return affected the quality of experience and satisfaction of housing needs in the urban residential areas (Brower, 1996).

In the Turkish case, this transformation on the design of residential environments fostered with the introduction of neo-liberal policies in the 1980s with bigger and more speculative investments in the housing sector which resulted in higher rents, emphasized new meanings on housing and boosted spatial segregation between different social classes becoming more concrete in the form of high-security apartment blocks and gated communities surrounded by surveillance mechanisms (Arıkan, 2013). Another major transformation regarding residential environments in Turkey began with the introduction of Law no. 6306 on Transformation of Areas under Disaster Risk enacted in 2012. Along with the enactment of this law, massive urban transformation processes started in Turkey especially in historic residential areas. There has been controversial use of the law in order to transform these neighborhoods within the central areas for the sake of economic gain through increasing the building heights and floor space rather than creating better living spaces for all. These implementations caused a decrease in the environmental quality as well as infrastructural problems. To sum up, fostering social segregation, decreasing quality of environment, inability to meet human needs, fast-paced transformation, lack of identity, loss of sense of community and alienation can be denoted as the major problems that arose in Turkey with the fast-paced transformation of traditional neighborhoods and development of new areas in the form of gated communities and mass housing developments.

Consequently, the transformation in residential development patterns also caused shifts in terms of territoriality of urban residents. Within these new residential areas, the private domain takes on the role of the old neighborhoods and functions as local group territory in the form of well-equipped homes offering various facilities from laundry to social interactions within single building, while commercial and other services maintained at the neighborhood scale are also transferred to the city scale (Castell, 2010). In this context, the way residential environments are designed not only affected the notions of a sense of community and quality of life, but also transformed the ways residents perceive, utilize and behave in their residential territory. Hence, the extent and content of perceived residential unit as residential territory in the recent era within different spatial layouts will be further assessed within the scope of this research focusing on the two districts in the capital city of Turkey, Ankara both from a traditional and a contemporary residential area.

Residential Environment as Human Territory

Territory is defined as a space whose boundaries are well-defined and well known by its occupants (Sell, 1983). Regarding residential environments, territorial organization of space at this scale is crucial to sustain cohabiting in a delimited space; whereas defining the extent and content of the residential territory have been one of the main tasks of urban planning. Yet, the difficulty in defining

behaviorally meaningful and unambiguous boundaries on residential environments to derive better fit indicators and interventions is associated by Galster (2001) to variations among local actors (households, businesses, property owners and local government) on the perception of its boundaries.

In this regard, there are many measures for designating the boundaries of residential environments such as physical thresholds, statistical areas, character areas (based on building type), community facility service areas (such as the elementary school), land-use and ethnic group concentrations residing in certain locales. Besides, various models have been developed for the designation of the optimum extent of residential territory in planning theory. For instance, the 'neighborhood unit' developed by Perry in the early 20th century based on the principle of an optimal size that corresponds to a five minutes walking distance to a primary school is one of the pioneer models which has later been replaced by a concern for neighborhood functionality.

In this context, official clear boundaries such as census units, planning districts, neighborhoods, or zip code areas are preferred in empirical research due to the availability of large amount of information such as crime reports and housing values, while resident's perceptions may offer a more meaningful and relevant representation of the unit (Coulton *et al.*, 2001) and better express the actual boundaries of the unit in the daily life of its residents (Park and Rogers, 2014). On the other hand, there are also phenomenological approaches that investigate the subjectively designated boundaries that are grounded on the lived experience of the residents (Campbell *et al.*, 2009). In order to determine the boundaries of identifiable subunits, Keller (1968) puts forth a more holistic approach and states that both objective (census tract data etc.) and subjective (respondents indicating the boundaries) indicators can be used simultaneously. Hence, subjective indicators can be utilized to check on the accuracy of the objective indicators. Moreover, Galster (2001) puts forth a framework to indicate that distinct spatial scales of the boundaries refer to different aspects of the neighborhood by presenting '*multi-scaled*' boundaries with respect to bundle of dynamic attributes associated with the residential territory.

To sum up, the type and extent of territorial boundaries of urban residential environments, so called neighborhoods, which have been at the focus of planning studies transformed significantly in the recent era parallel to the changing patterns in the development of residential areas from facility-based to home-based organizations. In this regard, intermingling the conceived boundaries of residents with the administrative boundaries should be at the focus of planning studies in order to better comprehend the complex and dynamic structure of residential environments and to provide better solutions in meeting human needs within these areas. In this context, this research has a phenomenological approach with a schema-based emphasis which tries to investigate the subjective definitions of urban residents on their residential territories in order to grasp their lived experience.

Territorial Cognition at the Scale of Residential Environments

Territorial cognition of residential environments as a delimited area with specific boundaries by its inhabitants is one of the most important preconditions to define that area as a meaningful territorial unit. In addition to this, although territorial cognition is unique to each individual, consensus among the residents and the extent and type of territorial boundaries also reveals the significance of that area as a socio-spatial whole.

Territorial cognitions in near home territories are the perceptions and relations of residents with a particular delimited area, whereas these cognitions may also result in certain affections to the locale such as feelings of security, satisfaction, responsibility, association or problems associated with the area (Taylor, 1988). Hence, territorial cognition of residential areas is often studied in relation to its implications on residential satisfaction, attachment to territory, feelings of safety, development of children and youth as well as environmental quality. In this context, cognitive mapping as a method takes a crucial role regarding the investigations on the extent and content of territorial boundaries of residential environments defined by its residents (Table 1). In other words, cognitive maps are helpful tools in depicting the tacit knowledge of resident's territoriality into research.

Table 1. Some of the previous studies in which an average size for perceived residential territory is investigated.

Author	Case		Average Perceived Neighborhood Size
Lee (1968/1970)	Cambridge		Less than half a mile (>~ 130 ha)
Haney and Knowles (1978)	Green Bay, Wisconsin	Inner city	20 acres (~ 8 ha)
		Outer city	48 acres (~ 19 ha)
		Suburb	155 acres (~ 63 ha)
Guest and Lee (1984)	Seattle		Less than half a mile (<0.79 square miles, ~ 205 ha)
Banerjee and Baer (1984)	Los Angeles	Lower income	0.05 square miles (~ 13 ha)
Lee and Campbell (1997)		Higher income	13 square miles (~ 3.3367 ha)
	Nashville		14.8 blocks
Coulton et al. (2001)	Cleveland		0.32 square miles (~ 83 ha)
Talen and Shah (2007)	Urbana, Illionis		10-400 acres (~ 10 - 161 ha)
Lohmann and Mcmurrin (2009)	Los Angeles suburban area before (1998) and after (2004) the construction of the freeway	City scale before construction	City scale 0.50 square miles (~ 129 ha)
		after construction	0.89 square miles (~ 230 ha)
		Near the freeway before construction	Near the freeway 0.61 square miles (~ 158 ha)
		after construction	0.36 square miles (~ 93 ha)
Minnery et al. (2009)	Brisbane, Australia		Mean max. distance to perimeter: 1500 meters (~ 706 ha)
Pebley and Sastry (2009)	Los Angeles		Several blocks from home
Coulton et al. (2013)	10 cities in US (Denver, Des Moines, Hartford, Indianapolis, Louisville, Milwaukee, Oakland, Providence, San Antonio, and Seattle/White Center)		0.90 square miles (~ 233 ha)
Saghatoleslami (2014)	Mashhad, Iran		36 ha

It is also important to note that, cognitive maps are also affected by exogenous factors. These factors are listed by Evans (1980) under three main titles as; (i) *Different Stages of Knowledge Acquisition* (developmental aspects (children and elderly) and familiarity (length of residence), (ii) *Individual Variables*, (iii) *Physical Features* (environmental structure (such as grid structure of the street layout) and landmarks). For instance, in their study Lee and Campbell (1997) revealed that physical attributes such as size and map complexity differed vastly among how residents define their neighborhoods through a survey conducted in Nashville and denoted this inconsistency as 'respondents' definitional idiosyncrasies. A more recent study conducted by Pebley and Sastry (2009) in sample neighborhoods of Los Angeles also revealed that there is variation among residents' perception of their residential territory with respect to both individual (age, participation in and exposure to neighborhood, socio-economic status etc.) and neighborhood (density, residential stability etc.) characteristics. Besides, the location of the residential area within the urban space is also an important parameter with respect to the size of the perceived residential area. For instance, in their research on neighborhood perception of residents in inner city, outer city and suburban neighborhoods of Green Bay, Wisconsin, Haney and

Knowles (1978) put forth that centrality of the neighborhood differs the content of the territory, such as the number of features and important locations included in the maps, as well as the size of territory.

All in all, cognitive mapping as a method for territorial definition is useful in terms of addressing planning issues at the scale of residential areas since it reflects the residents own experience of place. Yet, not only the boundaries of the territorial unit and consensus among residents but also the content within the defined boundaries provide many inputs for planning interventions. For instance, what is included or excluded from the territory, what constitutes the core of the territory and differences with respect to individual's characteristics may provide fruitful insights for future planning studies. In this context, cognitive mapping is used as a method through this research in order to examine how urban residents perceive their residential territories based on the type and extent of territorial boundaries, landmarks as well as territorial gaps.

Research Methodology and Brief Introduction to Case Study Areas

As discussed in the previous sections, the main aim of this research is to investigate how urban residents perceive their residential territories in the recent era within different spatial layouts. Hence, territorial extent and content of perceived residential unit is examined through a comparative case study conducted in two districts of Ankara, Turkey namely Kavaklıdere and Çukurambar¹.

The first case study district Kavaklıdere² is associated with the early-republican era (formed in the 1950s) and has a continuous fabric as in the traditional neighborhoods, while Çukurambar³ district, which has transformed into a high rise, 'prestigious', luxury residential area after the 1990's with high amounts of gated-communities, is a typical example of contemporary residential developments in Ankara. The case study areas are selected as for being alike in terms of their central location within

¹ The total area covered in the case studies is at the scale of a district which consists of identifiable neighborhoods. Hence, Kavaklıdere district consists of Barbaros, Kavaklıdere and Remzi Oğuz Arık neighborhoods, and Çukurambar district consists of Çukurambar and Kızılırmak neighborhoods.

² Kavaklıdere district took its name from the creek that passes through the area with many poplar trees and had a rural character with many vineyards till the second half of the 1930s. In the beginning of 1950s the district transformed from a rural area to a suburban district with 1,2 storey detached houses and later transformed to a 'modern' residential district with the emergence of high-rise apartment blocks in the late 1950s (Resuloğlu and Altan Ergut, 2015). In the 1970s the district took a sub-center character with many commercial and institutional functions. The district since then functions both as a residential district and a sub-center, while parcel-based transformations started in the area in the 2000s.

³ Çukurambar (a place with granaries - geographically located on a pit land) district used to be agricultural lands till the 1960s with wheat fields and storehouses for cereals. With the mass migrations from rural to major urban areas in Turkey and especially Ankara, Çukurambar district hosted mainly 'gecekondu' (squatter) developments from 1960s till the 1990s. Later, in 1990s the area transformed from gecekondu area to a high rise, 'prestigious', luxury residential area with planning interventions (Durmaz, 2014). Today, Çukurambar is still among the most luxurious and prestigious districts of Ankara.

the urban fabric, articulation to the main developmental axis of the city and besides being prominent examples reflecting the residential area design approaches of their periods as well as for being distinct in terms of patterns of residential development.

During the case study, data is collected through questionnaires⁴ that included two main parts; primarily demographic information is collected from the respondents and later a cognitive mapping study is applied for the assessment of territorial cognition. In terms of selecting the respondents, systematic sampling is used during the questionnaires to obtain a representative sample of households in each district⁵. Consequently, 300 questionnaires are conducted in each district and the results are processed and analyzed both statistically and spatially⁶.

Territorial Cognition of Urban Residents in Kavaklıdere and Çukurambar Districts

Territorial cognition patterns of respondents in Kavaklıdere and Çukurambar districts is further examined in terms of types of designating boundaries, territorial extent of perceived residential environments as well as consensus on these boundaries, shared core of the territory, territorial landmarks and territorial gaps in this section.

Types of designating boundaries

As a part of investigations on territorial cognition, respondents of the questionnaire were primarily asked to draw the territorial boundaries of their residential environment. In this regard, Appleyard (1970) studied the ways in which people structured their cities based on inhabitants' maps of their local areas and the whole city. Hence, the results of his study put forth two main types of residents' maps in terms of structuring the city which are; the maps predominantly using sequential elements (roads) or spatial elements (individual buildings, landmarks, or districts). In a similar manner, the types of structuring that are utilized by the respondents during designating the boundaries are investigated in this research. In this regard, four prominent types of structuring are used by the respondents to bound neighborhoods;

- *Abstract boundaries:* home-centered abstract shapes are drawn by the respondents based on an approximate size
- *Road-based boundaries:* respondents connected the frequently used and well-known streets in order to set the boundaries of the area

⁴ The questionnaires are conducted with the residents of the districts above the age 18 in Kavaklıdere District during April, 2018 and in Çukurambar District during December, 2017.

⁵ Questionnaires are assigned for each sub region in the districts based on the housing density. Later, each street in the sub region is assigned to a pollster in order to provide an even spatial distribution of the respondents.

⁶ The questionnaire responses are processed and analyzed with IBM SPSS Statistics 21.0 and ArcMap 10.4. programs.

- *Function-based boundaries*: respondents draw an abstract form containing the location of certain frequently visited places (parks, schools etc.)
- *Daily-routine based boundaries*: respondents draw the path among the daily used facilities and frequently passed streets combined with the area of these facilities.

In this context, it can be claimed that the road-based and daily routine-based constructions of the respondents are similar to the sequential cognitive maps while abstract and function-based designations resemble more of spatial cognitive maps defined by Appleyard (1970).

In terms of bounding their residential areas respondents used different types of structuring during the questionnaires, while the main type of designating boundaries in both districts is road-based whereas in Kavaklıdere function-based boundaries are also utilized. Thus, it can be claimed that major roads with heavy car traffic are perceived as the prominent thresholds in bounding the residential territories in the recent era in both traditional and new fabrics. On the other hand, identification of well-defined boundaries is a positive aspect of territoriality, however major roads are less permeable elements in terms of connecting the territory to adjacent territories thus becoming separators rather than boundaries.

There are also shared boundaries referred by the majority of the respondents in each district. In Kavaklıdere, most of the respondents referred to Güvenlik Avenue (commercial street) at the west, Esat Avenue at the east, Karum (shopping mall) and Kuğulupark at the south, and Olgunlar Street and Kocatepe mosque at the north for bounding the residential area. In Çukurambar, 1516. Avenue at the west, Muhsin Yazıcıoğlu Avenue (commercial street) at the east, 1505. Avenue at the south and Öğretmenler Avenue (dividing the residential area from the large non-residential uses located at the north of the district) at the north are mainly set as boundaries. Hence, although major streets are conceived as the main boundaries of the residential territory in both cases, existence of a monumental structure acting as a landmark (as in the case of Kocatepe mosque) or a historical site with strong identity (as in the case of Kuğulupark) may also orientate residents by acting as a boundary mechanisms through marking the starting or ending point of the residential territory.

Extent of Perceived Territorial Unit

During the questionnaires, when respondents were asked to draw the boundaries of their residential territory, the term ‘neighborhood’ was avoided and the given base map was almost 3 times larger than the actual administrative neighborhood boundaries in order not to canalize the responses to administrative boundaries of the residential areas. As a result, respondents draw boundaries ranging from 2 to 483 ha. Hence, it can be claimed that there is lack of consensus over the extent of the boundaries among the respondent’s which is defined by Lee and Campbell (1997) as respondents’ definitional idiosyncrasies. However, the drawn boundaries are overlapped to acquire a consensus map of each district (Figure 1) for future inquiries.

In terms of territorial extent, total average size of the perceived boundaries is 75 ha which is similar to the assumptions of planning theory that is shaped by the walking-distance principle (5-10 min walking distance that is 500 meters, approx. 64 ha). On the other hand, the average size of the perceived boundaries in Kavaklıdere decreases to 60 ha while it increases to 90 ha in Çukurambar. In Kavaklıdere, majority of the boundaries (70,7%) are below 80 ha, while in Çukurambar nearly half of the respondent’s maps (42%) are above 80 ha. Thus, it can be claimed that in Kavaklıdere the

perceived size (territorial extent) of the residential area is closer to the assumptions of planning theory that is shaped by the walking-distance principle, while in Çukurambar it exceeds this size and refers more to a driving-distance scale.



Figure 1. Consensus map of Kavaklıdere District (on the left) and Çukurambar District (on the right).

On the other hand, the extent of the boundaries designated by the respondents do not often match with the administrative boundaries. In this regard, the average size of the perceived boundaries in Kavaklıdere District is similar to the size of the administrative boundaries of Kavaklıdere and Remzi Oğuz Arık neighborhoods while it is larger than Barbaros neighborhood. However, in Çukurambar the average designated boundaries are smaller (almost half size) than both Çukurambar and Kızılırmak neighborhoods administrative boundaries. In the case of Çukurambar, smaller perceived size of the residential territory than administrative boundaries of the neighborhoods can be related to the large non-residential uses located at the north of the district such as Çankaya University campus and MTA (General Directorate of Mineral Research and Exploration).

Moreover, in order to measure the impact of individual characteristics on the perceived size of the residential territory further statistical analysis are carried out. According to the results, car ownership and age are the main determinant factors on the perceived size of the residential territory in Kavaklıdere⁷. The larger perceived residential territory by the respondents who own a car in

⁷ In Kavaklıdere district, as a result of the Mann Whitney U test there is a statistically significant difference in terms of perceived residential territory size between car owners and non-car owners ($p < 0.05$) and according to the results of Kruskal Wallis test there is a statistically significant difference ($p < 0.05$) between age groups and occupations.

Kavaklıdere is related with the access to a larger area. Younger and student respondents tend to perceive a smaller area which connotes to a block-scale, this result can be interrelated with the use of multiple-territories in their daily lives and higher mobility of younger people while older and retired people are more dependent on their near-home residential territories in terms of access to certain services and facilities. In addition to these, retired people also tend to perceive larger areas as their residential territory than other occupational groups which still refers to the scale of a walking-distance neighborhood. Thus, it can be claimed that older people, especially the retired, are both more dependent and more actively using their near-home territories resulting in larger areas perceived as residential territory.

In Çukurambar, sex and education are the main determinant factors on the perceived size of the residential territory according to the results⁸. Hence, women tend to perceive significantly smaller areas as their residential territory than men. This can be a result of higher number of housewives among the respondents of Çukurambar whom use their near-home territories more actively while men travel larger distances in terms of reaching to work and other territories. Besides, respondents with graduate degrees tend to perceive bigger areas as their residential territory than other educational levels which can be related to the university campuses located at the surrounding of the area that are often perceived as within their residential territory by the students of higher education.

Territorial Core

There is lack of consensus over the extent of the boundaries among the respondents as discussed previously, while there is a shared 'core area' agreed by the majority of the respondents in both cases. The shared 'core area' connotes to the center of the residential territory most of the residents use in their daily lives and intermingle in terms of social interactions. The size of the core area is similar in both cases; a 20-ha area in Kavaklıdere and a 17-ha area in Çukurambar. The core area of Kavaklıdere district extends along Tunalı Hilmi Avenue from Esat Crossroads to Kuşluköy. Tunalı Hilmi Avenue is a busy commercial avenue on which lots of cafes, restaurants and shops are located and Kuşluköy is one of the most well-known and historic parks of Ankara. On the other hand, the core area of Çukurambar extends along the two main shopping streets (1425. and 1459. Avenues) including also Teoman Öztürk Park. This area contains also many commercial facilities, but dominantly stores for grocery and other shopping as well as cafes and restaurants. The results reveal that, the shared core area depicted by the respondents in both residential districts refers to a nearly 20 ha area with mostly commercial uses. Hence, it can be claimed that the commercial axis at the core of the residential areas act as the center of the districts in both traditional and new fabrics.

Territorial Landmarks

In the second part of the cognitive mapping, respondents were asked to designate what features of the built environment they recalled as territorial landmarks. Hence, respondents were asked to point

⁸ In Çukurambar, as a result of the Mann Whitney U test there is a statistically significant difference in terms of perceived residential territory size between men and women ($p < 0.05$) and according to the results of the Kruskal Wallis test there is a statistically significant difference ($p < 0.05$) between education levels.

‘important reference points in their residential areas such as memorable buildings, streets or open spaces, or places they use while giving directions to someone’⁹. In both cases majority of the respondents were able to identify a landmark in their residential area.

According to the results, the most frequently mentioned landmarks in Kavaklıdere are; Esat crossroads, Tunalı Hilmi Avenue, Kocatepe Mosque, Güven Hospital and Kuğulupark. On the other hand, the most frequently mentioned landmarks in Çukurambar are; Nişantaşı Bazaar (market), Liva Pastry Shop (café and restaurant), Safa Mosque and its park, MTA (General Directorate of Mineral Research and Exploration), Muhsin Yazıcıoğlu Avenue and Arjantin Elementary School. Yet, the higher number of buildings within the most frequently mentioned landmarks and also in the total number of buildings mentioned as landmarks in Çukurambar can be resulting from street names given based on a numbering system rather than actual names which makes it harder to memorize a street as a landmark. In addition to this, majority of the most frequently mentioned landmarks in Kavaklıdere are located within the shared core area derived from the respondent’s maps, while in the case of Çukurambar the landmarks are more dispersed in the district with only the most frequently mentioned landmark (Nişantaşı Bazaar) located within the shared core area.

In the overall distribution among the landmarks mentioned in both cases, 7,7% are open spaces, 4,7 % are an area referring both to a street and an open space (such as crossroads and bus stops), 18,3 % are an area referring both to a building and an open space (such as schools, malls etc.), 21,4% are streets and 47,8% are buildings. Thus, it can be claimed that buildings are the most memorable spatial elements in terms of landmarks. However, the dominance of buildings perceived as landmarks as well as exclusion of open spaces such as parks and squares point out to the lack of open spaces with memorable layouts or characteristics that people can refer to as landmarks in both residential environments.

Territorial Gaps

In the last part of the cognitive mapping, respondents were asked to demarcate and explain areas where they feel uncomfortable or insecure while crossing or areas avoided especially at night in their residential territory. Since, these zones are avoided by the respondents during their daily lives and excluded from the residential territory by the respondents they are referred as ‘territorial gaps’ within this research. The areas depicted by the respondents are later overlapped to designate areas where respondents feel the most uncomfortable. In this context, very few responses were given in terms of territorial gaps during the questionnaires. Thus, it can be claimed that security is not seen as a premise problem within the districts.

Although the number of territorial gaps is low in both cases, there is differentiation between the two districts. In Kavaklıdere, only 41 respondents demarcated an area as fear or discomfort zones among the 300 respondents while in Çukurambar this number increases up to 113. Besides, the most frequently demarcated areas are overlapping only 7 times in Kavaklıdere, while this number also

⁹ Only a few well-known landmarks were pre-existing on the base maps, in order to better orientate the respondent as well as overcoming the difficulties of map reading and drawing by the respondents.

increases to 19 in Çukurambar. Besides, the most frequently mentioned territorial gaps in Kavaklıdere are embassies located at the west of the district along Atatürk Boulevard due to security emergencies occurring time to time as well as bars and restaurants along Tunus Avenue which are declared as discomfort zones due to late closing hours creating noise pollution, parking problems for the residents as well as crowding in the area. On the other hand, the most frequently mentioned territorial gaps in Çukurambar are vacant lots, construction sites and areas on which few squatters are existing. Yet, parks are also referred as discomfort zones due to inadequate lightning and stray dogs.

To sum up, territorial gaps depicted by the respondents living in the districts are areas where the residents feel the most uncomfortable or insecure. Hence, the results reveal that non-residential uses creating infrastructural problems such as parking as well as noise and crowding in addition to vacant lots and construction sites due to security issues are the prominent types of territorial gaps in residential territories. Furthermore, depiction of territorial gaps from the perspective of the residents provides more accurate and relevant insights for the locus of planning interventions at this scale.

In Lieu of a Conclusion

This empirical research aims to investigate residents' perceptions of their residential territories in terms of extent and content through cognitive mapping. The results reveal that, the perceived territorial extent of residential environment is unique for each individual, whereas a consensus area, as in the consensus maps, can be derived from these idiosyncrasies to define the boundaries of the residential territories from the perspective of its residents. The use of consensus maps provides an alternative source of inquiry into urban residential space than conventional solely quantitative mechanistic methods. Yet, consensus maps can be used as a tool for uniting the spatial aspects of the phenomenon such as extent, proximity and layout with the social aspects such as demographic characteristics of the residing population. Besides, consensus maps reveal the accurate representation of residents' experience of space which can guide planners and policy-makers to enhance this experience through the design of the spatial environment.

Besides, although each schema is unique for each resident, overlapping areas as well as differences with respect to individuals' characteristics such as age, sex, education level, ownership or income also reveals important insights. Yet, the weight of these factors differs for each locale. Hence, in order to attain the main aim of urban design is meet the diverging needs of the whole population residing in the same area, the divergences on territorial perception based on individual factors can provide a basis.

Moreover, the results of the study reveal that residents are able to define the subjective boundaries of their residential territory and mention at least one landmark within the area. Hence, it can be claimed that respondents in both cases conceive their residential territory as a meaningful territorial unit. On the other hand, the findings also show that regarding territorial cognition there are both similarities and variances between the traditional neighborhood fabrics and contemporary residential areas. At the cognitive level, the two districts show similarities in terms of the prominent type of designation of boundaries based on major roads as well as the size and main functions within the shared core area. Whereas, districts differ in terms of extent of the perceived boundary of residential territory.

In this regard, the respondents from traditional urban residential environments with continuous fabric (as in the case of Kavaklıdere) tend to perceive smaller units which connotes to a walking distance

scale, while the respondents from contemporary residential environments organized in the form of ‘enclaves’ and comprises mainly of gated communities (as in the case of Çukurambar) tend to perceive larger areas as their residential territory that connotes to a driving distance scale. Based on these results, it can be claimed that in Çukurambar, and most of the newly developed residential areas in Ankara, perception of driving-distance scale territories makes it especially difficult for disadvantaged groups with lower mobility whom also rely on their near-home territories as their primary resource-base. At the same time, the dependence on car transforms the experience of all residents in their near home environments. Furthermore, the perception of residential territory within driving distances can be associated with the design of the physical environment in the form of enclaves with narrow sidewalks adjoined by passive interface zones bounded with high walls or fences resulting in lack of defensibility of space, less number of eyes on the street and decrease the ability of the residents to actively use their near home environments as well as vacant lots increasing the fear of crime and creating unpleasant environments for walking. All in all, based on these findings it can be claimed that the spatial organization of space is a prominent factor causing the differences in territorial perception patterns at the residential scale.

Furthermore, the boundaries designated by the respondents do not often match with the administrative boundaries. Hence, the subdivision of urban areas into smaller spatial (residential) units by planners falls short in explaining the territorial extent of the residential environment. In this regard, in addition to administrative boundaries, that is useful for the availability of a large amount of information, resident’s consensus maps that reveal the lived-in territorial extent of residential space can be used during planning decisions at this scale such as the distribution of services and facilities.

Yet, not only the extent of the territorial unit and consensus among residents but also the content within the defined boundaries, what is included/excluded, provide many inputs for planning interventions. In this regard, consensus maps also reveal the shared core of the residential territory which connotes to the center of the area most of the residents use in their daily lives and intermingle in terms of social interactions. Thus, it can be claimed that the planning interventions at the shared core can result in consequences at the social-group level. On the other hand, the lack of public open spaces both at the shared core of the residential territory as well as the landmarks mentioned by the residents put forth the lack and inadequate distribution of open public territories in both residential environments which is a problematic issue at the residential scale that planning discipline should confront.

In terms of content of the maps, excluded sites, territorial gaps that is the fear and discomfort zones delimited by the respondents during cognitive mapping, are important part of territorial cognition at the residential scale which directly impacts the everyday experience of the residents. Territorial gaps are mainly depicted as non-residential uses resulting in infrastructure, environmental as well as crowding problems in both cases as well as vacant lots and construction sites. The depiction of territorial gaps from the perspective of the residents provides more accurate and relevant insights for planning interventions in terms of revealing the locus of dissatisfaction in residential environments from the insider’s perspective. In this regard, territorial gaps can be seen as places of priority for planning interventions.

All in all, it is also important to note that, this research does not try to emphasize the residents subjectively defined boundaries as a sole determinant of the territorial extent of residential

environments, but rather tries to put forth that in addition to conventional methods the use of resident's perceptions of their lived space can reveal different insights for the decision makers regarding spatial developments. Hence, rather than relying on a single basis, planning studies can use a diverse amalgam of approaches to unfold the nature of the lived experience of the environment in order to guide future interventions and production of new residential patterns more responsive to diverse human needs.

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The Characteristics of the Working Place of the Creative Class: The Case of Fashion Designers in Istanbul Nisantasi

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Abstract: Development of the fashion design industry in Turkey has gained momentum since the 1990's. Nisantasi, where there are many luxury garment stores and ateliers producing haute couture evening dresses, is the neighborhood where most of the fashion designers have an office. On the other hand, fashion designers are part of the creative class. The creative class has high knowledge and skills, as opposed to unskilled workers engaged in routine work in industrial plants. This working class, which works flexibly, needs different working places from the classic work offices. The researches in the literature related to the design criteria of these work places are insufficient. In this study, fashion designers' offices in Nisantasi were examined and both environmental characteristics and interior features of the offices were analyzed. Face-to-face interviews were held with designers. In these interviews, the reasons of clustering of the designers in the region, the environmental, physical and social factors affecting their creativity were questioned. The answer to the question of how to design the ideal office where fashion designers can exhibit their creativity was also sought. This research provides design criteria for the offices of fashion designers as well as location criteria of them.

Keywords: Creative Class, Fashion Industry, Working Place of Fashion Designers, Nisantasi

Introduction

People who work for the purpose of creating meaningful new forms and who earn income because of this work are named as Creative Class by Richard Florida (Florida, 2002). Unlike the unskilled or semi-skilled blue collar workers who perform routine, monotonous and tedious work, these workers do the work that requires skill, knowledge as well as high technology.

The creative class works out of traditional working patterns and works under more flexible working conditions. Working place of this class also differs from classical working place. For this purpose, this research seeks an answer of the question about how to design working place of the creative class. It focuses on fashion designers, a part of creative class, and their working places. In the research, it is aimed to find out designing criteria for the working place of them by examining the factors effecting them, their requirements, their needs and their current working place. The research focuses on the fashion designers in Nisantasi district of Istanbul since 22 of the 71 fashion designers registered to the Association of Fashion Designers are located in this area. Face to face interviews were made with 8 of 22 fashion designers in Nisantasi, and their offices were examined.

Creative Class and Creative Industry

Various definitions have been made about creativity. Creativity is to produce new things, ideas or assets. Therefore, creativity is the principle of innovation (Sundgren and Styhre, 2003). Creativity is the whole of the talent, hunter and motivation needed to deal with the problem. Dobbins refers to creativity as a skill that can be learned and developed (Dobbins and Pettman, 1997)

Three essential criteria for evaluating the creative idea are defined. They are: novelty, value, and surprise. Novelty is a measure of how different the idea is from existing similar ideas, but it is different in its value. Value is a measure of how the potentially creative idea compares to other ideas in its class in utility, performance, or attractiveness. To distinguish this from novelty, value is a measure of the idea's utility rather than a measure of how its description differs from other ideas in its class. The measurement for surprise has to do with the recent past and how we develop expectations for the next new idea. This is distinguished from novelty because it is based on changing the expected next difference (Yassa et al. 2016).

Parallel to the technological developments in the 20th century, concepts such as creativity, innovation and meritocracy started to come forward. Workers have not been seen as tools only, but their skills and creativity have gained importance. This has led to the need for organizational, physical and managerial change in small and large scale companies. In the previous years, various definitions have been made for the working class which used information as input. Richard Florida defines the knowledge workers who work for the purpose of creating meaningful new forms and earn income from this work as Creative Class. In its original classification, Florida divides the creative class into two "creative core" and "creative professionals". Scientist, engineers, academic researchers, writers and poets, artists, actors, designers, architects as well as editors, researchers, analysts form the creative core. High-tech sectors, financial sectors, health professionals, and business management fall into the class of creative professionals (Florida, 2002).

Creative class prefers some certain urban spaces to work and live. Florida states that "... tolerance is the key factor in enabling places to mobilize and attract technology and talent ". According to Florida, it is the quality of places that attract creative people and because of their presence it attracts high tech industries and cultural industries. The central idea is that "... tolerance and low entry barriers to human capital helps to attract talent and that talent is in turn associated with high technology industry and regional growth " (Florida, 2005). Westlund and Caledoni-Lundberg have given a list of factors that are effective in making urban spaces appealing to the creative class. Accordingly, a region must contain the following factors to attract the creative people (Westlund and Calidoni-Lundberg, 2007) :

- A life style with a wide range of recreational activities
- A large and busy labor market that facilitates business mobility,
- Tolerance to different ideas, lifestyles, cultures and ethnic groups,
- Cultural authenticity of the region or place,

In recent years, the term of "Creative Industry" is a concept that is frequently mentioned in various industrial fields within the framework of creativity and economy. The first use of the concept of

creative industry is based on the new economic policies of the British government in the mid-1990s. In 1997, the newly elected British Labor Party Government, led by Tony Blair, argued that the economic value of areas related to creativity and culture is not sufficiently understood, and that the industries involved in these fields are important sources for creating jobs and raising welfare. In this context, the government established the Department of Culture, Media and Sports (DCMS). According to DCMS, the sectors that become the creative industries are "advertising, architecture, art and antique market, handicrafts, fashion design, interactive entertainment software, music, performance arts, printing, software, television and radio" (Demir, 2014). Creative industries are the cycles of creation, production and distribution of goods and services, in which creativity and intellectual capital are used as main inputs. It provides profits from trade and intellectual property rights. It focuses on art, and moreover, it is related to the sectors of art, service and industry (UNCTAD, 2008; Erkayhan, 2015).

Development of the Working Place and Working Place of Creative Class

It is possible to define offices as open, closed and hybrid office. Open offices are the functional working spaces in which portable unsupported divider panels do not rise up to the ceiling. One of the main objectives of creating these offices is to accelerate communication, interaction and workflow among employees (Kaya, 2010). Increased communication between the steps in the hierarchy, increased productivity in the flexible space and cost savings are the positive effects of the open office on companies (Wagner and Watch, 2017). But these offices also have some disadvantages, such as gathering of many workers together, increased noise, and loss of privacy. On the other hand, closed office is the working unit which is surrounded by walls, and personalized by the workers. Closed office systems are the most appropriate design approach for companies with high level of privacy requirements. Communication in closed office systems is weak and controlled (Kaya, 2010). The other concept is hybrid office. When disadvantages of open and closed offices are regarded, architects have headed to the hybrid office where both open and closed spaces are integrated. However, with the development of technology and the change of the labourforce, new types of offices have been needed.

Actually, physical characteristics of the working place have changed for last two century. The transition to the service industry sector has played an important role in the development of working place. New complex business activities have required more sophisticated solutions and management systems in order to improve performance of employees. Essential changes in the design of working place started in the very beginning of the 20th century. "Scientific management" principles developed by Frederic Winslow Taylor led to the industrial Fordism model adopted by non-industrial businesses. This new work model for industrial settings promoted the concept of breaking down labor processes into detailed tasks to improve efficiency. This new way of work had a huge influence on architectural as well as interior design (Cagnol, 2013; Albrecht and Broiks, 2000). In the subsequent decades a new spatial tendency arose in Europe. In 1960 Wolfgang and Eberhard Schnelle developed a new concept for workspace design called "burolandschaft" or "office landscaping." The initial intention was to promote teamwork and collaboration with new arrangements designed to fit patterns of communication, informal layouts, environmental psychology, staff satisfaction and performance, open space, flexible furniture, rising equity and diminishing hierarchy. In 1990's, the worker was no longer perceived as a person who would fulfill his duties, but also as an individual to be dealt with. So, it became the responsibility of the employers

to ensure healthy working conditions (Albrecht and Broiks, 2000). Technological progress has a significant impact on the design of the working place. It has not only transformed the qualifications of the furniture and engineering solutions, but also reduced physical distances by strengthening communications (Obispo, 2016). In the late 1980's to 1990's the rise of technologies started the post-industrial era. The internet was a great engine for many start-ups that would grow overnight. Unpredictable markets and patterns required teamwork for productivity and flexible spaces to adjust to changing. Another important feature resulting from the introduction of the internet to the workplace was a freedom to perform work tasks without the attachment to geographical location. Many new work modes and concepts were introduced and applied due to increased mobility and fluidity (Myerson et al. 2010; Albrecht and Broiks, 2000). Since the year 2000, IT companies have been trying to push for a more creative, innovative office design (Cagnol, R. 2013). Working spaces have turned to undefined virtual and physical places from familiar and predictable places. These contemporary offices have mixed workforce and present different environment. There is a wide discussion about how to design places where workers using creative knowledge operate, and which strategies to be used in the organizational management. In this contemporary offices, some unusual spaces are come across, such as sleeping rooms, social activity spaces, sport and entertainment areas (arkiv.com.tr). The fact that different industries have similar types of workspace with various characteristics makes it difficult for a designer to figure out particular requirements for each case. Even narrowing down to creative knowledge workers as a potential clientele, architects might have to provide suitable physical setting for activities varying from advertising, video games, business incubators, think-tanks and sciences. Thus, in last decade working place such as research institutions, incubation centers, and innovations centers have increased significantly all over the world (Obispo, 2016).

The rise of information communication technologies has led to the formation of an entirely new social group, which Florida refers to as the "creative class". Florida implies that this working class needs ability to perform tasks as well as creative thinking. Moreover, they can also be professionally associated with the economic structure called as creative industries. Since creativity is not a phenomenon that occurs during working hours, the creative class prefers to work and produce in the time they are most productive. The opportunity of working out of the office, lack of dress code, working with a team of open-minded individuals are other motivation sources for these individuals. Working hours and duration of work do not make any sense for them. On the contrary, it is important to adjust the working hours to themselves and to improve the quality of work and to deliver the project on time (Florida, 2002). For this reason, there is a need for working places where the creative class can motivate, work with self-giving, create, and produce. These places will lead to new ideas. Instead of an organization where people are forced to do the same thing from morning to evening, it is absolutely necessary for a creative environment where they can be active and mobile. The main purpose of the modern office concept is to eliminate the hierarchy, flatten the pyramid, and thus obtain a pleasant and productive working environment.

Physical work areas affect the success and creativity of users. Creativity not only depends on the personal characteristics of the creative worker, but also on the physical environment they encounter and work with (Dul et al. 2011). A suitable physical environment with appropriate light, furniture, space and ventilation can promote creativity, and an environment with noise, heat, insufficient lighting and a lack of space can hinder creativity (Yassa et al. 2016). On the other hand, not only the

building space that is worked, but also the urban space that is lived affects creativity. The city has become a place where creativity has been created, implemented and at the same time a place affected by the creative activities done. Economic activities based on creativity in urban environment depend on interrelated various factors. In this sense, it can be said that the creative space creates differentiated interaction networks in the space and establishes relations with related industrial activities (Copercini, 2015).

In the literature, the studies on the working place of creative class are quite limited. There are researches that deal with the context of creativity as a psychological and social environment, but it takes only a little consideration of the physical context. In addition, The most debated things in the literature are ergonomics, spatial arrangements of offices, environmental psychology, sociology, architecture and innovation (Yassa et al., 2016). What are the design criteria of the working place of creative class? As the creative class covers a large number of different sectors, the working spaces of fashion designers are discussed in this study.

A Creative Industry: Fashion Design

The concept of fashion, which is coming from the word of "modus" in Latin, and means unlimited, has effect in many areas. Sproles defines the concept of fashion as transient cyclic phenomena adapted to a specific time and situation by the consumer. Although he defines clothing as the classic product of fashion, he also states that fashion is related to the aesthetic choices of consumers from car to house, from eating to music (Sproles, 1981). It is stated that various aspects of the people's lifestyles in modern consumer societies reflect social status and success. In this context, fashion is effective on all products that are visible, such as cell phones, cars, watches. According to Simmel, the fashion can contain all aspects and conceptually all contents (Simmel, 2003). Moreover, every clothing, art, behavior or appearance form can be in fashion (Ertürk, 2011). In today's sense, fashion is defined as the way of dressing especially followed by women. It is related to the life style.

In Western Europe, fashionable dressing behavior has continued since the Middle Ages. The basic function of clothing fashion from the Middle Ages to the New Age is to specify the social class. The political power centers such as the Burgundy of the Middle Ages, the cities of Northern Italy during the Renaissance and then the French Palace were very influential in the fashion field. In this period, the people involved in the fashion process were also limited, such as well-educated people, and the royal family. In the 19th century, garments were produced with industrial methods. The increasing number of different social groups have begun to be effective in the development of fashion. This development has been managed and supported by modern mass media from fashion centers such as Paris, Milan, New York or Berlin (Evecen, 2015). Until the Industrial Revolution, the fashion of clothes for the aristocratic class was on the streets of all worlds. However, these status differences have disappeared and been replaced by the economic war of the brands (Çeliksap, 2015). In the 1920s, the role of women in capitalist societies were changed considerably, and great designers such as Chanel provided a simplification of clothing. The aristocratic world of glorious consumption collapsed and fashionable, luxurious clothes for women were used only at official events. In the 1950s, fashion got closer to ordinary people. A more pluralistic fashion industry were created, escaping the tendency to couture (Aage and Belussi, 2008). The democratization of fashion took place in the 1970s. It was characterized by the success of low-cost manufacturers such as Levi's, and the introduction of fashion into mass markets.

On the other hand, fashion is one of most criticized concepts. Some researchers argue that fashion, as a social phenomenon, targets identities in capitalist society and uses social identities that have a variable structure both aesthetically and economically. In capitalist societies, the effect of fashion is very much felt. In these societies, individuals identify themselves and their identities through the clothing they buy and use in their daily lives (Evecen, 2015).

Textile design, regardless of the purpose, primarily refers to a process that involves the act of creating. The final product is a unique proposition of the designer as a result of complex processes (Dinçer, 1997). In his design process, the designer reveals his product by regarding the social, cultural, technological, economic and aesthetic values of the society. He interprets these expectations of the society according to his own. He also regards the fashion trends determined by international fashion centers. Determining fashion is primarily a design work (Dumanlı, 2014). On the other hand, innovation is the main source of fashion. When searching for innovation in the field of fashion, it is necessary to build a bridge between the past and the future (Çeliksap, 2015).

Development of Fashion Industry in Turkey

Textile is an old sector with a long history in Turkey. For centuries, fabrics unique to local areas have been produced using traditional methods. However, the fashion design industry is very new sector for the country. For example, while fashion was spoken in 1700's in France, fashion designers who engaged in their own design were be able to be trained in 1990 in Turkey.

Pattern designs of woven fabrics were prepared in the 16th century in Ottoman Empire. This means a process of design in the real sense. However, Ottoman clothes were cut without any distinction between men and women for centuries, and it was impossible to talk about fashion design. In the West, the material, form, design methods and techniques of constantly changing men's and women's clothing were the subjects of fashion history. It is known that the Western influence was gradually increasing in both life style and clothing habits of Ottoman society from the nineteenth century onwards. But the end of this century, fashion phenomenon experienced in Turkey was developed with much curiosity and sense of imitation, unlike the process based on production in West. In the country, it is possible to talk about a fashion consumption for a particular group in the late 19th century and early 20th century. However, fashion was not developed as a sector, and production similar to production in centers such as Paris and London could not be mentioned. In Istanbul, where fashion consumption was at an advanced level, it is known that there was very little tailor-made sewing. Even though it did not develop as a sector, fashion curiosity were seen in port cities like Istanbul and Izmir until 1922, and then in Ankara (Şahin, Y. 2009). On the other hand, the development of fashion design education was slow and limited. Designers started this work either by studying abroad or by being educated within a master-apprentice relationship.

There were some fashion designers who stand out in the Turkish fashion industry until the 1990s. These designers were mostly doing haute couture. In the 1990s, competitions such as the Koza Young Fashion Designers Competition were the major milestones in the fashion design sector. These competitions led to the emergence of young designers who were trying to create their own brand, creating their own way, designing models except haute couture.

In 2000's some important developments accelerating the development of Turkish fashion design sector were lived. New generation fashion designers organized festivals and events, such as Galata Fashion, and international meetings, such as Istanbul Fashion Week. In 2006, the Fashion Designers Association was founded by 7 fashion designers who had contributed to the development of the Turkish fashion design sector. The purpose of the association was that the Turkish fashion design sector played a decisive role in the formation of world fashion trends. Moreover, Turkish ready-to-wear firms started to prepare collections with Turkish fashion designers. Domestic clothing brands offered the collections of Turkish fashion designers for sale. These developments have caused the target group of the fashion sector not to be only high-income group and the sector has started to address different segments of the society. The 2000's was a period when Turkish ready-to-wear suppliers that exported abroad were trying to provide design services to their foreign customers in order to increase their competitiveness. Some of these Turkish ready-to-wear suppliers started to work with Turkish fashion designers, which contributed to the development of the sector. Therefore, it can be said that 2000's is another turning point for Turkish fashion design sector. Today, the biggest markets of Turkish fashion sector are Europe and America.

Reasons of Location of Fashion Designers in Nisantasi

It is striking that the district where the fashion designers in Istanbul choose mostly has been Nisantasi. According to the data of 2018, 22 of the 71 fashion designers registered to the Fashion Designers Association are located in here (Figure 1).



Figure 1: Location of Fashion Designers' Office in Istanbul

As Istanbul is the gateway of fashion and textile opening to the world and a metropolis that has international relations, fashion designers choose to locate in Istanbul. The majority of these designers are in Nisantasi despite the high rental rates. It can be talked about a fashion design cluster in

Nisantasi. The most important suppliers of these designers are the fabric and the accessory suppliers settled in this area (Figure 2). What are the dynamics that cause the fashion designers to cluster in Nisantasi?

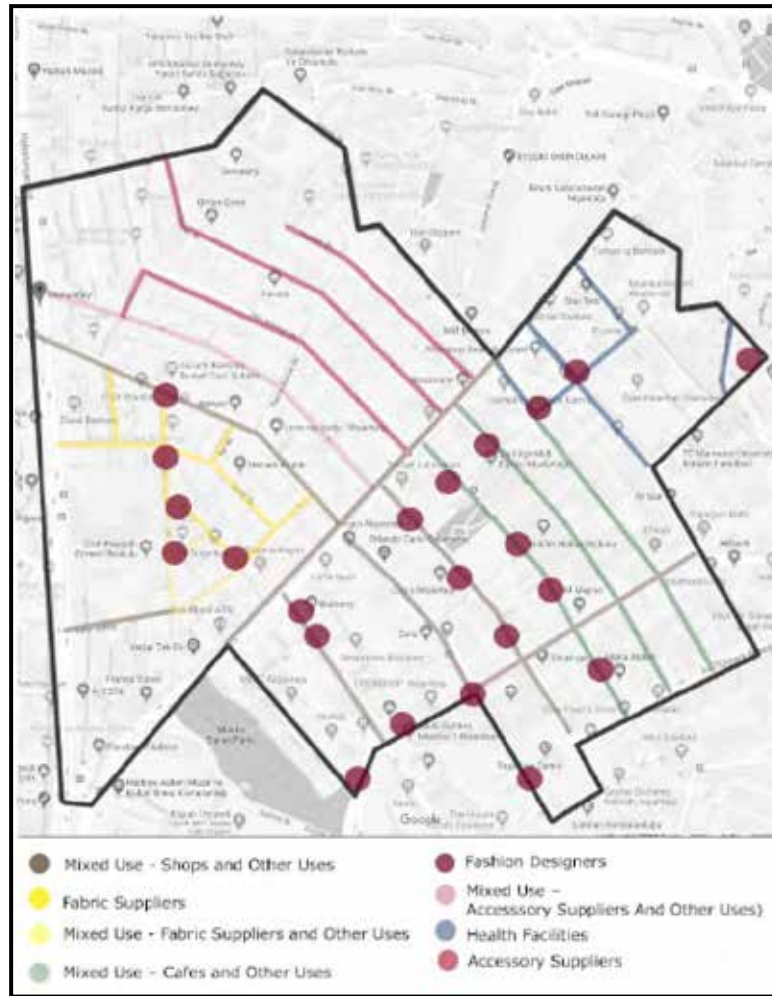


Figure 2: Fashion Designers Cluster in Nisantasi

Nisantasi is one of the neighborhoods where upper income groups live (Öncü, 1999). For many years, the district has been a preferred by trade and industrial sectors, such as garment and textile. Shopping centers opened along the main streets also supported this process. Today it is observed that Nisantasi resembles an open-air shopping center. It does not only addresses the district, but also the whole city. The district has become a field of activities for shopping tourism with the interest of world famous stores selling luxury products (Akbayar, 1993). In Nisantasi, beginning from the 1970s and 1980s, the tailors and then the fashion houses has begun to take place. These fashion houses has begun to sew haute couture products in the form of evening dresses and wedding dresses. Since the 1990s, the new generation of fashion designers have also concentrated in this neighborhood. In short, the presence of potential customers as well as the presence of fabric and accessories suppliers in the region has initially been influential in choosing of location of fashion designers in Nisantasi.

The values of the creative class, individuality, openness and difference are the core values of fashion designers in Nisantasi as well. Fashion designers in Nisantasi prefer work individually. The main

reasons for this are being free in their design, lack of working hours and working pressure. Although their offices have rules, these rules can be stretched. These values are effective both in the location of their offices and in the design of office spaces.

The openness, a value of the Creative Class, is one of the factors influencing the location choice of the designers. Nisantasi is a neighborhood where people from different religions and races live together. Many different people living here have learned to live together. Most probably, the designers have chosen to live in an area where different cultures can coexist and people accept each other as they are.

Being a part of the network formed by the designers in Nisantasi and providing information through this network is another reason for clustering of designers. For the designers, having place in this network is important not only for information sharing but also being visible in the sector. Buyers can make comparisons between products in this region where a large number of designers are clustered.

Inner Space Analyses of Fashion Designers' Offices in Nisantasi

In the interior analysis of design offices, the structure and function areas of the offices are examined (figure 3). Designers were asked questions about the initial state of the office, present state of it and what kind of changes they made. The designers were also asked to define ideal working space for them.

Most of the designers' offices are located in 40 or 50 year-old buildings. Designers are tenants in these buildings. Therefore, the changes they make in office space are mostly related to decoration. They did not change the structure and kept the structural elements such as walls, windows and doors as they were. Some designers chose wall colors in light tones to create a larger perception because their offices were small. Nearly all of them are well lighted. Both natural and artificial lighting are used.

The designers' offices have many accessories and objects, many of which have their own design. Some designers have reused many things that have meaning for themselves by transforming them. They have given life to many objects such as a childhood bike, his own drawings and paintings, a hand-woven rug, a converted chandelier, and a vintage table from the closet doors of his grandfather's house. Many items in many offices have a history. One of the most important accessories in these offices is the hangers. The hangers are also functional accessories. In their offices, designers often use movable hangers to expand the venue in meetings, fashion shows, etc.

While taking part in Nisantasi is beneficial for designers, using the old buildings in Nisantasi as a working place brings some disadvantages. As designers try to settle on existing old buildings, it is observed that the dimensions of the space are not suitable for their use. Generally, the connection between the spaces and functions are weak in offices. Storage and workshop areas are often inadequate. Some designers are forced to carry out basic operations such as manufacturing outside the office areas (figure 3).

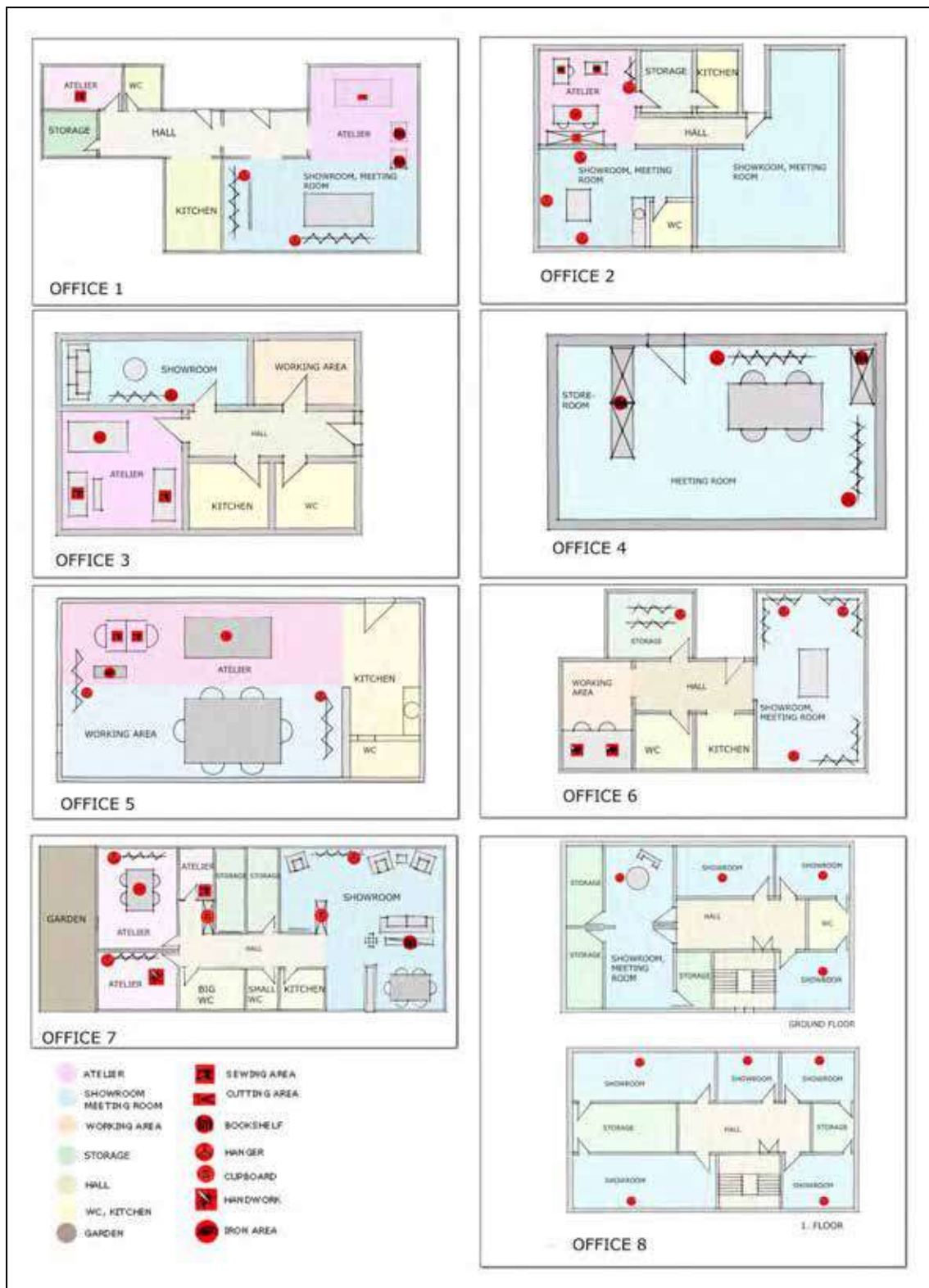


Figure 3: Plans for Current Office

Designers basically carry out two activities; design and production. Only one of the designers interviewed has a workroom in his own office. Other designers have no separate workroom. Most designers do not need a workroom in their offices to design. However, most of the designers realize their production stages in their offices. Some of the designers have an atelier outside of Nisantasi and

some designers make their production to manufacturing firms. All of the designers emphasized that it is important to have an atelier at the office and some state that they need larger ones. Actually, manufacturing is a part of their designing process.

Showroom is one of the most basic places in offices. Generally the collections of the designers are exhibited in these showrooms. Showrooms are the places where designers display their products to their customers and carry out their marketing and communication activities. In addition, showrooms can be used for multiple purposes such as meeting and design.

In the offices of the interviewed designers there is no storage room or the existing ones are small. Almost all of the designers stated that they needed large storage rooms where they could store old season designs, accessories and fabrics.

Since the design processes are flexible and they are not time dependent, it is examined whether there is accommodation in offices. Designers do not have accommodation in their offices. Some designers think that having accommodation will reduce the yield. It can be thought that the fact that the design activities are mostly done outside the office eliminates the need for accommodation in offices. However, a kitchen is located in almost every designer's office.

Office Design Criteria of Fashion Designers in Nisantasi

According to the observations and findings, for the fashion designers, the design process is a process that involves the design and production stages. In fact, the production process in which the design turned into product is an important part of the design process. Therefore, design and production are two basic and nested processes.

Designers mostly carry out the design activities out of the office. This is due to the fact that design is an activity independent from time and space. 7 of the 8 fashion designers interviewed do not have their own design unit in the working place. Some designers have said that they can make design everywhere, because the things they are inspired by are independent from places like legends, stories and Anatolian culture. Istanbul inspires some designers. Some of the designers work on the bus, even in any cafe. There are designers who do not even need a paper and pencil, and make their design with their smart phones. One of the designers expresses that he is inspired by films and books, he can design only while watching movies and reading books and therefore does not need a space to design. Some designers prefer to design at home. Visitors coming to their offices during the day also prevent some designers from focusing on design. For a variety of reasons, the majority of designers make designs outside of working place and do not need any space to design. But the production is a part of design, and designing process continues in atelier. Thus, the production phase is one of the main activities in the offices. There is a large atelier in the ideal office of the dream of all the designers interviewed. Because if there are large atelier in their offices, they will be able to realize the whole production, but also have the chance to interfere with the design in production when they want. 6 of the 8 designers interviewed have atelier in their offices. But they all find them insufficient. Designer 6 who has no atelier in his office stated that he should definitely have a atelier in his ideal working place. Designer 4 has an atelier in his office in Çatalca, another district in Istanbul, but he believes that all these units must be intertwined.

One of the most basic function areas in the offices is the showroom. Almost all of the designers used the showroom and meeting room together and not complained about this situation.

Design offices need large storage area. Because there are not enough spaces to store fabrics, accessories, old season products, and prototypes. Designers underlined that it is very important to have a storage room in their offices.

There were no accommodation areas in the offices. 7 of the 8 designers think that there should be no bed and accommodation units in the office. Only 1 designer stated that they should have a unit where they can relax in their ideal places, and that they need open or semi-open spaces where they can spend time in their offices.

In short, fashion designers dream of large working spaces that they can design while they are producing, that they can intervene in every stage of production. Because the creators' creativity continues in the production phase. If the design process ends when production starts, there will be less chance for them to produce the best product as they do not have the chance to intervene.

On the other hand, according to the designers, in order to exist in this sector and to be able to market their designs, they should locate in Nisantasi, which is the heart of the fashion. This shows that, for the designers, the location of working place is important as well as the interior features of this space. In the design of the designer's working place, urban scale is as effective as the building scale. It is quite difficult to find a large office in a built-up area like Nisantasi. For this reason, some designers had to try to fit into their existing work places. Some of them contracted with companies outside the office to realize the production part of their designs. The others used a few offices, one in Nisantasi and the other in another district.

At the end of these evaluations, 3 types of fashion designer's office schemes can be presented, in which all the units are located in Nisantasi, or some of them are located in the districts outside Nisantasi. Different alternatives can be produced by changing the locations and dimensions of the functions according to the needs.

1. Integrated Fashion Design Office in Nisantasi

Although it is very difficult to find a large office in Nisantasi, a scheme for an integrated office in Nisantasi is created. In this scheme, all activities are carried out in a single office in Nisantasi (figure 4). The design space in the office can also be solved in a separate space or intertwined with the showroom. Design space is not compulsory. The biggest venues are solved as showrooms and atelier. If a design unit exist, it can be associated with both the showroom and the atelier. Storage area is a need in the office. Both the atelier and the showroom have their own storage.

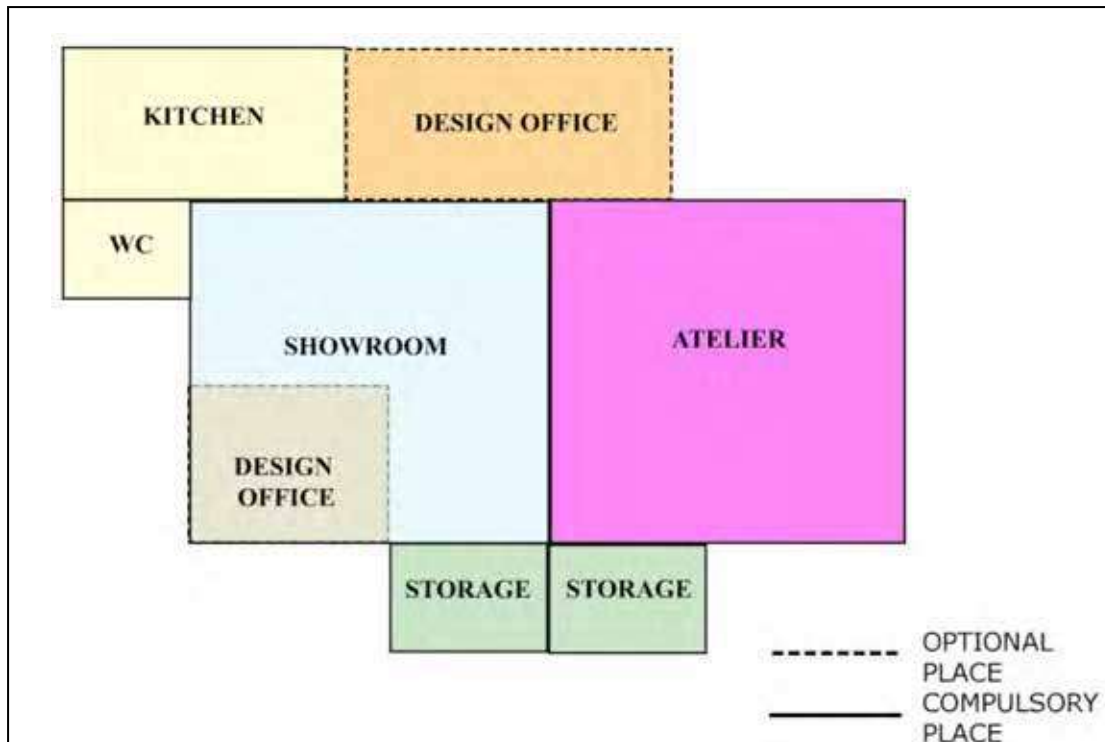


Figure 4: Scheme1 - Fashion Design Office That Has Showroom and Atelier in Nisantasi

2. Partial Fashion Design Office

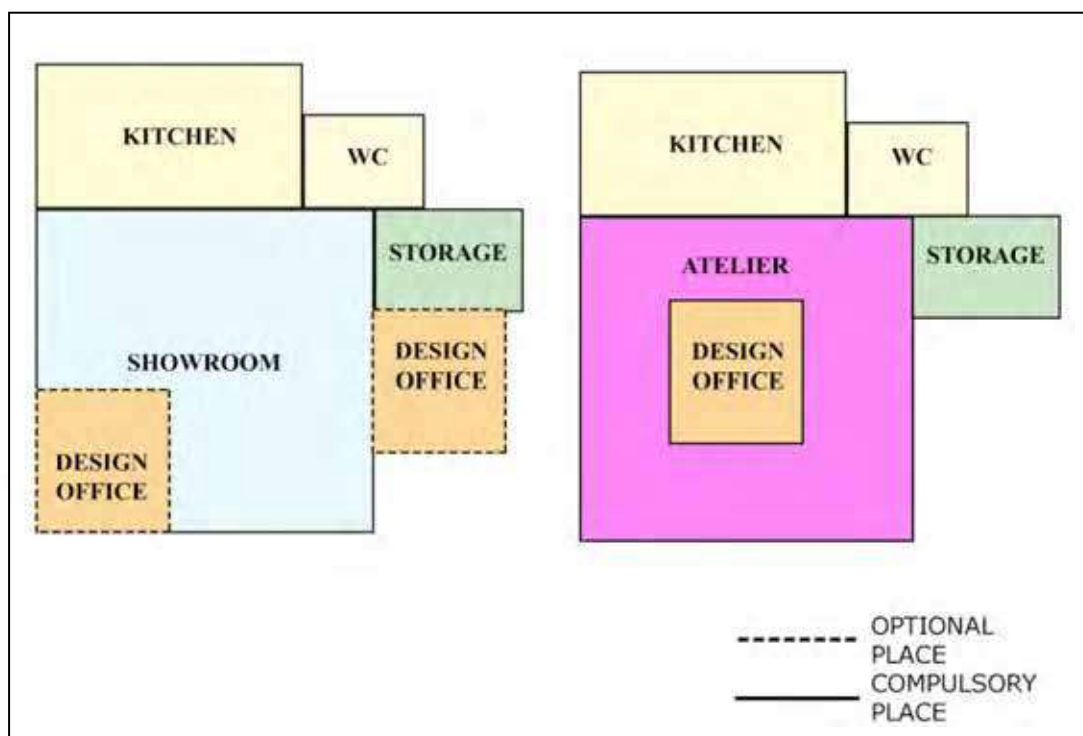


Figure 5: Scheme 2 - Fashion Design Office That Has Showroom in Nisantasi and Atelier outside of Nisantasi

Scheme 2 is created for the designers, who locate their showrooms in Nisantasi due to the advantages such as being a part of the existing network, but locate their ateliers in different neighborhoods due to lack of space in Nisantasi (figure 5). Both showroom and atelier units need storage spaces. There is an optional design space connected with the showroom. The design unit in the atelier is compulsory space as design is an ongoing phenomenon at every moment of production.

3- Integrated Fashion Design Office Outside of Nisantasi

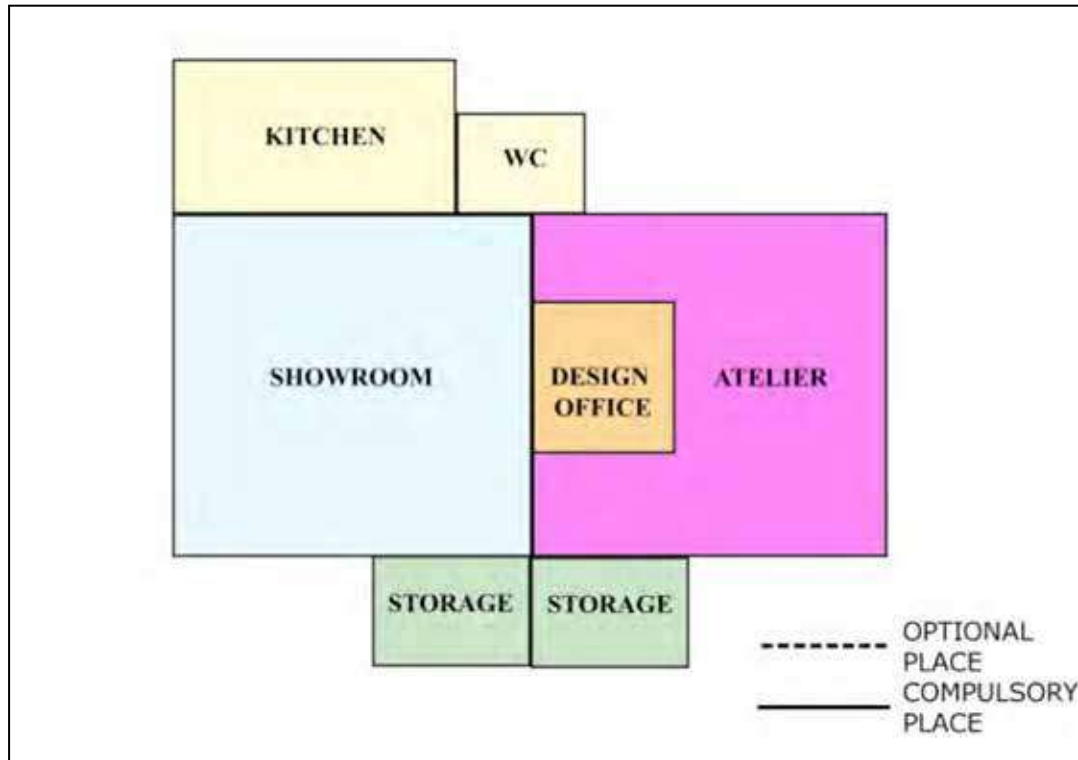


Figure 6: Scheme 3 - Fashion Design Office That Has Showroom and Atelier outside of Nisantasi

Scheme 3 includes all of the design and production spaces. Most of the designers interviewed imagine an office which has a showroom and an atelier where they can perform all production stages (Figure 6). The schemes can be applied in single-storey and multi-storey buildings.

In this scheme, the design unit is positioned to serve both the showroom and the atelier. All of the design and production stages work together. The designer is involved in production, produces ideas in the design process, uses his creativity until the end of the product, and takes part in every step of the creation.

Conclusion

Since the last quarter of 20th century, the concepts such as creativity, innovation and creative industry have begun to stand out. The creative class needs special working places. However, the studies on the working place of the creative class are very limited.

In this study, the working place of fashion designers are examined. In the study, working offices of the fashion designers are analyzed and evaluated in the urban and building scale. Firstly, the criteria

of location choice of the design offices are discussed. Then, by examining the existing offices, needs and desires of fashion designers, it is aimed to reveal the design criteria of the working place for them. For this purpose, fashion designers in Nisantasi, the district where fashion designers have located mostly, were interviewed.

According to Florida, 3T (technology, talent and tolerance) is effective in the location choice of the creative class. It can be said that Nisantasi has all 3T for fashion designers. Istanbul, the gateway of Turkey to the world, offers many opportunities for the creative class in terms of technology, a tolerant environment where people with different lifestyles live together, a space where people demonstrate their talent. On the other hand, the concepts of individuality, openness and difference, which are the values of the creative class, are influential in the location choice of designers in Nisantasi as well as in the design of their offices. These designers prefer work individually in order to design freely. The office conditions and working hours are flexible. They have the freedom to do their work, especially their design wherever and whenever they want. Most of the designs have a story and their inspiration is different. Designers have reflected these differences in their working space. Nisantasi also provide some other advantages attracting the designers to this district. Numerous accessory suppliers and fabric suppliers located in the district. Moreover, Nisantasi is a district where upper income people, who are the potential customers of the sector, live. All these factors have caused fashion designers to cluster in Nisantasi. In addition, being a part of the network formed by the designers in Nisantasi and providing information through this network is an important reason for the designers to cluster in the district. For the designers, having place in this network is important not only for information sharing but also being visible in the sector.

These factors related to the city have been influential in the location choice and clustering of fashion designers in Nisantasi. However, Nisantasi is a built-up neighborhood and the buildings are relatively old. Designer offices are often located in these old buildings. For this reason, designers work in physically unsuitable conditions. The spaces in the offices are insufficient and the connections between the spaces are weak. Ateliers and storage areas are insufficient in their offices, and even some designers carry out their production activities in ateliers outside of Nisantasi. Despite high rents, designers prefer to work in these offices with physical disabilities. This shows that, for the designers here, the location of the offices is more important than the interior features.

In the research, design and production have been seen as two basic intertwined activities in the design process. Designers usually make their designs outside the office and do not use a space for design in the office. This is due to the fact that the design process is independent of time and space. However, all designers emphasize that it is important to have an atelier in the office. Because the designer improves the design during the production process and changes when necessary. Another important venue in the offices is the showroom. In these showrooms, they both exhibit their products, make meetings, and sometimes use them for design. Designers dream of integrated workplaces with a large atelier, showroom and adequate storage areas, where all functions are combined. According to them, the fact that all the spaces are together is very important for the efficiency of the design process.

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Urban design for multilevel planning

An inclusive, multilevel planning experience to regenerate Milan metropolitan peripheries

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Abstract: “Metropolitan welfare and urban regeneration” is the project that the Metropolitan City Authority of Milan is carrying out thanks to a National fund by the Infrastructure Ministry of the Central State aiming at developing deprived areas in the country. The topic of inclusiveness is the key chosen by the Metropolitan City of Milan to interpret the issue of peripheries and the idea of urban regeneration. Its target is to transform marginal places into the pivots of a territorial and social infrastructure to build a new livability of the metropolitan suburbs, through a multilevel planning tool that involves the environmental level, such as the housing inclusion and the cultural and social promotion levels. It is mainly addressing the vulnerable population, and at the same time it aims at the construction of nodes of attractions for all the citizens. The paper presents the innovative approach of governance proposed by a program that experiments new relationships at the metropolitan scale, and the contents of the six different projects that compose the program interpreting the issue of integration as a fundamental criterion into planning tools aimed at responding to the current challenges.

Keywords: urban regeneration; welfare; metropolitan scale; peripheries.

Introduction

In 2016 the Metropolitan City of Milan participated to a national call for proposals for financing by the Infrastructure Ministry of the Central State (called ‘Bando Periferie’), aiming at developing deprived areas over the country. With the project “Metropolitan Welfare and Urban Regeneration. Overcoming emergencies and building new spaces of cohesion and hospitality”, the Metropolitan City of Milan has proposed to build a system of services and spaces for hospitality and social cohesion promoted and managed by a network of Municipalities that have identified places to allocate activities capable of taking care of the marginal context on their territory. Abandoned or never inhabited places have been identified, in order to turn them into the pivots of a territorial and social infrastructure able to aggregate diversified activities and to unite different subjects for the construction of a new livability of metropolitan suburbs. Through the networking of spaces, of actors, of planning by a multiplicity of aggregate administrations, a design logic defined as “open network” was introduced: a collaborative design that allows both to overcome the emergency logic with which complex problems like that of hospitality are faced, and to change the scale in which the issue of redevelopment is usually approached.

1. Metropolitan welfare as a design strategy

With the participation in the extraordinary program for the redevelopment of the peripheral areas [‘Extraordinary program of intervention for urban redevelopment and the security in the suburbs of metropolitan cities and provincial capital municipalities’ (ex D.P.C.M. 25/05/2016)], the Metropolitan City of Milan has embarked on a path that has marked a discontinuity with respect to the ordinary government practice for two reasons. The first relates to the interpretation of the issue ‘peripheries’ and the very idea of redevelopment, which has been focused on the paradigm of social inclusion; the second reason for novelty concerns the governance model that the Metropolitan City of Milan has started building, giving impetus to a planning experience based on an ‘open network’ logic.

From the point of view of the interpretation of the peripheral issue, the call for proposal ‘Bando Periferie’ urged us to ask ourselves questions about which territories should be considered peripheral, that is, on how to identify urban contexts towards which to direct the project proposals. In recent urban studies, the periphery has been described in different geo-political contexts and with different disciplinary approaches: it has been analyzed as dichotomous dependence of power on centrality (Kühn, Bernt, Colini, 2016), as a condition of spatial marginality and peripheralization (Naumann, Fischer-Tahir, 2013), as a socio-economic process of construction of the exclusion – ‘the making of marginality’ (Wacquant, 2015; Wacquant, Slater, Pereira, 2014), as a territory subject to financial predation strategies and a territory of conquest for urban growth (Bernt, Colini, Foerste, 2017). At the same time, public policies have turned their interest in the periphery within the framework of EU social cohesion policies, while central governments and local authorities have addressed it through national redevelopment programs (Soziale Stadt DE, Politique de la Ville FR, NDC in UK, Urbana ES, Bando Periferie Italia). On the basis of these analytical frameworks, it was highlighted how the theoretical analysis of urban disciplines has failed to effectively inform public policies and, vice versa, urban policies up to now interpreted only partially the theoretical-critical contribution. With the aim of starting to fill this gap, the Metropolitan City of Milan has built a project that focuses attention not only primarily on space, but on the social and economic processes that produce inequality.

The starting point was therefore to take periphery as a transversal issue to the different territories, identifying peripheral places as marginal due to social conditions, economic, cultural aspects of its inhabitants - even where these spaces were located geographically in a central area. The contents of the project derive directly from this definition of what can be considered periphery. Expanding the geographical horizon of what is peripheral has led to accepting the challenge of considering the whole Metropolitan area as peripheral; extending the semantic field means constructing a project for the redevelopment of the suburbs involving the different levels with which a program of urban redevelopment is called to measure itself: environmental and sustainable mobility on the territory, housing inclusion, social promotion.

Overall, the objective of the 'Metropolitan Welfare and Urban Regeneration' (MWUR) program is to trigger processes of redevelopment of spaces underutilized or abandoned through projects capable of responding to the housing demand of weak population and at the same time to the need for places for cultural and social activities aimed at supporting social inclusion: places open to the territory, spaces for welcoming and, at the same time, potential attractors for all metropolitan citizens, with functions of supra-municipal relevance. In particular, Metropolitan City has asked the Municipalities to develop projects that, declined in the context of living spaces rather than within the framework of an infrastructure upgrade, could combine within the same intervention the residential destination, or the public transport, with cultural or social service: integrated projects, suitable for diversifying the residential offer in relation to the specific needs of different types of inhabitants, or to identify actions to support living even independently of direct interventions on built environment.

2. A network logic for urban regeneration

From the point of view of the proposed governance model, the Metropolitan City of Milan has interpreted the participation to the extraordinary program for the redevelopment of the peripheral areas as an opportunity to transversally measure oneself with the fundamental questions of the metropolitan government and as an opportunity to define its own directing role with respect to themes and territories interested by the project. This planning orientation has been developed through promoting interdisciplinary work within the administration and initiating a practice of cooperation between different administrations and subjects involved in the projects. This perspective has been identified with the image of an 'open network': a strategic vision that responds to a logic of collaboration amongst groups of activities and subjects (not only institutions, but also associations, cooperatives, organizations) and which prefigures a progressive implementation of intervention programs.

In interpreting its directing role with respect to the planned territories, Metropolitan City proposed to the Municipalities to follow this logic, both through the consolidation of relationships between Municipalities that had already started shared projects on their territories, and through the activation of new networks able to work on strategic supra-municipal goals. Milan metropolitan territory is articulated in homogeneous areas - by geographical features, demographic, historical, economic and institutional - by the Strategic Plan approved with Council resolution of 12/05/2016 in order to aggregate decentralized metropolitan activities and services. This articulation constitutes a first, albeit embryonic, identification of 'territorial figures' (Gabellini, 2008, Pasqui, 2000), a reticular system aimed at promoting integration between similar services of single or associated Municipalities.

Following an open network logic meant triggering processes of urban regeneration within a collaborative design involving a plurality of actors, through the sharing of spaces and of planning by many aggregate administrations; it meant giving life to projects that involve repercussions, in terms of improvement urban quality, on different interrelated territorial contexts; it meant finally to put oneself in a perspective which provides for the replicability of virtuous models even on larger territories. The MWUR project is part of this vision. The proposal for a metropolitan welfare for urban regeneration is to build a system of services for welcoming and social cohesion promoted and managed by a network of Municipalities that have identified on their territory places to allocate these activities. Interventions for sustainable mobility, housing facilities, cultural nodes and programs for social inclusion are interconnected so that each Administration can draw, from the mutual relations that the different subjects involved will build, an advantage in terms of function, attractiveness and cost-effectiveness and therefore also in terms of a planning that can further develop and aggregate other projects giving rise to new territorial polarities.

3. An integrated program for a new habitability

Combining the residential destination with the cultural and social one within the same project, and diversifying the residential offer based on the specific needs of different types of inhabitants, mean designing places open to the territory: not just spaces for welcoming but also potential attractors for all metropolitan citizens, with functions of beyond-local relevance. The expected results of these processes involve several levels with which an urban redevelopment program is called to measure itself in the environmental and sustainable mobility level, the housing inclusion and the cultural and social promotion level.

From the urban environment point of view in which buildings or abandoned areas are inserted, an intervention of renovation focused on an inhabiting perspective that contains a wide spectrum of functions in addition to residence, will allow to transform marginal places – marginal because they are degraded or because they are excluded from privileged trajectories by the inhabitants –, in places of urban quality that can gradually become spaces of reference for social life of the territory. This transformation process is closely linked to accessibility through the existing public transport network and through forecasting or strengthening of a sustainable mobility system that can connect spaces and services not necessarily adjacent.

From the residential function point of view to which buildings will be mainly be used, the project responds to some of the most unresolved socio-economic emergencies of current events. Among them, the living of migrants, providing spaces for families or single people within a path of social integration; the cohabitation between different types of inhabitants, inserting accommodations for students, whose presence guarantees a continuous exchange between different cultures in addition to recalling activities able to revitalize the territorial context; the inclusion of vulnerable population, with the provision of rooms for the residence but also for a series of shared services, together with the identification of the most suitable forms of management.

Finally, from social promotion point of view, the redevelopment of abandoned places for living not separated from the creation of new public spaces, as well as the provision of services for integration and job opportunities (with refurbishing programs that include, for example, self-construction as a tool

for both economic advantage and professional training), will allow those who will live there to feel involved in a renewal project extended to several aspects of civil life. Also, it will help them, in general, to perceive the areas no longer as marginal places but as pins of a territorial and social infrastructure able to aggregate diversified activities and to unite different subjects for the construction of a new habitability of the metropolitan suburbs.

Six groups of Municipalities, which include a total of 31 administrations, have participated in the call for proposal, each interpreting the Metropolitan City's proposal on the basis of emerging problems and potentialities present in its own territorial context, in the perspective of triggering urban regeneration processes.

3.1 Urban and territorial redevelopment of the areas of M2 stations along the Martesana canal

Promoted by 7 Municipalities (Bussero, Cernusco sul Naviglio, Cassina de' Pecchi, Gorgonzola, Gessate, Vimodrone, Milan), the project involves restructuring and functional redevelopment of some stations of the M2 underground line and of the relative system of accessibility, which is accompanied by the recovery of social housing buildings and the redevelopment of a garden (Giardino Tre Fontanili) and of a bicycle path in the Municipality of Vimodrone and the realization of a bicycle workshop in the Municipality of Bussero. This project responds primarily to the goal of the Strategic Plan to "contribute to the development of infrastructure networks for mobility", included in the framework of a wider regeneration of the urban areas along the M2 line, through the recovery of buildings and public spaces and the activation of services that can give impetus to the entire territorial system along the Martesana canal (figure 1).



Figure 1: Urban and territorial redevelopment of the areas of M2 stations along the Martesana canal

3.2 Peripheries at the Center: redevelopment of the Pioltello Satellite district

The project involves the redevelopment of one of the areas most affected by marginalization processes in the entire metropolitan territory. Through a series of actions aimed at promoting social integration, a support policies for work, to enrich the offer of spaces and programs for recreational activities, the ‘Peripheries at the Center’ project aims to provide the Pioltello area, starting from refurbishment of a sports center and the opening of a housing support desk, by appropriate infrastructure for the inclusion of this geographical context in a broad system of multilevel relations that transform the condition of isolation in a condition of high urbanity.

3.3 Integration Machine

Starting from the redevelopment of three buildings in the Municipalities of Legnano, Rescaldina and Castano Primo, the project triggers a process of social inclusion that supports the creation of low-cost living spaces and related management plans, the participatory planning of some public places, the creation of new aggregation spaces, as well as job training for the young people. The project aims to consolidate an already existing collaboration between administrations and the third sector and to expand the network of actors involved also through participation processes, responding to the objective of the Strategic Plan to “implement policies aimed at sustainable social development and inclusive, guaranteeing all citizens equal opportunities”. The different nodes of this “integration machine” are networked not only through an integrated management system, but also geographically through the implementation of a local public transport line and the construction of a cycle path between the buildings to be redeveloped (figure 2).

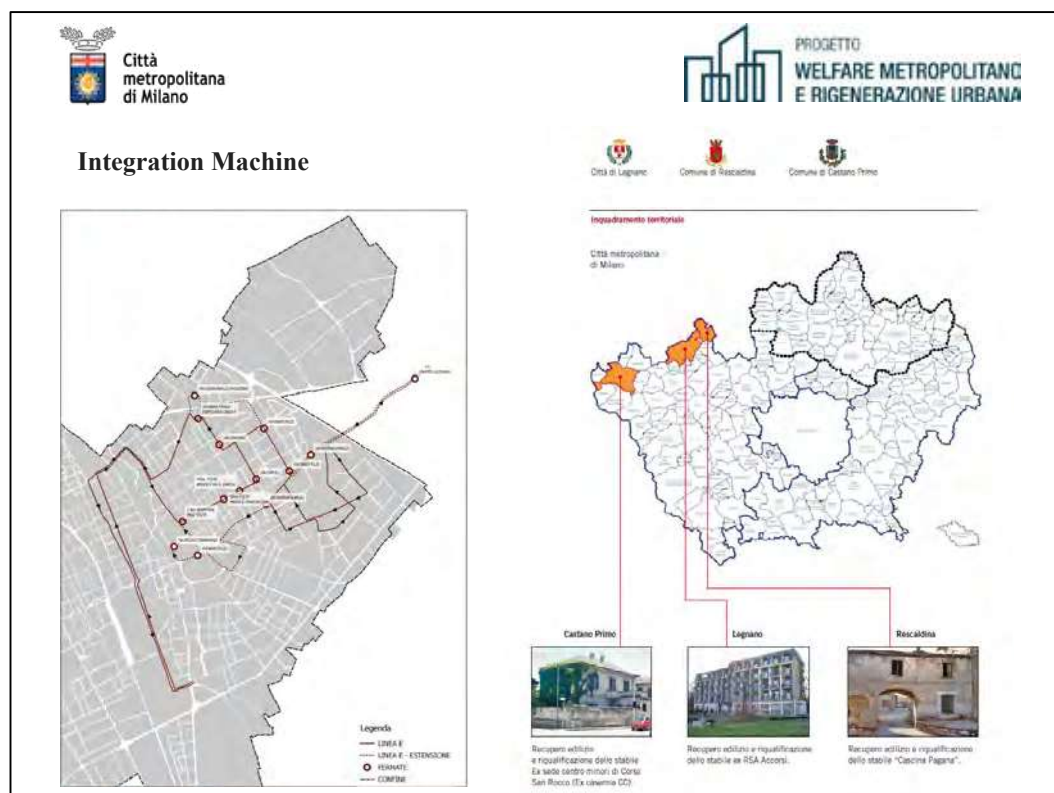


Figure 2: Integration Machine. Redevelopment of peripheries in the Northern part of the metropolitan territory

3.4 Urban regeneration in North Milan

The Municipalities of Cinisello Balsamo and Sesto San Giovanni present heterogeneous projects for the type of urban regeneration proposed, united by the intention of constructing a new identity of marginal contexts, because they are not easily accessible or they lack aggregation spaces of social and cultural services that distinguish them. There are two issues involved, the first of a predominantly social nature, the second marked by environmental requalification. The recovery and reuse of a historic farmhouse for a social housing intervention, the renovation of a school building, in addition to the creation of ‘Citizenship houses’ in which some of the projects related to the culture and sociality already present are put to system on the territory, are the projects aimed at promoting social inclusion. The creation of a cycling network of interchange between the Municipalities of Cinisello Balsamo, Milan, Sesto San Giovanni and Monza, and the project of a farmhouse and a rural park redevelopment, between the river system of the Lambro and the Parks of north-eastern Milan, instead propose to respectively enhance the nodes of interchange at the metropolitan scale, and to improve the landscape and environmental quality of what is today defined as a ‘no land use’ due to the presence, in particular, of a power line that is planned to be buried.

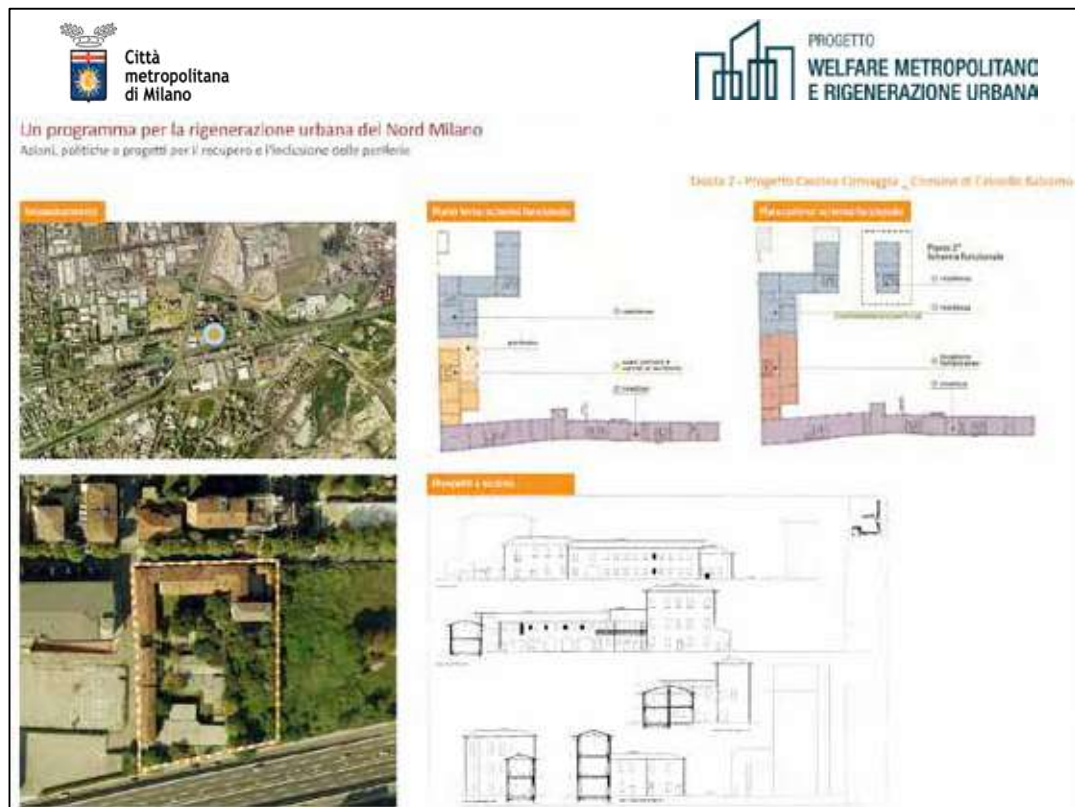


Figure 3: Urban regeneration in North Milan. The renovation of a farmhouse for social housing in Cinisello

3.5 RICA (Regenerating communities and living) towards Human Technopole

The project proposes interventions aimed at the social inclusion of various sectors of the population to generate new reference poles for the entire urban community. The recovery and re-functionalization of some buildings, including a road house owned by the metropolitan city, are designed to house elderly and an experimental didactic center for children, or an auditorium together with gathering places for the elderly and children, or the creation of a community hub and a space for living of weaker groups in the

same building. Regenerating peripheral spaces to integrate different functions related to living, through a project articulated in the territory of several Municipalities, answers the goal of the Strategic Plan to “promote, also through cooperation between the public and the public private, with particular reference to the third sector, a new generative welfare system, understood as a strategic lever for innovation”.

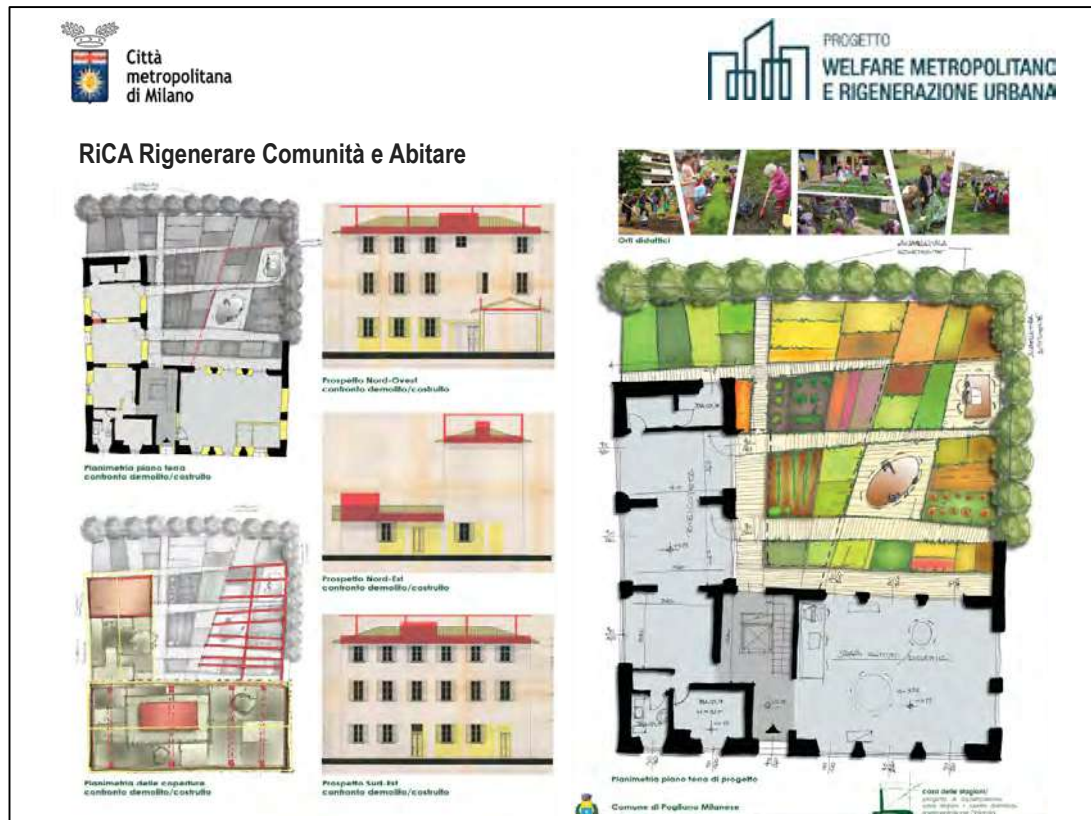


Figure 4: RiCA (Regenerating communities and living). The ‘Seasons House’ in Pogliano Milanese

3.6 For a city of us. Urban regeneration and socio-cultural development in the South West

In one of the most degraded socio-economic contexts of the Metropolitan City, the Municipalities of Pieve Emanuele and Rozzano propose to establish a stable organization in order to develop an inter-communal socio-cultural pole formed by three urban laboratories, redeveloping three existing public structures into one with a prevailing social characteristic, the other sportive, the last cultural. The project makes use of the consolidated collaboration between the two Municipalities to build a political, technical and associational coordination that promotes urban regeneration through measures to combat discomfort. The three laboratories are three incubators oriented towards promoting active citizenship and spreading social responsibility in city community, places of aggregation able to attract the talents and resources present on territory in order to build a neighborhood identity and to foster social relationships, responding to degradation problems related to high housing tension, a high rate of micro-crime and to the acute youthful unease that historically characterized this urban region.

Conclusions

The MWUR project can be read as an experiment of multilevel planning, as it has tried to stress the interaction between different levels of territorial government (the metropolitan and the municipal levels) and to implement the connections already existing from the geographical, infrastructural, social points of view, but which have not been acquired in urban planning yet. It has in fact proposed an articulated system of material and immaterial actions, considering the different levels involved in an urban redevelopment program: the environmental and sustainable mobility level, the housing inclusion and the cultural and social promotion level. Moreover, the projects have been realized by different actors, institutions, associations and stakeholders on the metropolitan territory, with the common goal of making urban regeneration, together with social inclusion, the core of a work of total rethinking of the metropolitan peripheries.

In light of the experience gained with this planning approach and after the first year of management of the MWUR project, it is possible to propose some suggestions in the perspective of moving from extraordinary planning to a new cycle in the governance at the metropolitan scale. The first suggestion concerns the process of renewal within the Metropolitan City of Milan, triggered by the project as it was conceived, and that could now be consolidated in the perspective of disseminating in other metropolitan areas the same multilevel approach expressed by the 31 Municipalities involved. The proposed interventions are guided by a unified interpretation of the issue of periphery and respond to the hypothesis that social inclusion can shape urban regeneration and that the redevelopment of the territory in turn is generative of social inclusion (Botto and Pezzoni, 2018). Both from the point of view of the issue that guided the redevelopment of the suburbs, and from the point of view of the experimented working method, the project MWUR marked a discontinuity with respect to the ordinary planning processes, indicating a possible direction of work in the practices of territorial government at the metropolitan scale. The conception of a project that made social inclusion the pivot around which to design the development of Milan's suburbs means going beyond the boundaries of traditional territorial planning sectors to respond more properly to the overall goal of *taking care* of areas considered marginal. On the other hand, a care of the territory that took into account the contextual criticalities required to diversify the interventions, focusing attention from time to time on aspects directly related to the physical space rather than on the difficulties of living connected to a specific urban context. Material and immaterial actions, variously combined in order to respond to the specific needs of each territory, have therefore designed the field of urban regeneration that has been defined in a close correlation with the conditions of marginality expressed by the territories themselves, as they were represented by the municipal administrations that have taken the theme proposed by the Metropolitan City into their projects. At the same time, the different interpretations of welfare, advanced by the metropolitan peripheries to rethink themselves, have made a concept explicit to be implemented, that of 'metropolitan welfare', which is the result of the opportunities for social inclusion identified in the single areas and networked with those of other contexts: a concept that cannot be separated from the intrinsic planning of each Municipality that has activated itself in transposing the questions of the territory and in proposing solutions open to fruition on the metropolitan scale. Finally, the general suggestion in the perspective to start a new cycle of governance at the metropolitan scale, based on an ordinary multilevel planning, is to strengthen and spread an approach to the entire urban region aimed at identifying the transformative potential of single places or the possibility of overcoming specific marginal conditions through integrated interventions that are inscribed in the broader design of a metropolitan welfare capable of regenerating the territory.

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Characteristic of Flexible Space of Traditional Urban Street under the Concept of Healthy City: Case Study of Muslim Settlements in Xi'an

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Abstract: Healthy city refers to a whole which is organically developed by healthy people, healthy environment and healthy society. It can improve its environment, expand its resources, and enable the urban situation to support each other so as to maximize its potential (Trevor Hancoc and Len Duhl). Xi'an Muslim Residential Area was formed after the Tang Dynasty and lasted more than a thousand years. Muslim settlements in Xi'an take mosques as the center and form a spatial pattern of Residence Around Mosques, which is continuing the traditional scale of urban street public life in China, and becoming an important carrier of people's emotions, life and communication space. Xi'an Muslims have a tradition of doing business, which the front of the house serves as a shop and the back yard serves as a residence. Therefore, the commercial activities there often extend from the first floor of the house to the street, forming an important public living space. With the extension of commercial activity space, this kind of place gradually becomes a functional medium, which softens the rigid boundary between the building and the street, thus forming a flexible space. This flexible space forms the event carrier of historical memory or the space field under the stack of daily life, which emerges a sort of reaction to space actors makes Muslim settlements have unique social and spiritual cohesion. It strengthens the stacking effect of historical information in urban space, then it constitutes the cultural information field of human-space-place. Taking Xi'an Muslim Residential Area as a case study, this paper analyses the types, attributes, characteristics and elements of these flexible spaces by the methods of typology, investigation data and Mapping, aiming at exploring the design method of traditional urban street flexible space based on the concept of healthy city as well as the healthy settlements.

Keywords: Healthy settlements, Street space, Traditional yardstick, Flexible space,

Introduction

Healthy city refers to a whole which is organically developed by healthy people, healthy environment and healthy society. It can improve its environment, expand its resources, and enable the urban situation to support each other so as to maximize its potential. The social value of flexible space originates from the pluralistic and complex nature of local residents, living places and public spaces, and has multi-functional adaptability. It is often manifested in the effect of space occupation and activity fields in pedestrian blocks. Investigations show that the flexibility of this space promotes the spiritual cohesion of local residents' society, strengthens the degree of social harmony, and further promotes the community health trends.

Since the Tang Dynasty, Xi'an Muslim Residential Area has been formed. It lasted 1300 years. With mosque as the center, Xi'an Muslim Residential Area has formed a spatial pattern of "encircling the mosque while living". It has continued the traditional scale of public living space in urban streets of China and become an important carrier of people's emotions, life and communication space. The social value of flexible space in Muslim neighborhoods (hereinafter referred to as "Muslim Square") is fully embodied and typical. Through the analysis of flexible space types, the spatial attributes, characteristics and elements of traditional street and lane public space are revealed, and the sociological value of flexible space in traditional urban neighborhoods based on the concept of healthy city is explored.

1. Research object and its background

Muslim neighbourhoods are located in the west of the Bell Tower in the old urban area of Xi'an, the central city of Northwest China. They cover an area of about 1.1 square kilometres (Fig. 1), starting from Shehui Road in the east, Zaozi Lane in the west, Hongbu Street in the north and West Street in the south.



Figure. 1 Scope of study and location map

Photo Source: Self-drawn by the author

The formation of Muslim residential space can be roughly divided into three stages: 1st, From the end of Tang Dynasty to Yuan Dynasty, Muslim settlements were formed and developed. The ancestors of Muslim settlements were mostly foreign nationals and their descendants. The

influence of Islam penetrated into all aspects of the lives of the ancestors of Muslim neighbourhoods.2nd During the Ming and Qing Dynasties, the basic pattern of Muslim settlements and a large number of historical relics and monuments were formed in the Ming and Qing Dynasties, and the spatial pattern of "Seven Temples and Thirteen Squares" laid the framework for the development of Muslim settlements.3rd Since modern times, the number of Muslim residents has increased significantly, forming a large-scale community. The infiltration of foreign culture and social fashion weakens the religious role of Muslim settlements, but the social organization form of mosque-Muslim community is still the basis of all kinds of relations in Muslim settlements.

The historical area of Beiyuanmen is located in Ming City of Xi'an. Drum-tower in the South and Beiyuanmen in the north and included the part of Xiyang Street and Huajue Lane, covering an area of about 9 hectares. Muslims are the main inhabitants. The section includes one of the key cultural relics protection units in the whole country - Drum Tower, and two of the key cultural relics protection units in Shaanxi Province - Huajue Lane Mosque and Gaojia Courtyard.



Figure . 2 Analysis and Investigation on the Current Situation and Publicity in Beiyuanmen Area
Picture Source: Drawing Based on Investigation Data by Author

The Muslims in Xi'an take business as their tradition and take family as the unit to form the space form of front store and back house or the space form of bottom store and upper house. Therefore, business activities often extend from the first floor of the room to the street, forming an important living space. With the extension of commercial activity space, this kind of place acts as a functional medium, softening the rigid boundary between buildings and streets, and forming a flexible space with social value because it bears specific public social activities. This

kind of flexible space forms the event carrier of historical memory or the space field under the stack of daily life, which reacts on the spatial behavior subject, makes Muslim dwelling have unique social and spiritual cohesion force, strengthens the stacking effect of historical information in urban space, and constitutes the cultural information field of human-space-place.

2. Medium Properties of Flexible Space

Jan Gehl put forward the concept of "flexible boundary" in his book *Communication and Space*, which wrote: Flexible

boundary is a transitional area which is neither completely private nor completely public. They often act as a connecting link, making residents and activities more relaxed physically and psychologically when swinging in private and public space.(Jan Gehl, 2002) , Flexible space, as one side of public space and directly connected area of buildings, plays a role in softening the interface between buildings and streets, and is an important container for attracting people to stay and promoting street life. According to spatial attributes, flexible space can be divided into three types: open, semi-open and introverted. The historical area of Beiyuanmen has abundant business forms and various stores, forming a flexible space with diverse forms and unique features. Flexible Space can be divided into public activity space, Street shared space, green leisure space and so on according to its spatial function. Its space has the property of medium space, which is the medium space of behavior transition, psychological transition and emotional transition.

Table 1 A List of Flexible Spatial Investigation and Classification of Beiyuanmen Historic District

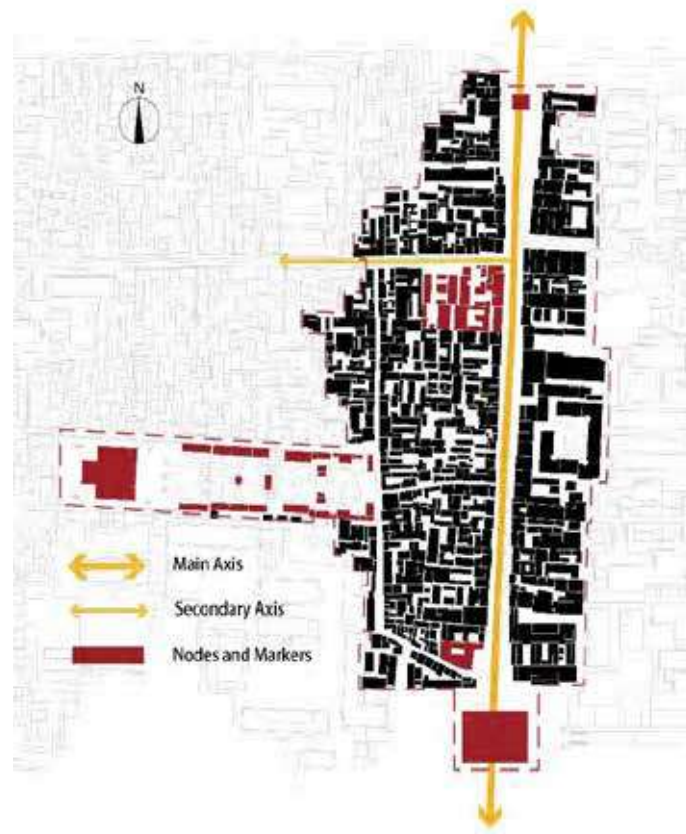
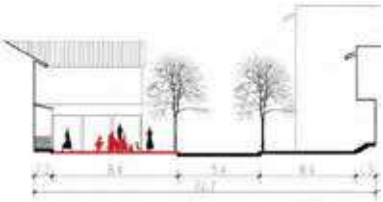



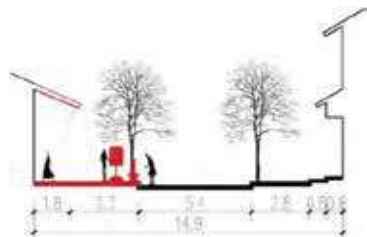





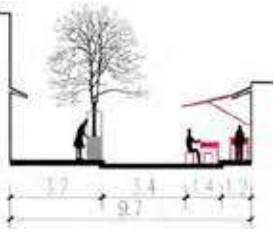

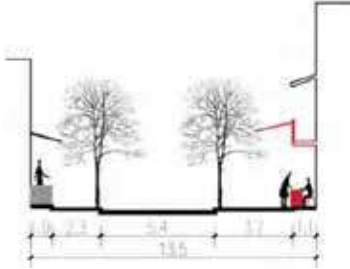

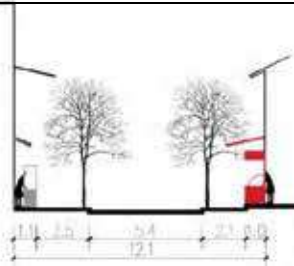

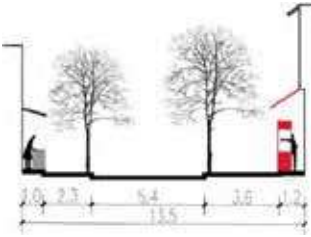

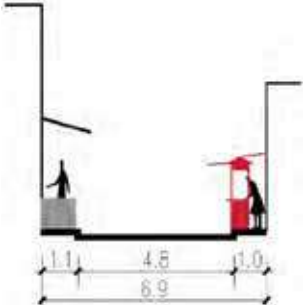



Figure.3 The Spatial Order of the Block and Its Node Elements
Picture Source: Drawing Based on Topographic Map by Author

Type	Space Form	Road Section	Photo	Elements
Open type	Small square space			open space, characteristic sculpture
	Street green space			stone bench, parterre, sculpture
	Entrance space of scenic spots			caves, stone tablet, billboards
Semi open type	Outer court of Street Shop			canopy, fence, tables and chairs
	Pedestrian space			canopy, works display shelf

Type	Space Form	Road Section	Photo	Elements
	Street space			canopy, tables and chairs
	Outdo or space of shops			canopy, stool, bronze statue, console
Intro verte d type	Shop space			Canopy, Commodity cabinet
	Outdo or space of shops			Canopy, Outdoor Operator
	Sidewalk space			Canopy, Food stall

3. Space-time field properties of flexible space

3.1 Hierarchy of Spatial Communication

The public space of Beiyuanmen block has multi-level communication functions, including daily communication of local residents, anonymous communication of citizens and tourists, and multi-polar communication of socialization.

(1) Daily communication: normalized hierarchical, hierarchical, classified communication space, and frequency assurance of communication, which is one of the important characteristics of urban modernity.

(1) Anonymous Communication: Seeking first experience of communication and self-choice of communication

(3) Social intercourse: regional activities and contacts, beyond the needs of contacts across time, space and region, such as kinship, neighbourhood, geography and industry, to obtain more abundant communication information and the basic basis for self-decision-making.

3.2 Street and Lane Vitality Externalization

According to the survey, the current business types of Muslim settlements are mainly divided into four parts: Muslim food, jewelry and jade antique trade, flower-bird-fish-insect commodity business and trading. Among them, the operation of Muslim food is its leading industry. There are 223 shops in the survey area, gathering many well-known snacks in Muslim settlements, including 11 centuries-old shops, with a strong business atmosphere. Muslim catering and retail trade are the main types of business in the area. Details are as follows:

Commercial and retail trade: mainly distributed in Huajue Lane and Beiyuanmen accounting for 50.45% of the industry mix. In recent years, the market share has gradually expanded, mainly serving tourists. Retail is mainly Muslim food, such as Muslim salted beef and mutton, in addition to Shaanxi local products and various tourist souvenirs, which is related to the vigorous development of tourism in recent years.

Muslim catering industry: mainly distributed in Beiyuanman and Xiyang City, accounting for 31.08% . Special snacks include steamed beef and mutton, stir-fried, steamed beef and mutton, etc. It serves both residents and tourists, and is the main feature of Muslim settlements.

Non-Muslim catering industry: mainly distributed in Beiyuanman, accounting for 4.50%, mainly snacks and drinks, serving tourists, is driven by the development of tourism in Muslim settlements.



Leisure and entertainment and supporting services: mainly distributed in the Beiyuanmen, accounting for 6.76% and 7.21% respectively. The main types are hotels, cafes and supermarkets. It is also driven by the development of tourism in Muslim settlements.

At present, the internal management mode of the district is mainly family-style small workshops, with family as the main unit. Store area is generally small, about 30-300 square meters, there is no large number of commercial facilities and large commercial service outlets.

Street vitality is reflected in the following four points:

(1) Functional format: life leisure, tourism leisure, business leisure, leisure after work; Its

functional format adapts to the derivative functional format of living space, employment space and business space.

(2) Spatial vitality: the consistency of space nature, space order and place spirit.

(3) Social Vitality: Medium Communication Space Promotes the Quality of Communication and Enhances the Acquisition of Spiritual Value of Places

(4) Economic Vitality: The traditional business form with family as the unit, the historical accumulation and the brand effect of historical stacking constitute the industrial chain and market environment based on the spirit of space place.

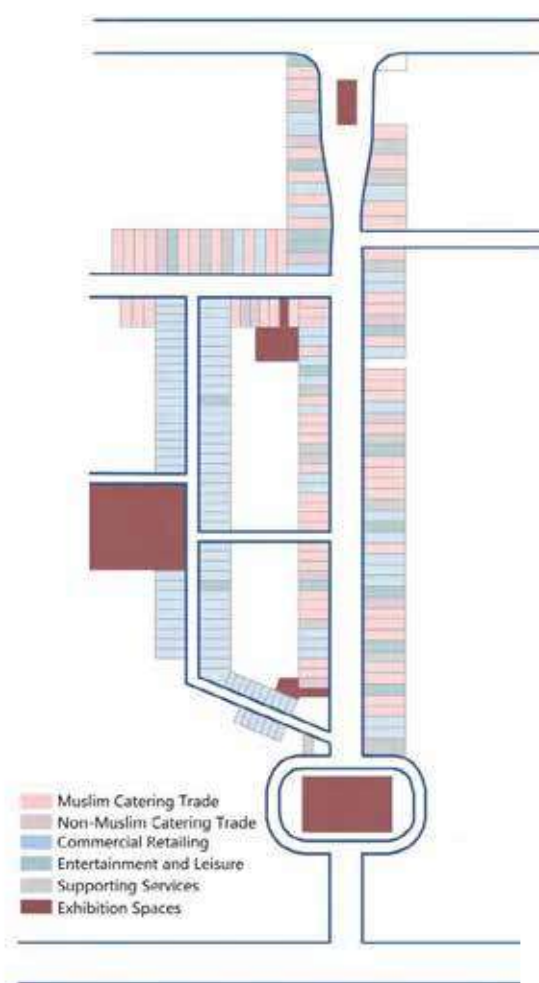


Fig.4 The Schematic Diagram of Investigation Results of Industry States distribution in Investigation Section
Picture Source: Drawing Based on Investigation Data by Author

3.3 Self-management of Urban Behavior

Because of the historical and cultural value of Muslim neighborhoods, the historical-spatial field composed of community groups and space carriers produces effect, which constitutes the characteristics of self-management of urban behavior. It involves the following three aspects.

(1) Place management: Place management is divided into urban management and community self-management, in which urban management mainly focuses on health and safety, while community management makes the relationship between business and residence close and complex. Muslim neighbourhood has become an environmental theme, reflecting the cultural connotation and denotation of the community's space and cultural characteristics.

(2) Scene management: The historical accumulation of family as business unit constitutes its specific environment atmosphere, which makes the sense of environmental symbols, color, texture and environment scale have the matching characteristics of block pedestrian space, space function and its behavior, showing the order under chaotic phenomena.

(3) Behavior management: In the space dominated by catering and tourism commodities, the family-based business has the characteristics of diversified development and diversity. Self-management mechanism is the spatial logic and order of acquisition of spiritual value based on the adaptability of place theme and emotional pleasure.

4. Self-organization of Flexible Space

In Muslim neighbourhoods, the traditional living space of streets and alleys bears the local history and memory, so it has cultural inheritance. However, the family-based business model also shows the trend of self-renewal and the gradual alienation of traditional business groups. However, in the process of self-development of stability and renewal, the interaction of various factors strengthens the complexity of the community and highlights its cultural, social and economic value, which is embodied in the following four aspects of the relationship and role process.

(1) Leisure life network: From environmental quality to communication quality, leisure life has obvious locality based on a daily life scene with historical atmosphere, and the multiple characteristics of spatial attributes endow the people in this region with greater tolerance for foreign cultural or fashion trends. Therefore, multi-cultural attributes and local living places pass through neighborhood formats. It generates the power of self-renewal.

(2) Derivation of public function: Communication center transforms from organizational behavior to leisure life behavior, which has prominent local characteristics, self-adjustment based on the complex functions of historical environment and public living space, and

infiltration and integration of daily life behavior and urban public life behavior. Strong regional characteristics have become an attracting factor of local life experience willingness. Public life functions derive and diversify around residential life functions.

(3) Multidimensional public life: Local micro-economic location factors make community life tend to be multi-centered and decentralized, while mosques play a composite role of economic, social and cultural effects of commercial integrity under cultural constraints. The function of public life is multi-dimensional and multi-level symbiosis and coordination, and it also meets the public and tourists'recreational life, business contacts and other public life behavior.

(4) Business form self-renewal: Starting from the traditional life form, it adapts to people's attention and pursuit of history and memory. As a result, the leisure life form in this area not only improves the economic benefits, but also promotes the communication activities of consumers. Through the adaptability upgrading of business form, the whole block is full of vitality.

5. conclusion

Healthy city refers to a whole which is organically developed by healthy people, healthy environment and healthy society. It can improve its environment, expand its resources, and enable the urban situation to support each other so as to maximize its potential. The social value of flexible space originates from the pluralistic and complex nature of local residents, living places and public spaces. It has multi-functional adaptability, often manifested as the effect of space occupation and activity field in pedestrian blocks. Therefore, the community flexible space design guided by social value is a new trend of urban space planning and design under the concept of health.

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Assessing territorial vulnerabilities and spatial inequalities: the case of Portugal

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Abstract: The economic crisis of the past decade has exacerbated existing vulnerability problems in Europe, particularly in the southern countries. These relate to unemployment, poverty, housing conditions, access to basic services or insecurity issues, among others, and have affected particular groups as migrant or the elderly. Although the increase in quality of life is a transversal goal to cohesion and urban policies, the effects of vulnerability have only recently begun to be documented in scientific research. Generally, comparative vulnerabilities' assessments are based on limited (often economic) indicators or, if they are more comprehensive, on a limited territorial scale. Thus, they don't perform holistic analysis at national scale, nor comprehensive regional/municipal comparisons. Consequently, this paper presents a multivariate diagnosis of vulnerabilities at national scale, considering an array of indicators of quality of life in various domains as housing, health, accessibility, education, security or employment. Each indicator was geo-referenced and represented at municipal level, leading to the creation of indexes of vulnerability for each theme. An overall index of vulnerability combining all parcels was then composed through advanced statistical analyses' techniques. More than displaying territorial differences, this approach allows discussing different geographical realities within Portugal, and provide outputs for supporting planning policies concerning integration, social cohesion, urban equity, and the development of urban systems.

Keywords: Territorial cohesion; vulnerability; multi-scalar planning; Portugal

Introduction

The economic crisis that has affected Europe in the last decade has been particularly harsh to Southern European countries (Bosco and Verney, 2012, Whitehead et al., 2014, Torres, 2009, Cairns et al., 2014, Carballo-Cruz, 2011). Existing vulnerability problems have been exacerbated, and today, even if the crisis has officially passed, they are still felt. With austerity policies in place, aimed at correcting rising fiscal and external imbalances, countries like Portugal witnessed cuts in welfare benefits, wages and pensions, and saw the increase of taxes. An immediate consequence was the slowdown of production, consumption and investment, and the rise of unemployment. With the reduction of the purchasing power, the bankruptcy of families and businesses, the increasing gap between income and consumption, and the deterioration of the social security system, poverty levels have increased and new types of poverty have emerged.

Although the number of people at risk of social exclusion has decreased in Europe (Eurostat, 2019), the crisis, political unrest or citizen dissatisfaction have led to the emergence or the increased visibility of social vulnerabilities (Ranci et al., 2014). They have also contributed to increasing spatial segregation, poverty concentration and social inequalities (Madanipour and Weck, 2015). For example, access to basic services and socio-economic benefits have declined, and so have housing conditions (Frazer and Marlier, 2011, CECODHAS, 2012), whereas some types of crime, such as sexual and domestic violence, have increased (APAV, 2017). This denotes how particularly vulnerable groups, such as the low qualified, immigrants, elderly or youngsters, have been severely affected, leading to a social crisis as a result of the economic crisis. In countries where welfare support relies extensively on family resources – notably in southern Europe – these effects have created heavy strains (Madanipour and Weck, 2015). Consequently, in the words of Méndez et al. (2015) this not only brought about a second recession of the economy and a later phase of stagnation, but also emphasized the unfair distribution of its impacts.

Today, the most important political and planning discourses are concerned with responding to the UN's Sustainable Development Goals. These call, among other concerns, for the reduction of inequalities (Goal 10), and making human settlements more inclusive, resilient and sustainable (Goal 11). Quality of life (OECD, 2017), cohesion agendas (EC, 2017) and overall political initiatives (Madanipour and Weck, 2015) support such calls, advocating for policies to combat social inequality and exclusion, and emphasizing the importance of place-based approaches. However, if the scope of vulnerability issues, and their relation to sustainable planning, is being increasingly debated (Lee, 2014), the spatial dimension of social exclusion, poverty and overall vulnerability has so far been mostly neglected (Madanipour and Weck, 2015).

Impacts are not spatially uniform and the drivers for these patterns differ within countries and within regions (Marcinićzak et al., 2015). The spatial dimension of exclusion, for example, is visible in the patterns of spatial segregation, in small-scale concentration of urban disadvantage, or in the rural problems of remoteness and accessibility (Murie and Musterd, 2004). However, comparative assessments of vulnerabilities have so far strongly relied on economic indicators or, if they have a greater scope, on selected sectoral indicators or a limited territorial scale. Thus, they don't perform holistic analysis at national scale, nor comprehensive regional/municipal comparisons taking into account an extensive battery of indicators.

In Portugal, the most important strategic planning document, the National Plan for Territorial Planning Policies (PNPOT), has been revised in 2018. It aims, according to Resolution n.º 44/2016 of the Council of Ministers, to further promote the territorial dimension of the public policies at various scales, by reinforcing the contribute of the urban structure and the improvement of quality of life in the country's development. It also intends to promote territorial cohesion and economic development with a strategy focused on the development of jobs and wealth outside the major metropolis, thus potentiating endogenous resources and a more planned and balanced distribution of facilities, functions and services. These goals point towards the development of mechanisms to regulate territorial inequalities that include multilevel integration of actors and instruments, but also to the construction of qualitative and analytical diagnosis. It is expected that these mechanisms allow exploring the relationships between geographies of vulnerability and the spatialization of planning policies, hence supporting spatially selective interventions and place-based prevention strategies.

Using Portugal as a test-case and contextualized in the aftermath of the revision of PNPOT, the main goal of this research is to perform a multivariate, territorial-based diagnosis of vulnerability, by creating and developing an innovative vulnerability index. This index is based on a wide range of relevant indicators of quality of life in 9 different domains, ranging from housing to economy to health. The purpose is dual; first to overcome the lack of space-based assessments of vulnerability at national scale. Second, to provide evidence-base for reshaping policy approaches and developing integrated responses.

This paper is organized into five sections. The second section reviews the (European) literature in terms of the measuring of territorial vulnerabilities and spatial inequalities at national and sub-national levels. The third section explains the methodology. The fourth section discusses the results, displaying the composite indexes produced. The fifth and last section presents the conclusions. Different geographical realities of Portugal are pointed out, raising awareness to vulnerability issues and leading to discussions regarding social cohesion and urban equity, crucial within current territorial planning in the European context.

Measuring territorial vulnerability and spatial inequalities

Sen (1976) started her well-known 1976 paper on measuring poverty by stating that two distinct problems should be faced: (i) identifying the poor among the total population, and (ii) constructing an index of poverty using the available information on the poor. This simple statement is still extremely profound and extremely relevant today, even if we substitute the word “poor” for “vulnerable” or “excluded” persons, or other related concepts. There is still the need – even more so after an economic crisis – to understand the dimensions of vulnerability, as well as to construct territorial indexes that may help us measure, understand and overcome them.

As Brown et al. (2017) state, vulnerability has many facets. The term has been widely used, particularly on the last two decades, in several areas of knowledge from medicine, to criminology to risk management (Gallardo, 2018). It has become a keyword for addressing issues of inequality or adversity, related to aspects such as economic or social disadvantage, insecurity or limited coping capacity (Brown et al., 2017). The concept itself is multidimensional, entailing a conceptual diversity that relates to the material and moral fragility of the most marginalized individuals or groups in society. Sapountzaki and Chalkias (2014) describe it as the loss potential of human, social, and economic capital. For Gallardo (2018) it is a state of defencelessness against adverse shock that could inflict damage, characterized either by the presence of certain weaknesses or internal conditions (which determine the state of defencelessness), or by the presence of certain probable external shocks (for which there is no ability to cope). Simply put, families and persons have more difficulty in facing adversities and access universal benefits and rights, either because of lack of material resources such as income, education, precarious housing or health condition; or because of discrimination due to age, gender, geographical location or an unsuitable distribution of services or goods (Marques et al., 2016, Sen, 2003).

Notwithstanding, no consensus exists on how to identify and characterize vulnerable persons in a given society. The multidimensional character of vulnerability, exclusion, poverty or, on the opposite end, well-being, is difficult to grasp, measure or monitor (Madanipour and Weck, 2015). “We can never directly observe a household’s current vulnerability level”, wrote Chaudhuri et al. (2002). Indeed, it seems rather impossible to encompass it into a single variable or indicator, as it derives from the cumulative overlapping of various dimensions. Many recent assessments of vulnerability, particularly those associated to the recent economic crisis in Europe, focus mainly on single macroeconomic indicators related to employment (or unemployment) and income (such as the GDP) (Artelaris, 2017, Mohseni-Cheraghlo, 2016, Madanipour and Weck, 2015). However, the fluctuations in macroeconomic indicators have often been shown to not be significantly correlated with the changes of social indicators (Boarini et al., 2006). Nor are they considered to be enough to explain the dimensions of vulnerability in a crisis period, as they provide only a partial picture of living conditions, social progress and interactions, the human and social costs of recession, as well as of other elements such as health and safety (Artelaris, 2017, Decancq and Schokkaert, 2016).

Consequently, the focus on using solely economic indicators has been challenged, leading to the rise of multidimensional approaches (Di Berardino et al., 2016) and the development of composite indicators (Artelaris, 2017). Such indicators are naturally of great interest to local, regional and even national policies, as

they can condense information, and be more easily read and understood by stakeholders and decision-makers, facilitating policy evaluation and comparison (Dialga and Thi Hang Giang, 2017). However, the formulation of such indicators has been effectively restricted. A critical aspect is the selection of the components themselves (OECD, 2008, Decancq and Schokkaert, 2016), more than often conditioned by the availability of statistical data, which results in the use of only a small number of variables (Artelaris, 2017, Madanipour and Weck, 2015). Furthermore, it is necessary to select the weights attached to each dimension, something that has been an object of extensive debate in the literature (Lee, 2014). Not prioritizing variables may cause deviation from reality; whereas weighting can produce distortive results. Variation in units of the indicators and their different directions may also cause problems. Lastly, another present critique is that the spatial dimension of exclusion or vulnerability has been mostly neglected (Madanipour and Weck, 2015), resulting on a little territorial decomposition of the results (Artelaris, 2017, Madanipour and Weck, 2015).

The theoretical framework suggested by the OECD (2017) in their ‘How’s Life’ series relates to eleven dimensions; namely Income and wealth, Job and earnings, Housing, Work-life balance, Health status, Education and skills, Social connections, Civic engagement and governance, Environmental quality, Personal security and Subjective well-being. Previously, the European Statistical System (2011) had referred to most of the same dimensions, under slightly different names (see Decancq and Schokkaert (2016) for a comparison). Many authors have added other dimensions to cover relevant points, notably the social dimension. For example, Decancq and Schokkaert (2016) added control or dummy variables related to household size, gender, age or belonging to an ethnic minority. Artelaris (2017) added four additional dimensions related to social exclusion, social capital, family and demographic dynamics. Besides presenting similar domains as the previous, the ESPON project TiPSE - The Territorial Dimension of Poverty and Social Exclusion in Europe (ESPON, 2014) also allowed for variables related to Transport and Communication or Ethnic Composition.

Lee (2014) reviews several authors who have shown correlations between social vulnerability and indicators as various as Female population, Age, Population density, Birth rate, Infant mortality rate, Households with disabled members, Social and economic status, Poor population, Income, Percentage of population 25 years or older with lower than high school diploma, Rates of unemployment, Working population in primary sector, Strength of social network, Percentage of houses rented or seasonal houses, Public infrastructure and resources that belong to inhabitants, Quality and price of house, and Percentage of old house. The author himself, due to data collection constraints, uses just 13 indicators. Table 1 synthesizes the variables used by these and other authors including Sapountzaki and Chalkias (2014).

Table 1 – Variables for measuring vulnerability and well-being in the literature

Authors	Lee (2014)	Sapountzaki, Chalkias (2014)	TIPSE project (ESPON, 2014)	Decancq and Schokkaert (2016)	Artelaris (2017)
Measure of:	Social vulnerability	Social-human vulnerability	Social exclusion	Well-being	Social Well-being
Scale	Township	Metropolitan	Macro-region	Country	Region
OECD framework					
Income and wealth	% of low-income population	Human poverty	Disposable income	Total household income per capita	Disposable Income (per capita); At risk of poverty rate
Housing	Peasant household; fishing household; % of single-person households		Tenure status; Density; Amenities		
Education and skills	% of population aged 15 years or older with educational attainment below high school	Illiterate rate	Access to different kinds of school, college, cultural facility; Attainment (ISCED levels)		Early leavers from education and training (from 18 to 24 years)

Environmental quality	Superficial measure of cultivated land				
Health status	Average number of patients who were served by hospitals; Number of hospital beds per 1000 inhabitants	Old age index	Access to primary health; Healthy life expectancy	Self-reported health	Medical doctors (per 100,000 inhabitants)/ Infant mortality rates (per 1000 live births)
Job and earnings			Employed / Unemployed; Inactive; Long term unemployed; Jobless households	Unemployment status	Unemployment Rate (%)/Average number of usual weekly hours of work in main job; Long-term unemployment (%)
Work-life balance					
Social connections				Frequency of social meetings with friends, relatives or colleagues	Family Divorce rate (per capita)/ Number of marriages (per capita)
Subjective well-being			Dependency rates		Suicide rates (per 100,000 inhabitants)
Civic engagement and governance			Voters; Civic engagement; Membership of NGOs		% Voter turnout in national elections
Personal security			Crime rates	Feeling safe when walking alone in local area after dark	Homicide rates (per 100,000 inhabitants)/Burglary rates (per 100,000 inhabitants)
Other domains					
Population	% of females; % of Elderly; Population density; Crude birth rate; % of physically and mentally disabled	Population density	Ethnic composition; Proportion from minorities; Migrants as share of population	Household size, education, gender, age, marital status, being religious, urban, belonging to an ethnic minority	% Population Growth (%); Young people neither in employment nor in education and training
Transport and Communication			Post Office; Broadband; Public transport; Car availability		

Methodology

The first decision made by the project team has been to select the most important domains in order to perform the vulnerability analysis. Two methods have converged. First, an analysis of the literature review (see previous chapter). Second, a group of discussions with an expert stakeholder team. Striving for an integrated approach, complex yet easily understandable, towards measuring and representing social vulnerability in Portugal, the result has been the decision to consider nine different domains. These have been i) housing (problems and constraints of the market...); ii) employment (unemployment, precariousness, income, qualifications...); iii) education (lack of schooling, lack of performance, social contexts...); iv) health (untimely death, morbidity, offer of services...); v) services of social interest (offer, accessibility...); vi) income (inequalities, savings, power of purchase...); vii) safety (crime rates, crime typologies...); viii) environment (conditions, behaviors, offer of services...); ix) vulnerable groups (poverty, social exclusion, conditions for social vulnerability...).

Most of them have a direct relationship to the domains in Table 1. Others are a parcel of those domains (such as vulnerable groups for Population; and access to facilities for Transport and Communication). Variables directly related to work-life balance, social connections and civic engagement and governance have not been directly

considered, as they have not been in previous studies. This is mostly due to the absence of data. In view of these constraints for obtaining detailed and extensive data at municipal level for each domain, the project team has chosen to use exclusively open-access statistical information at municipal level. This included data made available by the Portuguese National Statistics Institute (INE, 2019); an Institute responsible for the production of official statistical information, collected and condensed from an array of multiple primary sources. Furthermore, the official websites of the Ministry of Education and the Ministry of Labor and Social Solidarity were consulted, where different types of information were condensed to build new indicators.

The project team had discussion with thematic experts in order to select, of the available indicators for each domain, which ones should be included in the vulnerability analysis. A difference to previous studies lies in the fact that a large array of variables has been selected within each domain, rather than just one or two representative variables. Furthermore, for each domain the analysis has been structured to respond to two main objectives. The first has been to evaluate the specific types of vulnerability that each domain contains. For example, housing problems (such as homes without bath, or in a bad state of conservation) in the housing domain; the levels of unemployment in the employment domain; or the poor accessibility to services of social interest in the accessibility domain. A total of around 10 such indicators have been selected for each of the 9 domains, totaling 83. The second objective has been to evaluate the context that may influence the levels of vulnerability in each domain. For example, the pressure of the housing market in the housing domain; the low salaries and the precarious job offers in the employment domain; or the low levels of power of purchase and savings in the income domain. A total of around 5 indicators has been selected by the team of experts for each domain, totaling 49.

Considering the 9 different domains, a total of 132 indicators were collected. For each indicator, the most recent available data was used, although this means that some indicators, such as overcrowded dwellings, were produced using data from 2011 (the last population census in Portugal and sometimes the only information source available for a given variable), whilst other indicators were produced with data from 2017 (such as average rent values, or buildings rehabilitated after 2011). In some cases, in order to add consistency to the analysis and eliminate the influence of less frequent events, an average of three consecutive years was produced. This has been done for example for crime rates (in the safety domain), where an average of values from 2015, 2016 and 2017 (the last three data years available) were used.

Using this criteria and ArcGIS software, each one of the indicators has been cartographed at national scale (see figures below). In each map the municipalities were divided into five classes, using natural breaks, ranging from low to high incidence of the given indicator. Such procedure allowed for the elimination of differences in scale between indicators when the overall vulnerability index was computed, thus putting the emphasis on comparable territorial differences. Consequently, another difference to previous studies has been not to use a mathematical formula to sum the different variables in order to produce a composite indicator, but rather to perform a Multiple Correspondence Analysis (MCA) for each domain. MCA, an extension of correspondence analysis (CA), is an exploratory data analysis technique that allows analyzing patterns of relationships of several categorical dependent variables. It can be regarded as a form of factor analysis for categorical data (Greenacre, 2017, Yelland, 2010, Abdi and Valentin, 2007) that, through the reduction of the dimensions of a given dataset, facilitates the analysis of the relationships therein. Partial indexes of vulnerability were thus produced for each indicator, and the results identifying the most vulnerable territories were discussed with territorial experts (for example of the Commission of Coordination).

From each partial index the most representative indicators (with the highest test-value) were selected, in order to feed an overall index of vulnerability combining all domains. These were the ones displaying greater significance in the territorial differentiation of vulnerabilities in each domain. About 70 of the original 132 indicators were selected for computing the composite index; around 40 for the identification of the territorial specificities of vulnerabilities (1st objective), and around 30 for the identification of the territorial contexts

affecting vulnerability (2nd objective). MCA was then performed, considering the first set of variables as active and the second set as passive. This resulted in an overall synthesis of territorial vulnerability.

Results

For this paper, and with the impossibility of showing all maps concerning the 130 indicators within the 9 domains, the housing domain has been selected as an example. Figure 1 shows the two final maps for the housing domain. The first map represents the synthesis of housing vulnerabilities in Portugal. It has been produced combining around 10 different indicators of housing problems, for example those related to derelict buildings, overcrowded dwellings, social housing dwellings, families to rehouse, among others. The second map represents the synthesis of the contextual vulnerabilities that may influence the housing domain; most notably the pressures on the housing market. Variables used to compose this second indicator include the average rent value, the bank evaluations by square meter of homes or the percentage of local accommodations.

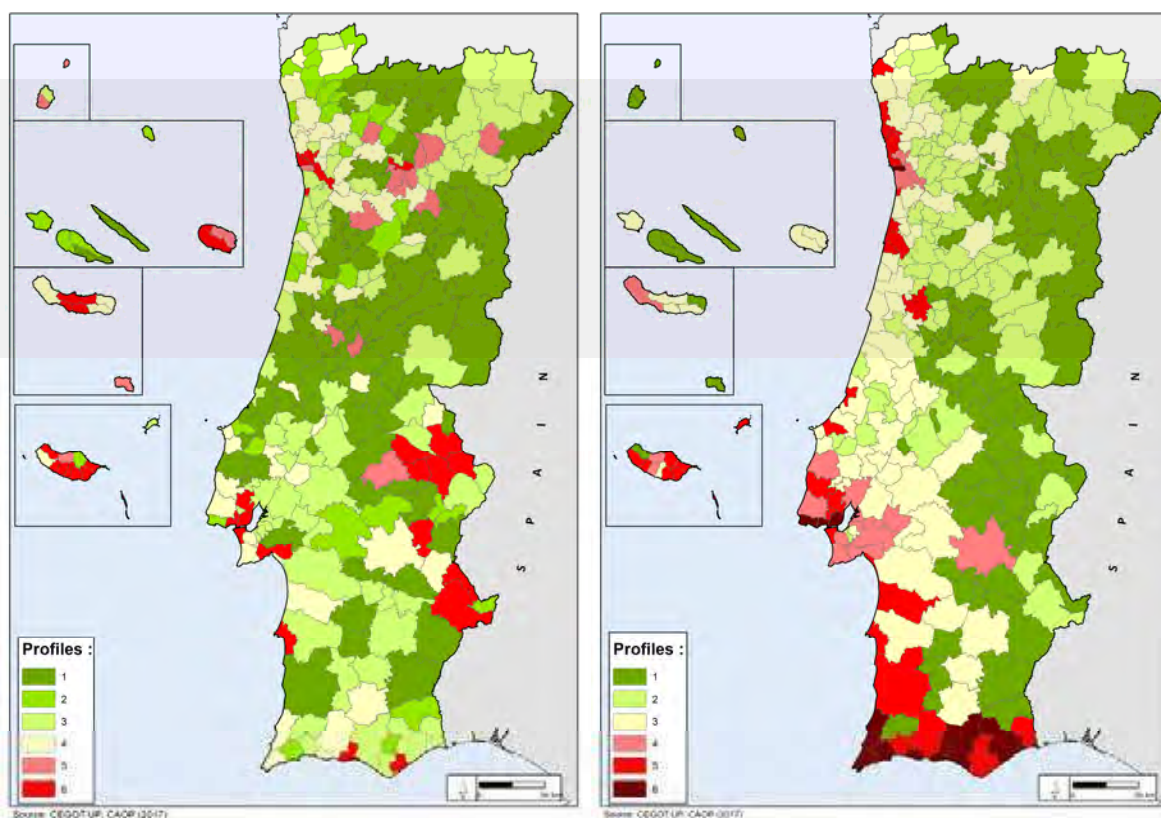


Figure 1 – (a) Synthesis of housing vulnerabilities; (b) synthesis of contextual vulnerabilities that may influence the housing domain

The highest profiles represent those where the amount of problems is larger. In territorial terms, it can be seen that housing problems (Figure 1a) feature more in the metropolitan areas of Lisbon and Porto, but also in some coastal areas, closer to the border with Spain and in some islands of the archipelago of Azores and Madeira. Although there is a strong presence of social housing, this profile is characterized by a large need of families to rehouse and overcrowded dwellings. It is also underlined by a large unemployment rate. Problems are also visible in Profile 5 in municipalities of the interior Portugal to the centre and the north, where there is a very high percentage of derelict buildings. The population in these areas is characterized by low incomes and not having an university education.

Nonetheless, the majority of Portugal has mostly been placed in Profiles 1 and 2. Both have in common a large number of derelict buildings and a medium to high population without an university education. Profile 1, dominant in central Portugal, is further distinguishable by low social housing but also low overcrowding and employment. Profile 3, with some predominance in the littoral, both to the north and the south, also shares low social housing and a medium amount of derelict buildings and families to rehouse, but is more characterized by very low incomes. Profile 4 is distinguishable by the amount of overcrowded dwellings.

The synthesis of contextual vulnerabilities (Figure 1b) clearly displays the differences between the interior and the littoral, and also between these and the areas around the metropolitan areas of Porto, Lisbon and the Algarve. Indeed, this is clearly the most problematic region, with profile 5 and 6 relating to high housing prices and rent values and large number of local accommodations. Profile 6 is also particularly characterized by unemployment and low incomes. Whereas the interior of Portugal is characterized by profiles 1 and 2 (low rents, low housing prices, low number of local accommodations), the littoral is characterized by profiles 3 and 4, where rent values and housing prices increase as the main cities of Lisbon and Porto are approached, and the percentage of income spent on housing is high.

Housing policies should be able to cross the two analyses, understanding that housing pressures are concentrated in Lisbon, Porto and the Algarve, but housing problems appear both in rural and urban territories. The most sensitive areas are those where bad housing conditions and a high pressure on the housing market, with elevated prices, hinder the access to a proper home.

Figure 2 represents the overall vulnerability results, considering all 9 domains and the 70 most representative indicators, resulting from the partial analyses, as the one for housing seen in the previous paragraphs. Five profiles have been identified, which display clear territorial patterns. Profile 4, for example, is clearly found in the interior north of the country. It represents an elderly, low income population, with poor school qualifications and a high degree of school abandonment, suffering from long term unemployment. Families are large, building dereliction is a problem and the access to high order services is low. On the other hand, Profile 5 is clearly seen around the major metropolitan areas of Porto, Lisbon and Faro (in the Algarve), as well as around other relevant medium-sized cities in the centre and south. It corresponds to a population highly qualified, with high power of purchase and high access to services, characterized by more than the average of single parent families and migrants. However, salaries are often low, the rent and evaluation values for homes are very high (although the number of social housing is also high), and there are greater problems with health, overcrowding and crime.

In between, Profile 1 is more prevalent in the littoral and center of the country, whereas Profile 3 is more prevalent in the interior, centre and south. Profile 1 has low levels of unemployment, overcrowding, housing rents, health problems and crime, and high levels of people with a complete basic education and high access to proximity services. However, incomes are low, and so is public employment and the number of social houses. Having large forest areas, these territories are also more susceptible to forest fires. Profile 3, on the other hand, is a territory susceptible to desertification. Although there is a high percentage of public employment, the percentage of elderly living alone and people with low education is high, and there are low levels of power of purchase and access to proximity and high order services. Housing is evaluated at lower values by banks and municipalities have high level of environmental expenses. Profile 2 has only a small expression in the outer rim of the larger metropolitan area of Porto. Is is distinguishable by very high levels of proximity to services, large families, single parent families and younger population. There are, however, low levels of public employment, long term unemployment and the weight of the housing rent in the family income is high.

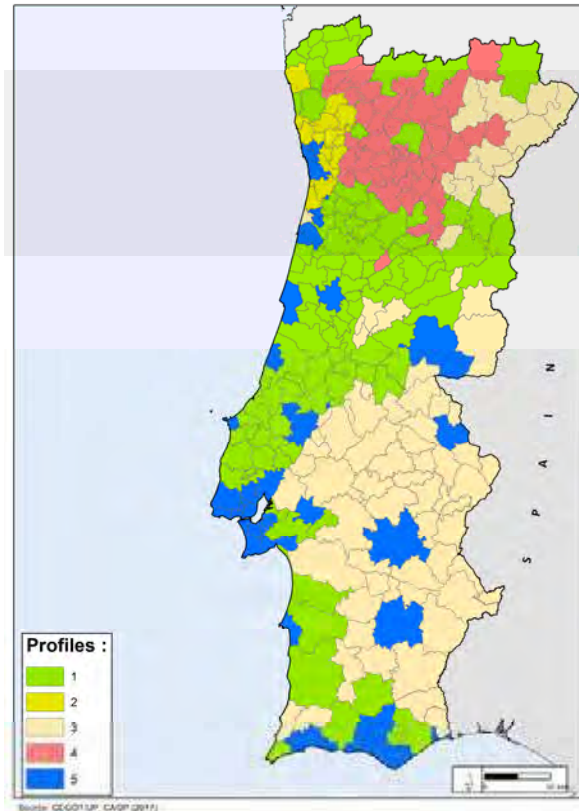


Figure 2 – Synthesis of overall vulnerability problems

Conclusions

As Lee (2014) argues, the traditional planning paradigm often stresses physical vulnerability and exposure to risk, with only a few studies applying social vulnerability to planning practices. However, in a post-crisis era, where social constraints are far from solved, the main planning agendas point towards the development of instruments capable of offering policy insights for promoting quality of life and spatially just and cohesive societies. This means improving several social indicators and reshaping how regional problems are approach (Artelaris, 2017). Combining both, it seems necessary to re-conceptualizing how territorial and social vulnerabilities as well as spatial inequalities are assessed, and how such knowledge can be integrated in strategic decision making.

In this paper, we have succinctly summarized an innovative approach applied in Portugal in the aftermath of the revision of the National Plan for Territorial Planning Policies (PNPOT) in 2018. The multivariate approach at national scale, using the municipality as a unit of measure, allowed for the extensive characterization and understanding of the territorial contexts of vulnerability and exclusion in Portugal. Firstly, it has to be acknowledged that this rather lengthy approach (over 130 indicators were initially analyzed and computed) is a step forward from previous works, because the complexity of the vulnerability phenomena, composed by a wide range of indicators of an economic, social and even physical nature, cannot be encompassed by single indicators. As Artelaris (2017) writes, wellbeing is inherently multidimensional. Even so, composite indicators themselves are the object of criticism (Dialga and Thi Hang Giang, 2017, OECD, 2008) because they may be misleading if poorly constructed and their construction often relies on subjective judgments. Yet again, i) by applying a methodology in stages, where each domain is analyzed individually and then only the most influencing variables are used for the final index score; ii) by dividing the variables in those directly related to

problems and those related to context; iii) and by using MCA rather than a mathematical expression, many of these criticisms can be overcome.

Besides displaying a national vision of vulnerabilities, replicable to other contexts, these results are intended to bring positive outputs for the guidance of planning policies regarding quality of life and the development of urban systems, by providing evidence-base for integrated responses.

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GRENOBLE-ALPES AND THE ECOLOGICAL TRANSITION: TERRITORIAL PLANNING IN MOTION

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Abstract: In this article we make the following hypothesis: sustainable urban development and climate change adaptation policies have had significant effects on the reconfiguration of territorial planning systems, and we analyse this evolution in the context of a European territory. Since the early 2000s, the Grenoble metropolitan area has carried out a series of actions (tram and bicycle path network, adopting a “Plan climat”) and launched related projects (“Ecoquartiers”, “EcoCité”), which explains why it is often considered a pioneering territory in terms of sustainable development and adaptation to climate change. The revamping of public policies to better meet the challenges of ecological transition explains the overall transformation of the planning system that has been in effect until now. Moreover, for “Grenoble-Alpes Métropole”, the recent change of status is a moment of change for the territorial planning strategies. The establishment of the metropolis and the obligation it has to quickly have a “Plan local d’urbanisme intercommunal” now allow it to build a strategy based on a common vision of the urban area and its development. That’s why this strategy leads to the search for a kind of multilevel territorial planning that is flexible, proactive and in motion.

Keywords: Ecological transition; Multilevel planning in motion; Urban demonstration projects; Grenoble-Alpes Métropole.

Introduction

Since the early 2000s, a series of actions have been launched in the Grenoble metropolitan area: developing a tram and bicycle path network, adopting a “Plan climat” and launched related projects: “Ecoquartiers, EcoCité”, which explains why “Grenoble-Alpes Métropole” is often considered a pioneering territory for sustainable development and adaptation to climate change. And more recently, in early 2019, Grenoble decided to take part in the competition rewarding Green Capitals.

The revamping of public policies (environment, mobility, urban planning) with the goal of better meeting the challenges of an ecological transition that lies ahead explains the comprehensive

transformation of the planning system that has been in effect until now. In a metropolitan context marked by institutional fragmentation, the planning process is incremental in nature, which shows why local actors favour specific projects over planning strategies. The change in status of the “Grenoble Alpes Métropole” in 2015 explains the emergence – on the scale of the metropolis and no longer of the municipalities – of new planning, based on the vision of a mountain metropolis organised in a polycentric manner. The establishment of the metropolis and the obligation it has to quickly have a “Plan local d’urbanisme intercommunal” now allow it to build a strategy based on a common vision of the urban area and its development. That’s why this strategy, which is developed in close collaboration with the municipalities, leads to the search for a kind of multilevel territorial planning that is flexible, proactive and in motion.

In this article we make the following hypothesis: sustainable urban development and climate change adaptation policies have had significant effects on the reconfiguration of territorial planning systems, and we analyse this evolution in the context of a European territory. First, after presenting our methodology, we will begin by analysing the consequences of ecological transition on territorial planning systems. Then, in second part, with the case of “Grenoble-Alpes Métropole”, we will present the context, the relationships between spatial planning and urban demonstration projects, the actors involved in the story of building a sustainable urban development strategy and, in third part, we will analyse the new modes of governance and Grenoble’s territorial planning in motion.

Part 1: Methodology and relations between ecological transition and territorial planning systems

1.1 A qualitative research methodology

This section draws on the results of research (POPSU¹, 2011-2018; CFE², 2016) conducted on strategies and projects implemented in Grenoble (France). In this research, we examined the issues of strategies, projects and governance. This work was done, on the one hand, by analysing documents on the national and regional energy policies and studying strategies of territorial planning and landmark urban projects at the local level and, on the other hand, by carrying out in situ investigations, conducting a series of interviews with elected officials, technicians, architects, urban planners, engineers, academics and residents and paying visits to architectural and urban operations. This approach enabled us to understand the drivers of urban ecosystem that foster the emergence of social and technological innovations in order to manage ecological transition at the local level.

The analysis of urban projects and strategies was conducted with a funnelling approach: from the current situation (political and administrative systems, energy policies and national players) to regional energy planning and policies to the specific context of territorial communities, local urban planning and landmark urban projects. The analysis may be close to what Yves Chalas calls a figurative analysis (Chalas, 2000), which is an approach that seeks to produce representations of an

¹ POPSU : Plateforme d’Observation des Projets et Stratégies Urbaines : Etude du cas de Grenoble_Alpes Métropole dans ce programme de recherche encadré en par le Ministère français de la Transition Ecologique et Solidaire.

² CFE : Conseil Français de l’Energie : programme de recherche sur l’Impact du développement de la Décentralisation des Energies sur le système Energétique

urban reality by giving equal weight to observation, description and analysis. The goal of this approach is to focus more on the relations than the oppositions that may exist between metropolitan planning strategies and the implementation of local urban projects.

In this way, we show how the proliferation of actors – and especially of the relationships that are cultivated – reveals a process of cooperation aimed at reducing technological uncertainty and increasing the stakeholders' innovation skills. The aims of Grenoble are entirely in line with the desire among local authorities to develop links with private economic actors and research organisations in order to enable the development of urban demonstration projects.

1.2 Sustainable development and the transformation of territorial planning systems

Because they lead to a pursuit of greater coordination between actions related to urban planning, the environment, mobility and energy management, policies for sustainable urban development and adaptation to climate change have had significant effects on the reconfiguration of territorial planning systems at the metropolitan level. In a world that continues to look uncertain, strategic and spatial planning, like its predecessor, strategic planning, as seen in Figure n°1, is both an exploration of transformation possibilities and an experimentation with solutions through the launching of projects, which are no longer necessarily large projects.

Figure n° 1: The main stages of French territorial planning

	Main objective	Approach	Method of elaboration	Modalities of stakeholder involvement	Implementation
Planning of land use	Management of urbanization and extensions	Comprehensive approach	Procedure conducted by the public power exercising hierarchical power	Consultation of civil society actors, once the objectives have been defined	Application of a regulation
Strategic planning	Economic development	Elaboration leading to a selection of <i>key issues</i>	Process constituting a strategic cycle in which milestones (goal development, implementation, evaluation) are equally important	<i>Collaborative planning</i> with stakeholder involvement throughout the process. Process that can lead to a pact of mutual commitments	Major projects, supposed to have a ripple effect on the development of the rest of the agglomeration
Strategic and spatial planning	Sustainable urban development	Production of a vision (<i>leitbild</i>).	Process - leads to several territorial scales, - involving a plurality of public and private actors, - mobilizing a variety of tools (territorial plan, sectoral plans, projects, guidelines and regulations)	<i>Collaborative planning</i> using innovative methods of involving civil society actors (shared diagnosis, workshops, forums ...)	Definition of network projects (mobility networks, network of centrality, green and blue weave) having a structuring effect of urbanization.

Source: Gilles Novarina and Natacha Seigneuret, 2018.

Using the metaphor of navigation proposed by Jean Hillier (2011), we can affirm that strategic approaches, whether plans or projects, must both set a course, which corresponds to defining the elements of a medium-term vision, and identify the stages, which corresponds to the projects that make it possible to translate this vision into actions. This desire to associate a distant vision with immediate action assumes, on the one hand, the linking of systems such as thematic groups, forums, public facilitating the involvement of the actors and, on the other hand, the use of new communication techniques such as exhibitions, digital collaborative cartographic platforms to mobilise the public (Balducci, 2011).

Because it calls for the alignment of sectorial policies for economic development, urban development, mobility and the environment, sustainable urban development requires that territories' material and physical organisation be taken into account. Thus, the promotion of sustainable mobility is easier with an organisation of centralities in coordination with the structure of the public transport network (train, metro, tram), the preservation of biodiversity is facilitated by the networking of natural spaces, and energy cogeneration plants operate better in compact spaces in city centres than in the territories of the diffuse city (Novarina, Seigneuret, 2019). Sustainable development policies remind their stakeholders of the importance of the constraints and the path dependency arising from the territorial structures they are trying to act on.

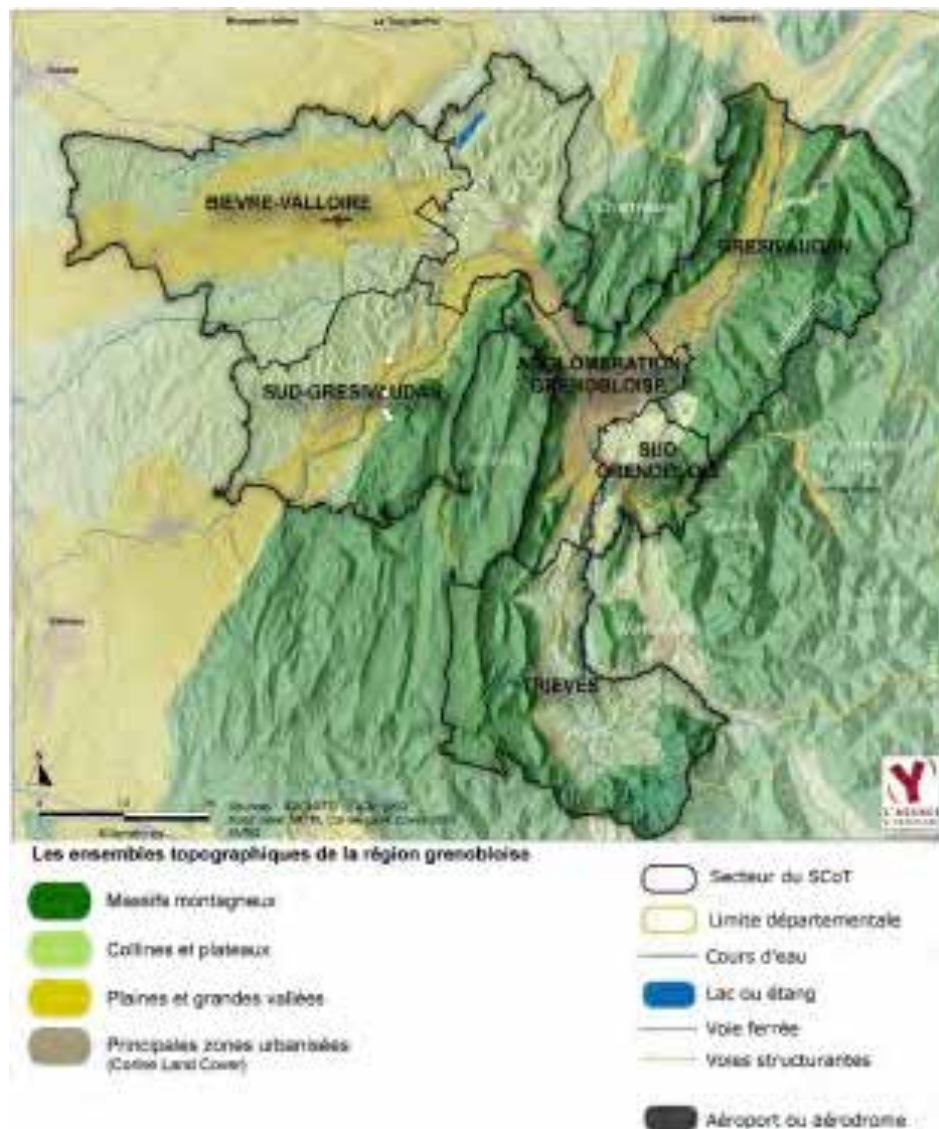
The “Loi de Modernisation de l’Action Publique Territoriale et d’Affirmation des Métropoles” MAPTAM law of 27 January 2014 has enabled urban all urban agglomerations with more than 400,000 inhabitants to have broad powers in terms of sustainable planning, economic development, housing and the management of mobility and local public services. Looking at Grenoble’s experience, guidance regarding the ways in which the territory is organised finds expression in the “Schéma de cohérence territoriale” and is the subject of various regulations, as part of the “Plan local d’urbanisme intercommunal”.

Part 2: Grenoble-Alpes Métropole, context and history of the construction of a sustainable urban development strategy

2.1 “Grenoble-Alpes Métropole au cœur des Alpes »

“Grenoble Alpes Métropole” has 445,000 inhabitants and is situated away from France’s major highways and rail routes. This isolation has been viewed as a limitation, one that the local actors have had to overcome in order to grow their businesses (Blanchard, 1935). The valley floor, at the confluence of the River Isère and the River Drac, is surrounded by three mountain massifs, the Vercors, the Chartreuse and the Belledonne, and has produced an urban site that is both complex and limited, as seen in Figure n°2. The lack of space explains the need to intensify urbanisation, which leads to both the compactness (3,673 inhabitants per km²) and especially density indices (8,500 inhabitants per km²) being rather high. The agglomeration is characterised by a juxtaposition of urban fabrics (historical centre, condominiums, single-family houses, large complexes, activity zones) that produce a composite landscape.

Figure n°2: Grenoble Urban Region and its territories



Source: Agence d'Urbanisme de la Région Urbaine de Grenoble, 2005.

Grenoble has been an industrial city since the mid-19th century. The city's tradition of scientific and technological innovation, based on an innovation ecosystem that links the university, research centres and industrial enterprises, has yielded a dynamic of technopolitan activities. Today, Grenoble specialises in software design and nanotechnology, and its economy is boosted by the presence of a dynamic university, large scientific facilities (Synchrotron) and international companies. However, its technological dynamism does not guarantee an urban dynamic since, between 2007 and 2011, the number of private salaried jobs fell 2.7%. (Novarina, Seigneuret, 2015).

2.2 Grenoble, a pilot city of the ecological transition

Because it lies in a basin, the city's urban area is facing acute environmental problems (pollution, global warming, an increased range of temperatures and other hazards) that compel it, perhaps more than others, to implement sustainable development strategies voluntarily. Grenoble has been involved

in a series of sustainable development initiatives since the beginning of the 2000s, for which it has received recognition at national and international levels. In 2001, the refurbishment of former military barracks in the Bonne district, in the immediate surroundings of the historical centre, combined the restoration of old buildings with new building projects. It was based on the use of renewable energies and the “Haute Qualité Environnementale” standard. This project enabled Grenoble to receive funding from the European Union as part of the Concerto programme, as well as the “Grand Prix EcoQuartier”, which is handed out by the Ministry of Ecology. At the same time, the municipality chose to include a guide to the environmental quality “Guide de la Qualité Environnementale de l’Architecture et de l’Urbanisme” in its “Plan Local d’Urbanisme”. Around a decade later, with the goal of creating a post-carbon metropolis, the agglomeration community obtained support from the Ministry of Ecology and the “Caisse des Dépôts et Consignations” (a public finance institution) for its “EcoCité” project, whose goal is to repurpose the technopolitan site of the Scientific Peninsula and facilitate greater social and urban diversity.

Up until 2015, the Grenoble urban district (the city centre and the inner-ring suburbs) had been organised as a “Communauté d’Agglomération” with limited powers regarding economic development and territorial planning. Its powers were limited to mobility, housing and the management of local public services. Competing interests between municipalities explain the local reluctance with regard to large-scale planning. Local actors long expressed a preference for a concatenation of experiences and specific projects that allow their communal singularities to be affirmed. As a result, territorial planning in Grenoble has been done by stratification and juxtaposition of projects.

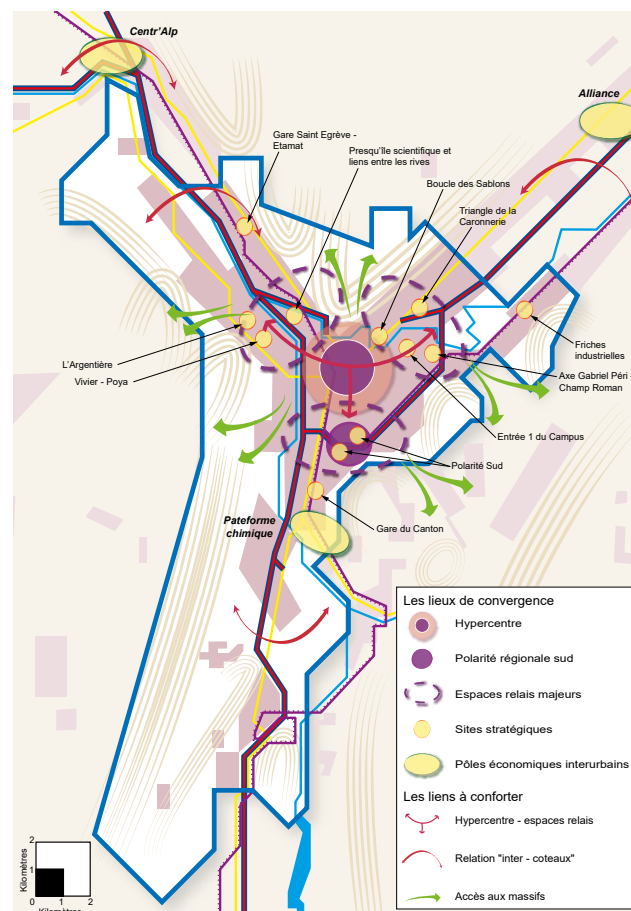
2.3 The “Projet d’Agglomération”: towards a polycentric territorial organisation

In order to grow and to guarantee that it will be a sustainable and innovative city, Grenoble took a positive path on which it is possible to point to cities that were trailblazers in this regard – ones that historically benefitted by finding investment and external financing that helped them get their projects off the ground. This yearning to increase the appeal can be noted in the many documents that make up the main stages of Grenoble’s territorial planning process on , whether it is the “Schéma de cohérence territoriale” (SCoT), the “Plan de déplacements urbains” (PDU), the “Projet d’Agglomération” (Acts I and II) or, more recently, the “Ecocité” (1 and 2) and the “Plan Local d’Urbanisme intercommunal” (PLUI) processes.

Over the course of sectoral inter-communal processes, such as the successive “Plans de déplacements urbains” (2000, 2007 and 2012) and the “Plan Climat-Energie Territorial”, professionals and subsequently elected officials gradually forged a common approach to sustainable urban development, an approach that may be described as pragmatic because it is built more in terms of the local context than on theoretical or doctrinal principles laid down at the outset. Also, while these documents were being drawn up, first the information, then the consultation, increased: Elected officials, technicians, inhabitants, associations and economic actors took part in discussions at negotiating tables (Forum 21, public meetings). Inter-communal mobility policies, related to those regarding housing and energy, have contributed to the building of a strategy of sustainable urban development that is shared between numerous actors across the Grenoble urban district. But there is no question that it was the “Projet d’Agglomération” that first offered a vision of the urban area and its development.

The “Projet d’Agglomération” does not have any binding effect. It came in response to a simple desire to supervise operational projects in communities and because of a search for coherence. At the time, there was still a gap between the guidelines as defined by the “Schéma de Cohérence Territoriale”, which had been developed for a vast urban region, and the operational projects that the municipalities were undertaking. The “Projet d’Agglomération” appears to be the preferred way of moving to an “Intercommunalité de projets” and to be in a better position to take advantage of funding opportunities. Based on the involvement of public and private actors, it presents itself as a framework for synthesising sectorial programmes (economy, transportation, sanitation and waste management, housing and urban social development, sports equipment), a partnership mechanism with the municipalities and the private actors, as well as a means of positioning the urban area in relation to others in France and around Europe. Thanks to a two-step process, the “Projet d’Agglomération” made it possible to organise an original stakeholder participation experience in building a common vision of the future of their territory. The process consisted of the adoption of Act I in 2003 and of Act II in 2007. While emphasising the importance of networks of natural spaces in the identity of the urban area and the need to intensify urbanisation in public transport corridors, the “Projet d’agglomération” was in favour of a polycentric organisation as seen in Figure n°3. Around Grenoble’s reinforced city centre (heart of the city and the urban area), there are three secondary polarities. Each of these polarities provides property opportunities for an equal number of sites of urban renewal to be developed within the framework of polarity conventions.

Figure n°3: The “Projet d’Agglomération”: a polycentric organisation



Source: Projet d’agglomération, Grenoble-Alpes Métropole, 2007.

2.4 From strategy to urban demonstration projects

The Ministry of Ecology and Sustainable Development's "EcoCités1" call for tenders in 2009 provided an excellent opportunity for Metropolitan Grenoble-Alpes to turn the goals of the "Projet d'Agglomération" into concrete actions and achievements. The desire of the ministry, and of the City of Grenoble, to favour projects that, on the one hand, could be built quickly and, on the other hand, would attract local economic actors resulted in only one test site being built: the Scientific Peninsula, located on territory that belongs to the city centre.

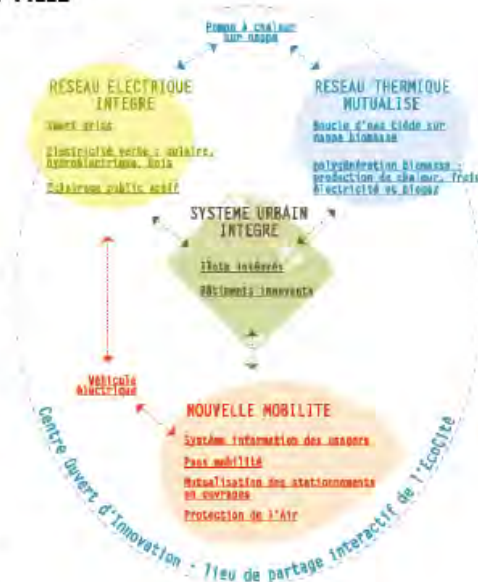
Driven by the City of Grenoble on the one hand and the local scientific and technical community on the other hand, Grenoble's "Eco-Cité1", even though it has met the criteria set by the French government to access funding, has taken a technical track. The Peninsula project is indeed an opportunity to develop technological innovations in favour of a sober and peaceful city, with a cooperative management of energy, the building of smart-grids and the implementation of the "Pass-mobilité" system, the "Ilot Urbain Intégré" as seen in Figure n°4. And actions in support of a "ville-intégratrice" and a "ville-nature" have been planned to bolster these innovations. However, the constant quest for innovation has led to technical solutions being sought to solve social and urban problems. In an effort to achieve immediate and exemplary results, it has led to a sectorial operational project being favoured at the expense of a metropolitan strategy and the importance of public debate being minimised when it comes to drawing up strategies and constructing projects.

Figure n°4: "Ilot Urbain Intégré"

Ilot Urbain Intégré maîtrise des consommations énergétiques et utilisation d'énergies renouvelables pour UNE VILLE SOBRE

L'Ilot Urbain Intégré, est privilégié :

- pour penser toutes les thématiques du projet (énergie, usages, mobilités, formes urbaines,...)
- pour rechercher une diversité des énergies à utiliser, une autonomie et une gestion collective de l'énergie sur une grille de partage intelligente, la smart grid.



Source: Grenoble-Alpes Métropole 2011.

Part 3: Grenoble-Alpes Métropole, territorial planning in motion

3.1 The “Plan local d’urbanisme intercommunal”

Following the change in the governing coalition in 2014 in the city centre,³ a new majority governing Grenoble-Alpes Métropole⁴ is making changes to the strategies and projects undertaken. The need to reinforce the urban area’s economic attractiveness is now being looked at more closely, and the public and private investments in a small number of big projects are receiving criticism. Thus, in addition to seeking efficiency and energy sobriety, the Grenoble actors’ strategy at the time they applied with “EcoCité 2” in 2015 is to open the game to the actors, help the consumers to better control their energy costs and push them towards becoming producers. At the same time, the change in status of Metropolitan Grenoble-Alpes on January 2015, when the urban community became a metropolis, led to a considerable expansion of powers and an obligation to draw up a “Plan local d’urbanisme intercommunal” (PLUi), which will replace the 49 communal/municipal plans on December 2019.

This “Plan Local d’Urbanisme intercommunal” seems to provide an opportunity to revise territorial planning.

- It defines new ways in which citizens can participate and proposes a new division of decisions between the inter-communal and the communal levels;
- It considers the diversity of spatial configurations at the metropolitan scale in order to develop a vision that makes the quality of life a condition for economic attractiveness;
- It takes new temporal constraints into account by taking up the challenge of producing a complex plan in a short amount of time (three years);
- It takes into account the challenges facing the metropolis: fighting climate change, initiating an energy transition, strengthening economic dynamism and reinforcing social cohesion in the territory.

3.2 New methods of participating at the level of the large territory

While for many years there has been consultation in Grenoble regarding operational projects that have an immediate impact on the inhabitants’ living conditions, planning on the scale of the large territory concerned the elected representatives as a matter of priority. The development of the “Plan local d’urbanisme intercommunal” is an opportunity for “Grenoble-Alpes Métropole” to replicate and amplify experiments in this area, conducted as part of the “Plans de déplacements urbains” and the “Projet d’Agglomération”. Thus, “Grenoble-Alpes Métropole” has renewed communication and consultation in a way that can be described as traditional. It has mobilised the usual means of information: articles in newspapers, displays and registers in town halls. It has also organised workshops according to the major geographical sectors and mobilised a Citizens Panel. In addition, the Development Council, which brings together citizens, representatives of employers organisations,

³ In Grenoble, the new majority comprises the Greens, the extreme left and representatives from NGOs.

⁴ While the president is still a Socialist, his party is in the minority in the new majority that also includes the extreme left, the Greens and the Communists.

trade unions and associations and represents, to some extent, the economic and social world, was invited to issue an opinion on the main guidelines of the “Plan local d’urbanisme intercommunal”.

However, fully aware of the limits of these traditional modes of doing things, the professionals in charge of the “Plan local d’urbanisme intercommunal” have resorted to more innovative means of communication. The consultation was organised particularly for inhabitants thanks to the creation of a digital collaborative cartographic platform. “Carticipe” became the “Plan local d’urbanisme intercommunal’s central consultation tool: It allows all of the city’s residents to geo-locate themselves and file an opinion, which the other inhabitants are called to vote on and speak out about, as seen in Figure 5. “Carticipe” made it possible to collect more than 2,012 contributions and to broaden the consultation approach to a large number of people in an effort to have a collective exchange and a production of syntheses. The result of the work, within the framework of the Territorial Workshops on the one hand and the Citizen Panel on the other hand, was also addressed in filings on this digital platform.

Figure n°5: Carticipe tool: interactive map

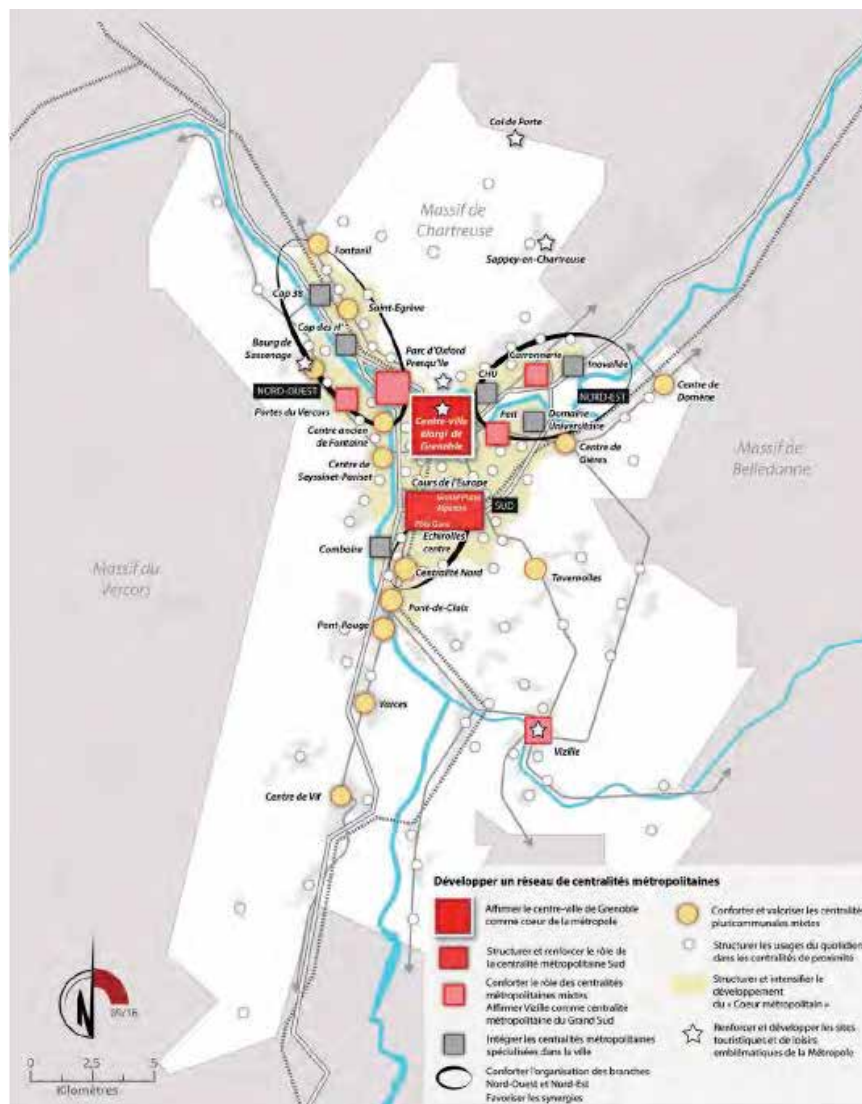


Source: Grenoble-Alpes Métropole 2018.

If the role of scientific and technological innovation in local development is brought out, the focus is on quality of life as a condition for attractiveness. “Grenoble-Alpes Métropole” is presented as a “mountain metropolis” that has to seek a way of better highlighting the diversity of its landscapes,

namely its urban core, as well as its valleys and surrounding mountain balconies. The fight against urban sprawl involves the creation of a polycentric metropolis by identifying three levels of centrality (proximity, inter-communal and metropolitan). The structure adopted by the “Projet d’Agglomération” is the subject of a new presentation aiming to take into account the complexity of a territory that was enlarged in 2015 when the community was made a metropolis, as seen in Figure 6.

Figure n°6: Network of the centralities on the metropolitan level

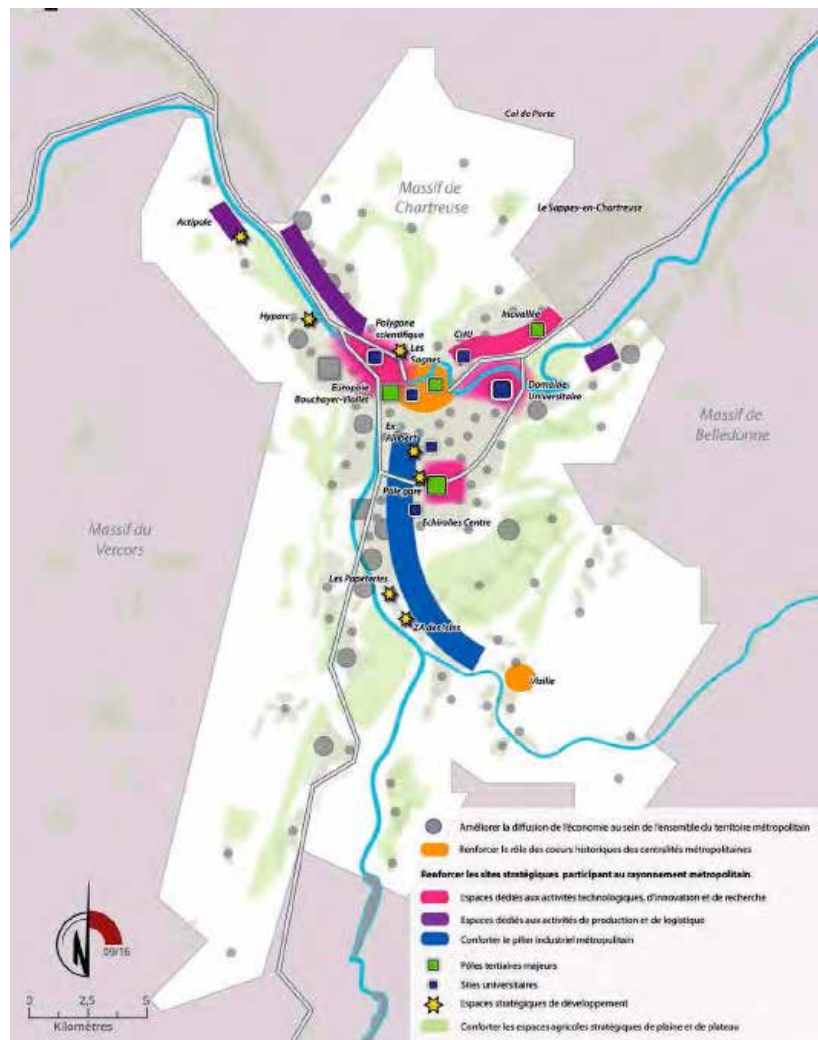


Source: Grenoble-Alpes Métropole 2016.

Economic development sites are no longer confined to the technopolitan spaces to the east (computers and software) and to the west (nuclear and nanotechnology) of the city centre but tackle the need to strengthen the metropolitan role of Grenoble’s historical centre, to take into account the industrial

pillar located in the south and to reinforce the presence of agriculture. The goal is, therefore, to utilise a variety of economic development pillars as seen in Figure n°7.

Figure n°7: Strategic sites on the metropolitan level



Source: Grenoble-Alpes Métropole 2016.

3.3 New temporality and finding flexibility

The obligation to draw up an urban planning document in a very short amount of time and on the scale of a vast territory comprising 49 municipalities initially seemed to be a constraint that professionals would find difficult to overcome but was ultimately revealed to be a real asset. It forces the planners to drop an approach that tries to be exhaustive because it seeks to treat the same level of precision all the themes that a “Plan local d’urbanisme” has to tackle.

Today, the idea is to consider the “Plan local d’urbanisme intercommunal” as the first step in a planning process that will have to take reversals of circumstances into account as much as possible. Thus, plans are made for regular changes in order to respond to municipalities’ requests and to incorporate mature projects. Additional studies may be undertaken at strategic sites as soon as

the “Plan local d’urbanisme intercommunal” is approved. The goal is to find flexibility in the different planning documents.

Discussions have also started regarding the implementation of the “Plan local d’urbanisme intercommunal”. Since the passage of the “loi Solidarité et Renouvellement Urbain” (SRU law) in 2000, there has been a possibility to put in place “Orientations d’Aménagement et de Programmation” (OAP). Unlike rules that have to be strictly adhered to when they are applied, these guidelines are less precise. They can be interpreted in various ways and negotiated when they are applied. The guidelines can be sectorial and can outline a project for a strategic site identified in the “Plan local d’urbanisme intercommunal”. They can be thematic and provide indications of public policy in a particular area. In “Grenoble-Alpes Métropole”, three thematic guidelines are in development: The first concerns the quality of the landscapes, the second takes risks into account in the context of a resilient approach to urban planning, and the third relates to recommendations that have to be kept in mind to limit the effects of air pollution in homes.

Stressing the need for flexible planning and emphasising its procedural nature is a paradigm shift for professionals who, until now, have been accustomed to taking the time necessary to draw up documents that are as comprehensive as possible. There is a desire to set the planning in motion and to make it a privileged means to drive actions and projects.

Conclusion

In a metropolitan context characterised by the fragmentation of institutions, “Grenoble-Alpes Métropole” had been forced to rely on sectorial actions and projects to produce a “Projet d’agglomération” at the intersection between a “Schéma de cohérence territoriale”, developed for the metropolitan area, and town planning projects by the municipalities. Following Parliament’s passage of the MAPTAM law, the “Grenoble-Alpes Métropole” changed status in 2015 (from “Communauté d’agglomération” to “Métropole”) and acquired broader powers than municipalities.

The drafting of the “Plan local d’urbanisme intercommunal”, which accompanied a growing openness by metropolitan and municipal elected representatives towards an ecological transition, corresponds to a moment of change for the territorial planning strategies concerning the urban area:

- The use of new tools favouring an opening of the participation process with Carticepe;
- the adoption of a new vision: a mountain metropolis rich in diversity;
- the construction of a new polycentric organisation;
- and the will to put the guidance above the rules;

demonstrate a willingness by the Metropolis to seek close cooperation with the municipalities and with private actors and the desire to promote a type of planning in motion that would be both proactive and flexible.

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Acronyms

MAPTAM: “Loi de Modernisation de l'Action Publique Territoriale et d’Affirmation des Métropoles”.

OAP: “Orientations d'Aménagement et de Programmation”

PDU: “Plan de déplacements urbains”

PLUi: “Plan Local d'Urbanisme intercommunal”

SCoT: “Schéma de cohérence territoriale”

SRU: “Loi Solidarité et Renouvellement Urbain”

Figures

Figure n° 1: The main stages of French territorial planning

Figure n° 2: Grenoble Urban Region and its territories

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The spatial dimension of the Flemish Covenant of Mayors: A comparative spatial analysis on the transition towards energy neutral municipalities

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Abstract: Previous research has proven the necessity of an energy transition. More and more local visions on an energy neutral future are being adopted, powered by targets on different policy levels (UN, EU, national and local) and the Covenant of Mayors initiative in Europe. These visions are flanked by a series of concrete actions that should be established by either 2020 or 2030. A comparative analysis of the Sustainable Energy Action Plans (SEAP), submitted within the framework of the Covenant of Mayors, however shows that although the ambitions within these visions are frequently high when setting long term targets for an energy neutral future in 2050, actions on the short term often focus on low-hanging fruit. While these quick wins are necessary towards an energy neutral future, they will not be enough to create a real transition. There seems to be a missing link between ambitious visions and concrete actions.

This paper will argue that territorial actions are needed to reach the energy goals and fill in the gap between those first, successful, but relatively easy actions and a full-blown energy transition. Moreover, the general awareness of the importance of spatial planning, of integrating energy goals into every spatial project and connecting different scale levels is often missing. Reducing energy, increasing energy efficiency and increasing renewable energy can all be linked with territorial factors. Furthermore, governance, going beyond government and including private and civil society actors is needed.

Keywords: Spatial Development, Energy Transition, Governance, Mitigation

Introduction

This paper will use the Covenant of Mayors (CoM) initiative in Europe as an approach to analyze if and how the local government as an actor is contributing spatially to the energy transition. The goal of this paper is (1) to analyze the extent in which the guidelines and methodologies put forward by the Covenant of Mayors (CoM) are taking territorial factors like the influence of land use and planning measures into account and (2) to analyze to what extent the developed and submitted SEAP's in Flanders are using these territorial factors within land use and urban planning measures to implement their short term and long term goals. The first section will introduce the Covenant of Mayors (CoM) initiative as a means to achieve energy neutral cities. The second part will focus on the reciprocal relationship between energy and space and how spatial planning can influence our energy needs and production. Here, a framework will be introduced to analyze to what degree plans take spatial

elements into account. In the third part the guidelines offered to the local government on how to develop their Sustainable Energy Action Plan (SEAP) are reviewed focusing on the suggestions for spatial actions. Then we turn to our case of Flanders and first of all introduce the way the CoM is implemented in Flanders. In the fifth section an in-depth analysis is made on five specific SEAP's in Flanders and the extend in which they take territorial factors into account. This paper ends with a discussion, a conclusion and recommendations for further research.

The Covenant of Mayors initiative underlines the importance of local governments within the energy transition

Several authors (Bertoldi, Cayuela, Monni, & De Raveschoot, 2010; Croci, Lucchitta, Janssens-Maenhout, Martelli, & Molteni, 2017; Hakelberg, 2014; Kona, Bertoldi, & Kılış, 2019) stress the importance of local governments in achieving the global and European energy targets. Their potential is linked to a combination of local knowledge and power and responsibility (Melica et al., 2018). In 2008 the Covenant of Mayors (CoM) was introduced by the European Commission as a voluntary commitment to reduce municipal CO₂ emissions by at least 20% in 2020 or 40% by 2030. In order to achieve these commitments, municipalities engage themselves to develop and implement a Sustainable Energy Action Plan (SEAP) by 2020 or a Sustainable Energy and Climate Action Plan (SECAP) by 2030. While a SEAP only focusses on mitigation strategies and actions a SECAP also includes climate adaptation. By signing the CoM, municipalities commit themselves to follow standardized methodologies in setting CO₂ reduction targets and in designing and implementing policies and measures to reach these targets (Croci et al., 2017) and to submit a SEAP within the year following adhesion. Because at the moment not many municipalities have signed in for a SECAP this paper will focus on SEAP.

The first step within the CoM is to sign the agreement and committing to the reduction target of either at least 20% (2020) or at least 40% (2030). As a second step a municipality should make a Baseline Emission Inventory (BEI). This BEI indicates for each sector how much CO₂ is emitted due to energy consumption in the territory of the municipality in the baseline year. This inventory helps them first of all to identify the best field of action and the opportunities to reach the set goals (Bertoldi et al., 2010). Secondly, it helps them to monitor the progress linked to the third step of the CoM process. Differences in CO₂ emission levels between local administrations is mainly dependent on local specificities like urban form and landscape determining for instance potential for renewable energy generation, but also the possibilities for a modal shift. Climate conditions can furthermore influence the energy needs for heating and cooling (Croci et al., 2017).

The third step for a municipality is to develop and submit the SEAP itself. The SEAP should include actions of both public and private sectors, but since the municipalities themselves are the key players to implement actions, they mainly focus on their own buildings and infrastructures to act as role models for businesses and citizens. Since heavy energy-using installations like large power plants and industrial plants are part of the European CO₂ Emission Trading Scheme (ETS) (covering around 45% of emissions), these actors are excluded from the SEAP. The target sectors are buildings, transport, equipment/facilities, industry (non-ETS), local electricity generation (non-ETS) and local heating/cooling generation. As additional 'other' fields land use planning, urban regeneration, public procurement and participation are mentioned. These are the policy areas which a municipality can directly influence (Melica et al., 2018). The municipality is encouraged to distinguish between a long term vision towards 2050 and short term goals and actions towards 2020 or 2030. The vision for a sustainable future should be used as a guiding principle to make a SEAP together with the BEI.

As a fourth step the municipality should develop an implementation report and an action report. The implementation report contains information on the actions implemented and their impacts in a quantified way calculating the (hopefully reduced) CO₂ emissions. Part of the implementation report is a Monitoring Emission Inventory (MEI). The MEI follows the same methodology as the BEI. The action report on the other hand is a

more qualitative report about the implementation of the SEAP giving the status of the measures mentioned in the SEAP.

It is important to mention, especially for the next parts of the paper, that municipalities that are lacking capacities to make and implement their own SEAP can be supported by administrations or organizations that do have such capacities (Bertoldi et al., 2010) like a province or a region. These so called coordinators offer strategic guidance, financial and technical support to municipalities. Their existence has proven to support municipalities with less capacities to adhere (Melica et al., 2018; Pablo-Romero, Sánchez-Braza, & Manuel González-Limón, 2015). The three countries with the highest number of signatories (Italy, Spain and Belgium) also have the highest number of official coordinators (Melica et al., 2018).

Territorial factors are important to help the energy transition

Urban planning and land use planning are often overlooked areas to assist in reducing energy needs, increasing energy efficiency and increasing the integration of renewable energy forms in the landscape. Literature however indicates that urban form and locational factors are key influencers within the energy transition (Crocì et al., 2017; Seto et al., 2014; Van Den Driessche, Nijs, Rédelé, Oelbrandt, & Van Steenkiste, 2019; Van Noordt, 2018; Wauters, Dhondt, Fremault, & Corens, 2017). This section wants to list and elaborate on the spatial actions that can be taken by local governments and use it as an analytical framework to assess first of all the level of territoriality of the CoM in general and secondly the existing CoM action plans in Flanders. Five territorial factors will be further elaborated: (1) General awareness on the importance of a territorial perspective; (2) Energy Reduction; (3) Energy Efficiency; (4) Renewable Energy Production and (5) Governance.

General awareness of the territorial perspective

The first and most important step is to raise the general awareness of policy makers and practitioners on the fact that the link between spatial development and energy policy and goals is a very important one. This relationship works in two ways: the framework set out by energy policy has important consequences regarding the spatial design of our environment. Measures to reach the targets, like siting wind turbines or reducing the energy used in transport, need to find their 'place' in our environment. They literally need to 'land' somewhere. The other way around, spatial policy and urban design also determine the energy system, the amount of energy used and the potential for efficiency and production (Van Noordt, 2018). It is important that policymakers become aware of the fact that 'the energy transition' is not a separate project which needs to be developed independently, but instead should become an integral part of every project a municipality starts. Policies and measures should look beyond the building level and focus to connect different scale levels from building to building block, neighborhood, city, region, nation and even global. Connecting these scale levels and looking beyond the building will help to translate policy ambitions into concrete actions while at the same time making the abstract consequences of the energy transition very tangible for citizens. By thinking beyond borders, whether this is the border of a specific project or municipality borders, linkages, opportunities and synergies can be detected (Van Den Driessche et al., 2019).

Energy reduction

Reducing the amount of energy needed in the built up environment is dependent on four variables (Seto et al., 2014). These factors are of course interrelated and interdependent and need to be taken into account together to achieve the maximum energy reduction. The first element is density. When applied to the city scale, low density developments result in higher transport needs with greater distances. Furthermore, low densities make it difficult to promote sustainable transport types like walking, biking or public transport. High density urban fabrics on the other hand reduce distances and so reduce travel need and energy needed for traveling while also promoting

alternative transport types (Seto et al., 2014). Finally, density can also be applied on the level of a building. The energy use in a building and so the potential to reduce this energy use is mainly determined by the size of the building, the surface-volume ratio and the insulation. Building more compact buildings, in greater densities and with sufficient isolation would therefore reduce the energy needs (Wauters et al., 2017). The second factor in the built up area is land use mix. Land use mix refers to the degree of mixing of different functions in an area. For example mixing residential, business, commercial and green areas. By bringing these types of activities into each other's proximity the need for transport (eg need for energy) is reduced. Historically, land use planning adhered the opposite: to separate functions because of possible negative effects from industrial areas (Seto et al., 2014). Regarding increasing the land use mix, the highest gains are achieved when daily activities are located close to each other (Wauters et al., 2017). The third factor is connectivity. The level of connectivity in a city can be measured by the average size of a building block and the amount of intersections. When a city or neighborhood has a very fine grained infrastructure system with attractive footpaths and cycle lanes, walking and biking is promoted, which reduces the GHG emissions (Gehl, 2010; Seto et al., 2014; Wauters et al., 2017). The last element in reducing the energy needs in the built up environment is accessibility. This factor is closely related to land use mix, but also to connectivity. Accessibility can be defined as access to people and places in a city (Seto et al., 2014) and access to sustainable types of transport (Wauters et al., 2017).

Energy efficiency

A third group of spatial actions are focusing on increasing the energy efficiency. At the moment a large part of energy from burning fossil fuels is lost due to the inefficiency of the extracting methods we are using. The heat produced in a car engine is lost to its environment, making the percentage of actual used energy compared to the potential energy of gasoline only 25%. The same comparison holds up for using high quality of natural gas to heat our buildings: most of the energy potential of this energy source is lost (Sijmons, 2014). By linking different end users and using collective installations instead of individual ones, the energy need can be brought down to 1/5th of the need of individual users (Posad, 3E, Universiteit Gent, & Resourcedesign, 2016). By introducing collective installations more thought needs to be put in the localization of these installations, the connections to individual users and the overall urban design. This is connected to the actions introduced for energy reduction. A specific type of collective installations are heat networks. Because of the specific characteristics of heat, this energy mode needs to be generated close to the place where it is used (Wauters et al., 2017). At the moment, like stated before, much of the heat generated is lost as a by-product. By activating lost heat, but also by introducing heat cascades, the energy can be used more efficiently. A heat cascade makes sure that high temperature heat gets used in processes needing high temperatures, like industrial processes, while the residual lower temperatures can be used for less demanding usages, like heating buildings. By creating networks of heat cascades the same amount of energy can be used in multiple ways, losing less high quality sources (Sijmons, 2014).

Renewable energy production

Within the energy transition a switch needs to be made from using fossil fuels towards using renewable sources. The energy density, or the amount of energy per volume, of a renewable energy source is however much lower compared to fossil fuels (Sijmons, 2014). This means that in order to generate the same amount of energy from renewable sources as from fossil sources, more space is needed (Posad et al., 2016). Moreover, because of the more direct link between renewable sources and the end users, smart solutions to integrate renewable sources within our built up environment are needed. Furthermore, the potential to generate renewable energy differs from place to place. Wind energy can only be generated when there is enough wind, while deep geothermal energy is dependent on aquifers at the right depth. Regarding renewable energy, two elements are taken into account. First of all the integration of renewable *electric* energy sources like solar panels and wind turbines in the (built up) landscape must be considered. Two possible, but not excluding, strategies can be applied. First of all large scale renewable energy projects can be sited in the landscape, producing a large amount of renewable

electricity. But it is also possible to integrate smaller scale renewable sources into the (built up) landscape, like siting solar panels on existing roofs (Wauters et al., 2017). A second element of renewable sources that need to be integrated in the urban environment is heat. Like explained above, heat cannot be transported over longer distances, so siting new heat sources, using residual heat and linking varied sources with demand through a heat network is a very place-based project. Moreover, a direct link with densification strategies mentioned above can be made. A heat network becomes more profitable in densely built-up areas.

Governance

The complexity of the energy transition necessitates the involvement of other actors besides the government. Literature argues that for transitions in general a wide variety of actors needs to be involved (Avelino & Wittmayer, 2016). In order to mobilize the public opinion, suggest new solutions and to form strong coalitions private actors and civil society together with academia are needed (Lemos & Agrawal, 2006). When talking about governance it is therefore important to stress the fact that actions can be initiated by the government, but also by civil society, companies and NGO's (Boelens, 2010). Governance is therefore by definition multi-actor (Newell, Pattberg, & Schroeder, 2012).

Table 1 summarizes the five elements understood under 'territorial factors'.

Territorial Factor	Spatial Element
General awareness	Reference to land use planning / urban planning
	Integrating energy goals into every project
	Connecting different scale levels
Energy Reduction	Promoting densification & reducing urban sprawl
	Promoting mixed use
	Connectivity
	Accessibility
Energy Efficiency	Use of collective energy installations
	Investing in heat networks with heat cascades
Renewable Energy	Reserving space for large scale renewable energy projects
	Integrating renewable energy sources in the (built up) landscape - electricity
	Integrating renewable energy sources in the (built up) landscape – heat/cold
Governance	Involving all actors: public, private and civil society

Table 1 Summary of territorial factors which can assist to reach the energy transition

The Covent of Mayors guidebooks help local governments with their SEAP

The CoM initiative exists for over 10 years now. The developed insights during this period has produced two guidebooks for municipalities: one in 2010 (Bertoldi et al., 2010) and a new, recently released version in 2018 (Bertoldi, 2018a) (Bertoldi, 2018b), both published by the Joint Research Centre (JRC). The new version is much more elaborate, drawing on good practices from submitted SEAP's and adding the component of climate adaptation and the connected Risks and Vulnerabilities Assessment (RVA) as part of a SECAP. This part will analyze the territorial factors suggested in these guidebooks focusing on energy actions using framework explained above.

Both the SEAP and the SECAP guidebooks point to the importance of land use planning especially when developing a long term vision. The guidebooks show great awareness of the link between spatial planning and

energy actions in general. Both guidebooks have a special section dedicated to urban and land use planning. The energy transition should become a core element in urban planning (Bertoldi, 2018b). A reference is made to the opportunity to make cities more energy neutral with every new development project within the territory of a local government. Missing out on these opportunities will have lasting consequences for the future. The guidebook therefor advocates a thorough integration of energy related considerations in all new developments (Bertoldi, 2018a).

When referring to the reduction of energy needs the guidebooks explicitly connect urban planning with transport. The actions to achieve this goal are to make more efficient use of space by promoting a compact city and targeting urban development to public transport, cycling and walking. Spatial planning is also stated when the attractiveness of alternative transport modes needs to be increased by delivering the required loading factors. Moreover there is a role for spatial planning in providing enough space for cycling and walking (Bertoldi et al., 2010). According to the guidebooks, land use planning has a key role to play to avoid urban sprawl, promote compact urban settings and mixed use. On the scale of buildings, planning regulations have an important role for the amount of energy used for heating, cooling and lighting. Adequate orientation and arrangement of buildings, building blocks and green elements can significantly reduce the amount of energy needed (Bertoldi et al., 2010). Moreover, by reducing urban sprawl, green and rural areas are preserved which may potentially provide carbon sequestration. What is interesting to see, however, is that the first guidebook on how to make a SEAP sees urban planning and regulation only important for new buildings, but less relevant for renovated buildings and not relevant for existing buildings (Bertoldi et al., 2010). The second guidebook also refers to urban regeneration by revitalizing old brownfield sites and to 'Ecodistricts' (Bertoldi, 2018b). Although the second guidebook goes further into which spatial actions are possible they both mainly refer to 'new' developments, either on formally used, but now abandoned sites, or on completely new sites. By referencing spatial planning towards buildings in this way, the guidebooks overlook several ways how spatial planning can influence the energy performance of the urban fabric, like explained above. By downgrading its importance it is also less likely for a municipality to actually use spatial planning as an instrument.

Regarding energy efficiency, actions like promoting local electricity production to avoid transmissions losses and the promotion of district heating and cooling are put forward. Heat mapping is promoted to help determine where heat surpluses and heat demands are and to create robust energy strategies (Bertoldi, 2018b). Urban density and limiting sprawl are connected to opportunities for district heating. Other references are more on a regulatory level like modifying regulations to support heat pipelines through public spaces or shortening the time to obtain permits for renewable energy sources (Bertoldi et al., 2010).

According to the guidebooks, a careful planning of urban form can enable the production of renewable, low carbon and smart energy, while at the same time ensuring access to sustainable and secure energy supply. Like mentioned under energy efficiency, the guidebooks indicate the possible deterring effects of planning regulations on renewable energy projects. Complicated authorization procedures could become obstacles to promote renewable energy. Land use planning is also connected to the availability of space to achieve renewable energy projects. By using specific zoning laws certain areas can be safeguarded to be used for the installation of renewable energy sources. In order to select these areas a careful, integrated planning process is needed. The focus for energy generation is mainly on the possibilities there are within the municipalities own estate, or by public-private partnerships where the municipality plays a crucial role (Bertoldi, 2018b). Again, setting the right example is put forward as key for convincing its citizens. Community cooperatives are highlighted as projects which can enable citizens to have collective ownership, but in order for cooperatives to become successful there needs to be a certain level of citizen engagement and empowerment.

The guidebooks both stress the fact that a SEAP should not only focus on the local government itself, but all members of society should be involved to establish a common vision for the future and figure out how to achieve this common vision. Therefore, a SEAP should also include actions from the private sector (Bertoldi et

al., 2010). Moreover the guidebook calls the adhesion and participation of civil society as essential. The recommendation is to involve civil society in the elaboration, implementation and follow up of the SEAP. Especially the guidebook from 2018 refers to the concept of governance and the contributing roles of the private sector, academia and civil society (Bertoldi, 2018a, 2018b).

Support from regional, provincial and intercommunal level helps Flemish cities and municipalities submit their SEAP

Belgium is among the Member States with the highest number of signatories together with Spain and Italy (Melica et al., 2018). When looking at Flanders, 251 of the 300 municipalities have signed the CoM (Covenant of Mayors Office, 2019). What is even more interesting is that Belgium also has the highest number of Covenant Territorial Coordinators (CTC). These coordinators support local governments by providing strategic guidance, financial and technical support.

The Flemish government supports the municipalities by providing a website which offers datasets and tools. First of all inventories of CO₂ emissions are provided as an excel-sheet for each municipality for the years 2011 – 2016 and updated yearly. These inventories can be used to produce the BEI and MEI of each signatory. If they want, municipalities can also change the pre-made inventory by adding own data (Meynaerts, 2013). In addition, a ‘measures tool’ is offered. This tool suggests 10 example measures which can be taken to reduce energy use and thus reduce the CO₂ emissions. The actual reduction of CO₂ emissions for these measures is also calculated in an excel-sheet depending on the degree of implementation of the measure (Meynaerts, Renders, & Beckx, 2013). The example measures are all very much focused on individual buildings while the larger scale and possible measures related to urban and land use planning are not suggested. The tool mainly focusses on calculating CO₂ reductions. Although the suggested measure are of course only examples and municipalities are free to add their own measures in their SEAP, example measures given by a higher hierarchy could be very leading, especially for those local governments lacking the capacities to elaborate their own SEAP.

In the whole of Belgium 20 CTC’s are registered, of which 8 provinces. In Flanders, all the five provinces have signed up as a CTC as well as seven intercommunal organizations. The province of Vlaams-Brabant and Limburg for example offer extensive support towards their municipalities. In addition to pointing to the inventory made at the regional level they also offer a guidance document on how to make a SEAP in Dutch. This guidance document follows the same logic as the first guidebook offered by JRC, which means spatial planning is seen as an optional sector for measures to implement (Provincie Vlaams Brabant, 2014). Together with this document they offer a list of possible measures which is much more extensive than the list offered at the regional level. The downside however is that this list does not automatically calculate the reduced CO₂ emissions. The list of measures includes: limiting urban sprawl, Transit Oriented Development (TOD), improving fine grained connectivity, supporting collective actions at the neighborhood level, research into the use of residual heat and heat networks, land use regulation measures like compact neighborhoods, active search for space for renewable energy sources, integrating energy transition principles into land use planning and area developments (Provincie Vlaams Brabant, 2015). Overall this list is very comprehensive and seems to integrate the territorial dimension quite well. As a last document the Province also offers a model of a SEAP containing a base text and guidance which the local government only needs to fill in (with the help of the inventory and the measure list).

In-depth analysis of 5 SEAP (Brugge, Gent, Antwerpen, Leuven, Hasselt) and their territorial dimension

The previous parts have first of all argued why territorial factors are important to reach the energy goals, secondly concluded that the guidebooks made available for municipalities mostly follow the insights derived from literature regarding the role of urban and land use planning and thirdly ascertained that Flemish

municipalities are very well supported by both the regional level by providing data and tools and the provincial and intercommunal level by helping them to make and submit their BEI and SEAP. This part wants to look into further detail to what degree SEAP submitted by Flemish cities follow the advice from the guidebooks. To do this, a selection of the SEAPs of the five Flemish provincial capitals is made. Because of the general larger size of these cities and thus the bigger capacity, it can be expected that these SEAPs will be more comprehensive and elaborate compared to the SEAP of other, smaller municipalities. This analysis will however provide us with a first insight into the territoriality of Flemish SEAPs.

The city of Hasselt, with 78.000 inhabitants, follows the model offered by the Province of Limburg for their SEAP. The overall goal of Hasselt is to reduce their CO₂ emissions with 20% by 2020, with a focus on reduction through the switch towards renewable energy. Hasselt choose to include spatial planning as a sector to take into account in their SEAP, showing their general awareness of the importance of spatial planning. Location policy is put forward as crucial for a sustainable development. Mobility is taken into account by making sure new developments are served by public transport. Within the other sectors actions like applying the principle of compact and efficient use of space, introduction of a heat network, looking into possibilities to apply a neighborhood approach, linking spatial planning to the realization of sustainable mobility policy, by reducing the need for cars and improving soft mobility infrastructure and maximizing the amount of wind turbines are put forward. A communication strategy needs to make sure citizens and other stakeholders are involved and can participate (Stad Hasselt, 2012).

The city of Leuven, with 101.000 inhabitants, drafted their SEAP with assistance of the KU Leuven and has set a goal of 22% CO₂ reduction by 2020. The SEAP is part of a long term process towards an energy neutral city of Leuven by 2030. As a part of this road map a structure will be set up involving the city, the private sector, academia and civil society, covering the governing aspect. One of the actions which is put forward is to turn Leuven into a bicycle city and to significantly improve the public transport possibilities. Areas which lack a sufficient degree of services should be upgraded to avoid unnecessary transport. In general the city has the ambition to promote mixed land use and compact development. Regarding new developments, priority should be given to realization within the existing urban fabric by densification. Furthermore, 10 wind turbines and 10 small scale heat networks fueled by pellet stoves should be installed (Stad Leuven, 2013). Land use and urban planning is not explicitly mentioned nor taken up as a separate sector, but some of the actions do refer to the territorial factors. The document of Leuven also explicitly states that it should be regarded as an interim document and that the city will develop a more elaborate action plan towards 2030.

The city of Antwerp is the largest city of Flanders with 523.000 inhabitants. It wants to become an exemplary city regarding sustainability. On the long term, Antwerp wants to become a CO₂ neutral city by 2050 and have at least 20% reduction by 2020. The SEAP elaboration involved a large group of people ranging from policy makers to private sector and civil society. The SEAP also stresses the importance of all these different actors in the implementation of the actions and has the ambition to have an integral approach. A separate section is devoted to spatial development with an overall goal to integrate sustainability and energy within spatial policy. The goal is to reach a spatial structure that encourages soft transport modes and public transport, compact buildings and neighborhoods with high densities, mixed use and heat networks and to create possibilities for the siting of renewable energy sources. The harbor of Antwerp is put forward as an area with high potential for the development of both solar parks and wind turbines, while heat networks mainly seem interesting for new developments (Stad Antwerpen, 2011). The SEAP of Antwerp seems to be an exemplary case in which an integrated, spatial approach is put forward to reach their goals.

The city of Gent, with 260.000 inhabitants, also wants to become one of the good example cities in Flanders regarding sustainability. The city of Gent was one of the first cities in Flanders to approve a local energy plan. Because of this early adoption, it was not yet sure about their own energy impact nor about the most efficient measures to implement. The whole document is there for conditional and will be further elaborated during its

implementation period. As an overall goal a CO₂ reduction of more than 20% by 2020 is put forward, with more specific goals for the administration of the city. The city sees cooperation with its citizens, companies and visitors as essential. The city wants to act as the initiator and stimulator. With this approach they want to show that the energy transition is a common responsibility. For new developments a sustainability note needs to be made and at least one project needs to be realized that can serve as an example on sustainability. The city also wants to develop a 'wind-plan' for the entire territory of the municipality taking the 'wind-plan' for the harbor of Gent as a starting point. The SEAP does couple mobility reduction with land use, but no concrete actions, besides the development of bicycle lanes are suggested (Stad Gent, 2008).

Lastly, the city of Brugge, with 118.000 inhabitants, has developed its SEAP with support of two external companies. The overall goal is a reduction of 20% by 2020. The city has put great emphasis on participation, working together with citizens and businesses to define the policies and measures that need to be put forward in the SEAP. In its SEAP, Brugge refers to the guidebooks of JRC as an inspiration for the selected measures, while the inventory of the regional level is used for its BEI. The document is referencing scientific literature and acknowledging the fact that taking only small steps will not be enough to evolve towards a climate neutral city by 2050, therefor the SEAP and its measures is combined with a long term vision. One of the focal points is spatial planning which needs to be organized around energy-neutral nodes based on public transport axis, while the use of cars needs to be minimized and the shift to biking and walking promoted and the use of 'green heat' should be investigated. Concretely, 35 measures are put forward. Brugge wants to realize 30 wind turbines on its territory, expand its existing heat network and wants to introduce micro heat grids in the historic center (Stad Brugge, 2015). A more concrete elaboration on the energy-neutral nodes is however missing.

Discussion and Conclusion

This paper wanted to analyze to which extend territorial factors are taken into account in local energy action plans in Flanders. Since most of the municipalities of Flanders have signed up for the Covenant of Mayors (CoM) initiative, local SEAP's were taken as the focus for this analysis. A first step was to produce a framework to analyze these territorial factors. With the use of this framework the guidebooks offered by the JRC were examined. Overall these guidebooks offer a very comprehensive overview of how to make a SEAP. When focusing on the possibilities of land use planning and urban planning the guidebooks also refer to the insights other literature sources offer on the connection between the spatial dimension and reaching long term energy goals. The actions offered, like increasing the urban density, promoting mixed use and offering space for renewable energy sources, are however more complicated to reach compared to other measures and therefore require more skills and more commitment. The focus, especially in the first guidebook was mainly on the very concrete actions municipalities could undertake themselves to improve the energy performance of their own buildings. Defining and implementing land use measures seems to be the next step. Moreover, regarding the built-up environment, measures for new developments are suggested, while the existing urban fabric seems to be neglected.

Turning towards Flanders, the support from the regional, provincial and intercommunal level seems to be very well developed to support local governments in drafting and implementing their SEAP. Although the data and tools offered by the regional level does not seem to be very aware of the territorial dimension of the energy challenges, the provincial level does take these types of actions into account. The actions suggested regarding land use and urban planning, although they do follow insights from literature and the suggestions from JRC, are however not very visible and more or less 'hidden' in between the multitude of actions suggested. The five analyzed SEAP's all take territorial factors into account, although in different degrees. This general awareness, however does not always translate into concrete actions. Moreover, even when actions are proposed, they often stay very high level without a very concrete elaboration.

Land use and planning measures are very complicated to implement, this therefore seems to be a step not many municipalities are able to take (yet). As a consequence, at the moment actions on the short term often focus on low-hanging fruit, like changing to LED lighting or focusing on the energy reduction in the municipalities own buildings. These quick wins are rightfully part of an action plan towards an energy neutral city, but they will not be enough to create a real transition. Moreover, actions focusing on land use often take a long time period to implement and also have a long-term effect. This means that policy and measure on this theme need to be established now, otherwise energy inefficient development realized today will have consequences regarding energy efficiency for generations to come. Furthermore, wrong developments now could trigger a lock-in effect, which hampers a full transition towards carbon-neutrality. When analyzing local energy policy documents there seems to be a missing link between ambitious visions and concrete actions.

Further research on the action reports and implementation reports (MEI) would provide additional in-depth insight into the territorial factors and into what extend the actions put forward in the SEAP's are achieved. Since the goals set are for 2020, a more elaborate evaluation should be made in the next couple of years. The insights gained until now should however not be overlooked. They can already provide valuable input for the SECAP's which need to be made and implemented by 2030. Moreover, this paper only looked into the SEAP's of the five provincial capitals, more insights could be derived from an analysis of a more representative sample, including smaller municipalities. It can be expected that smaller municipalities in general lack the capacity to elaborate and implement a SEAP. The support given by the provinces and intercommunal level, might be helpful for the elaboration of a SEAP, but the implementation requires even more support.

This paper has put governance forward as one of the key factors for the energy transition. While some first insights regarding the public sector were given, more in-depth research is also needed for the private sector and civil society. The framework elaborated above, with territorial factors can also be used to analyze actions from these actors.

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Sensing older people's lived experiences through visual images in Singapore

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Abstract: This paper presents a user-based qualitative research approach: 'see and snap' to gain insights into older adults' lived experience of their neighbourhood environment. The method provides a way of capturing personal observations from the older population by involving them to take photographs of their built environment. The purpose is to allow participant photographs to query the built environment, in particular, how the built environment is perceived, negotiated and experienced during daily journeys. The discussion presents findings on older Singaporeans' (age 55+) daily travel experience, exploring what they see and think to be important environmental features for their ageing process. Such information has relevance to the wider discourse on healthy ageing and planning. Even though photographs are increasingly used as a research tool across a wide range of disciplines, e.g. anthropology, sociology, geography, few have used them with older people in cities. This 'see and snap' photo-taking method is part of a larger, multi-method study to understand the connection between older people's health and their neighbourhood built environment in Singapore.

Keywords: user photographs; neighbourhood; older population; Singapore.

Introduction

This paper presents a user-based qualitative research approach - 'see and snap' to gain insights into older adults' lived experience of their neighbourhood environment. It is one of three urban audit methods developed as part of a research project on "Understanding the Changing Needs of Singapore's Older Adults"; the other two methods are On-site Observation and Walk and Talk (see Yuen, 2019). The purpose is to investigate the older population's usage of their neighbourhood built environment and identify potential barrier and enabler in the design of current outdoor urban environment for ageing.

The premise of the 'see and snap' approach is the visual narrative research method, which involves the use of participant photographs as discussion materials during a research interview (Wang and Burris, 1997; Pain, 2012; Glaw, et al., 2017). As Glaw et al (2017) summarised, the use of photographs in interview offers a novel approach to accessing the rich everyday worlds of participants. Even though photographs are increasingly used as a research tool across a wide range of disciplines, e.g. anthropology (Collier, 1987), sociology (Banks, 2001; Harper, 1997; 2002), geography (Smith and Barker, 2000; Oldrup and Carstensen, 2012), health research (Hanna and Jacobs, 1993; Riley and Manias, 2003; Glaw, et al., 2017), few

have used them with older people in cities (Magilvy, et al., 1992; Yankeelov, et al., 2015; van Hees, et al., 2017). In Singapore, district level town councils in collaboration with various government agencies have started to conduct photograph-based participatory town audits to identify physical hazards in residential neighbourhoods and suggest improvements (Ministry of Health, 2014).

The rest of this paper presents an example of the method used in a study of older adults (aged 55 years and older) in Singapore. Like many cities around the world, Singapore, a city-state of 710 sq km in Southeast Asia, is ageing rapidly. Its age-65+ population is projected to double to one in four (900,000 people) by 2030. For many, the built environment for growing older is in high-rise public housing where 80% of resident population live (Yuen and Soh, 2017). Based on new town planning, each public housing town is designed along neighbourhood lines with a hierarchical range of retail (e.g. shops, markets), educational (e.g. primary schools, kindergartens), healthcare (e.g. polyclinics, clinics), transportation (e.g. mass rapid transit stations, bus stops, bus interchange), community, recreational and social amenities (e.g. parks, children's playgrounds, swimming pools, outdoor fitness equipment, senior activity centres) to cater to the daily needs of residents while providing a quality living environment (Yuen, 2007).

Method

The research activity of 'see and snap' involved two components: a photo-taking activity and a follow-up discussion. It was completed with a purposive sample of 17 older public housing residents (aged 55-70+ years) in a local neighbourhood from Jul 2015 to May 2016. The research protocol was reviewed and approved by the SUTD Institutional Review Board. Participants could choose to discontinue at any point of the research process and their data would be accordingly omitted from the study. In this study, an initial 22 participants were recruited and 5 decided to discontinue the study as they found the photo-taking activity onerous.

Participants were asked to use their camera-enabled smartphones to take photographs of their neighbourhood built environment as they went about their daily activities for one week. The aim was to collect older adults' place-bound, experiential knowledge about their neighbourhood built environment. Participants were, however, not required to do anything special or go anywhere outside of their daily routines and activities. The photographs could be of the built environment features along their travel journeys and/or destinations, e.g. their favourite places or regularly visited places, capturing the environmental features that they like or dislike about these places/routes, their concerns about the built environment and the features they view as important for their ageing process. During photo-taking, participants were encouraged to take note of the time and place where the photograph was taken and to submit these with a short line on why they had taken the photograph to the research team.

Each participant was invited to participate in one follow-up discussion session. Held within a couple of weeks after photo-taking was completed, the discussion was designed as small group discussion at the convenience of the participants to facilitate collective visualization of their experiences and views through the photographs, offering an opportunity for the less literate participants to also share their perspectives. A common discussion guide was used though the emphasis was on using the photographs to guide and encourage the participants to share their personal experiences of the built environment - which and why certain built environmental features matter to them/not. The discussion was audio-recorded with participant permission for transcription purposes. Where permission was not given for recording, instant notes were taken by the research team. The average duration of the discussion was between 1-1.5 hours.

The discussion was held in the preferred language of the participants – English or Mandarin. It should be noted that older Singaporean’s spoken English might not be grammatically correct to the native English speaker.

Results

Photo-taking was a new experience to some older adults. Yet, they patiently participated and took photographs to show and tell their experiences and memories with the research team. They sent an average of about 38 photographs each over a period of 7 days. The description that they provided with each photograph was a useful prompt for them to recall the context of the photographs during the follow-up discussion session.

As seen in Table 1, many of the photographs were about immediate neighbourhoods (5 of 7 photograph categories) while in some cases, they showed places beyond individual neighbourhood (e.g. traditional ethnic/cultural/religious places in other parts of Singapore) and about participants’ travel journeys by public transport or on foot (none of the participants drove or cycled). Discussions with the participants revealed that most of them were long-time (over 20 years) residents, at least two were in employment and the rest were either housewives or retirees. All participants were Singaporeans or permanent residents and physically mobile.

Table 1: What did participants take photographs of?

Photograph Content	No.	%
Outdoor green spaces, e.g. neighbourhood park, community garden	167	25.3
Transportation and travel journeys, e.g. sheltered walkway, longer crossing time for older adults, steps and ramps	122	18.5
Amenity and facility, e.g. marketplaces, eateries, shopping areas, library	117	17.7
Incidental social space, e.g. void deck, common corridors in public housing residential blocks, en route to key destination e.g. market, school, park	83	12.6
Favourite or frequented activity node outside of one’s neighbourhood, e.g. to visit friends and relatives, workplaces, medical care, leisure and recreation, cultural and religious places	63	9.5
Structured social space, e.g. exercise hard court, children’s playground, community centre	60	9.0
Quality of neighbourhood infrastructure and outdoor street furniture, e.g. lighting level, condition of benches, littering, maintenance	49	7.4
	661	100

Participants talked not only about the provision and setting but also the activities and meanings they attached to places. A frequent theme was outdoor green space, ranging from neighbourhood parks to community gardens and landscaped areas around the neighbourhood (Photo 1). Participants talked about community involvement in greening, community gardening

and nature maintenance; the community gardens were one of the favourite and most frequented places. They spoke about the role of their district mayor in championing the provision of community gardens. In consequence, their town now had more than eleven community gardens, spread across the neighbourhoods in convenient locations close to the residential blocks. Even though edible fruits and vegetables were favoured by many community gardeners, many of the community gardens had evolved special focus over time – some were for organic farming while others were spice garden, had medicinal herbs or special varieties of fruits trees and flowering plants.

Photo 1: Neighbourhood green spaces (all photos from respondents)



Zhenghua Park near residential blocks, a platform for exercises



Resident at community garden



Landscaping brings garden and greenery near to residents



Retirees engaged to do landscaping upkeep

Participants commented that they were able to have a sense of ownership as they took care of their own plot of garden and chose their preferred plants, vegetables, flowers or even medicinal herbs. They could enjoy the “fruits of their labour” as gardeners would get to keep the produce. Many opined that it was healthy to eat vegetables that they grew themselves (organic food). Importantly, for many, it brought back memories of days when they or their families were farmers.

Participants spoke about activities (soft programming) that brought residents to the community garden, park and green spaces. One respondent shared that she found it useful for residents to learn about gardening tips. The more experienced gardeners would sometimes share gardening tips on the types and names of vegetables, how to plant and harvest various kinds of vegetables. For some, gardening had become an integral part of their daily routines, something to do before or after their morning or evening exercises, morning trips to the market or before some of them go to work. For them, the community gardens supported social interaction, a place to meet other residents in the neighbourhood who shared similar gardening interests and through that helped them to make new friends and strengthen the sense of community. Some would take part in competitions such as for the best community garden in the neighbourhood. As one respondent proudly shared,

the community garden beside Block 423 is very good, was done beautifully. It is able to

win the first place in competitions! – Madam C, Chinese lady.

Others talked about the organisation of community programmes like ‘Sports to Stay Fit’, which took place every morning from 6.30am-8.30am, to encourage the participation of residents, mostly housewives and retirees for group exercises such as qigong. They also highlighted the provision of hardware infrastructure such as pavilions and seating, in particular, the absence of provision that discouraged their participation. For instance, some participants shared that their neighbourhood park lacked colour (a variety of floral planting), attractions and amenities for older adults to spend their spare time. More specifically, the lack of toilets in the park was an inconvenience, especially to the older person. One respondent highlighted the difficulty experienced by her mother,

...my wheelchair-bound mother has to rush back home because there’s no toilet in the park. It puts a lot of pressure on the old folks. – Madam HS, Chinese lady.

Others talked about the resulting adaptive behaviour. For example, one participant said that many of the people would just go home or to the shopping mall after their exercise to use the toilet, as it was close by the park. Two of the participants shared photographs showing some residents, mainly retirees who were hired by the town council for landscape maintenance work around the neighbourhood (Photo 1). It was understood that these senior citizens could choose the days and frequency in which they want to work. The participants felt that this was a good option for senior citizens who might want to engage in some work within the neighbourhood and who would otherwise be bored at home. As this respondent explained,

They are working as gardeners under Town Council... My husband is in charge of the workers there... Some of them, maybe the ladies, (work) only half a day. Only senior citizens (are employed). After retiring have nothing to do, might as well better they go out and work right? - Madam S, Malay lady.

Besides green spaces, another frequently visited place in the residential neighbourhood were food places.

Three-quarters of the participants commented that markets and local food establishments (Photo 2), e.g. *kopitiams* and hawker centres, were places that they would frequent on a regular basis – daily, several times a week, or weekly, usually by walking. *Kopitiams* are a type of food establishments, which are ubiquitous in Singapore. They are of a smaller scale than the hawker centre (often co-located with the wet market) and can be found in every neighbourhood, frequently at the void deck of public residential blocks. Aside from visiting the market and food places for grocery and for meals, participants viewed these places as social spaces to meet neighbours and people from the community. It was a place where they could stop, linger and sometimes watch the world go by.

Photo 2: Frequently visited neighbourhood amenities (all photos from respondents)



New Bukit Panjang Market and Hawker Centre



Library



Kopitiam



Pasar (market place)



Neighbourhood retail

Participants talked about how housewives and retirees (including themselves) could often be seen in these places, passing time, chit-chatting (among women), playing chess (among men), etc., enabled by the provision of seating, television set (in some *kopitiam*) and the availability of food and drinks. These neighbourhood food places were valued for their ease of access, convenience and low cost. Most participants informed that they could reach these places by walking. They were able to get a wide variety of daily necessities without the need to travel elsewhere. As one participant explained why a particular shopping mall was her favourite place in the neighbourhood,

Because the reason we have everything there (sic). We have market, we have clinic, and we have stationary shops. And we have provision shops. We have everything we need. Everything is there, so we don't have to go anywhere (else). And the MRT station is nearby for all the people (living in flats) ... I'm staying in Block 452, next door is the shopping centre. It's convenient. Everything is there. And the clinic is there. For the elderly people, the PG¹ clinic is also there so no need to worry; dental is also there. Everything is there. So I don't have to go anywhere (else). – Madam R, Indian lady.

Another participant spoke about her appreciation of long-time shop owners of various trades in her neighbourhood; these businesses not only offered convenience for residents in the neighbourhood but were also a familiar presence within the neighbourhood. There were interesting instances of specific local knowledge that some participants had, which would not

¹ PG refers to “Pioneer Generation”, i.e. Singaporeans aged 16 and above in 1965 or those aged 65 and above in 2014, who contributed to Singapore’s nascent years of nation building. Singapore had initiated a PG package for this group of older population to help with their medical costs; a PG card allows the cardholder to receive subsidised medical treatment at designated clinics.

be immediately apparent to outsiders. For instance, one participant talked about a particular vegetable stall in the market that sold vegetables grown in his own farm and her periodic haircut sessions to a neighbourhood hairstylist who worked out of her flat.

Other community amenities that participants liked included the community library, places of worship (e.g. churches, mosque and temples), senior activity corners, clinics and even traditional Chinese medicine (TCM) clinics in the neighbourhood. A couple of the participants wished for more senior activity centres to be located at their void decks. One participant spoke about the growing popularity of TCM clinics with older residents and the importance of including this amenity in the local neighbourhood,

Oh, this is the best. Nowadays, old people like to visit the TCM, and now it's so near our homes. We don't need to wait for the children to fetch them there or travel for long on public transport. We can just walk for a little bit. It is just behind the CC, Zheng Hua TCM. It is very convenient for the elderly. – Madam SB, Chinese lady.

Another added,

Before this, the nearest TCM was in Yishun. The doctor's skills are also really quite good. He is proficient at acupuncture and even massage. – Madam AP, Chinese lady.

About half of the participants who talked about footpaths indicated that they walked every day. They highlighted the importance of sheltered walkways that connected residential blocks to destinations such as bus stops, MRT stations, shops and wet markets, perhaps because of Singapore's hot and wet tropical climate. A handful of them expressed appreciation of the general landscaping and greenery efforts around the neighbourhood – along main roads and even at traffic lights (flower shrubs there are beautiful). For a couple of them, they would prefer to do their brisk walking along the footpaths of the main roads rather than to go to a park as the former was pleasant enough for exercise. Participants further talked about staircases, steps, inclined slopes and handrails that enabled them to move from one level to another. They often suggested replacing the staircases with ramps to support ease of movement.

Some elaborated on how some of the design features around the residential blocks did not contribute to a barrier-free environment. One participant cited the example of barriers erected to prevent cyclists or motorcyclists to ride on pedestrian paths but unintentionally could cause obstruction for some pedestrians like wheelchair users. The respondent explained with a Mandarin caption to his photograph that could be translated as,

The barriers are installed to increase accessibility but instead, added an additional obstacle. I would suggest for them to be removed. (Mr P., Chinese man).

Another respondent underscored the importance of safety in the design of elder-friendly public spaces,

(I would) like to have a safe environment for us (the elderly), and not only for us but for everyone. When you want to design anything, you want to make it good for all the people, (with) elderly people in mind – safe and not complicated. Don't make it so complicated that the elderly cannot use. I mean if you have all these features and you don't know how to (use them, it is it useless), just like a gadget... You think all the elderly know how to use all the sophisticated gadgets? They don't know it! Just to make it safe and easy to use for them. – Madam AR, Malay lady.

Other disliked aspects of the built environment were about the maintenance and upkeep of the neighbourhood, e.g. damaged park benches not replaced (do not have backrest for older users), rubbish not cleared promptly, recycling bin misused as rubbish bin (Photo 3). Several issues concerned the inconsiderate behaviour of other residents, e.g. neighbours who clutter and obstruct public passageways when they place their overgrown plants, shoe cabinets, clothes-drying racks, etc. in common areas. Others pointed out that in a high-density living environment and a multi-racial, multi-religious city like Singapore, there were some cultural or religious practices that when carried out in public spaces could spark inconvenience and cause unhappiness to others. One respondent gave the example that people sometimes do not burn “paper money”² in the designated containers provided but on public walkways. The resulting fire and debris causes obstruction and inconvenience to pedestrians while flying ash/debris can make the estate grounds untidy.

Photo 3: Neighbourhood maintenance issues (all photos from respondents)



Damaged benches in neighbourhood park not replaced



Rubbish in recycling bins, clutter not cleared



Burnt “paper money” residue in public space

Even though photo-taking is a useful method to find out what older people feel about their neighbourhood and help convey the ineffable, hard-to-put-into-words feeling, it is not without limitations. Its effectiveness depends on several extraneous factors such as who is taking the image (the person taking the photograph decides what to include/exclude and where to take it),

² Burning paper money for the dead is a religious-cultural practice, part of Chinese Taoist ancestral worship.

who is viewing the image and the context in which the image is being viewed (the photograph is open to interpretation, sometimes in ways that those taking the image might not have intended or imagined). Some people may find this research activity time-consuming, to have to follow through one whole week of continuous photo-taking, and thus, decline participation. This potentially excludes people who are busier, engaged in full-time employment, and/or with limited mobility. Furthermore, this method requires the researcher and participant to have access to a photo-taking device (smartphone or camera) as well as a process for checking and transferring daily photographs from participant to researcher. There is also the logistical challenge in scheduling the discussion session after photo-taking.

Conclusion

The photo-taking and sharing activity has proven useful for involving older people in the research process. It gives the researcher an opportunity to see the built environment through the eyes of the older users as they go about their daily travel and activity, which otherwise are not easily conveyed verbally if only using conventional interviewing (see also Glaw et al, 2017; Harper, 2002). In the process, older people become research participants of their own neighbourhoods as they take photographs and speak about their photographs in their own words. The process provides an opportunity for older people including the less educated to show and speak out about their own life experiences, concerns and ideas. Through their self-generated photographs and sharing, they are able to bring in their ideas, visualise and identify issues of interest to themselves.

In this case, they gave narration to what they liked and disliked about their neighbourhood for growing older – the green spaces, amenities, community activities and are friends with people within their neighbourhood through activities like community gardening and regular exercise. They illustrated with location and action where neighbourhood maintenance and inconsiderate behaviour of other residents could be problematic to them and the community. They made visible how solution to one problem had sometimes created unintentional problems for others.

Since the built environment is inherently experiential and visual, the inclusion of photographs accompanied by descriptions from the participants has the potential to generate and bring to the fore everyday life behaviours, ideas or social worlds that are not easily conveyed by verbal description alone or missed as mundane and unimportant. From a practical perspective, the advances and prevalence of digital technology have made this research method much easier (some help will be needed for older participants who are not familiar with photo-taking/camera use) even though it remains subjective and somewhat time-consuming.

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Privatization, Marginalization and Reuse of Waterfront Space in New Town——Taking Zhangjiang Science City Zhongshi Unit as an Example

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Abstract: In the past ten years, China has ushered in a new era of urban development. The urban renewal project has gradually changed the original urban pattern. In the suburbs, the construction of new cities has replaced the old towns and formed two types—an industry-led new towns and life-oriented new towns. The Zhangjiang area is one of the earliest industrial zones in Shanghai. It is currently in an important period of transition from industrial zones to the urban area. The comprehensive improvement of scientific research capabilities, living environment and urban vitality is its development goal. The long-term industrial development has led to the relatively closed industrial parks in the Zhangjiang area. The high-end communities have been built everywhere but the supporting facilities are insufficient. This has led to the emergence of city-industry separation, and separation of jobs and residential in the Zhangjiang area. These problems are particularly prominent in the Zhongshi units. In the process of building a fast new town, Zhangjiang Old Town, which was originally water-based, gradually declined, and was replaced by a new town with roads as the development axes. Planners used modern and mature design methods to design high-end residential communities and spacious car roads, but also brought public space with no vitality. Taking the Zhongshi unit of Zhangjiang Science City as an example, this paper first analyzes the existing characteristics of public space, and takes the waterfront space as the research focus. It is found that the waterfront space is characterized by privatization and marginalization. After that, some urban design method was used to redesign the form of waterfront space, function, and relationship with the surrounding area in order to realize the reuse of the public space.

Keywords: waterfront public space; urban renewal; privatization and marginalization;
Zhangjiang Old Street

1 New town development model and existing problems

1.1 Two models of the development of China's new town

With the continuous development of China's economy, the urbanization process is also accelerating. In 2018, China's urbanization rate is close to 60%, and the city is undergoing rapid changes and transforms. In the core area of the city, the urban renewal project with the main contents of comprehensive renovation, functional change and demolition and reconstruction of existing buildings, infrastructure, public facilities, streets and environment is changing the original urban pattern (Chen, 2019). Tianzifang, Xintiandi in Shanghai and other urban traditional street reconstruction projects have become a model for urban renewal in the country. Due to the expansion of the city's scale and the need for development, there is no land and space for urban development in the city center or the old city. As a result, various new town and new district planning and construction projects have been carried out across the country to meet the needs of industrial development or urban population expansion.

New town or new district is a relatively independent unit planned for political, economic, social, ecological and cultural needs(Feng, 2015). After more than 30 years of construction, China's new town and new district has formed a huge and complex system. There are many types and development models of new urban new districts. Many new town developed from industrial parks have become important economic growth poles besides the core areas of the city. Due to the rapid development of the new town, it is also facing problems such as city-industry separation and lack of vitality. The development model of the new town needs to be transformed. The relationship between industry and urban space has always been an important issue in the development of new towns in China. The problem of city-industry separation has seriously restricted the healthy development of cities. Scholars have conducted in-depth research on the phenomenon , the classification and causes, and the path of city-industry integration. At present, China's new town and new district can be divided into four categories: residential new district, industrial park, high-speed rail new town and science and technology new town(Yang and Lin, 2017). Its development model can be classified into the following two situations.

The first is new town formed by industrial agglomeration, represented by industrial development zone. Most of the industrial development zones are located in the suburbs, relying on the construction of industrial parks to form industrial clusters, and promote the economic development of the new town. In terms of space, large-scale closed spaces such as factories and parks have gradually replaced the more densely populated old towns and farmland. People live

in places with good housing conditions and supporting facilities in the city center, and only work in the new town during the day. Second, new town relying on opportunities such as high-speed rail with the residential area is the main function. In order to share the population pressure in the city center, large residential areas are built on the edge of the city or in the suburbs. Lower prices and larger space meets the housing needs of people working in the city center. However, there are certain problems in the current two development models. The new town with industry as its main function cannot provide supporting service facilities. The new town with residential function as the main function lacks industrial support. It will be less attractive to talents, so the ability to absorb the population is limited. The space differentiation between jobs and residences causes the industrial park to become a "ghost town" at night, and the strange phase of the residential area becomes "empty town" during the day. It leads to the lack of vitality in the city and the low sense of identity of the crowd.

1.2 Development and transformation background of Zhangjiang area

Zhangjiang High-tech Zone is located in the center of Shanghai Pudong New Area, adjacent to Lujiazui Financial Center and Shanghai Disneyland (Figure 1). Since the establishment of the Zhangjiang Hi-Tech Park in 1992, it has experienced the development phase of the exploration period (1990-1999), the incubation period (2000-2005), and the development period (2006-2011), and entered a new era of transformation (Wang and Huang, 2013). After the implementation of the "Zhangjiang" policy in 1999, a large number of high-tech industries gathered in Zhangjiang. The area of the park continued to expand, and the industrial functions were further strengthened and improved. It became the vitality point of the economic development in Pudong, and its influence continued to expand. In 2011, Shanghai was approved to establish China's third national independent innovation demonstration zone, and named after Zhang Jiang. The word Zhang Jiang has become synonymous with Shanghai's high-tech development, and Zhangjiang region has entered a new era of transformation and development.

In 2017, the "Zhangjiang Science City Construction Plan" was approved (Figure 2). The plan is based on the original Zhangjiang High-tech Industrial Development Zone. The area is increased to 94 square kilometers, and a science city integrating production and urban space is to be established. With the concept of open agglomeration, integration of diversity and green communication as the planning concept, the transformation and development of Zhangjiang Science City will become the creation place of new knowledge and new technology in China and the world, the breeding place of new industry, modern new livable city and municipal public center. And built into a world-class science city.



Figure 1 Zhangjiang Science City Bitmap



Figure 2 Land Use Planning of Zhangjiang Science City Construction Planning

1.2 Main problems in the construction of new towns

Zhangjiang Science City began construction in the 1990s. Planners use advanced planning concepts and design techniques to design clean, modern and urban areas. However, in the past 30 years of, some contradictions and problems have been exposed. The livability and vitality of the new town have not met the vision of the government and planners. The Zhongshi unit is located in the north of Zhangjiang Science City. It is the earliest developed unit in Zhangjiang area. The northwest corner of the unit is an industrial park, the east is a large-scale residential area with mature and mature construction, and the southwest corner is a newly-planned software park. It presents a pattern of intertwined collages between residential areas and

industrial areas. From the perspective of the Zhongshi unit, the main problems reflected in the new town include the following aspects.

First, the industrial park area and the residential area are relatively independent and the supporting facilities are insufficient. The density of public service facilities in residential areas is enough but unevenly distributed, lacking comprehensive hospitals and cultural and sports venues. Second, the road is wide but not suitable for walking, which makes it empty. Each urban cluster has a fence, which is closed to the public. People mainly work in residential areas or work inside industrial parks. The street only bears the traffic function. Although there are walking and running lanes, there is no corresponding supporting function on both sides, and the road is too wide, the radius of the turn at the intersection is large, causing people to lack the desire to travel. Third, the ecological base is rich, but the accessibility and continuity are poor. The landscape function of the green space is greater than the public activity function, and it is not systematic. There is a fault zone in the waterfront activity space. Fourth, ignore the inheritance of historical context. The old town of Zhangjiang are damaged, the intangible cultural heritage lacks the space carrier, and the emerging culture lacks the output platform and space.

2. Introduction to the water environment of Zhangjiang Old Street

2.1 Impact of urban development on river systems

The Yangtze River Delta is a typical plain river network area. The water system of the Pudong New Area is vertical and horizontal, with a typical Jiangnan water town style. The water system and the town are interdependent. As an important part of the urban public space, the waterfront space can not only improve the urban micro-environment, but also improve the environmental quality. It is also a public place for residents' activities. In the planning of the new town, the planning of the waterfront area is a key design area to display the image of the city. The dynamic waterfront space design can drive the economic development of the surrounding area and become a symbol of the region. However, the construction of the new town is often accompanied by the destruction of the original river network. In the construction and development of the Zhangjiang High-tech Zone, in addition to the rivers or main streams in the center of the city are preserved and redesigned, many tributary water systems are landfilled into roads or the construction of the park. The original farmland was requisitioned, and the water environment of some water systems was also invaded by industrial pollution, causing the river network to shrink and the water surface rate to drop. Bai Yiqin (2010) compared the land use and water system remote sensing data and water environment quality in Pudong New Area over the years, and found that with the acceleration of urbanization process, the length, area and

quantity of river network decreased. Small and medium-sized rivers and village-level rivers disappear faster. In the central urban area, the network is relatively systematic, while the river network in the urban fringe area maintains the original natural form. (Figure 3).

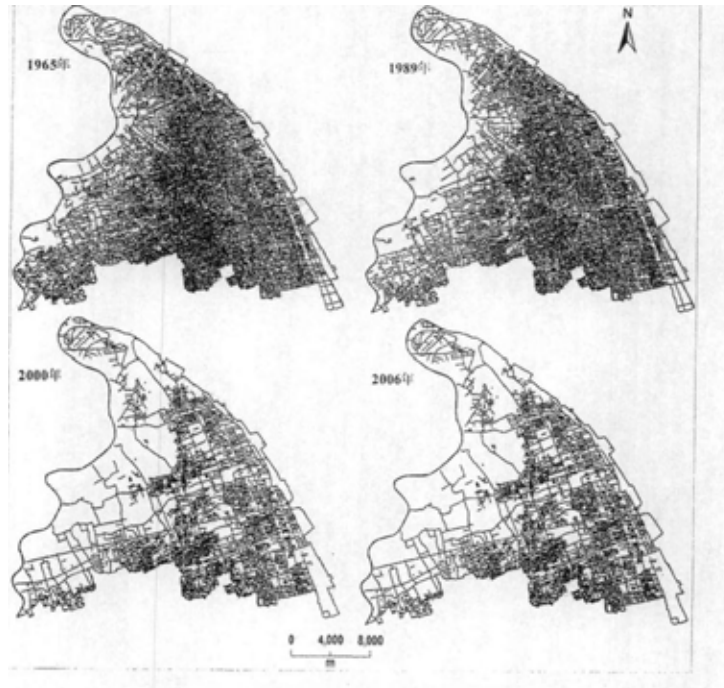


Figure 3 River network changes in Pudong New Area from 1965 to 2006(Bai, 2010)

2.2 Water resources around Zhangjiang Old Street

There are many rivers in the Zhongshi unit. The main two rivers, Majiabang River and Lvjiabang River cross in the middle of the unit (Figure 4). The river from west to east is the main traffic in the hinterland of Pudong. Transporting waterways, nowadays, has lost its transport function and has become a landscape river. The north-south Majiabang River was dilapidated and digging through the original Libang channel. In addition, there is a river called Taohe passing through the east of the unit. The river sets the Majiabang River and Lvjiabang River together in the interior of the block to form a ring structure.



Figure 4 Existing river in Zhongshi unit

The intersection of the two rivers of Majiabang River and Lvjiabang River is the location of Zhangjiang Old Street. Zhangjiang Old Street is a spontaneously formed market town formed during the Ming Dynasty (1567-1572). It retains the longest historical memory in the Zhangjiang area and the original spatial pattern of the Jiangnan water town. The old street extends along the east and west sides of Lvjiabang River, and the enclosed courtyard space is arranged in layers to form a deep spatial feature of the courtyard. A main street is set up in parallel with the water system to form a house-street-river spatial pattern. A number of lanes are perpendicular to the water system and extend to the bridgehead, the water system intersection, and the intersection to form an open space (Figure 5).



Figure 5 Zhangjiang Old Street courtyard and water street space pattern

3. The role of waterfront space in the change of Zhangjiang Old Street

Up to now, the surrounding area of Zhangjiang Old Street has been replaced by modern industrial parks and residential buildings, and the construction of new town is still in progress. Zhangjiang Old Street is also facing demolition, and some indigenous people have left their long-term residence. In the process, Lvjiabang River transformed from the original main

transportation channel into a landscape river channel, and the waterfront space was transformed from a lively and energetic public space to a place where no one cares. From a historical point of view, the change of Zhangjiang Old Street witnessed the entire process of industrial park development changing the old market town space.

3.1 Late Ming dynasty to the Republic of China: prosperous period

The history of Zhangjiang Old Street can be traced back to the Ming Dynasty. It is said that there are two phoenix trees on both sides of Lvjiabang River. Therefore, the old name is Gutongli. During the Longqing period of the Ming Dynasty, there was a man named Zhang Jiang who opened a ceremony here. He built a fence as the boundary between the east and the west, so it was named "Zhangjiangzha". At this time, the river channel is the main means of transportation. Both the cargo ship and the passenger ship to and from the sea and Shanghai have to transport each other through the rivers. As one of the main transportation waterways in the hinterland of Pudong, the Lvjiabang River has frequent commercial trade on the river. Zhangjiang Gate has also developed as a major market town along the Lvjiabang River. By the time of Qing Emperor Qianlong, Zhangjiangzha had formed a commercial market town with more than 200 shops. The number of households exceeded 1,000, and it formed a 100-meter-long east-west street and a north-south street and sugar shop across the Lvjiabang River. Street (Figure 6). By the time of the Republic of China, Zhangjiangzha was already a major town in the northern part of Nanhui County, and a water and land transportation hub, known as the "North Gate Key." Until the 1950s, Zhangjiangzha has always been a commercial and trade center in the district. The waterfront space is mainly commercial activities. The merchant ships that come and go are docked at butou for loading and unloading goods. There are many shops, tea houses and pubs on both sides. The commercial atmosphere is strong (Figure 7). It can be said that ZhangJiangzha has developed and expanded by relying on the transportation of the Lvjiabang River River. The waterfront space is the most popular public space in Zhangjiangzha, and it is also the place where people interact and trade.



Figure 6 The whole territory of Nanhui County, Qianlong, Qing Dynasty



Figure 7 Zhangjiang Old Street Historical Image (1948)

3.2 After liberation: privatization of space brought about by the transformation of functions

After the founding of New China, with the start of the economy, a large number of urban construction activities occurred frequently. Chinese cities entered a stage of rapid development. Due to the change of transportation mode, land transportation has gradually replaced water transportation and has become the main mode of transportation. A large number of roads were built, and influenced by the traffic location, commercial and other public functions began to gather on the road. In Zhangjiang, the new town center was established on the west side, and the shops concentrated on the roads, forming a pattern along the ZhenXixin Street, Chuanbei Road, and Zhangjiang Road (Figure 8). The original commercial functions of Zhangjiang Old Street were gradually replaced into living spaces. Old Street lost its status as a core city and became a town dominated by residential functions. This process is spontaneous and not government intervention. Since 2000, Guanglan Road

has been constructed, and Zhangjiang Old Street has been divided into two parts (Figure 9). The old street of Zhangjiangzha has entered a decline period. The functional changes on both sides of the river and the decline of water transport have also made the riverside space The original commercial vitality space has been transformed into a living space for residents.

With the improvement of people's quality of life requirements, the living conditions of Zhangjiang Old Town are becoming more and more crowded, and the waterfront space is showing a trend of privatization. In the period of our investigation, the aborigines have not yet fully moved out, and we can see the imprint of life that has been preserved on both sides of the river bank. Some illegally built sheds extended from the residential houses to the river banks. The fences blocked the waterfront roads. The riverside stood many poles for drying clothes, and it became the home of the residents on both sides of the river.



Figure 8 Zhangjiang Old Street Historical Image (1948)



Figure 9 Zhangjiang Old Street Historical Image (1948)

3.3 The construction period of the new town: the marginal space in the development of the new town

Since the 21st century, urban construction in Zhangjiang has entered a stage of rapid development. As mentioned above, the changes in the river system of Pudong New Area have also been staged around Zhangjiang Old Street. Now the water system around Zhangjiang Old Street faces the following problems, affecting the vitality of waterfront space.

First, the tributary water system lacks management and the waterfront space is poorly accessible. On the south of Zhangjiang Old Street, there is a river that runs through Pudong New Area and is 28 kilometers long and about 70 meters wide. It is also one of the main main streams in Pudong New Area. The city-level public service center will be built on both sides of the Chuanyang River. The implantation of science and technology and public service functions will greatly stimulate the vitality of the riverside space on both sides of the Chuanyang River. The Zhongshi unit where Zhangjiang Old Street located is in the northern part of Science City. Its status and role are much lower than those on the banks of the Chuanyang River. The tributary water system such as Majiabang River is neglected, the river channel is narrow, and some riverside landscapes are poor and lack of management. In addition, due to the complex property rights on both sides of the Lujiayu River and the Majiabu River, the public shoreline has not been integrated into unified management and planning. Most of the shorelines are in a closed management mode and are not open to the public (Figure 10). Besides, the collapse of many river-crossing bridges has not been repaired (Fig. 11). The river banks are filled with domestic garbage and building materials, so the connectivity and accessibility of the riverside space is poor (Figure 12). This is also one of the main reasons for the openness and vitality of the riverside space.



Figure 10 Waterfront space with closed management measures



Figure 11 Bridge collapse

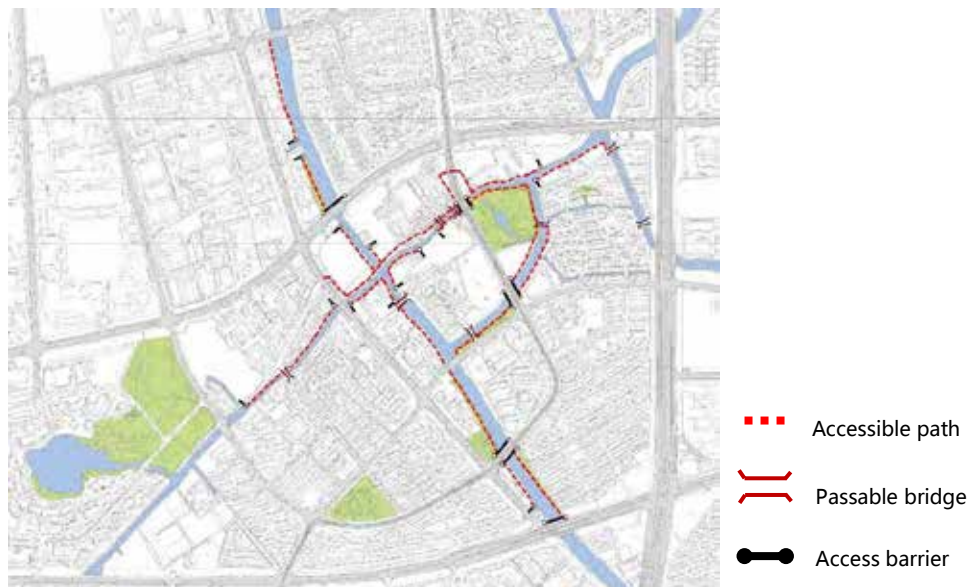


Figure 12 Analysis of the Traffic Situation between Ma Jiazhen and Lu Jiayu

Second, the river bank line is simple and lacks design, and the waterfront space is difficult to get close. Take the Majiabang River River passing through Zhangjiang Old Street as an example. The south side of the eastern section of the river is Guanglan Park. Combined with the streamline design of the park, the walkway and the hydrophilic square are set up in the waterfront space, and the space is relatively open. On the other side of the Guanglan Park, the embankment is relatively simple, with fences as the mainstay. Although the passage space of the old street waterfront was preserved, it was undesignated and the vegetation was overgrown, which made it impossible to get close. In the important urban core area, the waterfront area is a place where vitality gathers. But in the non-core area such as Zhangjiang Old Street, the waterfront space exists only as the “back of the street”, and the waterfront space is neglected and becomes the edge of the city. (Figure13, Figure 14).



Figure 13 The difference between the two sides of the Majiabang River River is obvious



Figure 14 Straight shoreline with vegetation

4. Design strategies of waterfront space: reuse and vitality

In order to preserve the spatial pattern of the water town of Zhangjiang Old Street and enhance the vitality of the waterfront space, we designed the area around the cross-shaped river formed by the Lujiayu River and the Majiabang River River, covering an area of about 33 hectares. A design response strategy is proposed for the waterfront space. The land includes Zhangjiang Old Street and some Zhangjiang Townships built after the 1990s. Existing buildings are dominated by industrial, residential and businesses. It is hoped that through the planning of space design techniques and theme functions, the waterfront space of Zhangjiang Old Street will be activated, thus driving the regeneration and development of the entire area.

4.1 Public function is concentrated in the river

Science and technology is the eternal theme of the development of Zhangjiang area. In the vicinity of the design scope, there are software parks based on R&D and innovation, as well as industrial parks that focus on parts processing and manufacturing and have future transformation and upgrading needs. However, there is a lack of places around the base for R&D personnel to rest and exercise. In addition, the surrounding cultural atmosphere is relatively strong. Zhangjiang Drama Valley, Zhangjiang 368 Cultural Industrial Park and

Changtai International Cultural Center are located in the Zhongshi unit, but these cultural industries lack a platform for export and publicity, resulting in insufficient influence. Therefore, we consider implanting technological innovation and cultural creativity related functions in the base to gather public functions to the river. The waterfront space serves as a space carrier for the external display and activities of the creative experience function, and promotes the regeneration of the riverside space with diversified functions.

Create a common core of science and technology at the intersection of rivers. The Chuangzhi Square, the Game Interactive Hall, the Comprehensive Experience Hall, and the Binhe Park are arranged around the river intersection to form a public activity center. The Chuangzhi Square on the west side is the main place for undertaking various kinds of performances. It is also a place for residents and researchers to exchange and gather. In combination with the outdoor space of the Exhibition Center, various technology product launches, creative markets and roadshows can be held. It is also a great place for watching the waterfront landscape. The north and south sides are equipped with small-scale buildings, which is a continuation of the old street texture. They allow small and micro enterprises to interact and experience offline and attract people. On the east side, a riverside park was designed as the most concentrated public space in the entire area, allowing busy people to relax and enjoy the natural beauty after work.

On the east side of the science and technology public core is the reserved Zhangjiang Old Street area, along the river to form a waterfront business district based on casual dining, and join the retail, experience, old street memory hall and other functions. Further to the east is the commercial service and leisure area formed by the Guanglan Road subway station. While continuing the function of the old street, it also adds functions such as parent-child activities, shopping and entertainment, and provides corresponding supporting facilities for the surrounding communities. On the west side of the science and technology public core, the current building quality is good. The main problem is that many closed blocks are formed due to the barrier of the wall, and there are more negative spaces. Therefore, the micro-update method is adopted to sort out the stock space, and the waterfront landscape is infiltrated into the area, and sports activities facilities and leisure plazas are arranged in places with large space as places for residents' activities.

Three theme routes are planned, which are the Old Street Discovery Tour, the Kechuang Experience Tour, and the Leisure and Recreation Tour. The public nodes besides River are connected in series to create a communication place (Figure 15).



Figure 15 Theme tours and public events

4.2 Reconstructed River Street Space

Due to the acceleration of the construction of the new town, the original river street space of Zhangjiang Old Street has been destroyed, and the modern waterfront space is obviously not suitable for this historic land. By combing the existing architecture and space texture, we summarize the past river-street relationship of Zhangjiang Old Town based on historical images, hoping to rebuild the river street space and continue the traditional space pattern of the old street. According to the existing building quality, the buildings that need to be demolished and can be reconstructed are selected, and new buildings are implanted to bury the damaged space. The original space texture of the old street is restored and continued. Some of the waterfront space design direct waterfront commercial interface, enhance the accessibility of the waterfront space, and form a continuous pedestrian street on both sides of the river bank. Thus, a building-street-river-street-building spatial relationship is rebuilt(Figure 16). The bridgehead is designed with a relatively small open square to form a small public node in the neighborhood. The riverside combines commercial buildings to form a good leisure and commercial space. The outdoor teahouse and viewing platform are set up to reshape the traditional watertown atmosphere.



Figure 16 Spatial relationship of river and street in Zhangjiang Old Street

4.3 Shoreline design for different people and functions

The waterfront space adopts a differentiated design approach to the functions of both sides of the river to create a variety of waterfront space forms and meet the needs of different groups of people. The shoreline can be divided into four sections according to its functions: the living section on the west side, the river intersection section, the Zhangjiang Old Street section, and the Guanglan Park section.

The living section on the west side: the riverside is dominated by talent apartments, commercial and residential areas, and the living atmosphere is strong. The riverside creates a community atmosphere and increases the space for residents to do some activities. The original single straight shoreline is partially widened to form a multi-layer retreat, and a continuous two-story water walkway is provided in combination with the two sides to provide a venue for fitness, leisure, and community activities (Figure 17, Figure 19).



Figure 17 Waterfront perspective of the living section on the west side

The river intersection section: At the intersection of the two main rivers-Majiabang River and Lvjiabang River, it is the most crowded place for crowds. Therefore, it is necessary to design a shoreline with a high degree of publicity to provide outdoor activities and make full use of the waterfront. The landscape creates a vibrant and open atmosphere. Design a shoreline form that is open to the surface of the water, and maximize the provision of a hydrophilic space by adding sunken plazas, waterfront terraces, and stepped slopes. Part of the waterfront building has a roof garden that provides a rich view space in the vertical direction (Figure 18, Figure 20).



Figure 18 Waterfront perspective of the river intersection section

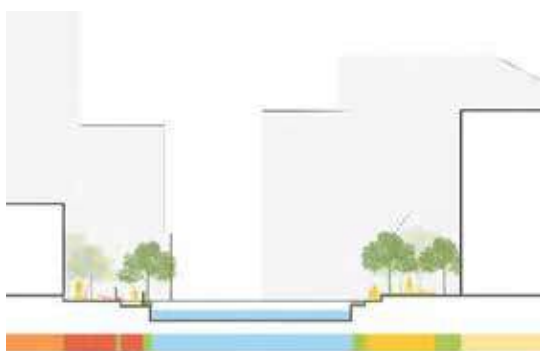


Figure 19 River section of the living section on the west side



Figure 20 River section of the river intersection section

Zhangjiang Old Street section: There are many commercial buildings on both sides of the old street, and the shoreline has been redesigned. When the street is indirectly facing the river, it is completely open space. When the building is directly facing the water, the street is a semi-open space on the inside and becomes the backyard of the waterfront shop. The two ancient bridges, Zhong'an Bridge and Taiping Bridge, are restored, and the landscape and the directly hydrophilic steamed buns are intertwined to form an ecological and artificial mixed coastline. The traditional waterfront forms such as Shantou, plank road and wooden bridge are used to

link the waterfront street with the Lvjiabang River. The riverside space occupied by the residents is designed to open to the public, forming multiple riverside parking spaces and reshaping the atmosphere of Zhangjiang Old Street. (Figure 21).

Guanglan Park section: The south bank of the Majiabang River on the east is Guanglan Park. The landscape resources are good and the flow of people is dense. It is in stark contrast with the landscape on the north bank. The waterfront space between the two sides lacks contact. Design a waterfront revetment that is partially open to the river and form a contrast with Guanglan Park. The tour line in Guanglan Park is also close to the river. The hydrophilic platform is added to the narrow river. People can directly enter Guanglan Park from the north side, which also enhances the accessibility of Guanglan Park and the radiation capacity to the surrounding area. (Figure 22).



Figure 21 River section of Zhangjiang Old Street Section



Figure 22 River section of Guanglan Park section

4.4 Pay attention to walking space

The entire area requires people-oriented, paying attention to the walking experience and weakening traffic. The internal roads are dominated by narrow urban roads, and landscape and lifestyle roads are preferred. The two main rivers are the main open space streamlines, extending the public corridors, connecting the Guanglan Park and the Zhangjiang Theme Park on both sides, and infiltrating into the surrounding areas to increase access to the waterfront space to form a public space network(Figure 23).



Figure 23 Walking space system

5 Conclusion

Zhangjiang Science City is an outstanding representative of the construction of Shanghai new town, but there is still a phenomenon of low vitality in the north, and there are problems such as insufficient supporting facilities, lack of street life, unused waterfront space, and destruction of cultural memory. This reflects the lack of humanistic care and quality in the planning and construction of the new town. Zhangjiang Old Street bears a long history of Zhangjiang area, and the change of its waterfront space reflects the change of urban construction to the spatial pattern of old towns. Through field research, we found that the waterfront space in the Zhangjiang Old Street area currently has problems such as poor accessibility and simple bank line, which leads to the lack of waterfront space vitality. In view of the above problems, we proposes a redesign of the waterfront space with four strategies as follows: public functions to be concentrated in the river, shoreline design for different people and functions, and pay attention to walking space. We hope it can activate the entire Zhangjiang Old Street and even the Zhongshi unit.

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Study on the Construction Strategy of Green Space in Urban Shallow Mountain Area—Taking Xishan Military Industry Community in Wulitun Area of Beijing As an Example

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Abstract: The shallow mountain area refers to the transitional area between the city and the mountainous area. The geographical environment of Beijing has created a large number of shallow mountain areas. As a potential resource for future urban space expansion, the protection and utilization of the shallow mountain area has attracted much attention in the context of rapid urban expansion. This paper discusses the green space network planning of the Wulituo area in Beijing and the green space design of the Xishan military community. From the green network construction and the green renewal of the shallow mountain community, the green space construction strategy research of the urban shallow mountain area is carried out at the meso and micro scales.

Keywords: Shallow mountain area; Green space; Mesoscale and Microscopic scale; GIS;

Introduction

“Shallow mountainous areas” appeared earlier in China, and many scholars have carried out research and discussion on this. However, due to the large differences in shallow areas in different areas, the definition and division of shallow mountain areas are still relatively vague. According to previous studies, the overall definition is as follows: “The shallow mountainous area is part of the mountainous area. It is a certain altitude and slope of the plain. The mountainous area is a plain, mountainous and mountainous with low mountains, hills, terraces, mountain plains and alluvial fans. The transition zone between the two, and the artificial development and construction of the natural habitat of the mountain, the buffer zone.” (Feng, 2008) China's planning studies on shallow mountainous areas have focused on agriculture and forestry production in the early stage. As the ecological environment has been destroyed, the ecological environment in shallow mountainous areas has become more and more concerned. At the same time, in the face of the outward expansion of the city and economic development, discussions on the development and utilization of shallow mountain areas began to increase, but there is still a lack of planning research and specific practices. This paper takes the Wulituo area in Beijing as the research object. By summarizing the real problems in the Wulituo area and combing the development history of the area, this paper proposes the green space network construction strategy and the micro-scale landscape renewal strategy under the mesoscale scale of Shanshui City. Provide reference for the green space planning and design of the vast shallow mountain areas.

The Historical Origin and Realistic Dilemma of Wulituo Area

The Wulituo area is located in the Shijingshan District of Beijing, bordering the Mentougou District, west of the Western Hill of Beijing, and the Yongding River passes through the southwest. It is a bowl-shaped area surrounded by mountains and water, including shallow mountains and plains in front of the mountains. Through a summary analysis of the distribution of unincorporated villages in the history of Wulituo, it is found that in the natural geographical environment where the mountains, plains and river valleys are stepped and laterally distributed, the Wulituo area has developed from ancient times and its social production and living mode and settlements are closely related to the natural geographical environment. (Figure 1) Since the Ming Dynasty, many nobles have set up family cemeteries in Wulituo, established temples, and formed natural villages, such as Longen Temple Village and Shuangquan Temple Village, which are mainly engaged in agriculture, forestry and animal husbandry. In the plains, the Jingxi Ancient Road has passed through this, and the economic prosperity brought about it has formed a natural village such as Sanjiadian Village as a trans-shipment hub for coal and leather goods in Beijing. The sediment brought by the Yongding River formed suitable land for cultivation along the river, and gradually formed some natural villages.



Figure 1. Distribution Map of Unincorporated Villages in Wulituo Area. Diagram by the authors.

However, since the modern era, the Wulituo area has gathered industrial enterprises such as Xishan Machinery Plant and Shijingshan Thermal Power Plant. With the rise and fading of industry, many large industrial sites and structures have left the urban space. The abandoned railway has blocked the vertical traffic connection of the city, and the ecological environment of the area has been destroyed, and the development has lagged behind. Since the Ming and Qing Dynasties, the civil construction of Beijing City and the destruction of modern warfare have caused the original mountain forest vegetation in the Wulituo area to disappear basically, and the soil erosion is serious. In addition, the extensive expansion of the city continues to occupy the space originally belonging to the mountains and rivers. The predicament of the green space in the Wulituo area is:

- The forest is mottled and broken
- Water system and historical context are interrupted
- The passage from the mountain to the water is interrupted
- The conflict between mountains, water and cities

The Green Network Planning of the Integration of Mountain, Water and City in Wulituo Area

Based on the study of superior planning, three kinds of key words of green network planning in Wulituo area were extracted: ecology, countryside and green corridor; ancient roads, culture, leisure and recreation; development, transformation and comprehensive services. Based on this, it puts forward the planning objectives of restoring green shallow mountain forest land, finding source and waterfront context, ensuring ecological security, and connecting life and nature. The green space of Wulituo area is positioned as a transition space of landscape city integrating natural ecological conservation, original protection of rural areas, sightseeing of landscape scenery, historical and cultural inheritance, and urban life service, with shallow mountain forest land and yongding river water vein as the background, ecological security as the basis, and life connection as the pursuit.

Construction Strategy of Green Network in Wulituo Area

The construction of the green network in Wulituo area firstly analyzes the ecological security pattern of the region and the needs of urban residents' life recreation, from hydrological safety, geological safety, bio-safety, and urban parks, mountain recreation, and slow-moving demand. Through the use of GIS software and analytic hierarchy process. By constructing an ecological security pattern and a living recreation network, the initial scope of the urban green space is obtained. In addition, combined with the functional layout of other urban land, functional planning and positioning of each green space was carried out to achieve the design goal of building a green space network that meets the needs of ecological security and living recreation.

Ecological Security Pattern Construction

Through the use of GIS analysis, the basic data and literature data are used to construct the hydrological safety pattern, geological disaster buffer safety pattern and comprehensive bio-safety pattern in Wulituo area. These three patterns correspond to the water conservation area, the mountain key conservation area, the substrate, and the plaque. Blocks and corridors. A comprehensive analysis of the three patterns can provide an integrated ecological security pattern, that is, a green space based on ecological security. (Figure 2)

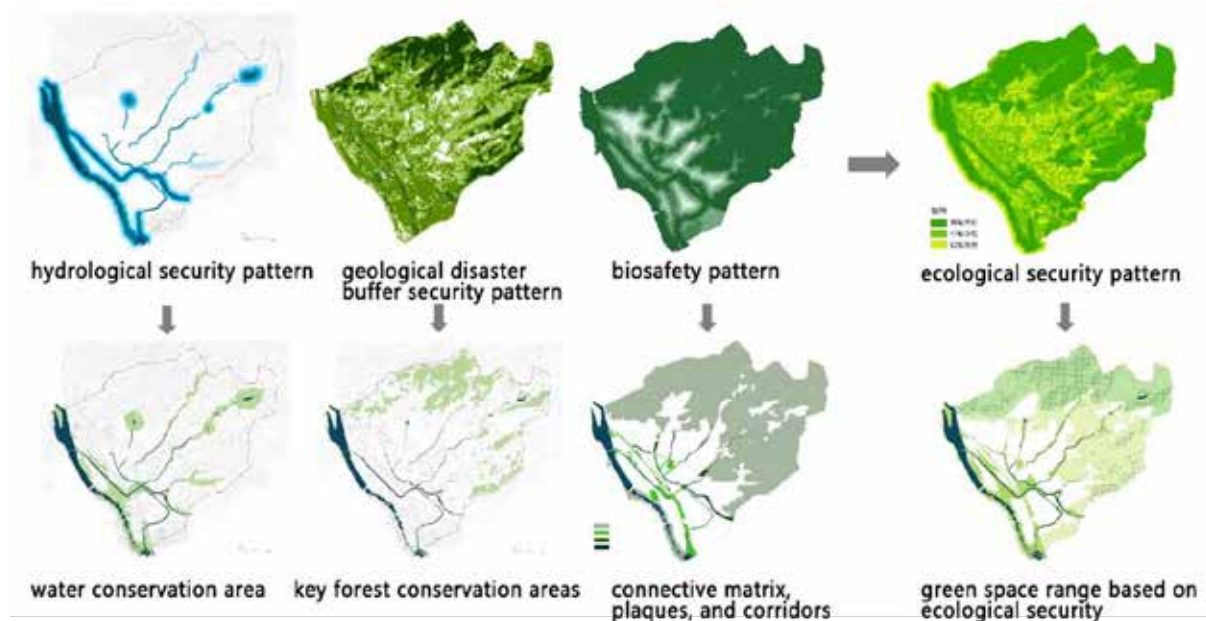


Figure 2. Ecological Security Pattern Construction Process. Diagram by Hu, E., Sun, Y., Huang, T.

Hydrological Security Pattern

Hydrology is closely related to human production and life, habitats of animals and plants, and is an important reference for flood control, drought relief, water resources management and related infrastructure construction. The shallow mountainous area is at the foot of the mountain. The mountain rainwater runoff flows from the upper part of the mountain. When it supplements the water source for the mountain river, it also forms a flash flood hazard in the rainy season, as well as soil erosion and water pollution. According to the hydrological process associated with green space, the hydrological security pattern is divided into three aspects: water conservation, rainwater defense and water quality protection. Through GIS analysis, the water source safety pattern, rain flood inundation area and water quality protection pattern were obtained, and they were superimposed to obtain a hydrological safety pattern.

Geological Disaster Buffer Security Pattern

As a transitional zone between mountains and plains, shallow mountainous areas are geological disaster-prone areas, and green space can be an important area for buffering geological disasters. Therefore, to construct a geological disaster buffer security pattern, on the one hand, it can prohibit urban construction by defining geological disaster sensitive areas as green space, and on the other hand, it can increase green space in areas with high geological disasters, thereby preventing and delaying the occurrence of geological disasters. Through the analysis of geological hazard in GIS, several factors (slope, land type, vegetation coverage) that affect the geological disaster buffer can be inlaid and reclassified according to the empirical weights, and the regional geological disaster buffer pattern is obtained.

Biosafety Pattern

The green space is an ideal habitat for a large number of living things. The shallow mountainous area is located in the interlaced zone between the mountainous area and the plain. The species richness is high, but it is also a region that is greatly disturbed by humans. The fragmentation and homogenization of the green space is unfavorable for the safety of the species habitat. Therefore, it is necessary to construct a biosafety pattern. By referring to the literature, three representative birds, mammals and amphibians in the Wulituo area were selected as indicator species. Based on their living habits, the impact of species and other factors on species movement

was scored. Then, based on the island biogeography theory, the biological source area is selected, the landscape resistance surface is established, and the spatial analysis is carried out by GIS to identify the buffer zone, the source connection, the radiation channel and the strategic point, and the safety patterns of the three species are superimposed to construct a comprehensive biosafety security pattern. Different levels of safety were visualized and graded to form a comprehensive assessment of habitat suitability of the three species. Then it is superimposed with the analysis of vegetation coverage to obtain a comprehensive biosafety pattern.

Life Recreation Network Construction

The urban green space is responsible for important life recreation functions. By defining the urban residents' demand for urban park green space in Wulituo area, the park system is constructed, the mountain forest area with recreation value is demarcated, and the chronic demand integration slow-moving system of the population in the area is analyzed, and then the construction of the living recreation network is completed. (Figure 3)

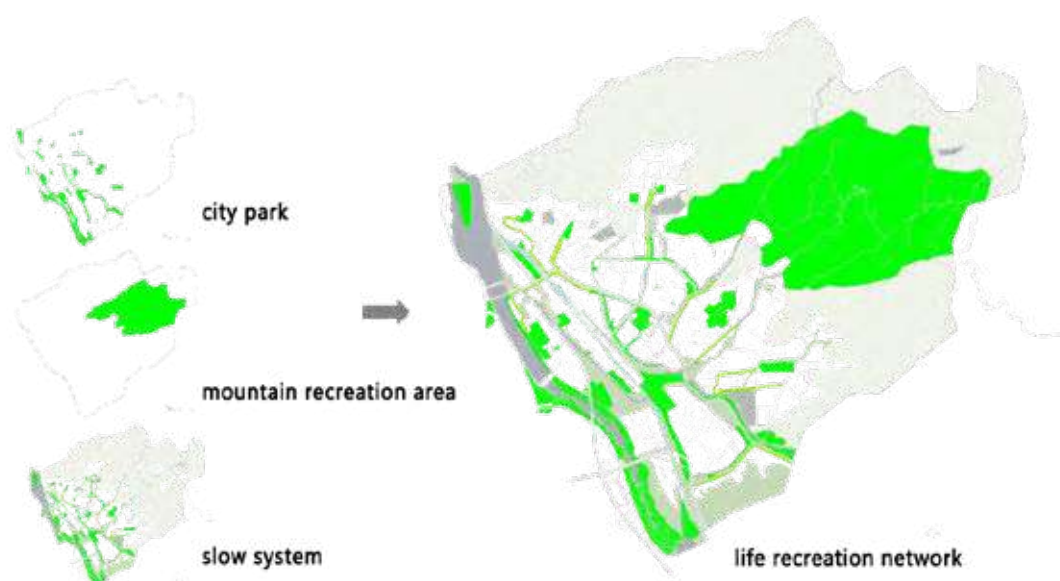


Figure 3. Life Recreation Network Construction Process. Diagram by Zhao, X. and Fan, B.

City Park

According to the Ministry of Housing and Urban-Rural Development, the park service radius of 500m should cover all residential areas. The coverage of the park green space with an area of more than 5,000 square meters in the Wulituo area has not yet reached this standard, and it is necessary to increase the urban park in the blank area. Through the renewal of urban wasteland and the renovation of existing green space, covered the blank area by the park service, new urban parks will be planned according to the current conditions of the plot and the principle of uniformity. The urban park's 500m service radius covers all urban residential areas, and meets the urban park needs of residents in the Wulituo area in terms of spatial layout.

Mountain Recreation Area

The demarcation of the mountain recreation space is mainly based on the analysis and evaluation results of the ecological sensitivity assessment and the mountain recreation demand analysis (mountain landscape value and humanistic features). Areas with high ecological sensitivity are not suitable for recreational activities, and areas with high demand for mountain recreation should be included in the mountain recreation space for demand. The range of mountain recreation areas is comprehensively defined by the ridge line and the road.

Slow System

The construction of the slow-moving system begins with the selection of various types of slow-moving needs. By crawling out the commercial hotspots in the area with big data in the Internet, it combines residential areas, urban parks, cultural relics, public transportation stations, and riverside landscape nodes. These points are connected and selected, and the results of urban greenway selection are obtained after comprehensive superposition and partial adjustment. The mountainous area is rich in mountainous recreation resources, and the construction of mountain forest recreation trails is indispensable. According to the walking trajectory of the hiker recorded from the track record app, the potential route of the mountain recreation and the viewpoints along the line are obtained. Combining the existing mountain roads, we can obtain the results of the selection of our mountain trails by retaining, adding, connecting, and extending these routes.

Construction of Green Network in Wulituo Area

By superimposing the green space based on ecological security and life recreation, combined with the current satellite imagery, the planned green space is obtained. Considering the natural ecological factors of green space and the surrounding areas of commercial, residential and educational land, the dominant and composite functions of green space are determined. Eventually, a green space network linking mountains, rivers and cities will be formed.

Green Landscape Renewal of Xishan Military Industry Community in Wulituo Area

Xishan Military Industry Community, located in the hinterland of Wulituo, mainly includes the factory area and family area of Beijing Xishan Machinery Factory, one of the former “Eight Factory in Western of Beijing”. In recent years, production in the factory has stagnated, community infrastructure has been slow to update, and the needs of residents' living and leisure have not been met. At the same time, the community located on the Tiantai Mountain is rich in mountain woodland resources, which is a valuable landscape resource for the city. Combined with the positioning of the green space in the green space network planning, the micro-scale design strategy continues the principle of meeting the ecological and recreational functions of the green space in the shallow mountainous area. At the same time, in close connection with the actual situation of the site, the design method of landscape garden was used to respond to the problem of urban renewal. (Figure 4)

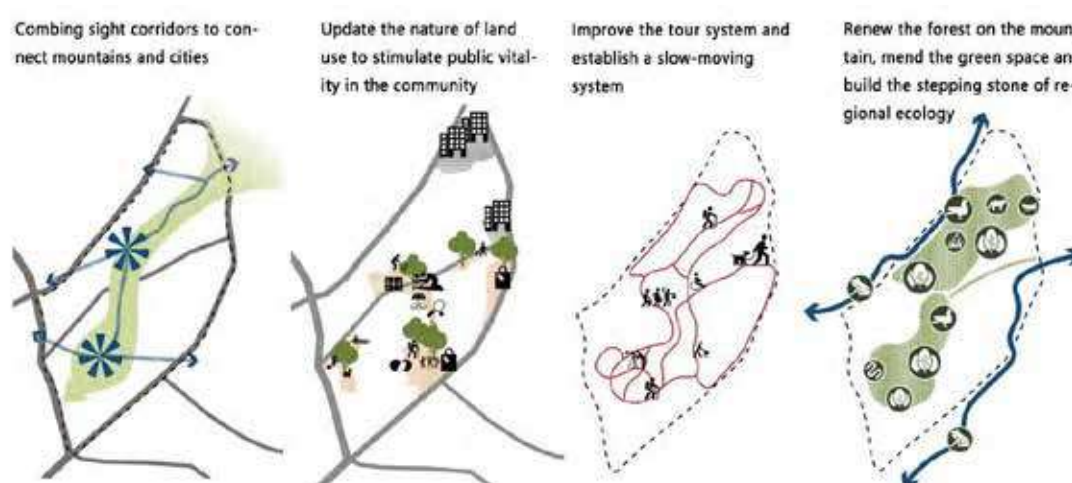


Figure 4. Design Strategy. Diagram by the authors.

Combing Sight Corridors to Connect Mountains and Cities

By dismantling the existing shantytowns and shops to expose the mountain and opening up the sight window and sight corridor for the tourists at the entrance of the park, the different styles of the mountain parks are

shaped, and the demand for “seeing” from the urban interface to the mountain park is basically realized. By using plants to strengthen the ups and downs of mountain parks, the beautiful urban landscape is constructed. Various viewing platforms have been set up at different altitudes using different platforms. The landscape space along the way of the mountaineering makes up the landscape sequence with the open space under the mountain, the enclosed space on the mountainside and the open space on the top of the mountain.

Update the Nature of Land Use to Stimulate Public Vitality in the Community

Within the design scope, there are large-scale shantytowns, low-end businesses, and messy wasteland. After identification and evaluation, three shanty towns and low-end businesses were demolished. In combination with the overall lack of commerce in the Wulituo area and the potential commercial needs of large residential areas in the surrounding areas, large commercial centers and commercial pedestrian streets will be established to stimulate regional vitality. Located in the center of the military community's residential area, there is a community of medical service stations, community pension centers, vegetable markets, supermarkets and other community service facilities. The functions are preserved and integrated in place to form a higher quality community service center. The launched land is used as a community sports venue to build a vitality center that meets the needs of residents. The Xishan Machinery Factory site, which has basically stopped production, has been renovated and remodeled. In view of the presence of artist studios in the factory area, the factory area has been transformed into an art district, attracting artists and design groups to come here. (Figure 5)

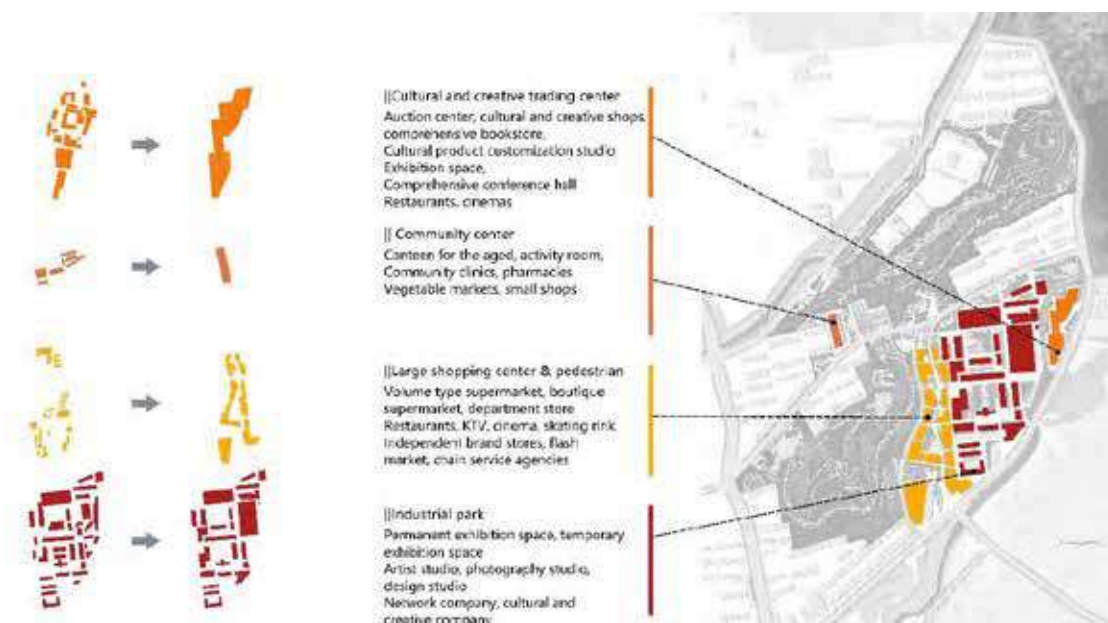


Figure 5. Land Use Update. Diagram by the authors.

Improve the Tour System and Establish a Slow-moving System

Connect the urban slow-moving roads within the designed range, suspend the slow-moving system of urban and mountainous and water systems, and form a landscape tour system consisting of mountain park roads, urban road walkways, community slow-moving systems and outdoor activity venues, and The slow-moving system in the green space network of the Wulituo area is docked. The terrain in the shallow mountain area is richly varied. By properly handling the height difference, setting up the site and carrying out special activities, it can increase the interest of slowness while satisfying the demand for traffic. (Figure 6)

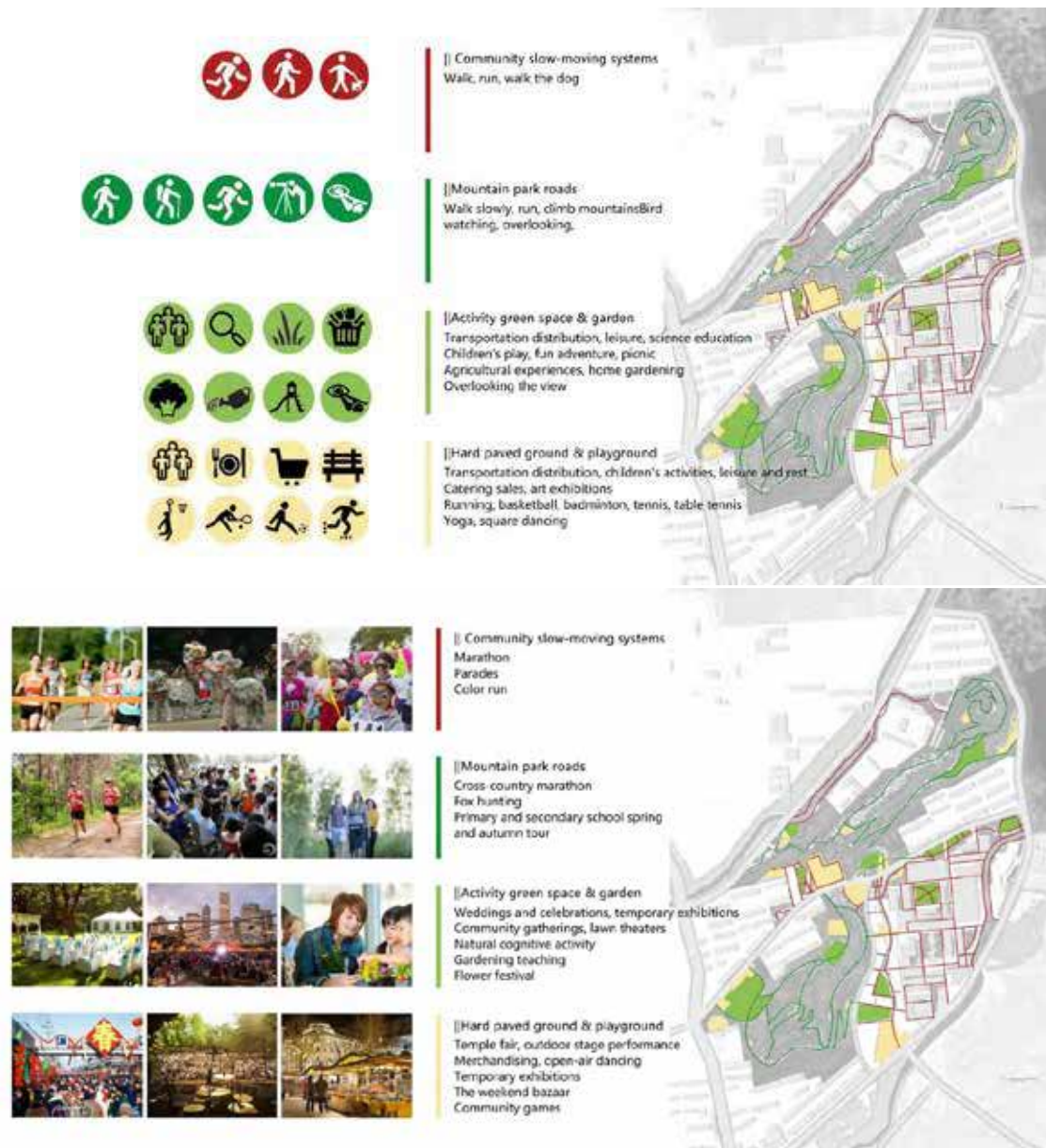


Figure 6. Landscape Slow System and Event Planning. Diagram by the authors.

Renew the forest on the Mountain, Mend the Green Space and Build the Stepping Stone of Regional Ecology

The forests in the mountains of Wulituo area are dominated by the pure forests of *Arboreal cypress* and *Pinus tabulaeaus*, which are basically the products of the artificial afforestation movement in the 1950s and 1960s. For many years, the agricultural forest management mode has been adopted to form a single-layer forest structure, and problems such as slow growth of stands, decline of soil fertility, decrease of landscape recreation function, and sharp decrease of biodiversity have emerged. (Ning *et al.* 2009) The strategy is mainly to transform the artificial forest into natural one. By hygienic cutting, removing interfering trees, adjusting the competition

between trees and the utilization of resources to promote the growth and development of outstanding individuals in the main forest layer. At the same time, through the protection and promotion of natural regeneration under the forest, and artificial replanting of the local climax community tree species -- *Quercus variabilis* -- in areas with weak natural regeneration ability, the forest recovery and self-development mechanism can be promoted. (Figure 7)

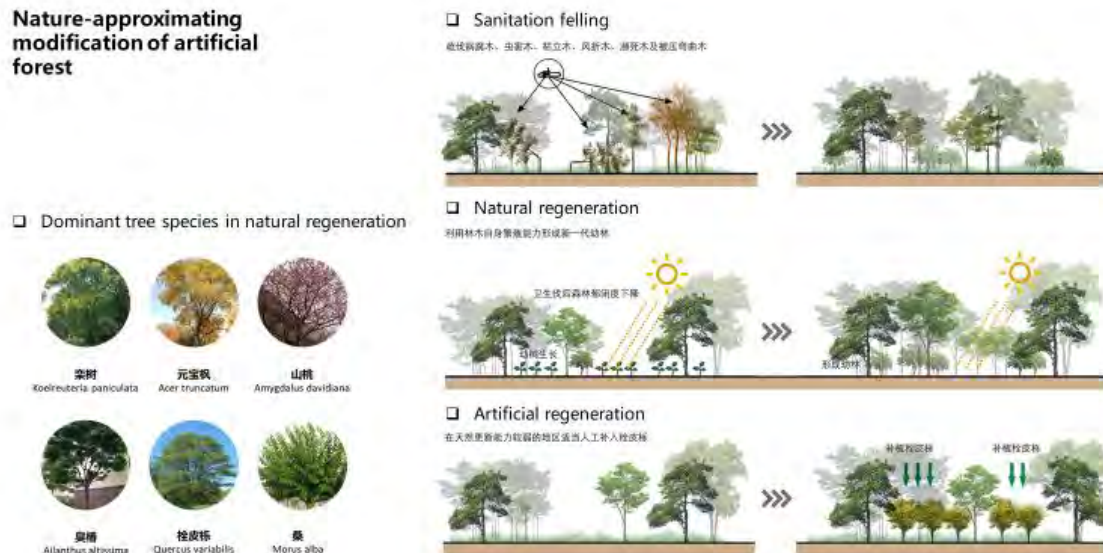


Figure 7. Nature-approximating Modification of Artificial Forest. Diagram by the authors.

The “stepping stone” refers to a small plaque habitat that can temporarily inhabit (stepping) when the animal migrates and spreads. Its presence is conducive to increasing the connectivity of the landscape, thereby increasing the chances of successful species movement and diffusion. (Hua, Li and Gao, 2005(04):30-31) The Paochang Mountain in the Xishan Military Industry Community is embedded in the city as the remaining vein of the Tiantai Mountain. Due to the good vegetation, a large number of birds are inhabited here, so the Paochang Mountain has become an ecological stepping stone. potential. In order to improve the richness of the habitat of the Paochang Mountain, the habit characteristics of the birds in Beijing woodland were considered in the selection of plant species, and the plant community was designed to meet the habitat preference of birds distributed at different heights of the plant community and provide food sources.

Renewal Results

Through the renewal of the green landscape of the Xishan Military Industry Community, it has become a region where mountains and waters are integrated, which has inspired the vitality of the Xishan military community and surrounding areas. The ecological restoration and development of the Paochang Mountain has created a new important landscape node for the Wulituo area, enriching the urban landscape and improving the construction of the urban ecological corridor. Through the reuse of stock space such as shantytowns, multiple urban functions are implanted in these spaces to provide the possibility of activating the site. In the micro-scale, the strategic principle of the meso-planning is continued, and landscape architecture methods were used to respond to the site problem. (Figure 8)



Figure 8. Updated Plan of Xishan Military Industry Community. Diagram by the authors.

Conclusions

The protection and development of green space in shallow mountainous areas is an important way to establish a balance between urban development and environmental protection. In this paper, the construction of green space at the two levels of mesoscopic network and micro-design in Wulituo district of Beijing is taken as the entry point, hoping to provide reference for rational utilization and protection of green space in shallow mountainous areas of Beijing and other cities in the world.

Acknowledgements

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PA04

Teaching planning for
the transition

The role of the university in the promotion of socio-spatial justice.

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Abstract: In 2016, The New Urban Agenda adopted in Quito recognized the persistence of multiple forms of poverty, increasing inequalities and environmental degradation as the greatest obstacles to the sustainable development of cities around the world.

In this paper, it is argued that, to begin to address these challenges, it is necessary to transform the formative itineraries of the disciplines linked to the production of the city. Likewise, it advocates the incorporation of socio-spatial justice and environmental sustainability as fundamental approaches into their curricula in order to respond effectively to the challenges of cities in the 21st century. In this sense, this work presents an innovative action-research-learning initiative to incorporate the socio-spatial justice approach in the context of urban planning education.

A review of theoretical approaches has been done in relation to the role of the university in the promotion of socio-spatial justice, from which an analytical framework has been developed. This analytical framework is applied to a innovative challenge-driven practices in Brazil. The research shows the actions carried out from the university in order to make visible the difficulties as well as the capacities of a community excluded from making their rights effective. Throughout these experiences, the importance of the co-production of knowledge (as a result of a collaborative work between the university and vulnerable communities) is shown, as well as the need for the university to put training and research activities at the service of society and, in particular, of social justice and not of other interests.

Keywords: Urban education and research, innovation, learning processes, social inclusion, international dialogue.

Introduction

All accepted By 2050, the world's urban population is expected to nearly double. This will pose enormous challenges in terms of access to housing, infrastructure, basic services, natural resources, etc. (UN, 2017: Section 2). Heads of State and Government, who have ratified the New Urban Agenda, recognize that the persistence of multiple forms of poverty, growing inequalities and environmental degradation will be the greatest obstacles to sustainable development worldwide (UN, 2017: Section 3). In view of this perspective, the "right to the city" is clearly included for the first time in an international agenda, as well as some of its key elements such as: the recognition and guarantee of all human rights; the social function of land; public control of speculation and gentrification processes; prevention of evictions and the fight against homelessness, and a wide range of access to housing and public services, including social production of habitat as well as other collaborative and cooperative models.

Nevertheless, it would be too naïf to think that the inclusion of these issues in the international agenda is a sufficient condition for their implementation. Many of these values and commitments have been collected for more than 40 years, from the Vancouver Declaration (1976) to the Habitat Agenda (1996) or some international declarations (ECE, 2013, 2015). Despite so many promises, the situation of human settlements around the world has only deteriorated dramatically (Pascual, 2016). According to the World Charter on the Right to the City (2004), this is because the development models implemented in most countries, both in the North and in the South, have been characterized by establishing patterns of concentration of power and income. These patterns have generated poverty and exclusion, and have contributing to environmental degradation and to the acceleration of migratory processes and socially and spatially segregated urbanization.

For decades, a paradigm shifts in the way of producing and understanding cities has been demanded. The dominant model of unlimited economic development, which is repeated as a mantra on numerous occasions in the New Urban Agenda, is incompatible with social justice and with the limits of growth of the planet (Zarate, 2017). Numerous social organizations and some local governments around the world consider *"the right to the city"* as an instrument for paradigm change insofar as it claims the city as a collective right and not as a commodity for the benefit of a few (Lefebvre 1969, Harvey 2012, Pascual, 2016, Zarate, 2017). The Right to the City would be determined, according to the World Charter of the Right to the City (2004) by three fundamental principles:

Full exercise of citizenship, understood as the realization of all human rights and fundamental freedoms, ensuring the dignity and collective well-being of the inhabitants of the city in conditions of equality and justice, as well as full respect for production and management Social habitat.

Democratic management of the city, understood as the control and participation of society, through direct and representative forms, in the planning and governance of cities, prioritizing the strengthening and autonomy of local public administrations and popular organizations.

Social function of property and of the city, understood as the prevalence, in the formulation and implementation of urban policies, of common interest over individual property rights; Implies the socially just and environmentally sustainable use of urban space.

The right to the city is a call to overcoming the prevailing model *"the right to the city is like a cry and a demand, a transformed and renewed right to urban life"* (Lefebvre, 1996: 158). It is aimed at strengthening processes and claims against injustice and social and territorial discrimination, and therefore to promote social justice (Belda-Miquel et al., 2017). The right to the city is not a legal recognition but a social struggle (Kuymulu, 2013) oriented towards the collective self-government of the urban space (Purcell, 2013) so that the production of the city responds to the needs of its inhabitants and not to other commercial interests (Brenner et al., 2012).

This paradigm shift requires profound changes in all sectors (economic, social, political and cultural), from the production of knowledge to policies and practices carried out by actors and institutions at all levels. It is not merely a question to be discussed at an international conference once every 20 years. All institutions need to be forced to take concrete measures to promote greater urban social justice at local and global levels (Pascual, 2016). A struggle that is beginning to gain from the transformation of discourses, that is, from the identification of the causes of the problem and its possible solutions, and from the power relations that determine them (Kipfer et al., 2013). A process that cannot be led by the state, but arises from the creative experimentation of those who suffer the most from exclusion and segregation insofar as their needs become the engine of change in *"motivation, mobilization and Commitment"* (Max-Neef et al., 2010: 34).

The role of experts and professionals will not be to lead the processes of change, but to put themselves at the service of the excluded communities to make visible the structural causes of their exclusion and support them in their efforts to realize their rights (Vidal, 2009).

This vision of the role that professionals and experts must play implies important challenges regarding the training they must receive in the numerous disciplines related to the production of the city: architecture, urban planning, engineering, law, sociology, economics, etc. These disciplines should begin by incorporating the socio-spatial justice and sustainability approaches into their curricula if they really want to respond to the challenges of 21st century cities and not to other interests (Ngau, 2013; Zarate, 2017).

"In our opinion, it is time for the academic community to seriously rethink and redefine its role in society and in sustainable development efforts. This may require changes in how universities conduct operations, teaching, and research.... More than ever, holistic and cross-disciplinary initiatives are needed to link academic into a truly sustainable learning environment and experience." (WEF ISCN-GULF, 2017: 3)

"...is the time to implement a 'very different educational imagination' – one with equity at its core ... Listening and responding to communities who have in the past been 'excluded, silenced, marginalized and ridden over' and fostering meaningful connections with them." (Smyth, 2012: 9-11)

It should also be understood that exclusion and poverty are not only a matter of material dispossession, but above all a political issue, related to the position in the social space and the linkage that is established with the rest of the power structures. In this structure, professionals and experts are not neutral actors, as is often wanted to make them see. If they really want to promote urban social justice, they must put themselves at the service of people and communities private of power to increase their capacities and support their struggles (Freire, 1970, Frediani, 2007, Elizalde, 2007, Cabrera, 2015). They must be willing to give power, and to prioritize the interests of these communities over other possible interests.

As far as urban planning is concerned, this is a crucial question, insofar as planning has been systematically conceived as an instrument of control at the service of established power (Sevilla-Buitrago, 2008, Ngau, 2013), As an instrument it can be transformed or re-created to become a relevant tool to combat socio-spatial inequalities.

"Urbanism must return to life, but this time not to destroy or discipline it, but to open the doors: new tools will be necessary, new methods still to be done" (Sevilla-Buitrago, 2008: 157-174).

"I was more interested in the ways that planning could be used to ensure equitable distribution of resources and services.... I saw planning as a tool for social engagement" (Ngau, 2013:6)

"Facing these challenges undoubtedly requires a personal, ideological and political commitment to the field of urban research and management, with colleagues and with the generations that are forming." (Cabrera, 2015:468)

Keys to forming promoters of socio-spatial justice

The question that arises below is therefore how to move from traditional training on "urban development" to a training centred on the promotion of socio-spatial justice. Or in other words, how to move from learning the design of the "formal" city to learning to promote the co-management of urban space, in order to promote "the right to the city" for all people and to address the challenge of the widening gap of socio-spatial inequalities in cities around the world. It is considered that this learning must be collective, active, integrative and critical.

“In both stages, and incrementally, students develop a critical understanding of the ways that the social and the spatial are entwined in urban space through devising and conducting action-oriented and people-centred acts of design research. Students actively engage with ...local communities, and the material conditions and socio-political complexities of a place.... knowledge are recognised as a collective production... Our educational approach starts by questioning the role of the expert and the way in which discourses of expertise are constituted in particular contexts... The Studio unfolds through a continuous dialogue within workgroups – often through role-plays – whereby design is understood as a non-linear process, influenced by the multiple and often divergent aspirations of different parties” (DPU, 2015:6-7)

“Social issues, inclusiveness and working more closely with community-based organisations were to be at the forefront of our programme.... Our students must be equipped with the relevant skills to address dynamic urban growth and inequality.” (Ngau, 2013:10 -19)

First, it must be assumed that the generation and production of knowledge must be understood as a collective effort between different actors (community organizations, public and private institutions, etc.) (DPU, 2015). A knowledge that must respond to the real needs of the population (Cabrera, 2015) and therefore be rooted in the concerns and challenges of the affected communities, who must be the protagonists of their own process of change (Max-Neef et al. Ngau, 2013, Belda et al., 2016). The professionals, researchers and / or experts are only an actor at the service of this communities.

An active training, that is oriented towards the resolution of real challenges (WEF ISCN-GULF, 2017), located in a specific context (DPU, 2015) in which students are invited to get involved to participate in the actual processes of promotion of greater social, spatial and environmental justice (DPU, 2015). In the specific case of training for the promotion of urban social justice, students should be immersed in real contexts of vulneration of the right to the city in order to be able to know both the needs of the excluded communities and their capacities to prioritize and respond to the challenges they face.

An integrative, trans-disciplinary learning with the capacity to: link theory and practice; understand the complexity of the object of study, that is the diversity of elements and actors involved and the relationship between them; make visible the conflicts of interest and mediate to overcome them in favour of the excluded community in order to rebalance as much as possible the initial imbalance of existing power relations (Álvarez et al., 2015).

A critical learning, as the result of the process of reflection-action. A learning that allows to make visible the structural causes of the exclusion as well as the capacities and collectives proposals co-produced with these communities to overcome them.

These pedagogical dimensions, explored in the previous paragraphs, are considered the starting point for urban education to really contribute to the fight against inequalities, both local and global, in the production of knowledge and of the urban space.

Following we present the results of the case to finally draw conclusions.

From theory to practice: The case of the Observatory of Removals in Brazil.

According to the 2017 Census, Brazil has more than 6 million unoccupied properties, a number higher than the housing deficit, which is 5.4 million units, as a result of the lack of housing policy coupled with the high concentration of property on the part of the dominant class. Culminating in a problem of complex solution that is tangent to particular interests.

A group of studies formed by professors and students from the University of São Paulo (USP), named Labcidade, was born in 2009 to understand the transformation of the urban environment and its process of peripheral expansion, supporting the diffusion of research related to the theme. One of the developments of this group of studies is later transformed into the Observatory of Removals that is consolidated in the year 2012 with the purpose of studying the appropriation processes and the informal city in the metropolitan area of São Paulo.

The main objective of the Removal Observatory is to make removal processes visible in the metropolitan region, giving voice and empowerment to the affected communities, through their participatory actions.

The project achieves its objectives being directed from two fronts, the collaborative mapping and collaborative actions both in the communities. In this way, the project is redefined in the field of action research, broadening its objectives of identifying, mapping and understanding at different scales, people and groups affected by forced removals from their dwelling areas and their causes (relatório final de projetos, observatório de remoções; 2016).

The map is co-produced using a GIS-based platform where everyone can contribute to the database by uploading information about affected communities with help of any device that has access to the internet. The purpose is that the platform can be appropriated by affected families, communities, lawyers and researchers in the area offering them a more accurate and reliable database.

In addition, for a participatory mapping the actions also are dividing between: Facebook site, which has helped communication between communities and researchers, as well as creating various practical activities and the “Pill’s project”, which are short quick videos published on Facebook and Blogs networks that help to visualize the living conditions of those affected.

A second step would be the project “*Observando de Perto*” (Observing closely), which, apart from the analytical exploration of the case for research purposes, the Observatory’s action may also, together with those affected, produce against proposals for expropriations, as well as a greater knowledge of the socio-spatial reality of settlements, instrumentalising this population, in order to strengthen it in the struggle for the right to decent housing and the city (FAU-USP, 2019). The final report of the project was published in Portuguese, helping to disseminate the actions carried out by the Observatory for a greater extent.

The project has grown a lot in recent years with a help of the most varied resource, one of them was The Ford Foundation with a financial support. Besides this, the collaboration and support for the creation and feeding of the web platform has been among them: residents and former residents of areas affected by removals and entities of society involved with the agenda; partnerships with social movements for the housing rights; besides to readings of databases of the public defenders of the city and news published in the press.

Today, the project encompasses approximately 868 cases of threats of expropriations and partial expropriations in São Paulo, Santo André, São Bernardo do Campo, Diadema and Mauá, reaching 287,926 thousand families; esteem almost 1 million people under these conditions, which would be equivalent to 10% of the total population of the municipality of São Paulo.

In any case, we can detect that the actions created have actively contributed to solving the most urgent issues of these communities, since these collectives gain visibility and empowerment, in order to strengthen their networks and stimulate the formation of a common identity.

However, it was possible to establish a general and behavioural view of these evictions by identifying a pattern in the eviction processes in the metropolitan area of São Paulo, as well as to draw a profile of these communities, reasons, actors involved and procedures. Most of them are made up of a population of greater social vulnerability whose conditions of occupation are linked to the deficiency of the State’s public housing

policies. These populations often originate from expropriations; eviction of formal or informal rent, high occupation of clandestine plots in risk areas such as favelas and slums or even housing complexes, prison population and homeless.

The practice of generating a mapping of these communities and of making this information public, besides serving as a denunciation of the precariousness of the public housing system, helps in strengthening the resistance of the affected communities, enabling the articulation between communities that go through a similar process. In this way the mapping opens the fields to other researchers and collaborative actions.

In a country where the lack of public policy and guaranteed access to quality housing benefited the concentration of private property by a dominant political elite makes throughout Brazil's history "illegal" occupations become the main form of access to housing and the right to the city by the most vulnerable population. However, all the actions mentioned demonstrate that collaborative activities show the ability of communities to make effective access to the city, even though in practice their rights are not guaranteed by the State.

Finally, as a great challenge, the replicability of this model is being studied at the moment, being able to extend the platform at national level, the compatibility of the database created with other Brazilian universities will help to highlight the problem on a national scale, and that could be used for the elaboration of a national plan of housing policies.

In conclusion, we must see the action-research initiative as a break from the historical and classicist model where the university should serve society. It is important to affirm that collaborative action is not simply a transfer of knowledge between the university and community, but construction of knowledge together, as a shared process of knowledge. This active sharing between researcher and resident is based on libertarian education, in which to build knowledge together one must recognize oneself as being unfinished as proposed by (Freire, 1970; Angileli, 2007).

In this way, it is intended to make the debate an inclusive, participatory and educational process for both sides, horizontally. When locals, leaders, social movements recognize themselves as producers of knowledge and not only viewers become more critical and aware of the process in which they live (of whom I serve, and what patterns I reproduce) (Angileli, 2007).

The role of the University in the promotion of socio-spatial Justice

In a context of persisting multiple forms of poverty and growing inequalities, it is our duty as educators and professionals to put our knowledge and skills at the service of the excluded communities to fight with them so that their right to the city becomes effective.

"It is the responsibility of the planning profession – including planning educators – to change perceptions... We have realised that we need to approach planning in terms of how it can be of value to people, rather than as an imposition from above... Universities can be part of this process. They can be innovative and responsive; but they cannot push for change in isolation." (Ngau 2013:17)

In this article, it is shown how the Removal Observatory has contributed to produce a collective and integral knowledge with the set of actors involved: Residents, university, social movements, professionals, etc. An active training, oriented towards the resolution of real challenges (WEF ISCN-GULF, 2017), in which students are invited to get immersed in real contexts of vulneration of the right to the city in order to be able to know both the needs of the excluded communities and their capacities to prioritize and respond to the challenges they face. A critical learning, as the result of the process of reflection-action. A learning that allows to make visible the structural causes of the exclusion as well as the capacities and collectives proposals co-produced with these

communities to overcome them. These pedagogical dimensions, are considered the starting point for urban education to really contribute to the fight against inequalities, both local and global, in the production of knowledge and of the urban space.

The experiences presented in this work have contributed to show that housing exclusion is a structural issue and that the way to its solution goes through empowering individuals and their communities to make their rights effective. The case studies show the relevance of the co-production of knowledge between different actors (affected, social movements, academics) and of different forms (formal and experiential), and their potential to make visible the struggles of socially excluded communities as well as their capacities to elaborate collective proposals that allow their right to the city to become effective.

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Researching schools vs. researching with schools. An urban research laboratory experience in an Italian high school

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Abstract: We have tried to develop an innovative way to approach educational practice to promote synergies between school teaching, academic research and society. Through a transdisciplinary approach we have tried to prepare high school students to the challenges of researching, thinking and therefore planning about their own territory. This experience was conducted with a group of 23 teenagers from a high school in the periphery of Rome, elaborating an original project of work-based learning inside the school. As tutors of their work, we tried to guide the students divided in five research groups, each one with a specific focus related to the territory where their school is located to the creation of a research project. Students were introduced to different tools with the aim of creating an interdisciplinary methodology, like interviews, focus groups, production of emic maps. Besides the nonetheless interesting results of all the research projects carried on by the five groups, what the participants learned has been a more complex way to reflect and argue upon urban territory, trying to manage change. In our view, this approach to deuterio-learning can be seen as a way to give future citizens the tools to imagine and design the future of cities.

Keywords: educational practices, work-based learning, interdisciplinary methodology, deuterio-learning

Introduction

In this paper we will describe our attempt to develop an innovative way to approach educational practice, not only to give specific notions to students, but also to promote synergies between school teaching, academic research and society.

This work envisaged several objectives. From the point of view of "pure" research, we wanted to increase our knowledge about the relationships of the School with the surrounding territory, trying to observe it not as a place or an institution, but as a subject present within a specific territory, with which it must necessarily confront, with the aim of opening a new strand of research in the field of urban studies and urban planning through the study of this report carried out in an interdisciplinary way. The attempt is therefore to address such a large issue through a "micro" approach, focused on a small case study, thus allowing the beginning of a discussion on the topic. In particular, we wanted to do this through the observation of the relationship that students from secondary school have interwoven with the territory where their institute is situated. This would also be helpful in understanding how the new generations confront the urban space, in what ways they think about it, represent it and act on it.

On the other hand, we wanted to provide the students with tools necessary to learn to think reflexively about themselves, their city and their role as citizens. The goal was to get them to figure out how to imagine the future as a cultural fact (Appadurai, 2013) and how to design it, thus imagining also the future of the territory where they live. These instruments, in particular, are the methods of qualitative research, particularly in the field of urban anthropology, urban studies and architecture.

In fact, we started from the conviction that the future should not be simply considered as what follows the moment in which we live, but as a cultural project whose participation must be extended to as much people as possible. According to Appadurai, the openness to the practice of planning the future goes through the diffusion of the idea of research as human right.

This is why it is important to deparochialize the idea of research and make it more widely available to young people with a wide range of interests and aspirations. Research, in this sense, is not only the production of original ideas and new knowledge (as it is normally defined in academia and other knowledge-based institutions). It is also something simpler and deeper. Research is the capacity to systematically increase the horizons of one's current knowledge, in relation to some task, goal, or aspiration, (ibid.: 282).

The ability to have aspirations is also connected with that of planning, a fundamental ability to distribute in an equal way for the whole world, to allow each individual to put into practice the work of the imagination that processes the future as a cultural fact.

With this work we have also attempted to integrate more two areas of study that in recent years are conversing but still not close enough, such as social anthropology and urban studies. The work has in fact been done as a moment of research-learning, in which the ethnographic data has come to build itself in the interaction with the subjects of the research, which have at the same time learned the basic methods of the research in the city. In fact, we have built as a tool of work an urban research laboratory within which the students would be actually in charge of a piece of research and we would be only their supervisors. The results of their research and what we can deduce, not only tell us something about the relationship that the new generations of citizens have with the territory, often a not-so-good relationship due to great difficulties in planning the future, but also tell us about how much often in Italy the school can become a non-significant place or a non-place at all, except for the personal initiatives of teachers or headmasters particularly interested. The good news that results from our work is that if the researchers decide to confront more strongly within the schools, they can achieve great results by simply letting students know the research methodologies to be applied to their daily lives and to the analysis of the territory in which they live.

Field and methods

Our workshop was held inside the Liceo Orazio, a high school focused on humanities of Montesacro, a neighbourhood in the northeast outskirts of Rome. Before we started our work, we confronted with some of the teachers. These preliminary meetings brought out two main problems concerning the possibility of having students undertake different paths aimed at stimulating their active participation: the distance of the university and the poor quality of the paths of Alternanza Scuola Lavoro -ASL- (school-work alternation, moments of recent introduction in Italian schools, in which student are made acquainted with public or private working environments in the context of training placements).

On the one hand, in fact, in high schools, in particular in such high schools as Liceo Orazio that imagine the student as "of course" destined to continue his studies, since it is already gaining access to an education deemed of excellence, the university is perceived as a distant institution, that does not give the right importance to the work of the high school teachers, as if this was a lesser value, and not interested in being seen in schools, if not

when obliged. This sensation is renewed with the inauguration of the ASL routes. If, in fact, teachers and administrative managers of schools can understand that the paths of ASL within companies are more aimed at practical activities, or otherwise do not expect some great commitment on their part, many are disappointed by the scarce commitment of universities that offer very few projects compared to the actual possibilities and only rarely able to confront the student with a “university mentality”.

All this relates then to a third and much more serious problem identified by the teachers: the lack of moments and spaces in which the children, rather than simply having to assimilate notions, could put to work moments of self-reflection, reflecting about themselves and the context where they live.

So, we decided to create an urban research laboratory that, beyond its objectives of research and teaching, was based on a precise methodology, that of deutero-learning (Bateson, 1972)

Rather than "to teach" the participants of the project how to do research through frontal lectures, we decided first of all to bring out key topics of social research from the reasonings made by the students in their everyday life experiences. This is not an easy task, because the pupils were interested in talking mainly about big topics and they could hardly find themselves in their closest contexts. The methodology used can be defined as a method of research-learning, because the ethnographic data comes to build not so much and not only according to the observations that we could accomplish once inside the school, but mainly originates from the reflections made by the students themselves once they have been engaged in research paths. The attempt, in short, was to identify a communicative strategy to try not to rebuild the “teacher-student” dynamic, as a dynamic that would have obliged them to perform the tasks assigned to us and nothing more, but to set moments of deutero-learning instead. This neologism proposed by Bateson (1972) refers to a type of collateral learning, whereby in the moment of learning something one learns to learn, to build in one way or another the plan of the real and the flow of the events; it is according to Bateson a process of learning not dissimilar to the ways in which we acquire the mental habits that constitute our daily attitudes. In this sense, the proposal of our work was not so much to teach the method of social research, but above all to make the students know and assimilate a self-reflective attitude, which seems to us not dissimilar from what is proposed by Appadurai with the concept of research as human right.

We tried to achieve this result with communicative strategies through which we tried to propose ourselves as intermediate figures, positioning ourselves halfway between students and professors. While remaining their tutors and then invested with a certain authority, as well as the task of expressing a judgement on their work at the end of the project, we still tried to make ourselves accessible, with stratagems that might appear insignificant, but that were instead functional in their presenting themselves as "opposites" compared to the rituals that build the "time" of a school lesson. We therefore asked the students to call us by name and not by surname; we would often tell anecdotes of our lives to let us know and emphasize how we are generationally closer to them than to teachers; rather than position ourselves in front of the kids we preferred to sit with them and spread out in the classroom. Finally, we created a group on WhatsApp in which we can chat together, where to provide service communications but also joke.

All of this clearly involved a certain challenge in managing the work of students who, once understood our "lack of firmness", try to exploit it more than once to get out of their homework or take long breaks. It was a behaviour legitimate to expect, absolutely consistent with their role as students. But the more our figure moved away from that of a teacher and the work they have to do was different from those of the "task", the more we noticed that the willingness to cooperate increased.

In addition to these communicative tricks, we also worked with some classical instruments, replacing or at least masking our explanations with moments of focus group and brainstorming. So we tried to get to the concepts that we are interested in transmitting always passing through the interpretation of the pupils, trying to

understand what according to them meant to do research in a general sense and then what according to them would have been interesting to investigate, helping them to articulate their observations.

Development of the project

Between November of 2017 and April of 2018, for a total of 70 hours, we held the workshop "the job of the researcher: Doing research in the city", which involved a group of 23 teenagers between 15 and 18 years.

After a first introductory meeting in which we introduced ourselves to the students and told them our research work to give an idea of the variety of topics that can be tackled in urban research, we organized different meetings in the form of brainstorming, circle time and focus group to get together with them to define what it means to do research (the most interesting answer was: "To have a purpose"), on what can be the technical and methodological tools in the hands of a researcher and what it means to do research in the city.

To familiarize the children with these issues, we also ask them to make some emic maps (Micciché, 2009) of the neighbourhood where the school is located, also as an exercise to understand the ways in which everyone perceives the space around them differently, then to propose themes that they would have wanted to face during the research, so that we could orient ourselves in the drafting of "calls for research" that we would then have written for them.

If in the drawings there was no relationship between the school as an institute and the territory lived by the pupils, with the latter that sometimes disappears, or with the school itself that often remains relegated to a corner, point of departure or arrival of the paths traced by the students, but never filled with particular connections with the rest of the neighbourhood, the research proposals seemed to aim to explore the possibility of an opening of the school boundary to what is their everyday life out of school spaces.

«Why students do not use the common spaces offered by the school»

«Why are there no beautiful murals in Montesacro? »

«Why are there so many fascist posters in the neighbourhood? »

«Why do some barbers in the neighbourhood don't want to cut girls' hair, even if they have short hair? »

Starting from these cues and from others born during the first meetings, we divided the students into five groups and assigned each of them a "call for project" invented by us, which they were required to participate responding consistently to our requests, as if they were actually getting funds for their research.

1. The first group should have presented us with a proposal for projects on the subject: "The other, the professor. The uses of the school space by the teachers", imagining having to make a real ethnographic survey of teachers of the school. The goal was obviously to put students to the test with the need to reason their relationships against individuals very different from them;
2. A second group would have to answer the call called: "In my days... The generational prejudices on the uses of space "thus dealing with comparing the use of the space of the neighbourhood for leisure purposes between their experience and those of adults who they could interview;
3. The third group was asked instead to respond to the call entitled "To dwell in Montesacro, an approach between history and biography.", thus asking to gather the life stories of the neighbourhood and to tell its story through the experiences of the people that they would interview;

4. The fourth group would instead focus on the production of stereotypes in a work titled "Ways of Being. Distinguishing themselves through the body and through space", which asked students to think about how through the management of their own bodies and the choice to attend certain places people try to adhere to certain styles and tastes;
5. The fifth and last group had to think about the characteristics of space that are not immediately visible or tangible in the call "The invisible space", in which we asked them to reason about those symbolic characteristics that provide certain places determined meanings, stigmas, atmospheres, etc.

Although always through examples taken from their everyday life, in the calls the students were asked to face anything but simple concepts.

So, on returning from winter holidays they brought us their proposals in response to our calls. Each project proposed by them, which we will now see in detail, would have then be developed in the following months. This also meant taking the pupils on the field, where it was necessary, to make them do interviews, photographs, "walks" to notice the spaces of the neighborhood, etc. Back in the classroom we then elaborated all the data obtained in real research, which the students then presented to Sapienza University in front of a public composed of PhD student and professors.

1. The first group proposed a work entitled: "The Other: the Professor. The relationship between student and professor after the new technologies", in which they reflected on how the relationship between teachers and students has changed after the arrival of digital technologies in school spaces. The students conducted several interviews with both their companions and some teachers, coming from the definition of two categories of technologies present in the classrooms: the official ones, those that were introduced on ministerial decision, as the class computers or interactive whiteboards; the unofficial ones, i.e. the various smartphones that students and professors always carry with them and which are sometimes used also for educational purposes but often as recreation;
2. The second group built a research entitled "The use of space in the free time: a generational confrontation", both through various interviews with inhabitants of the neighbourhood, and the drafting of a personal diary drawn up by each member of the group and on which they have reasoned all together. Their work led them to conclude that the ways of using the public space of the neighbourhood in their spare time have only changed relatively over the years, showing how it distorted the idea that current generations would spend less time out of their homes than their parents;
3. The third group interpreted the task of collecting life stories of the neighborhood by focusing in particular on their school, investigating through special "stories of school life" how uses of school spaces in the years has changed, in a search entitled "To dwell in the Orazio. The use of school spaces between yesterday and today ".
4. "Are we just what we show? The stereotypes between prejudice and orientation", is the survey proposed by the fourth group. Methodologically, this group used both semi-structured interviews and questionnaires, based on photos that were shown to the interviewed. In their conclusions, they highlight that, as well as people, even places can undergo stereotypes that change the ways in which everyone can use them. These stereotypes, even if sometimes negative, would serve people in order to be able to orient themselves more easily in the space dividing it into, sometimes too rigid, categories;
5. The fifth group finally focused on the ways in which the area where they are located is contested by various political parties through the use of posters and writings on the walls, which they go to create what the student have called a "written landscape". In the research entitled "metonymy or Synecdoche? The lettering on the walls and the image of the neighbourhood.", the pupils observed how the visual

experience of a place contributes to give to the latter certain meanings, through interviews and photographic reportage.

Besides the nonetheless interesting results of all the research projects carried on by the five groups, what the participants learned has been a more complex way to reflect and argue upon the urban territory, trying to manage change. In our view, this approach to deuterio-learning can be seen as a way to give future citizens the tools to imagine and design the future of cities.

But what we noticed during our work with the students, which was the initial difficulty to get involved in thinking about the neighborhood where they live and go to school, it is present on their daily background. On the one hand, this was totally out of the classical schemes of school education, which instead always led them to imagine the school space as strongly separated from that of the neighborhood, on the other, this asked them to imagine themselves as active citizens, which did not seem to have happened very often.

This has led us notice how little the school is present as an active subject within the territory, but only as an object. In a nutshell, the school does not seem to produce relations with the territory, nor stimulate the children to do so. The relationship of the children with the school itself also seems to have become increasingly less of affection (even when it was hateful) and increasingly "professional". The pupils we worked with in fact managed their relationship with the school with the same pragmatism with which a worker organizes his own holiday plan. It is necessary to manage the hours of ASL, the other laboratorial hours and the possible absences to spend at strategic moments.

But the students are the first to complain: they would like to find within the school the tools suitable to orient themselves among the possibilities of their present. As we have seen, these needs to be able to find in school what is outside is manifested even as we work together with their projects. In the last meeting, in which we asked the students to give us suggestions to improve the project for the next years, the necessity to meet the territory of Montesacro outside the Orazio boundaries was underlined several times.

Conclusion

Through the construction of an urban research laboratory within a high school of the outskirts of Rome, we have created a research project that would allow us not to investigate "the school" but to investigate "with the school", more precisely with its students.

This research-training pathway, activated through the methods of deuterio-learning and in particular by building a context in which students were required to be themselves a group of researchers supervised by us, allowed us to achieve multiple goals.

In fact, we have increased our knowledge in relation to the school's relationships with the surrounding territory, trying to observe it not as a place or institution, but as a *subject* present within a specific territory, with which it must necessarily confront, with the aim of opening a new strand of research in the field of urban studies and urban planning through the study of this report carried out in an interdisciplinary way. In the same way, we discovered something about the students' relationship with their school, coming to notice how often it refuses to let them be in contact with all that part of the world outside the school walls, leaving them without tools to imagine themselves as active citizens. All this, obviously with the necessary exceptions constituted by professors or particularly proactive principals, is not actively supported by the ministerial institutions.

At the same time, however, we have tried to fill these problems at a micro scale, providing the children with useful tools to learn to think about themselves, their city and their role as citizens. By deprovincializing research, we have tried to provide young people with the tools to manage and orient the huge range of interests

that are able to develop into more precise aspirations for the future, but also tried to build bridges between school and University.

Thinking about future developments of this research branch, we hope that researchers and in particular universities as public bodies will be more involved in school environments, trying not to look at them only as places where to collect qualitative or quantitative data but rather as places where knowledge can be produced with the children.

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Teaching planning for the transition

Reconfiguring Teaching/Learning/Action/Research: Apparatus for Socio- Spatial Transformation with/in Disadvantaged Rural Regions

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Abstract: The following article presents an adapted theoretical and methodological framework used to rethink and analyse social innovation at work in socio-spatial transformation. The framework is operationalised through a novel teaching/learning/action/research programme that supported local and collaborative spatial planning with/in a disadvantaged rural region in the United Kingdom. A *diffractive* reading of Gabriel Tarde with Karen Barad leads to the dimension of ‘spatial spread’ within the concept of social innovation being reconfigured through the posthuman turn, providing a novel apparatus for collaborative transformation through experiment and situated learning.

Through this apparatus, which draws on advances in critical cultural theory, in particular Barad’s ‘Performative Posthumanism’ the paper reveals how material–discursive practices are agential in the reconfiguration of boundaries and the distribution of agency, calling into question ‘stubborn dualities’ as in this case, the teacher-researcher, activist-professional, local-nonlocal and human-nonhuman.

Keywords: Social Innovation, Situated Learning, Collective Agency, Spatial Planning with More-than-humans

Introduction

There is growing body of evidence supporting the claim that social innovation is well placed to drive social change, meet local needs and address today’s most pressing global challenges (e.g.: Ayob et al. 2017, Defourny et al. 2014, Howaldt et al. 2014). And, how social innovation (SI), is put to work through the social and solidarity economy (SSE) to operationalise territorial transformation (Moulaert et al. 2013) and more recently, addressing local development challenges in disadvantaged rural regions (e.g.: Bock 2012, Christmann 2014, Richter 2016, Noack and Federwisch 2018). However, as the research within this paper shows, local needs do not always align with wider regional, national or global strategies for sustainable development and transformation. While social enterprises, co-operatives, and community based organisations often have strong views about local environments, many non-professional SSE



organisations, especially in disadvantaged rural regions can ‘lack specialised knowledge and training (EC 2013). According to further reports, social innovation and the SSE has the potential to drive social change but is hampered by ‘insufficient knowledge..., limited support of grass roots and social entrepreneurship activities, poor diffusion and little scale-up of good practices’ and further by ‘fragmented capacities and skills.’(BEPA 2010). This lack of specific knowledge, expertise and coordination between spatialities can also inhibit the spread of social practices, which according to some literature (e.g. Howaldt and Schwarz 2010) is constituent to the concept of social innovation. This raises the question: how is connectivity made across territories and, can it be improved to co-generate and transfer knowledge and spatial practices supporting the SSE deliver global, regional and local socially innovative and democratic strategies towards low carbon, resource responsible and fairer societies. In this contribution, I develop the assumption that universities, through their unique positions as part of wider research/practice assemblages are well placed to fill the void in ‘specialised knowledge and training’; improve spatial connectivity; and, through an experimental learning approach cut together with contemporary design-thinking strategies, directly support the social and solidarity economy deliver carefully conceived yet, novel solutions to address global challenges in/between local situations. To aid this objective, the article sets out a theoretical framework to clarify, analyse and rethink the problem of connectivity, co-generation and spatial spread. It attends to the specific research question; how, within such assemblages do specific practices function to co-generate and spatially spread social innovation within the field of sustainable development and socio-spatial transformation.

Based on recent theoretical advances the paper begins with a brief description of social innovation as a transformative force active within the SSE. The following section illustrates the broad spectrum of SI, highlighting how it is operationalised in territorial transformation and more recently, in the development of disadvantaged rural regions with reference to SDG17. This section ends by bringing to light some of the contradictions at work in sustainable development and spatial planning in the U.K., providing context for the following empirical data under analysis. A short discussion addressing collective learning within SI follows, with reference to SDG 11. The paper plots a precise course showing how social innovation cuts across and connects the social and solitary economy, education/research and spatial planning and transformation. I establish a theoretical and methodological framework to rethink and analyse the diffractive force of spatial spread within social innovation drawing on advances in critical cultural theory, in particular Karen Barad’s ‘Performative Posthumanism’ Here we find the thrust of the argument: by attending to how certain boundaries are enacted, we may begin to pursue a more democratic and trans-disciplinary apparatus for transformation. Through this framework, empirical data from a single case study is analysed to reveal how specific practices enact boundaries in/between the fields of spatial planning, civil society and higher education.

Social Innovation and Social and Solidarity Economy

In transformation research innovation and new social relationships between individuals, civil society and states, as well as the economy and science are paramount to supporting transformative change (e.g. UNECE 2012). New forms of social contract and joint responsibility rely on democratic governance, a spirit of participation and an obligation towards future generations and can be enacted through the SSE (WBGU 2011). In parallel to this field, social innovation is described as a process through which social change emerges, where new social relations (e.g.: Ayob et al. 2017) and social practices are intentionally reconfigured (Howaldt et al. 2014) to better satisfy the unmet needs of a society (e.g.: Ville and Pole 2009, Zaph 1989). Such new combinations of practices engendering social change may be regarded as

collaborative and participatory (e.g.: Moulaert 2013, Pestoff and Hulgård 2016), achieving empowerment through democratic governance and co-production (e.g.: Pestoff 2009), and are exchanged through mechanisms of non-linear, social learning (Bock 2012, Howaldt et al. 2015, Moulaert et al. 2013). Novelty is strongly associated with these practices (e.g.: Rammert 2010, Zapf 1989) however, not necessary new universally, but where pre-existing practices spread spatially and become adopted in a new locations (e.g. Christmann 2014). These fields of research clearly overlap through social change, participation and democratic governance, but where transformational research aims towards, as Karl Polanyi (1944) referred a, ‘Great Transformation’, social innovation can provide insight into the microprocesses and mechanisms agential in change. To this end we may draw out three interrelated dimensions of SI to help orientate the study, these are: *social practices*; *spatial spread* and; *social change*.

Where social practices¹ are reconfigured meeting specific, often localised needs through which new social relations emerge. These practices are typically diffused, or spread spatiality and together these dimensions, through a participatory framework, engender democratic social change. It is the dimension of spatial spread to which this article attends and aims to add further depth.

Social Innovation in Territorial Transformation and Rural Regions

Moulaert et al. (2017) make a compelling case for mobilising the concept of SI in territorial development to ‘trigger transformation’. Through an historical perspective, the authors describe SI as a continuum marked on one side by ‘a practical organisational stream’ as a driver of innovation and value creation, often displayed in social businesses. Whereas, the other side is characterised by ‘proponents of a ‘territorial development’ approach, fostering SI as a concept to meet human needs and aspirations, but also for political mobilisation among vulnerable and marginalised communities’ (Moulaert et al. 2017, p.6)². The analysis shows an historic relationship between SI as force in urban neighbourhood renewal and as potential for territorial transformation and reveals a gap in knowledge as to how SI and the SSE is operationalised in rural areas. In Dargan and Shucksmith's 2008 review into social innovation in rural areas and the LEADER programme the authors conclude, it is difficult to promote local development in places with no history of collective action and, how vital both local and external networks are in rural development and innovation. Supporting this claim, other scholars promote an hybrid approach to sustainable local development in rural regions requiring the interdependency of local and external resources, capacities and networks, including rural-urban linkages for success (e.g.:Bock 2016, Ray 2006, Shucksmith et al. 2016) and underpinned by SDG 11A. Furthermore, Howaldt and Schwarz (2010) note, for the success of social innovation ‘the cooperation (quality) of heterogeneous actors and the existence of intermediary arrangements regarding the organization of processes of collective learning, knowledge transfer, the exchange of explicit and implicit knowledge and at regional and/or local level seem critical...’. Knowledge readily available to businesses and academics on say, examples of best practices

¹ Social practices, according to some are specific, often repetitive forms of ‘action’ or ‘praxis’, ‘with intentional or unintentional political implication’ (Ortner 1984). According to Schatzki, practices are ‘a temporally and spatially dispersed nexus of doings and sayings’ (1996), where the individual is only a
² Moulaert points out that in ‘early 2000’s the neighbourhood and community (re)development movement adopted sustainability and food security strategies providing the basis for current social and ecological movements’ (p.18).

is harder to reach for local volunteers or local entrepreneurs pressed for time and money (Mercator, 2012). Here we are reminded of SDG 17, which emphasises the need for multi-stakeholder partnerships as ‘vehicles for mobilizing and sharing knowledge, expertise, technologies and financial resources to support the achievement of the sustainable development goals in all countries’ (UN SDG 17).³ As this literature shows, the force of social innovation in territorial development has the potential to support connectivity not least through ‘intermediary arrangements’ and ‘collective learning processes’. However, where these connections do not already exist barriers to development are evident possessing a significant challenge to sustainable development.

Sustainable Development, Participation and Spatial Planning in the U.K

‘The purpose of planning is to achieve sustainable development’ (DCLG, 2012), reads the first sentence in the ministerial foreword of the National Planning Policy Framework (NPPF), a new tier of local planning policy introduced by the British government in 2012 to promote ‘a shift in power away from central government towards local people’ (DCLG, 2011). This is followed by, ‘Sustainable means ensuring that better lives for ourselves don’t mean worse lives for future generations’ (DCLG, 2012 p.i). And, ‘Development means growth.’ (ibid p.i). Through the NPPF the government intended to introduce and redirect the planning system towards a ‘presumption in favour of sustainable development’, where, ‘development that is sustainable should go ahead, without delay’ (Conservative Party 2010). The NPPF cites Resolution 42/187 of the United Nations General Assembly which, following the Brundtland Report defined sustainable development as ‘meeting the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED 1987). Up until the publication of the NPPF, the U.K. had signed up to 5 guiding principles of sustainable development set out in a 2005 strategy, Sustainable Development: Securing the Future.⁴ However, despite much criticism (not least from the parliamentary select committee appointed to review the reform)⁵ the NPPF refused a comprehensive definition, referring broadly to the three pillars of sustainable development (economic, social, environmental) alighted to but missing the additional detail of the UN Rio+20 summit. The vagaries around what constituted sustainable development continued to haunt the planning reforms and provide uncertainty at local levels. How these rather abrupt and fundamental changes had intended to be carried out and joined-up between administrative levels, remained uncertain.⁶ Neither the resources nor skills for this new type of participatory governance were available within all local authorities, nor within the local,

³ A sentiment echoed in The Lisbon Declaration – Social Innovation as a Path to a Sustainable, Resilient and Inclusive Europe, released by the Social Innovation Community, which states: ‘Civil society, non-state actors and local communities are empowered to define and address challenges that matter to them, such as climate change; And, research and innovation gives greater recognition to the contribution of civil society and the wider public; And, mainstream innovators (like technologists, firms and research organisations) take up a key role in driving direct societal benefit’(SIC 2018) .

⁴ These are: 1. living within the planet’s environmental limits; 2. ensuring a strong, healthy and just society; 3. achieving a sustainable economy; 4. promoting good governance; 5 using sound science responsibly. (SDC 2005)

⁵ Consensus provided by expert evidence from Friends of the Earth, Campaign to Protect Rural England, Town and Country Planning Association and officials from DCLG through the committee was that the definition of sustainable development within the Localism Act and proposed NPPF was insufficient.

⁶ BY 2020 councils will have experienced a 60% decrease in funding since 2010, with almost half receiving no funding from central government. (Source: Local Government Association)

voluntary SSE who was expected to deliver local sustainable development (where sustainability was ill defined from national policy level down). Compounding the problem further, the required local capacities are not evenly distributed across U.K. communities, with more deprived neighbourhoods having less resources and skill required to undertake complex planning operations than those in affluent areas, a problem especially affecting disadvantaged rural regions.

Social Innovation in Teaching, Learning and Research

As pointed out in the social innovation literature and SDG17 cross-sector collaboration, experimentation and room for social and creative learning provide preconditions for social innovation to occur. Some scholars ⁷ turn to social learning theories to account for the transactionary procedure within the diffusion of novel practices between human agents, however the following case study shows, a closely connected form of experimental and creative learning developed by Lave and Wenger (1990) may provide further scope. Whereas, social learning as theorised by Bandura (1971) relies on the replication of behaviours between individuals through observation, imitation and modeling (Bandura 1971). Situated learning occurs in a social context and drawing on practice theory provides closer attention to ‘learning by doing’ addressing *real* problems in *real* situations. Situated learning is more pedagogical in character, where social learning leans towards an examination of how societies stabilise and change overtime. Through the case study, I suggest situated learning offers a more performative and experimental notion of learning and exchange where the emphasis lies on developing novel practices through the reconfiguration of existing ones, rather than solely on the intentional motivations of human actors. Both theories do however share the notion of a feedback between the practices learnt within a context and the effects of those practices back upon the context. Such forms of experimental learning not only serve to provide education and skills in sustainable development aligned with SDG 4.7, but moreover, individuals participate and enact transformation by identifying challenges and developing new skills and practices required to meet them.

Theoretical Framework: From Diffusion to Diffraction

The mechanisms at work within spatial spread of social innovation remain somewhat underdeveloped in recent literature often relying on an implicit notion of diffusion of knowledge taken from broader innovation literature.⁸ Here, innovations, for example technical innovations are rendered complete prior to knowledge of them being diffused through networks of human actors. Such an anthropocentric view of diffusion where information of innovations is passed between determinate subjects in a linear mode is described by Everett Rogers in his seminal *Diffusion of Innovation* (1995) where, an individual or unit of

⁷ See for example: Bock 2012; Howaldt 2010; and Moulaert 2017

⁸ Howaldt et al. 2015 have provided a thorough discussion on the recourse to Tarde’s work in contemporary Social Innovation research and practice theory to which this work is indebted. The authors elaborate on spatial spread and refer to the work of Rogers. However, they stop short of introducing theoretical advances from the ontological or posthuman turn to account for the immanent and performative aspect of practice. Furthermore the discussion does not attend in detail to Tarde’s intrinsic growth but does emphasise the significance of the imitative spread of practices as an overlooked dimension of social innovation.

adoption communicates new ideas to others in the sequence.⁹ However, since this milestone publication, scholars across disciplines have begun to rethink the world beyond the human. Nonhuman agents within a network or, assemblage are ascribed equal agency as their human counterparts.¹⁰ This attendance to the agency of the world or, the ‘liveliness’ of matter (Bennet 2010) beyond that bestowed upon it by human consciousness has a political and ethical dimension taking it beyond postmodern critical theorising (Žižek 2018).¹¹ As Karen Barad theorises, agency, rather than being an attribute of the human, is instead *performed* in the *intra-action* occurring within *material-discursive* practices. It is through these practices, or *apparatuses* that bodies are constituted and the world is iteratively (re)produced or, *reconfigured* (2007). Through this turn, the spatial spread of social innovation as a real force with real consequences must be thought beyond a representative diffusion of knowledge (about innovations) between determinate human actors. Moreover, the distribution of agency within the production of social innovation must be reconsidered attending to the diffractive propagation of specific (material-discursive) practices (or, apparatus) that serve of co-generate and propel social innovation.¹²

To help rethink the diffusion of social innovation through the posthuman turn, it is to Gabriel Tarde’s work we may look. In his *Social Laws: An Outline of Sociology* (1898) Tarde describes how inventions travel along ‘imitative rays’ propelled by forces of *repetition*; hindered in their journey by counter-forces of *opposition* (like a competing idea or innovation), and; *adaptation* where many infinitesimal ideas or inventions undergo a ‘harmonising synthesis’ through a passage of ‘gradual enlargement’. It is the imitative dimension of his work that has dominated Tarde’s legacy and passed on through diffusion research. However, his law of adaptation may provide a more complex and complete picture of the dynamics of spatial spread in social innovation and the affects therein. Tarde distinguishes between two ‘very much inseparable’ (Tarde 1893) but distinct forms of spread which he figures as growth, or enlargement. That of extrinsic growth, ‘a growth in extension by imitative diffusion’, (1893, 115), here we can think of Rogers’ famous S-Curve which traces the phased adoption of innovations over time. And the second, intrinsic growth which is, ‘growth in comprehension by a series of logical combinations’(115). It is intrinsic growth that is foundational to his law of adaptation and of interest to this particular study. Tarde writes, intrinsic growth is ‘the tendency of a given invention or social adaptation to become larger and more complex by adapting itself to some other invention or adaptation, and thus create a new adaptation, which, through other encounters and logical combination of the same sort, leads to a high synthesis, and so on’ (115).^{13 14}

⁹‘The essence of the diffusion process is the information exchange by which one individual communicates a new idea to one or several others’ (Rogers 1995, p.18)

¹⁰ See for example: Anderson and Macfarlane 2011, Braidotti 2013, DeLanda 2006, Deleuze and Guattari 1987, Law 1986, etc.

¹¹ As Donna Haraway presents a, ‘...version of the world as active subject, not as resource to be mapped and appropriated in bourgeois, Marxist, or masculinist projects. Acknowledging the agency of the world in knowledge makes room for some unsettling possibilities, including a sense of the world’s independent sense of humor. Such a sense of humor is not comfortable for humanists and others committed to the world as resource’ (Haraway 1988).

¹² In a forthcoming publication I elaborate this notion, drawing further on Barad’s concept of *Diffraction*, Rogers’ concept of *Re-invention*, Uno Yoshiyusa’s *Intercultural Refraction* and Deleuze and Guattari’s *Assemblage* with Tarde’s *Intrinsic Growth* towards a more complete picture of how social innovation ‘spreads’ with/in a posthuman and immanent world.

¹³ Tarde illustrates this adaptive intrinsic growth through the example of the invention of the wheel in combination with the domestication of the horse, both of which he claims spread independently though imitation prior to coalescing harmoniously in the notion of the cart. The new proposition formed through

From Interaction to Intra-action

Differing from assemblage theory as advanced for example by Manuel DeLanda where, distinct and determinate elements connect in relations of exteriority (DeLanda 2006), Karen Barad's performative posthumanism is founded on a philosophy of immanence (De Freitas 2017), a 'one-world ontology' (St Pierre 2018) where things are already intra-connected but temporarily separated through the formation and reconfiguration of specific boundaries. In Barad's work boundaries are produced through the intra-action within material-discursive practice that perform categories, such as *nature* and *culture*. This performativity leads to 'agential cuts' through which specific exclusions are made. In Barad's ontology there are no determinate individual entities, instead in a sense all things are already hybrid and incomplete, in a continual process of coming into being. Permeating Barad's work the concept of *diffraction* is deployed in varying ways but always with a sense of waves propagating, intersecting and adapting in the co-production of new phenomena. The concept is illustrated with the diffraction pattern of light waves intra-acting with a razor blade. Under magnification spots of light are seen in areas that should be dark and object boundaries become indistinct as light waves intra-act. Here we are reminded not only of Tarde's imitative rays, but moreover of his description of a social adaptation becoming larger and more complex by adapting itself to adaptations. Like Tarde's intrinsic growth, Barad's ontology is one of interiority, or more precisely 'exteriority within' (Barad 2007, 93) where all relations are intra-active, occurring within a continually changing and expanding assemblage performed through specific (material-discursive) practices, or apparatus. Through this diffractive reading of Barad with Tarde, spatial spread is no longer the discreet citation of an innovation spanning territory; rather, it is a diffractive enfolding and enlarging of intrinsic combinations of adaptations of adaptations.

Reconfiguring Teaching/Learning/Action/Research

Before continuing, I would like to introduce a drawing (Figure 1) that maps the interactions (relations of exteriority) within a typical spatial planning project. The illustration depicts the three separate fields I have discussed so far spatial planning, civil society and teaching-learning-research and the practices constitutive of each. As can be seen, the practices are distinct and separate with clear boundaries delineating them serving to reinforce the divisions between fields. As practices move closer to each other a space at the centre opens up for collaboration between fields. Other interactions are of course apparent between practices across fields but always in a relation of exteriority. Through the conceptual framework advanced above, the following case study analyses how such boundaries between fields are reworked.

the adaption of its constitute parts is no mere summation, as Tarde points out. That is, the product of this particular set of alliances is greater than the sum of its parts. It has the character of multiplicity or as Delueze and Guattari (1983) present near a century later, that of assemblage

¹⁴ In *Anti-Oedipus: Capitalism and Schizophrenia* (1983) Felix Guattari with Giles Deleuze adapt Tarde's example to first illustrate their notion of *assemblage*, where the domestication of the horse, in combination with innovation in riding technology and subsequently techniques combine to become the warrior-horse-bow, a war machine greater than the sum of its parts and possible only, according to Guattari (2009) under the condition of the great steppe. Here we see the adaptation of innovations and their affect not only on practices and constituents of the assemblage, but also affected by and with affect upon the space in which they are reconfigured. And, as Guattari points out, within this assemblage man is more-than-human, becoming a constituent part of the machine (Guattari 2002)

The analysis addresses the specific (material-discursive) practices coalescing around one particular workshop within a three-year project consisting of many other interrelated events and practices.

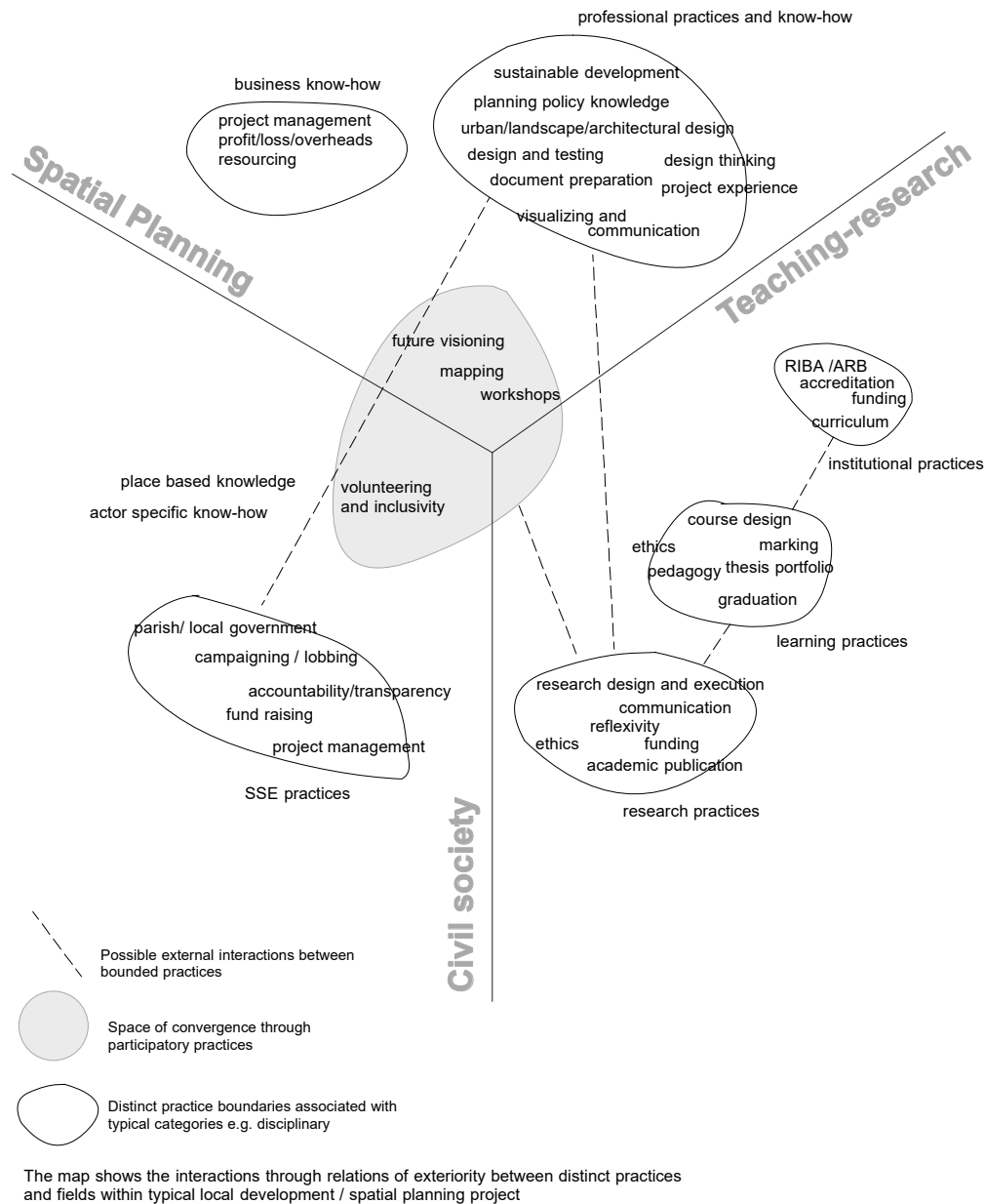


Figure 1. Interaction Map

Within the context of the new planning policy framework sketched out above, a group of academics and practitioners from the spatial planning field and construction industry designed a novel action-research and learning programme at a London university. The project acted as an intermediary, where together students, staff and other professionals supported disadvantaged communities in rural South-east England co-produce and deliver a new spatial development plan. Through a call for participants, three villages

were selected from a shortlisted to prototype the program. The region was selected as it displayed typical challenges associated with disadvantaged rural regions across the U.K. and Europe such as, perceived threats due to broader demographic changes and urbanisation processes and long-term lack of investment, access to resources were restricted and a lack of local capacities and finances were evident. Academic staff in the group had previously experimented with teaching programmes in which MA architecture students were given access to *real* situations and *real* challenges within communities. However, thus far the solutions conceived by students and teaching staff and had had little impact beyond the academic context. The new prototype programme combined situated learning practices, spatial planning practices and advanced co-design methods in participation. By linking to wider professional network students were provided with access to extensive skills and resources beyond the university context. The program facilitated a reciprocal relationship with the three villages developing novel practices for teaching and learning whilst simultaneously co-generating solutions jointly identified local development challenges in the context of planning reforms. Here we are reminded of the dimensions of social innovation set out above where novel (material-discursive) practices are spatially spread (now a process of diffractive enlargement), to reconfigure new social relations through participative (intra-active) procedures.

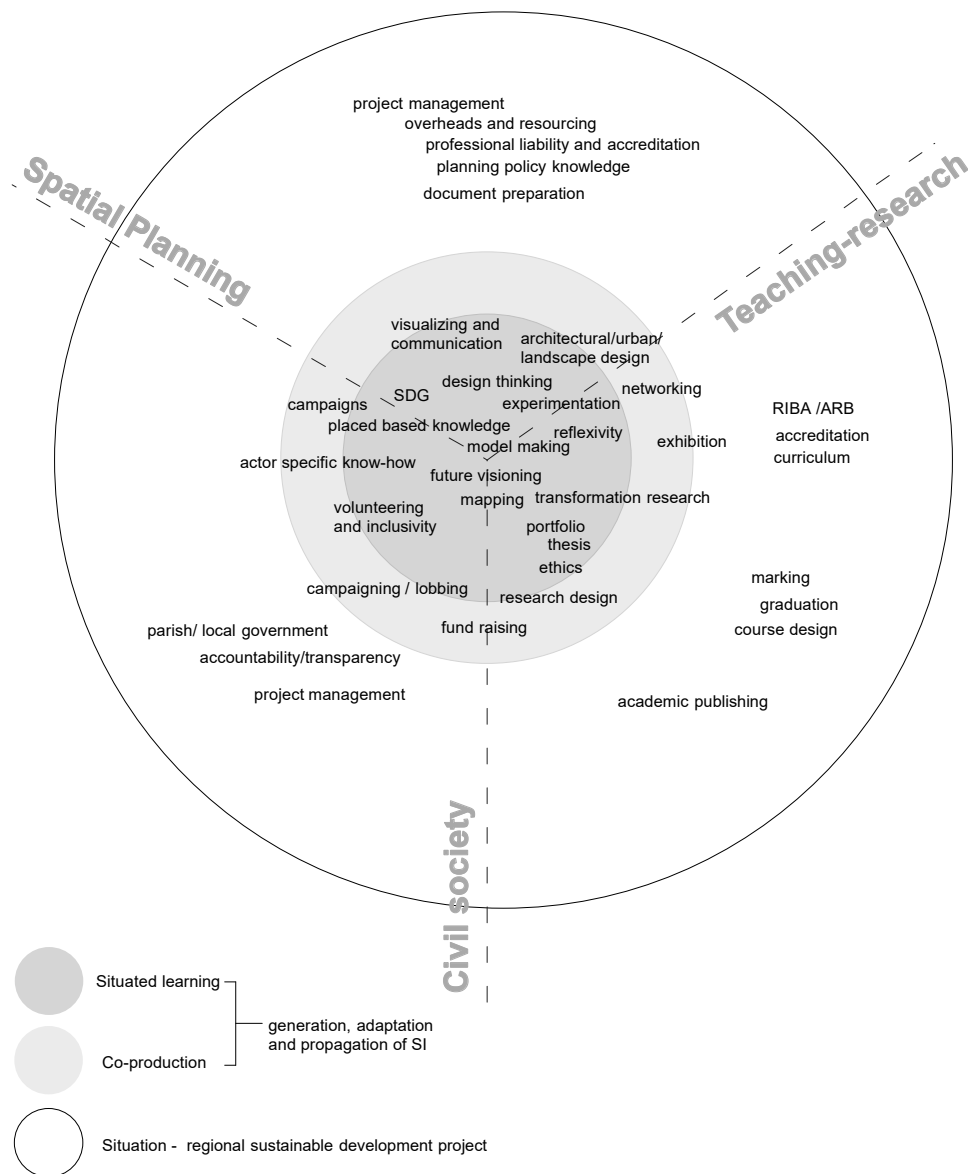
Research Methods and Ethical Matters¹⁵

Innovation biographies, initially developed by Rammert (2010), trace the history of an innovation, often technological but more recently social (e.g. Butzin and Widmaier 2012) in a biographical mode from conception, through development and spread. Textual biographies are usually reconstructed through qualitative interviews and document analysis and can be triangulated with actor-network or constellation diagrams. Traditional innovation biographies however have a bias towards a linear chain of cause and effect in the very biographical nature of the method. In attempt to overcome this restriction and to shift focus from human actors towards a more complex distribution of agency within (material-discursive) practices, I introduce a more spatial and experimental¹⁶ mode of research through map making. Adapting the innovation biography, I locate, map and analyse the specific practices within the case study attending to how boundaries were performed, as shown in Fig II. An analytical mapping of the specific practices and their constituent parts reveals the formation and diffusion of specific boundaries, including those between disciplinary fields. Mapping data are gathered and triangulated through a participative action-research with notes, interviews and extensive document analysis gathered through the duration of the programme. This form of analysis and theoretical framework brings into light assumptions that may otherwise remain obscure and provoke fundamental philosophically orientated questions.¹⁷

¹⁵ The author of this paper was a researcher/practitioner in the action-research programme. Action orientated research has received much criticism for the positionality of the researcher within the object of investigation, however Barad's performative posthuman framework rejects the notion of objective separation maintained in the pursuit of research, but rather attends to the agential role of the agencies of research in the materialisation of phenomena. (Cf. Barad 2007).

¹⁶ Here I refer to Elizabeth St Pierre and Elizabeth de Fretias invitation to a more experimental approach social science research, one that supports a project of mapping rather than tracing. See for example St Pierre's New Empiricism (St Pierre 2018)

¹⁷ This mapping method is currently being developed within the research programme RurAction (see acknowledgements above) and the Hybrid Mapping Working Group hosted at TU Berlin and in collaboration SFB 1265: Re-Figuration von Räumen.



The map shows the intra-action in/between specific (material-discursive) practices serving to erode boundaries between disciplinary fields.

Figure 2 Intra-action Map

Analysis: Modeling and Boundary Making Practices

Perhaps less commonly known to non-spatial planning professionals, scale models are often used during a design phase of a project to experiment and test proposed interventions. Here, a three-dimensional description of say a neighbourhood is made where houses, roads, public spaces etc. are constructed out of

wood, paper, card or other material at a scale appropriate to judge how a new physical intervention relates to the wider urban context. In contrast to presentational models, which are often static representations of a singular vision, this practice of modeling is open ended, exploratory and experimental.¹⁸ There is a dynamic relationship between the proposed intervention and the wider context within the model, of course the human hand is a part of this apparatus, but where agency is not a sole attribute of the designer. There is room for unintentional and unexpected relations to emerge with/in the model. What seems like a very material practice relies as much on a discursive dimension not least through the verbal communication of ideas with colleagues. This communication engages in discourse outside of the localised situation often relating to particular schools-of-thought in which the designers position themselves which in turn co-produce 'the object of which they speak' (Foucault 1971).

The case study intended to share such generative practices with/in communities to facilitate a democratic, co-operative and co-productive 'learning' environment. To this end, a co-design workshop was conceived where the generative and experimental modeling practices outlined above were taken out of the expert's studio and brought to the village for all to participate in. The co-design workshop centered around an elaborate three-dimensional scale model of the existing village built by students and staff from card, wood and paper. Crucially, no proposed interventions were produced prior to the workshop. As ideas and proposals were co-generate in the three hour workshop by all those present they were quickly prototyped from card and foam and placed into the model for consideration. This facilitated an immediate and transparent critique between experts, students, staff, community etc.. As an interviewee pointed out, trust grew through the fact there was no a preconceived solution presented during the event, rather the 'experts' and 'students' alongside 'locals' critiqued the proposals as they materialised through the workshop. The co-design practices were adapted from other city based participative projects to suit the specific needs locally. The adaption and co-generation of these practices and their enactment served, in part, to diffuse the rigid boundary often reproduced between expert and laypersons. Furthermore, through the spread and adaption of the practice (from city to rural region) a new, albeit temporary connection was made across the apparent rural/city divide. A difference in relations was observable at the end of the event where a new camaraderie was evident which was less perceptible at the beginning, where antagonisms between local/expert-other were observable. Furthermore, as Barad points out, discursive practices are not confined to the 'lab' and intra-act with concepts and discourses extending beyond the physical space in which the apparatus is situated (2007). This has multiple connotations and consequences, one of which is that the boundaries of apparatus are not fixed and through discursive practices extend spatially. This is evident in the apparatus of the co-design workshop, where the practices extended beyond the room in which the event took place and indeed the particular temporality of the event. The workshop took place in summer 2016 which coincided with the lead up to the EU referendum in the UK. At the time, some of the

¹⁸ In spatial planning practices, scale models are often used to display a determinate proposal within an existing built context. Here, the scale model is a rather static tool, a representation with more or less singular purpose, to communicate one group's vision (usually the designers) of a location to another group (either the users, clients or planning authorities etc.) Within this set of common practices a clear boundary is reinforced between the model makers and those asked to accept the intervention presented within it. Such boundaries usually follow a division between project roles and often along disciplinary lines.

national media aligned with the leave campaign¹⁹ aimed to (re)produce a division between ‘rural working class’ and ‘metropolitan’ or, ‘liberal elite’²⁰ to bolster an argument for leaving the EU.²¹ During the workshop these discourses could not be ignored and were performed locally through placard and posters displayed in gardens and windows reiterating affiliations with the leave campaign. The results of the referendum show the village voted leave. Furthermore, comments on the co-design workshop posted on an internet forum reveal some distrust towards the intentions of the workshop. We begin to see the tension here between the gradual diffusion of place-inscribed boundaries through certain practices (e.g. trust and camaraderie gained through developing and participating in shared practices) and the violent agential cuts serving to exclude and (re)produce divisions (e.g. local/nonlocal, rural/urban). This brings to the fore the power of such apparatus beyond the intentionality to carry out participative spatial planning.

A further concrete example of boundary making practices performed with/in the apparatus of the workshop can be seen in the significant shift in position with regard to development. The workshop begun with a strong and vocal anti-development sentiment within the group, but through the course of the event this position moved as an opening up towards additional housing at the edge of the village was experienced. It was evident that the model, associated practice of prototyping and critique was agential in this shift. This was manifested in the gradual erosion of the settlement boundary that circumscribes the village. A symbolic red line performed through local planning policy with very material consequences, not only to more development but also ingrained in attitudes towards nature and the built environment more generally. The material and discursive boundary of the village separates green space from built space, which, in this oft performed duality we can more broadly say represents the familiar nature/culture divide. In U.K. planning law and in the imagination of parts of the population, (particularly those concerned with the protection of rural environments) this boundary is more-or-less sacrosanct with a long and contested history affecting urbanization processes and the morphology of the U.K. However, in the case, the immovable ‘red line’ shifted through the course of the workshop to speculate on a significant extension to the village crossing the existing settlement boundary. We can say through the apparatus of the workshop, the space of the village began to be reconfigured in the imagination of those present and simultaneously in the physical space of the model (through prototyping). This new space was propagated through the repetitive practice of council meetings and minutes over the course of the following year and, would it not have been for a competing, oppositional force a year later (here we are reminded of Tarde’s repetition, opposition and adaptation) this new space would may well have actualized in planning policy and eventually resulted in reconfiguring the 1:1 space of the village. The symbolic dimensions should not be overlooked here. Through the apparatus a mental boundary had been reworked expressed in the acceptance of new development but with more profound consequences. The rigid cut between nature and culture, enshrined in planning law and routinely performed had been called into question. In doing so, not only were the perspectives of the human subjects reworked, but also the positionality of the human subject in relation to the object of nature was addressed. At first glance, from a sustainable development perspective, building on green field land may not be considered best practice, but this critical

¹⁹ E.g. ‘If you believe in Britain, vote Leave. Lies, greedy elites and a divided, dying Europe’ MailOnline 26th June 2016

²⁰ E.g. ‘May Savages Liberal Elite’. Daily Mail. 5th October 2016

²¹ Within this discourse, the ‘privileged elites’ who represent and are represented by the metropolis (London, the seat of political power) were out of touch with the needs and desires of the white working class, embodied by disadvantaged ‘rural’ areas, left behind by the prosperous ‘city elite’.

repositioning serves another purpose that is, to shift the ingrained ideas which perform a separation between human and nature through which nature is easily accepted as an inert resource, available for human consumption.

Lines of Flight

I have shown how reforms to national planning policy served to create confusion and misalign local, national and international goals for sustainable development. Specifically, where local desires towards development did not align with national economic agendas under the contested umbrella of sustainable development. Where local knowledge, capacities and skills were unable to cope with the pressures brought about through planning reforms an innovative programme developed through a university was initiated as an intermediary to support and contribute towards the development of the SSE and co-produce local spatial planning policy. I have shown how the programme exhibits traits associated with concept of social innovation and how it aimed to facilitate and stimulate social innovation locally whilst spreading practices spatially connecting regions. The concept of social innovation cuts across usual disciplinary fields connecting spatial planning, civil society and experiential teaching/learning practices in an effort towards sustainable transformation. The approach exemplified in the case study and reworked through the theoretical frame of this paper clearly has scope to be reproduced at other universities and in association with the UN's HESI. Furthermore, the paper provides an adapted theoretical framework through which social innovation and spatial spread have been rethought opening up a new dynamic space for further inquiry, and where ethical and philosophical matters may be considered. Finally, the notion of participation (core to the concept of social innovation) was been reworked from relations of exteriority, exemplified by interactions between determinate actors or disciplines, to relations of interiority characterised by intra-action, where agency is distributed and performed through (material-discursive) practices. As illustrated in Figure 3, practices, fields and categories usually thought to be distinct and separate are enfolded into a diffractive and expanding apparatus at work in socio-spatial transformation.

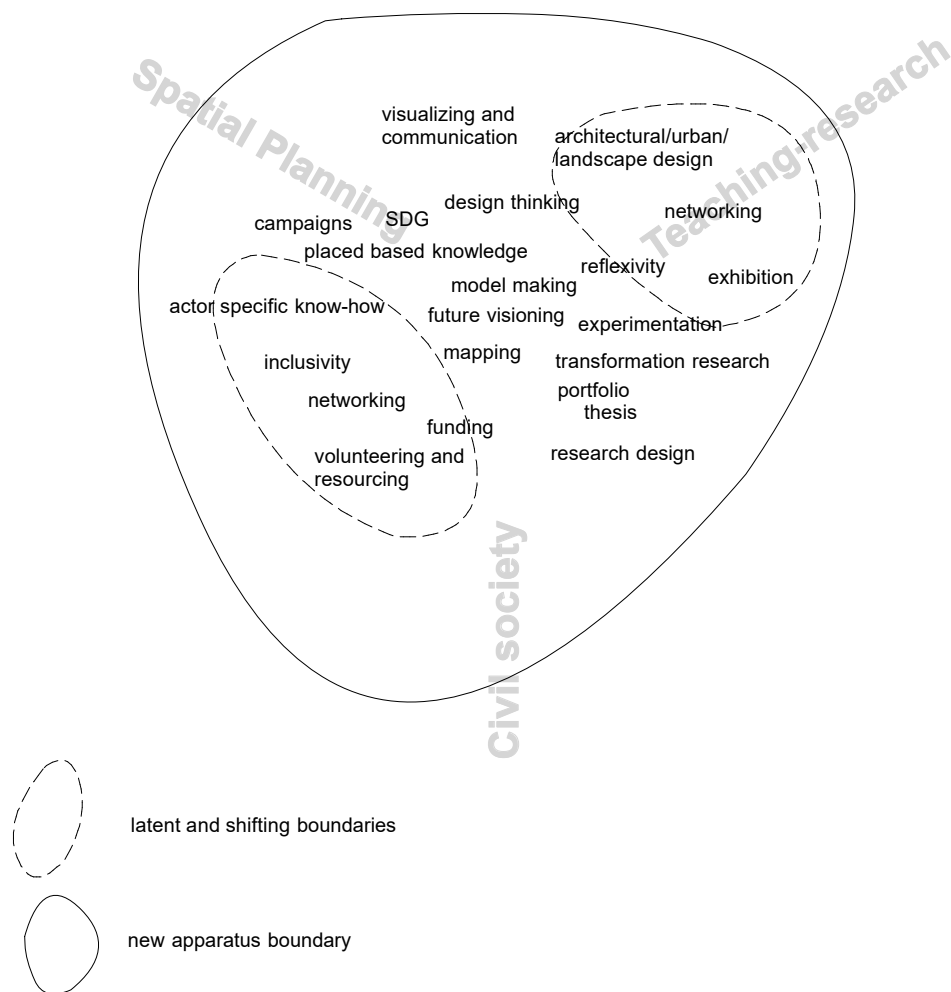


Figure 3. An abstracted model of novel apparatus in social innovation and transformation. The diagram depicts how practices are connected in a relationship of interiority where previous boundaries between fields are reconfigured.

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3 – The teaching of planning for the transition

Integrated Development Planning - Polish Practice And Didactic Challenges

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Abstract: The analysis aims to present the bases for integrated development planning and its use in the practice of spatial management, paying attention to the challenges related to the higher education in this field. The research procedure is made up of three stages. The first stage involves the synthetic systematization of basic theoretical premises of integrated development planning, taking into account the differences in definitions and suggested approaches in the Polish literature. The second stage presents the selected examples of challenges regarding the operational use of this conception in planning practice in Poland. The third stage shows the project of a unique field of study, Integrated Development Planning, that started in the 2018/2019 academic year in the Institute of Socio-Economic Geography and Spatial Management of Adam Mickiewicz University in Poznań under the Knowledge-Education-Development Operational Program's project entitled Integrated Development Planning – the forge of a new cadre of professionals for the sector creating the development policy.

Keywords: integrated development planning, theoretical assumptions, practical implementation, Poland.

Introduction

Current global and local conditions contribute to an increasing deficit in free space, leading to social and functional conflicts, larger investments and their influence on surroundings, and also a growing uncertainty regarding the stability of undertaken measures and their long-term effects. Under these conditions, a dichotomic system of public planning, that continues in many countries, also in Poland, is far from optimal. This leads to the conclusion, considering the systemic nature of the objects of planning, that planning processes (socio-economic and spatial) must be integrated. Integrated development planning ought to grow into a basic approach to programming and implementation of measures related to development intervention aiming at the improvement in spatial development. It should enhance the efficiency in the limitation of differences in living conditions and in running business activity to the socially acceptable level.

The analysis aims to present the bases for integrated development planning and its use in the practice of spatial management, paying attention to the challenges related to the higher education in this field. The research procedure is made up of three stages. The first stage involves the synthetic systematization of basic theoretical premises of integrated development planning, taking into account the differences in definitions and suggested approaches in the Polish literature. The second stage presents the selected examples of challenges regarding the operational use of this conception in planning practice in Poland. The third stage shows the project of a unique field of study, Integrated Development Planning, that started in the 2018/2019 academic year in the Institute of Socio-Economic Geography and Spatial Management of Adam Mickiewicz University in Poznań under the Knowledge-Education-Development

Operational Program's project entitled *Integrated Development Planning – the forge of a new cadre of professionals for the sector creating the development policy* (POWR.03.01.00-00-N055/16-00).

Integrated development planning – Polish understanding

Integrated development planning is one of the approaches to programming and implementation of measures related to development intervention aiming at efficient limitation of differences in the living standards to the socially acceptable level (Faludi, 2006; Molle, 2007). Planning constitutes a stage, which according to Henri Fayola's systematization, apart from organizing, managing and controlling, creates the basis for the management process, related in the case of integrated development planning to places understood as countries, regions, communes – territories (Alajlani et al., 2010; Audretsch et al., 2006). The management which, due to contemporary socio-economic changes connected with transformation and postmodernization enhanced by integration and globalization (Naisbitt, 1982; Churski et al., 2017), migrates from the private sector in which it developed to the public sector where it finds new applications. Its importance increases in the conditions of growing risk resulting from uncertainty about the direction and sustainability of development processes (Ziobrowski, 2015). The primary objective of integrated development planning is an attempt to join within its scope economic planning and spatial planning that leads to the integration of its subjects, levels and documents. It also involves the integration of planning dimensions towards a complementary consideration of the economic, social, spatial, ecological and institutional-political aspects, which places them on the foundation of sustainable development assumptions (Turner, Pearce, 1992). As Markowski and Drzazga (2015, p. 16) notice, breaking the present dichotomic system of public planning in which “...*there is a contradiction in proceeding and implementation between the sphere of economic planning and spatial planning...*” is on the one hand a pressing need, and on the other, a specific challenge. It leads, considering the systemic nature of subjects (i.e. countries, regions, communes – territories), to the conclusion that it is necessary to integrate the aspects of planning (socio-economic, spatial, ecological, institutional-political), which would ensure the inclusion of the whole, determinants, objectives and specificity of the course of development processes, which, as Parysek (2016c, p. 42-44) claims, should become “...*the foundation of the reconstruction of the planning system in Poland...*”.

The growing interest in integrated development planning and attempts at its operational use in the practice of the development policy result from the tendency of the last decades towards decentralization of public competences and strengthening a local level strongly limited after the 2008 financial crisis (Mazur, 2017). It is also the effect of the implementation of its new paradigm to European regional policy, which is based on the OECD conception (How regions..., 2009; Regions Matter..., 2009) applied in the Fabrizio Barca Report (2009) and called place based policy. Its use is of particular importance in the context of the popularization of the endogenous development conception applied in the explanation of states, changes and consequences of spatial differences, very well embedded in the theoretical bases of economic geography and economics (Churski, Kołsut, 2017). Integrated development planning and endogenization of development processes permeate each other in the practice of the contemporary development policy. They are of particular importance for the local level, natural for an optimal recognition of resources and relations creating local territorial capital and on this ground planning and implementing efficient development activities at this territorial scale.

According to Markowski and Drzazga (2016, p. 17-18), “...*integrated planning is a holistic process of setting goals and building paths to achieve objectives set in this process, taking into account the most*

important interdependencies (relations) between the most significant elements of a controlled system. Integrated planning understood in this way, related to socio-economic development, in its creative process of setting and achieving goals has to take into account quantitative and qualitative market and non-market relations occurring between the elements of subsystems: social, economic and a broadly understood living environment...". Integrated planning should lead to the elimination of contradictions resulting from the dichotomy of the public planning system by creating conditions for the implementation of an integrated planning process. They hold that (2016, p. 17) "...the essence of integrated planning is not to achieve integrated development (as sometimes indicated), but to integrate a planning and decision-making process which, if properly applied, should lead to a high level of integration of the social, economic and spatial subsystems and thus ensure development objectives, including sustainable development...". Parysek (2014, p. 17) draws attention to the dilemma over the approach to integrated planning which can relate to the planning process or/and its result, i.e. plan: "...in the case of creating an integrated plan one could say about the integration of a structure (structural aspect), whereas in the case of the integration of planning, the integration of the process (planning) is involved...". He is clearly in favour of integrating the process, that is planning, with limited, according to this Author, possibilities of implementing integrated plans for practical applications (Parysek, 2014; 2016a). Kudłacz (2015), in turn, highlights the lack of systematically thought-out synchronization of socio-economic and spatial planning, emphasizing at the same time that the integration of mechanisms for the regulation of spatial and socio-economic development processes should concern three elements: policy, planning and implementation of arrangements. On the other hand, Woźniak (2015) distinguishes three aspects of the integration of development planning:

- integration of planning levels,
- integration of subjects of planning,
- integration of planning documents.

The first one concerns the integration between the existing levels of planning – European, national, regional and local. A functional hierarchy should be in force here, based directly on the principle of subsidiarity. The second level refers to the basis of integration of the subjects of planning which should be a joint perception of different public policies and sectoral and thematic tasks. Finally, the third one pays attention to the need for the integration of planning documents, the process which should not be limited only to the unification of documents, but ought to aim at ensuring content-related coherence between them. Interesting proposals concerning the implementation of the indicated aspects of development planning integration are presented in the Polish literature by Parysek (2014, 2016a), Markowski (2014), Noworól (2014) and Kudłacz (2015). In addition to the diagnosis of the present deep dichotomy of the planning system in Poland, they draw attention to different variants of implementing the idea of integrated development planning. These proposals are based on both the evolutionary approach involving a gradual integration of present solutions intended for the replacement of present approaches and tools with new ones and the radical approach based on the need for rapid changes and implementation of new solutions.

Taking into account the present arrangements and importance of integrated development planning, three basic aspects should be considered (Churski, Motek 2016):

- the pursuit of sustainable development,

- regularities in spatial differences of socio-economic development and spatial development,
- the evolution of public planning.

Integrated development planning should be considered in relation to the progressive departure of modern society from the concept of socio-economic development based on simple quantitative growth in favour of qualitative changes. In this context, the theory of sustainable development¹, popularized globally by, e.g. Brundtland Report (Report of the World..., 1987), defining this process as such an exploitation of resources, directions of investments and technological progress as well as institutional changes that remain in harmony and improve both the present and future potential for the satisfaction of human needs and aspirations (Blowers, 1993). Integrated development planning should be analyzed in the context of regularities in development processes which are diversified in space depending on individual conditions, factors and processes which result from their differences as well as the lack of efficient intervention measures intended for the convergence of the development level using the compensatory model dominating at present in the development policy (Churski, 2014a, 2014b). Benefits resulting from the implementation of the idea of integrated development planning related to balancing development processes and convergence should constitute a sufficient condition for adapting the planning system to the implementation of such measures. As Markowski (2014, p. 1) states „... the need for integrated development planning by public authorities is so obvious that postulating its introduction seems a sheer truism...”. As emphasized by Markowski and Drzazga (2016), the essence of integrated planning boils down to the integration of planning and decision-making processes. The integration of the planning process, as Parysek (2014, 2016a) points out, is therefore a prerequisite for the full inclusion and coordination of socio-economic, spatial and environmental processes in pursuit of sustainable development of the EU territories, which is one of the main objectives of the Community. “...This is so because economic and social development are generators of changes in spatial development, whereas the natural environment determines the framework of solutions...” (Parysek, 2016a, p. 44).

This leads to the conclusion that the idea of sustainable development can and should be treated as the superior, indicating the goal and concretizing the assumptions of integrated development planning at every spatial level. Its significance at the local scale is particularly important. This is so because it allows a complementary approach both at the stages of programming and the implementation of development measures making full use of endogenous resources of territorial capital, its links with the surroundings as well as opportunities and limitations of strategic and spatial dimensions, present and future development processes concerning local communities inhabiting, developing and managing a given area.

Integrated development planning – Polish practice

Despite the indicated objective benefits related to integrated and holistic thinking about planning, the implementation of integrated development planning in the Polish practice of the development policy encounters a number of barriers resulting from both the functioning of hierarchical and sectoral organizational structures deeply embedded in public administration and also a very consolidated bureaucratic system of values and interests. A major obstacle, as Parysek (2014, p.18) writes, is also “...*the lack of clarity as to the meaning of the integrated plan and integrated planning...*”, accompanied

¹ See, e.g. Rogall (2011)

by objectively existing differences in the functioning of the socio-economic system (high dynamics and unpredictability) and the spatial system (high inertia) and also no institutionalized planning structures of integrated planning. What is also important is the specific devaluation of the term “integrated” in Poland, which has recently been extensively used and also overused in the context of measures implemented only in a seemingly coordinated way taking into account a multi-faceted nature of development processes. So far the attempts undertaken after the end of the 1990s to combine strategic planning with spatial planning have not brought the expected results². In part, it is certainly a consequence of too much political dependence of strategic planning, typical of young democracies and emerging political systems. On the other hand, it should be remembered that the system of spatial planning functioning in Poland rests on imperfect legal bases which enable the occurrence of many irregularities and even pathologies in the practice of spatial development (Parysek, 2015, 2016b).

The dichotomy of the Polish planning system is well-established in law and practice (Table 1). Currently, the legal basis for strategic planning in Poland is specified in the Act of December 6, 2008 on the principles of the development policy (Journal of Laws 2014, item 1649 as amended). They regulate the functioning of obligatory development strategies at the national and regional level as well as program documents and operational programs, the scope of which, however, is limited to the economic and social spheres without strictly covering the spatial one. Their preparation at the local level is optional, but considering the fact that having the strategy is in many cases an *ex-ante* condition for access to public aid, especially financed from European funds, their occurrence at this level is almost universal. It is worth noting at this point that, as usual, the quantity does not translate into quality and many of the prepared and adopted development strategies are only formal documents, not real ones. The sphere of spatial planning is regulated by the provisions of the flawed and conducive to spatial chaos Act of March 27, 2003 on planning and spatial development (Journal of Laws 2003, No 80, item 717 as amended). In accordance with its assumptions, what is prepared at the national level is the national spatial development concept operating alongside long- and medium-term strategies for socio-economic development. At the regional level, shaping and following a spatial policy is based on the spatial development plan for a voivodeship which is again a “parallel” document to the development strategy as well as program and operational documents serving its implementation. Yet, at the local level, communes prepare the studies of spatial development determinants and directions as well as local spatial development plans (LSDP), the latter being legal documents. Unfortunately, in this system an investor can (in the absence of an LSDP) submit a request for issuing a decision on development conditions and land development, which leads to a spatial chaos resulting in numerous very negative socio-economic consequences (Kowalewski, Markowski, Śleszyński (eds), 2018).

Table 1

Dualism of the planning system in Poland

Aspects	STRATEGIC PLANNING SUBSYSTEM	SPATIAL PLANNING SUBSYSTEM

² At this point one should not forget about the valuable experience of the Polish planning system of the 1960s concerning the preparation of regional plans which had the character of integrated plans.

Aspects	STRATEGIC PLANNING SUBSYSTEM	SPATIAL PLANNING SUBSYSTEM
FEATURES	<ul style="list-style-type: none"> • process approach • high susceptibility to market regulators • specified time horizon • limited rigor of law 	<ul style="list-style-type: none"> • final approach • low susceptibility to market regulators • unspecified time horizon • developed rigor of law
INSTRUMENTS	Long- and medium-term national development strategies Development strategy for voivodeship Voivodeship programs Territorial contract Urban policy Local development strategy Local programs	National Spatial Development Concept Spatial Development Plan for Voivodeship Study of Spatial Development Determinants and Directions Decision on building conditions
LEGAL BASIS	Act of December 6, 2008 on principles of development policy (Journal of Laws 2014, item 1649 as amended)	Act of March 27, 2003 on planning and spatial development (Journal of Laws 2003, No 80, item 717 as amended)
COORDINATION	Ministry of Investment and Development	Ministry of Infrastructure /Ministry of Investment and Development

Source: own study.

Under these circumstances attempts to integrate the excessively politicized strategic planning system with the spatial planning one based on a faulty legal basis cannot bring the expected results. “...A separately functioning system of the public planning of economic development leads naturally to a contradiction in proceeding and implementation between the spheres of economic and spatial planning...” (Markowski, Drzazga, 2016 p. 16). However, not without significance is the fact of self-government activities in this area, which despite obstacles, undertake joint measures regarding territorial planning integration, especially in the metropolitan areas of the largest Polish cities (Kaczmarek, 2015a, 2015b, 2015c).

The present state is indicative of the need to carry out a specific revolution and change the development planning model in Poland using the wide capabilities of information and communication technologies. This is confirmed by both the recommendations of opinion-making circles, including the Committee for Spatial Economy and Regional Planning, Polish Academy of Sciences and the Society of Polish City Planners (Assumptions and directional principles..., 2014) and also the postulates of practitioners of the development policy. This idea is also supported in the circles of the government administration, above all in the Ministry of Infrastructure and Development (Strategically for development..., 2011), and presently in the Ministry of Investment and Development (Strategy for..., 2017; Management System..., 2017). Additionally, legislative changes are planned in the near future – an amendment to the Act on the principles of the development policy. The ongoing work in the Ministry of Investment and Development concerning the amendment to the Act of December 6, 2008 on the principles of the development policy (Journal of Laws 2014, item 1649 as amended) aims to introduce a mandatory

integrated development plan at all the territorial levels of programming and implementation of the development policy in Poland. Unfortunately, the parallel works taking place in the Ministry of Infrastructure on the Town-Planning-Construction Code which was to supplant the Act of March 27, 2003 on planning and spatial development (Journal of Laws 2003, No 80, item 717 as amended) and all “special acts”, and which was supposed to introduce an integrated development plan to planning practice were abandoned. In these circumstances, one should expect that in the second half of 2019 the changes in the Polish development planning system will come into effect, which will become the first step towards its integration. They will be certainly imperfect due to the existing competence dualism (two ministries) and the abandonment of works on the amendment to the Act on spatial planning.

Integrated Development Planning – the forge of a new cadre of professionals for the sector creating the development policy – a case study of didactics project³

Seeing the need for changes in the Polish planning system and responding to the future challenges of preparing human resources for functioning in new conditions of integrated development planning, the Institute of Socio-Economic Geography and Spatial Management of Adam Mickiewicz University in Poznań prepared a program for a new unique course of study *Integrated Development Planning*. The main objective of the undertaken measures was the preparation, implementation and evaluation of the program of engineer-degree studies with a general academic orientation in a full-time and part-time mode. It also included building the cooperation network of scientific institutions and those of the socio-economic environment guaranteeing a full implementation of the assumed education effects in terms of knowledge, skills and competences. As a result of a competition (Competition no 1/NPK/POWER/3.1/2016 for New Education Programs), this project was selected for implementation with the support of European funds at the disposal of the National Centre for Research and Development as part of Priority Axis III HIGHER EDUCATION FOR THE ECONOMY AND DEVELOPMENT, Measure 3.1 COMPETENCES IN HIGHER EDUCATION of the Operational Program Knowledge-Education-Development. The preparation of the program and the implementation of the course were carried out with a full use of scientific and didactic potential of the Institute and wide external partnership including scientific and didactic units as well as economic entities, administration and non-governmental institutions. The project implementation was planned for the period 2017-2002 and its structure embraces two basic tasks. The first one was related to the preparation of the education program, the construction of a mobile information and communication infrastructure for the needs of education as well as preparation and printing of textbooks. The second task involves the current implementation of the first cycle of the education process, treated as a pilot project assuming self-improvement based on introducing corrections resulting from the on-going evaluation. As a result of the adopted measures, a seven-semester program of various parameters was prepared (Table 2).

Table 2

Assumptions of the program in the field of study *Integrated Development Planning*

Aspects	FULL-TIME MODE	PART-TIME MODE
HOURS	• 2400h	• 1200h
GROUPS	• 1 lecture group	• 1 lecture group
SEMESTER	• 2 practice groups	• 1 practice group

³ The chapter was prepared based on Churski, Motek (2016).

Aspects	FULL-TIME MODE	PART-TIME MODE	
ECTS	<ul style="list-style-type: none">7 semesters210 ECTS points	<ul style="list-style-type: none">7 semesters210 ECTS points	
EXAMPLES OF EFFECTS LEARNING	Knowledge:		
	<ol style="list-style-type: none">A student has a basic theoretical knowledge of socio-economic geography and spatial management, economics, law, sociology and Earth sciences necessary for programming, implementation and evaluation of development planning in the integrated approach.A student is familiar with a selected methodology of socio-economic geography and spatial management, economics, law, sociology and Earth sciences necessary for programming, implementation and evaluation of development planning in the integrated approach.A student is familiar with operational techniques of socio-economic geography and spatial management, economics, law, sociology and Earth sciences necessary for programming, implementation and evaluation of development planning in the integrated approach.		
	Skills:		
	<ol style="list-style-type: none">A student can carry out a problem analysis, determine the objectives of a project and define necessary resources, time, means and risk in the process of achieving the intended results in the integrated approach.A student can concretize the assumptions of an integrated project independently and working in a group, and implement its objectives combining knowledge, methodology and techniques from various scientific disciplines.While carrying out current tasks, a student can use a wide range of methods and techniques, including statistical and econometric models (along with forecasting natural and socio-economic phenomena), new IC technologies (along with the geocoding of spatial information), geographic information systems (ARCGIS, TerrSet, MAPINFO) and can design projects with the use of CAD computer software.		
	Competencies:		
	<ol style="list-style-type: none">A student understands the need and knows the possibilities of continuous training and raising professional, personal and social competences.A student is aware of responsibility for one’s own work and is ready to comply with the rules of working in a team.A student can think and act in an entrepreneurial way.		
	STRUCTURE OF EDUCATION PROGRAM	18 modules + modules to choose, diploma module, foreign language, field classes, additional activities	
		<ul style="list-style-type: none">lectures: 40%✓ practitioners: 20%laboratories: 60%✓ practitioners: 20%	
		TOTAL	
		100%	

Source: own study.

Detailed objectives of the didactic project include:

- providing knowledge, skills and competences to students concerning the importance of integrated development planning for the optimization of contemporary socio-economic development processes intended to minimize development differences, create conditions for sustainable development and implement a new planning system in Poland.
- strengthening the links with practice in the area of didactics related to integrated development planning, especially in the field of developing practical skills and in the context of popularizing good practices related to the application of this approach in public administration, e.g. by conducting sessions and internships in institutions which are interested parties in the development process and its planning in the strategic and spatial dimension.
- preparing and enriching the didactic materials concerning the importance of integrated development planning in the country's planning system.

- internationalization of studies in the field of integrated development planning (students' foreign internships), resulting in popularization of good practices and their implementation in Polish public institutions responsible for the development policy and principles of integrated planning.
- promotion of project results contributing to the popularization of the idea of integrated development planning as an approach ensuring optimization of intervention measures towards improving the efficiency of development processes.

The education process was based on the modular organization of studies. This means that the whole program is composed of courses which are grouped in modules while maintaining the principles of combining academic knowledge, practical skills and social competences. The adopted principles lead to the use of various methods and education techniques in each module, emphasizing the significance of practical activities, team work and a problem approach. Each module provides for courses in the following forms (at least one in the module structure): lecture, classes/workshop/laboratory, e-learning, one's own work (done individually and in a team in a problem approach), practice – e.g. a meeting with a practitioner, a visit to an enterprise/institution, a case study – field classes, carrying out a project as part of a commission from the economic circles – with at least 50% share of active classes. In each course of this didactic process, both academic teachers and professionals active in the spheres related to the skills and competences trained are engaged.

The process of obtaining the diploma in *Integrated Development Planning* is based on two principal elements. The first one involves semester projects prepared in the selected modules which, collected by students, create their portfolio at the end of the studies, which illustrates the knowledge, skills and competences acquired during the education process. The second element concerns a diploma thesis which is done in a project approach with a wide use of documents collected in the portfolio which is one of the primary data sources for a graduate. The thesis must meet the conditions of an integrated approach to development planning. Thus, it should be based on the integration of the strategic planning and spatial planning spheres and/or integrate three basic dimensions of development processes: economic, social and territorial. The adopted way of obtaining the diploma requires creating special care for the student. It will include the presentation of the principles of the diploma process (an Introductory module at year I), the possibility of taking individual tutorial sessions oriented to the identification of subject and spatial interests of a student and consultations with future thesis supervisors, support of students' counsellor throughout the entire academic year, guidance of a thesis supervisor and subject-related help during a diploma seminar.

The education program was prepared in the process of cooperation with the strategic Partners, i.e. the Ministry of Development – Department of the Development Strategy and the Marshal Office of Wielkopolskie Voivodeship – Department of the Regional Policy. This process involved the following six stages: (1) research into education results in terms of knowledge, skills and competences expected by the socio-economic environment (e.g. employers, self-governments, government administration), (2) establishment of the Program Council as a form of institutionalization of cooperation with the socio-economic environment and parties interested in the education process, (3) preparation of the initial version of the education results concerning knowledge, skills and competences and the initial structure of the modular education program (modules, courses, forms of classes, education methods, number of

hours, ECTS points) which should guarantee the implementation of the assumed education outcomes, (4) verification of the initial version of results and the education program, preparation of the final version of the learning effects and the modular education program and also syllabuses in accordance with the principles determined by the law, (5) construction of a mobile information and communication infrastructure, and preparation of textbooks and scripts necessary for the education process initiating the Polish textbook output and enriching the small scientific achievement regarding the importance of integrated development planning in the planning system in Poland, and (6) implementation of the education program and assumed learning effects in full-time and part-time studies.

A significant distinguishing feature of the prepared course *Integrated Development Planning* is the adopted program, very broad and interdisciplinary in terms of content, which assumes achievements in theoretical knowledge, practical skills and social competences in the field of socio-economic geography and spatial management, economics as well as legal, social, mathematical and Earth sciences (see Table 3).

Table 3

Examples of modules in the field of study
Integrated Development Planning

NAME OF MODULE	EXAMPLE OF COURSES	EXTERNAL PARTNERS IN SCIENCE AND DIDACTICS	EXTERNAL PARTNERS IN ECONOMIC ENVIRONMENT
NATURE-ORIENTED	<ul style="list-style-type: none"> • sustainable development • shaping and protection of environment • environmental determinants of development planning 	experts from European centers	WFOŚiGW ⁴ RDOŚ ⁵ self-governments
ECONOMIC	<ul style="list-style-type: none"> • microeconomics • macroeconomics • management basics 	Poznań University of Economics and Business experts from European centers	economic entities self-governments
SPATIAL PLANNING AND ITS TOOLS	<ul style="list-style-type: none"> • theoretical basics of spatial planning • application-oriented aspects of spatial planning • city planning with elements of architecture • engineer graphics • architectural and urban analysis • architectural and urban design • documentation integration in 3D • planning recording techniques • local planning 	Poznań University of Technology experts from European centers	MliR ⁶ faculties of spatial planning; designing studios; self-governments
STRATEGIC PLANNING AND ITS TOOLS	<ul style="list-style-type: none"> • introduction to strategic planning • diagnosing of socio-economic development areas • creation of socio-economic development strategy • management of projects and their financing from European sources • monitoring and evaluation of development strategy • territorial marketing 	Poznań University of Economics and Business experts from European centers	European Commission MliR UMWW ⁷ self-governments

Source: own study.

⁴ The Voivodeship Fund for Environmental Protection and Water Management.

⁵ The Regional Directorate for Environmental Protection.

⁶ The Ministry of Investment and Development.

⁷ The Marshal Office of Wielkopolskie Voivodeship

The assumed interdisciplinarity of the course *Integrated Development Planning* enables graduates an activity in the areas of, e.g. integrated planning of socio-economic, spatial and financial development, creation of the development policy of self-government units, making use of statistical and econometric models, application of new IC technologies, including GIS tools, carrying out individual or team projects. Knowledge, skills and social competences acquired by graduates during the studies allow them to participate in project teams dealing with socio-economic and spatial development planning. They can also work in public administration at the local and government level and take part in the management process in these kinds of units as well. They are substantially prepared to develop applications for co-financing projects from public funds, including EU means. They can also undertake consulting activity related to socio-economic development.

The target group of studies in the field of *Integrated Development Planning* embraces primarily people interested in taking up employment in public administration and presently employed in this sphere of the national economy. As follows from the Report on the need for educating public administration personnel in the area of development management (2010) prepared by the Institute of Socio-Economic Geography and Spatial Management on the request of the Ministry of Regional Development, there is a pressing need to improve the quality of public administration in Poland, especially regarding the competences of the personnel in terms of conducting a development policy taking into account contemporary global trends, including the use of integrated development planning for enhancing endogenous potentials of individual areas.

Summing-up

The above-mentioned facts and regularities lead to the conclusion that integrated development planning is necessary to ensure the effectiveness of intervention measures aimed at sustainable development resulting in improved convergence, being also a basis for the creation of a new, more effective organization of the planning system in Poland.

The presented education project in the field of *Integrated Development Planning* is a response to the need to expand education in spatial management resulting from contemporary changes occurring in society, the economy, public administration and higher education. This program and a new field of study, according to the presented assumptions, should measurably contribute to the creation of conditions for the improvement to the functioning of public administration in Poland in the area of the development policy which should be recognized as crucial for the effectiveness of the country's intervention financed from public means. Thus, the undertaken measures are directly involved in supporting public administration by the higher education sector in pursuit of improving the efficiency of the country, which is one of the key priorities indicated in strategic documents both at the national and EU level. The adopted model of the broad participation of interested parties, including socio-economic circles, in creating and implementing a new field of study and the use of didactic innovations prepared and already tested in practical application by the Institute of Socio-Economic Geography and Spatial Management of AMU, both in terms of the organization and implementation of the didactic process, guarantees obtaining unique and qualitatively distinctive effects of education.

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Teaching urban planning through international cooperation project with African cities in very fast transition times

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Abstract: The "African question" is increasingly an "urban question", particularly considering the transition phase and the transformation speed that African cities have been experiencing over the last few years. An important question therefore emerges regarding the quality of the training of urban planners, both in European schools – attended more and more by African students – and in the field of international co-operation between European and African universities, also supported by some recent EU Calls. In this context, this paper is an opportunity to discuss the limits and possibilities of teaching urban planning in a phase of rapid changes and, therefore, to define common strategies to reinvigorate the quality of our teaching and practices of future urban planners, inside and outside the European Schools of Planning while obviously being careful not to succumb to the always concealed neo-colonial drifts that would be even more negative for everyone today.

1. The environmental and educational context

The environmental crises and pollution rates are growing in tandem with the increase in population and very fast urban development of the major African cities. These processes are very swift and supported by international enterprises (mostly by the Chinese) that are exporting a dissipative model of development without considering mistakes and sometimes disasters we have already had in our own countries. For example, following the construction of the first Senegalese highway tracing the Dakar-Thies Mbour axis and the Blaise Diagne international airport in the village of Ndiass (between Mbour and the capital Dakar), the urbanization rate and economic growth of Mbour underwent significant increases by pushing the populations to continuously migrate towards this center. The spread of informal settlements and the difficulty of managing infrastructures created considerable inconvenience to the territory and to the population. A number of neighborhoods appeared in areas subject to flooding, while the rapid urban speculation has not encouraged any planning activities. In this way, the massive population density and its consolidation allowed for no kind of sustainable urban planning. In addition, to the absence of greenery, environmental ill-health is exacerbated by the widespread presence of outdated means of transport, which become the leading cause of air pollution (considerably exceeding the thresholds allowed by law, especially in constantly congested areas).

All these conditions appear accentuated by the weakness of education in urban planning, strictly connected to the sharp reduction in the urban planning curricula within Architecture and Engineering degrees, in the wider context of the closure/failure of a number of important Schools.

In particular, in Senegal, the Faculty of Architecture and Urbanism in Dakar (UAE-Ecole d'Architecture et d'Urbanisme) was founded in 1972 by the then President Léopold Sédar Senghor, who dreamed of excellence in all the arts for Senegal and wanted it to be recognized in Africa and throughout the world. He wanted to be able to form individuals capable of transmitting the values of Negro-African civilization. To translate this vision, based on UNESCO guidelines, the Senegalese State created the UAE within the public university UCAD, with the aim of annually training a hundred professionals able to address the issue of habitat and respond adequately to the needs that arose, dealing with the conception, construction, and management of housing supply.

These architects and town planners were to acquire the skills to intervene in all important decision-making bodies, in order to define an urban context in tune with modernist ideology and canons, adapted to the demographic growth of a

new capital in full expansion. At the time, the SICAP-Société Immobilière du Cap-Vert already been in existence for two decades, and the OHLM-Office des Habitations à loyer modéré had ten years of experience. Senghor had a particular interest in these projects and followed them closely during his presidency. The habitat had to translate spatially – and induce – a new way of life that would be the result of the articulation between various cultures and styles, essentially French (or more generally Western) and African. Complementarity, dialogue, and exchange were the key words of a line of research and approach that simultaneously had to participate in the construction of a new Senegalese and African identity, and in the construction of the "Civilization of the Universal".

Dakar was the place where possible 'compromises' between conservation and recovery of cultural heritage and development were experienced, in a reasoned mix of "Sorbonne et Négritude" (Senghor, 1961). "The Ecole de Dakar", as it was more commonly called, offered a space for dialogue on how to create architecture and think about the city and urban expansion, or even about how to enhance the vernacular and traditional architecture that was systematically defined through at least three important collaborations: UNESCO, BREDA, and IFU-Institut Français d'Urbanisme.

Parallel to the Senegalese initiatives, EAMAU, the Faculty of Architecture and Urbanism, was opened in Lomé (Togo) in 1975. This was the result of an essentially African initiative with the aim of preparing, through highly selective training, an elite capable of taking on the technical-administrative challenges brought about by the Independence of the new French-speaking states of Africa.

Furthermore, several member countries of the OCAM decided to open regional schools (of administration, veterinary, agricultural, etc.) and the creation of the EAMAU was the response to this decision: today it embraces 14 French-speaking and Spanish-speaking countries of sub-Saharan Africa. Its main objective was and still is to produce expert local architects, urban planners, and technicians specialized in urban management who would then occupy key positions in this field. By combining different disciplinary approaches, the aim was to relaunch research into urban planning across the continent and enrich knowledge of the construction of urban spaces, taking into account the cultural, economic, social, and spatial realities specific to the African world (cf. Coralli, Aholou, 2010).

The closure of the UAE in 1991 due to economic problems – students regularly omitted to pay university fees – left a significant gap with respect to the weight that the city had had and still has within the countries of West Africa as the former capital of the organization of the French-speaking states of the West (AOF). Thus for some twenty years only the Ecole de Lomé (EAMAU) remained active, before other schools were established in the different capitals of the West African countries.

In this framework, an interesting aspect is the fact that the French imprint on the teaching of architecture has had a long-term effect on the separation between architecture, urban planning, and territorial planning/management, leading to the progressive weakening of the competent figures who deal with the city and its territory, the consequences of which are still being paid, today more than ever. This separation is now challenged only by the geographers who, however, have less interest and fewer skills for sustainable urban design and transformative addresses, focused as they primarily are on the descriptive/interpretative dimension. Although this latter is undoubtedly necessary, it is obviously not sufficient when there are stronger and more defined market- and economy-driven directions for urban transformation and hasty development.

Visions and competencies seem lost, while the worst effects of mistaken development choices are showing their environmental and social costs all around the world. The increase in inequalities and the lack of awareness about environmental issues require more appropriate knowledge and tools to extend also to the management of waste, the control of landfills, and the significant problem of soil and air pollution.

Nonetheless, in the last 20 years west African cities have never produced design plans with a duration of more than 15 years, while detailed plans are included with priority action programs of 5-7 or 10 years. Nowadays the focus is only on the (economic opportunities of) "the building dimension" and therefore limited to the single lot linked purely with the logic of real estate speculation. This means that construction design is totally uncoupled from the context, both in terms

of understanding the relevant issues and with regard to the objectives of transformation and the effects of improvement of the context itself.

A sustainable development perspective must, however, be imagined within a broader horizon even if, at present, only the Plan Senegal Emergent (PSE) 2014-2018 follows the Documents de Stratégie de Réduction de la Pauvreté (DSRP), and the Stratégie Nationale de Développement Economique et Social (SNDES) provides some initial guidelines for managing environmental issues. However, these tools appear insufficient and sharply at odds with the technical apparatuses and local population awareness with a very low level of information and attention as regards these issues.

2. Our “capacity building” project

According to this larger picture, we believe that Universities (schools of Architecture and Planning) have to play a stronger role in the near future in promoting a different culture of urban and regional development through a thorough and widespread involvement of the population.

But considering the weakness of the Universities and through a small international cooperation project funded by the Sapienza University, we started to define strategies to strengthen the scope of urban planning within the Architecture section of the IPP-Institute Polytechnique Panafricain in Dakar. With the IPP as a partner university, we are targeting actions for developing training capacities suited to the needs of local institutions, the city government, and the citizens.

First of all, this international cooperation project funded by the Sapienza has allowed greater awareness of the difficult conditions of western African cities’ urban development with regard to the priorities, in particular, of Sdg’s 11 goals. And since this collaboration is obviously insufficient to conduct experiments on the field which might bring about concrete urban transformation in terms of sustainable development, we have already submitted proposals for further EU Funds to create real opportunities for exchanging the different experiences of the various Italian and African cities in terms of urban and territorial planning for sustainable development in order to act cohesively in the urban environment.

Our international cooperation project, however, aims to carry out extensive-capacity building action to lay the foundations for a competent and active institutional subject in urban research and specialized training, connected to local and national networks. The expected results of the project concern:

- strengthening research and training capacities through exchange practices;
- consolidation of training structures (possibly with the reopening of the urban planning department) through a closer relationship with the demand from local institutions and third sector organizations;
- creation of a solid cooperation network interacting between training institutions, local, and third sector associations;
- creation of a research laboratory with école doctorale and a second level Master’s course.

Moreover, the collaboration among different Departments of public and private Universities will help them to absorb the deficit in research and professional training in complex urban phenomena and the management of territorial transformation in terms of sustainable development. Thus, by simultaneously structuring actions aimed at research and training in the field of urban studies we aim to analyze plans, policies, programs and their results also in relation to the demand for innovation of the social actors and professional bodies involved.

2.1. The hidden challenge (or the trap) of the professional orders’ role

While working we understood that the targeted strengthening of the planning disciplines has to include an on-going debate among professional orders as to the training contents for the recognition of an adequate role of professions. This means that university education depends, in some way, on the professional orders that decree their quality and role, with obvious implications for the fortunes (and survival...) of the different schools.

Not surprisingly, in Ivory Coast the two founders of the new school of architecture (2016) are members of the Steering Committee of the national professional orders by showing the level of proximity between schools and professional

profiles, and revealing some overlap that perhaps does not allow the training programs to be defined within a broader and more adequate scope.

As a result, technical aspects prevailed over every pedagogical dimension, forcing schools towards professional-only training. In some cases, given that a number of academics teach in their private professional offices, it also merged the work of Atelier and teaching.

Then, as in the worst Italian tradition, the school becomes a place for the direct co-optation of professionals rather than a University that prepares for life, research, and a profession.

In this context, our international co-operation project should help to:

- enter into the debate since the technique and practices have been painstakingly reconnected to research (De Leo, Forester, 2018, Coralli forthcoming);
- support the increasingly evident and sometimes hasty route towards an African States autonomy desiring to rethink and rewrite its own history by being a different interlocutor with respect to the traditional dependence on the French scene;
- share important knowledge with respect to the foundation of Italian urbanism within the faculties of architecture but also in the most recent history of planning courses both inside and outside the faculties of architecture;
- develop the spirit of shared work among different institutions that is different from the support coming from NGOs.

In our sense co-operation has therefore become a tool for:

a) **giving legitimacy** to small universities motivated within a system that cannot be said to ease the survival of quality university education that navigates between the blackmail of the financiers/investors and that of the single evaluators directed towards professionalization. What we are trying to create is a recognized network of professional orders and faculties of urban planning and architecture to check and define possible guidelines for a more adequate training of students and future professionals.

b) **facilitating interaction** with the many stakeholders who today define guidelines and minimum standards for the evaluation of structures in relation to training programs on the basis of a collaboration that introduces competence into the field and reinstates the link between architecture and urban planning. We ourselves are trying to contribute to the debate by putting together as many interlocutors as possible, some of whom are particularly relevant in also being either evaluators or financiers¹. The aim is to stimulate a different debate and introduce new directions by trying to obtain a reframing of last year's statements on the fear of the multiplication of sometimes inadequate private schools, as a response to which they threatened that the diplomas would not be recognized for enrollment in the order and therefore for the exercising of the profession. Then return to the evidence that there would be few architects to carry out the many activities 'provided for (with reference to the regulatory framework) without entering into the merit of questions more' related to merit and the correct response to the new and urgent urban issues

c) **experimenting with innovative teaching** investigating how to leave the lot and include the context; developing a detailed description of urban fabrics; defining a design oriented to the transformation and improvement of the context in terms of sustainability and inclusiveness, and refining the arguments supporting the project. The experimentation will be completed by the third year, and can be proposed as a semi-intensive workshop of two weeks, connecting it with the design course in the first half of 2019-20, in the first two weeks of November, preceded by a part on the reading of the model workshop already experimented.

3. Some conclusions and future perspectives

¹ For example, the Eamau-Ecole Africain des Metiere dell'Architecture e de l'Urbanisme requests is funded by each member state and by the UEMOA for courses. The occasion is the UEMOA-Economic and Monetary Union of West African countries (there are eight) that have an important role given the economic support given to university education, since the states participate with reference to what is required by the Eamau.

The collaboration between the Sapienza and IPP offered valid support to define the specific needs of each territory in order to better share the priorities of an action for sustainability: a) networking and enhancing the experience gained in the various Italian cities; b) accompanying the interaction between the different parts; c) promoting open and inclusive participation processes.

The adopted scheme of SHARING > EXPERIENCING > PRACTISING used among Italian and Senegalese university partners is oriented towards sustainable development objectives through the sharing of experience and reflections on the importance and implications that sustainability effected on the quality of life on an urban scale, strengthening and, by “doing together”, further validating plans and rules for the sustainability and inclusiveness of western African cities. Pursuing sustainable development objectives is indispensable for the survival and development of European as well as African cities. However, we also need to cooperate to fill the culture and knowledge gap as regards sustainable development by exchanging knowledge with African universities and cities, thereby supporting them on the urban planning design issue and experimentation at the local level for strengthening urban governance and contributing to the achievement of SDG 11.

The project is trying to bring together the different experience and knowledge of the Sapienza and IPP by trying to promote directions for long-term sustainable development plans for the sustainability and inclusiveness of western African cities based on a larger network of universities. It is therefore a working hypothesis that converges the pragmatism and skills of those who work on these issues – theoretically as universities and practically as local authorities – in order to intervene on a concrete reality while aiming to deduce directions also useful for those African cities that, due to political and administrative instability, cannot at this moment set themselves the urgent goals of sustainable development.

For the future, more exhaustive experiment objectives should include: - sharing sustainable inclusive development by bringing together Italian urban experience and practices and those of African cities (starting from Dakar), the better to reach jointly the 11 goals through plans and a regulatory framework;

- experiencing sustainable inclusive development by selecting areas for demonstrating at a practical level how urban resilience could be experimented on the urban scale;
- carrying out sustainable inclusive development to strength urban governance by involving the population in the process.

We feel sure this will have positive effects on:

- incentivizing. Technicians and professionals of all local authorities will be better stimulated to do their job. Adequate incentives for local authority technicians and professionals are generally sadly lacking, while playing a very important role in developing new competencies and skills for urban resilience and sustainability, starting from public institutions;
- Best practice. Researchers and academics in the field of urban planning, environmental engineering, and administrative law are considerably interested in comparing practices for defining plans and new and more adequate rules for pursuing sustainable development goals in the different contexts;
- Public involvement of inhabitants, local associations, school and university students of all the cities involved, particularly the citizens themselves.

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A collaborative learning approach to promote positive interdependence in a “Planning Sustainable Cities” course

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Abstract: Following the scholarship of teaching and learning, this study is contextualized in a “Planning Sustainable Cities” course. It presents a collaborative learning approach to promote positive interdependence. Under certain conditions, collaborative learning approaches can promote among students each other’s efforts to learn, resulting in positive interdependence (cooperation). However, cooperation is not always facilitated, and it might be challenged when students have diverse backgrounds. This study incorporated elements of mixed-methods and design-based research approaches. Pre and post-intervention surveys were conducted with 23 international students as well as in-depth interviews and focus group discussions on the type and level of collaboration, and student’s view of cooperative learning. Based on the results of the descriptive phase and the literature, we addressed two key issues during the design phase: improving group dynamics and facilitating collaboration in the Learning Management System (LMS). No outside enemy interdependence was observed (negative interdependence with another group). Means interdependence is the most predominant characteristic of positive interdependence present in group work and positively perceived by the students. In the collaborative learning approach that was designed, both a group dynamics workshop (analogue/in class) and group pages in the LMS seem to help in improving means interdependence.

Keywords: scholarship of teaching and learning, design-based research, collaborative learning, positive interdependence

Introduction

Following the Scholarship of Teaching and Learning (Bishop-Clark and Dietz-Uhler, 2012), this paper self-reflects and is grounded on the opening course of the MSc specialization on Urban Planning and Management (UPM) of the Faculty ITC of the University of Twente (the Netherlands). The UPM specialization consists of four interconnected courses of 7 ECTS credits each:

- UPM 1. Planning Sustainable Cities
- UPM 2. Building Inclusive and Competitive Cities
- UPM 3. The Compact City
- UPM 4. Risk-Sensitive Urban Planning Studio

Students of these courses are international and predominately from the Global South. This paper relies on the critical analysis of the “Planning Sustainable Cities” course where group work is one of the main teaching activities. Some of the advantages of group work are that students have the potential to maximize and share their skills with the rest of the group (Brewer and Klein, 2006; Haigh and Gold, 1993). However, during group work, cooperation is not always facilitated and motivated and it might be challenged when students have different cultural backgrounds, disciplines or skills (Hennebry and Fordyce, 2018).

I would argue that in a diverse and unequal world educating (future) planning practitioners requires them to practice empathic and collaborative forms of learning as opposed to competitive ones. Competitive values are clearly differentiated from those of *cooperative efforts*. Cooperative efforts values comprise “commitment to one’s own and others’ success and well-being, commitment to the common good, and the view that facilitating and promoting the success of others is a natural way of life” (Johnson and Johnson, 2009, p. 372). On the contrary, *competitive efforts* teaches the values of “getting more than others, beating and defeating others, seeing winning as important, and believing that opposing and obstructing the success of others is a natural way of life” (Johnson and Johnson, 2009, p. 372). In collaborative efforts group membership per se is not enough to produce higher achievement and cooperation, “knowing that one’s performance affects the success of group mates seems to create responsibility forces that increase one’s efforts to achieve” (Johnson and Johnson, 2009, p. 366).

Under certain conditions, collaborative learning approaches can promote and facilitate among students each other’s efforts to learn, resulting in *positive interdependence* (cooperation) (Brewer and Klein, 2006), critical thinking (Cooper, 1995) and students satisfaction (So and Brush, 2008). A typical structure of collaborative learning is think-pair-share. This study concentrates only on positive interdependence as long-standing evidence shows that it is at the core of collaborative learning (Johnson, Johnson, and Smith, 2007, p. 23; Laal, 2013, p. 1436).

However, there are different views on how to establish positive interdependence (Brewer and Klein, 2006) and new challenges emerge with the incorporation of digital tools (Jaldemark, Hrastinski, Olofsson, and Öberg, 2018). Therefore, the main goal of this research is to develop a (computer-supported) collaborative learning approach that promotes positive interdependence in a group assignment. This collaborative learning approach entails the use of digital tools such as a learning management system (LMS) as well as analogue methods (e.g. group dynamics coaching). The main research question of this research is:

How can certain computer-supported collaborative learning approach facilitate positive interdependence in a group assignment?

Effective cooperation and positive interdependence

Johnson and Johnson (2009) theorized that five variables mediate effective cooperation: positive interdependence, promotive interaction, individual accountability, social skills, and group processing. Furthermore, positive interdependence it is also considered as “the heart of cooperative efforts” (Johnson *et al.*, 2007, p. 23) and a pivotal aspect (Laal, 2013, p. 1436).

Positive interdependence exists when “there is a positive correlation among individuals’ goal attainments; individuals perceive that they can attain their goals if and only if the other individuals with whom they are cooperatively linked attain their goals” (Johnson and Johnson, 2009, p. 366). Positive interdependence encourages students to work together in order “to maximize the learning of all members, sharing their resources, providing mutual support, and celebrating their joint success” (Johnson *et al.*, 2007, p. 23). Johnson and Johnson (2009) also consider that positive interdependence results in *promotive interaction* and they give the example of “individuals encouraging and facilitating each other’s efforts to complete tasks in order to reach the group’s goals” (Johnson and Johnson, 2009, p. 366).

Types of positive interdependence

The literature on cooperative learning describes three main types of positive interdependence: *outcomes*, *means* and *boundaries interdependence*. From a motivational perspective, the goals and rewards that are defined in the project group task will encourage and orient the students to cooperate and work towards a common desired outcome (*outcomes/end state interdependence*). For example, a group could get a joint reward (a bonus) when every member of the team obtains a specified score (Johnson et al., 2007). Slavin (1996, p. 44) indicates that “cooperative incentive structures create a situation in which the only way group members can attain their own personal goals is if the group is successful”. The way that students perceive goals and rewards will influence what means they will choose to achieve the desired end state (Johnson & Johnson, 1992).

Means interdependence -and those proposing a social cohesion perspective- include the (complementary) *roles* that students are assigned within the group and the *tasks* assigned to individuals (tasks which are overlapping and interdependent on each other). Social cohesion theorists, “emphasize the idea that students help their groupmates learn because they care about the group” (Slavin, 1996, p. 46). Teambuilding, group self-evaluation and other cohesiveness-building activities can teach students value their groupmates, their roles will also make them dependent on one another and more likely “to encourage and help one another to succeed” (Slavin, 1996, p. 46). From a cognitive perspective the tasks and interactions that students perform will benefit cooperation and e.g. critical thinking for “reasons which have to do with mental processing of information” (Slavin, 1996, p. 49). Slavin (1996) explains the importance of group interactions and how students learn from each other since “in their discussions of the content, cognitive conflicts will arise, inadequate reasoning will be exposed, disequilibrium will occur, and higher- quality understandings will emerge” (Slavin, 1996, p. 49). *Resources interdependence* is the third subcategory of means interdependency and requires that each member has part of the resources needed to complete the task (Johnson et al., 2007, p. 23).

Boundaries among individuals and groups will also determine positive interdependence as they will determine who is interdependent with whom. Johnson et al. (2007, p. 23) state that *boundaries interdependence* may be determined by the way individuals are segregated into different groups based on “abrupt discontinuities” (e.g. students seat together, wear same shirts or share history). Three subcategories are recognized: *environmental* (related to the specific work area), *identity* (what binds students together), and *outside enemy* (negative interdependence with another group). This last sub-category, in my opinion and based on my teaching practice, may be problematic as it contradicts the values of cooperative learning by establishing an “outside enemy”. My assumption is that inter-group cooperation also generates intra-group cooperation and that groups do not compete against each other.

In this study, I focus on positive interdependence because its three categories: outcomes, means and boundaries interdependence are in direct relation to how a teacher designs the teaching and learning environment. In turn, positive interdependence results in *promotive interaction* and occurs when students encourage and facilitate each other’s efforts to complete tasks and achieve the group’s goals by (a) helping and assisting each other, (b) exchanging needed resources such as information and materials, (c) providing each other with feedback, (d) challenging each other’s conclusions and reasoning, (e) advocating working harder to achieve the group’s goals, (f) influencing each other, and (g) acting in trusting and trustworthy ways (Johnson et al., 2007, p. 24).

Theoretical framework

Figure 1 summarizes the theoretical framework used in this study. It focuses on a collaborative learning approach aiming at effective cooperation as a result of distinct types of positive interdependence. Based on this theoretical framework, the main research goal for design research is to develop a (computer-supported) collaborative learning approach that promotes positive interdependence in a group assignment.

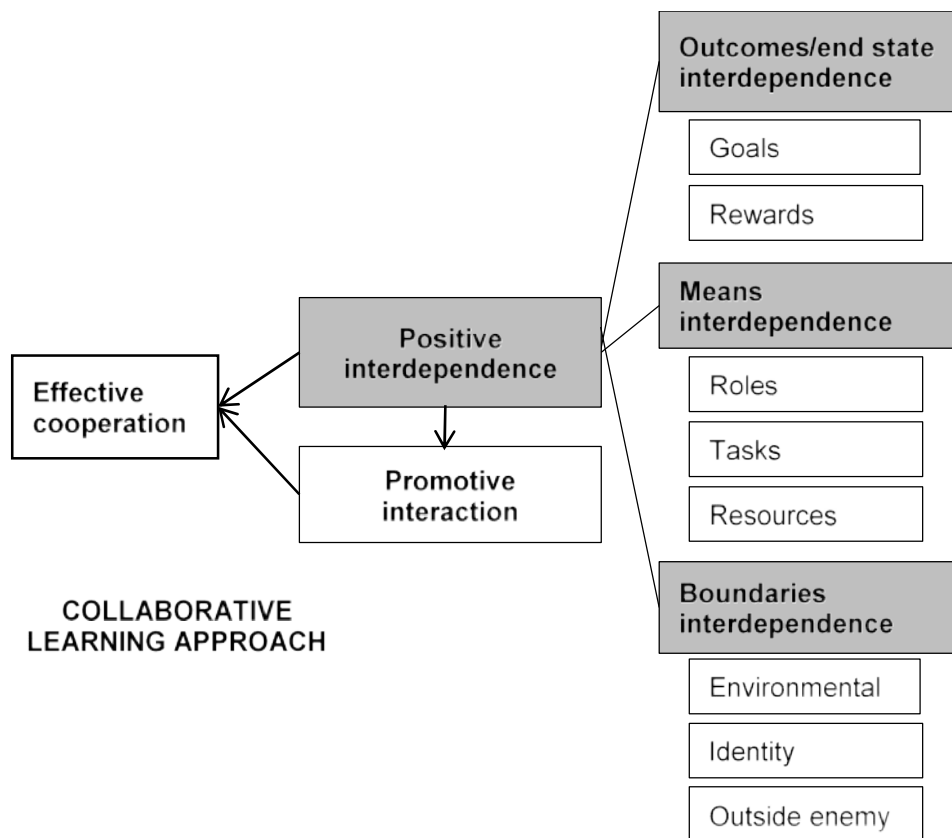


Figure 1 Theoretical framework. Positive interdependence types in collaborative learning.

Methods

This study incorporated elements of a mixed-methods (QUAL-quant) approach (Bryman, 2006; Tashakkori and Teddlie, 2010) and designed-based research approach. A better understanding of the needs, design and evaluation of a (computer-supported) collaborative learning approach required both the use of quantitative methods (e.g. cooperative learning questionnaire survey) as well as in-depth understanding of the type and level of collaboration, what students think about cooperative learning and why. The research participants were 18 students registered in the elective module “Analysis of intra-urban, socio-spatial patterns” (cohort 2017-2018) and 23 students of the UPM specialization course “Planning the Sustainable City” (cohort 2018-2020).

Data collection

Data was collected to 1- improve the understanding of student’s perception of group work, current obstacles and forms of group interaction; 2- to design a computer-supported collaborative learning approach; and 3- to identify what dimensions of positive interdependence emerge through collaborative learning.

During the different phases of this study, data was collected on 1- Students perception of group work assignments, current obstacles in group cooperation, types of positive interdependence and extent of use of Learning Management System tools in those interactions (descriptive phase), 2- types of positive interdependence emerging from computer-supported collaborative approaches (design phase), and 3- recommendations emerging from discussion with colleagues and course evaluation (evaluation phase).

Data was collected between June and December 2018 through: one paper based self-administered survey (Cooperative learning questionnaire –(Fernandez-Rio, Cecchini, Mendez-Gimenez, Mendez-Alonso, and Prieto,

2017)), one in-depth interview with alumna, two focus groups discussions (FGDs) and observations in the use of the LMS CANVAS™. As course coordinator and teacher, I collected the data myself and asked the support of a colleague to conduct the FGDs. The first FGD was conducted as a practical within a research methods class after the students had learned about FGDs. The facilitator was one of the students and we provided her with the conceptual framework. This help reducing the research-participant gap and power bias. The final FGD was moderated by an education specialist and was part of the course evaluation.

The measurement level of the quantitative data from the survey is ordinal (liker scale). The rest of the data is qualitative (text).

Secondary data was compiled and they consisted of formal course evaluations (EVASYS™) and instructions of similar group assignment used in the last 3 years.

Ethical standards and concerns

Participants were informed about the project and gave their consent (in written for survey and verbally for FGD). The FGD was recorded after informed consent. To reduce power bias, I used triangulation (i.e. anonymous students' evaluation of previous years) and final evaluation discussion was conducted by education specialist. Storage and processing of data is done following ITC protocols.

Analysis

The analysis of the data was done in three phases.

1. *Descriptive phase / needs analysis.* It included the definition and construct of positive interdependence (Figure 1) and current collaborative learning. I analysed the in-depth interview with former graduate, FGDs and course evaluation by making use of ATLAS.ti™ (axial coding).

2. *Design phase.* It included the design intervention (evidence-based). I used an existing and validated “cooperative learning questionnaire” (Fernandez-Rio *et al.*, 2017). The results of the survey were processed in SPSS. The variables were grouped into each of the five scales (including positive interdependence) using the median. I analysed pre- group work activity (before intervention) and the types of positive interdependence with descriptive statics of the survey.

3. *Evaluation phase.* It included an evaluation of the approach and recommendations for further design. I analysed and compared pre and post group work activity (after intervention) and the types of positive interdependence with descriptive statics of the survey. The results were compared with the pre- group work activity survey. I used text analysis to study the open questions of the course evaluations and the FGDs to identify which characteristics of positive interdependence where achieved during the group work.

Results and discussion

Descriptive phase

This section presents the results of the descriptive phase and it is structured around the sub-questions, qualitative data, literature review and quantitative data.

Students' perception of group work assignments and types of positive interdependence

Above all students are positive and value group work. As one student stated:

“For me group works is really important for the UPM course and they are the backbone because during those group works students learn a lot. So that’s one thing we cannot do without in UPM class”

In the course evaluation, one student specified that group work is particularly helpful during certain phases of the work such as sharing ideas:

“Group work is good especially in the analysis of data, you can learn some ideas from the other group members and build on your skill” [...] “It allowed sharing of ideas with colleagues”

A recurrent positive issue about group work during the FGD was that students appreciate the learning from different and each other’s backgrounds, skills and discussion. This is in line with studies that emphasize the cognitive perspective in group work (critical thinking) and social cohesion in particular. Slavin (1996) explains the importance of group interactions and how students learn from each other since “higher- quality understandings will emerge” as a result of the discussions (Slavin, 1996, p. 49).

The three types of positive interdependence (Figure 1) emerge from the interview and FGD but with different degrees of prevalence.

1- Outcomes / end state interdependence

For some students the main goal and motivation was to finalize the assignment in time and successfully. As one student put it “you need a common output”.

The importance of group integration in positive interdependence can be recognized in the words of this student: “For within the group I think you need a kind of 100% interaction because if you don’t integrate well the assignment will not come out well”. Therefore, providing a good output of the assignment was the motivation for that group to seek for integration within the group members.

A different type of motivation was present in students that received a scholarship. They were motivated to help each other to obtain a final group mark above the threshold required by the scholarship regulations.

Working together did not prevent that some students recognize individual learning goals as well. As one of the students explains:

“My goal was, regardless of whether we have to finish the assignment; I had to understand all the aspects of the assignments. For instance, if it was about spatial analysis and even if I am not the one doing the spatial analysis I have just to do it and get to know how has this person done the spatial analysis”

Above all, several students perceive the need to bring –as one student put it- “different strengths together to succeed”.

2- Means interdependence

From all the forms of positive interdependence means interdependence was the one that students discussed most about during the FGD.

The tasks and roles are clearly divided within the group and they are interdependent of each other. However, some students complain that they remain in their role and expertise throughout the course:

“So if I am assigned to do the things that I am able to do then I was continuously doing GIS work but I am not learning how to become a planner. So you should assign different people to different works so you can learn something else”.

All the students recognize the existence of a process of negotiation to identify skills and distribute tasks. Before starting the group work, students divide the tasks based on their existent skills and they negotiate who is doing what. One of the interviewees explains this process:

“First of all, when setting the TOR, I mean the division of labour, we tried to pick what you are good at, what you think you can handle comfortably or even with some effort. If you are not very sure about a particular section, it makes no sense to pick it...because then you don’t deliver”.

Another student added that the “most important thing is to coordinate all the work. You need to give...divide the work into several parts and everyone should complete their own part”. This negotiation process seems to be a pre-requisite for the fulfilment of expected outcomes. It requires strong social skills and determines the importance of social cohesion in the group. In some cases, this seems to be challenged by problems of communication among members. Some students complain that some participants were absent during work and did not communicate with the rest of the group.

In terms of resource interdependence, each member of the group has parts of the resources needed to complete the task. This is confirmed by one interviewee, and particularly in relation to resources provided to each of the groups by the teachers:

“One of the best things about assignments in UPM or ITC is that most of the resources such as data you find that is provided or is from case studies, from real life projects. So you find each and every student is able to access that”.

3- Boundaries interdependence

Boundaries among individuals and groups will also determine positive interdependence as they will determine who is interdependent with whom. From the analysis of the interviews, it seems that the environmental interdependency subcategory (*where* students work) plays a role in this but neither the distribution of the furniture nor the LMS had been designed considering that aspect.

The international character of ITC may be the identity that binds together members in a group. From the text analysis no outside enemy interdependence was observed (negative interdependence with another group); on the contrary, several students indicated that the collaboration transcends the boundaries of their own group:

“If we had a group discussion the class was the perfect environment because at the class you were able to know what the other groups are doing, are you also at the right direction and the lecturers were able to pop in and see if you are working well. So the classroom was the perfect place for group discussion”

Another student further elaborated on inter-group cooperation:

“We were able to solve any difficulties that arise among, for instance if it is a group that has a difficulty for instance in analysing flooding, they do not know how to use the tool, they are able to get the way or to get the skill from another member form another group”.

In terms of environment interdependence, students prefer to work in a classroom designated for group work as they can consult each other (within the groups and across the groups), “the classroom was the perfect place for group discussion”. Lecturers also came in to respond questions or support students. In case of extra work required to reach a certain deadline, students use the facilities at the ITC Hotel (the student accommodation provided to international students enrolled in ITC courses).

Current obstacles that hinder cooperation during group work and types of interaction

Most of the obstacles that students mention relate to social cohesion (e.g., group formation) rather than motivation (lack of goals or insufficient rewards). In terms of motivation, some students find that the weight of



the group mark is too low (in the case they mention they suggest that it should be 50%, equally to the individual reflection report). The pressure to achieve a certain group mark above threshold due to sponsor or scholarship regulations was also mentioned as an obstacle.

Several obstacles related to social cohesion and means interdependence were mentioned during the interviews. Some students prefer to choose the members of the group themselves (as they know the skills and capabilities of their potential partners) and even completely refuse to work with others (at least one case was mentioned during the interviews). The later generated conflicts especially when a lecturer allowed those students to work individually and they were exempted to integrate with the other groups. One student also reflected that some short course participants (those that are enrolled only for a particular course and not the full MSc) probably had different motivations to work in groups:

“There are people that come for short courses...their motivation is different from ours. Some of the groups that collapsed had this kind of people who came here for a SC [short course]. Maybe their main motivation was to go to Amsterdam Friday night...this kind of things creates a problem”

Finally, some students feel trapped in the role that was assigned to them in the group work (e.g. “the mapmaker or the GIS expert”) and they must conduct that role throughout the course. Rules on group dynamics are present in the group assignment but they seem not to motivate students to cooperate or to facilitate social cohesion. It is worth noting that none of the students mentioned boundaries interdependence elements hindering cooperation. From this, and the staff meeting discussed in the following section, it was clear that in the design phase social cohesion and means interdependence should receive special attention.

Types of positive interdependence explicitly stated in previous UPM assignment

The UPM group assignment that has been used in the past (The Sustainable City, cohort 2017-2019) only included a separate section with brief indications on groups dynamics to determine roles (e.g. coordinator and reporter). No rewards for group work or clear objectives for the need of group co-operation were reflected in the rubric. During a meeting with teachers involved in group work I also identified current challenges (e.g. lack of specific objectives in the study guide that justify group work). One of the outputs from that meeting for the design phase (also in coincidence with the literature) was to have a cohesiveness building and group dynamics activity.

Types of tools students use in and outside the LMS for group interaction

During the FGD students indicated that they mostly use WhatsApp™ groups to make appointments and Google™ Drive or Dropbox™ to exchange and share data outside the LMS (that cohort had used BlackBoard™). Eventually e-mail is used as “sometimes Google Drive does not work”. From the FGD it came clear that the design of the computer-supported collaborative learning approach could incorporate elements to facilitate means interdependence (e.g. facilitate discussion and sharing of data) but other elements related to social cohesion and group dynamics should be conducted in classroom. The next section discusses the literature review on computer-supported collaborative learning. Some of the studies show comparable results.

Computer-supported collaborative learning

Research on computer-supported collaborative learning shows that learning management systems (LMS) enhance collaboration (Jaldemark et al., 2018). In particular, group interaction usually increases significantly in the phase of project where students need to exchange work (Taylor, 2005, p. 35). Asynchronous interaction can be facilitated by computer-supported environments and offers advantages to collaboration such as reflection. Furthermore, “document sharing communicates project focus and demonstrates progress toward the final deliverable. Autonomously intra-group interactions —discussions, problem solving, sharing, revising,

reviewing, and commenting are all important learning opportunities” (Taylor, 2005, p. 35). Contrariwise, in the University of Twente a report showed that group collaboration is hardly used within the LMS (i.e. BlackBoard™). Students choose to use tools outside the LMS (i.e. Whatsapp, Dropbox and Google-tools). In the faculty ITC the function “groups” in BlackBoard was only used by 9% of the respondents (University of Twente, 2015).

In a project carried out for the Media Studies Seminar at the Katholieke Universiteit Leuven, computer-supported collaboration was used to facilitate positive interdependence (Buelens, Mierlo, Bulck, Elen, and Avermaet, 2005, p. 129). The authors indicate that to favour high positive interdependence they created a fair division of tasks “by partitioning group work into mutually connected sub-tasks, and by advising about role and turn taking within subgroups”. The authors further promote means interdependence, and to enhance individual accountability and responsibility, they subdivide the task in smaller units and students have to peer assess their contribution within the group at four points during the academic year. Some of the tools mentioned by the authors were aimed at facilitating *information delivery and information exchange* between students (e.g. digital drop boxes, group pages, and group calendars). To prepare (and follow up) regular face-to-face meetings, *asynchronous communication tools* (e.g. group email and group discussion forums) were also provided. Some elements of boundaries interdependence are observed in this project as the authors claim that “besides facilitating group work in a direct way, having a virtual group space at one’s disposal was also intended to enhance a feeling of belonging to a group” (Buelens *et al.*, 2005, p. 129).

There are claimed benefits related to the use of social media to facilitate interaction and sense of community within groups. Some authors claim that current students as “digital natives” tend to use social media as their primary source of information (Ahern, Feller, and Nagle, 2016). These authors report that students prefer “unofficial” channels of communication instead of “official” channels (e.g. LMS or e-mail). The choice of using unofficial channels like Facebook seems to be related to the easy to access characteristic of Facebook, which motivates them to interact with each other.

Results of cooperative learning questionnaire before design

Table 1 shows the results of the cooperative learning questionnaire. This was used to measure the level of positive interdependence perceived by the students in the cohort 2017-2018.

Table 1 Cooperative learning survey cohort 2017-2018

		Cooperative learning perceived by students				
		Positive Interdependence	Individual and group accountability	Promotive interaction	Interpersonal skills	Group processing
N	Valid	18	18	18	18	18
	Missing	0	0	0	0	0
Mean		4.3333	4.3333	3.9444	4.1944	4.1389
Median		4.0000	4.5000	4.0000	4.0000	4.0000
Std. Deviation		.56880	.56880	.78382	.59752	.63722
Range		2.00	2.00	2.50	2.00	2.00
Minimum		3.00	3.00	2.50	3.00	3.00
Maximum		5.00	5.00	5.00	5.00	5.00

Note. Likert scale 1-5 (1 strongly disagree, 5 strongly agree)

Promotive interaction is the scale with the lowest value and the highest standard deviation (Table 1) this can also be observed in the percentage of responses in some of the items (Figure 2) such as in questions 19, 14 and 8). The disagreement in the responses on question 8 “we cannot finish an activity without the contribution of our colleagues” could be explained by some specificities in the group related to the type of sponsor or funding rules students have. As some students explained, if they must take over a task from someone else to finish the work and obtain a higher mark, they will do it, in particular if they feel the pressure to obtain a higher mark due to sponsor regulations. In the group dynamics section of the previous UPM assignment there was no indication given to the different expectations students may have while starting a group work.

The literature shows the importance of sharing material in order to facilitate positive interaction (Buelens *et al.*, 2005, p. 129). Yet, 17% of the students disagree that sharing materials is important (question 13 in Figure 2). In the design phase social cohesion, means interdependence and sharing facilitation receives special attention.

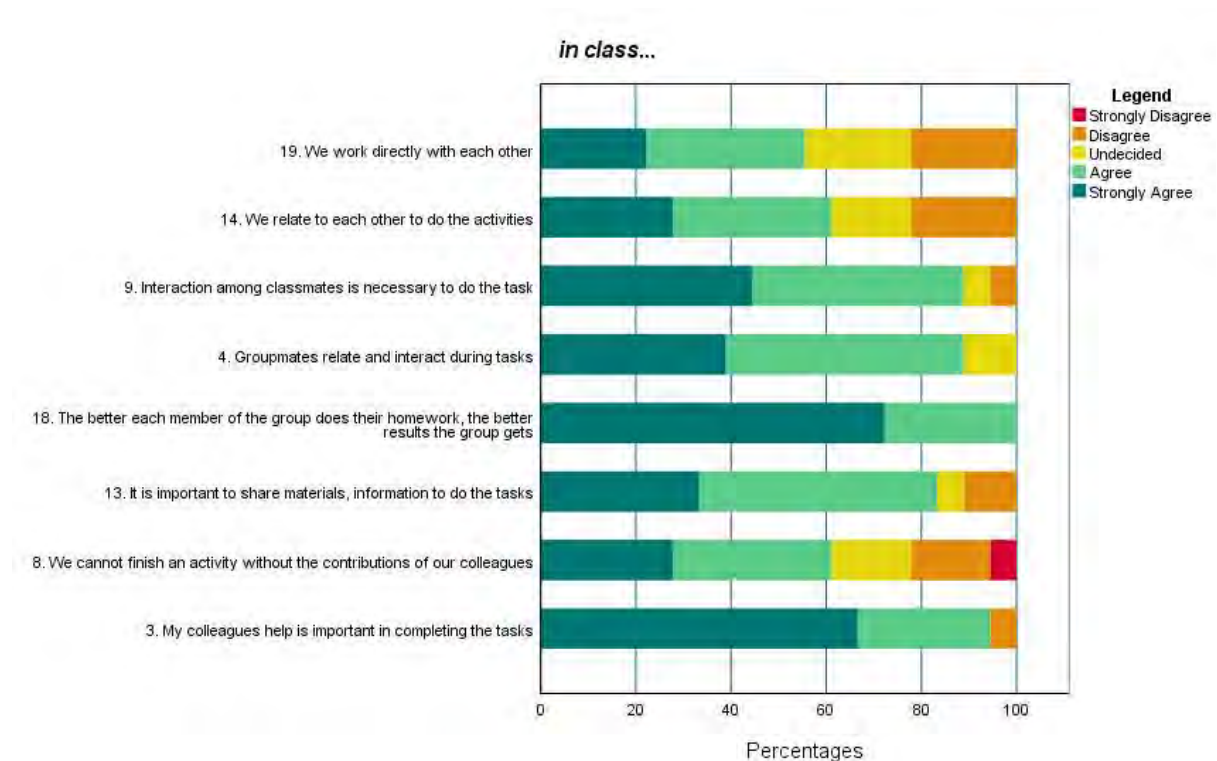


Figure 2 Promotive interaction (19, 14, 9, 4) and Positive interdependence (18, 13, 8, 3) responses students (cohort 2017-2018).

Design phase

Based on the results of the descriptive phase and the literature review I addressed two key issues during the design phase: 1- improving social cohesion through group dynamics workshop and 2- facilitating collaboration in CANVAS through asynchronous tools.

To improve social cohesion and group dynamics, I had a meeting with teachers involved in group work and we identified the main obstacles in group dynamics. We incorporated a group dynamics workshop the first day that the group assignment was presented. The other main element of this approach was incorporated in the

formulation of the assignment and in the design of the course material in CANVAS. We paid attention at the following dimensions of positive interdependence.

1- Outcomes / end state interdependence

We included a peer assessed item in the rubric for “active group participation” including these items:

“Rate your group members. Rate yourself at your own name on:

- a- “Active participation in group discussion” (contributing with ideas, discussing, communicating)”, and
- b- “Active working on agreed tasks (according for example the group contract)”.

The possible responses ranged from 1 (contributed scarcely) to 5 (contributed significantly). We intended to incorporate this peer assessment using an LMS extension called WebPA (which had been functional in BlackBoard) but it was not possible in CANVAS. The assessment was conducted in Google forms.

We included in the rubric 5 points (out of 115) to every student that collected green space data and shared it to the rest of the groups.

One of the outputs of the group dynamics workshop was a group contract. Each group had to sign a group contract where they also made explicit their expectations (e.g. if they aim at having a higher mark due to sponsor). Each group uploaded their group contract in CANVAS within the group home page.

2- Means interdependence

In CANVAS we included collaboration tools and instructions to facilitate cooperation and communication. They included group pages, group work discussions page and a group dynamics pages with invitation to the group work dynamics workshop. We included videos (tutorials) on how to use these tools.

Each group received its own group home page where they could upload files, share data, and create group discussions. The structure of the group page was pre-designed to stimulate cooperation –i.e. folders included names such as shared data and shared literature.

The group assignment pages included the instructions for the assignment and hyperlinks to group pages and general discussion section for group work questions.

3- Boundaries interdependence

The classroom was divided in two spaces, one for lectures and group presentations (traditional classroom arrangement) and one for group work (five tables and workshop material were always available in the room). Students were encouraged to appropriate the space and hang posters if needed.

Student created a name for their group to stimulate positive identity interdependence (e.g. “The dreamers”, “Bizck-T”)

In the meeting with teachers involved in the course we decided that it was better that I (course coordinator) assigned members to each of the group. Five groups were preassigned mixing gender, country of origin/continent and course duration (2 years MSc or short course). In total, there were three groups of five members and two groups of four members. One of the students indicated during the FGD that their preference was to choose themselves the members of the group but, on the other hand, they understood that in real life projects, and in particular, in the field of planning, they have to work within a team of people they do not necessarily choose.

Evaluation phase

This section aims to evaluate the design of the LMS. It compares the survey scores of the cooperative learning questionnaire before and after design and tries to find out explanations of possible changes.

The quantitative analysis shows a slight improvement in the perception of positive interdependence after the group work. The mode and mean in positive interdependence increased from 4 to 5 although the standard deviation and strongly disagreement responses increased (Tables 2 and 3). This can be observed in the statement “*we cannot finish an activity without the contribution of others*” with an increase of those who disagree from 13% to 33% (Figure 3). The statement “*It is important to share materials, information to do the tasks*” received responses that are more positive after the intervention. The percentage of students who perceived sharing materials as important increase from 52% to 71% (strongly agreed with the statement). From the qualitative analysis this could be explained by the positive perception that students gave to the group pages in the LMS as a place to share information within the group.

Table 2 Cooperative learning cohort 2018-2020 (survey a- before intervention)

		Cooperative learning perceived by students (PRE)				
		Positive Interdependence	Individual and group accountability	Promotive interaction	Interpersonal skills	Group processing
N	Valid	23	23	23	23	23
	Missing	0	0	0	0	0
Mean		4.3478	4.3478	4.1304	4.3261	4.3913
Median		4.5000	4.5000	4.0000	4.5000	4.5000
Mode		4.00 ^a	4.00 ^a	4.00	4.00	4.00
Std. Deviation		.41106	.50979	.64345	.46731	.39762
Range		1.50	1.50	2.00	1.50	1.00
Minimum		3.50	3.50	3.00	3.50	4.00
Maximum		5.00	5.00	5.00	5.00	5.00

a. Multiple modes exist. The smallest value is shown
 Note. Likert scale 1-5 (1 strongly disagree, 5 strongly agree)

Table 3 Cooperative learning cohort 2018-2020 (survey b- after intervention)

		Cooperative learning perceived by students (POST)				
		Positive Interdependence	Individual and group accountability	Promotive interaction	Interpersonal skills	Group processing
N	Valid	21	21	21	21	21
	Missing	0	0	0	0	0
Mean		4.4524	4.2857	4.3095	4.4048	4.4524
Median		5.0000	5.0000	4.5000	4.5000	5.0000
Mode		5.00	5.00	5.00	5.00	5.00
Std. Deviation		.96053	1.06737	.96794	.70034	.68747
Range		3.50	4.00	3.50	3.00	2.50
Minimum		1.50	1.00	1.50	2.00	2.50
Maximum		5.00	5.00	5.00	5.00	5.00

Note. Likert scale 1-5 (1 strongly disagree, 5 strongly agree)

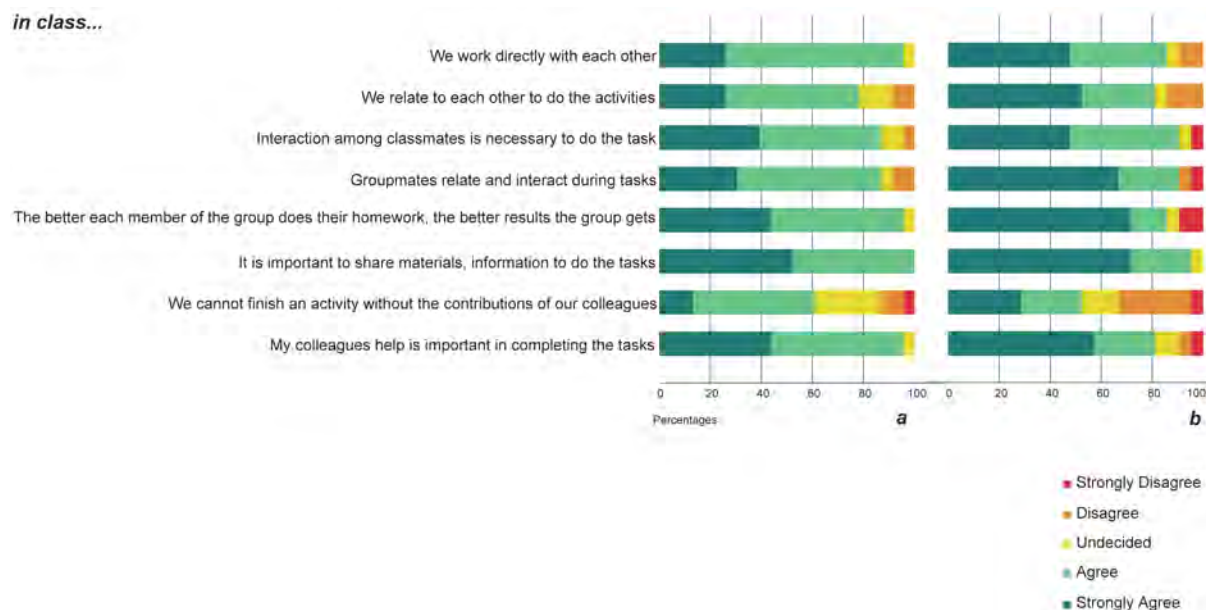


Figure 3 Promotive interaction (19, 14, 9, 4) and Positive interdependence (18, 13, 8, 3) responses students (cohort 2017-2018). a- before intervention, b- after intervention.

4. Conclusions and recommendations

The quantitative and qualitative analysis show that means interdependence is the most predominant characteristic of positive interdependence present in group work and positively perceived by the students. In the collaborative learning approach that was designed, both the group dynamics workshop (analogue/in class) and the group pages in the LMS seem to help in improving means interdependence.

Outcomes interdependence requires further attention as the objectives of the group work and the instructions uploaded in the LMS are not always clear.

In terms of boundaries interdependence, it seems that working in class in different groups is favoured by the students and even more when there is the possibility of contacting the staff in class (e.g. to receive feedback). No outside enemy interdependence was observed (negative interdependence with another group) but inter-group collaboration. Some students prefer to choose the group members, but they also recognize that in real life projects, and in particular in the field of planning, they have to work within a team of people they do not necessarily choose.

Johnson et al., (2007) summarize the core of positive interdependence by asserting that the precondition for any cooperative learning situation is that students “*must perceive that they are positively interdependent with other members of their learning group, that is, students must believe that they sink or swim together*” (Johnson et al., 2007, p. 23). The way that the LMS and the collaborative learning approach is designed and implemented could help them to “swim together”.

Based on the implementation and the course evaluation these are the main recommendations:

1- Outcomes interdependence

- Add clear learning objective(s) to group work instructions.
- Make more explicit why group work is relevant for the assignment.

- Improve instructions and discuss with students face to face if they have difficulties interpreting the assignment. It should be noticed that the discussion page in the LMS where students could have posted questions on the assignment was not used by the students.
- Reconsider the use of tools embedded in the LMS to peer assess participation, preferably in consultation with students before starting the group work.

2- Means interdependence

- Keep in the LMS group pages as students valued the possibility of storing and sharing data within the LMS.
- Keep group dynamics workshops and evaluate possibility of introducing social skills as part of the core training in the MSc.

3- Boundaries interdependence

- Keep the classroom as the place where students can work in group, physically interact with group members, across groups and staff.
- Invite students to choose a name for the group as it stimulates positive identity interdependence.
- Value and encourage inter-group collaboration.

Despite of the development of a computer-supported collaborative approach, I find that an LMS cannot substitute face-to-face teacher and learner meetings and interactions. Group pages in an LMS are useful but this paper shows that group discussion did not take place in the virtual environment and students prefer to communicate in class. Above all, students clearly appreciate working in class in a diverse and international environment.

The main strength of the scholarship of teaching and learning and the design-based research approach, was that it allowed me to reflect on my own teaching and perform research related to a specific teaching and learning activity in an urban planning course. As I indicated in the introduction, I would argue that in a diverse and unequal world educating (future) planning practitioners requires them to practice empathic and collaborative forms of learning as opposed to competitive ones. Within the UPM specialization and in courses like the “Planning Sustainable Cities” we emphasize, among others, the relevance of a better understanding of unequal quality of life conditions, spatial equity and social justice, and concepts of inclusive city and the just city (Fainstein, 2010, 2014). In this paper I have not discussed in detail the content of the planning course. However, it is not only *how* we teach and learn but also *what* we teach that will determine how empathic future planning practitioners will be.

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Training Young Planners as Experts in Participatory Processes: Thoughts and Experiences from Palermo, Italy

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Abstract: The following reflections are based on an innovative planning education model inspired by the cooperation of the Department of Architecture with public and private stakeholders. The model is based on two topics that are widely debated in urban studies, but apparently unconnected: the dissemination of participatory practices and cooperation between public and private actors, and the scientific and professional training to provide for new generations of urban planners. We argue that preparing students engaged in urban studies to the management of participatory practices is an inescapable need in today's Italian and international context. To address the issue of public-private cooperation in Italy, as a new approach to contemporary governance, we must consider that participation is increasingly becoming a subject of discussion. In the educational path we propose, qualitative techniques have been used mainly, but not exclusively. Thanks to the comparison of the points of view of the social actors involved in these processes, planning students have acquired professional skills that are producing significant professionalizing effects, including the birth of some associations of young graduates engaged in cooperation processes with the municipal administration. We therefore believe the experience of Palermo can be significant beyond the unique local context.

Keywords: participation; teaching methods; education; governance

A combination of participation, research and education

The relationship between participation and research has been extensively investigated in recent decades, up to the theoretical elaboration of the Participatory Action Research (PAR): several scholars (see for example Kindon, Pain and Kesby, 2007 for the English-speaking context; in Italy see Sclavi, 2007; Cellamare, 2012; Morisi and Perrone, 2013) have highlighted how the forms of participation are excellent tests for field research. On the other hand, the link between participation and educational practices is also a well consolidated approach that urban scholars have been investigating in the last few decades (Howard, 2010).

However, books and articles that try to connect the three fields mentioned above (participation, research and education) in a single theoretical framework prove to be less widespread and acknowledged. A few essays (McNall, Barnes-Najor, Brown, Doberneck and Fitzgerald, 2015) point in this direction, highlighting the potential for systemic change that the synthesis of those three fields has, but there are likely several steps forward that need to be taken. The effects of such a theoretical advancement could be significant, for example,

in terms of the repercussions on the occupational sphere of young jobseekers, as Stenberg and Fryk (2012) have pointed out.

In the light of these considerations, the present work proposes the task of investigating an experience in Palermo, which has been going on for 6 years and which has involved a large number of various social actors, in order to think precisely about the relationship between participation, research and education. As the conclusions of this paper will show, reasoning simultaneously on these three areas can produce concrete effects that have an impact not just on the territory, but also on the careers of young graduates in urban studies.

Participation as an unavoidable horizon for urban studies

To date, we cannot but recognise that participatory practices have become an indispensable element in tackling the issue of contemporary governance. Even Italy, albeit several years late, is facing the need – or even the legal obligation, as we will soon describe – to increasingly include participatory instruments in its urban policies.

Over the last fifteen years, in fact, we have witnessed a multiplication of studies on participation in Italy, both with the circulation of ‘practical guides’ for users and administrators (see, for example, Bobbio, 2004 and Regione Emilia-Romagna, 2009; also, Arena and Iaione, 2015 discuss a topic which is very close to participatory practices: urban commons and their management), and, sometimes, thanks to theoretical frameworks that can support the use of participatory practices (Ciaffi and Mela, 2006; Bignante, Dansero and Scarpocchi, 2008; Sartori, 2011; Cellamare, 2012; Picone, 2012; Burini, 2013; Morisi and Perrone, 2013; Celata, 2014).

As already mentioned a few lines ago, today in Italy participation is increasingly becoming a legal obligation (Banini and Picone, 2018). Several Regions have enacted laws that provide for the use of participatory processes (Table 1): the presence among these Regions of Emilia-Romagna, Umbria and Tuscany it is not surprising (Vizioli, 2014), considering the facts that these have always been ruled by progressive local governments; however, other Regions are joining the first ones, although they do not have as many previous experiences as those of the three Regions mentioned above. There are also cases of particular importance, such as the very recent case of Apulia: in this context, the national State considers that the Region is advocating to itself, with Regional Law no. 28 July 13, 2017, competences that do not belong to it; see the news ANSA published on http://www.ansa.it/puglia/notizie/2017/09/08/governono-a-legge-partecipazione-puglia_2b42399c-ef76-47a0-ac04-0cbac9ae7dbf.html, date of access: 12/05/2019.

Region	Regional Law	Web Site
Emilia-Romagna	Legge Regionale 3 (July 9, 2010)	http://partecipazione.regione.emilia-romagna.it/tecnico-di-garanzia/legge-regionale-n.-3-2010
Umbria	Legge Regionale 14 (February 16, 2010)	http://leggi.crumbria.it/mostra_atto.php?id=47211&
Tuscany	Legge Regionale 46 (August 2, 2013)	http://www.regione.toscana.it/-/legge-sulla-partecipazione
Piedmont	Legge Regionale 10 (May 16, 2016)	http://www.regione.piemonte.it/governo/bollettino/abbonati/2016/20/attach/l201610_polsoc.pdf
Basilicata	Legge Statutaria Regionale 1 (November 17, 2016)	http://www.consiglio.basilicata.it/consigionew/site/consiglio/detail.jsp?sec=107173&otype=1150&id=3376636&anno=2016
Apulia	Legge Regionale 28 (July 13, 2017)	http://partecipazione.regione.puglia.it/
Campania	Legge Regionale 23 (July 28, 2017)	http://burc.regione.campania.it/eBurcWeb/directServlet?DOCUMENT_ID=108008&ATTACH_ID=160507
Abruzzo	Under discussion	https://urp.regione.abruzzo.it/images/ppt/PresPartecipazione.pdf

Table 1: Regional Laws on participation in Italy, in chronological order.

At the municipal level, several cities are also increasingly carrying out experiments on the subject of citizen participation. Among these, Turin (Sclavi, 2014) and Bologna (Arena, Iaione, 2015) have a long and well-known history of NGOs and associations that have long been dealing with this issue; less frequent are for the moment the participatory experiences in Southern Italy, although with some notable exceptions, such as the case of Palermo which is described in this paper. Suffice it to say that more or less effective participatory experiences have been carried out in Palermo for years (see Schiavo, 2003; Trapani, 2012; Picone and Lo Piccolo, 2014; Picone and Schilleci, 2016; also see the website <https://www.comune.palermo.it/partecipa.php>, date of access: 12/05/2018).

Despite the mediatic and political interest in the topic of participation, however, many notions are still vague and easily exploitable, probably because participation is not part of the traditional Italian normative and regulatory tradition (Sclavi, 2014; Arena and Iaione, 2015). This shows that it is essential to multiply not only the practical experiences, but also the theoretical reflections on participatory practices, if we want to avoid the risks – or, even worse, the attempts – of manipulation that, among others, Arnstein (1969) and Habermas (1981) have been explaining and describing over the last decades.

The *Panormus* Project

In 2013, the event ‘*Panormus*: The School adopts a monument’ had already reached its twentieth edition in Palermo. During that same year, the University of Palermo, and in particular the Department of Architecture, started a collaboration with the Department of School of the Municipality of Palermo and with several schools ranging, from primary schools to high schools. The Department of Architecture has identified the authors of this paper as the scientific directors of a memorandum of understanding that was signed in 2013. For some years now, in fact, the authors have been coordinating a research group that has initiated specific studies, clearly reflected in the didactics, on the topic of the neighbourhood as a physical element in the design of the city but also as a place of resistance to the crisis of public spaces (Picone and Schilleci, 2012).

The *Panormus* project (Panormus being the ancient Latin name given to the city of Palermo) was structured in such a way that the many actors who, directly or indirectly, act on the transformations of the city could synergistically initiate participatory processes aimed at the knowledge and design of urban space (Picone and Schilleci, 2016).

The motivations that led to seek this collaboration between institutions and citizens find their initial input in the precise will of the authors of this paper to 1) provide the students of planning and urban studies with an educational offer that is not only theoretical but also practical, and 2) to strengthen the planning approach in urban studies, no longer considering it just a technical approach to the analysis and subsequent design of cities, but an approach based on the constant exchange between two disciplinary areas: urban planning and social sciences, which can be considered two sides of the same coin, fruitfully communicating with each other (Phelps and Tewdwr-Jones, 2008).

The students who attended these courses were invited to tear down the mental barriers according to which urban analysis can be either purely technical or purely social, and adopt the neighbourhood itself as the scale of research, within an action-research framework.

The project involves the ‘adoption’ of the neighbourhoods in which the schools are located, and in the first phase of the collaboration it produced – through classroom work, but above all through field experiences – several ‘neighbourhood guides’ that helped the residents (both the younger and the adults) to observe the area in which they live through different lenses, recovering the concept of neighbourhood as commons, beyond the individualism that characterizes today’s society. One of the first goals of the project, therefore, was to create students-citizens aware of the strengths and weaknesses of the territory in which they live, to encourage actions of change from below and participatory planning of neighbourhoods from multiple points of view.

A significant step forward was taken after the second year of collaboration, when the designing aspect was added to the name, transforming the title into ‘The School adopts [and designs] the neighbourhood’ (*La scuola adotta [e progetta] il quartiere*; see Figure 1).



Figure 1: Poster for the fifth edition of the *Panormus* project.

The project is grounded on the idea that no single building (be it a school, a church or any other historic monument, or even any single residential building) is an island, isolated from the context. Therefore, on the one hand the general interest was no longer addressed to a single element but to the complexity of the urban system that hosts it, while on the other hand this approach led to re-design the context itself through a shared methodology.

This evolution will lead to a real and complete process of participation, which will go through both the knowledge and the design phases.

In a process of continuous verification, planning students have coordinated not only the pupils of the schools involved in the work, but also the inhabitants and institutions, approaching the work as real professionals. In

fact, the actual regeneration projects that stemmed from the generic *Panormus* project, besides being shared and therefore certainly more effective, were based on another essential element: that of feasibility. The final dossiers written by the students, therefore, provided not only for the list of all the actors who will have to play a specific role in the process, but also the possible sources of funding that the administration could draw on for the implementation of the project.

The overall evaluation of the work done so far has been very positive, having met with a high degree of satisfaction from schools and citizens and having started a dialogue process, which is still in progress, with the municipal administration. The latter has recognized the value of the method and results, so as to start discussion tables with the Department of Urban Planning of the Municipality of Palermo, which is drafting the new planning tool (a masterplan) for the city (Figure 2).



Figure 2: The urban regeneration project drafted with the help of students and residents from the 6th municipality ('circonscrizione') of Palermo. The authors of the project are four students of the Urban Planning curriculum of the University of Palermo: Vittoria Attardi, Renato Collisani, Uma Damico and Giulia di Fisco.

Methodology and Professional Repercussions

The path that the students of the Urban Planning curriculum have followed, and that in some cases they continue to follow, has led to the acquisition of a greater awareness of the profession they are going to undertake, producing significant professionalizing effects, even if at the moment the process is still ongoing.

Certainly the awareness of the role of the planner as the main actor in the planning process is a great step forward, which has led the students to reflect on the skills and on how to create professional associations that, based on the experience conducted and increasingly deepening the methods of participatory planning, can make us think again of the city project as a shared project which is never imposed as top-down, but rather discussed and enacted in a framework that is focused on governance as collaboration between public and private stakeholders.

Some initial results have already arrived. The launch of some of these associations has already borne fruit, through forms of cooperation with the municipal administration.

Based on these first experiences, today we are working on the creation of an academic spin-off, which can create job opportunities for young professionals, by developing those methodologies that the students have been practicing and by bearing in mind that the city, along with its project, is not a series of lines drawn on a map, but is a bustle of people living together, is the set of multiple heterogeneous spaces but in relation to each other.

The experience of Palermo, if related to others that are starting to grow over different cities all over Europe, can be significant, even beyond the local context, for a relaunch of the project of urban regeneration.

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Although the paper should be considered a result of the common work and reflection of the two authors, Picone took primary responsibility for the first two sections of the paper, while Schilleci took primary responsibility for the last two sections.

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Creating shared consciousness through collaborative education: the case of municipal amalgamation in Ukraine

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Abstract: Since the launch of decentralization reform in Ukraine in 2014, the country has become an arena for a large-scale transformation of territorial governance and planning systems. Currently, 899 amalgamated municipalities have emerged through the voluntary merger procedure, with an overall population of 9.5 mln and total area equivalent to 38.9% of that of Ukraine. Being far more just an enlargement of territorial units, amalgamation is envisioned as a major tool for fiscal decentralization, community empowerment and re-defining the scale of social infrastructure provision. Currently, the planning process in newly created municipalities is constrained by the lack of appropriate legislation and planning tools, a severe shortage of planning professionals and low self-consciousness of municipal management in regards to objectives and potential of spatial planning. This paper discusses experimental pedagogic approaches implemented for enhancing spatial planning capacities of staff of newly formed amalgamated municipalities in the settings of post-socialist Ukrainian countryside and in the context of the ongoing decentralization reform, advocating the relevance of the blended learning formats that produce knowledge along with transformative change.

Keywords: municipal amalgamation; strategic spatial planning; collaborative education; ecological university

Introduction

A so-called *decentralization reform* was launched in Ukraine in 2014 as a means of smoothing regional divisions in the country and strengthening capacity of local communities (Shapovalova, 2014). The political mission of the reform was to fulfil the key demands of the Euromaidan public protests in 2013-14 in terms of accountability of national and regional authorities, as well as to offer decentralization perspective within the existing unitary state (*ibid.*). The package included into the National project 'Decentralization' consists of local government reform and an overall revision of centre-periphery relations, including fiscal and budget decentralization, which leads to structural changes on local, sub-regional (*rayon*) and regional (*oblast*) levels.

The current stage of the reform (2015-19) has been focused on the establishment of a basic level of municipal self-governance through the voluntary amalgamation of territorial communities of cities, towns and villages. The enlarged municipalities, referred to as *amalgamated hromadas*¹, are supposed to be formed before 2020 to become a territorial basis for upcoming local elections (Parliament of Ukraine, 2014). According to the perspective plans proposed by the government and approved on a regional level, the amalgamation of 8906 territorial communities into 1293 AH-s is envisioned, with 70% (899 AH-s) of this plan already completed.

¹ Amalgamated territorial communities – *Ukr.*, further referred to as *AH-s*, or *hromadas*.

The emergence of AH-s should put an end to prevalence of state administrations in terms of local decision-making and distribution of resources, as well as renew possibilities for local communities to govern land resources within the hromada territory (*ibid.*). For that, AH-s receive subsidies from the central government for upgrading local infrastructure in the first five years after amalgamation (State Treasury of Ukraine, 2018). Moreover, since 2018 the government has launched the process of agriculture lands transfer into communal ownership of newly formed municipalities (Decentralization, 2018). With the influx of resources comes a set of additional responsibilities for sustainable land-use and provision of services of general economic interest to the population, including education and healthcare. Enlarged territories and budgets bring an absolutely new level of requirements for AH executive bodies and political leadership and require long-term planning for a new territorial scale. While short-term socio-economic plans are generally available and the strategic planning process is currently ongoing in most of the AH-s, in most cases spatial dimension of such plans remains problematic.

As stated in Rudenko *et al.* (2017), the deficiencies in AH-level planning include the absence of official standards for a new planning scale, inadequate human resources to develop the plans for all AH-s and lack of detailed information on landscape qualities of the AH territories. Moreover, neither of the three planning tools available at a municipal level – general plan, zoning plan and detailed plan – make a good fit to the scale and character of the hromada area. While the introduction of AH-scaled plan is envisioned in the upcoming amendments to the national legislation, currently the only available planning tool is a ‘planning scheme of amalgamated hromada territory’ regulated by the national building norms.

Another complexity constitutes a never complete nature of the AH-s caused by the voluntary character of the municipal amalgamation procedure. The latter leads to the effect of ‘floating borders’ between the perspective plan of the AH and its actual spatial configuration, as presented in Figure 1. The reason for this phenomenon lies in the nature of amalgamation as a politically charged process in which spatial factors and landscape qualities are considered of secondary importance. According to expert estimations up to one-third of the already formed AH-s appears unsustainable in terms of infrastructure provision, managerial capacity and budgetary resources, which might lead to their re-configuration in 2020 (Decentralization, 2019). Such findings suggest that the ‘floating borders’ phenomenon will be persistent at least for a few years to come.

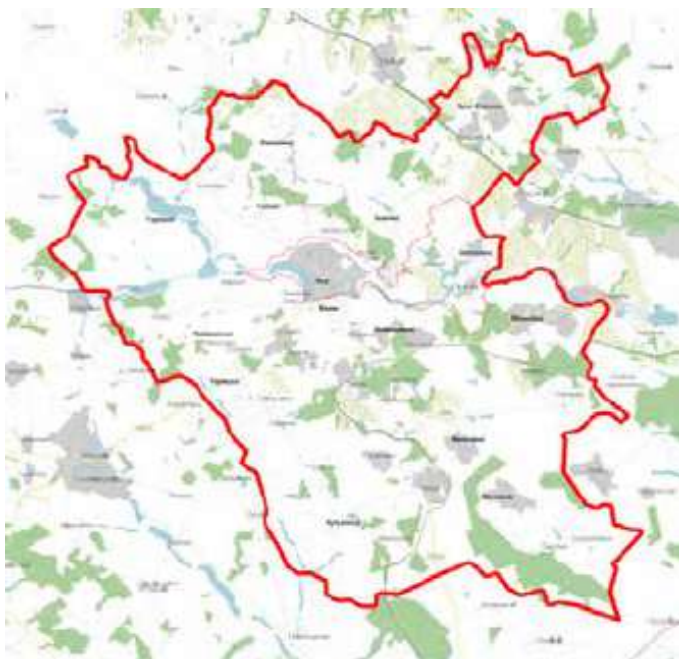


Figure 1. Perspective plan of Barska AH in Vinnytsia region (thick red border) against its current configuration (red dotted border). Image courtesy of Hanna Chernat.

The effect of voluntary municipal amalgamation on territorial governance in general and spatial decisions in particular also remains unclear. According to Swianiewicz (2018), between 2008 and 2017 territorial reforms have been implemented in 15 European countries, with municipal amalgamation becoming a mainstream solution in the decade after the global financial crisis. Meanwhile, a number of studies indicate the negative effect of amalgamations on the local democracy and uncertainty concerning actual savings in costs (*ibid.*). Udovychenko *et al.* (2017) draw parallels between the reform in Ukraine and Latvia, emphasizing the time pressure for shaping legal, fiscal and administrative background of the reform and reliance on voluntary cooperation between the local councils as factors that eventually led to flaws in spatial organisation, such as non-rational location of administrative centre or spatial fragmentation.

On a more general level, the context for local government reform is complicated by rapid ageing and depopulation in rural areas, poor general condition of basic infrastructure, alarming situation with waste management, dependence of some regions on unreliable and costly water supply schemes. Moreover, the history of Ukrainian village in the Soviet times is the history of forced collectivization and prohibition of individual farming, while its present condition is characterized by the prevalence of large mono-crop agricultural holdings and the extended ban on agricultural land sale (Prentice, 2017).

Finally, the institutional setup for spatial planning in AH-s also remains problematic, largely due to the lack of qualified specialists working on a local level. The AH-s where the central settlement is a village mostly lack a separate unit for architecture and planning within their executive bodies. Meanwhile, in hromadas where such units are at place, their activities are often narrowed down to working with a general plan, which focuses on the central settlement, largely ignoring the surroundings. The character of planning imposed by the general plan often bears the tradition of planned economy and thus remains prescriptive and in some cases unrealistic. This is partially explained by the fact that in most cases the planning tasks are outsourced to the state-owned planning institutes, which organisationally and programmatically inherit the practices of centralized planning.

The pressure of budgetary periods and newly transferred assets (lands, buildings, funds) creates a sense of urgency concerning spending without adequate long-term planning to support it. Where the strategic plans exist, they are often poorly connected to spatial dimension and thus unhelpful for decisions regarding precise land plots, buildings or public spaces. Hence, the role of planning in AH-s at an early stage of their development should not only imply regulation and control but also should suggest a long-term, spatially coherent vision for the future for all settlements and territories within a new municipality.

Conceptual framework

Strategic and integrated approaches in spatial planning

The ongoing local government reform in Ukraine puts pressure on management of the newly formed amalgamated municipalities in regards to generating strategic spatial development visions. The use of strategy in planning, as stated in Sartorio (2005), is a highly ambiguous concept, as the strategy has several meanings. For instance, while strategy generally implies pursuing a long-range vision, it also opens opportunities for the presence of different actors that could follow different, or even clashing, objectives (*ibid.*).

The revival of strategic planning in 1990s is generally associated with increased competition between cities (Sartorio, 2005) and rapidly blurring boundaries between municipalities, provinces, regions (Albrechts and Balducci, 2013). Strategic plans are often viewed as instruments of change and action plans, while the traditional plans are designed for stability (*ibid.*). While the possibility of identifying strategy in planning as a separate recognizable subject remains questionable (Sartorio, 2005), it is possible to grasp some of its recurring characteristics, such as the necessity to plan for a longer range, comprehensiveness in terms of wide array of actors involved, interactivity, process orientation and interconnectivity (*ibid.*).

The effect of implication of strategies in planning is described by Healey (1997, as quoted in Albrechts and Balducci, 2013) as ‘self-conscious collective effort to re-imagine a city, urban region or wider territory and to translate the result into priorities for area investment, conservation measures, strategic infrastructure investments and principles of land use regulation’. Albrechts (2004) adds ‘public sector-led’ and ‘socio-spatial’ as characteristics of strategic spatial planning as a process and emphasizes its orientation towards the future (‘what a place is and may become’, *ibid.*). Strategic spatial planning requires the decision-makers to challenge conventional wisdom and is distinguishable from traditional planning by the following characteristics (as discussed in Albrechts and Balducci, 2013):

- Shift from comprehensiveness to selectivity in planning;
- Action and process orientation;
- Ability to cope with uncertainties;
- Focus on co-production by multiple actors;
- Ability to change and reformulate the mindset of actors;
- Ability to grasp the momentum.

Hence, strategic spatial planning best serves in cases with an ambiguous and rapidly changing context for planning and where the existing decision-making perspective ought to be challenged or expanded. While the strategy allows turning planning from a regulatory mechanism into an action plan, coordination between the sectoral, spatial and temporal aspects of territorial policies remains an important factor for the effectiveness of planning overall and efficient spending of public funds in particular.

One of the European policy frameworks for streamlining such coordination is pronounced in the Leipzig Charter for Sustainable European Cities of 2007. Developed during the German presidency of the European Union, the charter is based on findings of the background study focused on integrated urban development as a policy tool and ‘*a prerequisite for urban sustainability in Europe*’ (BBR, 2007). Accordingly, an integrated approach is described as the one involving spatial, sectoral and temporal coordination of various policy areas and resources planning with the use of financial instruments (*ibid.*, p. 14). On the implementation side integrated approaches are embodied into integrated urban development concepts for certain territories that imply:

- Analyzing strengths and weaknesses of a spatial entity and its components;
- Formulating goals for particular areas;
- Increase the effect of public measures through coordination and pooling of public and private funds;
- Integrated planning for particular areas and sectors;
- Empowering citizens and encouraging corporate social responsibility;
- Supporting intermunicipal cooperation and partnership between urban and rural areas.

The vision of integrated urban development voiced in the Charter is being carried out further by the German federal ministries (for instance, see BBSR, 2017) and included into German-funded technical assistance and capacity building projects in the fields of spatial planning and urban development in the third countries. For instance, the project *Integrated Urban Development in Ukraine*, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and Swiss State Secretariat for Economic Affairs (SECO) is being implemented in six cities of Ukraine since 2015. While the integrated urban development policy framework largely addresses cities, the integrated approach remains relevant for projects focused on different territorial contexts but implemented by the same agent.

Hence, in the context of Ukraine, utilizing strategic planning toolkit for coordination of spatial development appears to be relevant, provided the rapid socio-economic and political change and perceived low effectiveness of the existing planning tools, such as the general plan. An integrated approach to urban development policy still finds limited application, however benefits from a strong agency provided by international technical assistance projects.

Planning education in Ukraine and the new role of a university

Education is an essential prerequisite for developing strategic visions for amalgamated municipalities and embedding new mindsets among the local actors. It is possible to split this broad term into two categories – the one referring to the professional education of planners, and the one that could be generally described as building capacities of local actors to deal with spatial issues. Regarding the former, it is important to mention that currently no separate programs in urban or regional planning are being offered by Ukrainian universities, and planning disciplines are only included into graduate programs in architecture. University programs in urban or regional studies offered by social sciences departments are also a novelty². Hence, a lack of academic tradition that would nourish the interdisciplinarity of planning work is currently observed.

Regarding the latter aspect, it is important to highlight the absence of inter-sectoral encounters in local administrations, as well as the lack of holistic understanding of spatial planning outside its technical domain. Improvement of inter-sectoral coordination and strategic planning and management of resources thus makes one of the focuses of international technical assistance projects that support decentralization reform in Ukraine. One of the examples of such projects is *U-LEAD with Europe*, a multi-donor action supported by several of the EU Member States and implemented by German and Swedish development agencies.

The rapidly changing context for planning under the local government reform requires increased individual and collective capacity to deal with challenges and differences. A great role in such capacity building could be performed by initiatives that have both educational and transformative objectives. One of the examples of such initiatives comes from sustainability science and is conceptualised as ‘real-world lab’, a scientifically designed space of collaborative sustainability research involving intervention’, characterized by transdisciplinarity, transformative approach and inclusion of civil society (Singer-Brodowski *et al.*, 2018). Designed as spaces for learning, real-world labs employ experimental strategies for studying the local context and focus on centrality of the learner in the educational process (*ibid.*).

Along with such models for social experimentations with learning and transformative effects, comes re-thinking of traditional educational establishments and their connectedness to the environment. Barnett (2011) comes up with a list of utopian future views for contemporary universities as an alternative to increased entrepreneurialism, in particular proposing the concepts of ‘ecological university’ and ‘networked university’. Accordingly, the multiple networks that university forms with business and industrial sectors should be put to a use other than securing a better position in the academic market place (*ibid.*, p 4). Rather, the university should act in accordance to ecosystem functioning and adopt the responsibility wellbeing of its environment. Doing so, the university does not just safeguard the wider society, but actively enhances the public realm (Barnett 2009, as quoted in Standaert, 2012). Serving such purpose requires a change in the pillar structure of the university consisting of disciplinary departments into a web-like structure (Standaert, 2012). Such transition launches a set of ‘nomadic’ practices associated with openness, mobility, public character, experientiality of educational activities (*ibid.*).

² The first intakes of such programs offered by Kyiv National University, Kyiv National Economics University, the Karazin University in Kharkiv were announced only in 2018.

The following parts of this paper will outline the case of application of strategic and integrated approaches to spatial planning in amalgamated municipalities, which takes the format of an educational program carried out by CANactions School, a non-formal educational institution based in Kyiv and Amsterdam. The concepts of real-world labs and ecological university will be further applied for evaluating the chosen educational approach and format.

Case study

CANactions School

CANaction School was founded in 2015, in response to the growing social demand for principled reform of relationships between citizens, government authorities and planning and design professionals in Ukraine. The School formulated the two key questions pursued in all of its subsequent activities:

1. Who are those change-makers who could moderate the process of building new types of connections in Ukrainian cities?
2. What tools and approaches do they need to be able to successfully deal with the complexity of the current challenges? (Thomann and Tyminskyi, 2015)

Working on these questions, the School shaped an educational approach based on shifting of professional roles from 'specialists' to 'generalists' and guided by the following principles:

- Interdisciplinary approach;
- Teamwork and experiential learning;
- Project-based learning;
- Strategic approach to urban design and spatial planning;
- Cooperation with a vast net of international experts and institutions.

The pilot educational programs of CANactions School in 2015-2016 were conducted in the format of semester-long full-time Studios, focused on the urban development contexts of various parts of Ukraine, with an aim to propose long-term spatial visions for the case cities that would reflect the outcomes of interdisciplinary research carried out by the students and complement (or oppose) the existing general plan. In the course publications, the School critically reflected on the experience of the pilot year, for instance, sharing concern for the possibility to initiate and carry out the systemic changes in cities and expressing the opinion that the impetus for the development of a city must come from the local community (Thomann and Tyminskyi, 2016).

In the following year, the School launched modular Advanced Studies in Integrated Urban Development (ASIUD) courses with an expanded vision of a study group. Unlike to the first programs targeted at professionals who participate in urban development, the student cohort was expanded by representatives of city administrations. Thematically, the focus shifted towards the concepts of integrated urban development. Such focus had been strengthened by a partnership with the project Integrated Urban Development in Ukraine, which provided links to city administrations and offered implementation prospects for student projects.

Four educational programs (two full-time studios and two ASIUD courses) resulted in a set of spatial visions and strategic urban development project models for seven Ukrainian cities. At the end of educational year 2017-18' CANactions School was characterized by bold experimentations with formats, student profiles and thematic foci, which led to educational methodology that interprets the nature of design and planning as 'continuous oscillation towards a consensual vision of the future of a certain place' (Thomann and Tyminskyi, 2018).

Integrated Spatial Planning for Amalgamated Hromadas

In October 2018 CANactions School announced the launch of a year-long educational program focused on the application of strategic and integrated approaches in spatial planning in the context of decentralization reform in Ukraine. The aim of the program was to enhance the capacity of local stakeholders in amalgamated municipalities to handle spatial aspect of strategic planning. The program emerged from partnership between the School and the *U-LEAD with Europe* Programme, which awarded a grant for its implementation.

It was decided that representatives of 30 amalgamated municipalities will participate in the program. The broad selection was aimed to ensure representation of most regions of Ukraine, various types of AH-s depending on the status of their central settlement (city, town, village), as well as of those both with and without strategic plans. The open call for AH-s resulted in 101 applications, based on which a cohort of 30 was selected (see the regional and typological diversity of the AH-s in Figure 2).



Figure 2. Location and typological overview of 30 AH-s that participate in the program

On a local level, the participating AH was required to form a working group consisting of six members that represent various stakeholder groups (see Figure 3).

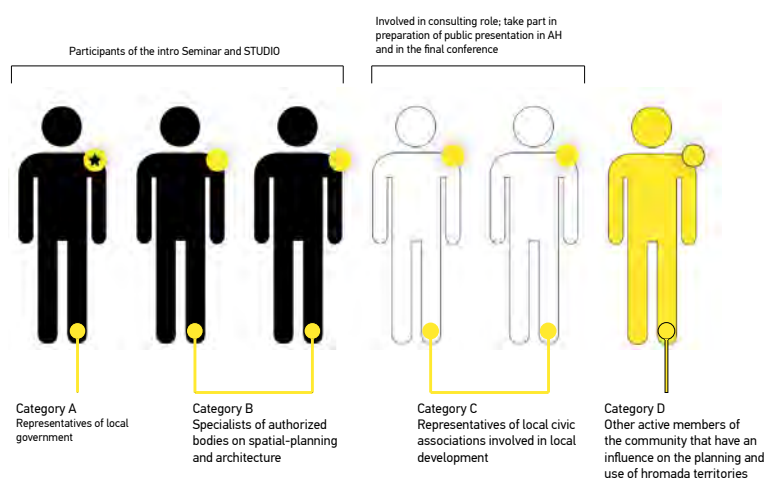


Figure 3. Recommended squad of the AH working group

Despite the observed rotations and incomplete working groups in some of the AH-s, the proposed composition generally favoured knowledge dissemination on the ongoing educational program and also formed a basis for inter-sectoral collaborations within the administration. The AH cohort formation confirmed the hypothesis concerning the lack of planners in amalgamated municipalities (see in Figure 4) and showcased the great diversity of newly formed municipalities in terms of size, population and spatial organisation (see in Figure 5).

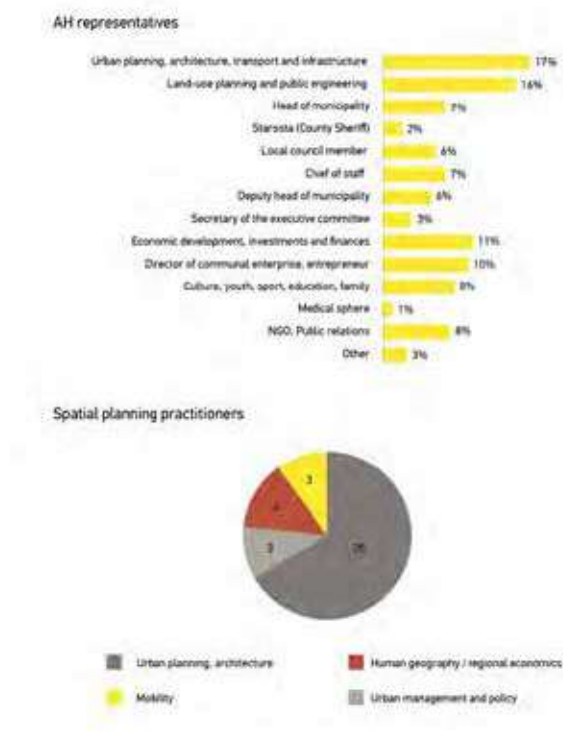


Figure 4. Professional background of program participants

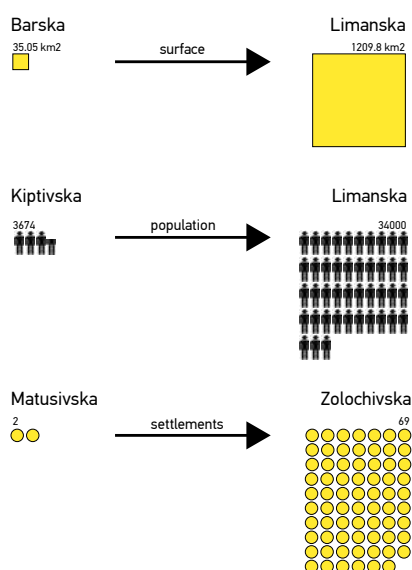


Figure 5. Diversity of 30 AH-s in terms of size, population, number of settlements.

These findings posed a challenge to the School's organisational and methodological setup. One reaction to them was the inclusion of an additional participant cohort into the program, namely 30 'spatial planning practitioners', who were selected separately through an open call procedure. As a result, an interdisciplinary group of thirty 'practitioners' was selected (see in Figure 4) to match the number of AH working groups with the following objectives:

- To provide for the lacking planning, design and social research skills and thus to enable the application of *learning by doing* approach;
- To help the AH working group embed a broader external perspective on local potentials and challenges that arise in the planning process;
- To help to re-create 'the client' and 'the planner' roles in the educational process, build new connections and encourage post-program cooperation.

The educational process was designed as three distinctive blocks visualised in Figure 6, where the preparatory block served to formulate a shared understanding of the strategic spatial planning and principles of integrated urban development frameworks, as well as to introduce the School's learning principles using simulation exercises. The block also included an international fieldtrip to Sweden and Denmark designed with an aim to challenge the established mindsets and present the pressing issues of municipal development, such as addressing decay of peripheral settlements, outside the usual context. The second block (Studio) consisted of practice-oriented workshops. During this block AH working groups were introduced to spatial planning practitioners. The third block envisions delivering two public presentations of the results in May and September 2019 and includes post-production of the Studio results.

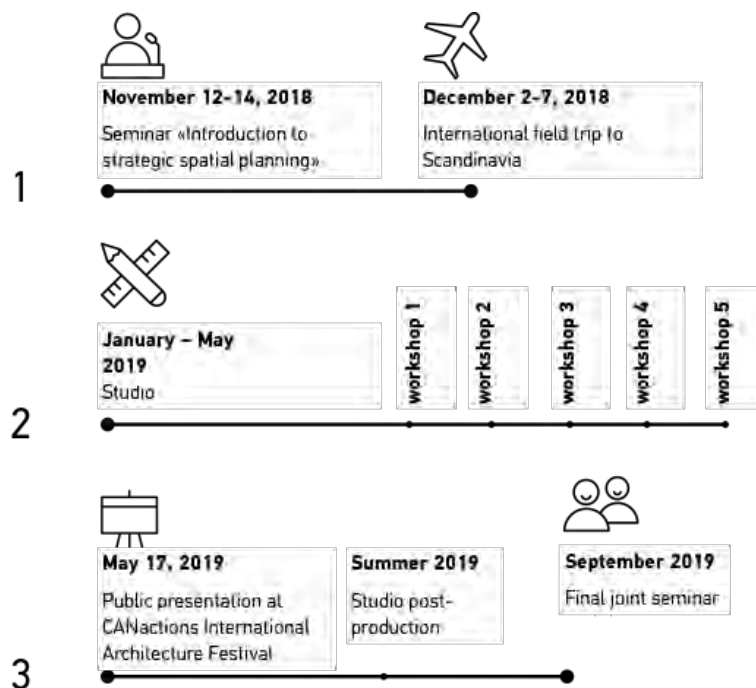


Figure 6. Educational program blocks

To ensure project-based learning each AH working group was presented with the case of their own municipality to work on; hence, 30 cases were reviewed in total. The workshops focused on production of a ‘spatial development concept’ for AH-s, created using the strategic spatial planning methodology. The aim of the concept was to achieve integrated, balanced and sustainable spatial development strategy, as well as to enhance legitimacy and awareness levels of local stakeholders in regards to spatial plans (Thomann and Tyminskyi, 2016). As a planning document, spatial development concept reflects the north-western European approach to spatial planning and has some common features with a number of instruments that are in use on regional and municipal levels of planning in other European countries, e.g. Räumliches Entwicklungskonzept (REK) in Austria, Germany and Switzerland. The key features of the spatial development concept in the context of amalgamated municipalities are outlined in Table 1.

Table 1. Features of spatial development concept in the AH context

Coordination instrument:	<p>communication tool which addresses all spatially relevant actors and provides inter-sectoral coordination among spatially relevant policies;</p> <p>pursues consensus with sub-regional and regional governance levels, as well as within the local community;</p>
Spatial study:	<p>strategic document at a local level that outlines the main spatial development potentials and challengers;</p> <p>describes socio-economic situation in AH-s;</p> <p>proposes a vision for all settlements and areas in AH;</p>
Not a legally binding plan	<p>not a statutory instrument, but must be considered in the preparation ToR of local plans;</p> <p>does not contain land-use regulations that are binding for land owners;</p>

Application of strategic and integrated approaches can be best illustrated on the basis of the Studio. The learning process took a form of a series of five consecutive workshops of five days each that took place once a month in the period between January and May 2019. Due to the size of the cohort the Studio work was split into five regional clusters, with the group size in each cluster under 30 persons. Each Studio workshop was oriented towards completing one of the parts of the spatial development concept, described in Table 2.

Table 2. Expected Studio deliverables.

Part 1. Analysis
Structural analysis of relevant aspects (socio-economic, landscape and environment, physical space etc.) is used to derive objectives and goals for future development. Spatial aspects and correlations should be presented in suitable schemes.
Part 2. Image of the future (Vision)
The Image of the future mirrors the vision and goals underlying the development concept. For communication, not only a «slogan» shall be used, but also a sketch or scheme to illustrate the idea on place together with short text for explanation.
Part 3. Concept
The concept builds the «bridge» between vision and plan. In various thematic schemes (environment and landscape, settlement, transport, economic development and working places, etc.), it shows “what” and “where” is intended. Up to three priority fields of actions are identified, of which at least one is elaborated as a “strategic project” and show-cases strategies and principles which shall be used for implementation.
Part 4. Road map
A road map for implementation shall answer the questions on the “how”, the “who” and the “when” actions are considered for implementation of the concept in plans and for realization of the “strategic project”. Specific “building blocks” of the concept should be identified and interdependencies between them explained.
Part 5. Description of the elaboration process
This part serves to explain the whole working process behind the Studio project, especially which actors and stakeholders were involved and what parent planning documents were used as base for the elaboration of the spatial development concept.

While the framework and deliverables were common for all five regional clusters, the precise methodology was developed by the teaching staff working in each cluster. Each cluster was assigned a team of one senior and two junior mentors. The requirements for senior mentor position were a track record in planning projects, pedagogic and professional experience in Eastern Europe. All senior mentors of the program were international and were supported by local professionals who served as junior mentors. Seven out of ten junior mentors were the alumni of CANactions School, which made possible the transfer of knowledge, toolkit and organisational culture of the former programs. Senior mentors defined the workshop curriculum, while junior mentors facilitated the group work, also occasionally stepping up as reinforcement to spatial planning practitioners. The organizational diagram of the Studio is presented in Figure 7.

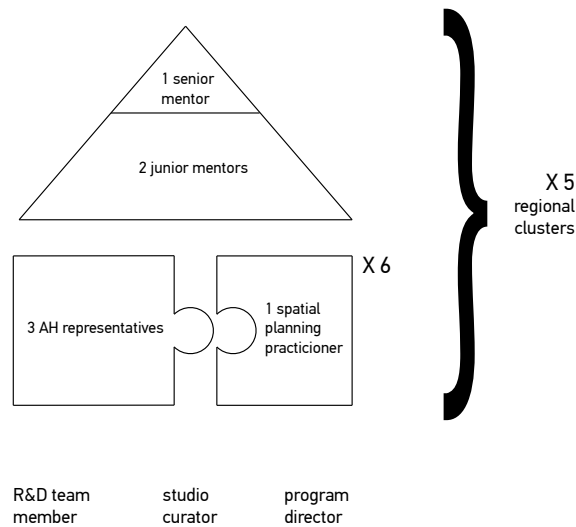


Figure 7. Studio organizational diagram

The learning process was also facilitated by the Studio set-up as a space for inter-disciplinary and also inter-municipal encounters. The group work was framed around the interaction between the AH representatives and the spatial planning practitioner, where the former acted as local informants and decision-makers, while the latter employed multiple roles of interviewers, data analysts, planners and project coordinators. In order to enable productive and evidence-based planning interactions, a dossier with the key socio-spatial data and base maps was prepared by the School for each AH. The character of group work in most cases implied producing sketches on printed base maps, thus cultivating spatial thinking and securing the involvement of all participants into planning exercises, regardless of software skills.

The Studio format largely implied regular interaction with the limited number of local actors divided into five regional clusters, several touchpoints for knowledge-sharing were introduced, including two seminars for spatial planning practitioners and the final workshop in May, which was conducted for all Studio participants in common. On a local level, the AH working groups delegates were responsible for the information flow within the local administration. In March 2019 thirty participatory events in the participating municipalities were organised as part of the third Studio workshop to test the developed spatial scenarios, involving over 1500 attendants overall. The public events were also utilized for needs assessment of the AH periphery and of various social groups.

Discussion

It is possible to interpret this abovementioned case through the ideas of ‘networked’ and ‘ecological’ university proposed by Barnett (2011). The ‘networked’ character here is proved by the complex web of interactions between the School and actors involved into implementation of the territorial reforms. In regards to bearing the responsibility for well-being of its ecosystem, which is an essential characteristic of an ‘ecological’ university, the School engages with the described program into several ongoing debates focused on the following themes:

- Shaping toolkit and strategic framework for spatial planning in amalgamated municipalities;
- Review of spatial planning practices and regulations on a municipal level;
- Generating new connections between the actors involved into the local government reform.

The School's latest program also confirms its nomadic nature, as described by Standaert (2012), which finds manifestation in the highly flexible and adaptable format of the Studio where workshop setup, location and methodology become subjects of free modification (and multiplication) whilst the core educational principles persist.

This paper focuses on the design of a learning framework while providing little information on the programmatic essence and specific results of the course. Yet, the presented evidence can be utilized for supporting the claim regarding the relevance of the blended learning formats that produce knowledge along with a transformative change in the contexts of territorial entities that experience rapid transition. This claim can be elaborated and discussed in three dimensions:

- Creating legitimacy through non-formal planning process;
- Conceptualizing Studio as a lab that fosters interdisciplinary, inter-generational and inter-cultural learning;
- Presenting the Studio deliverables as action plans.

Legitimacy

The legitimacy of planning decisions is particularly important in the context of the municipal amalgamation, as the enlargement implies a revision of centre-periphery relations and bears the risks of uneven development. Utilizing the strategic spatial planning methodology, the program benefits from its action and process orientation, as well as the focus on co-production involving multiple actors, as suggested by Albrechts and Balducci (2013). Due to high level of uncertainty, for instance connected to planning legislation and possible reconfiguration of the AH-s, the program grasps the momentum to influence the mindset of actors involved in spatial planning before such planning occurs.

The utilized methodology also allows reviewing selectively the issues that go beyond the competence of formal planning, helping to create legitimacy and analytical grounding for future political decisions. In the abovementioned case of Barska AH the working group made the decision to create a spatial development concept that stretches beyond the current AH border to use it during negotiations with neighbouring village councils (see Figure 8). On the other hand, the legitimacy of spatial ideas developed during the Studio is constrained by particular AH working group composition, lack of public involvement throughout the Studio and prevalence of the limited AH administration's perspective concerning needs and priority actions.



Figure 8. Sketch of the project map of Barska AH. Image courtesy of Hanna Chernat.

While the Studio's set-up is highly situational and fluid, it is nevertheless possible to claim that its pedagogical and transformative effect stretches beyond the educational program and could be in some instances compared to one of the real-world lab. Organizationally, it replaces the hierarchical structure of AH administration with a flat working group set-up. While the power relations in most cases persist, rotation within the working group, presence of spatial planning practitioners and non-administration representatives enabled bringing upfront the new situational leaders. The variety of participants' and mentors' backgrounds was utilized to produce meaningful inter-disciplinary, inter-generational and intercultural links. The most intense exchange took place between the AH representatives and practitioners, whose role transformed from external consultants to fully assimilated working group members with a strong AH identity. The Studio settings also opened new opportunities for inter-municipal cooperation through on a basis of discovered common challenges and regional similarities.

A communication cascade had been formed within the Studio for translating spatial and strategic planning notions into everyday language. In some cases, the translation was literal due to the foreign background of senior mentors and mixed use of English and Ukrainian during Studio work. The Studio handbook prepared and disseminated by the School included a brief dictionary mostly consisting of project management and planning jargon. Throughout the program, the participants were encouraged to use non-conventional formats for communicating planning ideas, such as preparation of local newspapers and videos that disseminate the Studio findings.

Participatory events trained the participants in essential skills that are required for embedding new approaches to spatial planning in the multi-stakeholder environment and proved the potential of 'hybrid forums' (Callon *et al.*, 2001) for creating a shared consciousness through discussion of raw ideas and concepts. However, the potential of interacting with the general public was not fully utilized due to a very limited amount of fieldwork and concentration of participatory events in central settlement. It was also identified that the design of a participatory event largely determines what it achieves. This is especially the case in a 'thirsty' environment, where people not so often yet had the opportunity for bring themselves into a planning process with a potential of co-production in interventions. In general, friendly and open atmosphere in the conducted events is an optimistic sign for the potential of the applied methodology, but it does not yet proof that it will be successful in conditions outside the lab. It is nevertheless possible to argue that the modelling of the planning process merits at least as much attention as the design of structures during this process.

Content-wise, the Studio encouraged experimentation in terms of studying the effects of territorial enlargement on day-to-day functioning of infrastructure, economic and social ties between the settlements, thus utilizing an opportunity to observe the impact of an independent variable (amalgamation) on the dependent, as suggested by Swianiewicz (2018). In some cases, Studio work led to the discovery of previously unknown data sets and local spatial qualities. For instance, in the case of Zolochiv AH consisting of 69 settlements (see the integrated map in Figure 9), a strategic project had been proposed to foster the internal exploration of local crafts, landscape qualities, development challenges and potentials that are generally unknown for the residents and administration alike. In the case of Storozhynetska AH, a hitherto unrecognized timber construction culture in churches and residential buildings has become a common identity and sustainability potential for economic and cultural development.



Figure 9. Integrated map of spatial development concept of Zolochivska AH. Image courtesy of Bohdan Volynskyi

From the Studio to action

Utilizing the integrated approach, Studio framework implied inter-sectoral coordination of discovered socio-spatial issues and addressing them in various temporal scale, with scenarios stretching to 2030 or in some cases to 2050. A number of discovered challenges concerned providing the most basic infrastructure, such as fresh water supply, or was related to global challenges, for instance, the effects of climate change on land fertility in Southern Ukraine. In the case of Komysh-Zorya AH, a proposal for introduction of a new waste management system was developed, implying inter-municipal cooperation and reorganisation of underutilized land plots currently functioning as informal dump sites (see Figure 10). Addressing global challenges through municipal perspective would require cooperation on a regional level, which also made the participants label such projects as the ones beyond their authority. In order to address this issue demonstration projects focused on soft measures and local scale along were introduced along with strategic projects.



Figure 10. Proposal for inter-municipal cooperation in waste management project.
Image courtesy of Lidiia Chyzhevska

Despite the ambiguity concerning implementation capacities, observed lack of expertise of Studio mentor team in some of the narrowly defined projects, such as the establishment of dairy farming cooperatives, the action orientation of the Studio helped to localize and specify otherwise abstract ideas presented on the integrated AH-scale plan. Spatial development concepts provide a useful basis for clarifying future expectations and objectives, as well as for defining priorities for action in larger and more open forums.

It is important to stress that for none of the participating municipalities a simple patent solution can be used for the development of the community or even one of their settlements. Utilizing integrated and strategic approaches, all work points to strengths, potentials and opportunities, which now have to be further processed with the necessary perseverance. What will be more important than the mere choice of the tool (spatial development concept) is the collective and thus communicative evaluation of definitions of planning goals.

Conclusion

Based on the presented review of ‘Integrated Spatial Planning for Amalgamated Hromadas’ program, it is possible to suggest that creating shared consciousness of stakeholders regarding spatial development is an essential prerequisite of sustainable use of lands and resources in the context of territorial reforms. The selection of process design dictates the opening up of spatial planning processes for a certain politicization or the closing down of opportunity spaces of the transition phase and their isolation from the realm of public debate.

Strategic spatial planning tools offer a broad overview of strategic development potentials in a dynamic environment, non-constrained by a static framework of comprehensive planning. Learning formats that attempt to moderate the discussion of planning priorities amongst local actors and bear transformative goals in terms of mindset change should be sensitive to the specific context of areas in transition and flexible in terms of setup, location and duration of educational activities.

Practice-oriented nature of the program with both educational and transformative objectives and based on the own cases of participating territorial entities provide incentives for local actors to invest time into the educational process. Inclusion of participants with various backgrounds and professional roles and presenting the work in progress to the general public generally appeared very beneficial for practising new types of

connections and communication channels by AH administrations, while a broad selection of participating municipalities and exposure to international cases created a basis for inter-municipal cooperation.

Studio work has succeeded in putting together a wealth of analyses, ideas and measures for the newly founded AH. Discussion of these results in the various forums (e.g. working group with mentors and experts / working group in communities / working groups with other working groups.) was very fruitful, not least of all testified by elaborated project ideas, which were immediately submitted to grant programs for implementation. Whereas a professional administration can be, of course, supportive but also restrictive, the Studio as a lab showed that a small, lay-controlled community may bring forth a highly motivated individual or team who is able to create a constructive climate for discussion.

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Inclusive experiential learning at graduate level planning studio: A collaborative governance case

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Abstract: This study conveys the two-semester studio experience of the Urban Planning Master's Program at Istanbul Technical University in the 2018-19 academic year. The aim is to build on the conducting of this studio considering its teaching strategies, methods, and curriculum, which were designed for an experiential learning and collaboration experience in line with its topic of collaborative planning and governance. Planning studios in Turkey are largely characterized by an ends-driven comprehensive planning paradigm. However, this study argues that in order to address contemporary planning practices and increasingly complex planning problems such as those in Istanbul, today's planning studios must explicitly focus on the means of the planning issue at hand and invite students to take on the role of the actual practitioners and empathize with local stakeholders.

Based on these premises, the first-semester studio allowed the students to choose a case neighborhood in Istanbul in line with their academic interests. Supported with relevant theoretical readings and case-driven literature research, they were involved in a field trip, a formal briefing at the local municipality, thematic data gathering and analysis (including an advanced stakeholder analysis), assessments, and collaborative planning proposals with spatial, financial and participatory aspects. In the following semester, they were expected to fit their refined plans into a collaborative governance model. They discussed various approaches in both a structured studio debate and an on-site focus group study with local actors to test and revise their models.

Through instructor observations, jury assessments, and informal student feedback, the preliminary findings have revealed that an interactive and inclusive studio design which actively involves both students and local actors has greater benefits for graduate students' motivation, comprehension, and solution generation to real-life planning issues. These findings will be further tested towards a refined studio framework by the end of the academic year.

Keywords: planning studio; experiential learning; collaborative planning; governance

Experiential learning in planning studio

A quote that is attributed to Confucius expresses the conviction of effectiveness of experiential learning:

I hear and I forget
I see and I remember
I do and I understand.

Simply put as the process of learning from experience, experiential learning has been termed in various ways throughout its evolution. For instance, John Dewey (Dewey and Dewey, 1915) discussed “learning by doing,” while Wolfe and Byrne (1975) used the term “experience-based learning.” David Kolb (1984), who is extensively cited in the experiential learning literature, defined the term as “the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience” (p. 41). Here, Kolb reinforces the idea that reflecting on the experience can potentially lead to a transformation as a result of the experience. Kassem (2007) defines experiential learning as “a purposeful process of engaged, active learning in which the student constructs knowledge, skills, or values by means of direct experiences in authentic, real world contexts” (p. 2). Perhaps the most recent definition is suggested by Beard and Wilson, who stresses the inner and outer world of the learner, and of the experience for and of learning:

A sense-making process involving significant experiences that, to varying degrees, act as the source of learning. These experiences actively immerse and reflectively engage the inner world of the learner, as a whole being (including physical-bodily, intellectually, emotionally, psychologically and spiritually) with their intricate ‘outer world’ of the learning environment (including belonging and acting (conative) in places, spaces, within the social, cultural, and political milieu) to create memorable, rich and effective experiences for and of learning. (adapted from Beard and Wilson, 2018, p. 3)

Learning through the “outer world,” more specifically real life experiences, is now synonymous with terms such as fieldwork, applied learning, learning by doing, hands-on learning, problem-based learning and experiential learning. This growing emphasis on experiential learning in higher education is clearly evidenced by a simple keyword search through scholarly literature. He is also credited for the model which challenges relevant past theories and reveals the complex nature of experiential learning (Figure 1).

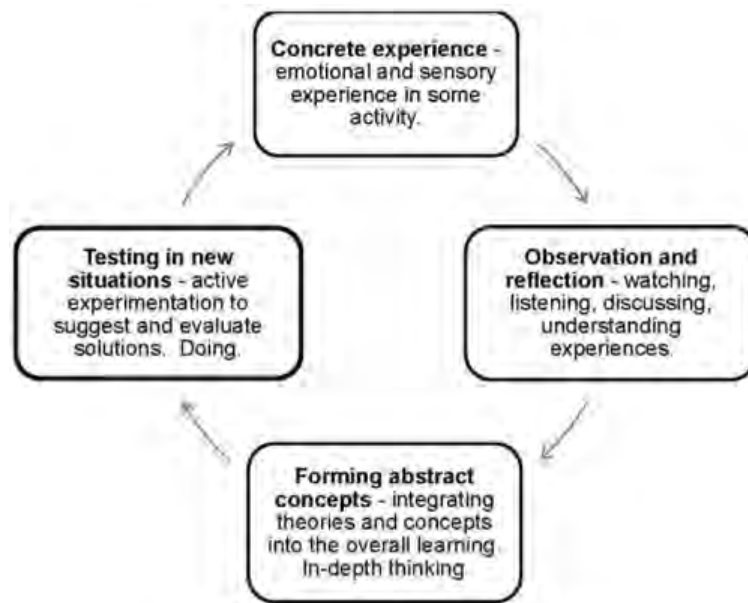


Figure 1. Kolb's experiential learning cycle (adapted from Baldwin and Rosier, 2017, and Kolb, 1984)

Since the 1980s, inspired by Kolb's influential model, experiential learning has attracted more attention in and entered into numerous education fields including planning. Planning literature demonstrates considerable interest in experiential learning, such as the Journal of Planning Education and Research's special issue dedicated to community outreach partnerships (JPER, 1998). Here, the emphasis is on reflecting on fieldwork, learning that takes place via first-hand experience outside the constraints of the four-walled classroom setting, as central to the teaching of planning (Kotval, 2003). For urban planning programs the US Planning Accreditation Board (PAB, 1992) requires accredited graduate planning programs to "train students to be able to work effectively as members and leaders of planning teams and to apply an understanding of interpersonal skills in interacting with community organisations."

Despite this movement, experiential learning is seen as a departure from traditional lecture-based courses and is considered on the fringes of serious teaching and learning (Margetson, 1995). Another common criticism is the lack of faculty experience in structuring such a course. Professional organisations and scholars (Kolb, 1994, Harland, 1998) in liberal arts-based education illustrated best practices and principles in an effort to help design and develop courses that better link theory to practice. Kotval (2003) cites the National Society for Experiential Education (1997) for the development criteria they suggested, such as intention, authenticity, planning, clarity, orientation, training and mentoring, monitoring and assessment, continuous improvement, reflecting, evaluation and acknowledgement. Building on these, she offers insights for teaching courses with experiential learning aspect in planning and allied disciplines as follows:

- Understand and articulate the importance of the Practicum course clearly;
- Structure the course and its relationship to the entire curriculum such that it reflects its unique characteristics;
- Foster good client relationships to ensure good community projects and effective working partnerships;

- Encourage healthy group dynamics and foster transferable skills;
- Encourage greater faculty involvement to seamlessly link theoretical and practical instruction;
- Evaluate students fairly on all aspects of the course experience (Kotval, 2003).

It would be right to argue that while planning studio provides a quasi-real world situation not offered by classroom courses, incorporating experiential learning into planning studio brings it to the real world. Planning studio in general focuses on planning-related tasks or issues that involve creative thinking and critical analysis to produce a practical solution or outcomes (Higgins *et al*, 2009). It offers opportunity for students to acquire skills in managing other people, themselves and their time as well as the project. It promotes learning outcomes that focus on process, involving both individuals and groups, alongside the application of skills (Grant and Manuel, 1995). However, the complexity and uncertainty encountered in real life situations cannot be duplicated in a traditional studio education (Roakes and Norris-Tirrell, 2000). When coupled with experiential learning, planning studio can better delve into the legal, financial and collaborative challenges of real life planning cases. Such experience-based learning can provide “intentionality of design and planning through structured activities such as role plays or games” (Andresen *et al*, 2000), which are practiced in the case study conveyed in this paper.

In line with these discussions, the study aims to improve graduate students’ knowledge and skills to enable them as highly efficient and competent professionals through experiential learning methods. Consequently, the main objectives of the planning studio subject to this study are to train students who can (1) integrate theoretical discussions of reading and the topic of the project and produce knowledge-based planning models; (2) determine how local actors participate in the process of model development, manage attendance meetings in accordance with the broader meaning of the project, and combine and model contributions with theoretical readings; (3) share the models they have developed with the participants, be open to discussion in the belief that feedback strengthens the model, and reconsider and organize rather than merely defend their models; and (4) discuss the developed models in the context of institutional structures and arrangements that determine the scope and capability of the planning action itself.

Studio themes: Collaborative planning and collaborative governance

Traditional planning has been associated with the rational comprehensive model developed at the University of Chicago since the 1970s. This type of planning searches for the best possible combination of means for the given ends. Throughout the evolution of the discourse, planners were told to attend to means and to leave the selection of ends to the interested stakeholders using pluralistic politics (Albrechts, 2003). Eventually, this common understanding introduced collaborative planning into planning literature.

At the end of the last century, Healey’s 1997 book, *Collaborative Planning*, argued that the challenges of urban development in the neoliberal era could no longer be handled effectively by government alone but required the participation of all sectors of society in a form of planning that involved dialogue and negotiation among stakeholders seeking an actionable consensus (also see Friedmann, 2008). Consensus building among people with conflicting interests, however, often required the intervention of mediators, and so mediation became an important new branch not only of planning but of legal

studies as well (LeBaron, 2002). Larry Susskind and John Forester made key contributions to this new specialization, the first in a series of publications culminating in the book by Susskind, McKearnen, and Thomas-Lamar (1999), *The Consensus Building Handbook: A Comprehensive Guide to Reaching Agreement*, the second in *The Deliberative Practitioner: Encouraging Participatory Planning Processes* by Forester (1999). Other contributions regarding collaborative methods and consensus building as a mode of planning and policy making that took place in the last two decades include the works of Sager (2002, 2006), Kolb and Associates (1994), Innes and Booher (1999), Yiftachel and Huxley (2000), Allmendinger and Tewdwr-Jones (2002), and Ansell and Gash (2007). These scholars found that such processes could be creative and effective, offering planners substantial roles. Thus, communicative or collaborative planning became a focus in planning theory.

The resulting paradigm, called the ‘communicative turn,’ has certainly dominated theoretical discourse since the late 1980s, and as Allmendinger and Tewdwr-Jones (2002) put it, it has since undergone a number of mutations, including ‘planning through debate,’ ‘communicative planning,’ ‘argumentative planning,’ ‘collaborative planning’ and ‘deliberative planning.’ It has also developed in different directions as a result of its origins in various intellectual schools of thought that have intertwined with the communicative approach, including neo-pragmatics, critical theory, Foucauldian perspectives, and planning practice. In its general manifestations, the communicative turn has been referred to as ‘collaborative planning’ in UK literature and ‘deliberative planning’ in US literature.

Inherently, the features of collaborative planning imply those of communicative turn. The main components of a communicative rational approach to urban planning have been advanced by Healey (1992). In her perspective, the communicative turn in planning involves the following:

- an interactive and interpretative process;
- a focus on the ‘arenas of struggle’ where public discussions occur and where problems, strategies, tactics and values are identified, discussed, evaluated and where conflicts are mediated;
- implementation among diverse and fluid discourse communities;
- development of a reflective capacity that enables participants to evaluate and re-evaluate; and
- the ability of participants to collaborate to change the existing conditions.

Consequently, collaborative planning is often mentioned as one of the most appropriate planning theories for the network society (Agger and Lofgren, 2008). It engages public and private sector players and other relevant stakeholders representing many different interests while maintaining concern about power distribution and the participation of the public with an aim to reach consensus through deliberation.

Referring to her earlier work, *Collaborative Planning*, Healey (1997) defines planning as “a governance activity occurring in complex and dynamic institutional environments, shaped by wider economic, social and environmental forces that structure, but do not determine, specific interactions” (p. 104). Indeed, planning increasingly moves away from the idea of government as the mobilizer of the public sector, providing solutions to problems, towards an idea of governance for a more desirable future situation through the mobilization of different interests, goals, and strategies (Albrechts, 2003). By

governance, Healey (2003) means the processes by which societies, and social groups, manage their collective affairs. Other scholars highlight the regenerative aspect of governance that reshapes policy ideas and institutional structures through a bottom-up approach (see Innes and Booher (2003); and Phelps and Tewdwr-Jones (2000), among others). There are, of course, many modes in which governance can occur (for a detailed analysis, see Cars *et al*, 2002). Addressing governance instead of government provides the basis not only for more broadly handling issues of power but also ensuring greater participation and inclusion. Also, governance can include institutions that are not normally considered in a narrower ‘government’ approach to planning decisions and processes. This brings up the definition of ‘collaborative governance’ in planning literature.

Most planning literature uses the term collaborative governance to describe a participatory relationship between public institutions and non-state stakeholders. For example, Reilly (2001) describes collaborative efforts as a type of problem solving that involves the ‘shared pursuit of government agencies and concerned citizens.’ Smith (1998) argues that collaboratives involve ‘representation by key interest groups.’ Connick and Innes (2003) define collaborative governance as including ‘representatives of all relevant interests.’ Such definitions set standards for the type of participation of non-state stakeholders which makes collaborative governance never a merely consultative process. Thus, it is no surprise that in their collaborative governance model that they developed by analyzing 137 cases, Ansell and Gash (2007) define the features of their cyclical collaborative governance process as face-to-face dialogue; trust building; commitment to the process; shared understanding; and intermediate outcomes (Figure 2).

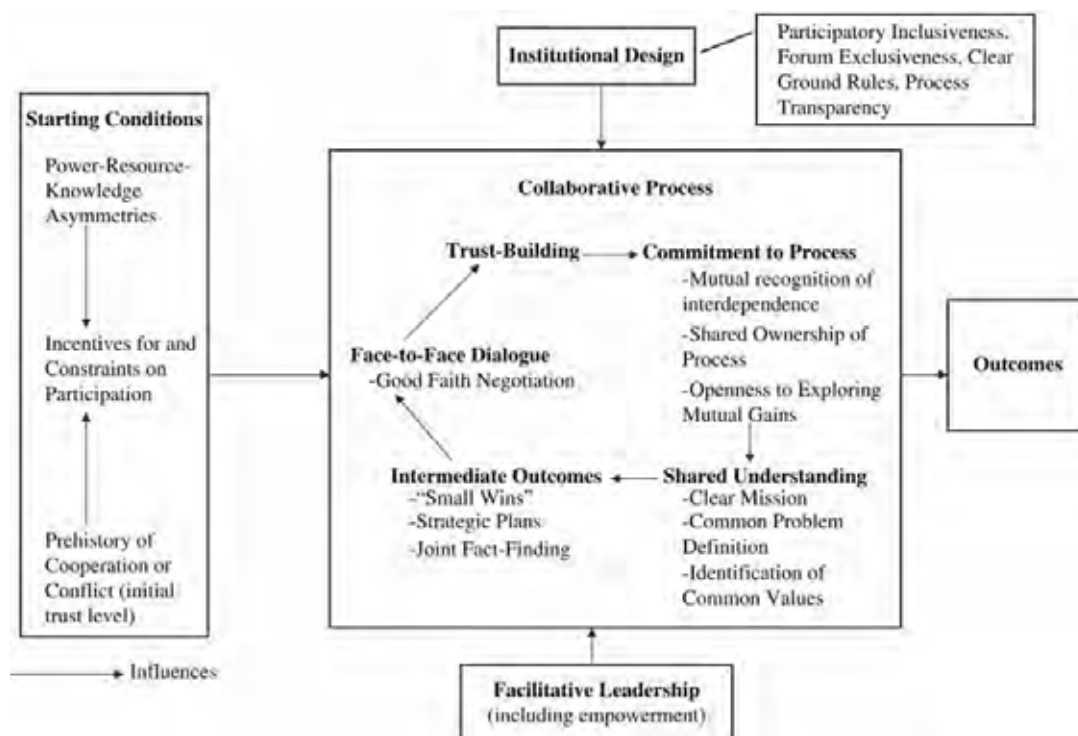


Figure 2. A Model of Collaborative Governance (Ansell and Gash, 2007, p. 550)

Although interest groups and public agencies have predominantly engaged in a conventional two-way flow of influence, the definitions of collaborative governance imply an explicit and public strategy of organizing this influence. There is a clear emphasis here on the power over process and procedures to effect, presumably through the weight of rational thought, reflection, expression, and change for the good of the majority of stakeholders (Phelps and Tewdwr-Jones, 2000).

Project studio description and process

Thus, the consecutive studios, Project 1 in fall semester and Project 2 in spring semester, were designed to demonstrate one holistic curriculum with two incremental themes: collaborative planning and collaborative governance, respectively. The students were asked to propose extensive models that correspond to the studio theme by the end of each semester that consisted of 15 weeks. The weekly program is summarized in Table 1.

Table 1. Weekly program and topics for the consecutive studios

	Project 1, Fall semester																Project 2, Spring semester															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	F
Theory review & discussion																																
Site visit & data collection																																
Thematic data analysis																																
Case review: good practices																																
Synthesis & assessments																																
Plan alternatives																																
Model development																																
Refining plans and models																																
Further implications from literature																																
Jury assessments with local stakeholders																																
Final project submissions																																

Building on the course description and the topic of collaborative planning and governance, Pınar Neighborhood in Sarıyer District, Istanbul, offers an interesting study area regarding tangible and intangible site characteristics, intervention areas, and pluralistic approaches. In particular, Pınar Neighborhood has already proven to be a suitable case area to study such practices due to its eager local government, many engaged local residents and NGOs, and not-yet-solved *gecekondu* (squatter) redevelopment dilemma. Proximity of the neighborhood to the campus was another criterion for site selection so that the students could make frequent visits to the site.

The fall semester studio, Project 1, aimed to make the best of the potentials Pınar Neighborhood offers. It refers to the planning of the neighborhood with a thorough organization of relevant stakeholders and their fair involvement in planning decisions so as to achieve successful and sustainable planning outcomes towards the betterment of the local public's wellbeing. Following the previous semester's studio topic, Project 2 aims to further collaborative planning practices in Pınar Neighborhood. It refers to enhancing redevelopment plans of the neighborhood by using collaborative governance models that require an in-depth analysis and organization of relevant stakeholders, their powers, leadership capacities as well as any conflicts and risks that are embedded in the planning, decision-making and implementation processes. This way, the outcomes of this two-semester studio curriculum aim to take the planning scheme closer to the ideals of social justice and just planning.

The experiential learning method of the curriculum design allowed students to experience on site observations and data gathering, and real life interaction with local community. Supported with relevant theoretical readings and case-driven literature research, they were involved in two structured and several occasional follow-up visits to the site, a formal briefing at the local municipality, thematic data gathering and analysis (including an advanced stakeholder analysis), assessments, and collaborative planning proposals with spatial, financial and participatory aspects. In the following semester, they were expected to fit their refined plans into a collaborative governance model. They discussed various approaches in both a structured studio debate and an on-site focus group study with local actors to test and revise their models. They worked in teams of 4 or 5, to form a total of 5 student groups. These groups are introduced as Groups A through E in the analysis below.

Fall Semester, Project 1: Redevelopment through collaborative planning

Students were expected to closely read, review, and reflect on related literature while determining and solving the planning problems of Pınar Neighborhood and the district it is located in, Sarıyer. They worked in teams during and outside studio meetings to produce said planning study in an inherently collaborative process; they presented their work using written, oral, and graphic expression techniques throughout the semester. Studio meetings served to frame and review weekly topics, further off-studio production, and allow for an inclusive discussion, thus enabling learning from different teams' work. This process were reinforced with two jury meetings.

Based on this scope, the Project 1 studio followed the steps below:

- Gathering and analyzing data on natural and built environments, as well as social and economic conditions, and needs of local stakeholders as a preliminary planning task;
- Assessing sorted data and analyses using various evaluation methods with collaborative planning in mind;
- Proposing alternative intervention scenarios and embedding collaborative approaches in decision-making processes;
- Foreseeing possible conflicts and proposing ways to mediate them;
- Refining analyses, assessments, and scenarios to ensure the ultimate project goal: improving Pınar Neighborhood locals' lives while effectively involving them in planning.

The weekly program below further broaches the fall studio process and lays out expected deliverables at each step.

Week 1: Introduction to the studio & logistics

Weeks 2-3: Field trip & site analyses

Natural, physical and socio-economic characteristics of the project site:

- Location and references in the vicinity;



- Important natural references that reveal the site's topography, geology, ecology, vegetation/soil, climate, and disaster peculiarities;
- Physical identifiers and patterns of transportation network, land use and ownership, urban services, building characteristics, etc.
- Demographic, social and economic conditions of local inhabitants via online and on-site secondary data, and primary data derived from observations and surveys with households, businesses, and local government institutions.

Site analyses included location, historical development, environmental relations and relevant planning decisions regarding the study area. In addition to them, natural environment, land use and accessibility (to hospitals, schools etc.) analyses and Bosphorus Law that have restrictions were critical to understand the area (Figure 3). First developed in the 1950s, the neighborhood is one of the first *gecekondu* areas of Istanbul. In the 2000s, shopping centers and gated communities were built that have had significant physical and social impacts in the neighborhood.

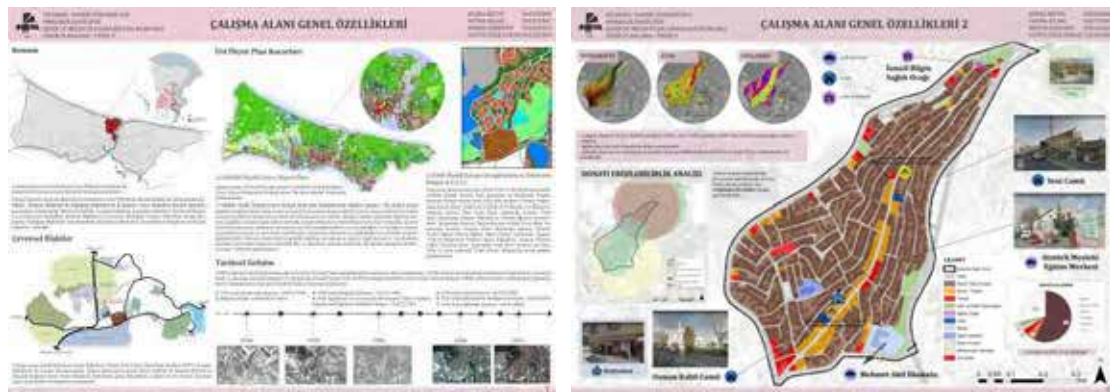


Figure 3. Physical and natural environment analyses (Group C)

Socio-economic structure analyses of neighborhood provided information about population, minimum-maximum and average household income, average age, numbers of housing and workplace, average land value per square meter, and education levels (Figure 4).

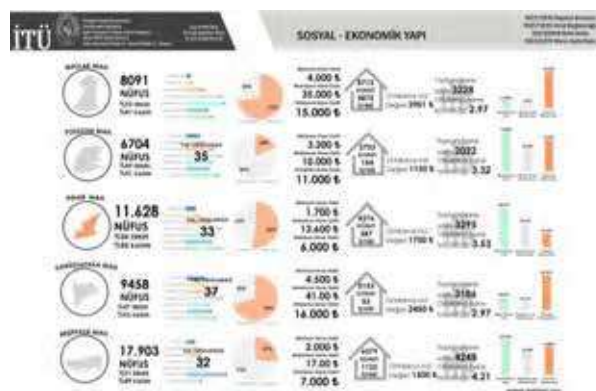


Figure 4. Socio-economic analysis (Group A)

Weeks 4-5: Stakeholder analysis & good practices with collaborative and participatory approaches

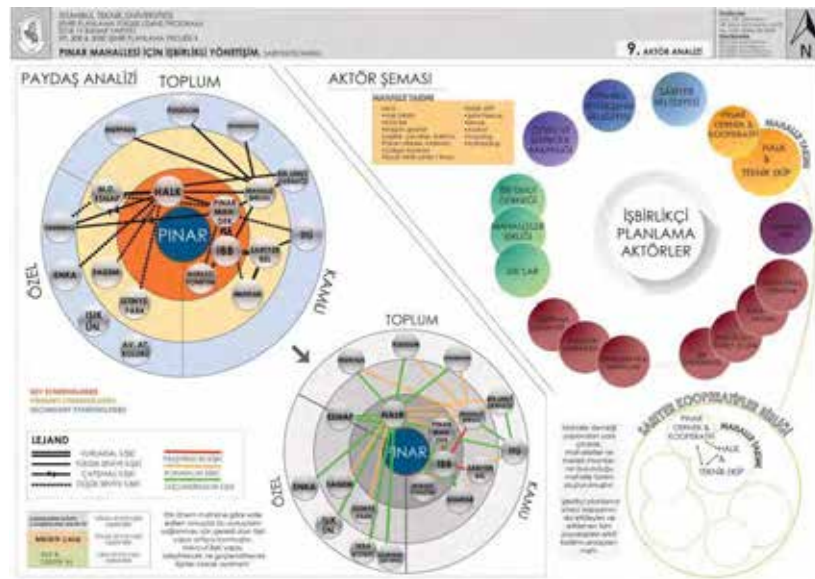
An advanced stakeholder analysis of the project at hand:

- Formal vs. informal stakeholders
 - government, private, non-profit, local public, businesses, etc.
- Interests vs. resources
 - interests— livability, quality of life, money, votes, reputation, etc.
 - resources— laws, politics, money, knowledge, time, liberty, etc.
- The influencer vs. the influenced
 - power relations

Participation and collaboration review of select international cases:

- Short description
 - case area size, population, main natural, physical and socio-economic characteristics
- Planning approach
 - planning problem(s), policies, goals, decisions
- Participatory approach
 - actor structure, participation policy, level, methods, and process
- Impact of collaborative approach on planning decisions and outcomes towards deriving lessons for the studio project

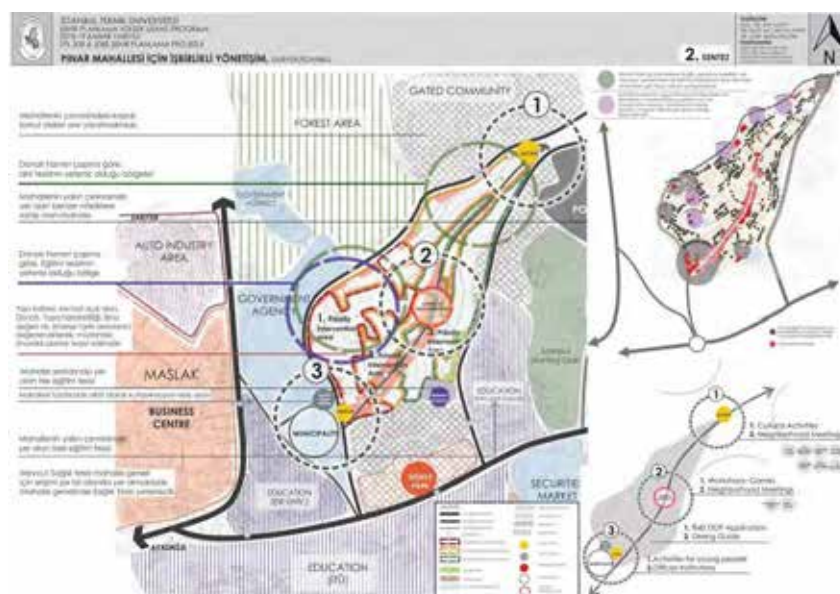
The actor and stakeholder analyses revealed those who potentially influenced and who were influenced by the redevelopment decisions. The students grouped stakeholders into three: local public, private sector (shopping mall, private university in area, entrepreneurs, etc.), and public sector (Istanbul Metropolitan Municipality as the land owner, local municipality, neighborhood associations, etc.). The relationship between actor groups were defined via various approaches (e.g. legal, financial, conflictive, high/low level) in terms of their interests and resources (Figure 5). Moreover, the stakeholders' significance-impact matrices ensured that relationships which are important for the collaborative planning process would be strengthened, improved and/or sustained.



Weeks 6-7: Assessments: Synthesis & problem areas

Refining and superposing analysis findings that are critical to the safety and wellbeing of general and/or a group of local public to reveal planning problems and intervention areas; associating these problems with actor groups' profiles.

As seen in Figure 6, the syntheses included the integration of natural and built environment analyses and the socio-economic characteristics. Examining the relationship of the study area to its vicinity further revealed strengths and weaknesses in term of physical and social characteristics (Figure 6).



Week 8: Fall break

Week 9: 1st Jury assessment

Analyses of the study area, its vicinity and relevant cases review & preliminary assessments

Weeks 10-12: Plan alternatives with a collaboration focus

Planning interventions & collaborative scenarios:

- General approach to the planning problem(s)
 - Solution-based modelling of the project process;
 - Designing a project process with relevant steps
- Conceptual elaboration and discussion of the project model
 - How model steps correspond to the problems and solutions;
 - Actors, their roles and contributions to the solution process

Possible conflicts & their mediation:

- Plausible risks for and conflicts in/between various actor groups that may arise during planning process
 - Interest groups and conflicts of interest (i.e. demands on space, public services, economic gains, etc.);
 - Possible cases of neglect and/or repression of vulnerable groups (i.e. regarding age, gender, disability, ethnicity, knowledge, income, etc.)
- Corresponding conflict resolution process
 - Conflict types and resolution processes in literature (Turkish and international) that engage mediation/participation methods;
 - Current Turkish laws and regulations towards conflict resolution;
 - Selecting and applying resolution tactics, tools and processes that are workable for the project at hand

Policies for public interest and wellbeing:

- Policies and principles derived from the project model
 - Expected outcomes;
 - Collaboration policies;
 - Conflict resolution policies that seek public interest

The students determined prominent parameters in collaborative planning process such as public and private investments, population and employment characteristics, social and physical infrastructure, land ownership, legality and gentrification. One group developed collaborative plan alternatives in the context of relationships based on the levels of investment and consensus (Figure 7). According to

analyses, the best alternative (#1) is achieved through high-level investment and consensus, while the worst (#4) relates to low-level investment and consensus.



Figure 7. Plan alternatives with a collaboration focus (Group C)

Weeks 13-14: Refining and concretizing proposed project model & policies

Making sure plans have achieved:

- Reflecting the project process model to the conceptual project at hand;
- Integrating solution methods and tools with spatial project decisions;
- Translating findings and implications into suitable resolution, participation and consensus building methods and processes that suit the possible conflicts determined in collaborative scenarios

Week 15: 2nd Jury assessment involving the local municipality

Revised analyses and assessments, planning interventions, collaborative approaches, consensus building scenarios, resulting project model and policies

Spring Semester, Project 2: Collaborative governance model

Like in the previous semester, students were expected to closely read, review, and reflect on related literature while determining and solving the planning problems of Pınar Neighborhood. They worked in teams during and outside studio meetings to produce said planning study in an inherently collaborative process; they present their work using written, oral, and graphic expression techniques throughout the semester. Studio meetings served to frame and review weekly topics, further off-studio production, and allow for an inclusive discussion, thus enabling learning from different teams' work.

The project process was reinforced with one structured studio debate, one focus group study with relevant local stakeholders and one final jury meeting.

Based on this scope, the Project 2 studio followed the following steps:

- Gathering and analyzing any additional data regarding natural, physical, socio-cultural and economic characteristics of the study area;
- Enhancing the previous semester's analytical assessments and physical, financial and collaboration plans;
- Enhancing collaborative planning principles, processes and visuals with added perspective from relevant planning cases from around the world;
- Reviewing past and current collaborative governance models and adapting them to the project at hand;
- Testing tailored collaborative governance models by a student-steered focus group activity that involves relevant local stakeholders;
- Revising the models by reflecting on the focus group findings, possible pitfalls, and good governance principles; and
- Drawing implications for collaborative and good governance legislation and practices in Sarıyer, Istanbul and Turkey.

The weekly program below further broaches the spring studio process and lays out expected deliverables at each step.

Week 1: Introduction to the studio & logistics

Weeks 2-3: Site visit & refining analyses and plans

Site visit for further analysis:

- Search for any missing or additional secondary data;
- Field observations, social encounters (in-person and in-depth examination of physical and social conditions & any changes in them)

Refining synthesis & assessments:

- Reflecting on revised primary and secondary data;
- Search for various feedback from previous semester's plans;
- Revision of synthesis, SWOT and problem areas

Refining physical & financial plans:

- Reflecting on any data changes, observations and assessments;
- Revising physical and financial planning decisions, diagrams and maps



Based on the three main groups of actors (i.e. local community, local municipality and entrepreneurs) they defined, one student group further examined various interests and expectations in a financial model (Figure 8). These models were developed to make the redevelopment project self-sufficient thanks to energy saving protocol, taxes and other incentives/means.

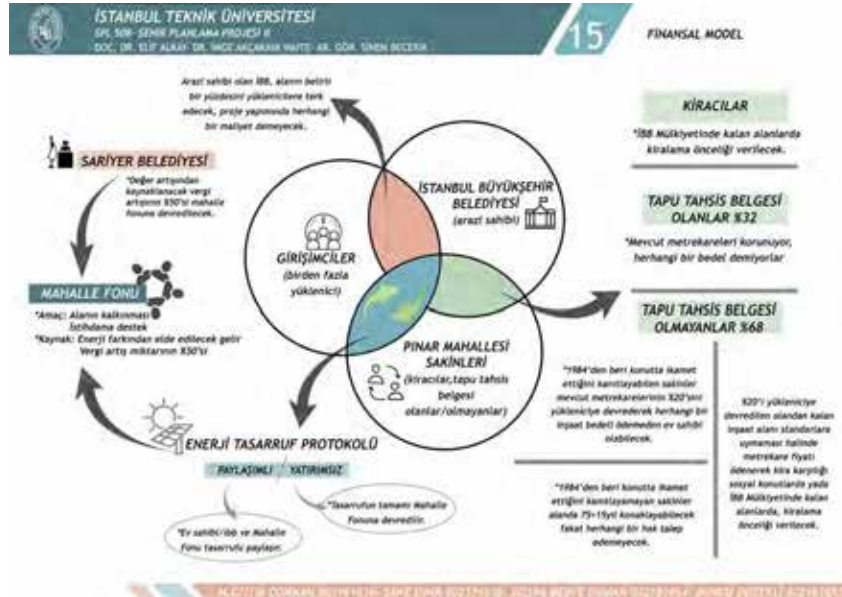


Figure 8. Financial model (Group D)

Weeks 4-5: Revisiting good practices & further refining plans

Collective overview of world cases with collaborative and participatory ambitions:

- A short paper (5-7 pages) that:
 - Compares and contrasts all cases reviewed in previous semester regarding physical, collaborative and participatory approaches;
 - Delivers concrete lessons and strategies for the studio project

Refining collaborative plans with input from literature:

- An “actor scheme” using stakeholder analysis
 - Formal v. informal actors (individuals, organized groups, private entities, government agencies);
 - Interests v. resources (overlaps, gaps, contradictions);
 - The influencer v. the influenced (power relations)
- A revised “collaboration scheme” and its adaptation to plans
 - Collaboration process with relevant actors, roles and responsibilities integrated to the physical and financial planning timeline;
 - Community participation process with relevant participation policy, level and methods integrated to the planning timeline

The world samples of collaborative (and participatory) planning experiences were reviewed in terms of problems, participants, organizations, processes and keywords. Some of world cases are Davis Creek, Anfield-Breckfield, Berlin etc. as depicted in Figure 9.



Figure 9. Review of world cases with a participatory and/or collaborative emphasis

(Group C)

Collaborative planning process was detailed into five phases by one group: organization, analysis-synthesis, determination of vision, aim, strategy and principles, finance and implementation (Figure 10). All phases involved different actors and interests.

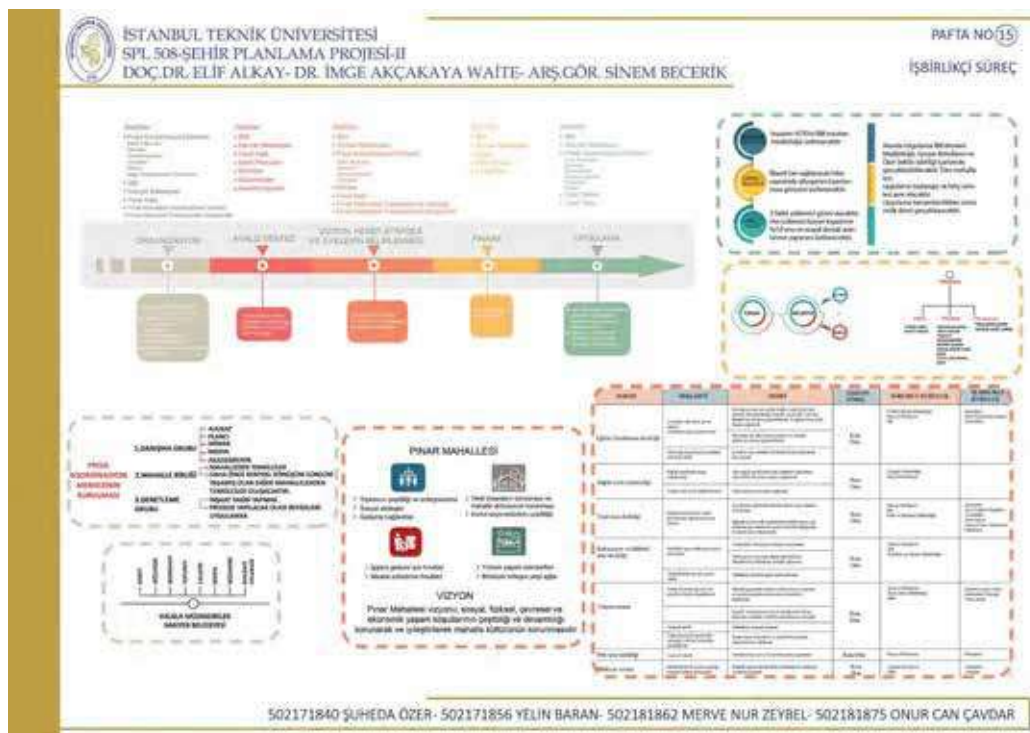


Figure 10. Collaborative planning process (Group E)

Weeks 6-7: Collaborative governance model

- Adapting Ansell and Gash's 2007 model (or another one, of the students' choice) to the Sariyer case based on previous studio studies
- Structured studio debate: Which model, which path of adaptation?
- Revised assessments, plans & adapted collaborative governance model

The collaborative governance models by Ansell and Gash (2007), Lasker and Weiss (2003), and Connick and Innes (2003) were analyzed in detail (Figure 11). The students' assessment of models was mainly related to the models' aim, important inferences, critical points of process, and phases. Then, each group developed a model for collaborative governance for the study area (Figure 12).

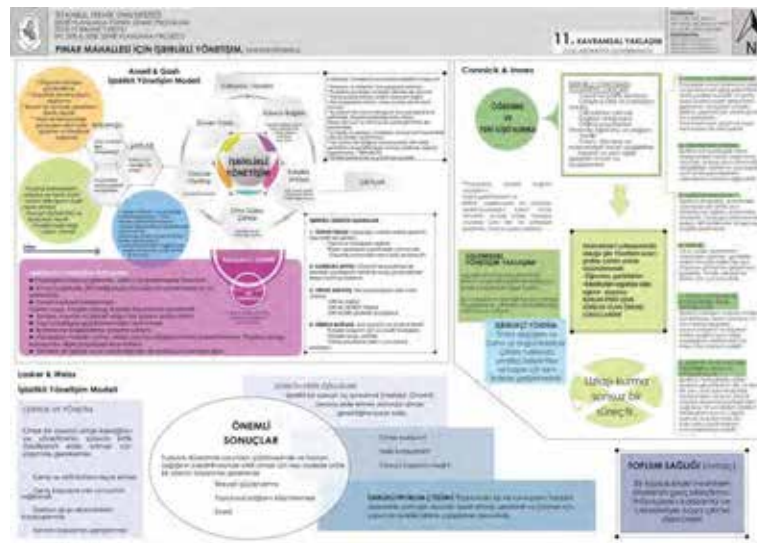


Figure 11. Analysis of Collaborative Governance Models (Group B)

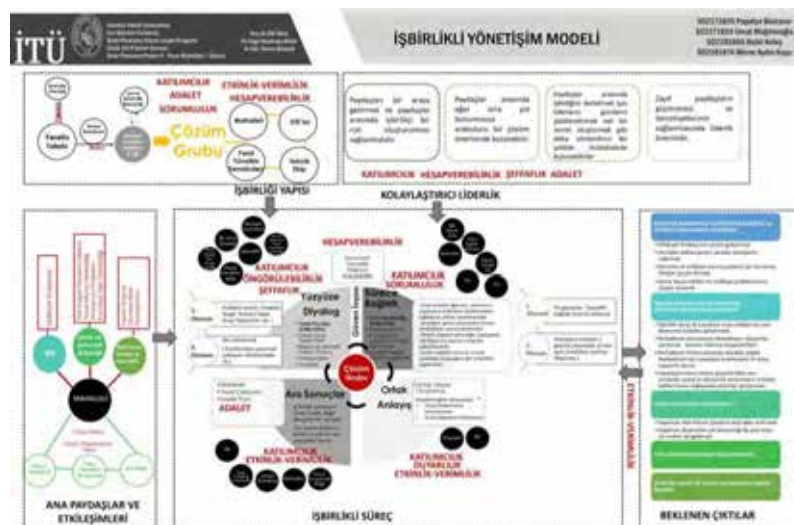


Figure 12. Collaborative Governance Model Proposal (Group A)

Week 8: Spring break

Week 9: Focus group preparation workshop in studio

Facilitation strategies— Facilitative leadership and mediation tactics (by students) that:

- Promote broad and active participation;
- Ensure broad-based influence and control;
- Facilitate productive group dynamics; and
- Extend the scope of the process (based on Lasker and Weiss, 2001)

Assumptions vs. expected outcomes— How to test the model:

- Existing assumptions: power/resource imbalances, incentives to participate, possible cases of antagonism and cooperation
- Collaboration tools: participation methods, face-to-face dialogue, trust building, commitment to the process, shared understanding
- Expected outcomes: planning decisions and their (intermediate) impacts, possible conflicts and their resolution/mediation

Question/discussion guide and logistics— Developing a question/discussion guide to test models and advance them:

- Open-ended questions;
- Students as overt participants;
- Task distribution (facilitating, note-taking, recording, etc.)

Week 10: Focus group study with local stakeholders

With participation of all interested stakeholders; facilitated by students using the question/discussion guide and strategies developed in studio— Focus group study took place in the municipality building with the participation of representatives of local community and NGOs. It started with presentations of student groups about their models. Participants were then asked to choose the one of group for discussion and evaluation of models (Figure 13).



Figure 13. Focus group study at local municipality conducted by students

Weeks 11-12: Focus group data analysis, revision of models & addressing model pitfalls

Analyzing focus group study:

- Organizing participant responses;
- Merging focus group observation notes;
- Coding data (looking for common themes);
- Translating data into findings;
- Supporting findings with outlier responses and notes

Revisiting collaborative governance model:

- Adjusting and detailing the model as necessary based on focus group findings;
- Designing a project process with relevant steps

Possible model pitfalls and responses:

- Plan B's addressing any risks;
- Community and institutional capacity building and (other) empowerment needs

The analysis of focus group was divided into two: first part involved citizens' comments, ideas and demands, the other one reflected on observations and inferences (Figure 14). The data were coded and examined in line with the collaborative governance model components. Models were then revisited to reflect the focus group findings.



Figure 14. Focus group analysis (Group E)

Weeks 13-14: Implications for “good” and collaborative governance

“Good governance” in action:

- Good governance principles in planning literature;
- Integrating good governance principles with the collaborative governance model

Implications for good governance in current Turkish governance legislation:

- Current guidelines, laws and regulations towards (good) governance in Turkey;
- Evaluating the Turkish (and local) planning practice regarding good governance (Figures 15 and 16);
- Generating relevant policies for national/city legislation to improve governance practices in planning

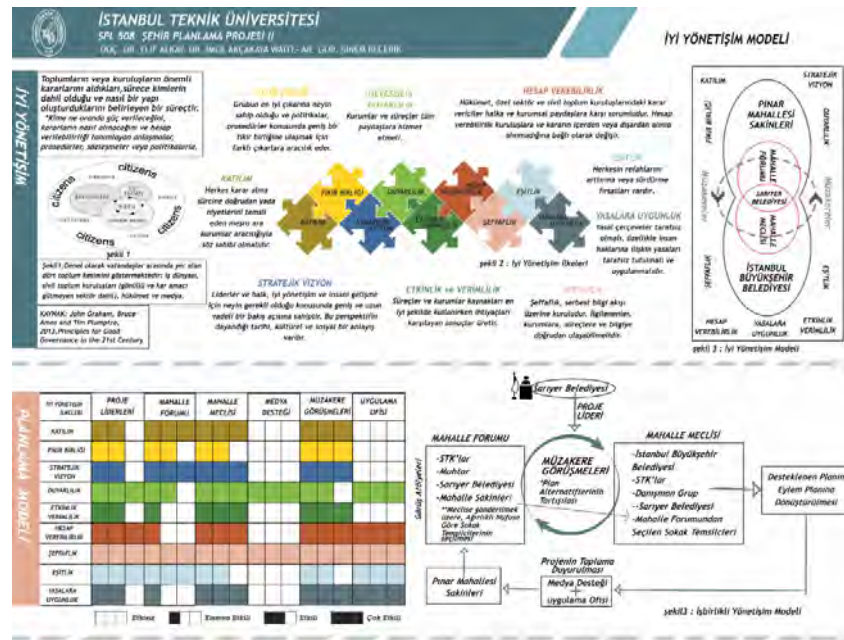


Figure 15. Good governance model

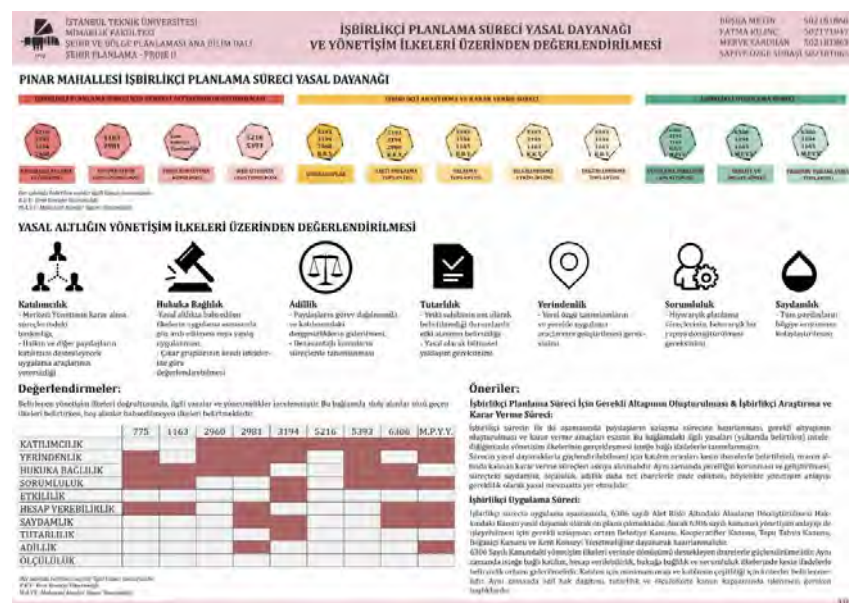


Figure 16. Current Turkish redevelopment laws within good governance perspective

Week 15: Final jury assessment involving local stakeholders

Cohort analysis and reporting of focus group study; revised collaborative governance models with adaptive strategies and good governance inputs; refined policies to improve governance practices in Sarıyer and Istanbul, with implications for Turkey

Preliminary findings and discussion

In the context of course content and development strategies, all five groups based their general framework and models on current conditions of natural, built and socio-economic structures of the study area. Initially, main problems of Pınar Neighborhood were defined in relation to the quality of physical environment, accessibility due to topography and lack of green areas. However, following the structured and semi-structured site visits, a formal briefing at the municipality, and surveys and interviews with local actors, one crucial problem of the area appeared as the land registration issue. All groups defined stakeholders and actors that will take part in the decision-making process of the neighborhood redevelopment in detail. In this perspective, local residents who do not have land titles, the Istanbul Metropolitan Municipality as the major land owner, the district municipality, and local NGOs were defined as important stakeholders for collaborative planning. However, the issue was to remedy all political and economic power relations and the jurisdiction disputes.

All studio groups have developed solution- and network-oriented organizational models and schemes to design neighborhood redevelopment alternatives in terms of spatial, financial, collaborative and legal restructuring. One of the groups described the core project values in keywords “participation — equality — equity — trust — right — clear — desire — need — expectation — empathy — public interest — participatory democracy — reconciliation.” It is observed that all models aimed to achieve successful and sustainable planning outcomes towards the betterment of the local public’s wellbeing. The students developed physical, financial and collaborative plans, with a special emphasis on the public participation aspect. All in all, both course context and collaborative studio environment enabled the graduate students to be more motivated, as they were encouraged to think about collaborative planning and governance processes for the neighborhood’s rooted redevelopment problems by empathizing and consulting with its everyday residents.

It is found that experiential learning based project studio design has been a factor in obtaining the studio deliverables analyzed in detail above. Unlike the more conventional planning studios, the graduate students discussed their findings and models with municipality officials throughout the semester and at studio juries. They also had an opportunity to test their models with a focus group study involving local community representatives. In fact, on-site interviews and the focus group study were main tools for re-examining the models and establishing further connections with locality. As students develop their ideas in their own groups, they can take into account the views of local representatives with different competencies and expectations. They also held intra-group and inter-group discussions concerning common pitfalls, responses and understandings; thus, studio meetings have helped students to observe various approaches to problem-solving and process management, and that they should question their models accordingly. The students have highlighted the importance of such inclusive and interactive processes both in the studio and on site towards building trust between planning practitioners and local actors. They have experienced that face-to-face dialogue goes beyond the developments of a site-based model, and that the model is an inevitable necessity in connecting with real life.

Acknowledgements

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Teaching planning for the transition

Collaborative International Workshops – A joint Brazilian-German Teaching Experience for Planning in Vulnerable Areas

Collective Learning on Planning for Integration and Transition

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Abstract:

A joint teaching experience involving Brazilian and German students of Architecture, from Universidade Federal Fluminense (Niterói/Brazil) and Jade University of Applied Sciences (Oldenburg/Germany), promoted the development of urban planning proposals. Based on previous teaching experiences in planning for vulnerable urban areas in the participating faculties we developed a workshop series as a collaborative teaching project.

In 2017 we worked in Niterói on a project for a centric favela and fishermen village at the Guanabara Bay. In 2018 we elaborated a project for a centric neighbourhood gathering (social) housing, enterprises, abandoned plots and harbour uses in Bremerhaven. In 2019 we will be back in Rio de Janeiro.

The workshops were accompanied by local actors. Students learnt to understand social implications of planning in a new context, started a critical reflection of own experiences and developed a cooperative project that was dedicated to open the local discussion about the places further development. During the Workshops students acquired knowledge about local conditions of urban development such as in the case of Brazil the challenge to integrate informally grown neighbourhoods and the formal city or as in the case of Germany dealing with the consequences of economic and demographic changes like shrinking populations and drastic changes of uses. Parallel to the development of projects the students participated on lectures and excursions. The concepts aim to integrate the neighbourhoods into the city and to develop ideas for public spaces, community facilities, affordable housing, and local economy.

These teaching experiences are challenges to integrate compact workshop formats and the manifold new experiences for the student into professional approaches within complex working fields. At the same time the experience of an immediate communication to planning agents and local communities create an intense learning process and a critical reflection on given for granted planning knowledge.

Keywords: collaborative teaching; vulnerable urban areas; urban planning; socio-spatial integration



Introduction

This article reflects on a joint teaching experience involving Brazilian and German students, from Universidade Federal Fluminense (Niterói/Brazil) and Jade University of Applied Sciences (Oldenburg/Germany). We developed a series of workshops as a collaborative teaching project to promote the development of urban planning proposals for vulnerable areas.

The School of Architecture and Urbanism (EAU) and the Faculty of Architecture (FBA) developed a format of iterative workshops. The Workshops were organized and taught by the authors, integrated around 30 students for each workshop and were held in English. This workshop series was funded by the International Office of the Jade University and by the German Academic Exchange Service (DAAD). In 2017 we worked in a mixed students group on a project for a Favela in Niterói (Brazil). One year later we elaborated a project for a neighbourhood in Bremerhaven (Germany). In September of 2019 we will continue the programme at Rio das Pedras (Brazil). Throughout the implemented workshops students learnt to understand social contexts of planning in a new context, started a critical reflection of own experiences and developed a cooperative project that was dedicated to promote the local discussion about the places further development. Parallel to the development of projects the students participated in lectures and excursions.

While in the case of Brazil a key issue was to integrate informally grown neighbourhoods and the formal city in the case of Germany it was about to deal with the consequences of economic and demographic changes like shrinking populations and drastic changes of uses.

In Niterói students in mixed teams developed concepts for the local favela Vila dos Pescadores. The goal was to show development alternatives that facilitate the integration of the existent favela into the city without expelling the community of dwellers and fishermen. So there had to be found ideas for public spaces and community facilities within the neighbourhood, for affordable and flexible housing projects and last not least ideas for local economy to develop as a stable base for the community of dwellers. There were developed divergent proposals based on the central approach to reinforce local qualities and to open up opportunities for the local community to use and discuss these proposals as much for self-initiative activities as for negotiations with planning administration.

In Bremerhaven the objective was to develop a proposal for the requalification of a degraded area, near the local harbour, students and teachers involved had the possibility of building a dialogue with different agents - public and private -, in the area under study, seeking for solutions that could create a urban morphology capable to attend social demands for housing, community facilities and also promote the integration into the surrounding neighbourhoods. In addition to these relevant issues addressed in the project development, the focus was on stimulating business activities in the area under study in order to generate income and job opportunities. Another determining point in the development of the urban projects was the creation of different types of housing projects including social housing.

Along the workshop, the students had also the opportunity to establish a rich dialogue between them, discussing references and similar projects of requalification of degraded areas, in different countries of Latin America and Europe.

The final presentation of the studies developed by the student groups, allowed – in addition to the return of the urbanistic proposals to the several agents involved – a first experience (for most of them) of a contact with some of the real "clients" of their projects. Finally, it is expected that the projects elaborated during the workshop will contribute with ideas to the development of future urbanistic solutions for the area object of study.

In both faculties there are courses that focus on integrating teaching into real planning discourses and specific needs of local communities and vulnerable urban areas. They are part of the compulsory programme of either school: At the School of Architecture and Urbanism (EAU) in Niterói it is the course on popular housing project. At the faculty of Architecture (FBA) in Oldenburg it is the course of urban design project. The joint workshops take these teaching experiences as a starting point to explore new didactic approaches by creating an intense learning process and vivid studio atmosphere and by using the different backgrounds of the two student groups as a base for a critical reflection on given for granted planning knowledge. Especially the immediate communication to planning agents and local communities create manifold new experiences for the students and opens up their perception of a complex working fields for them as future professionals.

The Social Housing Project Course at the Escola de Arquitetura e Urbanismo (EAU) at UFF

The Social Housing Project course is taught over six months, in the penultimate period of the Architecture and Urbanism course. Comprising three modules, the discipline addresses each semester one of the three distinct fields of the social housing project in Brazil: the urbanization of consolidated informal settlements; the re-qualification of abandoned properties, aiming to adapt them to the use of housing; and the occupation of empty land in urban areas equipped with sanitation, transportation and services infrastructure, with the construction of multi-family buildings. In addition to the teacher responsible for the discipline, teachers from other areas (sanitation infrastructure, structural calculation, transportation, social work), linked to other units of the Federal Fluminense University, also participate in the orientation process.

Each semester, a community - in the case of urbanization projects of informal settlements - or an area - when it comes to the development of housing projects - is object of study, addressing one of the themes mentioned above, in different municipalities of the Metropolitan Region from Rio de Janeiro. Thus, the students developed several projects in communities located in Niterói, São Gonçalo, Nova Iguaçu, Itaboraí, Duque de Caxias and in the state capital, Rio de Janeiro.

Organized in groups of up to four members, the students act according to a project development methodology, which foresees the development of the following activities: socioeconomic surveys in the areas where the interventions will be carried out, in order to build the social profile of the project. population that will be served; collection of data in different public agencies, in order to subsidize the architectural and urbanistic proposals that will be developed; participation in assemblies with dwellers, to discuss existing problems and identify solutions; and, finally, the development of urban-architectural projects, which will be presented and discussed with community leaders and the local population.

In the development of projects, lectures are also held with the participation of architects and town planners, who work in the State Housing Company of the State of Rio de Janeiro and other Brazilian states, with the objective of knowing different experiences and discussing them. Students are

encouraged to elaborate their work, almost exclusively, in the project studio, in order to share the different project approaches.

At the end of the course, copies of the material produced by the students are submitted, after approval by the dwellers, so that their representative entities can use the studies developed by the students, in their lawsuits and negotiations with the municipal and state governments. The level of resolution of the studies carried out by the students should allow the architectural and urban planning projects to be detailed later, without any significant changes in the proposals developed together with the community.

With regard to informal settlements, the studies developed by the students are focused on favela communities occupying sites with different characteristics. Some of the communities where the interventions were carried out had settled sloping areas with high risks of landslides. Others were located on land situated along riverbanks and lagoons, subject to floods. Finally, there were those that arose from the occupation of public areas, through actions implemented by the organized social movement, which sought to redefine patterns of land use and subsequent land regularization and the implementation of sanitary infrastructure and community equipment. The projects carried out by the student teams would thus contribute to negotiations with municipal and state agencies, aiming at the expropriation of the occupied area, thus giving it a social function - in the words of one of the leaders of this movement: the creation of a popular neighbourhood.

The analysis of the results achieved by the course of popular housing project, in the academic field, points to a positive balance. The students have access to a socioeconomic reality quite different from the one they experience in their daily lives, which undoubtedly contributes to the construction of another concept of citizenship, committed to democratic values and social justice, and, also, another perspective about what a city can be.

As far as their professional training is concerned, they have the possibility of developing architectural-urbanistic projects that question the standardized and poor quality solutions, which, with exceptions, characterize the official production of popular housing.

At the same time, the interaction with teachers from other areas, such as civil engineers and sanitarians, sociologists, social workers, geographers, in turn, makes it possible to anticipate the experience of a multidisciplinary dialogue, which will take place in professional practice of the students, in the future.

Finally, the architects who received this formation, in the bachelor course of the Fluminense Federal University - one of the few Brazilian architecture and urbanism faculties that has a course specifically built for the question of social housing – will have a special role in the labour market for their particular qualification in this field of planning.

However, with regard to the effective contribution of this academic production to the formulation of public policies, or even to meet the demands of the communities with which the projects were developed, the results are not that good, for several reasons.

Initially, it is important to highlight the resistance of a significant portion of government agencies, in their different spheres, to promote greater integration with the University, in the sense of building

partnerships. Whether for reasons of a political nature, or because there is a distrust of academic production, whose deadlines and products are supposed to be incompatible with the dynamics of public administration (some managers even affirm that the University is distanced from the real world) few projects served, in fact, as a reference for interventions in the areas under study. However, even though the projects presented were not implemented - most of the time - the solutions presented by the students contributed to the community leaderships having a study that materialized their aspirations, giving a base to their positions in the negotiations with the public power.

Considering the last 25 years of regular courses of Social Housing Project, at the School of Architecture and Urbanism of the Fluminense Federal University, we find that, despite adversities, we have sought to achieve our goals. One of these objectives is to contribute to the training of qualified architects for the practice, in a project field that has particular characteristics and that require another professional posture and a social conscience. Another is the commitment to contribute to the formulation of social housing solutions committed to popular participation in the planning process, the quality of the built environment and sustainable urban development - the University, joining forces in the construction of the right of Architecture for all.

Joint Workshop at Vila Dos Pescadores in Niterói

The partnership between the Federal University of Fluminense and the Jade University of Applied Sciences was originated by one of the Brazilian students who had studies there at the faculty of Architecture (FBA) due to his participation in the "Science without Borders Program" - an international exchange program promoted by the Brazilian federal government.

For 2017 we agreed on a first workshop in Niterói and in September 15 students from the Faculty of Architecture of Oldenburg came to Brazil to participate in a 2 weeks urban project workshop, involving students of the course popular housing project. The workshop was held by the authors and Ronaldo Brilhante.

The German students had participated in a preliminary seminar about urban development, housing policies and architectural approaches to social housing in Latin America at their home faculty. The Brazilian students prepared the workshop by own research activities that would give a base to the analysis of the site. In the beginning of the workshop several excursions within the Cities of Rio de Janeiro and Niterói were offered. Especially the visits of two Favelas, Rocinha and Parque Royale, allowed German students to acquire first on site experiences of informal city growth and urban interventions to integrate the favelas. After these first experiences the student groups visited and analysed the area that would be studied during the workshop.

The workshop was engaged to develop proposals for the community of Fishermen Village, in Niterói. This informal settlement, located on the shores of Guanabara Bay is home to about 80 families. Located in the central area of the city of Niterói, it was originally a colony of fishermen. Along the years, the community reduced their fishing activities, due to the pollution of the waters of the bay. According to information from local dwellers, some of the former fishermen are currently engaged in the promotion of boat trips for tourists. The place is still used for the anchoring of private boats, whose owners pay a small amount, to leave there their boats. The Fisherman Village presents recurrent problems in the Brazilian favela communities: lack of adequate infrastructure for basic

sanitation; need for improvement of the quality of housing conditions, the precariousness of the urban structure; absence of access to basic community facilities, such as day-care centers.

Regarding fishing activity, the intention was to propose suitable solutions of mooring for the boats in order to support the existing fishing activities and to support to the growing demand for sightseeing activities in the bay - considered the tourism and leisure potential of this area. Nevertheless, this involves a more complex situation that transcends the interventions envisaged for the project. It is not enough to propose a physical structure to support this activity if fishing in the area has been increasingly compromised by agents who deposit material in the sector of the border where the fishing is carried out. In this sense, it is possible to foresee in the project the implementation of infrastructures like sheds with refrigeration structure, for fish storage, to meet the demands of the fishermen's' association. But it has to be stated that this will not change the loss of water quality.

In order to provide adequate treatment for the bay's edge, it would be necessary to promote the resettlement of families who built, in extremely precarious conditions, irregular housing in this area. So the resettlement of housing within the area of the community was proposed, suggesting the demolition of a part of the buildings (with fair compensation of its occupants) and offering new housing within the area. Along the shore of the bay it will be useful to define with physical landmarks a precise boundary of settlement.

All interventions considered the need for improvement of the conditions of living for the local dwellers as for example the implementation of sanitary infrastructures and pavement of the existing streets. To support a positive future development of the area the group planned also community-based equipment that would meet diverse dwellers demands: health, professional training, culture, etc.

The community is adjacent to a state-owned abandoned plot. This area was included to create new opportunities for social housing or for affordable self-help construction with corresponding public spaces and infrastructure.

Needed to say that all proposals developed should consider aspects related to costs, in order to make them feasible.

Regarding the relationship with the community of Fisherman Village, the crisis of community representation, expressed by the absence of an active and combative dwellers association, compromised the perspective of a more active participation of local dwellers. Nevertheless several dwellers were interviewed by the students, accompanied by the teachers involved in the project workshop.

In addition to the above mentioned problems of the favela dwellers there is a project presented by the City Hall of Niterói, which proposed the withdrawal of all families currently living in this area, with the aim of promoting a "gastronomic centre", focusing on the tourist potential of the area. Until now - above all for economic reasons – it was not carried out. For this reason the local community had on one hand formulated their main demands but on the other hand they hesitated to promote them actively.

Within this complex situation the students considered the site analysis and, the community's demands to develop goals for the future development of the area. These results would be handed to the dwellers

association and it would be left upon their decision to consider whether they would use them for further negotiation or not.

Considering all these questions, the teams formed by German and Brazilian students developed urbanistic proposals focusing on site analysis and on the points presented as local demands. The student teams worked together beginning with creating knowledge and understanding of the local needs and going up to develop specific projects. Students' discussions were very concerned about the possibilities to create flexible housing typologies that could be afforded by the local dwellers. By this motivation they discussed private and collective needs, the minimal equipment of a basic house and strategies to amplify the houses by self-construction. The groups also discussed alternative options to facilitate economic and educational activities within the neighbourhood, and the adequate urban spaces for the area that would allow an integration to the city but keep a certain privacy for the community in the fishermen village. So besides presenting relevant possibilities for the development of the favela the students lived an intense process of reflection about human needs on housing, education, work and collective life.

Urban design projects at Faculty of Architecture (FBA) at Jade University

The urban design project Faculty of Architecture (FBA) at Jade University is part of the Bachelor Degree Programme. In the third year the students develop their first urban design project. Students work on the project for the duration of one semester.

The aim is to introduce students to current issues of urban development and the complex links between social, economic, ecologic and morphologic aspects. Projects are developed on base of real planning needs in cities within the region as Bremen, Bremerhaven, Wilhelmshaven and last not least Oldenburg. Bremerhaven and Wilhelmshaven have suffered severe shrinking processes. All cities have planning needs for the redefinition of areas with former uses for industry, harbour, military, railways, etc. The choice for working areas takes into account to form part of a current local planning debate. So the areas chosen are zones that require a transition of use and represent current urban voids not in the sense of being brownfields but having been excluded, being in decay or comprising conflictive uses and morphology within the area. The aim is to develop mixed use areas that allow hybrid functions between housing, commerce, business, leisure activities and social infrastructure.

The specific planning requirements are defined in collaboration with local planning administration, borough council, local citizens' groups or neighbourhood associations. While preparing the course contacts to the involved local actors are made and the main issues are defined in a cooperative way. At the beginning of the course students meet up with some of the actors on site. During the course of the semester the local actors are invited to on the mid-term presentations. The students elaborate their projects in groups of two. So, at the end of the course around twelve alternative project proposals are presented.

The developed project show divergent concepts to structure the areas, to develop a layout for buildings, to insert new uses, to create public spaces and infrastructure that integrates the areas into the surrounding neighbourhoods.

Project are presented in public on site or handed over to the involved local actors. In most of the cases the students' projects serve as a base of debate for local actors in order to define next steps for possible future development. The students explore by their project for the area alternative approaches and planning criteria. By this the developed projects have contributed to develop criteria for future professional processes.

Joint Workshop at Rudloffstraße in Bremerhaven

In September 2018, 15 students from the Escola de Arquitetura e Urbanismo (EAU) came to Germany for 14 days to work together with the students of the Oldenburg Department of Architecture to develop urban planning concepts for the further development of the Bremerhaven district. The workshop was held by the authors.

The topic of the workshop "Abandoned Industrial Areas" and the aim of developing hybrid urban spaces are based on the main questions of the previous workshop. Issues such as the participation of local actors in the development of goals for urban development projects were explored during the project work in the workshop.

The project area is located in Bremerhaven in a former port area close to the city centre. The properties located directly on Rudloffstraße are currently used mainly for commercial purposes or are abandoned. In the west of the area, the Wilhelminian Quarter "Alte Bürger", which in recent years has turned into a lively district with a wide range of cultural attractions. At the north-east there are neighbouring two major historic social housing projects.

The students had prepared themselves in preliminary seminars with overarching topics such as shrinking processes in cities, neighbourhood development and social housing.

At the beginning of the workshop several excursions took place. First of all, it was about introducing the group to current issues of urban development, housing policy and knowing existing settlements of social housing and the recent interventions to adapt them for future needs in Bremen and Bremerhaven.

Besides that in Bremerhaven students visited the neighbouring Goethequartier which is the neighbourhood most affected by relative poverty within Germany. Students learned about problems and social projects. During one afternoon the students played, designed and talked with children and pedagogical staff at a local child care project.

With this background, the students now explored and examined the project area more in detail. All discussions concerning the project area were accompanied by actors from Bremerhaven dealing with the area as the representative of the neighbourhoods' development agency, local planning department and the Bremerhaven Company for investment and urban development.

The local planning administration had initiated a public workshop with dwellers and initiatives in 2017. Citizen developed initial ideas and identified spots of special interest. Of particular importance within the project area are the large warehouses in the north (Marcushallen) and a former municipal construction yard. The still existing allotment gardens and the memory of former allotments in the area inspired to develop new community gardens and to foster urban gardening.

The main challenges for the areas is the contradictory situation in the current uses: The area is stretching parallel to the waterline but blocked from it by a shipyard for cruise liners. That give a fascinating scenery but also a high level of pollution. The area has a mostly commercial use but there are also a lot of abandoned plots. Towards the east side of the plot the predominant use is housing. The challenge is to integrate existing uses in a future mixed-used area, to foster more housing and to stimulate the use of public spaces, and to provide attractive social and cultural infrastructure for neighbours and new inhabitants. For the economic situation of the city there is a low investment rate and the possibilities for public investment are limited. Thus, all proposals have to be stimulating for investment on one hand and ensuring social inclusion on the other hand. Only a minor part of the plot are state owned. These plots have to be used to initiate a change. So besides finding a spatial solution students had to find a strategical approach for the development of the area.

In their urban planning concepts, the students sought solutions for the appropriate mix and zoning of living and working, the possibilities of social mix, the design of public spaces and the development of further ideas for the new use within the new neighbourhood to be developed.

The students elaborated five alternative proposals and presented them at the end of the workshop. The local actors were invited to the presentation after the intensive project work and were able to convince themselves of the developed urban planning concepts and give the students a feedback. For the local actors the workshop result were a relevant impulse to initiate and specify further planning steps.

As a follow up the workshop results were used a base for a further urban design project at the faculty of Architecture. The projects of both courses were shown in an exposition on site where citizens were invited to discuss the results. Meanwhile a planning office was found to develop a plan for the areas. They took part in the exposition and by this planning administration and professional planners can integrate the results of public debate. The students' projects visualized different planning approaches so they gave a visible base to define the criteria for future planning.

For the students of the workshop in particular the specific feedback of local actors reflecting issues discussed during the workshop in the context of the actual development process in Bremerhaven had a big impact. It enabled the students to gain new perspectives on possible positive impacts and constraints of their planning proposals.

Conclusions

The experience of working together allowed, as well for students as for teachers, a rich exchange of project approaches, work methodologies, and contact with distinct socio-economic and cultural realities. The joint project elaboration along the workshop and the experiences gained represent a significant enrichment of students' education for the members of both groups. The students discovered similarities and differences in planning processes and tasks of urban development. The opportunity for the students to get in touch with relevant urban issues of both countries, such as urban interventions in informal settlements (in the Brazilian case) and the rehabilitation of degraded urban areas (in the German case) is a very valuable outcome of this cooperative project. Likewise, the contact with public and private agents involved in the urban structuring processes of the two study areas of the workshops allowed an understanding of the practices of these agents in contexts of countries with very different stages of economic and social development. In the informal city in Brazil the local communities were represented mainly by dwellers associations, especially in the current

situation with an absence of state driven programmes for the integration of favelas into the city. In change in Germany the initiative to local development is far more formalized. Local planning department and an agency for economic development were in charge of the project, and even the neighbourhood representative was employed (by external funding) to gather and advocate the interests of the surrounding neighbourhoods. The experience of this different field of actors and the formal and economic conditions for urban development was an enriching experience for both groups.

For the German students, the experience of working in an informal settlement was something absolutely new and represented a challenge for the formulation of proposals appropriate to the particular characteristics of the area under study. Especially facing the pressure of informal construction on open spaces was a new experience for them. This made the projects for the needed public spaces becoming a challenging task. The Brazilian students were of course more familiar with the challenges of planning within informal settlements. Nevertheless the cooperation gave them the possibility to know another perspective, which allowed them to reflect on aspects of urban informality that, due to the proximity to their daily life, were unnoticed. The students developed due to this active process of mutual learning and reflection a high commitment to find appropriate solutions for the area.

On the experiences in Bremerhaven the ideas of Brazilian students about the visibility of social needs and poverty were questioned. When working on the Bremerhaven project the Brazilian students were confronted with shrinking processes and the consequently low pressure on spatial development and had to think about the stimulation of uses for public spaces, infrastructure and investments (public and private). So they found a completely new situation of involved actors and needed collaborative approaches with these actors. The German students could rely on previous experiences referring to the given situation but learnt a lot in the exchange about the more community oriented approaches of the Brazilian students.

For the teachers involved, it was an opportunity to discuss the methodologies of project teaching practiced in the courses of the two educational institutions, and also of the curricular structures of each course, what allowed a valuable exchange of teaching experiences. Besides this the joint workshop also promoted discussions with others faculty members involved in this partnership.

The cooperation in the joint workshop has been a relevant contribution to promote experimental and intercultural learning within the faculties. Both faculties are interested in continuing the workshop series and to keep on working on the possibilities of its didactic format. Nevertheless, this will depend on the possibilities to access future funding. In the Brazilian case, the desirable continuity of this partnership - with regard to the groups of students and teachers going to Germany - is difficult due to the economic crisis experienced by the country and, above all, by the cuts made in the current federal administration, in the budget of the Public University. But this complex economic and political restrictions also show the divergent embeddedness of learning for future architects and this is another essential part of the learning process for the cooperating students groups. So we remain with the commitment of all the teachers and students involved in this academic partnership program to pursue this valuable international interaction.



PA05

Institutional change and
regional transition

The Role And The Future Of Small Towns In The Central Italy Earthquake Crater 2016 And "The Reconstruction Of The Possible", Participatory Workshop For A Post-Earthquake Development Plan In Bolognola

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Abstract: The earthquake that involved Central Italy in 2016, in addition to its disruptive effects on people, heritage and social capital, cracking the fragile balance of economic and demographic systems, has greatly amplified the attention paid small municipalities, on the Apennines Mountains. Summing the Small Municipalities Law and the National Strategy for Internal Areas, a sole large-scale project affecting the so-called "earthquake crater" of Central Italy can be outlined and presented as a widespread reconstruction work, in the name of safety and technical, technological, administrative and planning innovation. Despite the magnitude of the objectives, the dislocation of damages, the distribution and over-provision of historical, public and private assets, the particularity of the places involved, characterized by extreme specificity and inhabited by local micro-communities with a strong local identity, are likely to enhance little programmatic tools. Assuming the necessity of a context-based and collaborative approach to producing effective change at the local and regional scale, the question is: how to make possible and support a local pro-active and co-operative environment? By focusing on the collaboration developed in 2017 between the Municipality of Bolognola and the IUAV University, the paper explores the possibility of co-designing an action plan for post-earthquake development.

Keywords: Governance tools, Participatory process, Institutional innovation, Territorial regeneration, Risk planning

Central Italy Small Municipalities. A resourceful context, between criticalities and new strategies.

In 2016 the Central Italy Earthquake involved a large part of the small municipalities attested on the Apennines, between Marche, Umbria, Lazio and Abruzzo. In addition to its disruptive effects on people, heritage and social capital, the earthquake cracked the fragile balance of economic and demographic systems. Those territories showed, since the fifties, a process of disarticulation of the social and economic fabric and abandonment of the land, with the population moving toward less marginal areas of the country, *i.e.* big or medium cities and largely industrialized valleys. Within this already critical situation, the earthquake emerged as an opportunity not only

to describe and discuss the intrinsic values and potentialities of those territories but also to fund a reconstruction process that would have worked as a complex and transversal system of improvements and reforms to flip the marginalization process of the Apennines. Two major national programmes would have allowed the regeneration process of these territories: the so-called Small Municipalities law and the SNAI (National Strategy for Internal Areas). Interestingly the surface areas of the two programmes largely overlap (ANCI 2017).

The driving idea to reimagine the Apennines is a form of *intrinsic sustainability* that these territories show (Fondazione Symbola 2018). They emerge as laboratories where industrial production is organized within local districts based on local communities (Becattini 2002; Sforzi 2008), and the agricultural production is investing in the creation of local supply chains and organic products (Fondazione Symbola 2018); also they were able to save high levels of biodiversity and memories of an ancient past (Calvaresi 2015b). At some degree, those tendencies are an implicit and innate form of sustainability that the inner part of the country displays. They were only possible because of the marginality of those territories from the industrialization and modernization processes that caused, on one side, the previously mentioned abandonment processes but also, on the other side, produced high levels of pollution and bureaucratization in big cities and intensively exploited lands in the rest of the country. In this sense, these territories constitute a resource to be taken into account for public policies.

The relevance and the strategic role that Italian inner areas and small towns play were already shaping the mentioned national programmes. The so-called Small Municipalities Law -officially *"Misure per il sostegno e la valorizzazione dei piccoli comuni nonché disposizioni per la riqualificazione e il recupero dei centri storici dei medesimi comuni"*, law 158/2017- is the output of a long and careful observation of local systems, and its approval was only speeded up by the earthquake. The law included a series of measures to support and develop small Italian municipalities with less than five thousand inhabitants and also contained actions addressing the renewal of their historical centres. This law affected 5.567 towns, approximately covering the 54% of the whole national territory with a population of about eleven thousand inhabitants, and allocated about 100 mil., to be distributed between the 2017 and 2023 (ANCI 2017). The SNAI, on the other side, was already at work since 2013. According to this programme, marginalities, calculated through a series of indicators of the distance from 'centralities' and services, should be at the centre of national policies. The policy design process should use a place-based approach that, working through prototypes and fostering strong local governance by public administration, would have overcome the illusions of purely bottom-up local projects and pretence of state-driven projects (Calvaresi 2015a). In this sense, what should emerge is that both the instruments, the 158/2017 law and the SNAI, even though with lightly different interpretative models, and different implementation protocols, are aimed at making this portion of Italian Territory less marginal, more cohesive and, so, more competitive. The programmes allocated consistent funds in the selected areas to achieve this enormous goal.

Therefore the earthquake should be taken into account not only because of its sudden and tragic nature but also as the accelerator of already existing processes. On one side there where dynamics of progressive social-economic impoverishment and depopulation, despite any small signal of recovery showed before the earthquake (Renzi 2018); on the other side, the earthquake fuelled the approval of programmes and projects aimed at stabilizing qualitative strengths of Central Italy. The whole reconstruction project, then, seems to be the last opportunity to avoid an inevitable decline and a future in which Central Italy Internal Areas, the earthquake crater, could represent a model for sustainable development. Thus the physical (and selective) reconstruction project in the earthquake crater could be considered a part of a larger urban and territorial regeneration project that could benefit from national and European funds (Law 158/2017, SNAI, reconstruction funds plus European funds as, among others, FEASR, FSE). In this sense, this complex project, being the crater the first experimental step, would be the more significant public investment in territorial regeneration in the history of the Italian Republic (Renzi, 2018). It would represent an extensive work of reconstruction, the most extensive building site in Europe, in the name of risk resiliency and innovation in design, technological and bureaucratic protocols.

Despite that, the described instruments, being too programmatic and hardly able to catch, understand and engage the extreme local singularities and the many diverse local communities, were easily unable to reach their objectives. The over-provision of public and private goods, the social capital and the specificity of the context, where micro-communities have strong and conflicting identities would need an approach and a series of instruments able to catch and rearticulate the many different identities and actors. Demonstration of it lays in the long-lasting state of *emergency* and in the awkward start of the reconstruction in a context where local communities have traditionally shown a pro-active tendency. The relation between local, i.e. micro-communities and specific contexts, and territorial, i.e. the Apennines and any institution aimed at addressing their governance, becomes critical.

Summing up, what emerges within the post-earthquake reconstruction – pertinent but also too much pre-determined and constraining- is not the lack of norms or innovative aspects in the administrative orders, yet their substantial inability to radically transform design and planning protocols. The approach to a post-earthquake rebuilding seems unable to include all of the mentioned singularities and adversarial (business) interests that emerge if we look at small municipalities. Here again to look at local governance processes gains a critical perspective, because of the genuine possibility to implement any national policy or programme. The participatory workshop in one small municipality –Bolognola- then emerges as an experiment to develop a place-based approach, that assumes one case study, in between the exceptional and the norm (Thomas 2005), from which we could move back to a general theory and then get back to practice, proposing new territorial settings and collective and collaborative strategies.

The workshop “La ricostruzione del possibile” in Bolognola, between collaboration and co-design.

Bolognola is the smallest municipality of the Marche Region, both in terms of area (25,88 km²) and in terms of inhabitants (137, of which only 108 permanently living in Bolognola); it is also the highest ones (1070 m. a.s.l.). Its territory is included in the National Park of the Monti Sibillini, and its economy is mainly connected with resources typical of mountain areas. Particularly relevant, in local economies, are woods-connected activities and pastoralism, with sheep and bovines, and tourism-related activities. The first group also survive thanks to the enduring of quite extended common lands in the area. The last group has experienced fluctuating success, but, recently, gained relevance thanks to the growing attention toward the naturalistic, historical and cultural value of the mentioned National Park and the revamp of outdoor sports and free-time activities such as trekking, mountain biking, and many others. The 2016 earthquake adds on an already fragile milieu with the disruption of productive infrastructures such as burns and sheds –putting the livestock in danger during the freezing winters- and hotels, housing and lodges for tourists, made not fit to use. The earthquake also meant a reduction in tourism flows, since people were scared by the risk of other tremors.

For what regards the housing stock, in Bolognola only the 30% of it was permanently inhabited by residents, mainly in the main village constituted by the three original medieval villages from which the municipality was born; 70% of the residential buildings were empty for most of the time. The earthquake did not provoke the collapse of any building, but it made non-habitable, more than the 50% of the all housing stock, and, among those, the 80% of the houses inhabited by all-year residents. Right after the earthquake, then, most of the residents moved to the coastal area of the Region, and only about 79 persons stayed in Bolognola. The risk is that those who left during the emergency will never come back: this was the leitmotiv of many public meetings, not only in Bolognola but in all the earthquake-crater. In the case of Bolognola, due to the already low number of inhabitants, it would have meant the disappearance of the local community and the possibility that the municipality would be incorporated to the close ones (already discussed as a possible option before the earthquake and also already happened in other close municipalities).

Because of the critical situation, the resources described in the previous paragraph represent a significant opportunity to let the local community stay, not only as small and utopian pockets of resistance. The earthquake became the opportunity to invest in a regeneration project that could transform hopes and vague ideas into

tangible improvements. To pro-actively use endogenous resources to sustain a *minimum vital flow*, and to foster any small improvement able to attract new users and (economic) activities becomes imperative.

From this urgency, the collaboration between the local administration and the IUAV University started. The driving question was: *how to proactively use endogenous resources to sustain a minimum vital flow, and to foster any small improvement able to attract new users and (economic) activities?* Moreover, the focus was not only about how to practically produce those new economies and futures, but *how to stimulate –and sustain in the long term- local pro-active subjectivities and a learning process between institutions, citizens and new economic stakeholders*, interested in investing their energies in projects in –and for- Bolognola?

The hypothesis that the mentioned workshop wanted to test is that a co-design event, open to the public, in other words with a high degree of *participation*, could represent not only a participatory design tool but a moment of empowerment of the local community, setting the scene for a collaborative approach for future development.

In this sense, collaboration is here not only used to depict a participatory environment that includes, in the planning process, the public institutions/decision makers and also everyday people. Neither collaboration only means conflict resolution through alternative dispute resolutions (ADR) techniques. Collaboration is here intended as an approach, a state of mind that, acknowledging the existence of conflict, tries to overcome the mere confrontation of two different positions fostering understanding, empathy and mutual respect. Collaboration implies a great effort in explaining technical and personal reasons and in carefully listening to other participants to the process. To foster such an approach within participatory events ideally sets the mood to participate in other meetings collaboratively.

On this premises, the workshop “The reconstruction of the possible”, whose title recalls the aim to build on the ruins produced by the earthquake in order to envision possible alternative futures for the territories hit by the catastrophic event, was held. During the design studio -“Laboratorio di Sintesi”- of the Master in City and Environment Planning and policies at IUAV University, thirty students, together with the authors of this paper, were invited for one week in Bolognola to listen to the inhabitants and to facilitate the workshop.

Clearly to be on site for one week is neither enough to set a collaborative environment successfully, or to prepare a charrette –a participatory method aimed at designing a project/plan/programme, and reflecting with the participants about how to practically configure physical spaces to achieve an objective. Also, the programme was so dense that there were only a few moments dedicated to co-design, and also there were not all the expected participants. Despite that, the students were able to pinpoint key-people and fruitfully engaged with them, also through walks and informal chats. The result was the production, by the students, of six reports. A part of them focused on the legal and technical framework in which the reconstruction process was starting (at the time of the workshop and the design studio, the emergency phase had just ended). Others concentrated their attention on local material and non-material resources; other groups carefully identified, through the conversation they had with the inhabitants of Bolognola, visions and hints for local social entrepreneurship.

Bolognola can be considered as an extreme example of criticalities experienced by many surrounding towns in Central Italy Internal Areas. At the same time, the small municipality also exemplifies all the opportunities and the strengths that a careful reconstruction project could put at stake and that were mentioned in the first paragraph of this paper. Within those premises, the guideline for further reflections could be: which kind of *material or virtual infrastructure*, or platform, could enhance collaborative forms of *interaction among the diverse stakeholders* to let local strengths and visions emerge in order to build a local agenda for development? In other words, how to let local social entrepreneurship emerge and survive in the long term? Which tools planners have? The presented workshop suggests that, despite the difficulty to set actually collaborative processes, only moving to a generative form of listening -as the most in-depth way of listening to the others that requires the listener to be out of his system and open to what surrounds him-, we can generate solution as

collective creations (Scharmer 2009, 2018). In other words, only through active forms of listening (Sclavi 2009), we will be able to detect molecules of bottom-up *projectual sensitivities* and connect them with (i) institutional frameworks and founts and (ii) necessary skills and expertise. By doing so, and starting from detailed enquires of local *micro-cosmos*, an articulated and trans-scalar set of plans, programmes, projects and actions, either public or private, could be outlined toward the definition of a coherent group of policies for the regeneration of the territory.

Toward a post-earthquake development agenda.

A preliminary listing phase, formalized in a document called "the collection of ideas and projects" was necessary to reconstruct in detail needs, ideas and project emerged within the design-charrette. For Bolognola, its public administration, the private stakeholders and the citizens, the catalogue represents a shared document and is an attempt to return all the interests at stake, in the most exhaustive manner possible. The collection might both be the base on which pacts between the public administration and the citizens could be build and function as a support on which the institution sustain those pro-active groups that are already developing projects in the area. The reasoned list can also constitute support for those who, thanks to existing funding, decide to start new activities.

The next step in the design of a development agenda would imply to transform the collection into a *constellation*, meaning, with that, the identification of supply chains in which an existing projectuality can be accounted (for its economic feasibility) and for its nexus with other projects (in and out each constellation).

The concept of the supply chain is here used to describe multiple connections and different actors involved in the transformation process of a resource into a good. It implies organizations, public and private deals, regulations and norms. Constellations of projects should be described and grouped in different supply chains, assessing their impacts on *the micro-cosmos project*, which identifies the ensemble of actions and inputs that would guarantee a minimum vital flow –services and micro-economies- in the small municipalities. The micro-cosmos project is only made possible by forms of collaboration and partnerships between the public, the private and the people.

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Between East and West. EU and China's competing spatial integration logics for the Western Balkan Region

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Abstract: The Western Balkan Region (WBR) is currently undergoing a complex process of integration into the European Union (EU) and its countries, although at different paces, are progressively nearing the moment of accession. This has several implications for the spatial integration of the region in the EU territory, with the EU that, since the 1990s, has been supporting the latter with a number of programmes and actions. In the last decade, however, a new, cumbersome actor entered the game: the launch of China's Belt and Road Initiative in 2013 has triggered a growing influx of foreign capitals into the region, potentially limiting the influence of the EU on ongoing transformations and reforms. The contribution aims at shedding light on this matter. It does so by exploring the logics of the Chinese interventions on the WBR, in terms of vision, approach, priorities, sectors and volume of investments and means of implementation, and by comparing it with the logics of the ongoing integration process. Overall, the contribution shows that, whereas the EU remains the most relevant player in the regions, the growing political and economic role played by China may in the slowdown the process of integration.

Keywords: Belt and Road Initiative, Western Balkan Region, European Union, China, conditionality.

1. Introduction

The paper addresses the question of whereas China is a credible alternative to or facilitating the integration of the Western Balkans Region (WBR)¹ into the European Union (EU). This question raises a series of considerations concerning the role of EU and China in the region and, in particular, the economic, political, social and environmental consequences they may bring up. As widely recognized, China is increasing its geopolitical and geo-economic influence globally. At the edge of the new millennium, the Chinese government launched the so-called *going-out strategy*, that had gained further concreteness with the development of the Belt and Road Initiative (BRI) in 2013. The latter represents the first global initiative in terms of economic investments, infrastructure connectivity and territorial development. Geographically speaking, the BRI partially retraces the ancient Silk Road; the corridor connected the European continent with the far East. As Sarker *et al.* (2018, 626) argue, the BRI 'has a great impact on global economy through integration of a large part of the world under an umbrella'. While, throughout the world, some branch of the BRI are already concluded or going through the final stages of their implementation, the consequences of this initiative for Europe has been partly underestimated, at least from the EU institutions. As far as the various countries'

¹ For the purpose of this article, the Western Balkan Region includes Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North-Macedonia and Serbia.

positions on the matter are concerned, the majority of EU Western states are lukewarm at best, while the Eastern states appear more open to engagement. As similar position also is taken by Balkans countries, which watch at Chinese resources as an alternative to the EU financial mechanisms.

Whereas a growing influence of China on the WBR is undeniable (Hake and Radzyner, 2019), no assessment has been attempted yet of the impact of this influence over the EU integration process the region is going through. This contribution builds on evidences collected in the recent literature and policy document, as well as on interviews with selected stakeholders to shed some light on this matter. After this brief introduction, the authors focus on the role of the EU in addressing political, social and economic challenges in the WBR, by acknowledging its strategic position and importance for the future of the EU integration project. It shows where WBR countries stand along the process of EU Integration and introduce the main funding actions put in place by the EU in the region. The third section of the paper illustrates the origin of the BRI's vision, its objectives, geopolitical ambitions as well as all political vicissitude the initiative is bringing along with it. The fourth section focuses on the WBR, exploring the implication of the BRI for the latter: the authors highlight the scheme and volume of investment, the main projects undertaken and foreseen as well as their mechanisms of implementation.. The fifth section then compares the EU and China's roles in the WBR through different lenses of interpretation: (i) the vision - which implies considerations in terms of geopolitical, economic and strategic decisions; (ii) the approach – that focuses on the type of agreements and conditionality (economic, political etc.); (iii) the main priorities – showing what priorities each player has (political, economic, social and environmental); (iv) the sectors of investment – illustrating who invest where in terms of infrastructure, energy and industry sectors as well as; (v) the mechanisms of implementation – exploring similarities and differences between the EU and China in terms of management, financial mechanisms, environmental and social standards. After the comparison, a final section rounds off the contribution, reflecting on the potential impact of the increasing role of China in the WBR for the integration of the latter into the EU, and paving the way for future research on the matter

2. The role of the EU in the Western Balkan Region

After the collapse of the Berlin wall and, in particular with the beginning of the 2000s, the EU has progressively invested in the geopolitical and economic stabilization of the WBR. By stipulating the Stabilisation and Association Agreements (SAA), which characterized the Stabilisation Agreement Process (SAP) launched 1999, the EU promoted a progressive integration process. Overall, the relation between the EU and the Balkans countries has not been linear, due to internal and external contingences. According to Rogelj (2015), there it is possible to distinguish between at least four different phases, that describe this relation (figure 1). Moreover, the integration process differs from one country to another. In fact, since the signature of the SAA, only Croatia had joined the EU in 2013, while the other countries are still dealing with the transposition of the *acquis communautaire* (table 1). At present, Serbia and Montenegro have already started the chapters' negotiation phase, and Albania and North Macedonia have been awarded the candidate status, in 2014 and 2005 respectively, and are now waiting to start negotiating the chapters. On the other hand, Bosnia and Herzegovina and Kosovo that are still going through the early stages of the Integration process, with the former that has only applied for the membership in 2016, while the latter did not apply yet.

Figure 1 - Three decades of EU and Balkans relations

1990-1995: humanitarian crises
<ul style="list-style-type: none"> The Balkans were considered as «terra incognita»
1995-2000: first-stage of the regional approach
<ul style="list-style-type: none"> Partial acknowledgment of the WBR as a whole and not as sum of countries Shift from a bilateral to a multilateral approach
2000-2005 : second stage of the regional approach (SAA agreements)
<ul style="list-style-type: none"> Institutionalisation of the regional approach by stipulating multilater agreements Starting of the «Europeanisation» approach
2005-nowadays: carrots and stick
<ul style="list-style-type: none"> Slowdown of the EU enlargement policy and progressive reduction of the integration possibilities According to the EU Enlargement Strategy of 2017: (i) there is no possibility that Balkans Countries can access to the EU before 2025 (stick); (ii) the EU will have more than 27/28 countries (carrot)

Source – authors' own elaboration based on Rogelj (2015)

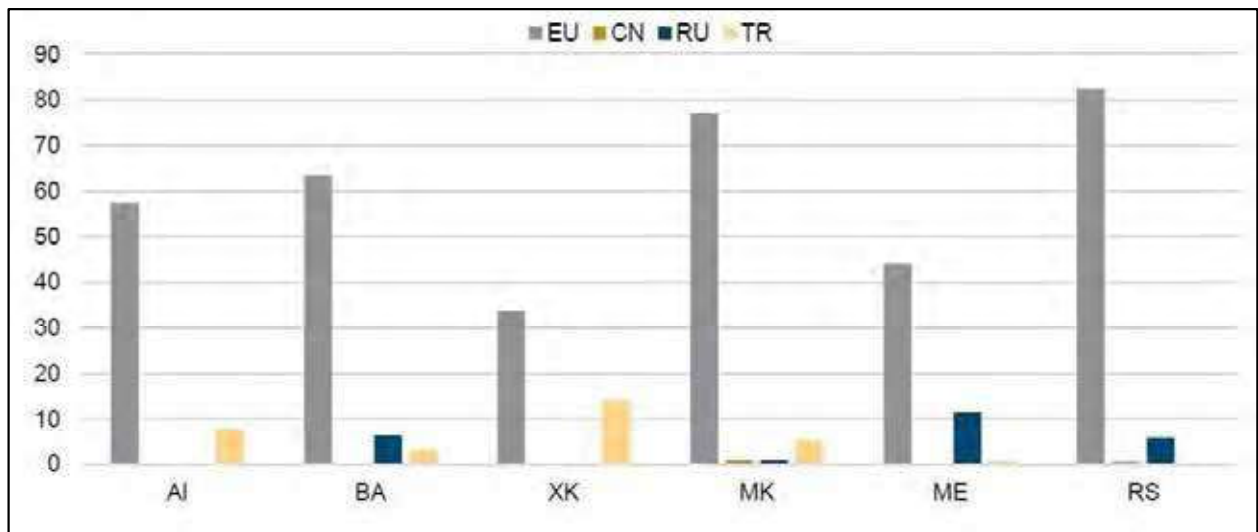
Table 1 - EU Integration steps for WB's countries

Steps	Agreements	AL	BA	HR	ME	MK	RS	XK
Pre-Adhesion Agreement	Potential Candidate	2000	2003	2000	2000	2000	2000	2000
	SAA	2006-2009	2008-2015	2001-2005	2008	2001	2008	2014-2016
	Application for EU membership	2009	2016	2003	2009	2004	2009	n.a
	Candidate Status	2014	n.a.	2004	2010	2005	2012	n.a.
Screening	Screening	n.a.	n.a.	2006	2011	n.a.	2013	n.a.
Negotiation	Chapters' Discussion Period	n.a.	n.a.	2006-2011	2012-	n.a.	2015-	n.a.
Adhesion	Adhesion Treaty	n.a.	n.a.	2012	n.a.	n.a.	n.a.	n.a.
Status	Member State	n.a.	n.a.	2013	n.a.	n.a	n.a.	n.a.

Source - authors' own elaboration.

Despite delays along the process of EU integration, in the last three decades it is possible to witness a progressive economic convergence between the EU area and the WBR. According to official data (EEAS 2017) there is a strong economic relationship between EU and Balkans countries: the share trade volume has reached the value of 49,5 billion in 2017 (EEAS, 2017), with the EU countries that represent the WBR best trading partner, with 73 per cent of the total trade volume. The leading role of the EU in the region is also confirmed when taking into account the inward Foreign Direct Investment (FDI) stock (figure 2).

Figure 2 - Inward FDI stock by source country, in % of total, 2016²



Source - wiiw FDI Database. EIB (2018)

These data confirm the EU has a strong influence on the WBR economy, trade and investment system, and this economic interdependency is expected to be consolidated further once the full integration of the region into the EU is achieved (EEAS, 2017). To this purpose, the EU has mobilized a set of funding mechanisms that target different economic sectors. Through a number of tailor-made instruments, these funds have contributed to strategic fields like transport infrastructure, energy production and efficiency, environmental protection and greenfield investment. For instance, during the period 2014-2017, the EU invested more than €330 millions for transport projects, in turn generating €930 millions³ of private investments and overall positive repercussions in terms of job-creation (EEAS, 2017)⁴.

Many of the introduced programmes and initiatives have had an explicit spatial and territorial dimension (Berisha, 2018). More in particular, despite being excluded from the structural funds' programming, Balkan countries are eligible for a series of other funding schemes altogether grouped under the Instrument of Pre-Accession (IPA). At the same time the region countries located in the WBR are involved in two EU macroregional strategies – i.e. the European Strategy for the Adriatic-Ionian Region (EUSAIR) and the European Strategy of Danube Region (EUSDR) – as well as in a number of other EU programmes – for instance Horizon2020, Creative Europe etc.

Since the introduction of the first (2017-2013) and second (2014-2020) generation of IPA, the EU invested more than 23 billion of euro on the WBR⁵ (table 2). Under the umbrella of IPA, numerous projects concerning regional cooperation and connectivity were developed. Importantly, a high share of funds has been dedicated to soften the distance between border communities by facilitating and implementing cross-border projects both among member-states and non member states as well as between two or more extra-EU countries. Beside the impact recorded by the IPA and the other initiatives on the territory, one should highlight that these tools similarly to the pre-accession tools implemented in the countries from central and eastern Europe throughout the 1990s and early 2000s, progressively contributed to channel in the region a number of EU priorities in terms of sustainable regional development, tourism, environmental protection and measure against social exclusion of minority and mitigation of climate change effects (Cotella, 2007, 2014; Cotella et al. 2012, Adams et al. 2011). This occurred through incremental logics of economic conditionality, with the EU that has developed an articulated set of conditions for the attribution and use of the established economic incentives.

² Acronyms stand for: EU – European Union; Ch – China; Ru – Russia and; Tr-Turkey

³ For more info see: <https://www.consilium.europa.eu/en/infographics/western-balkans-connectivity/>

⁴ A similar attention has been dedicated to greenfield investments, a sector in which the EU has contributed to create more than two hundred thousands jobs since 2003.

⁵ According to the European Commission, IPA I had funded with 11,5 billion while IPA II with 11,7 billion.

Whereas the landing into the region of a growing number of Chinese investments had progressively slow down these logic, and with it the integration of the region into the EU, is not clear yet, and will be reflected upon in the following sections.

Table 2 - Allocation of EU funds by sector in the WBR countries (programming period 2007-2013)

	Tot. Funds million	Justice	PA Reform	Transport	Env. and Climate	Social Development	Agr. and Rural development	others
AL	512	18%	13%	16%	18%	10%	22%	3%
BA	554	18%	13%	8%	16%	14%	5%	26%
HR	802	9%	9%	12%	15%	34%	21%	0%
ME	191	17%	23%	13%	8%	8%	18%	13%
MK	508	12%	13%	20%	18%	12%	17%	8%
RS	1.213	16%	22%	10%	19%	22%	6%	5%
XK	679	-	-	-	-	-	-	-

Source: authors' own elaboration based on EU data (European Commission, 2015)

3. The Belt and Road Initiative: objective and geopolitical ambitions

Since the edge of the new millennium, China has been attempting at expanding its geopolitical, economic and strategic influence (Pu, 2016). One of the ways pursued to achieve this end consisted in a revitalization of the ancient Silk Road, which for centuries constituted the only corridor connecting the Western and the Easter side of the Eurasian continent. The first step of relocating China in this modern corridor has been undertaken in 2013, when Xi Jinping launched the proposal for developing the so-called Belt and Road Initiative (BRI), that is a combination of the Silk Road Economic Belt and 21st-century Maritime Silk Road (figure 3). Whereas the Silk Road Economic Belt aims at connecting China with its international partners by investing in roads, motorway and railway, the 21st-century Maritime Silk Road, focuses more on maritime investments such as docks, logistic infrastructure etc. Both aim to promote the connectivity and the economic cooperation between China and the countries included by the initiative⁶. In this sense, the BRI is certainly one of the most ambitions and economically relevant initiative ever experienced, comparable only with the Marshal Plan⁷ launched by the United State after WWII and to the activities of the Council for Mutual Economic Assistance instituted by the Soviet Union shortly after.

⁶ The BRI includes 68 countries over the world and, in particular, countries located in the Eurasia region. In so doing, it concerns the 65% of the world's population and over 40% of the GDP produced in the world.

⁷ To allow a comparison, whereas the Marshall Plan envisioned an investment of \$130 billion (in 2015 value) dedicated to the post-war reconstruction of Europe., the BRI strategy is expected to mobilize more than \$4 trillion.

Figure 3 – The geographical scope of the BRI.



Source: Xinhua (Silk Road routes); U.S. Department of Defence

What the future economic and geopolitical consequences of the BRI, and more in general, of China's trans-continental ambitions, is however still subject of debate. As it is widely recognized in the literature (Liu, 2015, Griger 2016, Djankov, 2016, Tonchev, 2017, Cai, 2017) the reasons beyond the launching of the BRI can be divided into three main, intertwined spheres domestic-driven, external-driven and diplomatic.

The first group of reasons focuses on China's domestic and contextual needs and priorities. According to various authors, China seems to have reached its internal market expansion limits while overcapacity is becoming a serious problem (Pu, 2016). This is confirmed also by Grieger (2016), which states that the fast economic growth model implemented in the last decades is losing its impetuosity, by causing an economic slowdown, which could derail into social instability and rising unemployment rate. To avoid that, China is constrained to find new open markets for its goods, services, investments and labour forces. Secondly, one of the BRI's objective is to rebalance regional development between the more advanced coastal regions and the under-developed western Chinese's regions (Pu, 2016, Cai, 2017). In this perspective, BRI will be an instrument of Chinese territorial and social cohesion helping those provinces to fill the development gap with the most advanced East coast.

On the other side, externally, China is taking advantages from a set of positive global geopolitical contingencies, among which the recent EU economic, political and social crises. Adopting a *divide et impera* approach, the influence of China is growing over the world and in particular on the Europe continent. In this respect, Chinese investments in the EU area have been increasing exponentially since 2008⁸. At the same time, the progressive retreatment of USA from an increasing number of multilateral agreement, and the consequent decreasing of its international investments package contributed to leave free room to China's international initiatives. It is under this geopolitical condition that, China's going-out strategy has developed and

⁸ China's annual foreign direct investment in Europe grew from \$840 millions in 2008, to \$42 billions in 2017..

consolidated, aiming at reducing the transport cost of goods, to diminish the economy dependence of internal infrastructure development and to secure China's energy supply⁹.

Finally, yet importantly, China seeks to build a new geopolitical order, as explicitly argued by Xi Jinping during the Peripheral Diplomacy Work Conference in 2013. The objective is to turn China into the pivotal center of the world economy, by connecting the existing markets in the Eurasia continent and consolidating an increasing number of economic interdependency between the main economies in the World beside the United States. In the European continent, the Chinese investment capacity is positively seen by those countries that are struggling to recover from the recent global economic crises and/or presents level of development that lags behind the EU average. As it will be further detailed in the following section, this is the case of Eastern and South Eastern European countries (CEECs) and, in particular, of the countries located in the WBR.

4. The role of Chinese initiatives in the Western Balkan region

After having briefly delineated the geo-economic and geopolitical characteristics of the BRI, this section retraces the main historical and diplomatic relations developed between China and the countries of the WBR during the last decade. According to Liu (2015), the attitude of the Balkan countries towards the BRI has been rather positive since the beginning, if compared to the suspicious approach that characterized most Western European countries. Indeed, the first summit between China and Central and Eastern European Countries (CEECs) was took place in Warsaw in 2012, aiming at improving cooperation among countries and giving birth to a number of bilateral agreements. Heavily impacted by the global economic crises that manifested in 2008, CEECs and Balkan countries chose to *look to the east*, in so doing further legitimating the role of China in the international, and in particular in the European geopolitical framework. On the other side, China considers the CEECs as an opportunity to get access to the EU market, which remains the biggest in the world. The mutual interests were confirmed a year later, in 2013, during the Bucharest Summit, where the new cooperation between China and CEECs was seen as opportunity to bring China and the EU closer and to facilitate the EU integration process. This established the bases of the so-called "16+1 initiative", a cooperation platform between China, CEECs and South Eastern EU countries¹⁰. A year later, during the Belgrade Summit, the BRI was presented as a new economic driving force for both China and the mentioned countries (Liu, 2015). In this sense, President Xi Jinping recognized the importance of creating strategic and economic synergies between BRI and the 16+1 platform. The idea is to facilitate investments for increasing infrastructure connectivity within those regions and simultaneously helping the implementation of the BRI economic and spatial visions.

Differently from the BRI, the 16+1 cooperation is restricted to countries located in CEE and in the WBR. One of its priorities is to increase the inflow of China's foreign direct investment to the region by financing projects dealing with: construction of transport infrastructure (motorways), development of railway network, development of logistics such as airports and seaports, renewable sources of energy and the food production sector (Jakóbowski, 2015). In this sense, the 16+1 cooperation is more focused on economic and infrastructural objectives, if compared to the broader geopolitical perspective brought forward by the BRI. The objective of the 16+1 cooperation is to facilitate trade investments and acquisition ability of Chinese companies (both public and private). In this sense, the strategy of those companies is clear: diversification of investments. In less developed countries as those located in the WBR, transactions involves the mining industry, the wood processing industry and the production of foodstuffs. At the same time, in the more developed economies that characterise CEECs, that sectors interested by Chinese investments are those related to advanced technologies, ICT, automotive industry, electronics, biotechnology, nanotechnology, precision industry, R&D (Jakóbowski, 2015). Having a strategic geographical position between Western Europe and the East, Western Balkans are attracting the majority of the Chinese financed project within the framework of the 16+1 cooperation. In this sense, numerous projects are being implemented in several sectors like infrastructure, energy, electricity and logistic (Liu, 2015). Another particularity of the 16+1 is the proliferation of coordination platforms among

⁹ For example, 85% of China's imports and between 70-85% of its energy supplies passing mainly through the Strait of Malacca in Southeast Asia.

¹⁰ The European countries participating to the 16+1 initiative are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Czech Republic, Estonia, Lithuania, Latvia, Macedonia, Romania, Serbia, Slovakia, Slovenia and Hungary, Poland.

participating countries in very different sectors like tourism, agriculture, infrastructure, logistic, energy etc., aiming at facilitating cooperation among institutional and non-institutional actors.

Coming back to the BRI, its spatial configuration presents two Europe has two different paths: the north and the south line. Whereas the former refers to the Silk Road Economic Belt and mainly involves CEECs, the latter focuses on the China-Europe Land-Sea Express Passage located in South Eastern Europe, with particular attention to those countries in the Balkan Peninsula. According to experts and policy-makers, the synergic relation between these two paths will increase the cooperation and trade exchange, not only in the region, but also between the two major economies in the Eurasia continent: China and the (Western) EU¹¹. This is the main reason for China to invest time, resources and diplomatic efforts in ensuring cooperation (multilateral and/or bilateral) with the countries involved. Chinese policy-makers consider the implementation of these two paths as strategic for the enactment of the entire BRI strategy. In this light, they dedicate a high volume of economic and political efforts to investment in infrastructure development (ports, roads, railway, etc.), aiming at guaranteeing a good connection network within the region and outside of it. Connectivity (material and immaterial) is indeed implicitly or explicitly at the center of the BRI, as it has been confirmed by multiple Chinese authorities and in particular by President XI Jinping¹².

Differently from the EU approach to infrastructural development - which aims at regional balance and cohesion - China seems to be not interested to evaluate the social and environmental impacts. As recognized by Liu (2015), the implementation of the BRI may potentially rise a number of domestic and international challenges. By considering its transnational nature, indeed, the BRI is exposed to, thus weakened by, international contingencies. In the Balkan region, in particular, the initiative is dealing with path-dependent regional economic and political instability, as for instance the Greek crises, the Macedonia political impasse, the potential risk of terrorism. Despite that, the importance of the Balkan segment of the BRI has been unanimously recognized.

When it comes to the financial means adopted by China to support the implementation of the BRI in the WBR, it is interesting noticing the introduction of several financial institutions developed to this very purpose, such as the Silk Road Fund and Asian Infrastructure Investment Bank, or of targeted funds like the China CEE Investment Co-operation Fund. The way of how these institutions operate are very different. The recent literature on the matter identifies at least three line of investments:

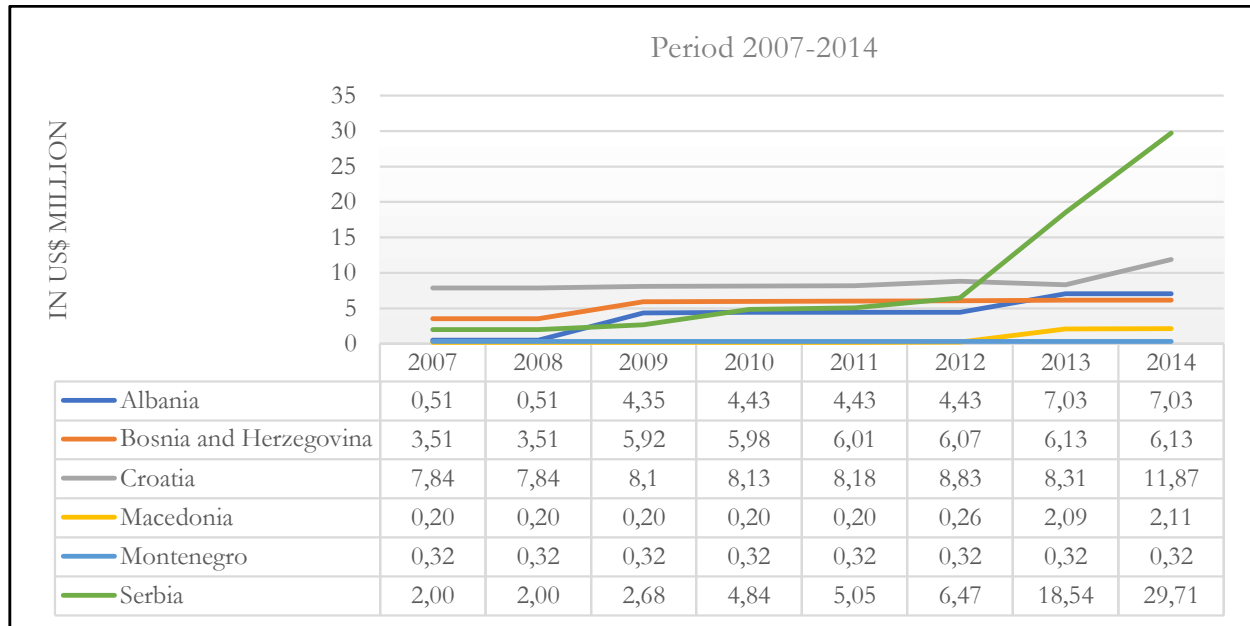
- (i) direct investments - through which Chinese private or state owned companies invest in acquisition of local companies;
- (ii) open credit line and loans - used for the development of strategic infrastructure and,
- (iii) acquisition of national debt shares.

Each of these credit line has been set according to a number of different objectives and together constitute the financial machine that is supporting the implementation of the BRI. Various authors (e.g. Stumvoll and Flessenkemper, 2018) are sceptic on the introduced measures and, in particular, concerning the acquisition of national debt shares by China State funds. According to the authors, this way of financing has negative effects in terms of states' debt accumulation and debt interests. The *debt-trap nightmare*, as experts call it, is one of the alarm launched by several global observers (among those Hurley *et al.*, 2018) which suggest to have a clear understanding of the potential consequences of Chinese acquisition of domestic debt and its real political implications (EIB, 2018). When looking Foreign Direct Investments (FDI) of China in the WBR, the period 2007-2014 show an increase of value almost everywhere, and in particular in Serbia and, to a lesser extent, in Croatia (see figure 4).

¹¹ In this sense, Liu (2015) affirms that more than 80% of Chinese products are exported to Europe through shipment while land transportation is still in its initial stage.

¹² In 2014, President Xi Jinping had the occasion to re-affirm the importance of the BRI and, in particular, of the Silk Road Economic Belt. He then repeated the message one year later during his visit to the headquarter of the EU.

Figure 4 - China's accumulated foreign direct investments in WBR



Source - Authors' own elaboration on data of MOFCOM, SAFE, NBS, 2015

According to Jakóbowski (2015), During the period 2011-2014, a credit line of 10 billion euro has been dedicated to the development of infrastructure and, in particular, for the construction of the Bar-Boljare motorway in Montenegro, the Mihajlo Pupin Bridge in Belgrade and of the Stanari thermal power plant in Bosnia and Herzegovina (Table 3). Whilst the last publication of the European Investment Bank affirms that, since 2013, China invested almost 7.8 billion in the region and in particular for the development of several initiatives in the field of transport, energy and technology projects. According to the report prepared by Bastian (2017) for the European Bank of Reconstruction and Development (EBRD), China dedicated to the development of the only Balkan Silk Road (from Piraeus to Budapest) almost 8 billion investing in four countries: Greece, North-Macedonia, Bosnia and Herzegovina and Serbia. Despite divergences regarding the total volume of investments, what is interesting to note is that, the majority of funds are loans which means that sooner or later countries should refund them.

When analysing China volume of investments in the WBR, it is also interesting to explore what sector do they target. According to Stumvoll and Flessenkemper (2018), the main Chinese investments are dedicated to the implementation of projects and programmes in sectors like transport, energy and industrial production (i.e. mainly by acquisition of local enterprises). This responds to the traditional delay in terms of infrastructure development suffered by the WBR, as a consequence of almost forty-five years of socialist and communist regimes, that have contributed to the spatial and economic isolation of the region¹³. Compared to the western countries, the level of infrastructure services scores among the lowest in Europe. This also concerns the energy production and distribution capacity, where Balkan countries score lower than their Western and CEE peers (EIB, 2018). Table 3 shows how pervasive the investments of China are becoming considering few aspects. In particular, it is interesting to note that awarded contractors of the projects are always Chinese companies, and so are the credit providers. This demonstrates that direct benefits from the realization of the projects mostly remain in the hands of Chinese companies, in so doing producing scarce spillover effects. This *only China-win scheme* is applied in all countries in the region, largely limiting the domestic economic and territorial impact of Chinese financial resources¹⁴.

¹³ Even after the downfall of the Berlin wall, the economic, political and social instability that followed did not facilitate the convergence of the region to the main western economic market. At present, Western Balkan countries have typically low or average levels of motorway density as well as railway infrastructure capacity (EIB, 2018).

¹⁴ Kosovo constitutes an exception as China did not recognize the declaration of independence of Kosovo. Due to this reason, no Chinese investment targets the country.

Table 3 –Main projects financed by China in the Western Balkan Region¹⁵

Projects	Where	Contractor	Costs – million € ¹⁶	Credit Provider	Loan	Transport	Energy	Industry and technology
Mihajlo Pupin Bridge, 2011	RS	China Road and Bridge Corporation	211	China's Exim Bank	85%	X		
High-speed rail link between Budapest and Belgrade	RS-HU	China Communications Construction Company and China Railways International	3.200	China's Exim Bank	85%	X		
Bar-Boljare motorway	ME	China Road and Bridge Corporation	1.000-1.500	China's Exim Bank	85%	X		
Skopje-Stip motorway	MK	Chinese SOE Sinohydro	574	China's Exim Bank	85%	X		
Kichevo-Ohrid motorway	MK	Chinese SOE Sinohydro	411 + 143	China's Exim Bank	85%	X		
Acquisition of Tirana International Airport SHPK	AL	China Everbright Limited	n.a.	n.a.	n.a.	X		
TP Kozjak - Hydro Power Plant	MK	China International Water and Electric Corp.	n.a.	n.a.	n.a.		X	
Kakanj coal-fired power plant	BA	China National Electric Engineering CO., Ltd	544	n.a.	n.a.		X	
Tuzla thermal power plant	BA	China National Electric Engineering CO., Ltd	840	China Exim Bank	n.a.		X	
Acquisition of Zelezara Smederevo steel plant	RS	China's Hesteel	120	n.a.	n.a.			X

Source - authors' own elaboration

¹⁵ The table does not take into account those projects that are currently under evaluation in the framework of the recent China-EU Connectivity platform, such as (i) the Rijeka-Zagreb-Budapest project; (ii) projects in the Orient/East-Med Corridor in the Western Balkans Region and (iii) the Corridor 5c Highway Project in Croatia and Bosnia and Herzegovina.

¹⁶ Data and volume of the investments builds on available secondary data.

5. Comparing of EU Initiatives and China's "going out" vision

According to the BRI spatial and territorial vision the WBR has a great opportunity to become the *trait d'union* between China and the EU. This why there is a growing attention on the region both by EU institutions and by China government. For that reason, it is worth to compare their approach to the region, in search for potential convergences and divergences between, in turn aiming at raising the attention of potential synergies as well as clashes. In this light, this section compares how the EU and China approach the WBR, respectively through the EU integration process and the implementation of the BRI. The results of this preliminary comparison are reported in table 4, and grouped around five main categories (each presenting a number of subcategories): vision, approach, priorities, investment sectors, implementation. For each of them, the approach of the EU and of China is proposed, and their convergence or divergence highlighted. Moreover, a preliminary inquiry of the risks and opportunities for the WBR is proposed.

The first category concerns the strategic vision and how the WBR is seen in term of geopolitical, geo-economic and geostrategic viewpoint. From this perspective, there is a substantial divergence between the EU and China approach in dealing with the future perspective of the Balkans. As emerged, the BRI, but also the entire China *going out strategy*, is profoundly characterised by a *top-down* approach where China establishes the main objectives as well as the rules of the game, while partners are rarely included in the process of vision making. In contrast to this China-centric global vision, the EU is promoting a more continental EU-centric perspective, putting at the centre a more open market system and the full integration of the WBR. For the latter, however, being at the centre of this international dispute can influence negatively the regional economic performance, turning it into a *transit region* for good and resources, with the risk to step away of the EU integration path.

The second category of analyses refers to the approach adopted and the types of influence and involved in the process. In this respect, the approach adopted by EU and China seems to be very different in terms of adopted agreements (multilateral vs bilateral), economic conditionality (co-financing vs loans), political conditionality (political stability vs *divide et impera*). In this respect, China pragmatism in international relation suggests to combine multilateral and (preferable) bilateral agreements in order to facilitate the implementation of the BRI. On the contrary, the EU institutions promotes multilateral approach to establish agreements between EU and other countries. In this sense, the main risk for the Balkans is to remain stuck within a number of international disputes that can slower the integration process.



The third category refers to the priorities of the players in the game (political, economic, social and environmental priorities), when it comes to the implementation of project and strategies in the region. Here China and EU show very different concerns in terms of political, economic, social and environmental consequences of projects. While the EU promotes a particular attention to environmental sustainability, due to the conditions and regulations specified in its Treaties, China has no particular attention on the preservation of the environmental quality and it does not award any priority to projects' impacts on local communities and/or on their social consequences. On the contrary, both players agree on the importance of the economic growth of the region and of its capacity of convey goods and resources towards EU richer regions.

The forth category focuses on understanding the differences in sectors investments in terms of infrastructure, energy as well as industry. Both players agree on the importance of infrastructure development in the Balkans. As table 5 shows, the Orient-East/Med corridor planned by the EU's TEN-T perfectly coincides with the BRI's Balkan Silk Road segment¹⁷. Indeed, there is no explicit conflict to what concerns the general ideal of the spatial transformation nor about the main develop trajectories of the main corridors in the region. In this sense, the recently signed "Memorandum of understanding on establishing a Connectivity Platform between EU and China" (2015) gives the opportunity to strengthen the synergies between BRI and TEN policy. Its action plan foresees a series of cooperation in terms of corridor

¹⁷ The TEN-T Corridor X presents the same path of the China-Europe Land-Sea Express Passage, running from Serbia to Greece via Macedonia

infrastructure development to improve the quality of infrastructure and services as well as developing green transport infrastructure.

Table 4 - Comparing TEN-T and BRI spatial strategy

EU Infrastructure Network (TEN-T)	Balkan Silk Road Corridor
	

Source – authors’ own elaboration

Divergences emerged, instead, concerning the energy development and industrial policies approach. While the EU is promoting a more eco-friendly and sustainable use of resources by financing renewable energy provisions, China is still funding coal-fired power plant, as with the Kakanj plant in Bosnia and Herzegovina. While the EU supports the development of innovation all over the region by contributing to research and capacity building, China focuses on the aquisition of the best and innovative industries. In terms of regional consequences, the Balkans can benefit of course by the volume of funds dedicate to the infrastructure network but on the other side, there is the risk to underestimate the social and environmental impacts of the investments. Similarly, le acquisition of companies by Chinese enterprises may have unintended consequences in terms of desertification of the domestic industrial environment.

Finally, the last category explores the implementation mechanisms. Here divergences can be distinguished concerning, management, financial mechanisms, environmental and social standards. A number of critiques concerned the implementation of the interventions, and in particular the fact that the majority of tenders have been entitled to Chinese companies (public or private), because of rather untransparent selection processes. For example, the lack of transparency in the selection process led to the momentary stop of the works for the completion of the Belgrade-Budapest railway. On the contrary, the EU procurement package clearly establishes how tenders should be conducted by respecting transparency and open-access principles, in so doing constituting a guarantee in this concern.

In sum, while the EU seeks a complete and systematic integration of social, economic, political and environmental components, China seems exclusively interested to guarantee infrastructure continuity along the BRI scheme. There is no ambition, indeed, to create a more proactive and inclusive economic development of the region, as it is instead among the aim of the process of EU integration. In this sense, the EU’ spatial development strategies promote a more coherent territorial and social cohesion, polycentric development and regional competitiveness. On the other side, China conversely uses the BRI to achieve exclusively its own regional development interests, as many experts confirmed. Differences emerged also regarding the modality and economic mechanism adopted in the process of plans implementation. In particular, China privileges loans instead of grants or other kind of investments while the EU promote a more coordinate funding system that guarantee a combination of EU and domestic funds (co-financing mechanisms). In the Balkans, the coexistence of such kind of different approaches can produce negative externalities in terms of countries credibility, increasing of national debt share and political and economic instability, among others.

Table 5 – Similarities and differences of EU and China interventions in the Western Balkan Region

Factors	Convergent, Divergent or Neutral	European Union	China	Opportunities and risks for the WBR
Vision				
Geo-political	Divergent	Complete the EU Integration Process	Implementation of the “Going out strategy”	This geo-political dispute may slow down the EU integration process for the WBR
Geo-economic	Divergent	Pro open-market	State oriented market	Risk of increasing negative economic trade balance
Geo-strategic	Divergent	EU-centric Continental vision	China-centric Global vision	The risk for the WBR is to become the “land of transit” of resources
Approach				
Nature of agreements	Divergent	Preferable multilateral	Combination of unilateral/multilateral	Political ambiguity where emerged personal interests and corruption
Economic conditionality	Divergent	By promoting market continuity and EU investments	Loans and investments	Balkans countries may benefit from those external investments (attention of the debt trap)
Political conditionality	Divergent	The EU aims at guaranteeing political stability	“Divide et impera” strategy	Political representatives are being attracted by the China pragmatism in the field of investment by losing sight its political implications
Priorities				
Political	Neutral	Integration of the Balkans to the EU	To guarantee the BRI implementation	The Balkans may benefit from the opportunity offered by the BRI only if its implementation can facilitate the EU Integration process
Economic	Convergent	Improvement of market economy indicators in the region	China agrees on the development of WBR	Positive effects on the regional economic performance
Social	Neutral	Increasing of social well-being	No specific indication	The risk is to underestimated the social effects of China investments
Environmental	Divergent	Protection of natural resources	Overexploitation of natural resources	Serious environmental risks
Investment sectors				
Infrastructure	Convergent	Increasing connectivity in the WBR	Balkans Silk Road	WBR can benefit from the potential synergy of TEN-T and BRI
Investment sectors				
Energy	Divergent	Renewal energy	Carbon based energy	Increasing risk of overexploitation of natural resources and air pollution
Implementation				
Industry	Divergent	Creating positive innovation based industrial policies	Acquisition of the best innovative industries	Desertification of innovative industrial environment
Management	Divergent	Transparency and public procurement	Not transparency mechanism	Lack of market competition, limit spill over effects. Increasing corruption etc.
Financial Mechanism	Divergent	Co-financing mechanisms	Top-down financial instruments	Risk of increasing of state debt
Environmental Standards	Divergent	Stringent regulations and standards	Scarce attention to environmental issues	Risk of over exploration of natural resources
Social Standards	Divergent	Social cohesion	No particular importance has been given to this issue	Underestimate of the social potential impacts of project implementation due to the top-down approach adopted

Source - authors' own elaboration

6. Conclusive remarks and future research perspectives

Since the beginning of the 2000, all Balkans countries have been involved along in the EU Integration process. Despite the important progresses made, only Croatia managed to access the EU, with the other countries (i.e. Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North-Macedonia and Serbia) that are still struggling with the EU requirements and the transposition of the *acquis communautaire*. At present, there seems to be no chance for those countries to join the EU before 2025-2030, as indicated in the Enlargement strategy (European Commission, 2018). Despite the univocally recognised importance to join the EU, the countries of the WBR are progressively looking for alternative political alliances and economic opportunities, also as a consequence of a number of concomitant factors emerged in recent years, among which the growing instability that characterise the overall European project.

Doubtless, the increasing geopolitical action of China is attracting more and more interest all over the world as well as in the Balkans. In particular, the BRI place the WBR in high consideration, due to its location between Western EU and China. This ensures to the region important economic incentives and unprecedented infrastructure development, in so doing representing a tempting alternative to the EU sirens.

However, the EU and the WBR will also face with important regional challenges that should be addressed. As illustrated, China is demonstrating more and more interests for the Balkans Peninsula and in particular for the Western Balkans. Aside from unprecedented increasing of Chinese foreign direct investments in the region, Chinese private and state own companies are orienting their major efforts by investing in several sectors. The presence of China is not only an economic issue but is rather a political one. As recognized by Stumvoll and Flessenkemper (2018) China is moving into a structural development gap and is meeting real investment needs in the region, a dynamic the EU has been slow to acknowledge. Despite that, one should note there is no explicit intention of China to interfere with the process of EU Integration but conversely, China seems to be interested on a regional stability of Western Balkans as well. According to the authors, China will not be a game-changer in that respect, but it is expected to be a motivating factor for the EU to step up its engagement in the Western Balkans and embrace a constructive partnership with China. There is no explicit evidence showing interferences of China (whatever kind positive or negative as well) along the process of Balkans' EU Integration. As the provided evidence illustrates, the EU remains the biggest investor in the region despite the growing role of China as well as Chinese investments.

Overall, the answer of the question whereas China is facilitating or inhibiting the WBR's EU integration process seems to be negative. Based on this contribution, there are four elements that let us conclude that China is not facilitating, at least directly, the EU integration of the Balkans. First, the EU Integration process is not a priority for China, hence there is no explicit initiatives in this direction. Secondly, from a political point of view, no common EU-China agenda for the WBR has been developed, and China is seen as an alternative partner to the EU. Thirdly, from an economic perspective, China's investments are mostly oriented to the benefit of Chinese players, rather than facilitating the EU Integration process as the majority of the EU investments do. Finally, yet importantly, there is considerable distance between Chinese and European approaches in dealing with the development of the region (vision, approaches, priorities, investments and implementation mechanism).

On the contrary, it may be true the opposite since several divergences emerged. The highlighted ambiguity faces the countries of the WBR with some important choices. Should domestic authorities privilege the EU Integration path or let themselves be fascinated by China? Should they respect the requirement imposed by EU laws, norms and regulation in terms of transparency, standards and public procurement or follow the more pragmatic mechanisms attached to Chinese investments? At present and based on our analyses, the presence of China it seems to be a *slowdown factor* of the EU Integration process instead of facilitating it. In this view, China may potentially trigger *de-europeanisation* processes in the regions.

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Building resilience through collective learning in project-oriented organizations in infrastructure planning

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Abstract: The performance of existing main transport infrastructure networks in The Netherlands is currently being challenged by for example climate change, new mobility technologies, ageing infrastructure and energy transition. These challenges call for an adaptive approach towards existing and new infrastructure. One way is to make physical infrastructure itself more resilient, another way is to create organizational resilience. Literature describes learning as a key element in organizational resilience. Most infrastructure network agencies are organized in a project-oriented way and consist of multiple projects and a parent organization. However, how do projects learn from each other and how does the whole organization learn from projects? This paper aims to enhance the understanding of collective learning and resilience of project-oriented organizations within the domain of infrastructure planning at three distinctive levels: within a single project, between multiple projects, and between projects and their parent organization. Findings are based on an in-depth case study at Rijkswaterstaat - the executive agency of the Ministry of Infrastructure and Water Management in The Netherlands. The study uses Social Network Analysis to analyse the observed network. Based on this study, it seems that collective learning in project-oriented organizations still remains limited despite the urgency of it.

Keywords: organizational resilience; collective learning; project-oriented organization; infrastructure planning

1. Introduction

The performance of existing main transport infrastructure networks in The Netherlands is currently being challenged by for example climate change, new mobility technologies, ageing infrastructure and energy transition. Infrastructure network agencies need to build resilience to be able to adapt to these continuously changing circumstances. These agencies fulfil societal functions through a combination of social and technical aspects and therefore can be considered to be socio-technical systems (Geels, 2004). By focussing on technical aspects, an infrastructure network agency can make the physical infrastructure itself more resilient. However, it is also important for infrastructure network agencies to act resiliently as an organization (Brown *et al.*, 2017).

In order to efficiently build, change and improve infrastructure facilities, infrastructure network agencies often manage by projects (Gareis, 1991). They organize themselves as project-oriented organizations (Gemünden *et al.*, 2018). Project-oriented organizations consist of multiple project organizations – projects – and a parent organization. Organizational resilience has been subject of

research in various types of organizations. However, previous studies have dealt little with project-oriented organizations. It is still largely unknown how the resilience of projects and their parent organization relate to each other. Research on this relationship is relevant because parent organizations expect projects to contribute to the organization's goals. If there is need for a project-oriented organization as a whole to adapt to changes in the environment, projects should support this change in interaction with their parent organization. However, projects are initiated to realize specific goals within a fixed budget and a fixed amount of time. These limitations may put constraints on the absorptive and adaptive capacity of projects and consequently on the project-oriented organization.

People in organizations interact with each other and create social networks that can cover projects and their parent organization. Barasa *et al.* (2018) and Lee *et al.* (2013) argue that information and knowledge, that flows through these networks, contributes to the resilience of organizations. In addition, de Kraker (2017, p. 101) states that “in resilience thinking, learning is given a central role in the adaptive cycle”. Despite these insights into information, knowledge and the relevance of networks that facilitate knowledge sharing and knowledge creation in organizations, little is known about how collective learning contributes to organizational resilience. How do projects learn from each other and how does the organization as a whole learn from projects? This paper intends to enhance the understanding of how collective learning takes place in project-oriented organizations in the domain of infrastructure planning at three distinctive levels: within a single project, between multiple projects, and between projects and their parent organization. The findings are based on an in-depth case study at Rijkswaterstaat – the executive agency of the Ministry of Infrastructure and Water Management in The Netherlands. Rijkswaterstaat is a major project-oriented infrastructure network agency that is faced with challenges, the need to become more resilient, and enhancing collective learning. Social Network Analysis is used as a method to analyse the observed network. Based on this study, it seems that collective learning in project-oriented organizations still remains limited despite the urgency of it.

2. Background

2.1. Organizational resilience

Organizational resilience can be defined as “a system's ability to continue to perform and meet its objectives in the face of challenges” (Barasa *et al.*, 2018, p. 496). Some researchers would define resilience as a process or an outcome, but increasingly authors, such as (Barasa *et al.*, 2018), define resilience as an ability or a property. This retains to the definition of resilience by Holling (1973, p. 17): “In this definition resilience is the property of the system and persistence or probability of extinction is the result.” In this research, resilience is viewed as an ability or property of a project-oriented organization.

Various authors distinguish two perspectives regarding organizational resilience (Lee *et al.*, 2013; Lengnick-Hall *et al.*, 2011): first, *absorptive capacity* of an organization that insures an organization to bounce back to business as usual in the case of unwanted events; second, *adaptive capacity* of an organization that enables an organization to respond to emergent situations and thrive amidst changes in the environment. Absorptive capacities are linked with short-term interventions and adaptive capacities are linked with longer-term interventions (Berman *et al.*, 2012). It is a combination of absorbing the challenges faced, and adapting and transforming so as to continue to thrive in the face of challenges that makes it possible to achieve organizational resilience (Burnard & Bhamra, 2011).

Research in the past twenty years has brought much insight into organizational resilience. Two studies that summarize the essentials of organizational resilience are especially worth noticing. First, Barasa *et al.* (2018) identified factors that influence the resilience of organizations, like leadership practices, information management, and preparedness and planning. Second, Lee *et al.* (2013) have made an explicit distinction between indicators for *planning capacity* – which we call absorptive capacity – and *adaptive capacity* – as shown in Table 1.

Indicators for absorptive capacity	Indicators for adaptive capacity
Planning strategies	Minimization of silos
Participation in exercises	Internal resources
Proactive posture	Staff engagement and involvement
External resources	Information and knowledge
Recovery priorities	Leadership
	Innovation and creativity
	Decision making
	Situation monitoring and reporting

Table 1 Indicators for absorptive and adaptive capacity (Lee *et al.*, 2013)

2.2. Project-oriented organizations in infrastructure planning

In order to efficiently build, change and improve infrastructure facilities, infrastructure network agencies often manage by projects (Gareis, 1991). Infrastructure network agencies often organize themselves as project-oriented organizations (Gemünden *et al.*, 2018). They have a responsibility to provide and maintain adequate infrastructure facilities. As such, they use projects to realize necessary changes in the existing infrastructure facilities. Therefore, realizing projects is not the main activity in a project-oriented organization, but it is a way to fulfil responsibilities.

Projects operate within set conditions to deliver a predefined result. This causes projects to operate relatively autonomous from the parent organization. While an efficient management of resources calls for structure, “adaptive responses resist the pull to order and capitalize on the collective intelligence of groups and networks” (Uhl-Bien & Arena, 2017, p. 10). Furthermore, Weichhart and Stary (2017) argue that for the evolution and improvement of the organization it would be beneficial to learn across multiple projects. Learning across projects and organizational levels enables organizations to deal with challenges more appropriately by increasing the diversity of response options (Folke *et al.*, 2005). Projects and their parent organization are part of a network, through which knowledge flows and learning can take place.

2.3. Collective learning

Learning is described as a key type of adaptation (Armitage *et al.*, 2011) and is therefore a key element when it comes to building organizational resilience. Organizations need to learn as fast as the environment changes in order to survive. They can learn by both formal and informal learning practices. According to Marsick and Watkins (2001, p. 25), “formal learning is typically institutionally sponsored, classroom-based, and highly structured”, whereas control of informal learning primarily rests in the hands of the learner and may occur anywhere and at any time in institutions. The interesting thing about informal learning is that it can be deliberately encouraged, but it can also take place even if an organization takes no deliberate action to encourage learning (Marsick & Watkins, 2001). This means that informal learning can take place under any circumstance. What makes collective learning interesting in the context of our study is the fact that it is concerned with learning as an accumulation of individuals rather than learning by a single individual. Backström (2004, p. 471)

defines collective learning as “... rather enduring changes in a collective as a result of interaction between the collective and its context. In simpler terms, it is the ability of the collective to learn from experiences drawn by members of the collective while working.” This can take place in both formal and informal ways.

The predominant resource regarding learning is knowledge. Knowledge differs from data and information. Although there are various definitions of these concepts, we interpret *data* as symbols that represent properties of objects or events, *information* as data that is processed to make it useful (know-what), and *knowledge* as what is needed for the application of information and data (know-how) (Rowley, 2007). In general, there is a distinction made between tacit and explicit knowledge. Tacit knowledge is based on personal experience and embedded in individuals, whereas explicit knowledge is articulated in formal language, stored in documents, databases, et cetera. In literature, four modes of knowledge conversion are distinguished (Nonaka, 1994): *socialization*, from tacit to tacit knowledge through interaction between individuals or shared experience, *combination*, from explicit to explicit knowledge through the sorting, adding, recategorizing and recontextualizing of explicit knowledge, *externalization*, from tacit to explicit knowledge through articulating into metaphors, analogies, models, hypotheses and theories, and *internalization*, from explicit to tacit knowledge through action, practice and reflection. Collective learning in project-oriented organizations might predominantly involve combination, because people from various projects and departments directly interact to transfer knowledge between each other. However, knowledge can also be transferred between individuals through documents. Knowledge is then externalized by one individual and subsequently internalized by another individual. The possibility to interact is gone and a part of the richness of the knowledge is lost, but this is still a useful way to transfer knowledge from one project to another across time and space.

3. Methods

3.1. Multiple-case study

One of the major infrastructure network agencies in The Netherlands is Rijkswaterstaat – the executive agency of the Ministry of Infrastructure and Water Management. Rijkswaterstaat initiates projects in order to fulfil its responsibility for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands, including the main road network, waterway network and water systems (Rijkswaterstaat, 2018). Changes in the external environment put challenging demands on Rijkswaterstaat as an organization and on its infrastructure facilities. For this reason, Rijkswaterstaat was selected for an in-depth case study. To collect data on collective learning within a single project, between multiple projects and between projects and their parent organization, a multiple-case study has been conducted within Rijkswaterstaat.

A set of criteria was established to select relevant cases. The cases should support the possibility to draw general conclusions so homogeneity is necessary. The selection criteria were type of contract (DBFM: Design, Build, Finance, Maintain), challenging environment, project phase (realization), type of infrastructure (highways), and realization in different periods in time.

In selecting the cases, first, the cases should support the possibility to draw general conclusions so homogeneity is necessary. Second, the selection criteria included: type of contract (DBFM: Design, Build, Finance, Maintain), challenging environment, project phase (realization), type of infrastructure

(highways), and realization in different periods in time. For collective learning in relation to organizational resilience, cases that contain an above average amount of uncertainty, surprises and changes are particularly interesting. DBFM, as a type of contract, was selected because this is a relatively new and complicated type of contract, introducing uncertainty for both client and contractor with respect to their collaboration and changes in responsibilities from what they were used to. Next, cases were selected based on a challenging environment, with many stakeholders close by. The realization phase was selected, because of the large amount of different activities and time pressure.

In relation to multiple case studies, Eisenhardt (1989) recommends to four to ten cases. Projects with DBFM contracts in challenging environments are numerous in The Netherlands, especially regarding highways. In this study, six cases were selected clustered in two metropolitan regions: Amsterdam and Rotterdam. Infrastructure projects in these regions are challenging and appeal to the resilience of organizations that realize these projects. With a relatively new type of contract and complex context, one would expect projects to learn from other projects that are realized at the same time or earlier. To be able to analyse whether this happened or not, the realization phase of the selected cases started in the period between 2010 and 2018 with an interval of one to two years.

Since collective learning involves people interacting with each other, in-depth semi-structured interviews (Mann, 2016) are considered an appropriate way to study this phenomenon. The key questions for the interviews focused on learning and interaction. The indicators of Table 1 were used in the analysis of the interviews to identify which ones seemed to be relevant for learning. In order to strengthen construct validity and to corroborate findings based on the interviews, also documents were analysed (Yin, 2003), such as the project management plans, which describes the way a project is organized and carried out, and reports of peer consultancy or evaluation trajectories.

3.2. Social Network Analysis (SNA)

Considering the importance of social networks to collective learning (see Section 2.3), subsequently a Social Network Analysis (SNA) has been carried out to understand more about learning through a network. Scott (2017, p. 2) states that SNA “comprises a broad approach to sociological analysis and a set of methodological techniques that aim to describe and explore patterns apparent in the social relationships that individuals and groups form with each other”. A social network consists of *nodes*, representing actors such as individuals, departments, and projects, and *ties* (Robins, 2015), which are relationships between the nodes that represent the flow of knowledge or other resources, either material or nonmaterial (Wasserman & Faust, 1994).

This research concerns collective learning in a social network as a whole. Therefore, a whole network view (Scott, 2017) is adopted. There are two ways to set the boundaries of a network: the *normalist* and *realist* approach (Pryke, 2012). In the *normalist approach*, the researcher defines the boundaries beforehand, whereas in the *realist approach*, the actors in the network define the boundaries themselves. The *realist approach* begins with some relevant actors. By asking these actors with whom they link up, the network starts to unfold. This way of letting the network unfold is also called snowball sampling (Robins, 2015). This research used the *realist approach* as: it is impossible to determine beforehand who interacts with whom; by setting the boundaries beforehand, possible relevant actors might be excluded from the research; besides the departments in the functional organization, there might be other hallways (Dixon, 1999), or events (Robins, 2015), where actors form a link between projects and the parent organization. Since this qualitative research seeks to understand how processes of collective learning unfold, snowball sampling is considered an adequate

approach. Snowball sampling began in the projects by interviewing two key actors for each project: the project manager and the stakeholder manager. Together, they have an overview of most of the relationships within a project and between a project and its environment. In the next phase of our research, we will expand to other parts of Rijkswaterstaat based on the references that were made by the participants.

In SNA, various centrality measures are relevant, particularly to collective learning. First, *degree centrality*, which is about the popularity or activity of a node (Robins, 2015). Directed networks, like in this research, comprise in- and out-degree centralities. *In-degree centrality* is the number of ties directed towards a node and, therefore, indicates the popularity of a node. *Out-degree centrality* is the number of ties directed away from the node and, therefore, indicates the activity of a node. In- and out-degree centrality indicate the available channels for knowledge flow to and from nodes. Second, *betweenness centrality*, which is a measure of the importance of a node in connecting other nodes through short paths (Robins, 2015). Nodes with a high betweenness centrality serve as bridges between parts of the network. Last, *eigenvector centrality*, which indicates the centrality of a node's network partners. Nodes with high eigenvector may have low degree centrality or betweenness centrality, but have relatively easy access to much knowledge, because they are connected to well-connected nodes. The data was processed with Gephi (Gephi, 2019).

4. Results

4.1. Network visualization

Figure 1 provides the main results of our study. The nodes in this visualization represent the projects from the multiple-case study (navy blue nodes with a capital letter A to F), the projects that were mentioned by participants (lavender nodes with small letters), the departments that were mentioned by participants (light blue nodes with a capital D and a number), other relevant platforms like communities of practice (yellow nodes with a capital O and a number), and relevant entities external to Rijkswaterstaat (green nodes with a capital E and a number). The size of the nodes represents the degree centrality of that node.

The arrows, or *edges* as called in SNA, in this visualization represent knowledge transfer. The direction of the edges shows in which direction knowledge was transferred. The weight (thickness) of the edges represents the strength of the relationship between a pair of nodes based on how many participants mentioned this relationship for each type of knowledge conversion. The colour of the edge represents the type of knowledge conversion:

- combination (green edges);
- externalization (orange edges);
- internalization (blue edges);
- individuals moving and taking their own knowledge from one project to another (black edges).

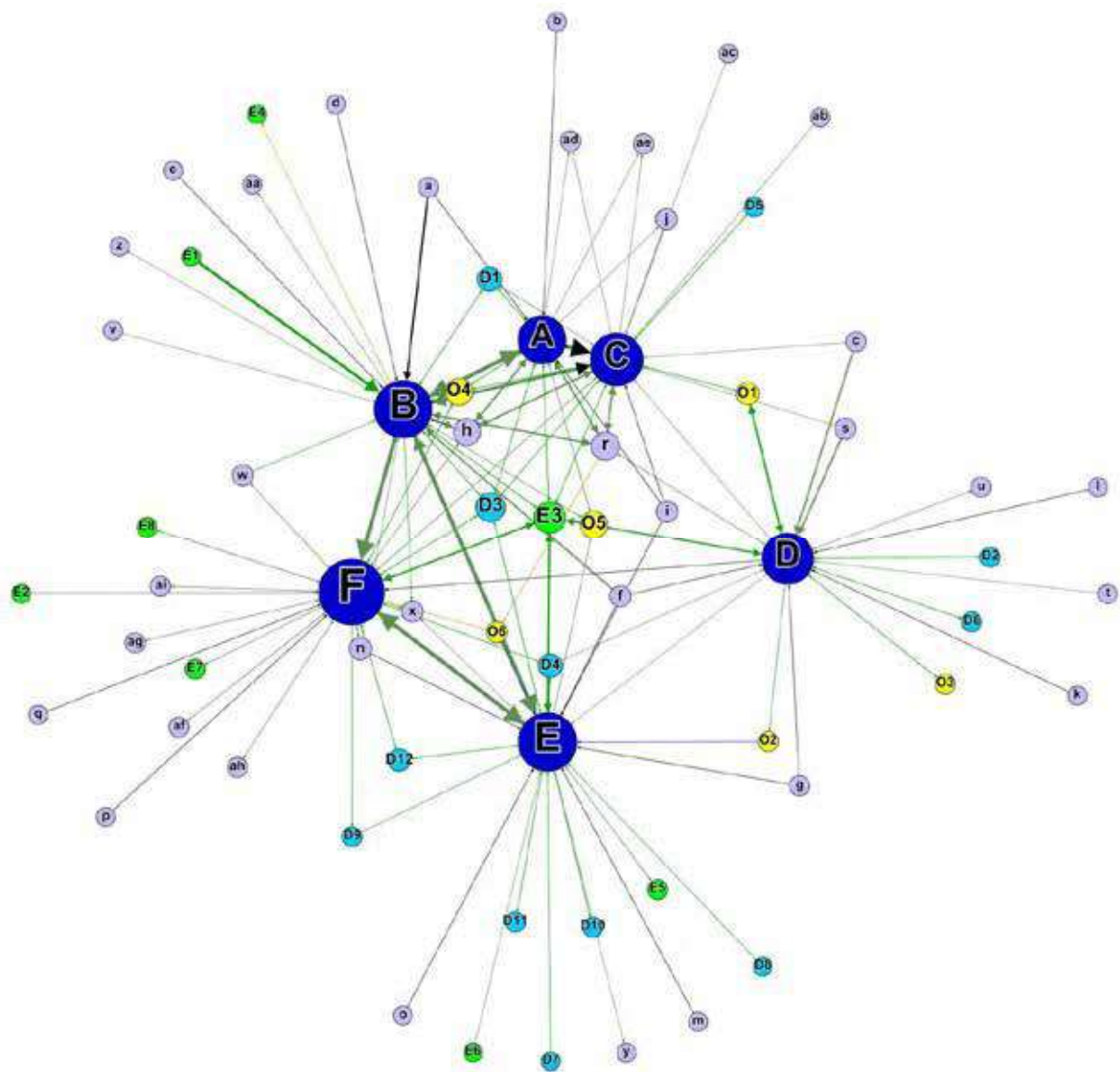


Figure 1 Network visualization of interactions in the cases studied

4.2. Learning within a single project

As Figure 1 shows, projects have their own collection of past projects (see the lavender coloured nodes with small letters) from which project members bring their knowledge and experience. When they are brought together in a new team to realize a new project, project members use their own knowledge and experience to give meaning to events. Changes or unexpected events and their effects on individual project members were often considered deliberately to collectively make sense of what was happening and how to proceed with the project. Participants indicated that it was important to do so to prevent miscommunication and to be able to proceed as a team.

The project management teams generally consisted of five members who represented various specialisms in a project: project manager, stakeholder manager, technical manager, contract manager, and manager project control (Rijkswaterstaat, 2019). They met each other regularly and discussed issues that they could not solve within their own specialism. Other than that, most of the interaction between project members took place within the boundaries of their own specialism. Although

participants indicated that this worked well for them, some participants indicated that problems arose at a later stage because their specialism was not considered at an earlier stage. A stakeholder manager interviewed said: *“Driving piles during the night is no cause for concern for a technical manager, as long as it happens safely and in accordance with rules and regulations. It becomes an issue once we have to inform the neighbourhood. For them it obviously is a problem.”*

Interviewees suggested that as a project proceeds, uncertainty reduces. They indicated that the frequency of interaction and knowledge transfer decreased during the realization of a project. There were less issues that needed to be solved, which allowed for less interaction. However, interviewees indicated that they were sometimes surprised by issues resulting from project members not being as well informed as others assumed. Furthermore, participants addressed knowledge loss due to project members leaving without transferring their knowledge to a successor as an issue. In contrast, knowledge transfer to future successors, i.e. apprentices, through socialization was mentioned by a few interviewees.

4.3. Learning between multiple projects

Like the frequency of interaction within a single project changes over time, also the interaction between multiple projects changes over time. The realization phase starts with preparing a contract and finding a contractor that realizes the physical infrastructure. Participants indicated that much knowledge was transferred from other projects during this phase. Projects want to learn how contracts from other projects worked out and they want to prevent themselves from making the same mistakes as other projects. Once this has been taken care of and the contractor has started, a project seems to go to a primarily internal focus. Often, many issues arise and project members need all of their time and attention to solve these issues. As the end of the realization phase approaches and issues are solved, projects start to open up and become willing to share their knowledge and experiences more proactively.

Nevertheless, participants indicated that they did also transfer knowledge during busy periods. Urgency seems to be dominant for engaging in knowledge exchange with other projects or experts. Participants mentioned three aspects that made knowledge exchange urgent:

1. infrastructure interfaces (e.g. projects having a physical interface due to parts of the infrastructure network directly connecting to each other, and projects having to align project activities in order to minimize effects on infrastructure availability on a regional level);
2. connections with the same stakeholders (e.g. clients, local governments, authorities, companies, and citizens);
3. similar issues (e.g. the same type of contract, the same project phase, the same period in time, and a similar project environment).

The aforementioned urgency aspects are recognizable in the network visualization. Projects A, B, and C were realized in the same region (Amsterdam), shared many stakeholders and had to deal with similar issues. Furthermore, these project teams were located in the same building. This physical proximity urged, and was beneficial to, knowledge transfer between the projects according to the participants. These aspects also hold true for projects E and F, although these projects were realized in another region (Rotterdam) than projects A, B, and C. Project D was realized also in the Rotterdam region like projects E and F, but was realized a few years earlier.

Projects A, B, and C were realized in a programme structure. This might explain why these nodes are closer to each other than the other nodes in the network visualization. Participants mentioned frequent knowledge transfer and learning activities between these projects. Apart from sharing documents and having frequent meetings, project members also switched between these projects. The programme board actively encouraged learning activities and tried to keep project members within the programme in order to retain a high knowledge level.

The interviewees indicated that project members engage in different networks depending on their specialism. These networks are predominantly communities of practice and functional networks in the parent organization. In projects, various specialisms interact, but the interaction between projects primarily takes place within a certain specialism. Furthermore, knowledge transfer is primarily initiated based on questions that need to be answered or problems that need to be solved. For all projects in this study, the weighted in-degree was higher than the weighted out-degree. This implies more knowledge transfer from another project than knowledge transfer to another project.

Participants mentioned the importance of considering the specific characteristics of each project, especially when experiences are externalized, e.g. in best practices and evaluation reports. When experiences are conversed through socialization or combination, it is possible to interact and, for example, talk about differences in project characteristics that may cause certain measures to be less effective or even counterproductive. Another way to transfer knowledge from one project to another and ensure that it is applied in a way that fits with the specific characteristics of a project is to move individuals with their knowledge from one project to another. This happens often as participants indicated. However, this can become problematic for individuals, especially when they have to serve multiple projects. An interviewee (stakeholder manager) said: *“... when the problem is big enough, they create facilities that allow me to get involved in the three biggest projects in my region, although this is somewhat difficult for me, because I have to continuously switch between the projects and also between the various roles that I have.”* This interviewee adds to this that the knowledge remains personal knowledge. In other words, collective learning is absent: *“So, they do create facilities, but there is a lot to gain when it comes to how you actually transfer knowledge to people who are the future of our organization.”*

4.4. Learning between projects and their parent organization

The network visualization in Figure 1 shows that learning platforms, such as communities of practice, are more centrally positioned than departments. Participants mention the relevance of these learning platforms for their work in projects. For example, node O5 represents a learning platform for stakeholder managers within Rijkswaterstaat. People from all over the country meet each other monthly to discuss issues in their field. This also lowers the threshold to interact with colleagues in the same field elsewhere in the parent organization at other times. In contrast, nodes O3 and O4, which represent similar learning platforms for project managers, are separated from each other based on organizational departments. Strikingly, the most central learning platform (node E3) is an external learning platform, namely Neerlands Diep. Nearly all participants mentioned this specific learning platform and its importance for learning within their project and between their project and other projects. This node also ranks highest for betweenness centrality, weighted degree centrality, and eigenvector centrality, behind the nodes that represent the investigated projects. This supports the interviewees' perceived importance of this external learning platform to learning between projects.

Interviewees mentioned a lack of interaction with the parent organization. Half of the participants mentioned that there was little or no knowledge transfer to departments at all. Some participants felt no need to interact with their department, because of the physical proximity of colleagues from other project teams who have a similar specialism. Others experienced a distance to their departments, rather physical, psychological or social, which prevented them from transferring knowledge. When knowledge is transferred, it is important for the richness of the transferred knowledge that project members experience social safety and trust. This holds true especially when people have to show their vulnerability as they tell others which mistakes they have made. As an interviewee said: *“To share that knowledge is very difficult, because it gets close to you as an individual. ... you actually do that once you have a lot of trust in each other.”*

Interviewees mentioned that a programme functions as buffer. Relatively small changes, both positive and negative, are absorbed at programme level. However beneficial this might be for the projects within such a programme structure, a programme structure was also considered to be disadvantageous for learning between projects and the parent organization. Interviewees experienced isolation from their parent organization. For example, an interviewee mentioned managers in the parent organization explicitly stating that the programme stood apart from the parent organization, as if those projects were not realized by Rijkswaterstaat, and experiencing a form of competition between the programme board and management from the parent organization.

5. Discussion

5.1. Collective learning in project-oriented organizations

The *network structure* resulting from this study (Figure 1) can be considered as decentralized. There are many ties, often weak, which allow for knowledge transfer from various directions and varying in content. This network structure makes sense for project-oriented organizations, because projects come across many and varying issues. To solve these issues, they depend on knowledge from outside the project. However, as Hansen (1999) argues, the transfer of complex knowledge through these weak ties may be problematic. This is why in practice people engage in combination, for example by intensifying interaction through frequent phone calls or face-to-face meetings. Furthermore, this retains the social safety and trust that people need to feel when they engage in the transfer of complex knowledge.

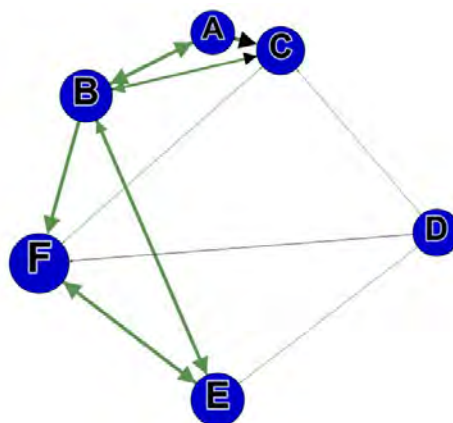


Figure 2 Network between projects

In Figure 2, the network between the projects in the case study is retrieved from the entire network and has a more distributed structure. A distributed network is beneficial to sharing tacit knowledge in an environment where people need to experience trust and safety (Smedlund, 2008). Not only the network structure, but also the weight of the ties shows generally strong connections between projects.

Figure 1 shows that each project has its own *satellites*. These satellites are knowledge sources. Some ties with satellites represent individuals moving from one project to another and, thus, the displacement of knowledge. Other ties with satellites represent the transfer of knowledge, mainly through combination. The knowledge from these satellites and the various specialisms within a project result in a multiplicity of perspectives. Dixon (1999) argues that the occurrence of multiple perspectives is one of the critical elements that fosters collective learning. Differences in knowledge enable learning. Therefore, projects need satellites, various specialisms and a decentralized network to reach and exploit as much knowledge as necessary to maximize response options in case of changes or unexpected events.

When we examine the relationships in Figure 1 more closely, we can see that many relationships are “homophilous”, which means that people have relationships with people who are socially similar or physically close (Rogers, 2003). This makes sense, because social similarity makes it easy for individuals to understand each other and physical proximity makes these relationships less time consuming. Furthermore, it is easier to assess if someone similar to you is able to help with an issue than someone you do not know. The research of Borgatti and Cross (2003) shows that it is important to know what another individual knows and to have access to that knowledge. It is a challenge for project-oriented organizations to stimulate heterophilous relationships to enable a higher level of collective learning.

Rijkswaterstaat regularly combines similar projects in multi-project *programmes*. Figure 1 clearly shows that projects A, B, and C, which are part of a programme, are closer to each other than the other nodes in the network. However, the only difference seems to be the frequency of interaction between the projects. This raises the question how collective learning within programme structures actually differs from other collective learning between separate projects. Furthermore, since participants experienced isolation from the parent organization due to the presence of a programme structure, one might wonder whether the advantages of a programme structure for the projects outweigh the disadvantages in the relationships between these projects and the parent organization. This needs further research.

Next to direct interaction between projects, learning between projects takes place through *learning platforms*, such as the so-called *communities of practice*. Figure 1 shows that such learning platforms have a central position in the network within a project-oriented organization like Rijkswaterstaat. These communities are somewhere in between the projects and their parent organization, but what is their actual function? Nonaka (1994) describes the importance of this kind of communities of practice for socialization and its contribution to the overall organizational knowledge creation process. However, based on the indications from interviewees about explicit knowledge, combination seems to be supported through these communities as well. Furthermore, the external learning platforms offer the benefits of multiple perspectives (Dixon, 1999) due to the participation of other organizations, but the knowledge that is transferred or created through these platforms only remains within the projects that were already engaged. There seems to be no diffusion to other organizational units.

Strikingly, the interviewees indicated an absence of relationships with *departments of the parent organization*. Departments are considered to be relevant for human resources management. In other words, according to projects, departments have to make sure that there are enough employees for each specialism and that they are equipped to perform at the right level. Considering that collective learning, also within specialisms, prominently takes place through learning platforms, raises the question whether departments should have more central positions in the network of a project-oriented organization or not.

5.2. Absorptive and adaptive capacity of project-oriented organizations

Many interviewees indicated that they proactively interacted with the environment. Projects interact with their environment to understand the context in which they operate and to identify changes to which they have to adapt. Doing so prevented them from surprises or crises and allowed them to adapt to changes in a controlled manner. This means that the indicator *proactive posture* (Table 1 in section 2.1) was clearly present. Other indicators for absorptive capacity were not clearly present. This might be because projects exist temporarily and have a specific objective to accomplish. If the business case of a project is no longer justified, for example due to changes in the context or a crisis that occurred, then that project simply ends.

Regarding adaptive capacity, interviewees indicated that the indicators *minimization of silos*, *internal resources*, *information and knowledge*, and *situation monitoring and reporting* received the most attention. A large project-oriented organization like Rijkswaterstaat consists of numerous departments, projects and specialisms, each making up a silo. Although people experience these silos and indicate that there is room for improvement, the aforementioned learning platforms do noticeably contribute to *minimization of silos*.

As Burch (2010) argues, it can be concluded that it is not a lack of capacity or *resources* that limits the building of organizational adaptive capacity, rather it is often a lack of facilitating the effective use of existing resources. This study shows that lack of time is a major issue in project-oriented organizations. Although all participants view learning as important, they often consider investing time in activities that might have benefits on the long term and are more abstract less urgent than spending time to solve concrete problems in short term. However, some participants indicated that they planned events or participated in externally organized learning trajectories to ensure that they kept investing time in preventive learning instead of only spending time on corrective learning.

With respect to *information and knowledge* we have observed fluctuations in learning between projects. Whereas adaptive capacity has a longer-term focus (Berman *et al.*, 2012), the aforementioned urgency in projects shows that learning is merely an adaptive response to find an instant solution for unexpected events. Furthermore, learning between projects occurs prominently at specific transition stages, i.e. right before writing a contract specification – knowledge transfer from other projects – and at the end of the realization phase – knowledge transfer to other projects. In the intermediate period, projects primarily maintain an internal focus. This makes the organizational knowledge-base (Nonaka, 1994) out-dated, fragmented and inaccessible to the entire organization. Further research is needed about what the implications are for the adaptivity of project-oriented organizations.

One of the prominent aspects of organizational resilience is to maintain an external orientation (Weick & Sutcliffe, 2007). How should a project adapt to changes in the environment? This external orientation is covered by the indicator *situation monitoring and reporting* and is mentioned by many participants. Projects depend on stakeholders in the environment for the acceptance of the project and, thus, the project success. How do the external orientation of projects and their parent organization differ from or complement each other? This needs further research.

6. Conclusions

This paper discussed the way collective learning takes place at three distinctive levels: within a single project, between multiple projects, and between projects and their parent organization. The findings indicate the following:

- A project-oriented organization like Rijkswaterstaat seems to consist of decentralized networks, which enable much knowledge transfer due to the presence of many weak ties. Projects interacting with each other do so in a more distributed network, which allows for sharing tacit knowledge in an environment where people need to experience trust and safety, and mainly through direct interaction with combination as the predominant mode of knowledge conversion.
- Learning within projects and through external learning platforms benefits from multiple perspectives in contrast to learning between projects and through internal learning platforms, where individuals generally engage in homophilous relationships.
- Programme structures and learning platforms enable learning between projects. However, they seem to hinder learning between projects and their parent organization.
- Learning between projects and between projects and their parent organization is hindered by a lack of time (internal resources). Next to solving acute problems, learning is urgent when projects share (1) infrastructure interfaces, (2) stakeholders, and (3) similar issues.
- Learning between projects occurs prominently at specific transition stages, i.e. right before writing a contract specification – knowledge transfer from other projects – and at the end of the realization phase – knowledge transfer to other projects.

7. Further research

This study is the first part of a research project on the contribution of collective learning to the resilience of project-oriented organizations. In subsequent stages, the research will expand from projects to the parent organization's perspective. The observations that were made so far will be further examined. Among others, further research is needed to identify (1) the advantages and disadvantages of programme structures for collective learning between projects and between projects and their parent organization, (2) the implications of an outdated and fragmented organizational knowledge-base for the adaptivity of project-oriented organizations, (3) the position of departments as opposed to learning platforms in project-oriented organizations, and (4) how the external orientation of projects and their parent organization differ from or complement each other.

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In-between dynamics

Towards a reconceptualization of soft spaces in regional planning

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Abstract

Collaboration across organizations is generally seen as a prerequisite for dealing with complex regional problems. This has led to a proliferation of new, informal and improvisational collaborative approaches, next to the more classical, formally institutionalized realities. From a geographic perspective the emergence of these different types of approaches has been captured in terms of 'soft spaces' and 'hard spaces' of regional planning. Despite the proliferation, soft space scholars observe a limited impact of these approaches. Drawing on a case study on urban regeneration strategies in the Dutch Randstad conurbation, we suggest that the limitation is caused by dynamics in the interaction with other spaces. In this paper we argue that, considered from a dynamic perspective, the emergence of soft spaces next to hard spaces, invokes an in-between space which is not geographic, but rather performative. We coin the term 'in-betweening' as the activity to switch and bridge between multiple harder and softer spaces by focusing on what regional planners 'actually do' when they are confronted with an accumulation of spaces. We argue that combining softer and harder spaces increase the problem-solving potential, that tensions between different spaces are structural and vital and that practitioners acting 'in-between' are crucial to deal with these tensions.

Key words: regional planning, soft space, problem-orientation, tension, practices of in-betweening

1. Introduction

In 2014 administrators and policymakers from a ministry and a province in the Netherlands invited participants from several municipalities, housing corporations, research institutions, real estate investors and developers to work together to revamp the urban regeneration strategy for the Southern part of the Dutch Randstad conurbation. This invitation came at a moment that organizations realized that they could not find solutions via the well-established approaches. This was particularly true now the consensus was that cities should increase their density and safeguard the remaining green spaces in the crowded Randstad as much as possible. Yet building in inner-cities stagnated and generated complex issues regarding transportation, parking, energy efficiency, building costs and dispersed ownership of land and real estate. Consequently, the actors agreed to embark on an experiment to use novel ways to collaborate and find innovative solutions. Facilitators were named to guide the informal collaborative process, meetings were organized and many ideas and initiatives were born. However, the governmental organizations involved had a long history in (formal) collaboration on infrastructural projects already. They developed extensive procedures, rules and routines and continued to operate in their own separate setting. Although the new, experimental and informal approach produced meaningful outcomes according to the participants, the governmental officials of the formal second approach did not recognize these as solutions for their regional problem. Yet

accelerating urban housing became more urgent and several actors worked on an Urban Agenda executed through ‘city deals’ with new playing rules and responsibilities. With this, a third approach was born. The three collaborative approaches consequently and simultaneously co-existed, but struggled in their interaction.

The regional level is often conceived a central scale in solving complex social problems (Albrechts, 2010). For these problems organizations need to mobilize the problem-solving potential of other actors involved (Healey, 2006; Cropper et al., 2008). “In the Netherlands (but also elsewhere) this primarily occurs at the level of urban regions, where the most intense forms of deliberation and negotiation on issues of policy integration take place” (Zonneveld and Spaans, 2014, p544). As a result the field of regional planning, formerly dominated by public organizations, is now increasingly influenced by business, social and civic actors (Boelens, 2010). This growing occupancy of organizations has led to a growing fragmentation (Hajer, 2009). Haughton et al. (2013) observed that “over the last two decades the nature of spatial governance has changed dramatically, both quantitatively [...] and qualitatively in the ways in which multiple networks of actors are continuously made and remade to carry forward particular strategies” (p217). In this growing variety of collaborative approaches, many observe an increasing emergence of informal and experimental arrangements (Lemke, 2002; Van der Steen et al., 2015; Powell and Soppe, 2015; Almendinger et al., 2015). Haughton et al. (2013) presume that “whilst planners have always worked informally and sought to coordinate activities arranged across multiple forms of administrative geographies [...], what we are seeing is in fact distinctive, new and still evolving” (p.221). It therefore comes as no surprise that when studying the strategic plans of public organizations, they aspire to collaborate in new informal ways, stimulating partnerships, networks, labs and communities (Ministry of Infrastructure and Environment, 2014; Ministry of Internal Affairs, 2016). Nonetheless, in practice actors experience disincentives as interorganizational collaboration is seen as an inherently difficult activity due to dynamics caused by divergent interests, opposing approaches and conflicting perspectives (Gray, 2008; Huxham, 2003; Human and Provan, 2000; Ospina and Saz-Carranza, 2010). The above described empirical context is therefore no exception to the present-day increase in quantity and diversity of collaborating actors and collaborative approaches that co-exist around a regional problem. And no exception to the struggle of creating accepted and embedded results across organizations and approaches.

However, studies that focus on the variety in collaborative approaches around the same problem, the interaction between these and the way this influences the collective problem-solving potential are limited. The leading question of this paper is therefore: *How to understand the collaboration across organizations in dealing with complex regional problems?* To answer this question we draw on the concept of ‘soft spaces’ as introduced and elaborated by Almendinger and Haughton (2007; 2009; 2010). They consider soft spaces as new informal forms of territorial governance with blurred boundaries that arise as a response to hard spaces; existing, statutory and formal spaces of government. Analyzing regional planning processes through the lens of this concept is powerful. Yet we argue that we can enhance our understanding of present-day regional planning by taking the conceptualizing of soft spaces further. Especially, because soft space scholars observe a proliferation of soft spaces, but also observe a limited impact of contemporary soft space approaches (Almendinger et al., 2015). We argue more attention is needed for the interactive dynamics in regional planning, within which both ‘hard’ formal spaces and ‘soft’ informal spaces are implicated. As described in the above empirical situation, different ‘spaces’ were involved in tackling the same problem, but there was only little interaction between them which limited their impact in effectively dealing with the regional problem. We adopt a dynamic perspective to investigate the way practitioners are dealing with the interaction between overlapping and concurrent ‘harder’ and ‘softer’ spaces. Not to eliminate, resolve or minimize these dynamics, although this is a regular reflex of practitioners and scholars (Hajer and Laws, 2006), but to work with and exploit the dynamics.

With the focus on interactive dynamics a different kind of space comes in view. We call this a performative space where the tensions between the different collaborative approaches are experienced and dealt with and where new practices of governance get enacted. A performance perspective puts the analytical lens on the ‘work’ that is being done in concrete situations in which understandings of dynamics are performed or enacted (Hajer & Pelzer 2018; Hajer, 2009). To investigate the way in which planning practices are enacted in the in-between space we apply insights from ‘practice theory’ as an approach that emphasizes the interactive, context-bound character of activities (Hajer 1995, 2009; Wagenaar and Cook, 2003; Shove et al., 2012). In practice theory, dynamics are understood through acting (Rein, 1983) and practitioners develop professional standards and repertoires while working (Lynch, 2004; MacIntyre, 1985). Practice scholars focus therefore on the practical activities, judgements and interpretations of the day to day struggle of practitioners in dynamic contexts (Lipsky, 2010). We use the conflict-sensitive orientation to practice theory as defined by Nicolini (2017). This allows us to investigate the co-evolution, conflict and interference of contrasting harder and softer spaces. Nicolini observes that a focus on conflict is used infrequently, yet paradoxically, this focus on tensions and contradictions often trigger new insights in dealing with the actual dynamics. Empirically this requires access to the detailed accounts of practitioners. This article draws on the privileged access of the first author who, as consultant, conducted 25 interviews to evaluate the experiences in planning with hard and soft spaces in the Randstad South region. She has been active as reflective practitioner for many years in a variety of collaborative approaches at different levels. She has experienced the conflict-ridden context herself, but she has also coached practitioners and guided organizational change trajectories to better deal with collaborative dynamics. As Dewey (1910) and later Schön (1983) formulated, reflection is the practitioner’s unique encounter and conversation with a situation through which “he shapes it and makes himself part of it” (Schön 1983, p. 163). And as Johns (2017, p. 13) puts it “knowing in action is intuitive drawing on tacit knowledge”. This approach follows up on the suggestion of Allmendinger et al. (2014), which has not yet been executed by soft space scholars themselves, that for further empirical testing an in-vivo perspective would be valuable (p. 2714).

In this paper we first explore the prevailing conceptualization of soft spaces. In the section that follows we reconceptualize this by investigating in the problem-solving potential of combining multiple spaces, the structural and vital role of tensions between different spaces and the personal impact of dealing with these tensions. In the fourth section we illustrate our theoretical positionings with the case of urban regeneration as briefly introduced at the start of this paper. This case provides a good opportunity to explore the in-between dynamics, because a new informal space emerged, that did not replace the more familiar space and evoked in turn another space, allowing us insights in (un)productive practices of in-betweening. This reflection leads, finally, to the suggestion for orderings and a proposed research agenda that more thoroughly investigates in the in-between dynamics.

2. The concept of soft space

The concept of ‘soft space’ was introduced by Haughton and Allmendinger (2007) to capture the phenomenon of new informal government arrangements in the British and Irish context under the New Labour government (see also Allmendinger and Haughton, 2009). Since then the concept has been wider applied in comparative work in spatial planning and territorial management in Europe (Allmendinger et al., 2014, 2015; Haughton et al., 2010, 2013; Metzger and Schmitt, 2012; Stead, 2014). Soft space became framed in a context of metagovernance (Jessop, 2004; Haughton et al., 2010), neoliberal spatial and state restructuring (Cochrane, 2012; Haughton et al., 2013) and policy integration in the European Union (Chilla, et al., 2012; Faludi, 2013). Important themes were administrative reform, decentralization, competitive localism and territorial governance. It is well

recognized that the emergence of soft spaces relates to the loss of steering capacity of forms of networked territorial governance that are organized around fixed scales and boundaries in this more complex relational world (Zonneveld and Spaans, 2014; Allmendinger and Haughton, 2009). Purkarthofer (2018) similarly states that regional planning today is increasingly dealing with new scales that emerge outside the formalized planning system. Against the background of the limits of statutory planning, soft spaces are seen as a result of “[...] a policy impetus to break away from the shackles of pre-existing working patterns which might be variously held to be slow, bureaucratic or not reflecting the real geographies of problems and opportunities” (Allmendinger and Haughton, 2009, p. 619).

Despite the substantial resonance of the concept, definitions and manifestations of soft space vary. Examples given by Allmendinger et al. (2015) are the Hamburg Metropolitan Region, the Sillon Lorrain, the Fehrman Belt or the Upper Rhine. Despite the different manifestations some key characteristics can be derived from the work of soft space scholars. Soft spaces are mainly regional spatial concepts or regional entities (which regularly coincide) for mostly urbanized areas between the local and national scale (sometimes across national boundaries). Soft spaces, thus conceived, can emerge by coincidence or evolve in a strategic and intentional way, either initiated from the national or European level (top-down) or from the local level (bottom-up). They involve diverse mixes of actors, including government, civil society and the private sector. They are, according to Allmendinger et al. (2015), by nature experimental, intended to provide testing grounds for new policy interventions. Soft spaces are therefore “often counterposed against what might be termed the ‘hard’, statutory spaces of government; formal territorial units of government typically with legally defined and definite territorial boundaries linked to administrative structure of subnational government, and to democratic electoral processes” (Haughton et al., 2013, p. 218). Soft spaces “[...] exist alongside but separate to the spaces and scales of elected government bodies such as local, regional and national government. Whilst some governance spaces can be coterminous with the territorial boundaries of elected government, soft spaces by contrast involve the creation of new geographies that transcend existing political administrative boundaries” (Allmendinger et al., 2015, p.4). Considering these characteristics we here briefly define soft spaces as ‘informal collaborative arrangements governed by a horizontal logic of improvisation’ (see figure 1 for a geographic visualization of the differences between soft and hard space).

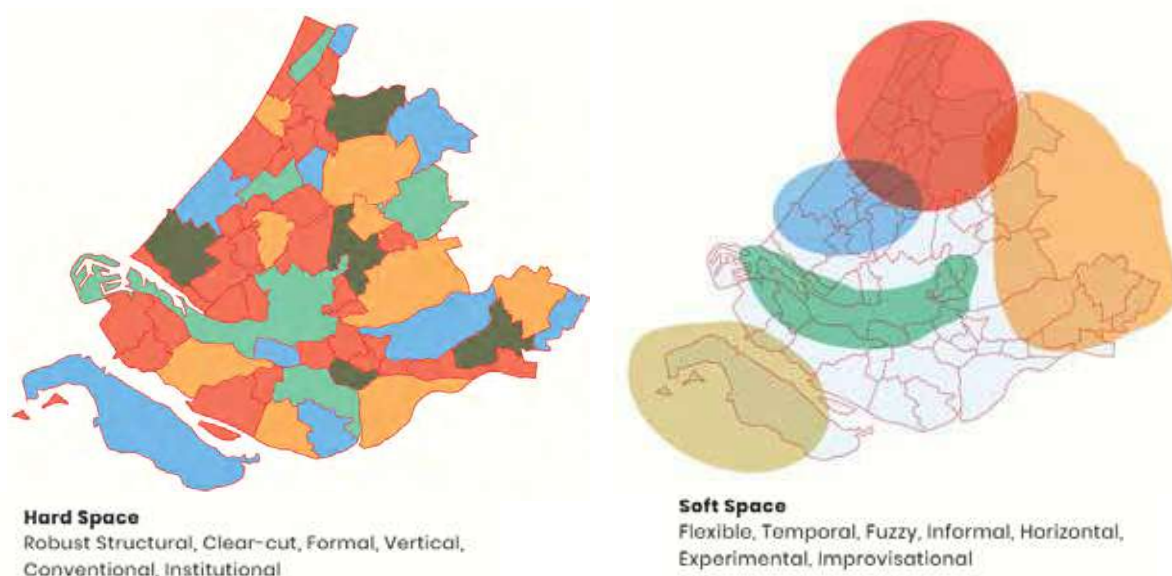


Figure 1. Geographic visualization of differences soft space and hard space (source: authors' own illustration).

Soft space scholars note several aspects on the positive value and impact of soft spaces for regional planning, in the context of the limitations of politics conducted in (pre-)existing hard spaces. Soft spaces are frequently set up to either address the mismatch between administrative and functional areas or to promote the identity of a chosen geography with new imaginaries that change and influence existing perspectives. Through this, soft spaces can help set geographical, institutional and financial conditions, for example to compete with other regions for national and European funds or to establish informal knowledge networks among policy-makers and practitioners (Allmendinger et al., 2015). The often temporary nature of soft spaces allows for a new momentum. Longer term effects of soft spaces are in the prevailing conceptualization captured speaking of ‘hardening’ and ‘softening’ stages, suggesting they can become more structural in their presence when cooperation processes, partnerships and governance arrangements that started with soft spaces may continue to exist over time (Metzger and Schmitt, 2012; Allmendinger et al., 2014). Haughton et al. (2013) state that “Soft spaces have played an important role in mediating and translating neoliberalism, providing flexible and ephemeral experimental spaces and alternatives to costly and disruptive reorganization of hard, statutory spaces” (p.227). Soft spaces are mostly low cost approaches and offer flexibility which implies room to manoeuvre, creating “a space for experimentation that local, regional or national authorities with official planning competencies do not possess. They also allow deniability if such politically sensitive solutions do not work” (Allmendinger et al., 2015, p.225). The authors conclude that successful soft spaces accept and include the heterogeneity of actors on a pragmatic basis and consciously avoid a formal geography. They promote flexible or blurred boundaries instead.

Linked to the positive evaluations the authors also raise serious concerns. They describe the democratic deficit of soft spaces, as democratic structures and processes might be circumvented, accountability outsourced to those running the new bodies and that less glamorous areas of policy might become marginalized (Allmendinger et al., 2015). Haughton et al. (2013) observe that soft spaces are used as a sidestep for existing political, legal or administrative spaces, and are often literally used to evade difficult issues. They also observe that “soft spaces have been the vehicle for a series of narrowly conceived experiments in promoting different forms of high economic growth, albeit in rather disconnected fashion, such that different soft spaces might have contradictory and rather loose aims” (p.231). Allmendinger et al. (2015) add to this by describing “[...] even if they appear to have achieved some measure of success, sometimes a soft space organization’s very existence could have stymied alternative forms of change that might have been even more successful” (p.224). “[...] there is little or no evidence from any of our case studies that soft spaces are somehow more effective, producing speedier or better-quality outcomes. This is in part because they necessarily still rely on using the statutory planning systems to get most large-scale development projects approved [...]” (p.233). Olesen (2012) even observes that soft spaces were not able to fill in the gaps between formal scales of planning and increase pressures on hard spaces. In their final conclusions Allmendinger et al. (2015) state that soft spaces work best when they try to find solutions for particular boundary effects with hard spaces instead of ducking “[...] awkward issues around who is in and who is out of particular arrangements, what is being negotiated over and what is being excluded from consideration, and the patterns of winners and losers that necessarily stem from such selectivities” (p.234).

3. In-between multiple harder and softer spaces

We concur that the realities of regional planning can be meaningfully analyzed in terms of ‘hard’ and ‘soft’ spaces. However, we are intrigued by the finding that authors observe a limited impact of soft spaces in actual planning processes. We suggest that this limitation may be caused by dynamics in the interaction with other spaces. Harder and softer spaces appear to constrain and compete with each other instead of reinforcing and completing each other. Considering the prevailing conceptualization

relatively little is known about the relationship between hard and soft space, how they can work in tandem and how practitioners deal with a multiplicity of spaces and hybridized forms of softer and harder spaces (Allmendinger et al., 2015). In the light of the growing emergence of softer spaces and the remaining presence of harder spaces, we argue that dealing with the interaction between multiple overlapping and concurrent spaces will only become more imperative. Starting from an appreciation of the complexities of regional planning (De Roo and Boelens, 2016) and following a practice approach (Shove et al., 2012) we suggest we may have to interpret the interaction between softer and harder spaces from a dynamic perspective, focusing on the fabric or space in-between. We foreground three theoretical positionings that help deepen our understanding of the interactive dynamics: (1) the problem-solving potential of multiple spaces; (2) the structural and vital tensions between different spaces; and (3) the impact of individual practitioners in dealing with tensions.

The problem-solving potential of multiple spaces

Empirical research illustrates the difficulty for organizations and especially public organizations to respond effectively to complex problems (Kettl, 2009; Head and Alford, 2015; Boelens, 2010). Complex problems are hard to define, contested by different actors, interrelated to other problems and identified by uncertainty (Termeer et al., 2015; Ney and Verweij, 2015). Multi-actor, multi-sector and multi-level collaboration is increasingly highlighted as a key driver for creating innovative solutions for these kind of problems (Davy, 2012; Hartmann, 2011; Ney, 2009; Verweij, 2011; Innes, 2016; Sørensen and Torfing, 2014; Buijs et al. 2018, Termeer et al., 2015). The multiplicity of cross-over interactions is particularly important, because the added value of collaborating becomes greater when actors think and work differently (Schrujjer and Vansina, 2008). In this respect, the (variety in) involved actors and the collaborative approach chosen for should follow the degree of complexity of the problem (Gray, 1989; De Roo, 2001). This contrasts the often employed way of working with predefined tasks and structures. When problem solving is central in the work that needs to be done, organizational structures and arrangements are not set; collaborative formats differ per situation (Teisman et al., 2018). Furthermore, different actors will have different interpretations of what is the problem and will have different preferences that influence the choice of approach (Lubell, 2003; Van der Steen et al., 2015).

Accordingly, multiple approaches are consequently and simultaneously possible for a specific regional problem. However, we observe a shift towards new, informal and improvisational spatial planning approaches as the appropriate way to deal with complex problems and a move away from more classical, formal and institutional approaches (Boonstra and Boelens, 2011; Termeer, 2009; Arts and Van Tatenhove, 2005). Soft space scholars tend to also highlight these new constellations of actors coming together (Allmendinger et al., 2015). Following Zuidema (2011) we argue that complexity is a reason for an increased plurality of collaborative approaches and that classical, formal approaches can act as a crucial foundation for new informal approaches. Thus, solving complex regional problems does not only raise the need for informal collaborative approaches, but merely the combination of and interaction between different approaches. Whereas soft space scholars consider soft spaces as the outcome of a thoroughgoing critique of hard spaces and its failure to deliver (Allmendinger et al., 2015), we rather focus on the strengths and values of harder spaces complementary to softer spaces, because considering 'the new' as a disqualification of 'the old', would stimulate unproductive and defensive reactions (Termeer, 2009). With respect to this, Lawrence et al. (2002) disclosed that collaborations that are highly embedded, which is the degree to which a collaboration is enmeshed in other interorganizational relationships (Dacin et al., 1999; Granovetter, 1985), are more likely to diffuse innovations beyond the boundaries of the collaboration. According to Lawrence et al. (2002) organizations that focus solely on their partners, at the expense of the connection with the broader interorganizational network, may secure competitive advantages, but forego the opportunity to effect more fundamental change: A common concern amongst soft space scholars (Allmendinger et al., 2015; Olesen, 2012).

When carrying forward this line of reasoning, it is fruitful for effective problem-solving to focus on *multiple spaces that emerge around the same problem*. However, the prevailing conceptualization of soft spaces puts the focus on the *hard and soft spaces that exist in one region concerning multiple problems*. Putting problems central allows us to appreciate how actors dance through the scales and when and how actors from different levels are involved (Teisman et al., 2018). More importantly still, it allows us to better focus on the interactive dynamics between spaces. With this focus a more performative, in-between space comes into view in which the actual interaction between spaces takes place and where the combination of these interactions together has certain effects. It shows resemblance to the work of Soja (1996) on the concept of ‘third space’ where different qualities add up to a new, unknown, third quality. The in-between space that arises out of the interaction between softer and harder spaces cannot be marked on a geographical map, but rather on a mental map. The in-between space is a performative space, but on certain interactive moments it can reveal itself when meetings are organized between the different harder and softer spaces. Allmendinger et al. (2015), however, raise concerns for overlapping spaces with different competencies that might lead to inefficiency, mistrust and tensions. Our hypothesis is that multiple collaborative spaces around the same regional problem can enhance the problem-solving capacity and that it are exactly the tensions between the divergent collaborative approaches that enable this to happen.

The structural and vital tensions between different spaces

In the prevailing conceptualization soft spaces exist next to, but outside hard spaces as separate realities (Allmendinger and Haughton, 2009). In practice soft spaces are often deployed as workarounds and sidesteps to avoid conflicts with hard spaces (Allmendinger et al., 2015). From a complexity perspective the dynamics of a system are exactly characterized by its relationships and interactions and these can only be understood by taking into account the parts, the whole and the context (Cilliers, 1998: 4; Prigogine & Stengers, 1984; Teisman et al, 2009). Using a dynamic perspective we therefore reveal both conflicting types of spaces as part of one reality. Lewis and Smith (2014) likewise suggest that in conflict-ridden situations we need to move from ‘either/or’-debates to ‘both/and’-perspectives that engage opposing approaches simultaneously. They herewith stress the value of a paradox lens and define a paradox as contradictory yet interrelated elements that exist continuously and simultaneously. The opposing elements of a paradox are therefore in a permanent state of tension, for example, between formal and informal cultures, institutional and improvisational approaches or mechanistic and organic structures. Lewis and Smith describe that researchers have long responded to these tensions by identifying conditions under which organizations or practitioners should attend to the one side or to the other side. However, nowadays different authors describe the reflexive character and ineffectiveness of this strategy to repress or avoid paradoxes in satisfying our need for consistency and uncertainty reduction (Derksen, 2016; Jay, 2012; Lewis, 2000; Smith and Tushman, 2005). In contrast, paradox scholars consider paradoxes as persistent unsolvable puzzles fostering the existence of the tension and fueling the interplay between the two poles to achieve long term success (Derksen, 2016).

Next to the fact that tensions between new, informal and improvisational approaches and classical, formal and institutional approaches are structural, they are also vital (Miron-Spektor et al., 2011; Smith & Lewis, 2011; Rauws and De Jong, 2019). While tensions often complicate collaboration, the coexistence of opposing values contributes to a system’s capacity for change (De Roo, 2017). Seo and Creed (2002) likewise state that inconsistencies, contradictions and tensions are enablers of change. Shove and Walker (2007) and Van Meerkerk (2014) both show that change takes place through processes of co-evolution and mutual adaptation within and between arrangements. Powell and Soppé (2015, p.770) confirm this: “Organizational forms can be conceived of as assemblages of elements

and practices. For newness to occur, existing templates and ideas must flow together and be recombined in novel ways, and integrated into the social world. [...] Such generative dynamics frequently occur when otherwise distant social arenas are brought together. Structural spaces between multiple networks have a high potential for foreign material and elements to flow together and become repurposed and rearranged to form a fresh constellation.” In this view tensions are seen as an opportunity and invitation for creativity and unconventional lines of thought (Miron-Spektor et al., 2011). Also Cameron (1986) describes that if there are no tensions, an unproductive and schizophrenic situation may arise. In contrast to soft space scholars we thus perceive tensions between spaces not as something negative and something to avoid or resolve (Allmendinger et al., 2014), but as something positive and something to exploit. By bringing harder and softer spaces around the same problem into the same reality, tensions are not unexpected, uncontrollable external intruders, but expected and manageable parts of the process.

However, this does not imply that dealing with tensions between new, informal and improvisational approaches and classical, formal and institutional approaches is easy. The embeddedness of soft spaces also complicates innovation (Termeer, 2009). Alter and Hage (1993) show that not only individual organizations institutionalize, interorganizational activity is affected in a similar fashion. Particular collaborative approaches may become the widely accepted and understood default approach for how actors work together around a specific problem. In the in-between space where harder and softer approaches assemble, the tension between new and classical scripts of working is preeminently experienced. Here, the impact of soft spaces on hard spaces resembles the transformative process of niche dynamics on existing regimes to change (Kemp et al, 1998; Raven, 2006). Hosking (2004) describes that once a particular pattern becomes stabilized, the other possibilities may be harder to have them validated as relevant and good. Van der Steen et al., (2015) call this a distortion of the process of choice, because current (institutionalized) ways of working might prevent actors from choosing new ways. Termeer (2009) illustrates that as a result many public managers talk the talk of new informal and improvisational approaches but in practice get entangled in all kinds of barriers and revert to more familiar, traditional strategies. As stressed by different authors dealing with these and related tensions asks for specific personal skills to “[...] create a whole new system of meaning that ties the functioning of disparate sets of institutions together [...]” and “[...] bridge what have come to be called the ‘old’ and ‘new’ [...]” (Garud et al., 2007, p. 957).

The impact of individual practitioners in dealing with tensions

Williams (2002) observes that the discourse about collective complex problem solving is positioned at an institutional and organizational level and comparatively little attention is accorded to the pivotal role of individual actors. The same applies for the soft space literature in which scholars have a strong focus on the emergence of the phenomenon and have largely neglected the impact of individual practitioners. However, they do suggest that tensions in how relationships are aligned and managed will arise and that it depends on individual actors whether they try to survive by competing or by developing complementing roles (Allmendinger et al., 2015). In different ways *interorganizational* collaboration studies have paid regard to the role of individual actors. By referring to for example ‘brokers’ (Gray, 2008) or ‘mediators’ (Susskind, 2008) the connecting role of individuals across organizational boundaries is explored. The term ‘boundary spanners’ was originally focused on the connecting role within an organization (Tushman and Scanlan, 1998), but was later oriented to the interactions between the organization and its environment in order to realize a better ‘fit’ (Van Meerkerk, 2014; Baker, 2008). Considering the above described context of multiple spaces around a regional problem, we share the crucial role of individual actors in *intraorganizational* and *interorganizational* collaboration. Yet, we argue that their role between multiple harder and softer spaces (on the *intercollaborational* level) is little exposed and understudied. While, practitioners in-between multiple spaces have to deal with all these interactions separately and simultaneously. Ospina and Saz-Carranze (2010) also describe that in successful collaborations the inward work (between

organizations) and outward work (between the collaboration and external actors) is done concurrently rather than sequentially.

We here consider the inward and outward activity, as ‘in-betweening’ and the individuals performing this activity as ‘in-betweeners’ (see table 1 for an overview of the concepts of in-betweenness). To be able to specify different practices of in-betweening we here define a practice as a coherent setting in time and place with actors performing an organized set of doings and sayings (Schatzki, 2002; Nicolini, 2017). These can be both a productive or unproductive practice. According to Cooper action does not take place inside or outside boundaries, but in the midst of things (Burrell and Parker, 2016). In this in-between setting the impact of the repertoire and behavior of individual actors increases: they are themselves instruments to switch and bridge between spaces (Vermeulen, 2012). Furthermore, Kivimaa et al. (2019) describe that intermediary actors can be key catalysts that speed up change and transition. However, when a situation is ambiguous professionals experience unease when they cannot ‘read’ a situation and choose readily among alternatives (Bauman, 1991). Also Argyris (1996) showed that we have developed defensive mechanisms and routines when contradictions threaten to undermine the harmony and consistency. Darling and Walker (2001) describe that backup behavioral styles come into focus as responses to high level of stress and conflict: “An individual’s primary backup style is a predictable yet unconscious shift to more extreme, rigid and non-negotiable behaviors” (p.237). According to Darling and Walker backup behaviors seem to relieve tensions, but are usually counterproductive for the individuals using them. A more reflective way of acting requires the ability to deal with contrasting viewpoints, actions, and intentions (Le Grand, 2007; Noordegraaf, 2007), to create optimal conflict levels (De Dreu, 2006) and in the words of Miron-Spektor et al. (2011) to adopt a paradoxical frame to identify contradictory elements, to explore their linkages and to find and test alternative solutions. Akkerman et al. (2006) also state that it requires people to have dialogues with actors of different spaces or organizations, but also to have inner dialogues between different perspectives they are able to take on.

According to Darling and Walker (2001) style flexibility is a key to interacting more effectively in conflict situations. In-betweeners therefore have to be conscious about their own style, the style of others and have to be able to broaden their own style or repertoire of actions to adapt to the different settings (Grant, 2016). In our perspective switching and bridging softer and harder spaces requires switching and bridging between ‘harder’ (formal and institutional) and ‘softer’ (informal and improvisational) styles or repertoires. Walker and Nocon (2007) define this as ‘boundary-crossing competences’, which is the “ability to manage and integrate multiple, divergent discourses and practices across social boundaries” (Walker and Nocon, p.181). The in-beweenner can be considered as a special type of boundary worker (Metze, 2010; Akkerman and Bakker, 2011). Professionals at boundaries “enter onto territory in which we are unfamiliar and, to some significant extent therefore unqualified” (Suchman 1994, p25). They “face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid situations” (Engelström et al. 1995, p319). This resonates with the later work of Lawrence et al. (2011) on ‘institutional work’ in which they describe “myriad, day-to-day equivocal instances of agency that, although aimed at affecting the institutional order, represent a complex mélange of forms of agency - successful and not, simultaneously radical and conservative, strategic and emotional, full of compromises, and rife with unintended consequences” (p. 52-53). Switching and bridging between spaces therefore requires continuous reflection on what in-betweeners do and who they are (Johns, 2017): The signs to read a situation “[...] are often subtle, requiring perception, imagination and intuition. There are no prescriptive solutions” (p.13). Appreciating this difficult position and stressing the need for skills of adaptivity and switching capacity could in our perspective be crucial for stimulating the interaction between spaces and the impact and embeddedness of soft spaces.

Table 1. Concepts of in-betweenness

In-betweenness highlights the interconnections between multiple softer and harder spaces		
Term		Definition
In-between space	Playing field	The performative space in which the interactions and tensions between multiple harder and softer spaces around a regional problem becomes manifest
In-betweener	Player	The individual practitioner that switches and bridges between different spaces and works on the intra-organizational, interorganizational and intercollaborational level
In-betweening	Interplay	The outward and inward activity of switching and bridging within and between different spaces while constantly adapting one's style
In-between dynamics	Dramaturgy	The inward, outward and intermediate dynamics that cause ambiguity and tensions

4. In-betweening in the case of urban regeneration

The case of defining strategies for urban regeneration in the Randstad South region constitutes an interesting case to study the interaction between multiple spaces. We studied the interactive dynamics between a new soft space and several other harder and softer spaces in the period 2014 (when the housing market was in a crisis situation) to 2016 (when the housing market was overheated). The first author was involved in the soft space as an evaluator of and reflector on the collaborative process allowing for an in-depth case-study. To enhance our understanding of the interactive dynamics we conducted qualitative research: events were attended to observe the interaction, regular meetings were held with the facilitators of the soft space to stimulate reflection and feedback, a document analysis of official letters, reports and newsletters produced by the different spaces were conducted, stories of 25 different participants of the multiple spaces were collected through interviews to produce 'thick descriptions' on practical judgements and interpretations made, and finally a focus group was organized to combine and test our initial findings. In this section we first describe the context of the multiple harder and softer spaces and highlight three collaborative spaces that acted as 'stages' for practices of in-betweening around the same regional problem.

Multiple harder and softer spaces

The 'Randstad' refers to the most urbanized western part of the country where 8.1 million people live and work and where a gross regional product of 367 billion is produced, which is more than half of the Dutch economic activity and which makes it the fourth-largest metropolitan region in Europe (Randstad Region, 2017). While interactions transgress municipal borders, the Dutch system does not foresee in regional planning authorities (House of representatives, 2012). So planning issues in the Randstad require collaboration among many municipalities, three provinces and several national ministries. Based on regional economic analysis the northern Randstad (focused around Amsterdam and Utrecht) is now often approached separately from the southern Randstad (focused around Rotterdam and The Hague). A major problem in the southern region is the stagnation of building houses in inner-city areas. Research shows that about 80% of the inhabitants of the southern Randstad would like to live in urban areas (MIRT-onderzoek, 2014). This results in an expected need to house 230.000 households in the region by 2030 and a need to build 200.000 houses by that time. Despite the massive need for new urban units, only few initiatives for inner-city housing projects are taken. The constraining factors are not clear-cut and extent to many different (policy) fields. Amongst others, there is a search for new business models to overcome the investment gap, for understanding the specific housing needs of target groups, for adjusted national and local regulations, for new parking and mobility solutions and for new sustainable and energy efficient concepts. If nothing

changes the estimated shortage in the urban segment amounts to 85.000 households by 2025 (MIRT-onderzoek, 2014). This situation can rightfully be perceived as a complex regional problem.

In 2014 the Dutch Ministry of Internal Affairs and the province of South-Holland agreed that the building of new housing stock in the urban areas was stagnant and that change would require action from a range of interdependent actors. Acting on this awareness they started a bottom-up collaborative process inviting over a hundred actors, ranging from municipalities, housing corporations and research institutions to real estate investors and developers (MIRT-onderzoek, 2014). This new soft space is the starting point for our research. Up until then they did not share knowledge and experiences. Yet the call for collaboration was clear. The aim was to come to a collective understanding of the problem and devise strategies to overcome the blockages for urban densification. However, the default approach of the national, regional and local governmental actors involved, was to formally regulate regional collaboration with extensive procedures, rules and routines, often directed by the Ministry for Infrastructure and Environment. The newly introduced space did not replace this more familiar space and evoked in turn another space. While acting most participants were not always aware of the different embedded spaces. Yet, when evaluating the collaboration process, they started to unravel the three spaces that had the most impact on their work and vice versa (some participants were involved in more spaces like for example the ‘watertorenberaad’, but these three were most often named and seen as interconnected). Figure 2 represents these multiple harder and softer spaces. The spaces were present in broadly the same period and involved similar organizations, but often in different roles and with different practitioners. When we would use the general definition of soft spaces set up by Allmendinger et al. (2015) not only the first space, but all three spaces could be defined as a soft space whereas they all have fuzzy boundaries and are a way to collaborate with multiple actors on the regional level of the southern Randstad. Yet in these three different spaces very different approaches were enacted representing a spectrum of harder and softer approaches.

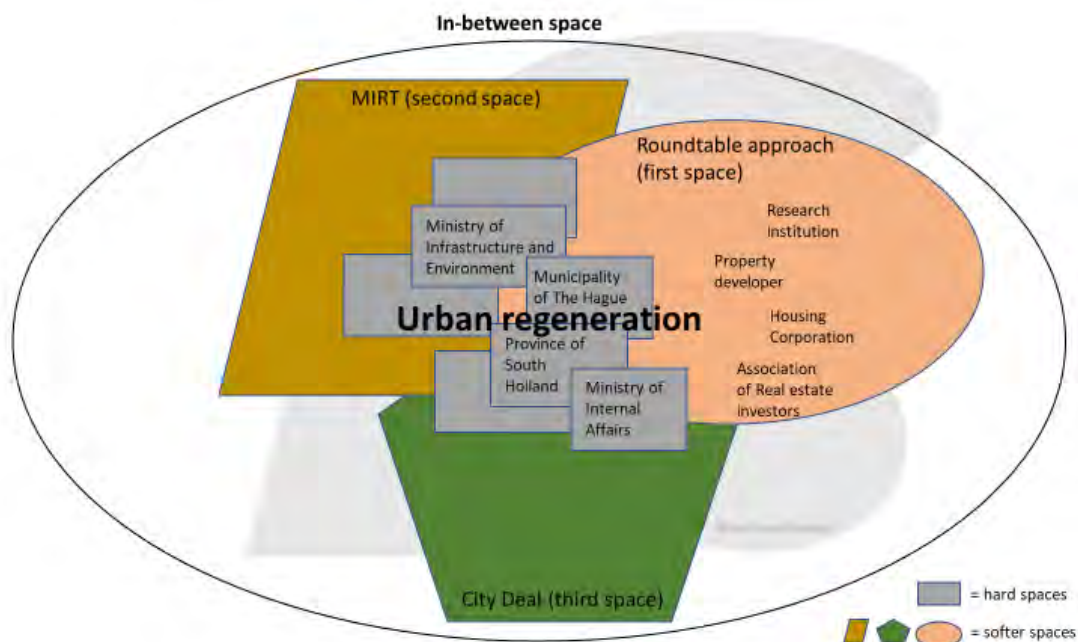


Figure 2. Visualization of the multiple harder and softer spaces for the case of Urban regeneration (source: authors' own illustration).

Roundtable approach (first space)

The Ministry of Internal Affairs and the province of South Holland offered each a facilitator to guide the collaborative process. They selected five themes for pilots employing a so called ‘table-approach’.

The tables were asked to illustrate the obstacles they experienced and were encouraged to suggest creative solutions for their theme. For each table an independent chairperson with a private, social or academic background was appointed. A civil servant from one of the involved public organizations was assigned to support him or her. The chairperson got a list of possible participants with diverse backgrounds but was also stimulated to invite participants from his or her own network. Next to this, people were able to invite themselves to the table. The process was open to everyone who wanted to join, as long as they (1) had something to contribute in solving the problem, (2) were able to organize themselves and (3) were open to reflect on their own agenda and interests. With this the conditions for a new soft space were born. At first mainly associations and platform organizations joined, but during the process more individual member organizations and entrepreneurs started to join as well. From September till December 2014 four big general meetings were organized by the facilitators for all five tables to exchange knowledge, get inspired and discuss the theme at hand. The facilitators hired reporters to make notes. People not involved in or committed to the pilots could sit in on these general meetings. In 2015 the approach was organized more loosely and informally and twelve tables became active on a diversity of themes. Each table was expected to deliver a concrete advice, without the format being specified beforehand. Consequently, each table had its own style and pace of working. Sometimes the ‘official’ informal process was overtaken by initiatives from people not committed to one of the tables. An example of such an initiative was ‘p-matching’ set up by three diverse participants that organized local sessions to match possible housing locations and possible investors and developers.

MIRT (second space)

The second space can be considered as the formal collaboration between the governmental organizations that have a history of about twenty-five years in the long-term national government investment program for infrastructural, spatial and transport projects called MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport). It started in the beginning of the 90s under the name MIT as appendix to the Infrastructure fund in the national budgetary framework for only infrastructural and transport projects. To stimulate integrated policies and coherence in regional investments in 2008 it was broadened to MIRT by adding also spatial projects. Through the years MIRT became an institutionalized way of collaborating. The content of the program is described in an annual MIRT project book, which is presented to the parliament on the third Tuesday of September each year. These projects are based on regional strategic agenda’s and have a fixed sequence of steps in their development: MIRT-research, MIRT-exploration and MIRT-plan. The way of working is described in the MIRT playing rules. Decisions about the course and finance of the projects are made once or twice a year in an administrative gathering per region (BO MIRT), like the Southern part of the Randstad, where all involved ministers, deputies and aldermen come together. These gatherings are carefully prepared by civil servants from the involved public organizations and are directed by the Ministry of Infrastructure and Environment. Because of the institutional approach this collaborative space is highly influenced by hard space characteristics. In 2014 the ministry accepted the downsides of their ‘harder’ approach, which was considered to be too rigid, time-consuming and bureaucratic for tackling the increasingly complex regional problems and the growing amount of involved actors (MIRT, 2016). A program to renew or ‘soften’ the approach of collaboration was launched with a broader view on problems, involved parties and possible solutions (MIRT, 2016). This was supposed to pave the way for the soft space approach in the first space.

City deal (third space)

At the same time in 2015, three ministries presented an Urban Agenda to strengthen the economic growth, innovation and livability in Dutch cities as catalysts of the national economy (Ministry of Internal Affairs, Ministry of Economic Affairs and Ministry of Infrastructure and Environment, 2015). This Urban Agenda is executed through ‘City Deals’ on important themes for transition. These deals are concrete agreements between public, private and social organizations on solving urban problems,

but also on learning from new ways of collaborating. Originally the private and social sector was supposed to be leading and the public sector was supposed to be facilitating (PBL, 2017). In practice, however, all sectors took their equal responsibilities. One of the deals made was the ‘City Deal Building and Transforming Inner-cities’ (Binnenstedelijk bouwen en transformatie). In the beginning of 2016 the City Deal was signed by seventeen organizations in the Southern part of the Randstad and a third collaborative space was born (City deal, 2016). The organizations committed to the common goals specified and for each organization their contribution to the goals was made explicit. Important in this City Deal were the seven municipalities that selected a pilot area and had to be open on the real-estate interests and investments. These pilots were partly based on the results of the first space. This third space was characterized by many soft space elements, however some elements were slightly ‘harder’ when the governmental organizations involved were called on their constitutional tasks.

The experienced value of the first soft space approach

The recognition of the complexity of the problem made that the initiators explicitly chose for a new, informal and improvisational soft approach in the first space. The respondents were very well aware of the fact that they needed different actors across usual and unusual sectors and levels to find solutions. The initiator from the Ministry of Internal Affairs stated about this:

“We wanted the collaborative process to become a festivity which is fun to contribute to, but we decided that it could not be a governmental party, like it mostly is on themes like infrastructure and water management. In the housing sector it are organizations outside the government that develop and create. We invited the private sector at the first meeting already. I remember the meeting still very well. The whole venue was packed. We were nervous whether private parties wanted to join, but we had no doubt that this was the right approach for dealing with our housing problem” [Respondent 20]

A right-hand man of a chairperson from the housing field emphasized the importance of the diverse disciplines and actors in this approach to solve the complex problem:

“Actually, I didn’t want to speak to people from ‘housing’. If you want to change something, you need other actors. That is why this was such a good process. With our group we combined accessibility, mobility and housing and translated an international guideline for transit-oriented development” [Respondent 8]

During the meetings many surprising and spontaneous encounters happened that would otherwise not have taken place:

“At a certain point I walked around on a very vague meeting and I bumped into someone that is the exact opposite of me. A very entrepreneurial type. We started talking and before we knew, we were making exciting plans. I would have never met a person like him, if these meetings were not organized” [Respondent 17]

However, participants did have to get used to the soft approach as a respondent from the institutional investors association for real estate illustrates:

“At a certain moment we were asked by a director of a housing corporation to join. He knew that we are a very active organization. I hesitated but said yes. And then I arrived in a chaotic setting with all sorts of enthusiasts. At first it gave me an awkward feeling. I wondered who was participating in what role. It seemed to be mainly people that put themselves forward. Sometimes voluntary and sometimes paid for. This is not how we are used to work. It was a mix of discussions, working groups and cross connections. And in the midst of this multiplicity I thought: we are going to do our own thing and we made a ‘reversed bid book’ to show what institutional investors do and want” [Respondent 2]

Since it was an experimental approach some tables delivered the expected advice, some came with unexpected outcomes and some did not come to results at all. Yet, the respondents at large signaled to be satisfied with the results of the soft space approach. Compared to classical approaches this approach was less expensive and produced a greater variety in results. However only few respondents

oversaw the variety and upon reflection some suggested that the more fluid or indirect outcomes were most impactful. A participant of the housing corporation explained:

“This process generated a lot of ‘side-effects. Usually we don’t have the time to explain the way our world and our systems work to each other, but in this collaborative format we had. The setting made it possible to talk about everything and we knew that it would not out on the streets the next day. This helped adjusting the traditional images of each other. It was probably not aimed for beforehand, but it created the relationships among the organizations we can now draw upon in subsequent engagements. I find participating in these processes much more effective than attending conferences. I experienced it as a gift and learned a lot” [Respondent 18]

The experienced value of in-betweening

The aim of all three presented spaces was to try and create a breakthrough in the complex regional problem of the stagnation of building new dwellings in inner-city areas. Yet, most participants were unaware of the multiple spaces active around the same problem:

“It was only after quite some sessions that I understood there is MIRT [second space]. I had the impression that it was mainly a search for money, but I had no idea what was going on there” [Respondent 2]

During the interviews and focus group the respondents expressed a strong need for an overview of spaces, their interrelationships and their link to the problem. The few respondents that did oversee and exploit the interactions between the different spaces experienced a deeper and more sustainable impact:

“To prevent fragmentation we [first space] have to be part of MIRT [second space] and we have a strong relationship with the City Deals [third space]. We use each other’s products. That gives my effort an added value and functions as a multiplier of my work. I have no doubt that my dedication was worth it” [Respondent 17]

One of the initiators of the ministry of Internal Affairs also described that the first space made the start of the third space easier:

“The signing [of the deal in the third space] was in my last working week at the end of march in 2016. With the help of the ‘Watertorenberaad’ as an intermediary organization we called everyone with the question whether they would sign. They could sign up with commitment or as a sympathizer. They all chose for the first. That was the result of the initial collaboration [of the first space]” [Respondent 10]

And one of the chairpersons used the relation between the first and second space:

“The connection with MIRT [second space] made it a lot easier for me to informally contact administrators and civil servants from the national level” [Respondent 1]

Several participants of the first soft space actively searched for legitimization in hard spaces by involving representatives of harder spaces at milestone moments or by referring to formal documents:

“Sometimes I use a line from the coalition agreement, not because of that line, but because I need a connection to legitimate our efforts and investments” [Respondent 20]

Some were surprised by the impact the connection with hard spaces had:

“It is actually a gigantic success that the Provincial Council decided to largely adopt our guideline for transit oriented development as a starting point for all conversations with the municipalities about inner city plans. And next to this the examples that we collected lead to an accepted motion in the council of the municipality of The Hague to evaluate their parking policy and start a pilot to build in higher density with less parking places” [Respondent 8]

And a participant from the housing corporation described the relevance of job rotation between the facilitator of the province of South Holland and a colleague from the housing corporation to better understand the institutional context. She also observed the softening of the province as a hard space stimulated by their role in the first soft space:

“Before I participated I had strong doubts about the province as a valuable administrative body. That image totally changed. They performed a beautiful role in-between the municipalities almost without using power or politics. I think they can profile themselves much more as an intermediary organization. This role was harder to play when the two bigger cities of Rotterdam and The Hague were involved, but next elections I am going to emphatically vote” [Respondent 18]

And finally the respondents experienced that being transparent on their own interests and role helped in making realistic connections between spaces:

“My face is associated with the national government. As if I can represent all these interests and worlds. Now, I am much more precise in what people can expect from me and it works” [Respondent 22]

In these positive experiences we can unravel some productive practices of in-betweening (see figure 3 for a visualization) like stimulating informal and verbal contact, stimulating spontaneous encounters at meetings concerning the regional problem at hand, involving representatives of hard spaces at milestone moments in soft spaces, adjusting historic images of the different organizations by taking time to really get to know each other’s world and systems (for example through job rotation), being explicit about the own role, using intermediary organizations like the province and the Watertorenberaad to connect different spaces, using the products and outcomes of the one space as a starting point for the other and embedding ideas through guidelines that can be politically adopted in hard spaces. These practices of in-betweening could be perceived as ‘micro practices’ responsible for ‘macro breaks’.

The experienced struggle of in-betweening

However, the respondents also expressed frustrations about the lack of interaction between the multiple harder and softer spaces. There was no explicit strategy for connecting the different spaces. As a chairperson noted:

“In my opinion we were finally doing something really valuable, but from June 2015 everything was focused on the City Deals [third space] instead of our tables and experiments [first space]. I didn’t get feedback from the administrative gathering of MIRT [second space] and we were not involved in the selection of the cases for the City Deal [third space]. The different parts seemed to work at cross purposes.” [Respondent 13]

Her righthand man explained why they were struggling themselves as well to make connections with the traditional hard spaces:

“The products that we delivered at our table [first space] had to be useful for the city councils [hard space], but we found it hard to act strategic, to use the appropriate language and to legitimate our results” [Respondent 8]

A participant from the ministry of Infrastructure and Environment was disappointed about the way the results of the first space were presented in the second space and therefore had less impact on the administrative level:

“In my opinion we didn’t fully exploit the label of MIRT [second space]. We didn’t succeed in having a true conversation on urban densification. It was presented under the heading of ‘international competitiveness’, but it drowned under that heading” [Respondent 22]

The initiator from the Ministry of Internal Affairs complained:

“Everyone is responsible for its own delegation, but the fact that the departments of spatial planning and mobility were involved in MIRT [second space] and the departments of housing in our process [first space] didn’t help” [Respondent 20]

One of the chairpersons was dissatisfied by the level of integration:

“Because of the separations between the spaces and the fact that we didn’t develop an integral perspective on urban regeneration. There were no moments of integration. You have to have the guts to let the chairpersons [of the first space] sit down at the table of MIRT [second

space] to present the red lines. I would have taken responsibility for that. Now there was very few interaction. We certainly would have lost energy if we had to comply with the structure and formats of MIRT, but there are other ways to connect” [Respondent 1]

During most interviews the respondents expressed concerns about the embeddedness of the soft space approach, which turned out to be not self-evident:

“I am worried about the follow-up and embeddedness of ideas [of the first space]. We tried to incorporate the innovative instruments in the city deal [third space], but they were not open to experiment. We had to start the discussion all over again” [Respondent 22]

In almost every interview it was stated that the success of the first soft space relied on the ‘people’ and the continuity of their involvement. They also noted that the different spaces needed different personal styles and repertoires as the initiator from the province put it:

“The MIRT process [second space] and the process around the initiatives [first space] are completely different settings and thus we needed different people. The way of working has to suit your personal style. I have really thought this through when I asked possible participants to join” [Respondent 21]

During the conversation in the focus group, the participants concluded that not every style and repertoire was valued and exploited in every space and that stimulating a mixture of styles and repertoires would have helped in better connecting the spaces. For example, styles attracted and activated in the second space could have helped to increase the administrative relevance of the first space. Styles attracted and activated in the first space could have helped to shake up the routines and playing rules in the second space. A participant from the private sector said:

“I wouldn’t be afraid of the presence of the people from MIRT [second space]. Of course, it are fixed-role persons. It would easily feel like you draw outside the box, but that is the point of mixing these styles.” [Respondent 17]

Some practitioners explicitly functioned as in-betweeners and were seen as crucial to the success of the soft space:

“A private and social participant said to me: ‘you have to be in between, then we feel safer. It helps when someone can be a neutral mediator and moderator. Someone that builds bridges, guides the conversation and formulates issues’. No one wanted to be in this position, but I learned a lot and increased my network, gained more understanding and got a stronger profile” [Respondent 7]

The in-between position was not easy to fulfill and the respondents raised the need for more specific individuals explicitly fulfilling that position:

“The facilitator of the Ministry of Internal Affairs was a strong connector. He has an enormous network and is an innovator, but even he had to drag and push to make things happen. The national governmental role was in my opinion too much depending on him alone. I think we should have made that line stronger and organize backing for him” [Respondent 22]

As a consequence of the struggles of in-betweening, the soft space approach of the first space that was largely considered a success from within the space itself, was less recognized across the spaces and therefore less embedded. However, in these frustrations and regrets possible practices of in-betweening can be derived. For example: Developing an integral perspective on the regional problem with input from all spaces, stimulating overlap in participants and key agents across spaces, naming explicit in-betweeners that take care of the connection between spaces, combining participants with different styles and repertoires in one space that have affinity with repertoires in other spaces, investing in a common language to discuss in-between topics, communicating about the successes of the different spaces, knowing and using the right headings that are important in another space and involving participants from other spaces in decision-making.

The conditions for in-betweening

Why did they not perform these practices? The respondents explained that the co-existence of the multiple harder and softer spaces made regional planning more difficult. It resulted in role diffusion and uncertainty about the own position and approach. The respondents felt discomfort, unease or awkwardness when switching between spaces. Although they were mostly unaware of the underlying fields of tension that caused this feeling, in reflective conversations several tensions were defined. For initiators and directors the most pressing tension was ‘protecting a space to be able to be innovative’ versus ‘connecting it to other spaces to be able to spread innovation’. The fields of tension experienced in the differences of approach between the spaces were for example ‘monitoring results according to agreements (central in the second space)’ versus ‘creating energy for a movement and unforeseen results (central in the first space)’. Or ‘stimulating big gestures and decisions to solve this urgent problem (second space)’ versus ‘taking small steps as part of a new approach to unravel the complexity (first space)’. A tension experienced in the different roles performed in spaces was ‘fulfilling a directing role in the hard(er) space of the province and MIRT’ versus ‘fulfilling a facilitating role in a soft space. Fields of tension experienced in the timing between spaces were ‘following the pace and planning of the own space’ versus ‘adjusting the pace and planning to important moments in other spaces’. Or ‘stopping a soft space that is followed up by another space’ versus ‘letting a soft space run parallel to another space to keep on stimulating innovation’.

There were many more fields of tension tangible in the fabric between spaces and the respondents had their own ways in dealing with them. The regional initiator choose to protect the first space against the hardness of the second space:

“I didn’t want to bother an energetic arrangement with the rules and regulations of the other”
[Respondent 21]

The director of the Ministry of Infrastructure and Environment involved in the second space choose to not become involved in the first, but felt the downsides:

“If I would have intervened [in the first space], then I would have done it in a traditional way, but the consequence of not intervening is that I now have no control on the next steps”
[Respondent 19]

The initiator of the Ministry of Internal Affairs made futile efforts to connect the first space to the second space:

“I really had to push to bring this beautiful example [first space] to the attention of the administrative table [of the second space], but it didn’t last” [Respondent 10]

Judgements about both sides of the tension and corresponding spaces made it harder to equally value both sides and stimulate a ‘both/and’-approach. Most participants assessed the second space by its characteristics as a hard(er) space and also criticized it like that:

“MIRT truly is horrible. Sometimes there are even thirty civil servants around one table to prepare the administrative gathering. All the speeches are ratified beforehand. My minister experienced it as a puppet-show” [Respondent 20]

“MIRT to me is comprehensive and complicated. They work with complex instruments and cost-benefit-analyses, but hardly raise ‘why-questions’ to talk about the heart of the problem”
[Respondent 15]

Participants also illustrated that the way of working in this second harder space, being the most historical and dominant space, made people fall back in their traditional reflexes and choose the one side of a tension over the other. The director of the Ministry of Infrastructure and Environment explained the difficulty to soften this space and stimulate spillover effects:

“I wanted to break through the culture of routine and formality in MIRT [second space]. But it sometimes felt useless to try. Our measure stick is still too much focused on the professional preparation of meetings, which is constraining personal involvement. All our ambitions to work differently are prohibited by the fact that we have money and then our traditional

accounting lines become dominant again, what makes it harder to be an equal partner in collaborations” [Respondent 19]

In the above some less productive in-betweening practices can be recognized when neglecting the tensions or explicitly choosing one side or space over the other: focusing on the rationale of one’s existence instead of the rationale of the regional problem, postponing involvement until things get more concrete for decision-making, defending the value of a soft space by explaining instead of experiencing, bypassing hard(er) spaces, applying the playing rules of the one space to the other, opposing to another space, not following up on earlier connections or even continuously separating the different spaces out of fear for slowing down innovation or decision-making. Making practices of in-betweening productive made a strong appeal to the competences of the respondents. The initiator from the Ministry of Internal Affairs deliberated:

“I wondered what could I have done differently? The label of MIRT and the renewal of MIRT was not recognized in my own organization. It was ‘not invented here’” [Respondent 10]

Having difficult conversations to address tensions was part of these competences that some tried to avoid and some found challenging:

“I feel challenged to guide tense conversations and find it fun to do. You have to feel the tension in order to be able to move” [Respondent 15]

One participant explicitly tried to increase the tension to break through stalemates and experienced resistance:

“On the basis of accessibility we explored new locations for housing. Until then no one dared to discuss sacred cows. The province got pretty nervous about this and people reacted with ‘What were you thinking to name specific locations and numbers?’ It was difficult to talk about, but conflict can help to innovate” [Respondent 5]

The secretary of the first space explained that dealing with tensions required opposing competences:

“You have to be able to deal with chaos and structure, you have to be able to move along and to set directions and to wait and speed up the pace” [Respondent 23]

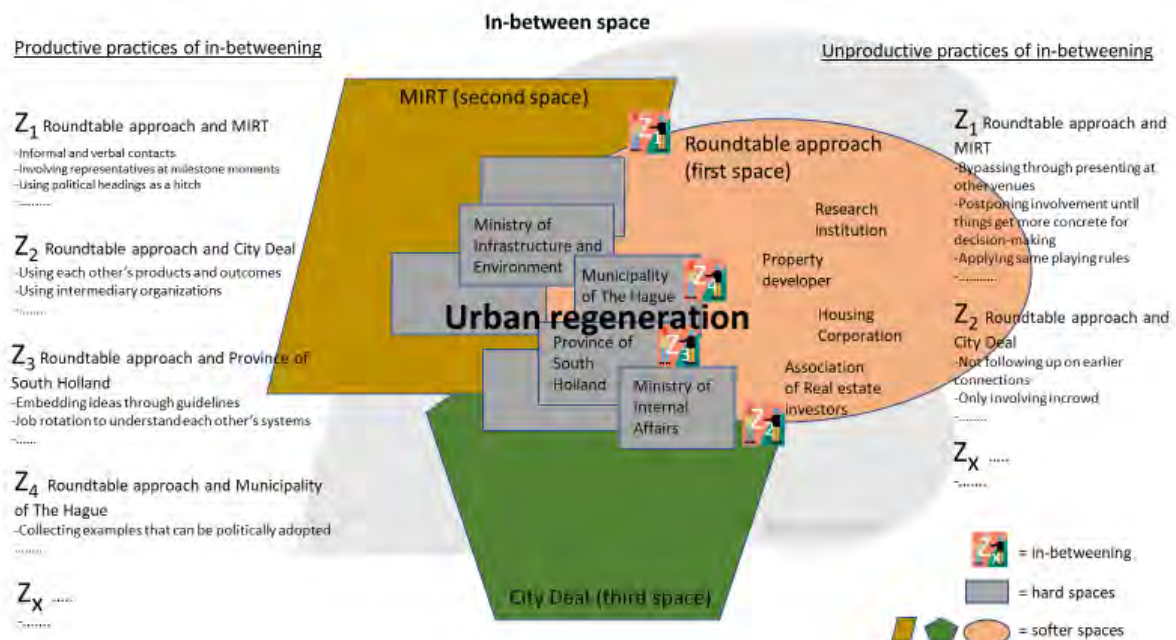


Figure 3. Practices of in-betweening for the case of urban regeneration (source: authors' own illustration).

Considering the above, four conditions for in-betweening can be distinguished. Firstly, participants have to have an overview of the different spaces related to the regional problem at hand and have to

consider these multiple spaces as part of one reality. If participants are not aware of the interconnections they cannot build bridges. Secondly, the different spaces have to be understood and appreciated for their positive strengths as equally valuable and complementing approaches. If participants do not value a space they are not motivated to connect with that space. Thirdly, also the different personal styles that are performed in different spaces have to be considered as equally valuable. If participants are not valuing different styles they will not be able to use each other's strengths and talents. And fourthly, as a consequence, participants have to be able to deal with differences and inherent tensions. If they are not able to, they will easily fall back on unproductive in-betweening practices limiting the impact of soft spaces.

5. Conclusion and further research

We used the concept of soft and hard space to study the collaboration across organizations in dealing with complex regional problems. We argued that soft and hard spaces are not opposed to each other in separate realities. We observed an accumulation and variation of harder and softer spaces around the same regional problem. The case of urban regeneration showed that hardness or softness was not so much defined by the geographical boundaries (administrative or functional) and statutory responsibilities, but mainly by the (in)formality of the collaborative approach. It also illustrated that new, informal approaches and facilitating roles by the public sector do not replace more familiar directing roles and formal approaches: softer and harder spaces consequently and simultaneously co-exist. Explanations for the contemporary limited impact of soft spaces were found in the dynamics between the multiple and divergent spaces. We showed there is merit in focusing on the specific characteristics of the in-betweenness and that more attention is needed for the 'institutional work' in-between harder and softer spaces. We illuminated many 'micro practices' of in-betweening that practitioners draw upon. Considering these micro practices helps to better understand the effects of the whole of spaces. We could bring these fine-grained practices out because of our in-vivo involvement and tacit knowledge. Considering the work in-between, the micro practices may lead to macro breaks in impact. However, the tensions between the different spaces complicate the work in-between and can also lead to unproductive practices. The tensions that arise from the in-between dynamics are hard to manage, but at the same time offer potential for change and innovation.

Further research is necessary to investigate how to act upon these in-between dynamics. General and familiar intervention tools and methods are often not useful, because they are not set up for the specific context and practitioner using them. Hajer and Laws (2006) use the term ordering device to explain how practitioners structure their reality to get a grip on their daily work and deal with the dynamics. They write that the analytic task for studying practices, is to develop concepts that can mediate between actors and structure. Orderings can help doing this. Also, Halffman (2003) explains that ordering stimulates interaction and according to Moor (2012) we need to disintegrate to be able to survive in complex in-between settings. This resonates with a performance perspective that focusses on the 'work' that is being done to create order and stability in inherently unstable situations (Hajer & Pelzer 2018; Hajer, 2009). We suggest that further research is needed to find orderings in the multiplicity of harder and softer spaces, orderings in the different styles and repertoires for in-betweeners and orderings in practices of in-betweening that allow dealing with inherent tensions between spaces and styles. We suggest to involve reflective practitioners to stimulate a deeper understanding of the work in-between on the one hand and to help practitioners reflect on their work in-between on the other hand.

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Metropolitan Governance in Mexico: The Institutions

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Abstract: Metropolitan Areas in Mexico are the result of the process that has led world population in general and of Mexico in particular to settle in urban areas. However, citizen participation in metro planning processes has been uneven through time, particularly for vulnerable groups. Therefore, this article analyses the relationships between local governments and the actors of civil organized society using as categories for the analysis, modes of governance considering: key decision makers, public-private relationships, and the key instruments that govern the processes of planning the metropolis. A three-step analysis is conducted: 1) Descriptions of context and background; 2) Revisions of adopted laws; and 3) Participation of organized groups of society in the decision-making process for metropolitan planning. This "chain of evidence" is used to explain two case studies in a narrative sequence: Guadalajara and Monterrey metropolitan areas. The research structure also allows characterizing some common stages of planning processes in both cities ranging from State Governments led planning, to the appearance of the federal Government in urban planning arena, to the fragmented planning by municipal governments of the metropolitan areas, to the emergence of coordination and municipal association, to the reappearance of the federal government in the metropolitan planning arena.

Keywords: Metropolitan governance; metropolitan planning; Mexico

The Process of Urbanization and Metropolization in Mexico

While the 20th century witnessed the development of urban Mexico, with the concentration of the country's population in settlements larger than 15,000 inhabitants (Table 1), the 21st century is characterized by a process in which these concentrations are articulated, and consolidated into large metropolitan areas (Table 2).

Population growth and rural-urban migration have led to urban sprawl and irregular development, which often exceeds the capacity of municipal institutions to adequately manage metropolitan territories; consequently, the metropolises risk becoming chaotic and out of control centers. In addition, urban growth has damaged the environment, as the invasion of cities into lands with high agricultural value, as well as the pollution they generate, both in the air and in the water, are evidence of the negative environmental impact on the process that has led the world population to concentrate in cities. This lack of capacity to manage metropolitan areas requires better governance modes and better institutions for citizen consultation and participation.

The urbanization process in Mexico has gone through several phases (Unikel, et al., 1976). The process was relatively slow in the period between 1900 and 1940, particularly in the first two decades due to the Mexican Revolution. This period of slow but steady growth, both in the countryside and in the cities,

generated a regional polarization of the country, with Mexico City, Guadalajara and Monterrey as the main poles. In the period between 1940 and 1970, the growth rate increased significantly due to a decrease in the mortality rate combined with an increasing migration, particularly of young people from the countryside to the city. The population growth in the country decreased at rates below 2% in the 1980s, with a consequent stabilization in the percentage of young people with the general population, which has placed great pressure on the government, since it must provide more jobs, facilities and services in urban areas. In the seventies, more than half of the population was already concentrated in urban agglomerations of more than fifteen thousand inhabitants, with the rest of the population settled in small settlements scattered throughout the national territory (Table 1).

Year	Population	Annual Growth Rate (%)	Urban population > 15,000	%	Non-urban Population < 15,000	%
1900	13,607,259		1,434,423	10.54	12,172,836	89.46
1910	15,160,269	1.09	1,782,911	11.76	13,377,358	88.24
1921	14,334,096	-0.56	2,085,117	14.55	12,248,979	85.45
1930	16,552,644	1.45	2,891,410	17.47	13,661,234	82.53
1940	19,649,162	1.73	3,927,694	19.99	15,721,468	80.01
1950	25,779,254	2.75	7,198,360	27.92	18,580,894	72.08
1960	34,923,129	3.08	12,746,685	36.50	22,176,444	63.50
1970	48,381,547	3.31	21,556,568	44.56	26,824,979	55.44
1980	66,846,833	3.29	36,135,767	54.06	30,711,066	45.94
1990	80,840,622	1.92	46,343,352	57.33	34,497,270	42.67
2000	95,753,396	1.71	58,311,557	60.90	37,441,839	39.10
2010	110,991,953	1.49	69,049,369	62.21	41,942,584	37.79

Table 1. Population in Mexico (Urban and Rural) Source INEGI.

Despite the decline in the rate of growth, during the 1980s the population growth would be enough to generate a city of 1.4 million each year; and in the next 2 decades a city of 1.5 million per year. The demographic data also show a pattern in the distribution, since there is a trend towards concentration in urban settlements, that is, those greater than 15,000 inhabitants (Unikel et al., 1976 and CONAPO, 2012). But there is another trend: the physical articulation of localities that originally worked independently, but which are now integrated into a single unit, in such a way that they add up to a population of 50,000 inhabitants, whether it is formed by a locality of a municipality or by localities that are located in two or more municipalities that show a high degree of physical and functional integration (SEDATU-CONAPO-INEGI, 2018). Considering the previous criterion, by the year 2000, more than half of the Mexican population resided in a metropolitan area, and by the year 2010 it was already 56.80% in 59 metropolitan areas (Table 2).

Of these metropolitan areas, there are three which in 2010 concentrated a quarter of the country's population; one of them, Mexico City, reached one million inhabitants in the 1920s, and the other two, Guadalajara and Monterrey also did in the 1960s. These three monopolized - even before reaching a million inhabitants, not only the attention of the municipal authorities that composed them, but also that of their states and of the federal government; the first for being the capital of the country, and the other two for being the capitals of their respective states. For this reason, subnational governments focused

on their development since the beginning of the 20th century, and hardly considered areas outside of them at the time of making decisions for the introduction of facilities and infrastructure, because at the same time that this trend was taking place, there was a great dispersion that included more than 5,000 settlements under 15,000 inhabitants in the national territory even before the 1960s (INEGI). However, local or municipal governments are embedded in a federal system, and metropolitan areas must be addressed in that context.

Category	1980	1990	2000	2010	2015
Metropolitan Areas	26	37	55	59	74
Metropolitan municipalities & delegations	131	155	309	367	417
States	20	25	29	29	32
Total population (millions)	26.1	31.5	51.5	63.8	75.1
Metropolitan population (% of Total)	39.1	38.8	52.8	56.8	62.8

Table 2. Metropolitan indicators. Source: SEDATU (2018).

The federal system that structures intergovernmental relations in Mexico comprises 32 federal entities, including the recently created Ciudad de México (CDMX). These sovereign units are the foundations of the federal pact; the Mexican Constitution establishes three orders of government: federal, state and municipal, without the possibility of an intermediate level between them, that is, a regional or metropolitan government. The Constitution establishes two orders of sovereignty: the federation and the states. The municipalities are free and autonomous but not sovereign, leaving the municipality as the basic cell of a political, administrative and territorial structure. Municipal governments can collect taxes, charge for subdivision rights of land and infrastructure, receive share of taxes charged by the states and the federation, and charge as consideration for water services, drainage, garbage collection, cemeteries, parks and maintenance of green areas. In the analysis developed in this study, the sovereignty of states and their capacity to formulate and implement policies are fundamental for understanding the structural framework in which metropolitan planning is carried out.

Study Analysis Criteria

Urban and territorial planning has been implemented through time in different ways in public policies throughout the Mexican territory. However, not all states have experienced and implemented it with the same resolve; some states have a relevant history in planning issues, while others simply had not dealt with it until the enactment of the General Law of Human Settlements in 1976. The most experienced states have achieved success stories but also failures, which should serve as a reference to inform those who are just following federal guidelines in this issues, about the pros and cons of planning policies and instruments. That is why it is important to describe and frame the contexts that have led to the development of planning at subnational level.

This study focuses on a recent trend in urban and territorial planning in Mexico, which is the coordination of state and municipal areas in the decision-making processes in metropolitan areas of the country, from a governance framework.

Governance is a term widely used today, which originated in the discipline of political science. It considers the participation of various social groups in conjunction with government action as a fundamental component, and emphasis is placed on the greater capacity for decision-making and on the

growing influence of non-governmental actors in matters previously reserved for the government (Becerra Mercado & Reyes Rodríguez, 2014). The term can be found in association with diverse planning issues, such as: environmental governance, water governance, good governance, or urban governance, to name a few. Urban governance is the most meaningful in the development of cities, and the concept has been an initiative of the UN-Habitat program as a campaign to empower citizens, to facilitate "good governance" and social inclusion (UN-Habitat, 2002). In large cities, urban governance has recently spread in coverage, to even consider "metropolitan governance", a very relevant concept, given the need for inter-municipal coordination, but above all, because of the urgency for participation of the groups of the organized civil society.

In the available literature, a wide range of debates about governance can be found; the vast majority grants three essential variants to the concept: 1) governance as opposed to the term government; 2) governance as a set of norms; and 3) governance as an integrated category of analysis in the regulation of issues of public interest, that is to say, as an interface between government, market and civil society (Henning & Heinrichs, 2011). The latter is the definition considered for the preparation of this study.

Governance includes two fundamental elements: normative and analytical. Governance as a normative concept can provide guidelines and norms for good planning, and as an analytical concept, it can facilitate the reflection and categorization of the reality of planning, particularly the mode of governance.

Henning and Heinrichs (2011) propose, based on Motte (1996), four categories for the analysis of governance: actors, relationships, institutional framework; and the decision-making process itself. With regard to the actors, it is essential to define who participates in the planning process, whether they are individual or collective actors, but above all, their roles, interests, resources and means of financing must be recognized. The relations are associated with the formation of coalitions or opposition fronts that can either become convergent interests or trigger a conflict between the different actors. The institutional framework provides rules of conduct, and enables the identification of institutions that prevail in both social and political contexts. Finally, the decision-making process is fundamental in the analysis, including: the effectiveness of the different actors to balance their interests (the state, the private sector and civil society); the identification of the mechanisms of social interaction that regulate the activities of the actors (both horizontally and vertically); and even the connection with those actors who are not directly involved in the process.

Urban and territorial planning has been influenced by the processes of law and policy making, particularly in the way in which diverse actors participate. Therefore, considering the approach of the modes of governance determined by Henning and Heinrichs (2011) as described before, a three-step analysis is proposed to be applied to two case studies: 1) descriptions of the context and background; 2) the revision of the approved laws; and 3) the membership of the consultation bodies involved in planning processes in the states in general, and in the metropolitan areas in particular, so as to describe the real possibilities of participation from the constitution of these participation/ citizen consultation bodies, and the guidelines of the approved laws. In order to organize this analysis, it was considered as a script for the development of the narrative the proposal of phases of Urban and Territorial Planning established by Demerutis (2005), which is based on the intergovernmental relations of the federation, the states and the state municipalities. The phases are listed below:

Phase 1. State experiences in urban planning: The planning of capital cities and the abandonment of small municipalities (1970-1975).

Phase 2. Federal revolution in urban and territorial planning (1976-1982).

Phase 3. Resistance by state governments to municipal planning by federal decree (1983-1992).

Phase 4. Municipal governments responsible for planning and fragmentation in decision-making in metropolitan areas (1993-2007).

Phase 5. Metropolitan coordination: municipal governments in conjunction with state government and governance (2008-2015).

Phase 6: The reappearance of the federal government in the arena of urban and territorial planning (2016- present).

Two case studies are comparatively approached using the proposed method of analysis, given that by their nature they can be paradigmatic to understand the situation of coordination between municipalities in a metropolitan area in Mexico; these cases are the Metropolitan Areas of Guadalajara and Monterrey.

Urban and Territorial Planning in the Metropolitan Areas of Guadalajara, Jalisco and Monterrey, Nuevo Leon

The States of Jalisco and Nuevo Leon have a long tradition of urban legislation dating back decades before the enactment of the General Law of Human Settlements (*Ley General de Asentamientos Humanos, LGAH* or GHLS in English) in 1976, which marked the beginning of the Federal Government into the scope of urban development. Both States are free and sovereign, like the rest of the states of the Mexican Republic. Their government is composed of three powers: Executive, Legislative and Judicial. Their Constitutions grant powers to enact laws to the Legislative Power, which is required to follow clearly defined procedures, in accordance with the Organic Law of the Legislative Power.

There are three metropolitan areas in the state of Jalisco: Guadalajara, Ocotlan and Puerto Vallarta. Of the 7.35 million inhabitants who lived in the state of Jalisco in 2010, more than four million lived in the Guadalajara Metropolitan Area, whose official name in Spanish is *Área Metropolitana de Guadalajara*, which currently consists of nine municipalities: Guadalajara, Zapopan, Tlaquepaque, Tonalá, Tlajomulco de Zúñiga, El Salto, Juanacatlán, Ixtlahuacán de los Membrillos and Zapotlanejo. In the Metropolitan Area of Ocotlán, which includes 3 municipalities (Ocotlan, Jamay and Poncitlan), the population in 2010 stood at 164,256 inhabitants. In the Metropolitan Area of Puerto Vallarta, an inter-state metropolis, 379,886 inhabitants lived in 2010 in two municipalities: Puerto Vallarta in Jalisco, and Bahía de Banderas in Nayarit.

In Jalisco, the issue of urban development was included in the public agenda since 1933. Among the principal initiatives, it stands out the requirement that any municipality of the state that included a city with more than three thousand inhabitants, should have a Commission of Planning and Public Works, in order to assist the Municipal Governments with the improvement of urban areas, as well as in the formulation of policies for their development. These commissions would be composed of the municipal president, the councilor in charge of public works, one representative of the merchants (Chamber of Commerce), a representative appointed by the municipal owners of the municipal seat, and an engineer

or expert from the same capital. The members of the Commission occupied honorary positions, for which they received no remuneration. The governor reserved the right to preside over any of these commissions at his own request. The main function of the Commissions was to elaborate and adopt a "master plan" for the physical development of the city.

These collegiate bodies adopted different forms over time but consistently their main function was to provide urban infrastructure for the municipalities, which was effectively performed; however, the issues related to planning and setting development controls were neglected. These oversights would later hinder the implementation of projects for the resolution of large-scale urban problems. It would also represent difficulties in developing master plans for the communities. For example, some of the issues related to transportation planning of Guadalajara are a proof of this lack of care in the planning of the city (Wario Hernández, 1998).

Up until that point, the mode of governance could be considered of the corporatist / administrative type, since the key decision-makers were predominantly businessmen and professionals - both with origins linked to the state government, together with public officials, and whose main objectives were economic growth and the regional redistribution of development with a very pragmatic style of policy-making.

In the State of Nuevo León there is a single metropolitan area, Monterrey; however, this federal entity also has extensive experience in politics for urban and territorial planning.

Valadez Fernandez (1995) categorized the history of planning in Monterrey in five periods, based on actors, planning techniques and legislation: 1) The private sector and planning: 1931-1950; 2) Advisory master planning: 1951-1960; 3) The institutionalization of the master plans: 1961-1970; 4) Consolidation of the legal framework: 1971-1980; and 5) Institutionalization of metropolitan planning: 1981-1990. In short, in the first years of planning in Nuevo León, from the 1930s to the 1970s, the private sector played a leading role, and later became an advisor to the state government, promoting the development of master plans for the city of Monterrey.

In the case of the state of Nuevo León, urban and territorial planning appeared on the agenda of the state government in 1927. By that time the goal was to to implement basic physical changes to the city, such as the widening of pre-existing roads and the construction of new roads, of which the state government was responsible in conjunction with the private sector.

Phase 1: State experiences in urban planning: Planning of capital cities and the abandonment of small municipalities (1970-1975)

This phase corresponds to policies adopted during the period prior to the publication of the General Law of Human Settlements (GLHS). Although the two states studied displayed a strong interest in urban and territorial planning for human settlements development controls in the period from the 1930s to 1970, this section emphasizes what happened in the immediate years before 1976, just when the capitals of both Jalisco and Nuevo León exceeded one million inhabitants and showed the features of a metropolitan area.

In both cases the planning of the capital city had been the main objective of the policies of the state governments. That is why this phase could be understood as the policy of "Plan the capital, forget the small municipalities".

In both states there was a strong participation of the private sector in conjunction with the state government, so that a type of corporatist governance existed, in which public-private partnership projects predominated for the growth of cities, mainly in the state capital. However, the governors' very strong link with the private sector, rested in the fact that their funding was necessary to implement planning actions. This strong bond, along with the centralist style of governing in the country, resulted in that the laws of planning and urbanization and their reforms were solely initiatives of the governors; in fact, there is no evidence that any local congressman or woman or specific interest groups proposed any amends during this period.

The private sector played an important role in promoting the city development. In Jalisco, merchants and industrialists were part of the commissions for public works and planning, and as members of them, they prompted the municipal government for the development of a master plan. Meanwhile in Monterrey, the industrialists supported the decision to develop a master plan for the state capital that defined the necessary infrastructure works for the metropolis.

In conclusion, planning was practically dictated by the State Executives and their associated businessmen, who with their resources established the guidelines of planning in the capitals. Governance was lead in a corporatist manner, because it aimed at growth, with a public-private agreement in which their partnership projects were carried out through cooperative works.

Phase 2: Federal revolution in urban and territorial planning (1976-1982)

This phase refers to the period between the appearance of the GLHS, published in the official periodical on May 26, 1976, and the following six years. The federal government amended three articles of the Constitution (27, 73 and 115) to provide a legal framework for the new law. During the first year after the GLHS, most states passed new laws on urban development controls. This general law established the basis for planning in the states and for the standardization of a national structure of urban and territorial planning. Following the establishment of this legal framework, each state modified its laws in accordance with its guidelines. Paradoxically with the GLHS, the federal government granted powers -which it didn't have before, on urban and territorial planning of the states, and simultaneously empowered the municipalities as key actors for the development of the cities and the territory. The participation of the three levels of government in urban and territorial planning through the GLHS attends to a principle of concurrence stipulated in the Mexican legislation. Although the federal government interceded for the municipalities, this was greeted with certain reservations by the state governments, resulting in contradictory state legislation sometimes.

The GLHS also included the concept of "conurbation" for the first time, which referred to an urban agglomeration where two or more cities became a homogenous geographical, economic and social unit. As a unit composed of several municipalities, the State executive was responsible for coordinating efforts among the municipalities involved, since in Mexico there are no regional governments. The state plan, as well as the plans for Conurbation Zones, became the first instruments of metropolitan planning in the Mexican states.

Guadalajara was declared a conurbation in September 1978 and Monterrey in 1984, although as explained earlier their size and functions were metropolitan since the 1970s when its population grew exponentially, which made it exceed one million inhabitants.

The GLHS included a requirement of citizen participation in the legislation. The plans of any level had to be presented to public consultation before being published; however, there was no mechanism to guarantee that the observations resulting from the consultation process were included in the Plan, that is to say that public participation was actually symbolic.

In Jalisco, the promulgation of the GLHS prompted the publication of a new Law which had the purpose of adapting to the provisions of the recently promulgated GLHS. However, the bases of the new law were mainly set in past experiences and scarcely in the guidelines of the general law. In reality, municipalities were not entitled to plan, since most of the responsibilities to authorize and plan the cities were left to the State executive.

During this phase the legislative changes generated discrepancies about its contents among the private sector leaders. In fact, they considered these changes a "socialist content of the law", in particular they mentioned that zoning threatened private property. These interest groups also expressed rejection for the granting of powers to local governments and favored a status quo and particularly supported the role of the state government.

This unprecedented situation in the state, represented a kind of startle between the corporatist relations that had prevailed in the state, which rarely questioned the decisions made by the authorities, to a more critical -although cautious- relationship of the various state interest groups.

Unlike other states that adjusted their legislation almost immediately to the promulgation of the GLHS, Nuevo León waited four years to do so. The purpose of the law was to determine the procedures and rules for zoning. It was also responsible for laying the foundations of a framework of attributions for the state executive and the municipal governments in the administration of the plans, but above all, for harmonizing the policy of urban and territorial planning in the state with the GLHS.

The Governor maintained the responsibility of authorizing the state and municipal plans of urban development, including zoning. He also was responsible for planning the metropolitan area, playing the role of coordinator of local governments, the same role he already had as coordinator of the actions proposed by the national plan for urban development. He ultimately acted as a mediator in conflicts between the government authorities and the public over the issues covered by the law and its application.

In this period, although the federal government had set guidelines to follow in the states, in Nuevo Leon, the state government *de facto* retained the attributions of the municipalities, Monterrey included.

In sum, both in Jalisco and in Nuevo León, the coordination of the municipalities of the metropolitan areas was still guaranteed by the state governments, whose interest in what happened in the territory, meant that in practice they were involved in all the planning processes in the municipalities. As for the mode of governance, this had the characteristics of the Corporatist and Administrative modes, because they aimed at growth and redistribution as well as efficiency; they had a pragmatic style and the nature of the public-private relationship was concerted, but at the same time in a competitive environment, mainly due to the emergence of the federal government.

Phase 3: Resistance by state governments to municipal planning by federal decree (1983-1992)

In 1983, the Mexican federal Constitution was amended to establish that municipal governments had the right to formulate, approve and administer urban development as zoning (Article 15). Despite this reform to the Constitution, the elaboration and implementation of the plan were still carried out by the states' governments. In Nuevo Leon, the authorizations of residential subdivisions were made directly in state agencies; something similar happened in Jalisco because although municipal approval was necessary for any development, there had to be a review or "technical advice" from the state executive.

In the municipal reform of 1983, reactions were generated from municipalities claiming their rights to autonomously manage municipal life in general, and the administration of the growth of cities in particular. However, only a few municipal governments were in shape to claim their independence; most of these municipalities were large and rich and were commonly part of the metropolitan areas. This was the case of the municipalities in the metropolitan areas of Guadalajara and Monterrey.

During this period, urban development plans for metropolitan areas were promulgated in both States - although the name referred to conurbations from Guadalajara (1982) and Monterrey (1988). This stage marked the entry of the state government into territorial/ regional planning implementation, but also the lack of resources and capacity of the municipal agencies became evident. At the time of the municipal reforms in the states of Jalisco and Nuevo Leon, only the metropolitan areas were decentralized, and only the municipalities that formed them were granted the responsibilities of urban and territorial planning.

In the state of Nuevo Leon, a new law, granted additional planning responsibilities to the municipalities, but still it reserved most of the planning powers for the state government. Due to this legislation, Municipal planning was strongly debated in Congress; a recurrent concern of the congressmen was the lack of capacity of the municipal governments that were not part of the Metropolitan Area of Monterrey. The congressmen highlighted the existence of a huge gap in urban planning of the time: on the one hand, a relatively new state plan was published as an instrument of planning policy, but on the other, the municipal plans were not executed due to the lack of resources in the municipalities.

In this phase, the coordination was carried out by the state government, which was responsible for the preparation and publication of urban development plans of the metropolitan areas, with the approval of the municipal governments. Regarding the mode of governance, it still had the characteristics of Corporatist/Administrative, since the membership of the consultation bodies was practically the same, as it relied on public-private partnerships through councils in which decisions were shared among organized entrepreneurs and officials of the state government to a greater extent, and municipal to a minor. Although in both states the consultation and citizen participation bodies had the same responsibilities and almost the same membership, it is important to highlight the incorporation, in the case of the Urban Planning Commission of Nuevo Leon, of two Universities of the state, while in Jalisco this still did not happen.

Phase 4: Municipal governments responsible for planning and fragmentation in decision-making in metropolitan areas (1993-2007)

In 1993, the federal Congress approved a substantial reform to the General Law of Human Settlements (GLHS). This law attempted to clarify the need of the municipalities to have the autonomy to decide on

planning and zoning within their jurisdictions. Although municipal governments were assigned to make plans, the necessary resources were not channeled to implement them through the elaboration of specific instruments. This situation resulted in an imbalance between rich and poor municipalities. In most cases, large capital cities -already converted into metropolitan areas, claimed their right to elaborate their own plans and determine zoning; meanwhile, the rest of the urban areas could not plan with autonomy, as provided by state law.

In addition to granting powers to local governments, there is an interesting fact worth noting in this phase: the initiatives for the new legislation were, for the first time in the history of the states of Jalisco and Nuevo Leon, proposals by an actor that was not the governor. In this phase, a new generation of urban and territorial planning policy was proposed, which included a sophisticated set of tools in which the experiences of the states as well as federal guidelines were merged. It included a complete list of zones, the limits of urban growth and the incorporation of strategic planning for city plans. In both cases, the initiatives were presented by congressmen, which broke with the tradition of direct proposals from the governors. This action can be interpreted as a change in the making of policies in the states because it was not only an imposition, but there was a consensus among congressmen and interest groups represented in Congress. There was also a notable concern about regional disparities within the state, which was not so evident in the previous phases and which had also been the product of the rapid growth of cities.

Organized groups of the society took part in the formulation stage of the law, as forums were convened to allow citizens to participate. These forums were organized by the official development committees in both state congresses. It was also the first time that stakeholders expressed their opinion on legislation for urban and territorial planning in a formal document.

The legislation of 1993 allowed municipal governments to finally have the possibility of implementing an official planning process, with which they became responsible for planning within their jurisdiction. The state governments promoted the elaboration of urban development plans in the municipal capitals during 1993 and 1994, but they left the local governments with decision making responsibilities on zoning. While this was an example of power devolution previously granted by the GLHS to the municipal government, the fragmented decision-making in land use became a serious planning problem. The municipal governments had the right to plan and to administer zoning as long as the content of their plans had been consistent with the guidelines established in the state plans, but interestingly, the state governments abandoned their responsibility as regional planners, leaving the full burden of planning to the municipalities.

In this phase, the municipal governments were characterized for exercising their responsibilities independently of the state government; as the state executive forcedly released some responsibilities to locals, as a result, metropolitan coordination was practically minimized. As for the mode of governance, it still had the characteristics of Corporatist/Administrative, since it relied on public-private partnerships, but at the same time a tendency was generated towards the populist mode, since the municipal governments sought to legitimize themselves with their citizens and voters so as to demonstrate its ability to help organized groups with interests in the municipal territory, and municipal-level politicians became key decision-makers.

It is worth noting again the participation of the academy in the consultation bodies in the state of Nuevo León, while in the state of Jalisco this sector continued to be relegated.

During this period, the municipalities took the lead in urban and territorial planning, and although they had a requirement of congruence with higher plans (regional/ metropolitan) these were never published. In the absence of these reference documents, each municipality opted -based on GLHS itself, for generating its own planning policies, generating an atomization of the decisions in this matter.

Phase 5: Metropolitan coordination: municipal governments in conjunction with the state government and governance (2008-2016)

In this phase, the problem of fragmented decisions by the municipalities is recognized, and a metropolitan coordination agenda is proposed in both states. This agenda includes the publication, in the case of the state of Jalisco, of a Metropolitan Coordination Law (2011).

The concept of Metropolitan Coordination appears for the first time in the legislation for planning in the Urban Code for the State of Jalisco. To reinforce the above, in February 2011, the Metropolitan Coordination Law of the State of Jalisco was published, and simultaneously, several articles of the Urban Code were amended and repealed, with which the metropolitan coordination was supported by a specific legislation that at the same time laid the foundations for the future of coordination in the Metropolitan Area of Guadalajara. This law, unique in the country, aimed to regulate the procedure for the constitution of metropolitan areas and regions, as well as to establish the bases for the organization and functioning of the metropolitan coordination bodies from the declaration of metropolitan area or region, the conclusion of coordination agreements and the constitution of coordination instances.

It is important to highlight that the Metropolitan Coordination Law of the State of Jalisco considers three instances of coordination: the Metropolitan Coordination Board (MCB), the Metropolitan Planning Institute (IMEPLAN), and the Metropolitan Citizen Council (MCC).

In Nuevo Leon, the State Congress the lack of inter-sectoral and inter-governmental coordination was acknowledged, as well as the need to respond to the challenges posed by metropolitan areas. Therefore, a new law was passed including guidelines for conurbations, as well as metropolitan and regional areas. According to this law, the municipalities that are part of a conurbation, had to conclude an agreement for the integration of a commission, in addition to the powers and obligations of the municipalities and the state.

The development of the metropolitan coordination institutions analyzed in this phase indicated an unprecedented trend towards the public participation in some decisions, which lead to conclude with two important points: firstly, there is already a process of coordination between the municipal authorities and the state government involved in a metropolitan area that previously did not exist; and secondly, that there is an important tendency towards the opening of spaces to organized citizenship in metropolitan planning processes.

Another key player in the process is the Metropolitan Fund: a national purse for construction of strategic infrastructure and facilities in metropolitan areas, since the year of its creation coincides precisely with the development of legislation regarding this in both states (2008). The amounts provided by the Fund cannot be underestimated; since its creation, in other words, a lapse of 10 years, more than four billion

dollars have been allocated to the metropolitan areas of the country, of which, more than four hundred and fifty million corresponded to the Metropolitan Area of Guadalajara, and more than three hundred to the Metropolitan Area of Monterrey.

In consequence, during this phase the mode of governance moved towards a Pluralist mode, although it still retains its roots in the Administrative/Corporatist mode. If this path follows, it will eventually be possible to make use of instruments such as disputes, mediation and elections or referendums on decisions regarding urban and territorial planning, although the balance of interests and the interactive relationship between the public sector and the organized civil society is still not so clear.

Phase 6: The reappearance of the federal government in the arena of urban and territorial planning (2017-present).

Recently, in November 2016 it was published in the Official Gazette of the Federation the new General Law of Human Settlements, Territorial Planning and Urban Development (*Ley General de Asentamientos Humanos, Ordenamiento Territorial y Desarrollo Urbano*, LGAHOTDU or LHSTPUD) which came to confirm the interest of the federal government in urban and territorial planning issues, and after 40 years, it redefined urban policy, which promotes, among other things, the constitution of deliberative bodies whose objectives are metropolitan coordination and governance. The new policy foresees and reiterates the role of coordinator and supervisor that the state governments should have, unlike the emphasis that the previous legislation had on granting powers to the municipal governments.

In matters of intergovernmental coordination, the new law establishes the need to address issues such as: the right to the city, equity and inclusion, the right to urban property, coherence and rationality, democratic participation and transparency, productivity and efficiency, public space, resilience, urban security and risks, environmental sustainability, universal accessibility and mobility.

The LHSTPUD includes a new definition of the metropolitan area that takes into account the conurbation, but which considers as the fundamental criteria for its conformation its complexity, and its social and economic relevance manifested in a territorial unit. This law also devotes a chapter to the Metropolitan and Conurbated Areas Plans in which the need for intergovernmental coordination is confirmed, but above all, it is important to highlight the metropolitan governance chapter that obliges governments to create two main instances for its management: the metropolitan ordinance commission that must coordinate the formulation and approval of the metropolitan plans, which is a technical instance with the participation of government officials; and also the Metropolitan Development Advisory Council, a body responsible for following up the public consultation and where representatives of the three levels of government participate, along with representatives of legally constituted social groups, schools of professionals, academic institutions and experts in the field, who should represent a majority on the council.

As a result, coordination processes, together with a consolidated governance, allow a new order to be foreseen in metropolitan areas, where intergovernmental coordination (both horizontal and vertical) should prevail, in addition to the increasing participation of representatives of the organized civil society, including the academy, since never before in the phases previously analyzed there was such diversity in the composition of the organs of citizen participation and consultation in urban and

territorial planning processes; time will tell whether this new order depicts better metropolitan scenarios.

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“There is no way of speaking logically about this mess”: The impact of actor-relational dynamics on integrated planning practice

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Abstract: The non-linear complexities of urban development processes exceed the understanding of any individual. Consequently, more actors are entering planning processes for enabling the synergy of multiple knowledges, simultaneously increasing their internal complexities. These complex dynamics contest the everyday planning practice from within, requiring increased awareness of their possible consequences. Planning research has acknowledged that the actor-relational aspects of planning processes are not yet adequately understood, calling for methods to reveal the often invisible dynamics and their possible effects over time. This research aims at revealing the social complexities of integrated planning processes and recentering the understanding on the actor-relational level by focusing on the aspects of knowledge co-creation and process memory development. A practice-based example of the actual actor-relational dynamics is explored with mixed methods and detailed longitudinal data of an actual four-year strategic spatial planning process in the Nordic context. The findings indicate that a range of actor-relational dynamics affects the level of sectoral and scalar integration over time, and social complexities carry an essential role for enabling knowledge co-creation and process memory development within integrated planning practice. Unveiling the actor-relational dynamics is a promising research direction, requiring new methods for bridging research and practice.

Keywords: planning practice; organizational learning; strategic spatial planning; integrated planning

Introduction

The growing complexity of cities is a widely discussed theme (Batty, 2005, de Roo and Silva, 2010, Portugali, 2012, Boonstra, 2015, Sengupta *et al.*, 2016). The nonlinear complexities of urban development are claimed to be incomprehensible to any one individual with regard to the often invisible interrelations (Innes and Booher, 2010). For responding to the growing complexities, and the need of more holistic planning, integrated planning has been discussed (Bertolini, 2017). Even though the exact definition of integration is not fixed sectoral and scalar integration are typically included in all frames (Healey, 2006, Vigar, 2009, te Brömmelstroet and Bertolini, 2010, Holden, 2012), complemented with organizational integration (Kidd, 2007). In the context of this paper, integrated planning is understood as the communicative practices over time, which enable the crossing of thematic and scalar boundaries for reaching systemic and holistic planning solutions. Consequently, for supporting the understanding of the nonlinear complexities, more actors enter into the planning processes to share their knowledges, simultaneously increasing the complexities from within due to their values and views, which contradict in the institutional settings. Thus, complexity is not only a feature of the environment, but also

of the collaborative processes themselves. For understanding the actor-relational complexities, the relational level needs to be explored, as the social interactions produce properties that are not present in the individuals. Moreover, a procedural focus supports the temporal understanding of their dynamics over time (Pettigrew, 1997, Langley, 1999). Discussion of planning processes is critical for understanding how our urban futures are developed in these collaborative and value-laden processes, as there is a relation between processes and substance (Innes and Booher, 2015). Planning research has acknowledged that the actor-relational aspects of planning processes are not yet adequately understood, calling for methods to reveal their often invisible dynamics and effects over time. Thus, methodological contributions are needed to understand the nonlinear and emergent nature of the actual social realities, and their impacts on knowledge co-creation and process memory development in the integrated planning processes. However, there has been a lack of established methods for systematic longitudinal analysis of the collaborative realities of planning processes, mainly due to the challenges in acquiring applicable data.

The aim of the research is to develop methodological contributions for understanding knowledge co-creation and process memory development in these collaborative processes over time. To illustrate the actual relational dynamics, the paper presents an example of the actual social dynamics over a four-year statutory strategic spatial planning process in the Nordic context. Social network analysis is used for identifying the networked dynamics over time, and the possible reasons and impacts of the networked structures are explored through interviews with practicing planners. Moreover, the applicability and relevance of the findings for planning practice are discussed with practitioners. The Finnish planning system works in the context of a Nordic democracy, where planning is a central element of the urban development system (Puustinen *et al.*, 2017). Municipalities hold a planning monopoly, even though the processes involve various private and public actors (Mäntysalo *et al.*, 2011). Planning is mostly regulated by the Land Use and Building Act (132/1999), which is currently re-evaluated. Consequently, the selected case serves as a relevant example for exploring the dynamics that emerge due to the collaborative nature of processes. In the next section, background on organizational learning and process memory development are discussed in the context of planning. Thereafter, the utilized data and methods are presented, followed by the findings concerning the networked structures, and their possible reasons and impacts. Finally, the answers to the research questions are discussed, and the paper is concluded.

Process memory development as a prerequisite for organizational learning

The significance of knowledge and learning in the context of public administration and planning organizations has been widely discussed (Rydin, 2007, Campbell, 2012, Tennøy *et al.*, 2016), and public sector organizations have been criticized due to their inefficiency of learning (Moynihan and Landuyt, 2009). Organizational learning capacity is essential for an organization's development, influencing its capacity to adapt to the changing societal needs (Senge, 1990, Prahalad and Hamel, 2000). Knowledge influences the learning capacity of organizations (Argote, 2013), and learning is not possible without memory (Lehner and Maier, 2000). Various concepts regarding memory in organizations have been suggested, including organizational memory, network memory, systems memory, and transactional memory (e.g., Wegner, 1987, Walsh and Ungson, 1991, Spender, 1996, Olivera, 2000, Soda *et al.*, 2004, Innes and Booher, 2010). Despite of the various descriptive concepts, it is widely agreed that through the iterative utilization of memory, organizations may consciously unlearn and forget, as the original memories develop further (Holan and Phillips, 2004, Fernandez and Sune, 2009, Easterby-Smith and Lyles, 2011, Martin de Holan, 2011). This kind of intentional unlearning has been considered important for developing organizational processes (Martin de Holan, 2011). However, unconscious forgetting may have surprising impacts when valuable knowledge is unintendedly lost (Holan and Phillips, 2004). Hence, knowledge, learning, and memory are interdependent parts of organizational processes (Spender, 1996). Previous research has suggested that learning in public sector organizations occurs in structural settings, which encourage interaction (Moynihan and Landuyt, 2009, Siciliano, 2016).

Planning processes are an example of knowledge-intensive settings, in which a variety of specialized knowledges is applied. As new knowledge in planning is typically generated in interaction rather than through value neutrality (Healey, 1992, Rydin, 2007, Rydin *et al.*, 2007), discussion of social processes in planning has emerged (Davoudi, 2015). In the social constructionist view, knowledge evolves in social processes, and is continuously purposefully and unconsciously filtered, selected, and post-rationalized on the way. There has been considerable discussion about whether organizational learning and memory resides on the individual or organizational level (Senge, 1990, Walsh and Ungson, 1991, Nonaka and Takeuchi, 1995, Lehner and Maier, 2000). According to Senge (1990), individual actors learn, but learning itself happens through interpersonal dialogue as a relational activity. However, part of the knowledge may be integrated into organizational structures, routines and traditions (Fiol and Lyles, 1985, Argyris and Schön, 1996). Memory in organizations resides on the level of individuals and their relations (Argyris and Schön, 1978), and is distributional in nature (Walsh and Ungson, 1991). What is not encoded in information systems, resides in the individuals, and transfers through their interaction.

Knowledge co-creation is specifically important for integrated planning, in which multiple perspectives should be adjusted with each other. Integration is challenged by differences in values, ideologies, epistemologies, and policies, which may stem from conflicts between actors (Waddell, 2011, Holden, 2012). Integration may be understood as a hierarchy from co-operation (functional relationships to avoid duplicating work) through coordination (adjusting functions not to leave gaps) to integration (joining efforts for creating a policy owned by multiple actors) (Stead and Meijers, 2009), which may be thought to have different networked structures (Curtis and James, 2004). Coordination refers to a single-core structure, whereas integration entails a more equally connected structure with actors linked to each other.

Coughlan and Coughlan (2011) have referred to the importance of network action in inter-organizational learning. According to them, learning is both a capacity and a process, requiring also conscious and intentional actions to be achieved. In order to enable learning and process memory development, an organization has to be aware of its structures, which affect the learning capabilities. Thus, the analysis of organizational learning should deal with the dynamic processes of organizing (Argyris and Schön, 1996) in social settings. Hence, social network perspective is important for the relational understanding of organizational knowledge, learning and memory as it makes the social processes more explicit (Borgatti and Cross, 2003, Oh *et al.*, 2004, Cummings and Higgins, 2006). Through the identification of their social networks, planning organizations may become more capable of answering to the challenges they face. Thus, understanding of the relational dynamics in planning processes are an important element for enabling organizational learning and memory development. In the understanding of this research, organizational learning is enabled through the knowledge flows and memory development in various social networks. In order to enable the understanding of planning as socially constructed and knowledge-intensive process, this research focuses on the actor-relational process structures, which enable knowledge transfer, and affect process memory development over time. Based on the current research of organizational memory, the characteristics of process memory development in networked planning processes are not yet well understood. Consequently, building on the current understanding, this research approaches the organizational learning processes by moving the unit of analysis to the relational level and longitudinal view of the complex adaptive systems (Innes, 2005, Innes and Booher, 2010) that reproduce the knowledge over time.

Methodology

The lack of process memory poses a critical challenge for learning in planning organizations. In order to understand the development of process memory during planning processes, this paper focuses on an example of social dynamics in actual practice-related planning context. The aim here is to develop methodological contributions for understanding knowledge co-creation and process memory development in the collaborative processes over time. The topic is approached through answering to more detailed questions: How the social

network structures unfolded during the process, when measured with betweenness centrality? Why the dynamic patterns of interaction emerged over time, and what were their impacts on knowledge co-creation and process memory development? And what is the relevance of the findings for planning practice?

Utilizing mixed methods and detailed longitudinal data of organized actor interactions during a four-year statutory strategic spatial planning process in one of the cities in the Helsinki Capital Region, Finland. The raw data included the documented process data, which was available still after the process was finished, including over 10,500 pieces of process documentation (see Eräranta, 2019 for a more detailed description of the data). The raw data was processed into a standardized time series of approximately 400 organized actor interactions during the process. The analyzed process was classified into four periods of time: goal phase (G), draft phase (D), proposal phase (P), and ratification phase (R), which were further divided into intervals of two months, for increasing the resolution analysis. Resident information was not individualized during the process, and was limited out of the analyses.

With the data, social network analysis (SNA) was used for identifying the everyday reality of the networked dynamics over time. Instead of focusing on the individual actor characteristics, SNA considers the relational attributes for exploring the dynamics of nodes (actors) and their ties (interactions) over time (Wasserman and Faust, 1994). As an established methodology, SNA includes a variety of network- and node-level measures for understanding the relational structures of interactive processes. In this paper, analyses of the socio-temporal network structures were elaborated through the measure of betweenness centrality, which was selected for understanding the potential information flows in-between the social actors in the process. Betweenness centrality can be interpreted as an indicator of an actor's ability to control the other actors' access to all parts of the network, measuring how often a node is positioned on the shortest path between two other nodes with the ability to manipulate the information (Freeman, 1978). For example, central actors may be considered as gatekeepers, by being able to manipulate or bias communication in the network due to their relationally strong position (Rowley, 1997). Borgatti (2005) has suggested an equation for the betweenness centrality (Equation 1) to measure the number of times that the information reaches a specific node. In the equation b_k is the betweenness of node k , g_{ij} is the number of geodesic paths from i to j , and g_{ikj} is the number of shortest paths from i to j , passing through node k .

$$b_k = \sum_{i,j} \frac{g_{ikj}}{g_{ij}} \quad (1)$$

As SNA has not been applied before for understanding the dynamics and process memory development over time in planning processes, the findings were validated through individual interviews (Symon and Cassell, 2013) with participants of the analyzed process. The applicability and relevance of the findings for planning practice were analyzed through focus group interviews (Morgan, 1996) with practicing planners. All research data was anonymized to avoid harm to the research subjects.

Findings

Overall dynamics of the network structures

The social network was in constant change during the process. In Figure 1, the network graphs have been illustrated by measuring the betweenness centrality of the individuals, describing their relational positions for influencing the information flows between other actors. In most of the graphs, the structure is strongly centralized with a clear core actor or a team of actors, suggesting that the relational power was highly centralized. The fewer central actors there are in the network, the greater their relational power may be, giving them a possibly stronger relational position considering the information transfer.

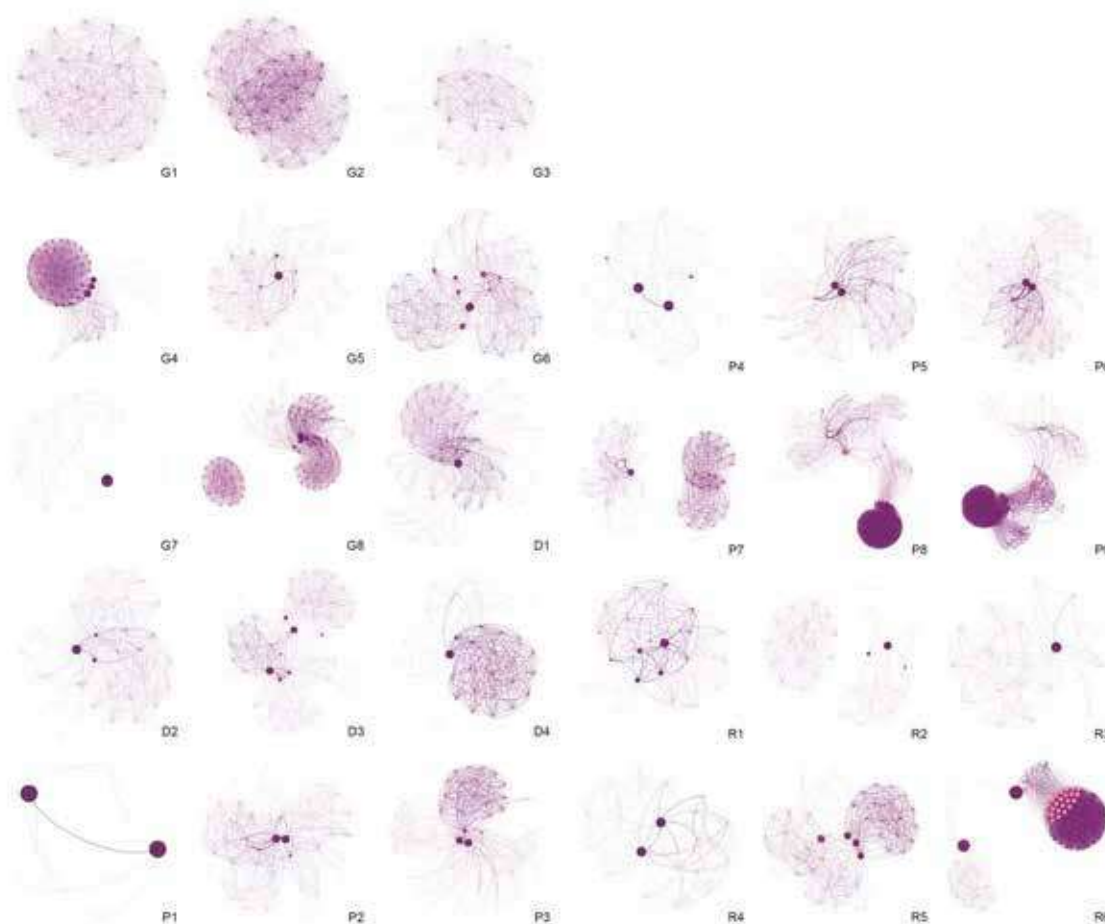


Figure 1: The networked dynamics of a four-year process were continuously changing. Over time, there were usually one or two actors having considerably high betweenness centrality in the network. Consequently, the information flows were strongly centralized.

Factors behind the dynamic patterns of interaction

The emergence of the networked structures was nonlinear. The structures were not tied to specific phases, but were influenced by a variety of factors on multiple levels (e.g., individual, actor-relational, institutional) over time. Some of the network dynamics were explained through institutional rules and routines, such as decision-making procedures, but also by emergent actor-relational factors, such as escalated arguments between some actors. Alongside the institutional framing of collaboration, emergent social dynamics affected the interaction over time. According to the interviews of the process participants, the social dynamics had effects on their intensity of involvement in the process. These actor-relational dynamics were typically not bound to the specific process, but originated in or had consequences also on other processes.

Based on the findings, the institutional framework did not support the longevity of network ties between processes. Planning processes are traditionally separated into different sub-projects led by different individuals, challenging learning between the processes. As the processes are dependent on the same scarce organizational resources, the situation is vulnerable to disturbances. The administrative division of the processes is typically due to a large number of simultaneous processes, and may challenge the actors' ability of focusing on individual processes. According to the interviews, when the participants see only disconnected snapshots in time, their commitment in the individual processes may decrease. Some process participants did not have enough time for

active participation, thorough consideration, information acquisition or collaboration in the analyzed process. As the participants visited the process only rarely, and only related to their own sectoral expertise, their overall understanding of the process remained unclear. Moreover, their awareness of how their own input affected the plan solution, or the subsequent parts of the urban development process, remained low.

Based on the interviews, centrality tempted more centrality, leading into strongly centralized network structures. According to the interviews, when the central actors were well-known by other actors, they were used for information acquisition in the process, leading them into an even more centralized position. For example, all actors referred to one specific actor as focal for information transfer in the process. The polarized positions between the few central actors and the others was intensified by intentional information withholding. The decision to not inform of changes in the process was aimed to protect the actors from information overflow by giving them an opportunity to focus on their own responsibilities. However, some participants explained that this decision decreased their ability to form an overall understanding of the process, challenging their ability to develop understanding of the interrelations between various scales and sectoral themes. Additionally, the sectoral themes were kept separate from each other, and were mainly handled among the few central actors, and the assigned sectoral experts. In case an actor had a tight sectoral responsibility in the process, a holistic view of the plan solution was typically decreased. Moreover, the adhocracy of communication challenged the generation of an overall understanding over time.

In addition to the aspects above, the emergent structures were influenced by the actors' own activity, as well as the actual subnetworks in which the actors participated. In the interviews, support from other actors with similar backgrounds was named as an important reason for forming subnetworks during planning processes in general. The support structures were explained to be dependent on personal relations, which take time to establish. Some of the participants described that their collaboration patterns were influenced by arguments, which led to their lack of input in the process. The participants explained that sometimes the plan solutions could have been different, if they had not quit collaboration due to the actor-relational reasons. The confrontations were intensified by the strongly centralized structures, which caused distrust between actors, as the actors were not aware of each other's opinions. Due to previous experiences, some actors tried to avoid confrontations, which reduced the information transfer and knowledge co-creation even more. The emotional side of the collaborative dynamics may have long-lasting impacts on the processes and plans. Furthermore, some participants described that due to the challenges in the overall awareness, the process seemed occasionally irrational. In addition, the emergent factors affected the process strongly, when some participants left the process and their tacit knowledge was lost, and ways of working were changed. Changes on the individual level affected also the collaboration patterns, as actors holding the same administrative position had different ego-network structures.

Impacts of the network structures on knowledge co-creation and process memory development

The network structures during the process can be classified into four main categories: single-core structures (e.g., phase G₇ in Figure 1), dual-core structures (e.g., phase P₂ in Figure 1), multi-core structures (e.g., phase G₆ in Figure 1), and complete structures (e.g., phase G₁ in Figure 1). In addition, disconnected structures (e.g., phase G₈ in Figure 1) may be formed through combinations of two or more simultaneous networks without a direct connection with each other, leading into challenges when the networks do not communicate. Here, the four basic structures are explored (Figure 2), focusing on their possible advantages and challenges for information transfer and process memory development. The possible advantages and challenges were discussed in focus group interviews with practitioners, who work in and around strategic planning processes.

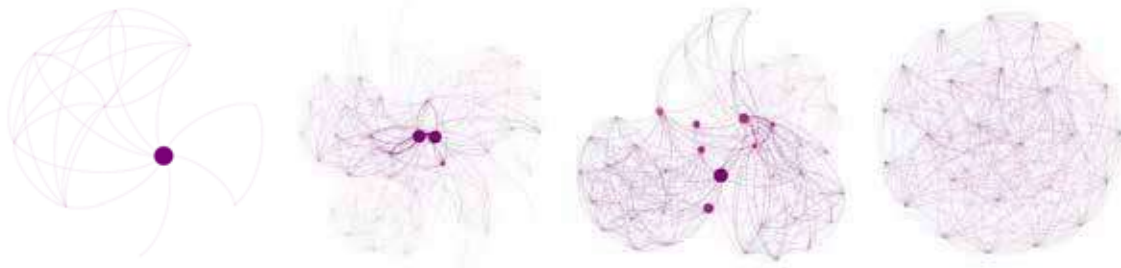


Figure 2: The four main categories of network structures (from left: single-core, dual-core, multi-core, complete) had different impacts on knowledge co-creation and process memory development during the process.

Single-core networks had one central actor. According to the interviews, a single-core structure can be effective for information transfer with one clear coordinator, but has few possibilities for wider discourse and integration due to the scarce connections between actors. Integration of the various views is done by one central actor, and the underlying reasoning remains unclear to the other participants. Moreover, the central actor can dominate the information flows, as was suggested by some interviewees. Considering process memory and knowledge co-creation, the single-core structure is risky, as it is focused on one key actor. The structure may lower the quality of the substance, as was suggested by some of the interviewees, because it is not possible for any actor to consider the variety of interrelations thoroughly alone. If the central actor leaves, the rest of the network may be severely disturbed. According to the interviewees, too centralized responsibility is not beneficial for the individual, for the organization nor for the substance of the process.

Dual-core networks had a pair of central actors. As was suggested in the interviews, a dual-core structure allows either of the central actors to be replaced without a total process memory loss. If one of the central actors leaves, the other still remains, and a new one can be trained by the remaining actor. According to the interviewees, dual-core structure is similar to single-core, as it does not enable diverse enough discussion and ideas to emerge, and does not allow holistic consideration of the various sectors and scales. The process may end up having highly personalized views of the central actors, as was suggested by the interviewees. The benefit of the dual-core is that the actors can support each other, and discuss the issues at least with each other. Some interviewees pointed out that for this structure to be efficient, both of the central actors should build their own subnetworks.

Multi-core networks are built around multiple cores, which are connected with each other. In particular, the core team can be formed by various experts, supported by their own subnetworks as mentoring structures. They central actors can integrate the knowledge of the subnetworks in the core team, bringing added value into the process. According to the interviews, a multi-core structure allows all of the actors to proceed quite independently. When the central actors are strongly linked, and their subnetworks are known, they can be also replaced with a lower risk. A multi-core structure enables easily the utilization of shared expertise, as was suggested by some interviewees.

In complete networks, all actors are connected with each other. When actors represent different expertise or scales, the structure supports the testing and integration of various views. According to the interviews, a complete structure has low risk of changes, as all actors hold similar meeting-based knowledge. From process memory perspective (not considering the differences in expertise), any actor can be replaced without a risk for process memory loss. Thus, when everyone is equally informed of everything, the risk of memory loss in case of personnel turnover is low. According to the interviews, a complete structure has good possibilities for effective information transfer within the network. However, the structure can also be considered ineffective and resource-consuming.

Relevance of the process analysis to planning practice

In relation to process memory development, the interviewees stated that statutory strategic spatial planning processes typically occur rarely in planning organizations. When the process experiences are not documented and actors change, much of the memory is lost, and subsequent processes have to start from zero. Thus, processes can become inefficient, when time is utilized on testing through trial and error, and on re-establishing networks. Process memory supports organizations in situations when personnel turnover is high, as was suggested in the interviews. Much of the memory and knowledge is attached to the actors, which is a risk in case of personnel turnover or voluntary withholding of information. However, some interviewees pointed out that personnel turnover and unintended forgetting are not always a challenge. It was suggested that organizations can also learn through personnel turnover by adapting new practices from outside. Moreover, when people change, process memory is dispersed to other organizations, and is not situated only in the originating organization. According to the interviews, process memory supports also organizational learning between processes.

Based on the interviews, network and process thinking in municipal planning organizations is diverse, and changing the established practices is difficult. Many interviewees stated that planning processes are not understood well enough due to their nonlinear and complex nature. Consequently, generating more understanding of the process structures is important to understand the reasons behind the actors' involvement in the processes. According to the interviews, discussion of planning processes is strongly focused on digital methods instead of the collaboration structures. Thus, it was suggested that improving awareness of the actual networked structures and their possible impacts on knowledge co-creation and process memory development is important. Moreover, the interviewees pointed out that SNA, as a method, is usable for analyzing the processes by making them visually understandable. In the interviews, the analyses were considered important for learning new ways of thinking about process development in planning practice, and for visualizing process development needs. Improved process awareness may enable better utilization of shared expertise, as actors become more aware of the phases in which they could share their expertise.

Discussion

Based on the findings, knowledge and memory in the analyzed process were strongly concentrated on few central actors, who were trusted as information sources, acting as knowledge brokers in a way described by Rydin *et al.* (2007). Previously established networks were primarily utilized for information acquisition and the actors turned more easily to someone whose expertise they already knew in advance. Previous research has identified that core networks represent ties, which provide support over time, whereas the peripheral network assists at specific moments in time (Cummings and Higgins, 2006). This seems to be the case also in the analyzed process. The more central actors, and their ties, endured over time, whereas the more peripheral actors typically changed from one phase to another. Combined with the views of social capital (Oh *et al.*, 2004), two types of ties can be suggested to exist. The core ones offer more homogeneous social capital and constant support due to the strength of ties. The more peripheral ones provide ad hoc support through access to diverse social capital, offering access to other ongoing processes and transferring process memory between processes. Although the exact memories of the process were generally scarce, multiple participants visited the process for varying periods, carrying parts of the process knowledge forward to their own organizations. Consequently, memory in the process was not only located in the specific responsible unit, but was dispersed widely through the network.

The findings indicate that social dynamics carry an essential role for enabling knowledge co-creation and process memory development within integrated planning practice, affected by the actors' ability and willingness to collaborate. The findings suggest that memories of planning processes are vulnerable to accidental and intended forgetting, affected by the social dynamics of the processes. The findings imply that process memories are typically saved as patterns of activities, which are detached from time. Thus, memories are affected by post-

rationalization, decreasing the possibilities of tracing process dynamics with traditional methods. Moreover, the intensity of involvement in the process influenced the randomness of the memories. The memories were strongly related to the actual networked structures, and their information transfer capabilities in the process. Differences in the process memory were considerable, and typically related to the actor's thematic responsibilities and position in the network. The more an actor attended in the process, the more exact the memories, and the wider the overall awareness of the process, tended to be. The interview findings suggest that this was partly because information transfer for supporting holistic understanding of planning processes was insufficient, and the interdependencies between the various themes are typically handled by few. The centralized structures affected the possibilities of aiming for integrated solutions.

In addition, findings imply that different networked structures can have various impacts on the possibilities for integrated planning, and on the vulnerability to process memory loss (Figure 3). In the structures which allow the simultaneous integration of a multiplicity of views the vulnerability to process memory loss is decreased, as many actors know the rationalization behind the plan solution, and the made decisions during the process. However, the collaboration and reflection of various views simultaneously takes time, and the structure may be resource-intensive. As the number of central actors decreases, also the possibilities for integrating multiple views simultaneously declines, and the integration is done by the few central actors, who coordinate the discussion between various separate thematic groups. Simultaneously, vulnerability to process memory loss increases. Based on the findings, there is no one optimal solution for all processes, but various structures may serve various phases and purposes during planning processes. In case of high personnel turnover, holistic memory held only by one or two individuals is not a resilient strategy, as it is vulnerable to actor-level changes.

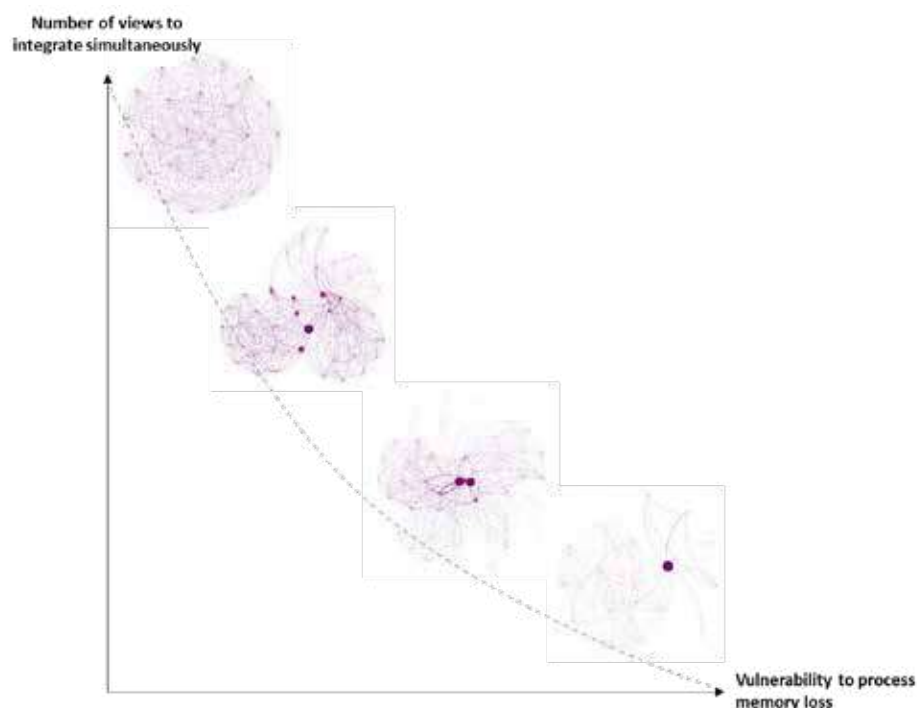


Figure 3: The different networked structures have various impacts on the possibilities for integrated planning, and on the vulnerability to process memory loss. The more views there are to integrate (complete), the less vulnerable the structure is for process memory loss, but the more resource-intensive the structure is, as well. The less views there are to integrate through collaborative

dialogue (single-core), the more vulnerable the process is to memory loss, and the less resources are required.

Based on the findings, utilization of longitudinal time-series data allows the analysis and evaluation of evolving phenomena, such as process memory. SNA may support the identification of structures, which may cause sectoral siloing or process memory loss in the processes. SNA supports the exploration of process memory development, which is influenced by different relational dynamics, which enable or restrict information transfer during the processes. Currently the related factors, such as organizational memory or experience (e.g., Wegner, 1987, Walsh and Ungson, 1991, Spender, 1996, Olivera, 2000, Soda *et al.*, 2004, Innes and Booher, 2010), are mainly utilized in a descriptive manner without methods for analyzing their relation with various process structures. The findings show that SNA has capacity for generating visual and statistical criteria for analyzing such concepts, suggesting a methodological contribution for studying integrated planning processes.

Conclusions

Based on the findings, we can conclude that planning processes are dynamic and continuously changing social systems. Memories of such a system serve as a basis for learning, and consequently, for process development practices in planning organizations. At least two types of memories develop during planning processes: content-related and procedural. Content-related memories are more context-dependent, spatially bound, deal with the rationalization and justification of the plan solution. They are primarily applicable on various scales in a certain spatial context, giving answers to questions like what and why. Procedural memories are more structural, and serve various processes on various scales and contexts, assisting in process development aims, and answering to questions like how, why, who, and when. Especially the procedural memories are an essential factor for organizational learning and process development. Thus, planning processes can have generalizable and repetitive structures that go beyond the unique nature of processes. Learning from the past experiences may consequently support the organizations in developing their everyday practices. In conclusion, unveiling the social dynamics of planning processes, and their relations with process memory development and organizational learning, is a promising research direction. This research stream may be supported with longitudinal and relational methods, which enable the visual-analytical understanding and evaluation of the various networked process structures and their impacts.

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4_Institutional change and regional transition

Regional innovation and the new territorial governance. French and Spanish cases

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Abstract: The European territories, especially in the southern and eastern peripheries, face various challenges linked not only to socio-economic globalization, but also to population aging and climate change. The regional innovation policy offers the possibility of facing these challenges and contributing to the cohesion - economic, social and territorial - provided that the specific characteristics of each territory are taken into account. Decentralization is a fundamental factor in the design of policies that clearly respond to the principle of subsidiarity of the European Union. In our work, we deal with the cases of Spain with a degree of quasi-federal decentralization with broad competences designed in the 1978 Constitution, and that of France that has progressively decentralized in the last decades until reaching the 2015 reform in which they reduced the regions from 22 to 13 in order to create functional territories that would help reduce regional divergences. Although in both cases there are marked differences between the territories, innovation rates are higher in the French case, while in Spain only the Basque Country is included in the group of strong innovators. The objective of this work is, therefore, to analyse the policies developed - design, objectives and financing- and the governance model -characteristics of the subcentral levels of government- in order to highlight their strengths and weaknesses.

Keywords: cohesion, territory, innovation, governance

Introduction

The turn of the century was a new scenario for the European Union both outside and within its borders. The great enlargement towards the East, the definitive economic and political globalization, the intense migratory flows, the aging of the population and the economic-financial crisis forced the European institutions to modify the objectives of their policies. Among these changes is the foreground given to the objective of competitiveness and innovation policy, complemented by new regional strategies and the so-called smart growth.

There does not seem to be any doubt that regional innovation policies can become the ideal instrument to face the multiple challenges and socio-economic transformations. For this, they will have to combine

a broad vision of change inserted in the common European policies with the territorial perspective considering the specific characteristics of the space in which they will be applied. That is, to make the principle of subsidiarity effective without losing sight of the objectives set by the Europe 2020 Strategy. This implies creating a strong synergy between cohesion, competitiveness and innovation with a markedly territorial character. It should not be forgotten that, as Bevilacqua *et al.* (2017) claim, there is a link between the regional innovation strategy (RIS3) and the principle of territorial cohesion, because the territorial approximation of this is based on its character of development policy (Regulation 1303/2013). Therefore, the initial concept of "smart specialization" that emerges as a response to the deficiencies identified in the EU in terms of competitive weakness in research and development is left behind. The objective of filling these differences will be the four-helix model -based on development and endogenous resources, cooperation with other territories, innovation and application of the creative process- that appears as essential in the definition of new regional innovation strategies.

However, innovation policies and regional strategies have highlighted the diversity and divergences that exist between the Member States and within each one of them. The Barca report (2009: 129) included an innovation index (2002-2003) that highlighted regional disparities in terms of innovation. Among the possible causes the author highlighted the fragmentation of the national research system, while among its consequences he cited the following: not taking advantage of the effects of scale; leakage of human resources and very limited relationships between research centres and the private sector; excessive diversity, positive in many cases, but negative in the dispersion and in the appearance of externalities that are not taken advantage of; and research overproduction in the same line.

This is one of the main challenges of innovation, since the differences in the application of territorial policies and their design have to do with the different quality of their governments, their ability to absorb funds, and their institutional capacities. According to Morisson and Doussineau (2019), it is based on the fact that there is no single regional innovation policy framework that can be applied to all territories. In this sense, Tödtling and Trippel (2005) affirm that the differences are related to the concrete innovation priorities according to the capacities, the industrial base and the institutional context. However, Fritsch and Graf (2011) conclude that the analysis of a RIS should take into account not only (sub) national conditions, but also the position of the region within the socio-economic framework of the surrounding space. That is, it is not enough to study only the region to design the regional innovation policy. In addition to these factors, the governance model and the degree of decentralization are fundamental, as affirmed by Hassink and Marques (2015), who are committed to strong regional institutions without forgetting that the state level continues not only to contribute decisive factors for innovation, but also explaining the different rates of economic growth, as well as the problems at the regional or local levels.

Regional planning following the principle of territorial cohesion is key to the development of innovation policies is truly efficient and effective. In this sense, the state framework continues to be fundamental even when processes of a bottom-up nature are favoured. All of them must be part of a state strategy that facilitates synergies between all territories in line with European policies. Especially if we take into account that innovation has a marked preference for urban areas, especially for larger ones, contrary to what happens in rural areas, and to a lesser extent in intermediate urban areas (Dijkstra, Garcilazo and MacCann, 2013).

Taking into account the different elements linked to regional innovation policies and that the objective of this paper is to analyse the management, design and financing of these policies in the French and Spanish regions, the structure of the article is as follows: first after this introduction the second section will address the regional position of Spain and France with respect to competitiveness and innovation indices; In a third section we will analyse the situation of innovation policies, that is, the application of decentralized governance, using the data and references offered by the Regional Innovator Monitor Plus (institutions, regulatory framework and financing). Finally, the work closes with some reflections.

The cohesion-innovation relationship

The 2014-2020 programming period definitely puts the accent - and the budget - on the objective of competitiveness. Its objectives are those of the Europe 2020 Strategy, approved in 2010, which is developed around three priorities: intelligent, sustainable and inclusive knowledge. The first of these priorities is based fundamentally on innovation - and on knowledge - to achieve the above-mentioned objective of competitiveness. Therefore the concept of intelligent specialization is currently part of both the Innovation Union program and the cohesion policy reforms (MacCann, Ortega-Argilés, 2015).

In our analysis we started from the regional competitiveness index, since the third group of factors are related to innovation¹, based on the link established by Sabatino and Talamo (2017). The 2016 edition, like the previous ones, shows elements linked to cohesion, which would indicate the need to maintain the structural aid of both the ERDF and the ESF. To maintain the cohesion-competitiveness-innovation link, we have organized the analysis following the typologies of regional policy aids for the 2014-2020 period (less developed regions and more developed regions) in combination with the regional innovation index. For our study we will leave the Canary Islands for being considered an outermost region and the autonomous cities of Ceuta and Melilla for having very peculiar socio-economic and geographic characteristics. In the French case, our analysis will focus on metropolitan France.

Table 1 shows the positions occupied by the Spanish regions with respect to all 263 regions analysed, both attending to each of the groups of factors and the global competitiveness index. The best placed region is the Community of Madrid, both in the RCI and in the pillar of efficiency and especially in innovation. The second position is occupied by the Basque Country, but in a much more remote position, although it is the best placed with respect to the efficiency pillar. As far as the pillar of basic factors is concerned, there is no Spanish region among the top 100. The last position is occupied by Extremadura, which receives Community Funds as a less developed region during the 2014-2020 programming period.

¹ The three pillars on which the Regional Competitiveness Index is based are, in turn, formed by a series of factors that contribute to a greater or lesser extent to determine the degree of competitiveness of a territory. Thus, the basic pillar includes institutions, infrastructures, macroeconomic stability, health, and basic education. The efficiency pillar covers the factors of higher education and lifelong learning, labour market efficiency and market size. Finally, the innovation pillar refers to technological readiness, business sophistication and innovation.

Table 1. Global position of the Spanish regions in the EU

	Basic Pillar	Efficiency Pillar	Innovation Pillar	Regional Competitiveness Index (RCI)
Galicia	181	191	179	181
Principado de Asturias	173	188	172	174
Cantabria	161	167	171	164
País Vasco	153	78	134	119
Comunidad Foral de Navarra	151	130	160	148
La Rioja	154	196	185	184
Aragón	140	194	169	173
Comunidad de Madrid	104	82	57	83
Castilla y León	152	199	192	187
Castilla-La Mancha	143	240	207	216
Extremadura	174	252	219	230
Cataluña	129	175	138	153
Comunidad Valenciana	156	205	175	184
Illes Balears	167	222	178	200
Andalucía	164	244	187	220
Región de Murcia	160	227	196	210

Source: European Regional Competitiveness Index.

Table 2 shows the positions of the French regions prior to the modification of their limits, although we have grouped them to better observe their characteristics. Île-de-France is the best region in terms of competitiveness, standing out in the efficiency pillar and ranking among the top ten regions of the European Union. Midi-Pyrénées and Rhône-Alpes are the next best-placed regions, both also standing out in the efficiency pillar. The worst index corresponds to Corsica and is similar to that of Spanish regions such as Galicia, La Rioja or the Valencian Community.

Table 2. Global position of the French regions in the EU

New Regions	Old Regions	Basic Pillar	Efficiency Pillar	Innovation Pillar	Regional Competitiveness Index (RCI)
Île de France	Île de France	58	4	18	8
Grand Est	Champagne-Ardenne	119	150	140	143
	Alsace	94	93	119	105
	Lorraine	123	125	135	130
Hauts-de-France	Picardie	116	139	154	142
	Nord - Pas-de-Calais	120	136	150	136
Normandie	Basse-Normandie	144	124	152	138
	Haute-Normandie	134	119	146	132
Centre-Val de Loire	Centre	112	97	138	115
Bourgogne Franche-Comté	Bourgogne	111	128	155	134
	Franche-Comté	128	126	123	126
Pays de la Loire	Pays de la Loire	127	82	137	115
Bretagne	Bretagne	145	57	112	105
Nouvelle Aquitaine	Poitou-Charentes	140	147	152	148
	Aquitaine	132	120	121	124
	Limousin	148	133	150	145
Occitanie	Languedoc-Roussillon	135	141	132	140
	Midi-Pyrénées	132	59	69	87
Auvergne Rhône-Alpes	Auvergne	150	115	125	129
	Rhône-Alpes	102	50	73	68
Provence-Alpes-Côte d'Azur	Provence-Alpes-Côte d'Azur	131	111	104	117
Corse	Corse	174	197	173	183

Source: European Regional Competitiveness Index.

Regarding the Regional Innovation Scoreboard, the measurement system distinguishes four main types of indicators and ten dimensions of innovation, resulting in a total of twenty-seven different indicators. *Framework conditions* measure the main drivers of innovation performance external to the company and encompass three dimensions of innovation: human resources, attractive research systems and an environment favourable to innovation. The *investments* indicator measures public and private

investment in research and innovation and covers two dimensions: financing and support and investments of companies. The *innovation activities* take into account the innovation efforts of the company grouped into three dimensions of innovation: innovators, links and intellectual assets. The *impacts* indicator covers the effects of the company's innovative activities in two dimensions of innovation: impacts on employment and impacts on sales (European Innovation Scoreboard 2018 - Executive summary).

If we apply all these indicators to the map of the European Union, we will see how four groups of countries are established: leader in innovation and three degrees of innovators: strong, moderate and modest. The inclusion in each of these groups and their position within them has varied since 2010, the reference date of the first innovation index and coincides with the signature of the Europe 2020 Strategy. Graph 1 shows both the four groups of countries such as the evolution of the innovation index. In line are Romania and Bulgaria, whose situation has worsened since 2010, more sharply in the first case. The group of moderate innovators includes both countries in Central-Eastern Europe and the Mediterranean, corresponding to a periphery that still needs cohesion policy for its development, and which was very affected by the economic crisis of 2008. In this case, the situation of Croatia, Cyprus, Estonia and the Czech Republic has worsened with respect to the 2010 index, and that of Portugal, Greece and Hungary has stagnated. The group of strong innovators includes Slovenia, France, Austria, Ireland, Belgium and Germany. The latter has somewhat reduced the situation compared to 2010. And finally, the leading group, the leaders in innovation are Luxembourg, the United Kingdom, the Netherlands and the Nordic States (Finland, Denmark and Sweden).

Graph 1. Performance of EU Member States' innovation systems, 2010-2017

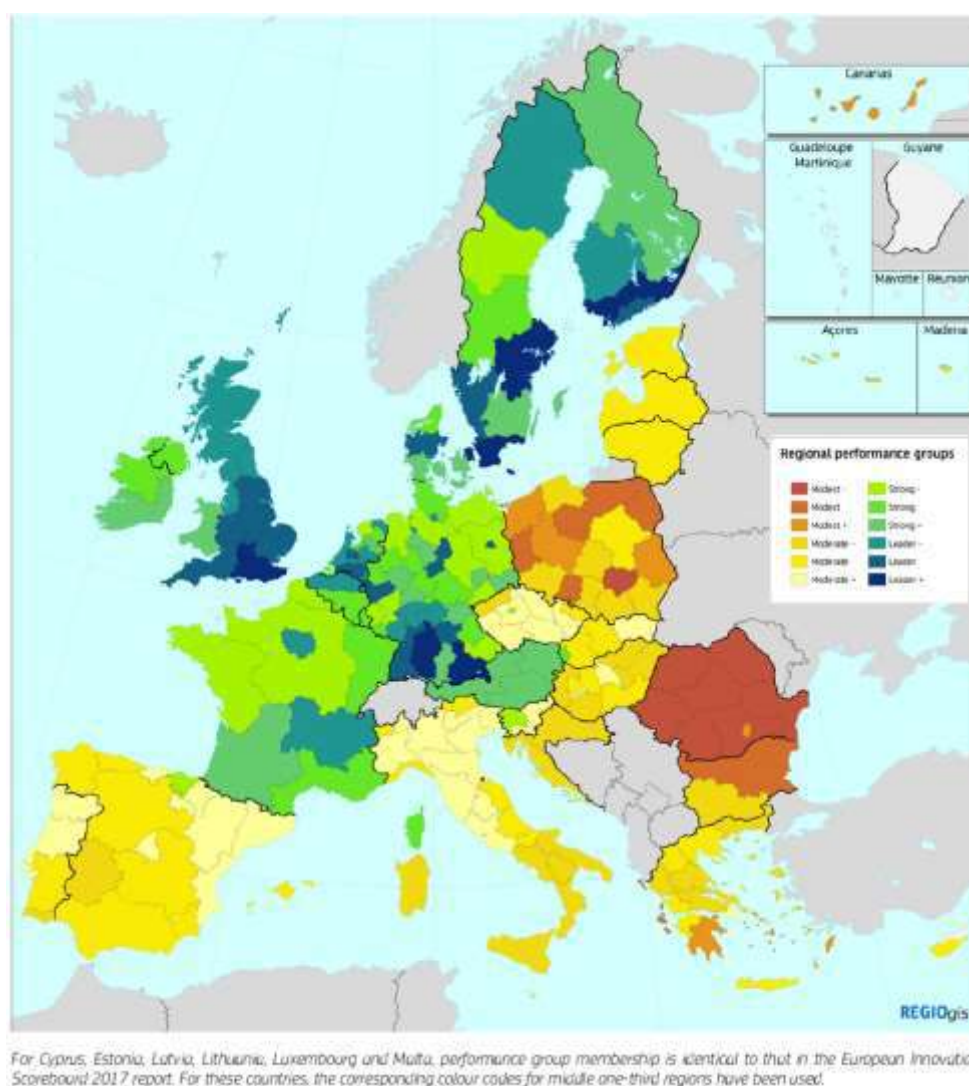


Source: European Commission (2018a: 7).

As with the Competitiveness Index, the analysis at the regional scale shows a heterogeneous panorama, as it appears in Figure 1. In the case of Spain, characterized as a moderate innovator, several levels of innovation are observed, ranging from the lowest in Extremadura, an intermediate level in the case of Galicia, the Principality of Asturias, Castilla y León, Castilla-La Mancha, Andalusia, Murcia and the Balearic Islands, to a greater degree in Cantabria, La Rioja, Comunidad Foral de Navarra, Aragón, Cataluña and Comunidad de Madrid. The Basque Country is an exception to be part of the group of

strong innovators. As for France, the whole of the country is characterized as a strong innovator, although Île-de-France and the Centre-Est region are leaders in innovation.

Figure 1. Regional performance groups



Source: Regional innovation scoreboard

In addition to territorial diversity, the innovation index shows a different evolution in the Spanish regions (Table 3) and in the French regions (Table 4). In the first case it is easy to observe the effects derived from the economic crisis with a reduction of public and private investment. On the contrary, the French regions show a more constant evolution, although the Est region and the Méditerranée region have experienced a setback in 2017.

Table 3. Spanish Regions. Regional Innovation Scoreboard 2017. Relative performance to EU in 2011

	RII2009	RII2011	RII2013	RII2015	RII2017
EU28	97,3	100,0	101,5	101,9	102,6
Galicia	72,3	73,5	77,1	69,3	73,5
Principado de Asturias	68,2	73,3	71,3	69,7	68,5
Cantabria	72,9	72,6	77,9	71,1	73,8
País Vasco	90,6	95,2	95,1	89,9	93,9
Comunidad Foral de Navarra	95,7	98,7	97,1	82,1	87,8
La Rioja	71,0	76,1	82,8	73,7	77,3
Aragón	82,8	83,0	87,8	78,4	80,1

Comunidad de Madrid	87,1	88,6	90,9	84,5	88,2
Castilla y León	71,7	74,9	76,1	63,5	68,3
Castilla-la Mancha	61,7	63,5	65,6	58,9	61,4
Extremadura	50,7	57,1	55,9	48,5	56,8
Cataluña	91,3	91,9	92,7	87,0	90,9
Comunidad Valenciana	78,2	76,8	81,3	75,7	78,5
Illes Balears	60,5	59,0	58,8	60,1	60,5
Andalucía	66,0	65,7	66,5	62,9	66,8
Región de Murcia	67,5	65,0	73,1	63,0	67,9

Source: Regional Innovation Scoreboard 2017 - Database

Table 4. French Regions. Regional Innovation Scoreboard 2017. Relative performance to EU in 2011

	RII2009	RII2011	RII2013	RII2015	RII2017
EU28	97,3	100,0	101,5	101,9	102,6
Île de France	126,8	129,6	130,1	130,2	130,8
Bassin Parisien	88,4	95,9	95,7	96,5	97,3
Nord - Pas-de-Calais	87,9	94,4	97,7	99,0	101,4
Est	107,7	104,1	107,7	112,5	110,9
Ouest	97,4	98,2	99,8	102,9	104,5
Sud-Ouest	108,5	109,9	111,1	112,1	114,3
Centre-Est	113,4	117,6	120,0	124,7	125,9
Méditerranée	100,7	104,7	105,5	110,2	105,7

Source: Regional Innovation Scoreboard 2017 - Database

Decentralized governance of innovation

In the last two decades, the decentralization process has accelerated in practically all European States. A process with multiple variants (Ismeri Europe, 2010) has the practicality factor contributed by the Europeanization of national policies and the principle of subsidiarity. The latter has favoured a new and complex distribution of skills, which, following Tödtling and Trippel (2005: 1207), has three levels: regional, national and European. This is a change in governance, as indicated Borràs (2003), which links competitiveness, development and innovation, relating sustainable economic growth - advocated by the Europe 2020 Strategy - with the ability of regional economies to change and innovate. In this relationship, it is necessary to consider not only the current characteristics of the territory, but also the previous (historical) circumstances that have led to this situation (Boschma, 2008).

The first point to take into account is the degree of *political-economic decentralization* with which innovation policies will be addressed. Thus, France concluded with the Law Notre (2015)² a process of decentralization that had been carried out over more than three decades, beginning in 1982 with the recognition of the region as a territorial community. The law passed in 2015 does not imply a radical change in regional policies, but a redefinition of the competences assumed by the new regions. These have been reinforced and classified, incorporating the following: economic development, tourism, territorial planning, transport (assumed from January 1, 2017), education and teaching, vocational training and employment, environment and energy, housing and habitat, culture, sports, and health-social. According to the Commissariat Général à l'Égalité des Territoires (CGET), the new territorial organization seeks, rather than establishing a model, to provide all regions with the indispensable

² Law n° 2015-991 of August 7, 2015 on the new organization of the Republic. It constitutes the complement of the Law of territorial public action and of consolidation of the metropolis (Maptam) of January 27, 2014, and the Law relative to the delimitation of the regions of January 16, 2015. The three form what has been called Act III of decentralization.

instruments for economic development. Its objective will be to find the modality that best adapts to the socioeconomic characteristics of its territory, applying the principle of subsidiarity, which is proper to decentralization, and seeking, equally, a place in the globalized economy. On the contrary, Spain is a decentralized state, as indicated in Article 137 of the Constitution of 1978. Its territories are organized into Autonomous Communities, whose powers are included in Article 148 - expanded by the total transfer of competences in health and education -, while article 156 refers to "financial autonomy for the development and execution of their competences".

These differences translate into the fact that in the Spanish case the main agent in charge of designing, developing and managing innovation policies is the corresponding regional government, given that the corresponding development agencies and / or agencies will depend on it to a large extent. innovation such as subsidies and financial aid; while in the French regions they intervene with the regional council, the French investment bank and in some cases the chambers of commerce.

The second point is the **regional innovation systems**, which, according to Asheim et al. (2015), can be of three types: a) endogenous: very linked to the characteristics of the territory; b) regional network systems: multilevel governance models; and c) "RIS directed", which are regionalized national innovation models. In our case, perhaps the second model predominates, although the French regions have less autonomy. To develop the objectives set by the CGET, including innovation, the French regions apply two types of programs³, whose guidelines complement those made at the national level: 1) the Regional Scheme of Economic Development, Innovation and Internationalization (SRDEII - Schéma Régional de Développement Économique, d'Innovation et d'Internationalisation), which defines the guidelines on business aid, support for internationalization, and aid for real estate investment and business innovation; 2) the Regional Higher Education, Research and Innovation Scheme, 2017-2021 (SRESRI - Schéma Régional de l'Enseignement Supérieur, de la Recherche et de l'Innovation).

In the case of Spain, regional governments establish their own development and innovation plans without a pre-established model by the national government. There is a great variety not only in the approach, since the economic characteristics of each territory are taken into account, but also in the temporal extension of the plans (Table 5). In some cases, such as the innovation strategy of Cantabria or the industrial plan of the Balearic Islands, the horizon of the objectives extends beyond the current programming period of European funds. In other cases, such as in the Community of Castilla y León, the plans show a broad previous route, that is, they are territories in which the objective of innovation was established in the 90s of the last century.

Table 1. Plans of development and innovation of the Autonomous Communities

REGION	POLICY DOCUMENT
Galicia	Competitiveness Agenda Galicia Industry 4.0 PLAN GALICIA INNOVA 2020 Strategic Plan for Galicia 2015-2020
Asturias	Science, Technology and Innovation Plan (STIP) 2013-2017
Cantabria	Future factories plan Innovation strategy 2016-2030
País Vasco	Basque Industry 4.0 - Advanced Manufacturing Strategy Science, Technology and Innovation Plan - PCTI EUSKADI 2020 The Industrialisation Plan 2017-2020 "Basque Industry 4.0"
Navarra	Science, Technology and Innovation Plan 2017 - 2020
La Rioja	Plan of Industrial Development of La Rioja 2017-2020 Plan RTDI La Rioja 2017-2020 V Plan RDI La Rioja 2017-2020

³ Although not directly linked to innovation policies, the Regional Scheme for the Organization of Sustainable Development and Equality of Territories (SRADDET – Schéma Régional d'Aménagement, Développement Durable et d'Égalité des Territoires), incorporated in the Law Notre, has as an added value its transversal character and its contribution to the territorial coherence of the great regional groups. It allows taking into account the interdependence of the thematic areas of intervention, that is, mobility, ecological coherence, climatic and energy challenges, and the prevention of waste

Aragón	Aragón Industry 4.0 (AI4.0) Economic and industrial promotion strategy of Aragon 2017-2019
Madrid	VI Regional Plan for Scientific Research and Technological Innovation 2016-2020
Castilla y León	III Framework Agreement for Industrial Competitiveness and Innovation 2014-2020 of Castile-Leon
Castilla-La Mancha	-
Extremadura	EXTREMADURA 2030: Strategy for green and circular economy Extremadura Industrial Strategy 2014-2020 VI Regional Research, Development and Innovation Plan of Extremadura (2017-2020)
Cataluña	Catalan Agreement for Industry Catalan Agreement for Research and Innovation 2008-2020 (PNRI) Catalonia 2020 Strategy (ECAT 2020) Digital Agenda for Catalonia 2020 (ADCAT 2020)
Comunidad Valenciana	Strategic Plan of the Industry in Valencia (PEIV) Strategy of Industrial Policy 2020 Vision (EPI V-2020) Strategy of Industrial Policy 2020 Vision (EPI)
Illes Balears	Industrial Plan Illes Balears 2018-2025 Plan of Science, Technology and Innovation 2013-2017
Andalucía	Andalusian Plan for Research, Development and Innovation (PAIDI 2020) Industrial Strategy of Andalucía 2020
Región de Murcia	Law 8/2007, April 23rd of Promotion and Coordination of Investigation, Technological Development and Innovation in the Region of Murcia

Source: Regional Innovation Monitor Plus <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/>

With regard to higher education, except the Basque Country, Navarra, Madrid, Andalusia and Murcia, public universities are presented as direct agents in innovation policies, emphasizing the fundamental factor of higher education and research. In the case of the Basque Country, the innovation agency (Orkestra - Basque Institute of Competitiveness) is managed by the University of Deusto, which has a private nature. Madrid, Andalusia and Murcia have organizations that incorporate universities into an exchange network together with other economic agents. They would be the Foundation for RDI Knowledge Madrid, which addresses aspects such as universities, entrepreneurs, Europe, scientific culture, and science and technology; the Andalusian Agency of Knowledge (AAC), linked to the Ministry of Economy, knowledge, companies and universities; and the Seneca Foundation, which is the Science and Technology Agency of the Region of Murcia.

Following the line of multi-level governance Tödtling and Trippl (2005) distinguish three levels, regional, national and European, according to the competences assumed. Levels that are interrelated, since the same authors affirm that regional innovation systems are not self-sufficient units but depend on both internal and external networks.

Regarding internal networks, we will refer both to the regional development and / or innovation agencies, as well as to the foundations and organizations destined to put in contact the different actors that intervene in innovation policies, that is, those that link universities, research centres and companies. It is not a static relationship, but by its very nature is called to change and evolution, depending on the degree of interdependencies with global innovation networks (Asheim et al., 2015: 2). With respect to the agencies, Prota, et al. (2012) distinguish between regional development agencies and regional innovation agencies, stating that the latter are closely linked to the regional government. They add that the decision to implement them is the last step of a process of raising awareness about the importance of innovation in the development of a territory: "It begins with the recognition of the importance of innovation for the economic development of a territory, continues with stronger regional commitment to RTDI, until there is the formulation of a specific innovation strategy and the creation of a specific body to realize it" (56-57). If we consider this argument, the regional innovation agencies are not predominant in the countries analysed. In Spain we would have the Galician Innovation Agency (GAIN), a public autonomous agency with its own legal personality, and attached to the Ministry of Economy, Economy and Industry; INNOBASQUE. Basque Innovation Agency, created in 2007 as a public-private foundation; and the Valencian Agència de la Innovació (AVI), which is a public autonomous agency. For its part, in France we find Grand Innove - Agence d'Innovation which is the

agency of the Grand Est region created in 2017; Transferts - Agence Régionale d'Innovation, which was created in 2005 as the Languedoc-Rousillon regional innovation agency and currently covers the entire Occitan region; and L'Agence régional Pays de la Loire - Territoires d'Innovation. This has changed its name to Solutions' & Co, and has been transformed into an economic development agency, which offers integral solutions to facilitate the development of companies and territories. This last example is the most numerous, agencies that incorporate an integrated vision of competitiveness, development and innovation. In France, the following would form part of this group: Dev'Up Center-Val de Loire - Innovation and economic development agency, Hauts-de-France Innovation Development (HDFID), Bretagne Development Innovation, Regional development and innovation agency - Nouvelle-Aquitaine, Madeeli, Regional Agency for economic development, exportation and innovation and Regional Development Agency (both in the Occitan region), Corsica Economic Development Agency (ADEC).

As for the Spanish regions, something similar happens, although in this case it is necessary to distinguish between public, private and mixed agencies, as shown in Table 6. We found private equity agencies in the case of Asturias, a Basque Country, Extremadura, Catalonia and Andalusia. Those that have both public and private financing are in Asturias, Basque Country, Aragón and Madrid.

Table 2. Development and innovation agencies in the Autonomous Communities

Region	Development or innovation agency		
	Public	Private	Mixed
Galicia	Galician Innovation Agency (GAIN) IGAPE - Galician Institute for Economic Promotion SERGAS - Galician Healthcare Service		
Principado de Asturias	Foundation for the Promotion of Applied Scientific Research and Technology in Asturias (FICYT) IDEPA - Institute of Economic Development of the Principado de Asturias	Network of Centres for Technological and Innovation Accompaniment for the Economic Development of Asturias (Network SAT)	European Business and Innovation Centre (BIC)
Cantabria	PCTCAN – Scientific and technological park of Cantabria Regional Ministry of Innovation, Industry, Tourism and Trade of Cantabria's Government SODERCAN - Society for Regional Development of Cantabria		
País Vasco	IKERBASQUE. Basque Foundation for Science SPRI - Basque Business Development Agency	Orkestra-Basque Institute of Competitiveness (University of Deusto)	INNOBASQUE-Basque Innovation Agency
Comunidad Foral de Navarra	Navarran European Business Innovation Centre (CEIN) SODENA	ADltech Technology Corporation	
La Rioja	Agency for the Economic Development of La Rioja, ADER		
Aragón	Aragon Agency for Research and Development, ARAID Aragon Institute of Technology (ITAINNOVA)		Zaragoza Logistics Center (ZLC)
Comunidad de Madrid	Foundation for RDI Knowledge Madrid		Madrid Network
Castilla y León	ICE – Institute for Business Competitiveness		
Castilla-La Mancha			
Extremadura	CICYTEX - Centre for Scientific and Technological Research of Extremadura Extremadura Avante, SLU	Foundation for the science and technology development and Extremadura Science and Technology Park	
Cataluña	ACCIÓ - Agency for business competitiveness AGAUR - Agency for Management of University and Research Grants CERCA Institute – Research Centres of Catalonia	FCRi – Catalan Foundation for Research and Innovation	
Comunidad Valenciana	Agència Valenciana de la Innovació, AVI (Innovation Agency for the Valencian Region) Valencian Institute of Business Competitiveness (IVACE)		

Illes Balears	Centre Balears Europe, CBE Foundation Bit - Fundació Balear d'Innovació i Tecnologia Institute for Business Innovation Illes Balears, IDI		
Andalucía	Andalusian Agency of Knowledge (AAC) Innovation and Development Agency of Andalusia (IDEA Agency)	Technological Corporation of Andalusia	
Región de Murcia	Agrarian and Food Research & Development Institute of Murcia INFO - Institute for the Promotion of the region of Murcia Seneca Foundation		

Source: Regional Innovation Monitor Plus <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/>

As far as external networks are concerned, some regions of both countries participate in projects with other Member States. Thus, Castilla y León, the Basque Country, Hauts-de-France and Provence-Alpes-Côte d'Azur are part of the Know-Hub Project⁴, while Catalonia, the Basque Country, the Principality of Asturias, Cantabria, Galicia, Navarra, the Pays de la Loire and Auvergne-Rhône-Alpes are integrated into the Vanguard Initiative⁵. Galicia is the only territory of our analysis that has an RIS3 that, integrated with the border region of Portugal, overlaps the existing Euroregion [Cross-Border Smart Specialization Strategy of Galicia - Northern Portugal (RIS3T)]. It is a space in which there is cultural and socioeconomic continuity beyond political and administrative borders.

The third point of our analysis is *the financing of innovation policies*. In the case of France, in addition to investments from Bpifrance, whose mission is to provide financial and technical support to companies in areas such as innovation, internationalization, creation and transfer of companies, the regions have so-called program-contracts State-Region (2015-2020). The Contracts include six essential axes (multimodal mobility, higher education, research and innovation, ecological and energy transformation, innovation and business, digital agenda, and territories) and a transversal priority (employment) linked to the objectives of the Europe 2020 Strategy. This investment translates into around 15.2 billion euros from the regions and a state contribution of about 14.3 billion. The amounts have been modified since the signatures of the contracts in 2015, due to the regional restructuring, since they included a revision clause expected from the autumn of 2016.

With regard to the Spanish regions, they have greater financial autonomy although they receive transfers from the State following the principle of solidarity that governs the Constitution. It must also be borne in mind that currently two models of regional financing coexist: on the one hand, the so-called common with own funds and the State, and the regional model (Basque Country and Navarre) with a collection of 100% of taxes and, therefore, greater spending autonomy. Although there are national frameworks in areas such as science and technology, the different economic capacity of the regions makes coherence between the different territories difficult⁶.

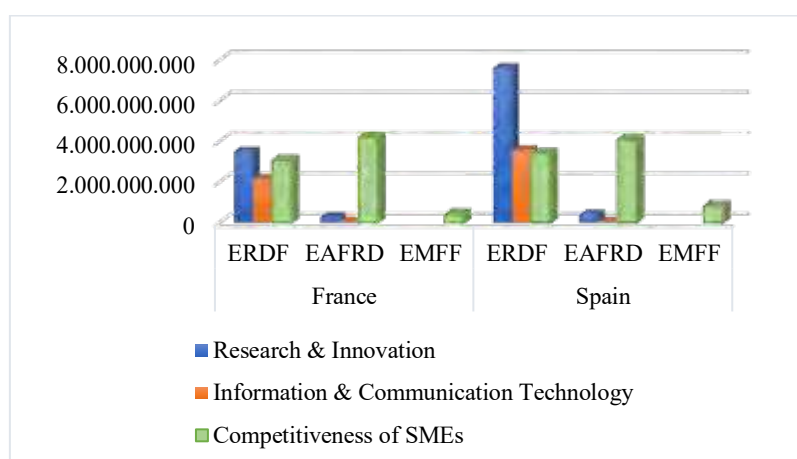
Funding from the Structural Funds of the European Union constitutes an important part of the total. We have considered that innovation policies would include funds for research and innovation, information and communication technologies, and competitiveness of small and medium-sized enterprises, which correspond to the first three thematic objectives established in the community regulations. Graph 2 shows the total amounts per country approved for the 2014-2020 programming period, with the highest percentage corresponding to the European Regional Development Fund, followed by the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund.

⁴ <http://www.know-hub.eu/>

⁵ <https://www.s3vanguardinitiative.eu/>

⁶ For the analysis of innovation in the previous programming period (2007-2013), see Faña, A., López-Rodríguez, J., Montes-Sola, P., and Pol, A. 2010. Expert evaluation network delivering policy analysis on the performance of Cohesion policy 2007-2013.

Graph 2. European investment funds by thematic objectives



Source: <https://cohesiondata.ec.europa.eu/>

Conclusions

After the revision of the indexes, and the development and management of innovation policies in the different regions, we can draw some general conclusions. In the first place, innovation policies could not only provide positive elements of territorial development and articulation, but also some negative effects that would have to be corrected in the design of these. They could favour territorial disparity, especially in the most disadvantaged regions that have less capacity to absorb the funds allocated to innovation, consolidating the so-called innovation paradox. On the other hand, if there is no strategy that takes into account the neighbouring regions, the development of innovation in a specific territory could cause negative externalities in neighbouring regions, such as the abandonment of rural areas, the brain drain, the loss of business fabric, among others. However, we must not forget that the innovation policy could contribute positively in the consolidation of the territorial aspect of cohesion, favouring the relationship between the different spaces -or new functional territories- and articulating the territory. In its incorporation to the reform of the cohesion policy, the policy of innovation and the intelligent specialization of the territories are just one more element. It is necessary to consider the whole and take into account other aspects and problems linked to institutions, governance, cross-border cooperation and limitations in the capacity to absorb investments (MacCann and Ortega-Argilés, 2015: 1300).

Secondly, the analysis of the French and Spanish regions shows common features defined by European regulations, but also important differences derived from their political and socio-economic trajectory (past and present), as well as geographic and spatial characteristics. In the position of the Autonomous Communities regarding innovation, several factors seem to contribute, although it is not always possible to apply a common guideline. Thus, for example, the case of the Basque Country -the most outstanding territory in innovation- has a financing model (regional) that favours the full management of income and expenses. However, Navarre - which shares a border and financing model - is characterized as a moderate innovator. The defining elements seem to be precise in the historical and socioeconomic trajectory. This reaffirms the theory that regional innovation policies cannot be unique but must be defined based on the characteristics of each territory. The way of designing and applying the development and innovation plans has a lot to do with the trajectory related to the regional cohesion policy since the accession of Spain in 1986. In the French case we would highlight the close link between innovation, economic development and territorial planning through the two schemes designed at the national level but adjusted to the specific characteristics through regional governments. The regional transformation culminated with the Notre Law has established a model that starts with a

vocation of balance between the spaces that make up the new regions, applying the principle of subsidiarity to the management of policies.

Finally, it could be asked whether overcoming the aforementioned differences and the diverse capacity to face the challenge of innovation requires the creation of functional territories that overcome the administrative barriers of regional boundaries. The coordination of efforts not to duplicate them and achieve more beneficial results for all actors goes through a multilevel governance in which regional plans and national and European guidelines are articulated.

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Track 4/ Institutional change and regional transitions

Regional Transition, Territorial Differentiation, Composition for sustainable trajectory

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Abstract: Abstract. The art to compose social transactions, environmental transactions have progressed with the explicit method of negotiation and mediation on the common project (Forester, 1999). Social knowledge and policy planning could progress when they specify how the different transactions can be combined so to reinforce the requirements of sustainability on a territory.

The construction of public policies have made possible to integrate these contradictory pressures inside a public policy who may stabilize the space of negotiation. The case of Venice Marghera demonstrated in the 1990 the social capability to articulate two levels of negotiation, between city council and polluting enterprises, between Unions, enterprise and National government on the stages a of depollution and new technic of refinery. The main analytical question intends to integrate the local public actions inside an articulated public policy (Crosta,1999)

The current process of sustainable transition is involved after 2015 in a new period with a diversity of local actions for sustainability. They have to be composed with parallel actions and policies, researching some convergence. In the french case of Loire Atlantic, we may identify three type of transitional territories, each one develop his own conception of ecological transitions.

Urban metropolis transition demonstrates his capacity of coordination on the economy of energy and management of risks inside a coordinate model of sustainable urban development. Municipal and institutional coordination are supporting the extension of urban environmental transactions

Countryside territories support the land protection but they require extended mobility, and are also reluctant to the economy of energy facing the gasoline struggle. Peripheral territory are struggling between precarious life styles, urban consumption and constraint of mobility.

At the regional level the coordination of action by explicit public politics, require more flexibility in a *federative combination* between differentiated territorial actions. Some conflicts emerge between urban and rural population, between stable and precarious population v workforce are developing at regional level. The institutional innovation have to be combined with their planning capacity so to support purposive trajectories of development.

Keywords: Sustainable pathways, Institutional Coordination, Community of Risks,



Introduction

§ I / Social cohesion and environmental policies

***Social cohesion has different meanings. The basic meaning details how to make groups and to cooperate on some basic tasks (so the group dynamic of Festinger. Social cohesion means that the functional interdependencies and solidarities are stronger than social and cultural cleavages (Coser). In State politics, social cohesion takes some normative and political meanings, claiming for a social order between social groups. In progressive area, social cohesion can be a resource and a goal so to initiate and frame a social welfare on consensual basis. In Europe, the politics of social cohesion means a list of transfers and funds for the declining region (zone 6 as Sicily, as Greece) facing the convergence of the European market. The key questions come on the interactions between national Welfare cohesion and European market cohesion.**

***Environmental politics address the response inside a community of risks (in group/ out group/ type de connections). How to protect together, how to define the first short term solidarity before the institutions take the relay. Agenda 21 in Nantes case Social cohesion could prepare some new institutional arrangements, including the risks management, based on a common pool of resources (Ostrom, 1991). Some other sociological questions address the process where the social groups are included in the cohesive social order, in the mobilization for economic growth, the way they are concerned by the environmental politics (protection return, politics of cultural diversity). Social cohesion address different facets on the relations between social community and State organization. This notion requires more analytical development.**

The criteria of social cohesion in the politics of urban renewal (France and Europe)

The notion of social cohesion appears as *a sociological category* with institutional, social and functional dimensions. We may recall and specify its relevance for the analysis of urban politics and the analysis of urban (Astengo). This category of social cohesion is currently developed on different repertoires : in - Economic restructuring as: market exchange, as logic of access and connexion. - in Welfare State constituency : as social solidarity, as logic of access and public support; - in Urban politics as social composition and urban solidarity. The redefinition of the Welfare State inside the economic restructuring (fordist, flexible) concerns the housing politics, the social politics, the urban politics; so result multiple definitions of urban politics. The city politics can be envisioned as a simultaneous arrangement of urban politics and social politics. The notion of social cohesion appears simultaneously as a criteria and as a political frame to evaluate and limit these political constituencies.

Governance and social cohesion : the institutional arrangements

Urban theories tend to connect directly the construction of governance with the arguments of social cohesion, by combining enlarged networking and flexible coordination. The diagnosis of social cohesion has to be experienced within the social differentiation inside the city and the metropolis. M Parkinson develops a more subtle argumentation, how the *competitiveness between cities* can be counterbalanced by

some social cohesion *“Employment is clearly a critical link between competitiveness and cohesion... However the overriding conclusion is that governance can make a significant if relatively marginal impact “..(Broddy, Parkinson, 2004). ”The main argument considers the urban system as a whole, as well as the broad patterns of urban change”*. But the enlargement of resources for the competitive sectors and professional do not conduct directly to the reduction of inequalities in housing market. So we have to consider the urban politics and the social politics who are counterbalancing: regulating the competitive sector.

Metropolitan governance, between competition and inequalities

During the 1990's, the trend to global cities is counterbalanced by some political constructions to contextualized the urban politics (Jessop, 2006, Crosta, 1999). So was elaborated a new analytical frames between urban societies, urban politics and system of governance. The theory of metropolitan exchange is connected with the requirements of market efficiency (Marin,). The rational choice preferences are supporting the differentiated development of urban services, the differentiation of middle classes (Dunleavy, Butler). The theory of coordination is connected with the contractualist approach of public action, but also with the paradoxes of contractualism connecting local joined actions and financial centralization. It induces different political and institutional solutions between the institutional fix (Jessop; 1999); the quango organization, the design of new democratic structure (Maggio). These dilemmas can be distributed between the levels of government.

The double structuration of government is sustained by his capacity to manage two levels of problems, the daily management and the global orientations. The first opposition between the direction setting and the steering government indicate the double requirement of problems inside metropolitan government (Thornley, Newman, 1997). It could be enlarged between the objective of modernization and the difficulty of social cohesion (Parkinson). But it has to deal with the cultural dimension of the steering government (materialist / post materialist) and the resources of economic modernization (high/ low) (Savitch, 1999). In addition, the differentiation of the urban systems (industrial, suburb, post industrial) restrain the unification of the urban economy and metropolitan cohesion inside the competitive governance. The community of risk facing climate could enhance the mutualisation of risks sustain new institutional arrangements.

*Models for social cohesion, and public choices framing

- The social cohesion at the metropolitan level concerns other requirements such as the access to employment (depending from the urban economy), the access to public service, the access to city centre. It is not limited to the management of the Welfare State.
- the social cohesion at regional level between agro farming and ecology, between urban area, rural area and natural protection is enlarged by the conflicts of yellow jackets questioning the relation between transportation non policy and distribution of populations

These levels of social cohesion, correspond to the double enrolment of the social groups between a residential community and a metropolitan economy. The entry of urban analyzis, only by the area of excluded people tend to limit the frame. Other dimensions of social cohesion have to be taken in account such as the institutional dimension, the redistributive dimension, the European dimension. They introduced some other large debates

*Urban regimes; type of social cohesion and sustainable development trajectories

Urban regime theory has been framed so to analyse the supports of local government and the construction of local politics (Stone, 1995). *The New state spaces* are involved in the politics of sustainable development. The politics of local state can be described as a specific arrangement of politics and institutions, on urban development, on sustainable development (Boyer, Brenner). This intermediary level of analysis contribute to analyse the urban regimes (Cl Stone) developed on specific issues as the urban sustainable development. It contributes also to frame the different social supports of an urban regime such as the network supports, the institutional clientelism, the elite coalition of interest. The working class areas are the objects of an addition of politics (economic restructuring, urban requalification, social cohesion, sustainable development).

Such an institutional regime analysis has been applied to describe and to characterize the trajectories of sustainable development in two french metropolis, such as Nantes metropolis and St Denis Plaine commune, not only as urban development, as urban social requalification but also as a combination of social requalification and sustainable development. In this view, the dichotomy between maintenance regime and growth regime need a new articulation. The stabilization of the economic regime as support and resources of political urban regimes requires also a clarification. The politics of sustainable development are questioning the standards of production in post fordist productions, and the combination of politics in urban development. The key question of urban regime is to combine economic interest, urban interest, political interest.

Different approaches of the urban regimes

Urban regime connotes the informal arrangements that surround and complement the formal modes / choices of government authorities between public and private orders. A regime involves a relatively stable group which accounts for the institutional resources that enable sustainable actors in making government democracy. Clarence Stone has defined *four different regimes* : *maintenance or caretakers regimes*, *development regimes concerned with changing land use*, *middle classes progressive regimes* which includes aims such as environmental protection, *lower middle classes opportunity expansion regimes* that emphasize human investment policy and widened access to employment and ownership.

Kathy Mossberger questions *the role of selective incentives* :_The three types of urban regimes (growth, maintenance, progressive) incorporate local dependence, selective incentives and purposive incentives. In this way the civic capacities can be extended to the Urban educational projects (Stone, 2003)._She recognizes two qualities of the theory of urban regimes : -To connect and interrelate the relations between actors and structure (as a structuration theory applied on urban affairs), to extend the formal and informal resources, civic and financial who shape the urban and metropolitan coalitions. But such an extension of urban networks of interest requires a formalization on the criteria explicating” the construction of power, the construction of politics. She concluded by the political assessment : “*The appeal of the regime frameworks has been its ability in use a political economy approach to synthesize structure and agency*” (Mossberger ‘(2001)

Transformative regulations

In contrast with the regime theories of the 1990’s, B Jessop develops a post regulation approach. His vision of integral economy such as Gramsci tends to envision the global determination by market, such as the American fordism of the 1930’s. His analysis underlines the effects of the social representation on the mediation inside the institutional analysis. This framework is supported by a specific analysis on the

dynamics inside the asian economies, such as state entrepreneurship in Singapour, as expert led economy in Japan, so to envision the change in the regulation systems; to connect more deeply the state development with the economic conditions. He criticises a static approach of regulation so to develop a transformative approach of regulation leading on accumulation regimes: He makes explicit the different dimensions of this reappraisal for transformative regulations inside accumulation regime : The Jessop's programme is leading on multiple and tense dimensions, the ideological and cultural basis of regulation, the cultural basis inside the historical compromise, the dynamic transformation inside regulative regime.

Social changes between industrial space, local state and sustainable development

The Large Urban Research Area (LUDA) questions the politics of sustainable requalification by focusing upon the working class territory with a special consideration on the industrial conversion by sustainable requalification. We describe how the policies of sustainable development are supported by the urban politics; as politic of district requalification (ie "politique de la ville"), with their social consequences. In this view, sustainable development is concerned by the issues of urban segregation and urban injustice (Harvey, 1996). We observe the progressive construction of the politics of sustainable development that incorporate the production process of goods and services. New models of industrial development have been suggested. These models imply new process in coordination and deliberation, promoting more integrated industrial space (for economy of scales, for risk management). So we can question the new relations between industrial politics and the politics of sustainable development.

We can formulate an hypothesis on the respective contribution of the state and local government in re-composing the industrial state:

* The state may actively support the politics of transportation, the politics of energy. A liberal state may accentuate the politics of industrial delocalisation and eventually support a regulation policy between social cohesion and industrial requalification¹ (such as the EEC policy).

* Local government may actively open the area of industrial requalification (restructuring, modernizing, complementing). It supports a key role in local arrangement and coordination between different politics (e.g. energy, transportation, industrial requalification, maintenance of industrial activity). It can supervise different actions (social requalification, sustainable development as inequalities containment).

The discourses and implementation policy of sustainable development have been examined at the level of metropolis guided by the definition of the public actions for sustainable development (community groups, city hall, expert groups, city hall administrations). A socio historical approach of each locality set the different sequences of the local definition of sustainable development (as path dependency), the degree of convergence and coalitions between these actors and stakeholders (Sabatier, 1999), but also the institutional arrangements mobilizing different actors and coordinating different actors. Historical sequences of each metropolis can be described by a trajectory of urban development and sustainable development. The practices of social deliberation for sustainable development are developing on different place and different scales of decision. Community and district deliberation are supporting the issues of housing requalification, with economy of energy and consequences on household affordability. The environmental deliberation is envisioned as a response to the ecological mobilization (on space and water preservation, on risks assessment / and alert (Hajer, 2009).

Construction of sustainable policies and mobilization of institutions

The political construction of sustainable development (e.g. the Agenda 21, sustainable planning, risk management, ecological activism, and civic environmentalism) requires to articulate different interventions and implementations. So it involves a wide-ranging mobilization covering different institutions, actors and stakeholders. The global dimensions of climate change (International Group for Climate and Environment, Giec^j) involve the local actions of associations: NGOs and community groups of city and municipal administration (for practising the Agenda 21).

The role of metropolitan government (by common institutions) involves shaping different functions: a role of communication between associations, community groups, elected members and professionals. A policy of coordination by: networks, professionals, agencies and policy setup and implementation process. So results a new redefinition of the urban sustainability by the level of anticipation and social support. In this policy framework, we can question the mediatory role of metropolitan agencies that frame new mediations inside global /local relations.

The methodology for local observations proceeds by extensive questioning of the process including multi-actors (community groups, policy definition, and deliberation process). By initial approach, we can find out the typical organizational inquiry connecting the administration and the professional. By enlarging the inquiry to the phases of implementation process with the place of community group and deliberation process, we can formalize the social relations on the issues (such as urban politics coalition, sustainable definition) and overcoming the institutional cleavages and visions (Latour, 2006).

Metropolitan changes and institutional arrangements for sustainable development

The social and industrial territory of Plaine community located in the north of Paris (120.000 being employed out of 250.000 habitants) and Nantes Metropolis (500.000 habitants) have been transformed significantly since the late 1980s:, This area study shows much larger presence of working class composing of 30 to 40 per cent, a lot more younger population, and much larger immigrants. In this framework of industrial, urban and sustainable trajectories, we can specify the role of pluri-communal

institutions and the city *enhancement of structural actions* (requalification, public health, and environment). The social outcomes (territorial, institutional, politics, technical) of these political constructions can be clarified.

***In Nantes the implementation process of sustainable development is sustained by metropolitan reorganization (Communauté urbaine in 2001). The implementation of sustainable development policies (e.g. the Agenda 21, risk management, and energy politics) governs the elaboration of planning politics (scot). The Agenda 21 provides a framework for procedural actions in addition to other document of housing politics (PLH) of transportation. Therefore comes up some strong and continuous innovation (Agence Nationale pour les Economies d'énergie, such as ADEME), such as eco-quarters, requalification of Ile of Nantes) can be developed. The community of risk can be a base for mutual and collaborative actions supported by institutional arrangements.**

Urban and political options: Metropolitan Coordination and Deliberation

St Denis and Plaine Commune have made the choice of cities with high population density, politics of urban requalification, eco-requalification with more urban intensities (population density, transport, eco-cycle). The industrial territory of la Plaine combines services (such as logistic, research and residential areas in a middle class territory). The urban territory of Nantes Metropolis and the schema for Territorial Coordination (SCOT) have to control and to regulate the urban sprawl – the extension to the periphery where single home units are available– with the cost of transportation and energy consumption. In this reason, city with a higher population density and the redefinition of metropolis and regional function in a new urban centre (Ile de Nantes) are promoted. The debate over the Agenda 21 elaboration raises the issue of mobility and transportation, and the combination of temporalities.

Institutional combinations inside the metropolitan trajectories

Within the territorial and metropolitan transversal dimensions, a large thematic of sustainability (environment, risks management, energy) emerges. This gives rise to a thematic reorganization and new institutional arrangements for the institutional supports of public policy (Table 1). They promote the politic of “transversality” (the Agenda 21, SCOT) and they require some administrative and political coordination. The metropolis of Nantes presents public policy for sustainable development, combining the City Politics (“politique de la ville”), the Agenda 21, management of risks, and planning politics. But the conception on the socio-spatial development model is supported by the Agenda 21 before the planning document (SCOTⁱⁱ). An open debate on the peripheral model of development (urban sprawl, compact area, mode of public transportation) is raised. The mutual and interdependent combinations between urban metropolis and environmental transversal dimensions in the model of development require some new institutional arrangements in the definition of metropolis development.

Table 1: Metropolitan Urban Sustainable Politics as a combination of public politics

The Metropolis of Nantes (2007) combines the “politique de la ville + agenda 21 + Management of Risks.



Politics	Politic of environment	Management of Risks	Politic of energy	Politic of Transportation	Politic of Housing
Public “Service” Board	Office of Environment	Office Of Risks	Office for Energies and Sust Dev	Public Transportation Company	Mayor and Metropolitan Agency
Document of Reference	Athénée Programme Eco quartiers	SIG System Craoil	Energy Programme (PPAE)	Transportation Plan	Housing Local Programme
Specific Territory Of Actions	River bank of Loire Great Area Project (GPV)	Integrated Industrial Areas	Energy Networks (Housing council)	Metropolis Area	Housing District And Village
Political Elected Reference	Vice Mayor For Environment And DD	Mayor	Vice Mayor For Environment And DD	Vice Mayor For transportation	Vice Mayor for Urban Development

In this framework of urban exchange, coordination and institutional arrangements develop multiple processes of social deliberation (The Agenda 21, council of development, community council). However we have to distinguish the collective of deliberation as community issue and the collective of decision as coalition legitimating a public policy. This is only at the level of decisional community (Dahl) that can be stabilized with certain referential matrix (Sabatier, 1989). The referential of sustainable development is fixed on the shaping and the organization of urban sustainable transversality.

Redistribution of competences and instruments

Within the large institutional changes, the instruments and dispositives settled for the risk management contribute to the stabilization of a pluri-communal “reference” frameworks with their effects on municipal frames, with their outcomes on private actors (citizens, residents, enterprises). The official discourses and narratives insist on the continuity between private values and public values (partnership, development, mixed economy). But a policy viewpoint has to specify the adjustments cost, inside the redefinition of the urban structure (local planning and land values, politic of requalification, conversion of brownfield). They promote new economy of scales, some new external economy (Baumol, 1994). Therefore the types of conflict emerge in the management of risks (environmental conflicts, political conflict, conflict of coordination).

In the current conditions, we may recognize *two regimes of the management of risks*: A middle range vigilance focuses on the envisioned risks of the global warming, inside the documents of urban planning (water, urban sprawl and energy costs). The local surveillance by municipal institutions focuses on specific risks (industrial areas, flooding) and the responsive capacity of each municipal administration.

New formulas of coordination

The new metropolitan authorities are not only some conventional agencies, but also new institutions with territories and competencies. They can support collaborative networks between representatives and associations. So result multiple forms of coordination, not only administrative and functional coordinations, but also civic coordinations with joined elaboration. Sustainable development is mobilizing community groups, representative and institutions in an “ascendant” mobilization. It groups institutions and local actors by top / down programme. The links between pedagogy and mobilization give a specificity to the implementation of sustainable development.

Path dependency approach suggests that each step of sustainable development, requires some specific coordination of actions, and some social support by deliberation on the norms and the orientation (Pierson, 2001). The legitimization of the public action on sustainable development is in processes (Sabatier, 2004). So results some functional interpretation of deliberation, so to promote pedagogy. We have already quote how conventional institutions are sustaining lateral mobilization by networks, by pragmatic linking of particular interest (Beaumont and Nichols). This analytical scheme can be extended on metropolis institutions.

Table 2. Institutional Levels and Social Responsibilities on Risks : Multilevel State and Sustainability

Cities / Municipality	Hygienic and Safety	Vulnerable Area / Vulnerable Population	Reference of Mayor
New Urban Communities/ Metropolis Agencies	Communality Management of Risks SCOT = Metropolitan Orientation Scheme Agenda 21, Climate Energy Plan (PCE)	Transversal Coordination Urban Project Territories Transformations	Communalities Cultures Deliberation
Department / Province	Agenda 21 for public services Environmental Pedagogy, in school, with association, Communication, Animation Climate Energy Plan (PCE)	Communication Social Links Social Care	Segmentation Specific Population
Region	Great Risks, Seveso Risks Agro farming and Pollution Natural park protection Transportation modalities and distribution of population (SDAU)	Territorial Changes Prospective	Regional Politics and Sustainability conflicts

The social dimensions of sustainable development

The classical approach of sustainable development points to the fact that social inequality “are setting large constraints on the arrangement and on the policies of sustainable development (Harvey, 1996). Therefore, the territory of high risks is likely to be that of vulnerable population like flooding areas (observed in the 2004 flood of New Orleans in the USA) and industrial areas (Bullard). The activist approach of sustainable development pay attention to the appropriation of the thematic of sustainable development by local actors. Social issues can be mediated through by different social channels such as local associations, community groups and their environmental claims – e.g. territorial politics of each municipal administration.

Our analysis of path dependency process (Pierson, 2004) insists on the necessary social conditions for implementing, the actions and the politics of sustainable development, such as the social actors supporting initiative and animation for sustainable development. The behavioural changes concern the economy of energy, education and consumption, the changes of institutional norms (policies of energy and transportation). The ecological modernization of Metropolitan institutions (law SRU of 1998ⁱⁱⁱ) seems to precede the social and ecological adjustments, which depend on the territorial choices of municipal politics and the management of territorial change. Some new relations between the economy of scale and adjustment costs as the rescaling and the downscaling of public politics are created (Brenner, 2004).

III / Two-levels of negotiation in Venice : Industrial policy and Sustainability policy

These results on the sustainable conversion of industrial sites in France can be compared, evaluated by the Italian process of requalification of industrial sites based on a dual process of political exchange and territorial coordination. This clarification of the urban regime at the metropolitan level (model of metropolitan governance) make explicit the political coordination between the urban model of development and the policy making in the industrial areas. These industrial changes implicate some new metropolitan reorganization (technopolis, quasi integration of industrial spaces, transportation logistics, training and flexibility of the industrial work force). The referential of sustainable development emerges inside the discourses of territorial change and the new requirement of sustainability.

The reconversion of the chemical activities of the port of Marghera, involves several collectives: (trade union, municipal, ecologist) and several levels of industrial relations (ecologist / elected officials, union / chemical industry). The dispersion of ecological activity groups fighting against industrial pollution (chemical) and for the preservation of the lagoon (natural environment, historical), is placed before the centrality of conflictual negotiations between contractors and employees on the modernization and preservation of jobs. The municipality of Venice Mestre provides a frame of reference for negotiations on environmental issues and the modernization of the port. Marghera's new plan in 1998 establishes a framework of reference and compromise between the diversification of the port's activities (tertiary tecnopolis tourism) and the continuity of certain chemical activities. Social demand passes through the unions. The environmental demand moves through the municipalities inside double level of negotiation

But the second stage of bargaining has moved up to a national level of negotiation so to establish a framework agreement between unions, companies and the central government. This February 1999 agreement links the maintenance of chemical activities with the preservation of certain environmental criteria on chemical discharges (discharges and water temperature). This addition of contractual agreements shows an example of an industrial and environmental partnership between municipalities and entrepreneurs seeking to promote a "common good", as a common asset between residents and employees of the industry. In Italy the partnership is conceived as a relay of territorial policies. It involves convening public and private actors to implement urban policy objectives. But the implementation of this policy remains problematic given the weakness of investment and coordination of public administrations (Perruli,). The 1998 framework agreement comes after the downsizing of the mechanical industry and oil. Large groups decentralize their production to other sites (Down Chimica, ENI) The actual result is a decline in the number of employees from 33 000 in 1998 to 13000 in 2005 with a diversification of activity on small businesses (Trifiro, 2008)

IV / Environmental conflicts in Nantes Region and shift in social cohesion

The current process of sustainable transition is involved after 2015 in a new period with a diversity of local actions for sustainability. They have to be composed with parallel actions and policies, researching some convergence. In the french case of Loire Atlantic, we may identify *three type of transitional territories*, each one develop his own conception of ecological transitions. Urban metropolis transition demonstrates his capacity of coordination on the economy of energy and management of risks inside a coordinate model of sustainable urban development. Municipal and institutional coordination are supporting the extension of urban environmental transactions (§ 2) *Countryside territories support the land protection but they require extended mobility*, and are also reluctant to the economy of energy facing the benzine struggle. Peripheral territory are struggling between precarious life styles, urban consumption and constraint of mobility.

1 / The refusal of eco tax in 2015

The ecological transition plan prepared by Minister of the Environment 2016 was based on the development of the eco-tax. This tax policy of road transport has met with strong resistance in 2014 2015. The organizer of roadblocks were based on truck drivers, self-employed, farmers Breton. The socio-economic issue concerns the final price of the goods, the free movement on the Brittany radial and the level of export of industrial agriculture. The rallies on the logo "red cap" which was based on Breton regionalism, associating a strong cultural identity as Breton regionalism and the intensive development of industrial agriculture. Hence the retreat of the government, as a deferred measure, canceled, not acceptable in July 2015. There remains the feeling of distrust facing the state and its ecological policies

2/ Contestation de Great Airport in ND Landes

The ND Landes airport project between Rennes and Nantes associates, the regional elected representatives of Angers Loire, Rennes and Nantes, The decision comes from an interregional conference with a scheme distributing the attractiveness, the accessibilities, the mobility. The challenge of the airport is the attractiveness of Nantes to new activities (airbus framework), the recovery of agricultural lands when Nantes Bouguenais airport face the pressure of urbanization. Ecological resistance is interpreted according to the theme of No growth, on the defense of bio diversity (Guerande,

Briere), on the defense of agriculture. The actions combine mass demonstrations of 10,000 people with a media dimension and land occupations (130 students, precarious housings), resulting in a heterogeneous coalition versus an explosive mix anti-government, anarchist for other forms of life (authoritarian)

The elected representative ecologists plays both the defense of nature and peri urban housing, the collaboration with sustainable development in Nantes metropolis the defense of the urban period against the intensive urban development, In January 2018, Macron Gvt Philippe, cancels the decision of the airport for budget savings (report) sustaining an alliance with environmentalists Ministers (Rugy, Hulot). Alliance between alternative ecologist and independent peasant are emerging. 60 precarious can cultivate agricultural land in a transitory way, under the argument of an agricultural laboratory of biodiversity. The new ecology focus on the defense of bio diversity, a new compromise between farming and organic agriculture. The pathways of transition could be very diverse between generations, with some blockages and large uncertainty of the strategy of sustainable urban/ rural development.

3/ Contestation of eco taxes in the periphery The conflict of yellow jackets between November 2018 and June 2019

The mobilization of the movement of the yellow jacket starts from a clear protest, even if it assume several causes. The mobilization refuses the increase of the eco tax (50 euros per ton) and its negative consequences on a high fuel prices. The high cost of peripheral mobility affects the monthly budget of precarious households. Media images expose the feeling of blocked lifestyles, a deep questioning on the constraints of the peripheral lifestyle (in dispersed rural area, especially in the central massif) and also lifestyle suburban, very far from the big cities (Meuse, South of France.) The analytical approach will be linking lifestyles and planning styles (Genestier 2019).

The process analysis of the mobilizations set up the aggregation of different audiences around the roundabouts, heterogeneous social recruitments between truck drivers, nurses and low-paid employees, retired peoples,, middle managers in the public service. Beside the independent professions resulting from the first mobilizations of the red cap are added the public of precariousness. After two months of explosive demonstration in the urban centers, the social demand, on the low wages on the precariousness tends to take precedence over the territorial claim of the peripheral way of life, the peri-urban autonomy, on the ecological claim. The government responds in December 2018 by measures concerning the precariousness of pension and very low wages (a year bonus)

The initiative of the great debate on the four themes (taxation environment mobility democracy) aims to curb the movement in the social and fiscal consensus. I intends to explore the deep reasons for this explosion of anger between rich city centers and poor areas, and possibly move the coding of the movement. Beside the aspiration of poor retired residents and precarious employees, there is a limitation of the ecological aspiration on the daily (eco gestures). The movement of yellow vests remains fixed on the wealth tax and the referendum of popular initiative (R.I.C.), on a direct political expression on the financial choices.

The viewpoint of planning notices the increased differentiation of the territories of lifestyles (suburban, peri urban, rural center). It can be diagnosed three territories of lifestyles and project. The current process of sustainable transition is involved after 2015 in a new period with a diversity of local actions for sustainability. They are composed with parallel actions and policies, researching some convergence. In the case of Loire Atlantic, we may identify three type of transitional territories, three community of issues, each one develops his own conception of ecological transitions.

V / Disjunctions and Conjunction framing / Regional Politics

Regional policies in France are based on several arbitrations, territorial conflicts and potential conflicts. The rural / urban conflict focus on densities and land pressure with regard to agricultural land (Hamman, 2012). They moves today on the conflict between rural agriculture / organic farming, on the protection of water resources.

a/ The regional policy of the Region des pays de Loire (3, 7 million inhabitants, 117 inhabitants KM² 2 surface, 32000 KM²) is a selective policy oriented territories and agricultural enterprises. It assumes its orientation on a policy of agro diversity, on the defense facing coastal risks. The budget for biodiversity 2018/2012 amounts to 192 million euros over 5 years: 71 million from Europe. The regional policy of Region Pays de Loire proceeds on the continuity of the industrial agriculture (Mayenne with refusal of the eco tax) The State is engaged with 2.5 million euros and the Region up to 6.5 millions of euros in a joined State Region contract. Its goal is to restore confidence in the territory. -Environmental policy manages coastal risks raised after flooding incidents in the Charente Sea

b / Regional policy is less assured on the energy transition, on the renovation of buildings, on an indicative construction of rural mobility. The search for new renewable energies remains experimental (St Nazaire wind energy project, electrical car as experimental). Renewable energy production is expected to triple the rate of energy consumed in the territory of renewable origin by 2021 (today this rate is 8%) (€ 33 million - European funds € 9.5 million). The energy saving dispoitives is referred to the cities Nantes against Angers. The coordination of energy cycles is delegated to department with Plan Climat Energy (P. C. E). The energy building plan (€ 39 million with -€ 22 million European funds) to support the energy renovation of private housing The challenge is to renovate 100,000 housing units by 2021. Sustainable mobility covers 3 commitments (Region € 10m - European Funds € 25m)

c/ This uncertain policy has consequences in the heterogeneous mobilization of cities (Nantes, Angers St Nazaire, Laval). Regional mobility is contrasted between city policy and regional policy. It assumes a policy of privileged territories (agro) and territories at risk (forest and parks) without link between territories and development objectives. The mobilizations of yellow jacket highlight the weakness of regional policies on peripheral mobility, on energy savings to develop, (see regional consultation). it combines a peri-urban crisis and crisis of the regional development model . Regional politics mobilize differently the three identified territories of issues. Countryside territories support the land protection but they require extended mobility, and are also reluctant to the economy of energy facing the agsoline struggle. Peripheral territory are struggling between agro protection and Metropolis mobilization on sustainable development (§ 2). At this time they do not present autonomous politics of sustainability and development

At the regional level the coordination of action by explicit public politics, require more flexibility in a *federative combination* between differentiated territorial actions. Some conflicts emerge between urban and rural population, between stable and precarious population v workforce are developing at regional level. *The regional policy presents itself as a federation of causes, territories without clear objectives* Parallel paths of sustainable development could amplify the areas of conflict such as eco tax or a disjunctive synthesis with predations. The tension odevelops between the advanced energy transition in the cities like Nantes and Angers and the policy of bio diversity on the agricultural and peri-urban grounds (regional politic). The new compromise would come from the regulation of conflicts, promoting a sustainable regional welfare state.

* How to organize urban coordination and environmental coordination in transition plans and regional coordination ? The urban region is fractalized in diversity of trajectories (rural region °) The

stabilization of the policies of sustainable development requires a sustainable welfare state, protecting the populations, supporting the social solidarity on the eco taxes. We notice the crisis of financial incentives facing the social differentiation and spatial dispersion. We may evaluate this crisis of financial incentives in regard with the possibility of coordination of action and federalization of risks

VI / Conclusion * :Multiscale governance between local State and national state

This paper has focus on the *new institutional arrangements set up at the regional and metropolitan levels on the rescaling of urban politics*; the development of the politics of social cohesion by requalification and gentrification; the new combination between urban politics and the policy of sustainable development. The local institutions and the local government play a specific role, so to adapt the actions of sustainable development by urban context and by social relevance. Metropolitan government has the specificity to coordinate the local actions, the public policies to modify the model of urban development in a more sustainable process. They develop a large influence by implementing some differentiated capabilities of actions.

The central State may keep a central role to impulse a rhythm and an agenda of modernization between sustainable development and industrial models. It may sustain or frame the role of metropolitan institution. The key issues concerns compromises between public norms, local mobilization and modernization of the eco-industrial models. In the current situation redefining the State authorities, experimenting the sustainable development policy, is not assumed the convergence of norms and rules between central state (by norms) and local state, with flexible coordination and autonomous institution. Different trajectories can be developed by coordination and deliberation.

Within this approach, we may compare the social outcomes in the production of the urban sustainabilities between national policies of the nation state and the policies of the local state:

- The politics of the nation state focuses upon the debates on the politics of energy, on transportation priority and economy of energy. Besides the media corporate debates, new eco technologies are envisioned.
- The politics of local state on sustainable development may articulate citizenship mobilizations on concrete issues, with open construction of these politics between public deliberation and social changes, the framing of alternative way of life (compact district, soft mobility). We may notice different urban solutions, different urban assemblages between contexts, between nature, social territories and institutional coordination.
- The regional area is leading the issues stakes on biodiversity, on agricultural land, on mobility politics

Table 3 Dual politics inside Climate Transition (Energy Transition, Biodiversity Politics)

	Energy Transition	Bio Diversity Politics
Dispostives	Energy system, autonomy and distribution	Territories and Eco systems
Behaviour	Information and autonomy of behaviour	Territorial attachment
Metropolis	New energy system Geothermy Public transport Multi modalités	Environmental politics Biotechnopolis
Periurban	Wind energy, solar energy Car consumption	Conflict rural land urbanization Bio farming and peri urban
Region	Innovation on new energy Pb/ extension, distribution	Agro ecology Coastal protection Park protection
Nations State	Coordination, Concentration Balance of energy system	Biodiversity mapping and rules of protection

*** New spaces of the state and sustainable development**

The local state (metropolitan agencies, regional state) may federate the local actions for sustainable development by networking and flexible coordination. It can give place to local communities and groups. The local coalition of power have to make their choices between the territorial based bureaucracy and the postmodern bureaucracy, with the social networks for environment (association, risk management).

Central State may keep a normative role in the construction and the protection of markets, such as the housing market, economy of energy, carbon balance and fiscal policy, eco technological innovation. We have framed how the normative dimension of a State keep a sense of responsibility in the risk management in a neo liberal State. This question concerns the relation between central state coalitions and the diverse plural local coalitions. This is the heuristic to analyse the urban and metropolitan trajectories and their institutional arrangement. How they change the local coordination and the norms of reference. The sociological analysis of urban sustainable trajectories may specify the purpose of social compromises and the place of deliberation inside these compromises".

In a first approach, we notice some stability in the analysis of social compromises bounded around the urban politics and the environmental politics.. The participation on the urban politics and the politics of sustainability, is more sustaining some arrangements between urban middle classes and central elites (Beaumont and Nichols, 2007, Hajer, 2005). Environmental compromises are destabilized by the new sustainable development policy. Energy transition and biodiversity are two pathways of sustainable development, two types of institutional arrangements. The classic tools of land use and property planning must be combined with incentive policies that support energy policies (market, finance, taxes). These questions concern the new future stages of sustainable regional development.

Gilles VERPRAET

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Institutional change and regional transition

Setting up the new planning system in Kosovo - evolution and influences in the development

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Abstract: This paper analyses the evolution of the Kosovo Planning System and the influences in the planning practice and development. It looks back in the period of socialism when planning was established and the overall context after the wars in the Western Balkans by identifying similarities and differences of the planning system in the former Yugoslavia and the shift from a centralized administrative to a democratic system after the war in Kosovo in 1999.

The author investigates the role of the international actors, in particular UN Habitat, in setting up the planning system, institutional development, capacity building as well as exercising planning tasks in the practice from 2000-2013. The paper analyzes also the impacts of the shifts in 2013 influenced by the World Bank towards a more liberal planning system and development.

The paper explores roles of main local actors in planning, including Kosovo government and the municipalities, international as well as local agencies and civil society organizations in promoting the relevance of planned development and necessary changes in the spatial planning policies.

Through the evidence based research the paper intends to measure the outcomes of the plans at central and local planning level throughout the territory of Kosovo.

Keywords: Spatial planning system, Department of Spatial Planning, Institute for Spatial Planning, UN-Habitat, Kosovo Spatial Plan,

Introduction

In this paper, I intend to present the planning system in Kosovo and how it changed after the war in 1999 to date. In order to trace back the emergence of the system, it was considered that it is necessary to mention some of the historical moments that marks the shifts in the development of planning as a profession since 1945 when Kosovo was set up as an autonomous province in the Former Yugoslavia. After the war in 1999, there are two phases that marks the establishment and development of the planning system of the new Kosovo as an independent country. The first period is under UN Administration 1999-2008 when the new planning system established the path to plan future developments. The second is the period from 2008 when Kosovo became independent. Although substantial changes took place in 2013, the planning system, structurally as a government sector, decentralised levels of planning and planning institutions, still remains as it was designed in 2002.

History

The roots of Kosovo planning system date back from 1945, when Kosovo emerged as a province within Republic of Serbia as one of the federal units of Federative Republic of Yugoslavia. According to Rudolf Bicanic¹ in the former Yugoslavia, during the period between 1945 and 1990 there were three models of planning:

- The centralized model of planning - 1947-1951
- The decentralized model - 1952-64

¹ Bicanic R. (1973) Economic Policy in Socialist Yugoslavia, Cambridge University Press, Cambridge, 1973.

- Polycentric model - from 1965

Some economists consider, in theory, the centralized planning model as the most rational planning pattern, although some of its supporters do not agree with its political presuppositions. The decentralized model had a certain level of rationality, although limited. The polycentric method seems to have been less homogenous than the centralised system.

The evolution of the Planning System in Kosovo could be considered a generative one. It emerged in 1974 with the changes in the constitutional Law of the Socialist Federative Republic of Yugoslavia (SFRY) and Republic of Serbia, when Kosovo was granted with the status of Autonomous Province within Socialist Federative Republic of Yugoslavia. The Parliament and the Government of the new Province were established and Constitution was adopted. This constitution delegated the power of spatial planning from the Federal Government and the Government of the Republic of Serbia to Kosovo government, so the first Law on Spatial Planning in Kosovo was drafted in 1975. In 1977 the first Kosovo Spatial Plan was adopted in the Kosovo Assembly.

The planning system in Kosovo before 1990 could be summarized in the table² below:

PERIOD	TYPE OF PLANNING ACTIVITIES	TYPE OF PLANNING DOCUMENT
1947 - 1965	Central command planning (Controlled development, urban growth and city limits/ public interest over the private / focused on technical solutions)	<ul style="list-style-type: none"> • Regulation and detailed plans
1965 - 1987	New system of voluntary planning, “social self-management planning”/ Communication and coordination of different bodies at all levels through agreements and commitments, with no hierarchical approval system	<ul style="list-style-type: none"> • Top down master plans as goal formulations from - (land use) • Regulatory and detailed plans as solution bottom-up driven (5 years plans)
1974 - 1990	Decentralized - Provincial level and local planning Spatial planning at the Provincial government level Municipal and urban planning, Regulatory and detailed urban planning	<ul style="list-style-type: none"> • Spatial Plan of Kosovo • Regional spatial plans • General urban plans • Regulatory Plans • Detailed Urban Plans

Table 1. Planning system in Kosovo from 1945-1990

2. After the War 1999

Although the theory of transition considers that it is a primarily political process, in Kosovo the transition process should be seen in a more complex context including liberation from Serbian apartheid system.

After the end of the war, Kosovo was administered by the UN Mission - UNMIK. It was a complex international organization involving also European Union and OSCE and other international Agencies specialised in particular sectors. The basic duties that UNMIK was responsible include:

- Performing basic civilian administrative functions;
- Promoting the establishment of substantial autonomy and self-government in Kosovo;
- Facilitating a political process to determine Kosovo's future status;
- Coordinating humanitarian and disaster relief of all international agencies;
- Supporting the reconstruction of key infrastructure;
- Maintaining civil law and order;

² Hoxha, E. (2006) PRISHTINA ESCAPE-Challenges for Urban Development-MSc Thesis, Catholic University of Leuven, 2006.

- Promoting human rights; and
- Ensuring the safe and unimpeded return of all refugees and displaced persons to their homes in Kosovo.

These tasks were implemented through four pillars:

Pillar I: Police and justice (UN-led)

Pillar II: Civil Administration (UN-led)

Pillar III: Democratization and institution building (led by OSCE)

Pillar IV: Reconstruction and economic development (EU-led)

The period of nine years of international rule had a large impact in Kosovo society in terms of law and governance, economy, social development. In the beginning all discriminatory laws approved after 1989 were abrogated and the laws of the former SFRY were considered applicable. In 2000 UNMIK organized first elections for the local governments. In 2001, a Constitutional Framework was approved as a supreme legal act based on which a set of laws were designed and approved in next seven years. This was the base to organize the first election for the first Kosovo government - so called Provisional Institutions of Self Government of Kosovo, composed of three bodies - Kosovo Assembly, Kosovo Government and the President. The administrative system was divided in two levels - central and local government. Most of the competences concerning local development issues were transferred to the municipal assembly, including spatial planning.

2.1 Transition

The process of transition in Kosovo include political, economic, social and transformations of urban morphology of the cities after the war under UNMIK administration and the extensive presence of international organizations that turned the reconstruction process and status negotiations into a global agenda for more than 10 years.

According to Harloe, transition, is not a unilinear process in terms of contents, sequence or timescale. It depends on system of local governance, legal and institutional framework, the way in which privatized public assets are distributed and policy choices³. In the case of Kosovo cities, this was even a more complex process. While before 1999 it was an apartheid-like situation, after the war the international administration changed the situation to democratic governance that gave the shape to future Kosovo development. In terms of time, due to the war it took more than in the other countries of the region, especially compare to countries of former SFRY. Due to the long period of conflicts situation, Serbia and Bosnia suffered from delay in transformation from unitary to democratic state.

In Kosovo, the period of discontinuity lasted 10 years, from 1989 to 1999. After the end of the war, UN took the role to establish the Provisional Institutions of Self Government in Kosovo. Through process of privatization a new liberal economic order was set up, and a new legal and constitutional order created the path to the new statute for Kosovo in 2008. New rules of social integration came to place by establishing the civil society, supported by the international community, which supported the reconstruction and development in the fields where government was not able to act due to limited capacities.

During this transition period, institutional and organizational structures of the cities were under reconstruction led by UNMIK, and other international organizations such as EU, OSCE, and different international development agencies. Decentralization was one of the goals of this transition process. This was reflected also in the planning and construction matters. Although in the former socialist system the power were decentralised, considering that it was a single party rule, the decentralisation was more or less controlled by the communist party committee.

Due to changes in the city institutions and organization of the governance, changes of property rights, urban development was disturbed by the needs for reconstruction of housing and the long period of very limited construction activities. Beside these facts, unmaintained public spaces and buildings suffered damages that were

³ Tsenkova, S, Budovic-Nedic, Z., (2006) The Urban Mosaic of Post-Socialist Europe introduction to 'The Urban Mosaic of Post-Socialist Europe: Space, Institutions and Policy' Edited by Tsenkova, S, Budovic-Nedic, Z., Physica-Verlag, Heidelberg

necessary to improve. But the existing planning instruments were too rigid to provide planned construction. In the other side, UNMIK Administration didn't want to strictly control development due to the needs for housing.

2.2 The Liberal Economy

Dostal (1998) concludes that a successful early post-communist transformation means (1) a quick resumption of macroeconomic balance and economic growth resting on (2) genuine democratization and economic liberalization, and (3) higher level of modernization'⁴

Liberal economy or so-called market economy came as a logical result of transition. After a long economic decline during 1990's, after the war, there was a big amount of donor support in reconstruction process, which generated an economic revival in the first years of 21st century.

UNMIK Administration introduced free market economic development policies. The abandoned industry in the beginning started to operate under international administration, but in 2002, the privatization process started and gradually most of the, industries stopped production due to old technologies. Privatized industries in most cases were transformed in services or changed the production technology or sometimes even demolished to leave the sites for construction such as in the inner part of city of Prishtina.

Flea markets and improvised bazaars were a rapid respond to growing demand for different kind of goods - clothing, everyday articles, and different kind of tools. The abandoned sites were given at a very low rent to allow people set up their businesses. For example a flea market operated in the city centre of Prishtina and was a very vital area until it has been displaced in the industrial area in 2007.

Due to the very high price of the land and big pressure for housing, industry and service economy - retail the municipalities begin to plan for the periphery. Beside planned areas, a lot of illegal construction occurred along the main infrastructure corridors. It was obvious that investors wanted to bypass procedures and decrease the investment due to the taxes. New spaces for private small and medium-sized production were constructed sometime of a very poor quality. But there were also very serious investments that followed the regulations in terms of space standards and construction materials. Privatization provided the opportunity for the investors with clear programme to bypass construction process and they used existing premises very efficiently, sometime even combining the production with renting the unused facilities.

As investment begin to grow, the service sector grew as well. When the Government of Kosovo was established it became also an important employer, although with very modest salaries. Other services such as education, health and culture also provided a considerable number of jobs.

There were also informal economic activities. Amongst them, illegal construction, which will cause big problems in the years to come. About illegal construction there will be some thoughts in the next pages of this research.

But, the investments and new jobs were not sufficient to provide jobs for growing number of unemployed population. Although there were a lot of informal economy, unemployment rate in 2002 was at the rate of 50-55%, down from a high of 74% in the second half of 1999.⁵ According to RIINVEST, an institute for economic development in Prishtina, the unemployment in 2003, was at the rate of 49%.⁶

The table below shows the unemployment rate between 2004 and 2008

⁴ Tsenkova, S, Budovic-Nedic, Z., (2006) The Urban Mosaic of Post-Socialist Europe-Introduction to 'The Urban Mosaic of Post-Socialist Europe: Space, Institutions and Policy' Edited by Tsenkova, S, Budovic-Nedic, Z., Physica-Verlag, Heidelberg

⁵ UNDP, Kosovo, (2002), Human Development Report 2002, Prishtina, Kosovo

⁶ RIINVEST, (2003)- Unemployment in Kosovo, Report, Prishtina, Kosovo

TABLE 2.3	Key labour market indicators, percentages (2004-2008)		
	2004	2006	2008
Labour force participation rates	46.2	52.3	46.0
Employment rates	27.9	29.0	24.1
Unemployment rates	39.7	44.9	47.5

Source: SOK, Labour Force Surveys (2004- 2008)

Table 2. Key labour market indicators according to Kosovo Statistics Agency in the period 2004 - 2008

2.3 Growing international competition

As from 2000, Kosovo became a region with a high interest for the international investors and suppliers. Since there was very limited production, the supplies came primarily from import - the region and EU countries.

Import remains even today very high, because production is still at a very low level. Low production is caused by low investment potential of the local population, limited incentives from the government and growing international competition. As an example, after the highway that links Prishtina and Tirana, the import of agricultural products from Albania had roused. Kosovo has signed CEFTA- a regional free trade agreement, which adds more difficulties in regard to this competition. It will become even more difficult after Kosovo starts the Stabilisation Association Process with EU.

2.4 Privatisation process

Privatization of land and housing is the most radical aspect of the transition from state socialist systems to democratic and market system.⁷ Property rights lie at the heart of that process (Marcuse1996). According to Webster and Lai (2003), "institutions that protect private property are essential for market activity and economic growth"(p3)."

The public housing stock has been privatised during the Serbian regime in 1992. At that time, Serbian government had two goals, to provide social peace within raising economic problems and unemployment. In the other side the acquired fund was used to finance the war in Croatia and Bosnia.

Immediately after the war, the property market boomed. Prices of properties owned by Serbs were sold quickly due to migration from Kosovo to Serbia, while many of these properties were soon transformed or sold out in higher price. During the years to come the property prices has grown tremendously, especially in Prishtina as a capital of Kosovo.

Beside achievements in setting the bases for a new independent state of Kosovo, UNMIK administration in Kosovo faced severe difficulties in terms of sustainable economic development. Privatization of the social owned properties to private ownership had as a goal economic development. But the way in which privatization was conducted, posed a lot of question starting from the source of investments, corruption and the future development of the industrial premises, agriculture land or other privatised assets. The former workers in these socially owned enterprises were supposed to be legal owners. From the total value of sold premises, the workers shared only 20%.

PLANNING FOR THE NEW LIBERAL CITY

The latest planning activities in Kosovo took place during 1980's, when most of the cities drafted city master plans - so called General Urban Plans, comprehensive long-term planning documents for at least 10-15 years. Some planning activities were exercised during 1990's by the Serbian government in Prishtina and Prizren in 1996/97. But they were carried out away from public, and in particular excluding Albanians. As a teacher in a

⁷ Tsenkova, S, Budovic-Nedic, Z., (2006) The Urban Mosaic of Post-Socialist Europe introduction to 'The Urban Mosaic of Post-Socialist Europe: Space, Institutions and Policy' Edited by Tsenkova, S, Budovic-Nedic, Z. Physica-Verlag, Heidelberg

parallel education system, the author of this research has found out about these document only in 2004.

Until 2002, limited planning activities took place in the local level based on the applicable law on spatial planning from 1974. Few plans were drafted but with very limited impact in the ground. For example, the General Urban Plan for Prizren was drafted from 2001-2002. Although it took some 8 years to redraft it according to the law, beside limited impacts in infrastructure, was not implemented according to decisions. The shifts in the planning system are shown in the table below:

PERIOD	TYPE OF PLANNING ACTIVITIES	TYPE OF PLANNING DOCUMENT
1990 -1999	Central imposed planning from above – Serbian government (top-down control) Exclusion of Albanians from planning process (Planning activities oriented towards the goals of sustainability / not linked with the real context - superficial	Land use Scenarios for development Regulative plans
1999-2002	Reconstruction and emergency activities “shelter programs “ Some limited regulatory planning activities	Applicable planning law of Kosovo from 1987
2002-2013	Decentralized- central and local planning Strategic planning at the central level Municipal and urban planning, regulatory planning	Central level: Spatial Plan of Kosovo, Spatial plans for special areas Local level: Municipal Development Plan, Urban Development Plan and Regulatory Plan
2013	Decentralized planning process, centrally approved plans, Strategic planning at the central level Municipal planning, zoning - land use plans, regulatory planning	Central level: Spatial Plan of Kosovo, Kosovo Zoning Map, Spatial plans for special areas Local level: Municipal Development Plan, Zoning Map, and detailed Regulatory Plan

Table 3 - Kosovo Planning System from 1990 - 2013

In 2001, before the first election, UN administration defined the main sectors that new elected government have to manage. Amongst main sectors, such as finance, economy, health, education, welfare, culture and youth, environment and spatial planning were chosen as on of the sector. The Ministry of Environment was established in the beginning of 2002 and immediately, the Minister signed a cooperation agreement with UN Habitat to support the Ministry in developing the planning system, including legal framework and setting up the sector institutions in the central and local level.

The new Law on spatial planning approved in 2003 defined the way the spatial planning will be carried out in Kosovo. The law defined two modes of planning:

- Spatial planning, carried out at the central level with two types of plans: Spatial Plan of Kosovo and Spatial Plans for Special Areas for which central government will be responsible, and Municipal Development Plan

(MDP) at the local level, for which municipalities will be responsible.

- Urban Planning, carried out at the local level with two types of plans - Urban Development Plan (UDP) and Urban Regulatory Plan (URP).

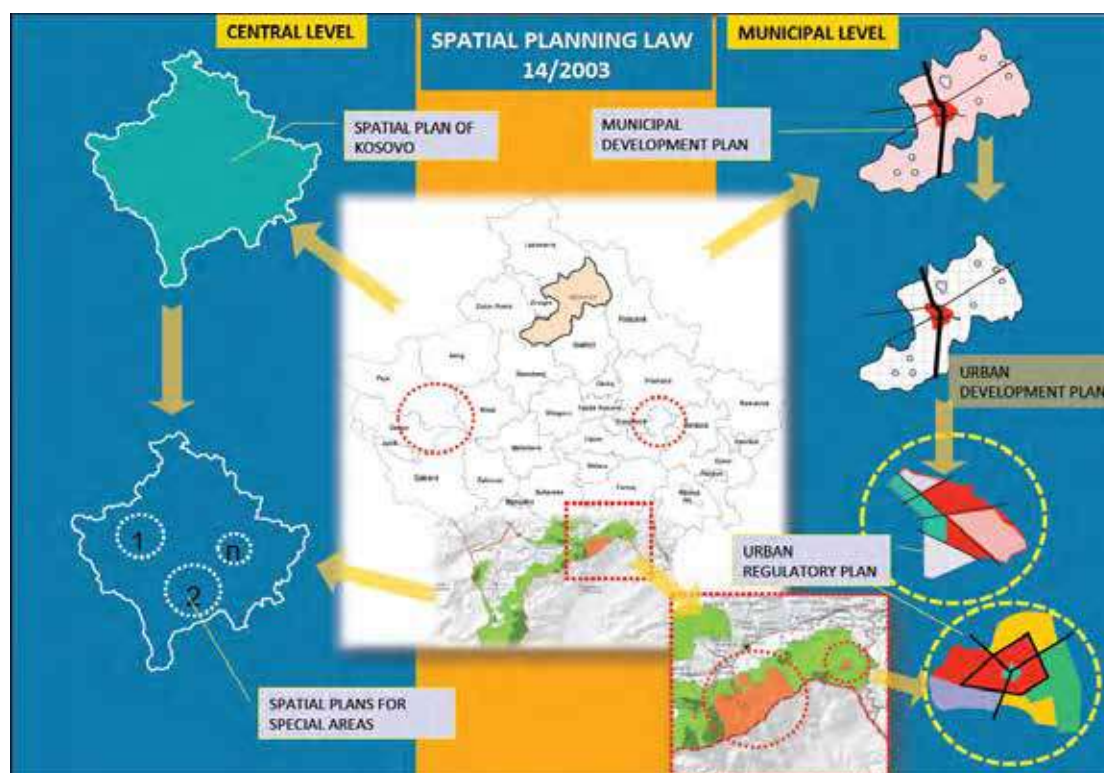


Figure 1. Planning System in Kosovo according to the Law on Spatial Planning 2003/14⁸

In the Figure 2, a summary of the planning policy instruments graphically illustrates the scale of the plans from central to local, through types of plans related to territory they serve and the character that they have

Policy Institutions

Spatial Planning in Kosovo is implemented at the central level - Ministry of Environment and Spatial Planning. Other ministries such as Ministry of Transport and Telecommunication, Ministry of Agriculture, Forestry and Rural Development, Ministry of Energy and other government bodies, have a role in the process of plan preparation. The relations between the policy institutions and instruments are presented in Table 1 below.

Content of the Plan and Planning Process

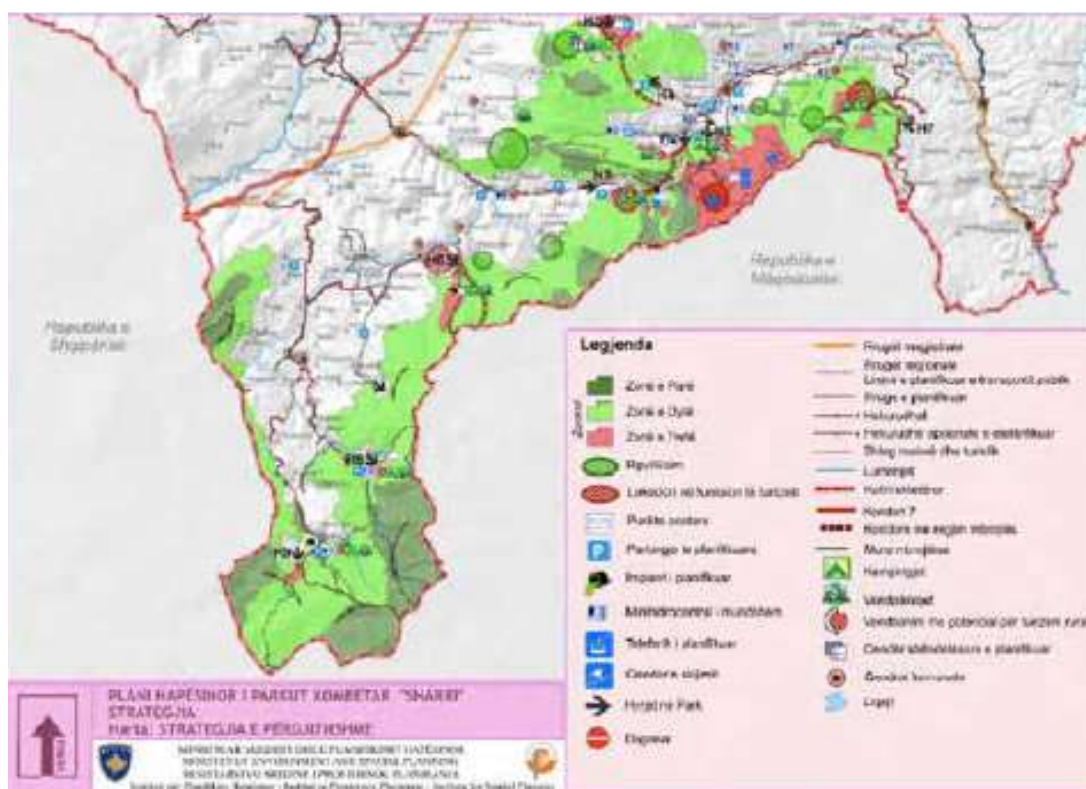
The main elements of the spatial plans at the central and local level which are framework or strategic plans contain graphical part (maps) and textual part: Urban Development Profile, Vision and Goals, Spatial Development Framework, Implementation Strategies and Actions, and Implementation Provisions. The differences are mainly at the scale of territorial coverage and at the competences that they have within the level of decision making authorities. They also differ in terms of stakeholder groups and the level of participation accordingly.

From 2003 until 2015, most of the municipalities in Kosovo drafted their MDP and UDP, and covered with urban regulatory plans partly or fully, the whole territory of the town/city, except Prishtina and Prizren, that used already completed the plans and drafted them later- Prizren 2009-2012 and Prishtina 2012-2013.

⁸ Source: Kosovo Institute for Spatial Planning/Ministry of Environment and Spatial Planning

Level	Planning authority	Average number of inhabitants	Types of Plans	Description	Legal effect
Central	Ministry of Environment and Spatial Planning	2,000.000	Kosovo Spatial Plan - Figure 2	Include vision goals and objectives and strategies Maps, implementation provisions and policy guidance	Guiding developments, protection of environment and national resources Binding for the national and local authorities
			Spatial Plans for Special Areas-Figure 3	Include vision goals and objectives and strategies Maps, implementation provisions and policy guidance	Guiding developments, protection of environment and national resources Binding for the national and local authorities
Local	Municipalities (36)	from smallest 20,000-200.000 - Capital Prishtina	Municipal Development Plan-Figure 4	Include vision goals and objectives and strategies for municipality Maps, implementation provisions and policy guidance	Guiding developments, protection of environment and national resources, may include regulatory provisions Binding for the local authorities
			Urban Development Plan-Figure 5	Include vision goals and objectives and strategies for city development Maps, implementation provisions and policy guidance	Guiding developments in the urban areas; protection of environment and national resources; may include regulatory provisions
			Urban Regulatory Plans - Figure 6	Include maps and land use. regulatory framework for buildings and infrastructure development	Binding for the local authorities and landowners

Table 4 - The Kosovo Planning System Framework according to Law on Spatial Planning No.2003/30



⁹ Source: Kosovo Institute for Spatial Planning, Ministry of Environment and Spatial Planning

Public participation

By the Law, Spatial Planning in Kosovo is all inclusive and respects principles of good governance and public participation. Public participation is regulated by an administrative guidance. The process differs according to the planning level taking into consideration competencies in the decision making process. Spatial plans prepared in accordance with this Law are subject to public review. Further more, it is mandatory to include public consultations during the process of plan preparation. The consultations may be an extensive process, which depend on the level of the plan and needs for involving appropriate stakeholders.

The public review of any plan shall include a report on the review with complains, comments and proposals on the plan and justification of approval or rejection of the proposals.

Figure 3 illustrates stakeholder involvement and participation in the process of drafting the Spatial Plan of Kosovo which took place between 2003-2006.

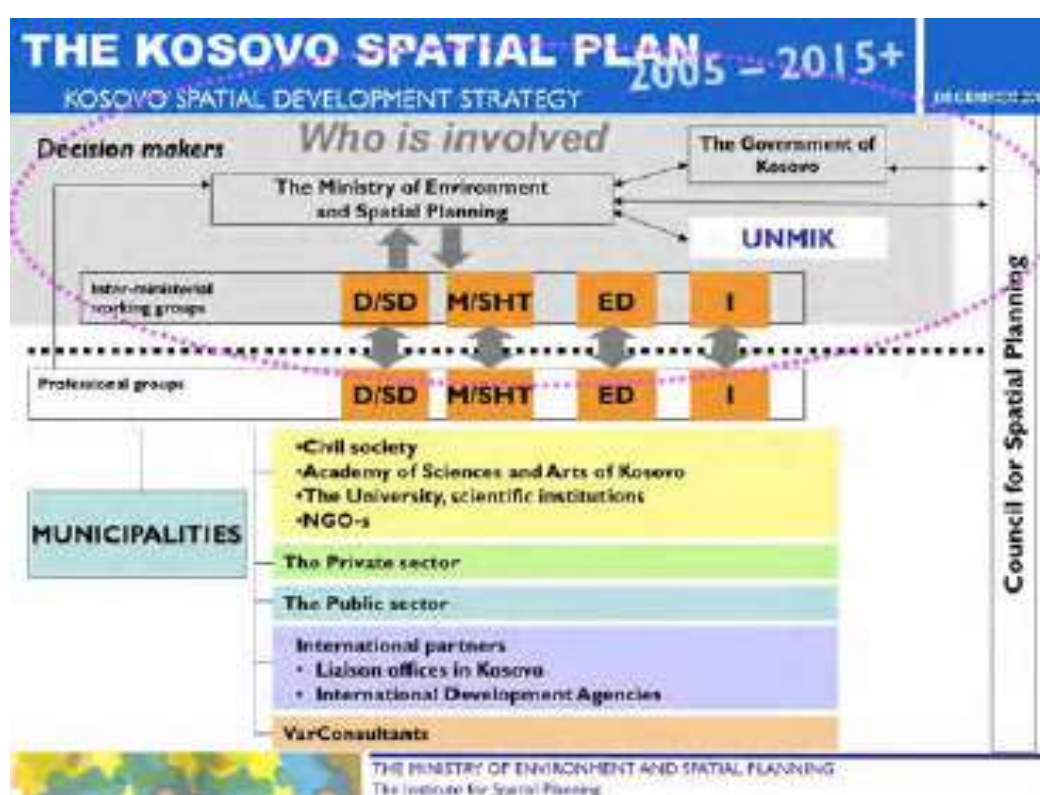


Figure 5 - Stakeholders involvement diagram in the process of drafting the Spatial Plan of Kosovo¹⁰

The Contribution of International Organisation

In 2000, UN Habitat established the office for Housing and Property Rights in Kosovo, a project that aimed to establish the property return to the owners, especially property claims linked to the war. In 2001 UN Habitat organised first training in community planning, a very important shift from master planning that used to be practiced in the former Yugoslavia. When the Ministry of Environment and Spatial Planning was established in 2002, UN Habitat became the main partner of the Ministry.

The contribution of UN Habitat was crucial for establishing the planning sector in Kosovo. Beside the direct support to the Ministry, their substantial contribution was in capacity building of planning professionals, mainly trained at the architectural schools.

¹⁰ Source: Kosovo Institute for Spatial Planning, Ministry of Environment and Spatial Planning

The Urban Planning and Management Programme, UPMP (2002-2003) funded by the Government of the Netherlands. It worked closely with the Ministry of Environment and Spatial Planning. It played a key role in development of the new planning law for Kosovo and also supported the first steps of establishing a the Institute for spatial planning. Another significant component of the Programme was its engagement with all 30 municipalities of Kosovo both from the planning perspective, and from the development of tools for gender mainstreaming in Kosovo municipal management. The Programme imparted comprehensive training to urban planners in the application of the strategic planning approach, through the Urban Planning and Management Framework (UPMF).¹¹ Within this programme, the new planning curricula for the Masters in Urban Planning and Management at the Department of Architecture, University of Prishtina was developed, involving Royal Danish School of Architecture and Aalborg University.

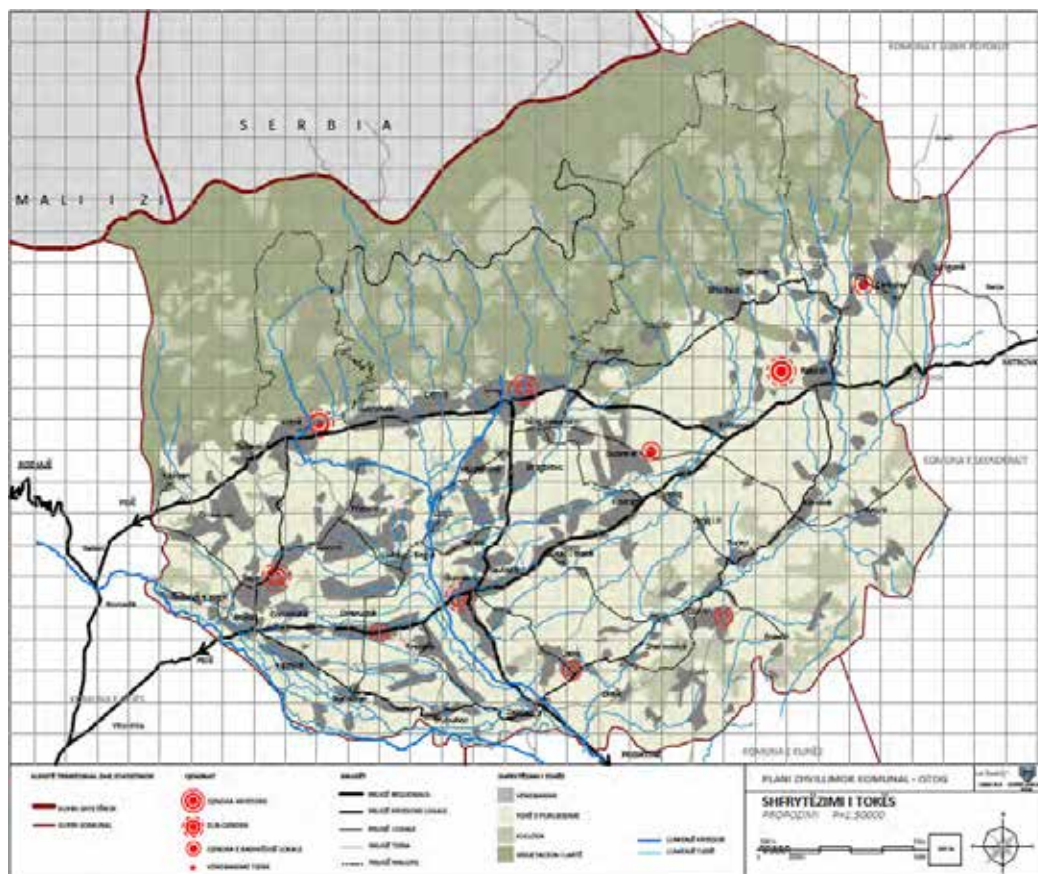


Figure 6 - Municipal Development Plan Istog - Land use plan - (Local Level)¹²

The Governance and Development Planning Programme, GDPP was funded by Dutch Government and started in 2003 and was completed in 2005. Its objectives were focused on continuing the assistance to further strengthen all three levels of spatial planning in Kosovo reflecting the linkages as required by the Law on Spatial Planning. It included more intensive capacity building at municipal and central levels to deal with spatial planning in an inclusive manner. The aim was to consolidate the new planning approaches, policies and legislation by making them more inclusive and compatible with countries in the region and in other parts of Europe.¹³ During this period of support, UN Habitat supported the establishment of the Spatial Planning Institute, responsible for drafting the spatial plans at the central level. The training of the staff of the institute was implemented with the Institute for Housing and Urban Development Studies from Rotterdam (IHS). The on job training continued for three years and was aimed to support the staf in drafting of the Spatial Plan of Kosovo.

¹¹ http://www.unhabitat-kosovo.org/en-us/UPMP_Urban_Planning_and_Management_Programme

¹² Municipality of Istog, Directorate of Planning

¹³ http://www.unhabitat-kosovo.org/en-us/GDPP_The_Governance_and_Development_Planning_Programme

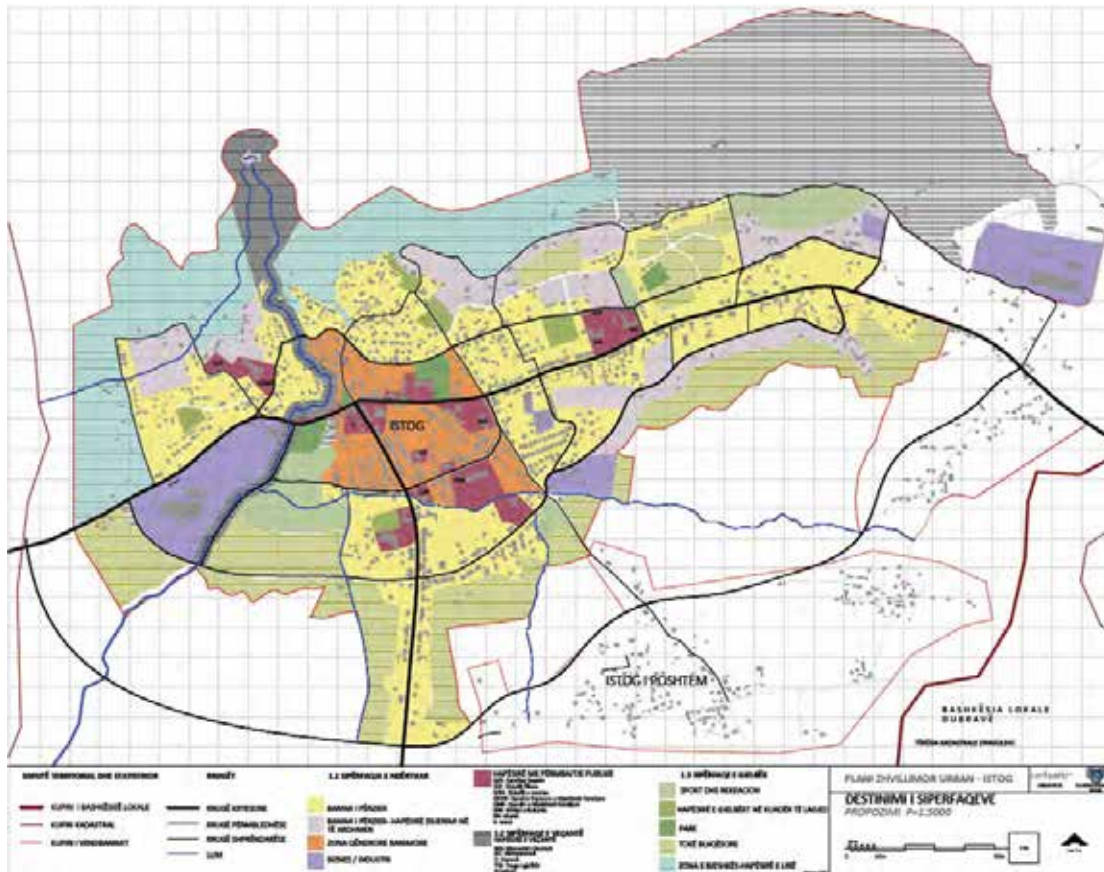


Figure 7 - Urban Development Plan Istog - Land use plan - (Local Level)¹⁴

The Municipal Spatial Planning Support Programme (MuSPP) funded by the Government of Sweden through the Swedish International ¹⁵ Development and Cooperation Agency (SIDA), was supporting 6 secondary municipalities through daily, intensive on-job advice and guidance in the preparation of spatial planning documents. It also assisted the Ministry of Environment and Spatial Planning and civil society organisations to support and actively participate in this process.

The Ministry of Environment and Spatial Planning was the key central level counterpart of the Programme. Close cooperation was maintained also with the Association of Kosovo Municipalities and the Ministry of Local Government and Administration. The Programme was carried out under the motto “Making Better Cities Together” which meant that by planning and working all together Kosovo cities can be a better place for living to all its citizens. The programme assisted partner municipalities in developing and implementing small demo-projects aimed at upgrading public spaces in urban areas.¹⁶ The MuSPP had two more phases from 2008-2011 and 2011-2014.

¹⁴ Municipality of Istog, Directorate of Planning

¹⁵ Source: Kosovo Institute for Spatial Planning, Ministry of Environment and Spatial Planning

¹⁶ http://www.unhabitat-kosovo.org/en-us/MuSPP_Municipal_Spatial_Planning_Support_Programme_phase_1

PART II - INDEPENDENT KOSOVO

The Constitutional Law of independent Kosovo 2008

Kosovo declared independence on February 17, 2008. Soon after the independence is declared, in April 2008, a new Constitutional Law¹⁸ was adopted. Although no direct provisions on planning are included in the constitution, some of the basic provision related to planning may be found below:

Constitution defines Kosovo as democratic state of its citizens. Kosovo is a multi-ethnic society based on principal of equality. The Republic of Kosovo ensures the preservation and protection of its cultural and religious heritage. The Republic of Kosovo protects and guarantees human rights and fundamental freedoms. Human rights and fundamental freedoms guaranteed by the international agreements and instruments.

The right to property is guaranteed by the Constitution. No one shall be arbitrarily deprived of property. The Republic of Kosovo or a public authority of the Republic of Kosovo may expropriate property if such expropriation is authorized by law, is necessary or appropriate to the achievement of a public purpose or the promotion of the public interest, and is followed by the provision of immediate and adequate compensation to the person or persons whose property has been expropriated.

New spatial planning context

The context for planning did not change much until 2013. In the new constitution, sectors which are governed by the Government are not mentioned at all. Environment and Spatial Planning neither, so by the constitution, there is no explicit order to establish Spatial Planning as a sector and its institutions.

After the constitutional law was adopted, necessary changes in the Law on Spatial planning in regard to protective areas, defined by the Ahtisari Plan¹⁹ had to be amended. These are cultural heritage areas of particular for the Serbian community.

Article 4 Protective Zones

4.1 A selected number of Serbian Orthodox Church monasteries, churches, other religious sites, as well as historical and cultural sites of special significance for the Kosovo Serb Community, shall be provided special protection through the establishment of Protective Zones. The objectives of the Protective Zones are: to provide for the peaceful existence and functioning of the sites to be protected; preserve their historical, cultural and natural environment, including the monastic way of life of the clergy; and prevent adverse development around them, while ensuring the best possible conditions for harmonious and sustainable development of the communities inhabiting the areas surrounding such sites.

Box 1 - Ahtisari Plan, Article 4

Spatial regulations in terms of buffer zones and restricted uses for these areas were given in the Ahtisari Plan which were also included in the Law on Culture Heritage Protection. These areas then had to be treated accordingly in the Spatial plan of Kosovo and Municipal Development Plans.

The New Law on Spatial Planning 2013²⁰

In 2012, the Ministry of Environment, under the influence of World Bank report on 'Doing Business' decided to start the procedures for drafting a new law because The Law on Spatial Planning 2003/30 was causing problems to development and the procedures for acquiring the planning permit, were 'highly' bureaucratic. This fact was based on a very narrow and limited survey, which World Bank carried out with individuals and businesses in Kosovo. The planning turned from a public sector interest to a planning based on the market economy, leaving public interest in the margins.

What happened for example in terms of institutional organisation is that the Spatial Planning Council at the central level and Committee of Spatial Planning at the local level were abolished. In the meantime, Ministry of

¹⁸ Constitution of the Republic of Kosovo

¹⁹ Comprehensive Proposal for the Kosovo Status Settlement-Ahtisari Plan

²⁰ Law on Spatial Planning - No. 04/L-174

Environment and Spatial Planning integrated Planning, Housing and Construction into a single department covering three sectors. In 2012, the Ministry of Environment, under the influence of World Bank report on ‘Doing Business’ decided to change the law because according to the afore mentioned report, Kosovo the procedures for acquiring the building permit, according to the law, were ‘highly’ bureaucratic. This fact was based on the limited survey, which World Bank carried out with individuals and businesses in Kosovo. What was interesting in the process of drafting the law, Department of Spatial Planning of the Ministry, had limited engagement, while the main actors were professionals involved from USAID, representing a pure American way of planning based on the market economy, living public interest in the margins.

The New Law introduced new spatial planning instruments. Zoning maps, an imported concept from the US, required at both central and local planning. These are regulatory instruments: Zoning Map of Kosovo in the whole territory of Kosovo for all developments which are government responsibilities and Municipal Zoning Map at the municipal territory for all other developments regulated by the municipality. Detailed regulatory plans are regulatory instruments which are not mandatory. They define the conditions for spatial regulation for urban or rural areas as defined in the Municipal Development Plan and Municipal Zoning Map. The relations between the policy institutions and instruments according to the new Law, are presented in Table 2 below.

Policy institutions			Policy instruments		
Level	Planning authority	Average number of inhabitants	Types of Plans	Description	Legal effect
Central	Ministry of Environment and Spatial Planning	2,000.000	Spatial Plan of Kosovo	Include vision goals and objectives and strategies Maps, implementation provisions and policy guidance	Guiding developments, protection of environment and national resources Binding for the national and local authorities
			Kosovo Zoning Map	A multi-sectorial document- defines type of land use and action measures Include maps and land use regulations for developments at the central level	Defines land use and regulates developments at the central level Binding for the national and local authorities

			Spatial Plans for Special Areas	<p>Include vision goals and objectives and strategies</p> <p>Maps, implementation provisions and policy guidance</p>	<p>Guiding developments, protection of environment and national resources</p> <p>Binding for the national and local authorities</p>
Local	Municipalities - (36)	from smallest 20,000-200.000 - Capital Prishtina	Municipal Development Plan	<p>Include vision goals and objectives and strategies for municipality</p> <p>Maps, implementation provisions and policy guidance</p>	<p>Guiding developments, protection of environment and national resources, may include regulatory provisions</p> <p>Binding for the local authorities</p>
			Municipal Zoning Maps	<p>A multi-sectorial document- defines type of land use and action measures for the municipal territory</p> <p>Include maps and land use regulations for developments at the municipal level</p>	<p>Guiding developments in the urban areas; protection of environment and national resources; may include regulatory provisions</p>
			Detailed Urban Regulatory Plans	<p>Include maps and land use regulations, regulatory framework for buildings and infrastructure development</p>	<p>Detailed development plans including site plans</p> <p>Binding for the local authorities and landowners</p>

Table 5 - The Framework of Planning System in Kosovo -No.04//L-174-2013

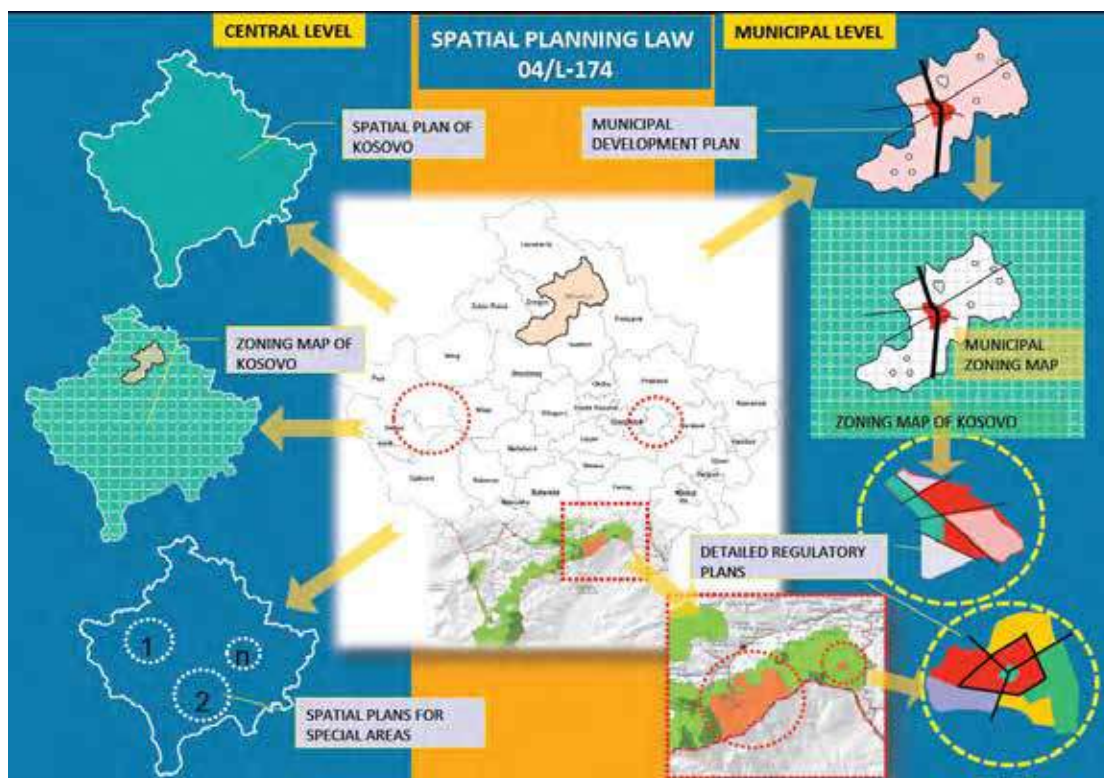


Figure 8- Planning System in Kosovo according to the Law on Spatial Planning 04//L-174²¹

The new planning instruments are more comprehensive so they take much longer to draft them. For the municipalities the process is longer and harder. A certain degree of centralisation is now on place and does not comply with the European planning practices. The fact is that municipalities are still acting according to planning instruments drafted based on the Law on Spatial Planning 2003/30, due to missing administrative guidance's that supports plan-making.

Protected Areas²²

Protected areas is a new provision of the Law on Spatial Planning. When approved, protected areas define the long-term protection and preservation of a geographical area with special features of natural resources, flora and fauna, cultural heritage and cultural landscapes, with a potential of social and economic development for the country.

Protected area consists of site perimeter designated under protection and the buffer zone of fifty (50) or one hundred (100) meters from the perimeter, or as it is determined by the competent institution. The aim of the protected area is to restrict constructions or other activities that could damage the natural and cultural heritage features. Depending on the features a protected area will be approved by the Government as a Special protected area through the Zoning Map of Kosovo.

AGENCIES AND MECHANISMS FOR DEVELOPMENT AND CONSERVATION

Approach to development

A mixed approach development involving public and private sector is in place in Kosovo. The role of public sector is usually to enable and promotional role as well as resource coordinating role in terms of land acquisition in implementing spatial plans, such as in big infrastructure projects implemented with public private partnerships (recent projects of highways, airport, new power plant, etc).

²¹ Source: Kosovo Institute for Spatial Planning

²² Law on Special Protective Zones No. 03/L-039

There is also strong involvement of private sector with limited development control from the government. Often this is not within a strong plan-led framework and very often plans record actual development, in particular investments in business and production facilities in particular alongside the main infrastructure.

Land policy mechanisms

In Kosovo, the only land mechanism for plan implementation is the Law on expropriation²³ which deals with land acquisition for the public interest. The constitutional law defines that everybody has the right to his/her property. However, the land may be subject of expropriation for the public interest. A process of expropriation and compensation based on the market values is lead by the Ministry of Finance. Acquisition of the land is possible only for the public interest and for non discriminatory purposes. The expropriation authority at the local level, is the Mayor of a city/ town, or a public body authorised by the municipal assembly. Expropriation is carried out for:

- Implementation of urban and spatial plans adopted by the Municipality.
- Construction of new and improvement of existing technical and social infrastructure
- Licences for exploitation of mineral resources that has been granted to the Municipality

At the central level the government is responsible authority for expropriation of the land for the developments with particular importance for the whole country. Expropriation deals exclusively with the properties within the municipal territory for the following purposes:

- Implementation of spatial plans adopted by the Ministry of Environment and Spatial Planning,
- Implementation of government responsible public social and technical infrastructure projects.
- Natural and Cultural heritage sites
- Areas of storing and disposal of dangerous materials and products
- Energy production and mining areas and mineral extraction, dams

DEVELOPMENT

In Kosovo there are many agencies and organizations dealing with development. They are usually linked to government sector authorities or with different international development agencies. International Development Agencies present a very important chain of development actors such as EU Office, UNDP, USAID, GIZ, DFID, SDC, ADA, SIDA World Bank, EBRD etc. Since after the war, these agencies have played a crucial role for Kosovo reconstruction and development. They are still very important partners in implementation of government development policies. Some of the local agencies are listed below:

Association of Regional Development Agencies

The Association of Regional Development Agencies (ARDA) is a network for the implementation of Kosovo and EU policies and is an independent, non-governmental organization established in January 2013 by the five Regional Development Agencies (North, East, West, South and Centre) in Kosovo.

Kosovo Cadastral Agency

Established by UN-Habitat in 2000, Kosovo Cadastral Agency is the central authority for the maintenance of cadastral database, property registers, mapping and GIS. It is also the central authority for geospatial data infrastructure. The rights, responsibilities and overall mandate of the KCA is regulated by the Law on cadastre and other legal acts, all accessible through the Kosovo Geoportal, the cadastre information database.

²³ Law on Expropriation of Immovable Property - No. 03/L-139

Kosovo Forestry Agency

The KFA is responsible for issues related to the regulation of forests and forest lands, and management of publicly owned forests and forests in Kosovo national parks in, except those issues that the law specifically assigns to any other government authority.

Kosovo Agency of Statistics

Kosovo Agency of Statistics is a professional institution which deals with collection, processing and publication of official statistical data since 1948.

The Agency provides qualitative statistical data in time and space so that users have reliable base to conduct regular analysis in the interest of planning and project development at the municipal and country level. ASK support government institutions, scientific institutes, research academies, businesses in order to provide proper information for decision-makers and other users in Kosovo.

PROTECTION OF THE ENVIRONMENT

Environmental Protection Agency

Kosovo Agency for Environment Protection (KEPA) is a government institution that engages, through integrated environmental monitoring, efficient system of environmental information and continuous reporting on the environmental situation, to maintain quality of air, water, soil and biodiversity, promote use of renewable energy sources and sustainable use of natural resources in order to ensure a healthy environment for generations present and future in harmony with the progress of economic and social developments.

Institutes, within KEPA are: Kosovo Institute for Nature Protection, Kosovo Hydro-meteorological Institute, and Kosovo Institute for Spatial Planning. Whereas, Directorates within KEPA are: Directorate of Environmental Monitoring, Assessment, and Reporting; and Directorate of National Parks.

The Institute for Cultural Heritage Protection

The Institute for protection of the cultural heritage deals with the issues of protection, reconstruction and revitalization of the cultural heritage sites and monuments mainly concerned with the central level issues in cultural heritage protection. It operates as a central government body linked to the Ministry of Culture, Youth and Sports. At the local level, there are regional centers for culture heritage protection which are subordinated to the institute at the central level.

Archeological Institute,

Archaeological Institute also part of the Ministry of Culture, Youth and Sports, deal with archeological sites - research, archaeological diggings, reconstruction and management.

POLICIES

A system of well developed and integrated policies is very important for a development country such as Kosovo, in particular as a newly established country. From 1999, efforts to develop sector policies have contributed to improve governance system in providing better quality of life, although it is still necessary to align cross sectorial cooperation for necessary synergies to accelerate economic and social development.

Through the 10 years of independence, there was an extraordinary commitment to draft the sectorial policies linked to spatial development. In particular housing, environment, industry, tourism, energy, transport, cultural heritage, agricultural land and mineral resources are well covered with the legal framework and policy strategies. These policies are now guiding planning process at the central and local level.

Most of the policies tend to be aligned with the European policies although a lot has to be done yet, due to very difficult political context in the region and difficulties caused by the unrecognised position of the Republic of Kosovo from five EU countries.

Conclusions

Measuring the outcomes of the period of 18 years would not be an easy task for those who are outsiders. For those who were actors in several tasks such as legal framework, capacity building, planning at the central and local level, the achievements may be seen subjectively, as they put a lot of efforts to bring profession to the state in which we could talk about planning that leads the development and not planning that is serves for recording developments.

At the central level, the Ministry, beside the work on legal framework, the Institute for Spatial Planning is responsible for drafting of the Spatial Plan for Kosovo, already under the review process. and plans for special areas such as two National Parks- Bjeshket e Nemuna (Coursed Mountains) and Sharr Mountains, Mirusha plan which is a Natural Park and coal mining area close to Prishtina capital. Recently the Institute has developed sectorial national policies linked to the spatial planning.

Most of the cities and towns have already drafted plans or are currently reviewing plans according to the requirements of the new Law on Spatial Planning. The plan implementation may vary from city to city and is mostly politics that affects changes that violates the planed development. Within the municipal administration, there are established planning departments, combined with housing and environmental protection, responsible for organising and leading the planning process. Although most of the plans are drafted through the consultancy, there is a significant role of municipal planning officers in the plan preparation and decision making process.

Public participation as a way od democratisation, during the years shifted from information and active listening, the public consultation and direct involvement of the public and civil society has been improved. And there is a growing interest to be involved in planning process from the civil society organisations. A process of capacity building for participatory planning has been developed for more than five years now. People are more aware of planning activities as municipalities publishes all planning documents in the Municipal online platforms. These platforms helps citizens to get information, to make online applications for what ever they might be interested in regard to planning and construction.

From 2002 to date there was a continuing process of capacity building led by UN Habitat programmes, from plan making, public participation, policies and decision making, always trough the on job training of the planning officers. These programmes were tailored for both planning officers at the central and local level, including civil society and university. At the university the planning is taught at the Department of Architecture and is based on the planning system so students are able to understand their role in a planning process. The problem based learning pedagogical model is applied so student can actually experience a real planning context.

Although from an initially decentralised planning system, with the new law, the planning process at the local level is not only monitored by the central level, but it is also controlled in terms of decisions taken. This is a step back if we compare to decentralised planning systems in Europe. The new Law on Spatial Planning has given the right to the Ministry to examine thoroughly all municipal plans before they are approved at the municipal assembly, which is an almost impossible task to preform due to limited number of staff.

In 2006, while participating in World Urban Forum in Vancouver, Forbs Davidson introduced myself and Mr Luan Nushi to some colleagues from RTPI as responsible for establishing the Kosovo planning system in a period of four years. The President of RTPI replied "... In four years?! That's really an achievement!" Of course, setting a planning system is not possible in such a short time, but Mr Davidson wanted to say that the commitment to make things happened were extraordinary.

Acknowledgements

I would like to thank the Presidency of Kosovo for the full financial support of participation in this Congress. Without the Presidents generous support, presentation of this paper would not be possible. .

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Responsibilisation in fish habitat rehabilitation and stewardship

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Abstract: Neoliberal thought has influenced how government policy is crafted, resulting in a stepping away by government in the implementation of policy solutions, and an ever-growing list of non-state actors enlisted to advance environmental policy agendas. The actions of these non-state actors are positioned as integral to solving environmental policy challenges such as habitat rehabilitation. Drawing on the theory of responsibilisation as a technique of governance this research explores the ways fisheries stewardship policy seeks to mobilise non-state actors to accept responsibility for addressing environmental problems which have previously been the responsibility of the State. Dvora Yanow's approach to interpretive policy analysis is used to analysis key policy artefacts to identify the discursive strategies used to attribute blame for fish habitat degradation and responsibility for rehabilitation actions in an Australian state. This research uncovers a tension between the attribution of blame for the degradation of fish habitats and attempts to mobilise recreational fishers to take responsibility for remediation action through engaging in voluntary rehabilitation actions. An analysis of the selected texts highlights how recreational fishers are constituted as moral, political and authoritative actors, and by extension responsibilised to ameliorate degraded fish habitats.

Keywords: responsibilisation, stewardship, interpretive policy analysis, recreational fishing.

Introduction

One of the more profound challenges in environmental governance lies in responding to the myriad diffuse threats to ecosystems to ensure their ongoing social and economic utility and ecological sustainability. The core challenge for government lies in determining how best to deploy increasingly limited public resources in the most effective manner to respond to these policy challenges (Howes *et al.*, 2015). An ever-growing list of non-state actors—individual citizens, community groups, as well as other non-government and business entities—have been enlisted to advance environmental agendas (Shamir, 2008, Jansssen and Estevez, 2013). This positioning of the actions of non-state actors as panacea to solving environmental policy challenges is a sufficiently significant shift of responsibility from the state to be worthy of academic and policy attention.

One of the hallmarks of neoliberalism has been a move by state actors to rely on non-state actors to perform tasks traditionally carried out by the state (Shamir, 2008). This move has extended to the realm of natural resource management and has manifested through the actions of fisheries managers seeking to integrate recreational fishers into solutions to some of the most pressing environmental challenges. A desire by policymakers to mobilise recreational fishers and increase their involvement

in participatory stewardship activities can be analysed through the concept of responsabilisation. Responsibilisation refers to the expectation and assumption of the reflexive moral capacities of social actors (Shamir, 2008). The remote and indirect actions of the state are enabled by the establishment of a form of self-hood, whereby the agent (here, recreational fishers) produces the ends of government themselves, allowing the state to govern at a distance (Pyysiäinen *et al.*, 2017). Authority and rule are exercised by individuals acting upon themselves, rather than giving way to some externally enforced agent, such as the state (Pyysiäinen *et al.*, 2017).

This paper explores the movement towards public stewardship of natural capital, and the trend towards devolving responsibility for the management of fisheries habitat to non-state actors. A case based study of fisheries policy in the Australian state of New South Wales (NSW) is used to explore the ways that recreational fishers have been responsabilised to shoulder a disproportionate stewardship burden in ameliorating environmental problems. Whilst this burden is framed in terms of civic responsibility, it is ultimately a manifestation of responsabilisation.

The public stewardship of natural capital

Stewardship can be understood as ‘the responsible use (including conservation) of natural resources in a way that takes a full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society’ (Worrell and Appleby, 2000: 263). Central to the concept of stewardship is the idea of looking after something ‘in trust’ for someone else, be that nature, society or future generations (Worrell and Appleby, 2000). Engendering high levels of stewardship amongst users of natural resources is viewed as an important policy outcome because it fosters support for rehabilitation and conservation measures, even when these place restrictions on the use of or access to these resources (Granek *et al.*, 2008). Statutes and regulations prescribing unconditional environmental standards, with punitive consequences are considered to be key components of the traditional regulatory toolbox, and can form part of the regulatory mix deployed by policymakers (Preston, 2012). The trend thus far, however, has been for policymakers to adopt an approach which actively constructs and deploys notions of stewardship in an effort to generate public good conservation outcomes, rather than solely relying on statutory obligations (Cooke and Moon, 2015). This trend can be partly explained by a reconfiguration of the societal role played by both state and non-state actors.

There is a significant body of political theory advocating for an increasingly participatory style of government – one in which the citizenry has the opportunity to have meaningful input into decisions that will impact them (Cameron and Grant-Smith, 2014). This has coincided with a shift in perceptions of the public as being a homogenous group to being perceived as diverse and heterogeneous (Cameron and Grant-Smith, 2005). A more participatory approach has also been linked to a growing acceptance that many of the key challenges facing society today – particularly complex social and environmental issues – may be best resolved by sharing responsibility with, and with the input of the stakeholders who are directly impacted by them (Head, 2007, Grant-Smith and Edwards, 2011, Serrao-Neumann *et al.*, 2015).

The mere presence of policy instruments, legal frameworks, and support programs does not in and of its own result in better public participation or policy outcomes. Arguably, genuine public participation strategies (particularly those that vest power in the hands of the community) could significantly

improve engagement by the community with planning and environmental management decisions, encourage collective debate and reinforce the legitimacy of final decisions, if executed correctly (Serrao-Neumann *et al.*, 2015). Whether such involvement necessarily flows on to deliver high quality outcomes is contested (Brody, 2003, Serrao-Neumann *et al.*, 2015). There are clear barriers to effective participation, with the obvious one being the reluctance of policymakers to devolve power and control of decisions, in conjunction with the responsibility of carrying out participatory activities, to targeted actors (Head, 2007, Serrao-Neumann *et al.*, 2015). By necessity, this also raises the question of whether this power and control should be devolved, or indeed whether the citizenry should accept such a devolution. In an environmental context, concerns have also been voiced regarding the lack of measurable conservation outcomes achieved, combined with those criticising participatory governance as a manifestation of neoliberal thought (Fletcher, 2010). Faced with trying to solve complex environmental problems, governments tend to rely on solutions driven by technocrats, who construct participatory processes which reinforce the beliefs of policymakers (Fletcher, 2010)

Critical social science engagement with natural resource management has increasingly engaged with the concept of neoliberalism, due to its predominance in shaping contemporary policy and discourse (Fletcher, 2010). The relationship between the environment and neoliberalism, with its calls for allowing ‘the market’ to address environmental governance issues, is one that is complex and inexplicable (Mansfield, 2004). The impacts of this restructuring of economic and social life, as well as on the management of natural capital, have been immense (Meynen and Doornbos, 2004). These impacts include: the privatisation of functions previously performed by the state through putatively market-based schema, the rescaling of governance and devolution of regulatory responsibilities to local government (often without proportional transfers of power), and a shift from relying solely on binding laws to achieve compliance to increasingly voluntary, neocorporatist regulatory frameworks premised on non-binding standards and self-regulation, public-private cooperation and greater participation from the citizenry (McCarthy and Prudham, 2004, Fletcher, 2010). This shift is evident in the policy instruments that are being deployed by governments across jurisdictions in an endeavour to deliver sustainable ecological outcomes.

The move towards neoliberal modes of governing has seen an increasing emphasis on the role that private actors can play in the delivery of services that historically have been seen to be the responsibility of government (Gray, 2009, Soneryd and Ugglä, 2015, Mitlin and Bartlett, 2018). An important assumption underpinning contemporary Western capitalism, and neoliberal governance in particular, is that processes of governing and responsibility-taking are interlinked (Pyysiäinen, *et al.*, 2017). Whilst interpretations around the tasks which should fall within the purview of the public and private sectors have swung over time (Reinecke and Ansari, 2016), there has been a clear trend in recent years to shifting responsibility to non-state actors, and to encouraging civil society actors to accept additional responsibilities, without a commensurate transfer of power (Gray, 2009, Thörn and Svenberg, 2016). State policy actors have mobilised individuals, private enterprise, and communities, while divesting themselves of the responsibility of meeting the social, environmental and economic needs and aspirations of the citizenry (Ilcan and Basok, 2004). This process is known as responsibilisation, a concept which serves as the practical link connecting ideal-typical schemes of governance to the practices of policymakers on the ground (Shamir, 2008).

Responsibilisation operates at the level of the individual, reconfiguring roles and identities in order to mobilise designated actors to undertake and perform self-governing tasks (Shamir, 2008, Summerville and Adkins, 2008). As a technique of governance, it is squarely premised on the construction of moral agency as a necessary precondition for ensuring an entrepreneurial, self-sufficient disposition in the citizenry, and socio-moral authority in institutions (McCarthy and Prudham, 2004, Shamir, 2008). A unifying theme across neoliberal policy programs is the desire to create congruence between economic rationality and moral responsibility (Shamir, 2008). In the neoliberal paradigm, networks consisting of government agencies, businesses, environmental advocacy groups and other stakeholders are established to either self-regulate (based on discourses of moral responsibility) or to establish standards and codes which are meant to function as either an alternative to, or complement to, traditional regulations (Thörn and Svenberg, 2016).

A case study of responsibilisation in fisheries habitat rehabilitation

Through a process of cyclical corpus building (Mautner, 2008) forty key policy artifacts deemed to be significant carriers of meaning were collated and analysed. These included policy documents, legislative and regulative texts, government reports, brochures, social media posts and other materials explicitly or implicitly authored by the NSW Department of Primary Industries (DPI), which at the time of the study was the relevant department with carriage of fisheries in NSW. Texts were selected where the primary focus was on the construction of the problem of fish habitat degradation in the NSW fishery, or on the framing of solutions to respond to the stated constructed problem. A purposive method of text selection was utilised, which attempted to capture the important texts – ‘those which are widely distributed, that are associated with changes in practices, or that were produced in reaction to a particular event’ (Phillips and Hardy, 2002: 73). The selected texts were authored during the period 2009 – 2018. Taken together, the collated corpus of naturally occurring data (Silverman, 2011) provides a useful insight into the NSW DPI’s strategic aims.

Yanow’s (2000) approach to interpretive policy analysis informed the methodological decisions made in the course of this study. Interpretive policy research encompasses a range of analytical approaches which are primarily aimed at studying language through narratives and discourses, objects via symbols and programs, and actions via rituals and observations (Yanow, 2000; Wagenaar, 2006; Hendricks, 2007). Interpretive policy analysis has been used in a number of environmental governance contexts, and has provided new ways of thinking about contemporary environmental policy challenges (Grant-Smith, 2015, Aukes *et al.*, Behagal *et al.*, 2017, Osborne and Grant-Smith, 2017). The texts were analysed through a process which involved: identifying policy artefacts that were significant carriers of meanings and the communities for whom this meaning was shared, identifying the meanings being communicated through these artefacts and their entailments, key points of conflict and conceptual sources, and finally exploring the implications of different ways of understanding and ways of bridging these differences (Yanow, 2000). Through the interrogation of language, representations, and absences, interpretive policy analysis can be used as a mechanism to understand and uncover implicit and explicit policy intentions (Osborne and Grant-Smith, 2017). Specifically the analysis identified how the NSW DPI frames fisheries habitat degradation, how solutions to the degradation are constructed, and which stakeholders groups are attributed with responsibility for enacting the articulated policy solutions.

Findings

The term recreational fishing captures non-commercial fishing activities which are not the fisher's primary resource for meeting their essential nutritional requirements (Granek *et al.*, 2008). As an activity, recreational fishing is extremely popular, with approximately ten per cent of the global population participating in it in any given year (Granek *et al.*, 2008). Participation rates in Australia are slightly above the global average, with around three million Australians participating in the activity each year (Copeland, 2012, Barwick *et al.*, 2015). The most recent figures for NSW suggest that around 12% of the population participate in recreational fishing each year (Department of Agriculture and Water Services, 2018). The recreational fishing industry makes a significant contribution to social and economic life in Australia, with the activity contributing an estimated \$1.8 billion per annum to the national economy and sustaining around 90,000 jobs (Department of Agriculture and Water Services, 2018). Recreational fishers themselves have become powerful stakeholders in fisheries management, as is evidenced by their influence over the policy processes governing recreational fishing activities in NSW.

The case study which forms the basis of in this research project meets Flyvbjerg's (2006) definition of a critical case, as it provides a valuable opportunity to understand how the degradation of NSW fish habitats is framed in stewardship policy, how the solutions to the degradation of NSW fish habitats are constructed, and which stakeholders are attributed blame for enacting the constructed solutions. Within the Australian context, policymakers in NSW have been at the forefront of policy enactments whose primary aims are to mobilise stakeholders to volunteer to ameliorate degraded fish habitats and to increase involvement in participatory stewardship activities. Through the NSW DPI, the NSW Government has been a key driver in establishing networks such as the Fish Habitat Network and the Fishers for Fish Habitat program, both of which are focused on mobilising recreational fishers to increase their involvement in participatory stewardship activities (Fish Habitat Network, n.d, NSW DPI, n.d.). The focus of the NSW DPI on increasing participation in stewardship activities, and the availability of artifacts authored by the NSW DPI which are evidence of pursuit of this aim, provides an excellent context through which to explore the concepts central to this research

Changing stewardship responsibilities in fisheries habitat management

Climate change, overexploitation of resources, habitat destruction and pollution have contributed to the degradation of the world's fisheries (Granek *et al.*, 2008, Al Mamum, 2015). NSW has a diversity of fish habitats, including the presence of cooler high country, warm interior freshwater systems, a narrow continental shelf, and coastline interspersed with beaches, estuaries and rocky headlands (NSW Parliament, 2010). There have been numerous studies conducted which suggest there has been significant loss and degradation of fish habitats in NSW since European settlement (Balcombe *et al.*, 2011, Rogers *et al.*, 2016). For example, the extent of fish habitat in coastal NSW that is either degraded or completely lost since European settlement has been calculated at 62, 258 ha, which equates to over 70% of the total area at the time of European settlement (Rogers *et al.*, 2016). In an assessment of fish species, hydrology and macro-invertebrates, Davies *et al.* (2010) found twenty out of twenty four river basins to be in poor or very poor condition. Up to 97 per cent of assessed river length in NSW has been modified, and fish passage in many rivers and creeks has been blocked by floodgates, weirs, causeways, and impoundments, the combined impact of which has a negative influence on levels of production of fish species (NSW Parliament, 2010).

When articulating the threats to fish habitat, the NSW DPI names the destruction of fish habitat as the primary threat to the ‘health, abundance and diversity of fish in NSW’ (NSW DPI, n.d.-a: para 1). The NSW DPI names diffuse activities including agriculture, urban and industrial development, and land use as activities which have impacted on marine environments. This can be seen in statements such as ‘urban development associated with heavily populated areas has altered marine environments’ (NSW DPI, n.d.-i: para 2) and ‘agriculture, urban and industrial development has impacted... through land clearance, agriculture, dredging, reclamation and water development’ (NSW DPI, n.d.-a: para 2). In this series of texts, the NSW DPI names eleven threats to fish habitat: acid sulfate soils, barriers to fish passage, climate change, cold water pollution, degradation of riparian vegetation, fish kills, impacts of urban and rural development, pests and diseases, removal of large woody debris, water flow and block and chain in sensitive habitats (NSW DPI, n.d.-a).

Throughout the analysed policy artifacts, causality is attributed in broad, diffuse terms to a range of human-induced activities. These activities include (amongst others) urban and rural development, the introduction of species and pathogens, construction of structures which amend water flow, and clearing of riparian vegetation. The absence of attribution of blame for the problem of fish habitat degradation to actors who are having the greatest impact on these habitats is consistent across the corpus of texts analysed. As the NSW DPI (2016: 2) states ‘rivers, creeks and wetlands through NSW have undergone extensive changes due to urban, industrial and agricultural development.’ In these texts, however, there is an apparent reluctance to attribute causality for any of the key identified threats to specific stakeholders or users of fish habitats. Although there is some evidence that recreational fishing is as negatively impactful as commercial fishing, there is significant disagreement relating to this among key stakeholders, and regardless the damage through these activities pales in comparison to other sources (NSW Parliament, 2010, Young *et al.*, 2016). Instead, for the most part, the attributed causes are able to be linked back to developers, agricultural interests and farmers, commercial interests, and government action (or inaction, as the case may be).

In order to prevent further degradation, and ameliorate the damage already done, policymakers have sought to rely on a range of regulatory measures in order to ensure the ongoing social and economic utility of fisheries, and to balance the competing priorities of resource use and preservation (Al Mamun, 2015, Young *et al.*, 2016). Examples include legislation that limits the number and size of fish that fishers are able to catch, when and where fishers are able to access particular environments, and the technology and gear that fishers are able to use (Cooke *et al.*, 2013). However, governments are increasingly moving away from wholly relying on compliance with legislative and regulatory mechanisms in order to achieve environmental policy aims. Instead, there is a trend towards deploying policy instruments to foster participatory behaviours amongst key stakeholder groups in order to deliver environmental governance solutions. In the fisheries arena, this includes targeting recreational fishers (Copeland, 2012).

Fisheries management has historically tended to rely on ad-hoc, reactive approaches to policy development and enactment. On occasion, these approaches have sometimes failed to produce desired behavioural changes, which may be attributed to the objectives, possible actions and resulting outcomes being treated as simple and known (Irwin *et al.*, 2011). Whilst the traditional regulatory toolbox used to manage recreational fisheries is diverse, it is apparent that policymakers see an opportunity to deploy new mechanisms in order to achieve compliance and environmental objectives, relying heavily on voluntarism (Cooke *et al.*, 2013). With this in mind, this research identified that

there is a lack of discursive connection between which actors are framed as the causal agents of the degradation of fish habitat in NSW and which users are ascribed responsibility for implementing the constructed solutions. This is a clear point of conflict within the analysed texts. By keeping the blame for fish habitat degradation diffuse, the collated corpus of texts, whose audience is primarily recreational fishers, do not provide the full story. There is a significant disconnect between causal attribution, and the attempts to responsabilise recreational fishers to take ownership of the problem of degraded fish habitats. The mobilisation of recreational fishers occurs in a seemingly decontextualised, depoliticised mode, and from the analysed texts it is unclear whether this is recognised by policymakers.

Shifting responsibility for fisheries habitat management

If actors are understood in terms of the consequences that flow from their actions as rights and duty bearing units, then a shift in the rights and duties assigned to actors will change the social consequences of their actions and simultaneously the discursive nature of their agency (DeWinter, 2001, Shamir, 2008). This position has previously been articulated in the context of corporations assuming socio-moral obligations that were once considered solely the role of the state. Although focussing on recreational fishers, the implications of this can be extended to citizens more broadly. Through the prism of responsabilisation, one can see a discursive shift underway, with social actors taking on additional responsibilities for tasks previously within the purview of the state. Abrahamsen (2004) frames citizens as agents who are conscripted – active creators of their own future rather than objects of external statist benevolence. This research suggests that ideally, this is how policymakers would like to position non-state actors such as recreational fishers – rather than people passively benefiting from the NSW DPI remedying degraded fish habitat themselves, instead recreational fishers are being positioned to take charge of their destinies and that of the environments of which their leisure activity depends. In such a paradigm, responsibility can be understood as one of obligation to those individuals care about the most – their family, neighbours, colleagues, and ultimately the community (Summerville and Adkins, 2008). Whilst in the corpus of analysed texts a broad array of stakeholders are ascribed responsibility for certain solutions, recreational fishers are the primarily attributed with carrying out their implementation. This is arguably as a result of both the sheer number of people engaging in recreational fishing as an activity, as well as a result of the vested interest that recreational fishers have in quality fish habitat.

Responsibilised actors, be they individuals or those acting as part of a club, are constructed as virtuous, particularly when they accept responsibility for maintaining the property of the state. For example: ‘... Bass Sydney took matters into their own hands and applied to Council for co-management of the reserve. With approvals granted, the Club applied for a habitat action grant to initiate rehabilitation of the site’ (NSW DPI 2016: 6). In this case example, the NSW DPI state that the Club are ‘aware that their hard efforts need to be preserved’ and that they have committed to maintaining the site (which is an asset owned by the State) for five to ten years (NSW DPI 2016: 6). The case example further notes that the Club has reached the ‘considerable milestone’ of 1000 hours of volunteer labour allocated to maintaining and restoring this site (NSW DPI 2016: 6). The actions of the Club are lauded and celebrated by the NSW DPI as a positive example that other clubs can follow. Although the efforts of the Bass Sydney Club were considerable, non-state actors are often encouraged to start small - ‘We all just need to start somewhere, even in our own backyard’ (NSW DPI 2016: 12). Within this context, the term ‘our own backyard’ is used to refer to state assets.

The responsibilisation of recreational fishers

The analysis of the selected texts provides evidence of a desire to shift how governmental authority is deployed, with an emphasis on voluntary mechanisms operating in concurrence with regulatory mechanisms that have the coercive backing of the state. Recreational fishing remains a highly regulated activity. The NSW DPI has used a number of rhetorical devices to shape perceptions, and encourage collaboration between recreational fishers and relevant government authorities at the state and local level. The former Executive Director Fisheries NSW, Dr Geoff Allan stated ‘Fish habitats underpin the productivity of our State’s fisheries resources. It is therefore vital that the government and community work together to protect and restore them, in order to sustain our fisheries in the long-term’ (NSW DPI, 2013: iii). The use of the word community here is contextual, with the implication being recreational fishers and users of fish habitats are the key stakeholders who need to work with government to protect and restore fish habitat.

The NSW DPI encourages collaboration between recreational fishers and local, state and federal government, in order to rehabilitate degraded fish habitat. This is achieved through praising actors who ‘took matters into their own hands’ (NSW DPI 2016: 6) as well as through celebrating outcomes which ‘significantly demonstrated that small community groups can collaborate with government to achieve positive outcomes for native fish’ (NSW DPI: 2016: 10). The NSW DPI uses phrases like ‘strategic partnerships’ when advocating for collaborative efforts, and links the projects delivered through these partnerships back to the improved utility of fish habitat targeted by recreational fishers (NSW DPI, 2016: 7). Increasing the participation of non-state actors, particularly those who are perceived to a stake in the issue at hand, provides an opportunity for the state to govern through regulated choice by strategically creating moral, autonomous actors with ethical commitments to those around them (Summerville and Adkins, 2008).

What is apparent here is that the NSW DPI is advocating disjunctive ideologies and goals through the message of ‘more habitat equals more fish’, and the use of case studies to highlight what volunteers can achieve in conjunction with the state. The analysed texts construct recreational fishers as empowered volunteer citizens who are meaningfully able to improve the quality of natural capital for the benefit of themselves, their communities, and for future generations. This construction of recreational fishers may be conceptualised through two frames. The first is one that is individualised, focusing on the benefit to the recreational fisher herself through increased fishing opportunities that arise as a result of the improvements to habitat. The second is collectivised, emphasising a goal of giving back to the community and to future generations. These two frames are mutually reinforcing, however they exist in a relationship of uneasy tension, particularly given that much of the damage to fish habitats is caused by sources which recreational fishers have no control over.

Discussion

Whilst the traditional regulatory toolbox used to manage recreational fisheries is diverse, it is apparent that policymakers see an opportunity to deploy new mechanisms in order to achieve compliance and environmental objectives, relying heavily on voluntary behaviours by key stakeholders. With this in mind, this research identified that there is a lack of discursive connection between which actors are framed as the causal agents of the degradation of fish habitat in NSW and which users are ascribed responsibility for implementing the constructed solutions. This is a clear point of conflict within the

analysed texts. By keeping the blame for fish habitat degradation diffuse, the collated corpus of texts, whose audience is primarily recreational fishers, do not provide the full story. There is a significant disconnect between causal attribution, and the attempts to responsabilise recreational fishers to take ownership of the problem of degraded fish habitats. The mobilisation of recreational fishers occurs in a seemingly decontextualised, depoliticised mode, and from the analysed texts it is unclear whether this is recognised by policymakers.

The participation of non-state actors in delivering policy solutions is often framed as positive - public participation tools, including IAP2 (2014) can be viewed as participatory buffets from which appropriate strategies can be selected based on levels of risk and the complexity of the issues at hand. An analysis of the selected texts highlights however how non-state actors – and particularly recreational fishers – are being constituted as moral, political and authoritative actors by the NSW DPI, and by extension are being responsabilised to ameliorate degraded fish habitats. While the resourcing pressures which policymakers are dealing with need to be recognised, it could be suggested that recreational fishers are being expected to shoulder a disproportionate stewardship burden. Whilst this burden is framed in terms of civic responsibility, it is ultimately a manifestation of responsabilisation.

There is a clear tension underpinning how government resources are deployed in order to ensure the ongoing social, environmental and economic utility of natural resources. What is self-evident is that, in the contemporary neoliberal paradigm, governments do not have the resources or the capacity to solely shoulder the responsibility for ameliorating degraded fish habitat. The core contemporary challenge for government lies in determining how to best deploy limited resources in order to achieve policy aims. Australian policymakers have looked to the international experience in mobilising recreational fishers and may be attempting to replicate that success. What does not appear to have been acknowledged is that recreational fishers are being disproportionately ascribed the responsibility for remedying the degraded state of fish habitats. There is a clear disconnect between the agents which are framed as causal agents of the degradation, and the actors which are framed and named as being key to delivering the solution. The NSW DPI is not seeking to remunerate recreational fishers for their involvement in participatory stewardship activities, and it is worth noting the time and resource commitment being sought from recreational fishers and fishing groups is not insignificant.

Conclusion

Although an interdisciplinary body of scholarship has explored the neoliberalisation of nature (Bridge, 2004, Mansfield, 2004), whereby environmental problems are solved through market mechanisms and public-private partnerships (Ciplet and Roberts, 2017), the associated rescaling of environmental responsibility to the individual has received less attention. This research highlights the discursive strategies used to mobilise stakeholders to become involved in stewardship activities. As a subset of environmental governance, fisheries management provides an empirical site through which to study these issues. Further, although increasing academic attention is being paid to the role recreational fishers may play in delivering on solutions to the degradation of fish habitats, little has considered the discursive strategies used by policymakers to responsabilise recreational fishers.

Future research opportunities may consider whether the identified dissonance in the selected corpus of texts extends to other artifacts which are produced by the NSW DPI. Further, conducting semi-

structured interviews with recreational fishers would be useful to gain a deeper understanding of how they respond to the responsabilisation agenda. Future research opportunities also lie in testing whether the discursive strategies utilised by the NSW DPI are deployed by state actors in other national and international jurisdictions. This research is potentially relevant to all neoliberal states, and while the content of responsabilisation may vary, it is likely to manifest itself across a range of public policy initiatives, including those within the environmental governance, health and education spaces.

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Spatial Evolution Characteristics and the Planning Coordination Mechanism of Cross-border Regions in Rescaling

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Abstract: Since 1980s, the transformation of industry production and migration in the process of globalization has triggered the reorganization of “scales”. Furthermore, the space rescaling has spawned the phenomenon of “cross-border area”, which has been a “softer” and flexible functional region. Space and governance are two important attributes to analyze cross-border area. This paper try to sort out the cross-border regional evolution of Hong Kong, Macau and the Pearl River Delta Region. The development of this area could be divided into spontaneous period(1978-1997), transition period(1997-2003) and official period (2003-2019). Research shows that: Firstly, in terms of spatial change, the industrial space were the forerunner, traffic links were followed almost at the same time. The ecology space was not valued until the official period. The social spatial connection, however, has not yet been established. Secondly, the governance has been developed from informal to the formal one. Planning and coordination mechanisms have been adjusted for many times. Formal contacts have been established through inter-governmental relations adjustment and multiple regional planning controls. In conclude, the empirical research proves that the “space-governance” model is efficient. The model might be effective in governing the rescaling region and ensuring coordination between multiple policy levels and administrative units.

Keywords: Rescaling; Regional Coordination; Cross-Border Area

Introduction

“Guangdong-Hong Kong-Macau Greater Bay Area”(GD-HK-MO GBA) is a hot spot in China in recent years. The Central Economic Work Conference and the 19th National Congress of the Communist Party of China regard it as an important strategy to promote coordination between the mainland and Hong Kong and Macau.

For this "cross-border area" formed by space rescaling, this paper attempts to explore two issues: Why does Guangdong, Hong Kong and Macau cross the border and reorganize the spatial scale? Between the three places, what mechanism is used to achieve cross-border restructuring and cooperation.

1 Literature Review: transition in the regional planning

1.1 Rescaling

Since the 1980s, with the deepening of economic globalization, the factors of production have accelerated, and the production mode has shifted from the original Ford system to the post-Ford elastic accumulation model. In this process, there has been a shift in scale and system (Wei et al., 2011). Many countries and regions have established new spatial platforms through rescaling, adapting to new production methods and promoting capital accumulation (Brenner, 2000).

Re-scaling includes two categories, the rescaling of countries and cities (Brenner, 1999). On the one hand, the state has formed a super-national organization such as the EU, the NAFTA through the upward movement of power, and the power has moved down to form a sub-national organization. On the other hand, cities form a world urban system through the capital flows of multinational corporations; new spatial systems such as super metropolitan areas and multi-center urban areas are formed between cities with geographical proximity.

1.2 Cross-Border Area

In the rescaling of countries and cities, a special spatial phenomenon occurs: a transborder region, that is, a spatial unit composed of two or more neighboring countries or subnational regions (Perkmann, SUM.NL, 2002).). In different contexts of discussion, it needs to be interpreted from different political and economic perspectives.

1.2.1 Interpretation from a global perspective

In the process of globalization, different transnational capitals, countries and local societies generate complex games. In the 1990s, cross-border areas emerging in the European Union and North America were super-national or national (Perkmann, 2003). After the Asian financial crisis in 1997, regionalization in East Asia increased, and the integration paradigm shifted (Liu, Regnier, 2015), cross-border integration in sub-national regions (Hall, 2002), and more objects and activities in cross-border areas emerged.

1.2.2 Interpretation in the context of Chinese

With the reform and opening up and accession to the WTO, China's entry into the global capital system has also undergone scale reorganizing and cross-border areas emerging.

China's traditional urban development takes place within a relatively closed administrative district. Due to the intensification of the flow of production factors, the region has developed and transformed its demands, and the phenomenon of integration between urban areas has emerged (Peng Zhenwei, Qu Niu, 2011). Under the promotion of cross-border industrial cooperation and transfer, cross-border collaboration, reconstructed cross-border areas such as the Hong Kong-Shenzhen area (Yang Chun, 2008) and even the Guangdong-Hong Kong-Macau Greater Bay Area, and the cross-border areas such as the Nanchong Economic Belt. Economic corridor (Wang Lei et al., 2012).

1.3 Regional Coordination

The transformation of the system and the reorganization of spatial scales have brought new problems to regional development: how can cities that are closed to open, how to coordinate various contradictions in industries, transportation, and ecology? Especially for cross-border areas with different systems, such contradictions are more acute.

In this context, regional coordination (especially urban space coordination coordinated by the government) has become an important means to promote the scale restructuring region from conflict competition to orderly competition and cooperation and win-win. Different from the Western “new regionalism” through the horizontal cooperation of the department and the comprehensive administrative and market role, China has adopted more forms of regional planning to promote regional coordination (Fang Wei, Zhao Min, 2013).

It can be argued that in China's rescaling, “*space conflict and coordination*” and “*government governance and planning*” are a core set of regional coordination, which have an important impact on the development of cross-border areas and are also the focus of this study.

2 Research framework: “space-governance” model

2.1 Basic inference: two characteristics of cross-border regional coordination

2.1.1 Spatial characteristics: reconstruct regional spatial organization, release factor flow

“Space” refers to spatial changes and conflicts in cross-border areas due to rescaling. This feature can be divided into regional spatial organization patterns and changes in spatial linkages and elements between cities.

- Regional space: The cross-border area in the rescaling will reshape the urban agglomeration relationship and rank of the region, break the original administrative district economy, and promote the relatively closed region from a single central structure to a multi-core and networked development.
- Urban space: The linkages between cross-border areas usually begin with economic and trade flows and ultimately establish cultural identity (Brunet-Jailly, 2005). This promotes the establishment of inter-city linkages between industry, transportation, and ecology, and the release of information, technology, capital, and talent.

2.1.2 Governance characteristics: multi-level governance, promote the coordinated development of space

“Governance” is the means of coordination adopted by the government when the development of the region changes. By adjusting inter-governmental relations, organizing multi-departments consultations, and issuing regional plans, the government implements multi-level governance to ensure coordinated regional development. Governance research includes two aspects.

- The inter-governmental relationship. This includes the vertical inter-governmental relationship between the lower and upper levels of government and the inter-governmental relationship between local governments (Xie Qingkui, 2000);
- The regional planning as the specific means of governance . It is an important medium and means adopted by the government, combining economic, administrative and legal aspects.

2.2 Research framework design

Based on the above inference, a research framework is established from the two aspects of “space” and “governance”. Firstly, through historical research, we sort out the development process of cross-border areas, and study the regional spatial organization of each period and the evolution of urban industrial space, transportation space and ecological space. Second, analyze the changes in governance methods from inter-

governmental relations and regional planning. As is shown in Figure 1, a “space-governance” analysis model for cross-border areas is established.

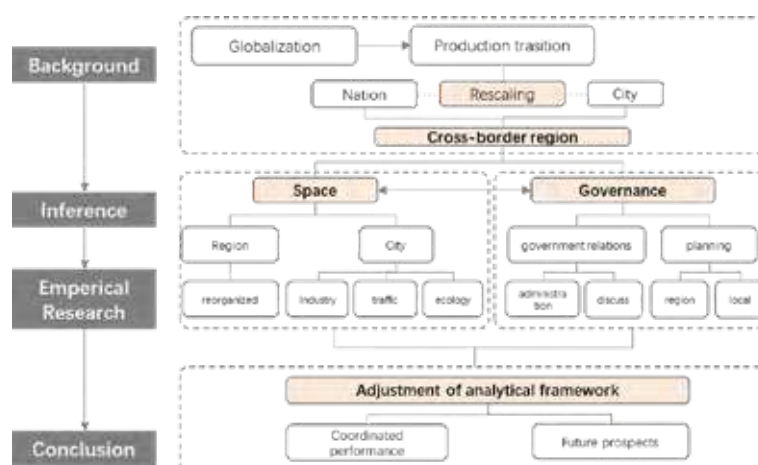


Figure 1 Research framework

2.3 Time and space range

The space includes Hong Kong (HK), Macau(MO) and the nine cities in the Pearl River Delta (PRD) region.

The time ranges from 1978 to 2019. It is roughly divided into three historical stages. From 1978 to 1996, it was a bottom-up, informal spontaneous communication period (spontaneous period). 1997-2002 was the transitional period (transition period) after Hong Kong and Macau returned. CEPA was signed in 2003, which marks the beginning of formal regional collaborative development period (official period) (Luo, Shen, 2012).

3 Spatial Evolution Characteristics of the Cross-border Areas of Hong Kong-Macau-Pearl River Delta

The border between Hong Kong and Macau and the Pearl River Delta includes both land and sea boundaries, and border inspection is required at the port through the border. Some of the Hong Kong-Shenzhen borders are still "forbidden zones" - although they have been reduced from 2,800 hectares to 400 hectares.

Since the reform and opening up, border space has been indirectly crossed – including cross-border industries and cross-border transportation. This has led to the reorganization of regional relations and the strengthening of urban spatial links. Some of the border space will even be directly crossed, and the restricted area will become a cooperation area.

3.1 Regional space: spatial organization relationship is reconstructed

1. In the spontaneous period, Hong Kong and Macau are relatively free from the Pearl River Delta region, and the interior of the Pearl River Delta is centered on Guangzhou.
2. With the tortuous fluctuations in the Hong Kong-Shenzhen relationship during the transition period, the central structure became loose. Hong Kong and Shenzhen formed a new economic core. The economic and transportation links between cities strengthened, driving the development of regional networks.
3. In the official period, Hong Kong and Macau integrated into the Pearl River Delta. Guangdong-Hong Kong-Macau Greater Bay Area initially presented a networked regional spatial structure.(Figure 2)

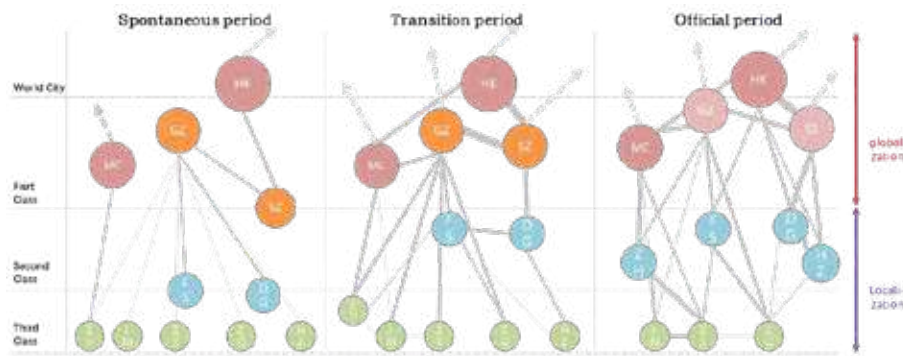


Figure 2 Regional spatial organization relationship in cross-border areas

3.2 Urban space: urban linkages strengthen and promote the flow of factors

3.2.1 Industrial space

1. Spontaneous period: “Before and after the factory” is the main feature of the cross-border industrial space. This model is the result of changes in the internal and external environment: on the one hand, the production costs of ASEAN countries are reduced, the trade protectionism tends to be in the West, and the development of Hong Kong's manufacturing industry is constrained. On the other hand, the reform and opening up policy has pushed the closed Pearl River Delta to cross economic isolation. Therefore, Hong Kong businessmen and foreign investors cross the border to use the cheap labor and land resources of the Pearl River Delta to reduce product costs (Xu Jiang, 2008). The main undertakings of Hong Kong capital are Dongguan, Huizhou and Shenzhen in the eastern part of the Pearl River Delta, and most of them are concentrated along the Guangzhou-Shenzhen Expressway. Hong Kong capital will accelerate the expansion of the space in the Pearl River Delta cities and promote the rapid development of professional towns, laying the foundation for cross-border links.
2. Transition period: The category and value chain of industrial transfer began to upgrade. The economic pressure brought about by the Asian financial crisis has forced some service industries in Hong Kong to transfer their operating bases. Secondly, the manufacturing transfer was upgraded from the toys and clothing industries in the 1980s to electronic components and electronic appliances and smart toys with high added value. However, it is still based on OEM production and assembly, and lacks its own brand (Chen En, Li Jiahong, 2011).
3. Official period: The connection of industrial space is strengthened and new trends appear. In the transfer and acceptance of global capital, Hong Kong and Macau are not the only “portal” and trade intermediaries. Guangzhou and Shenzhen can undertake foreign investment relatively independently. The global financial crisis in 2008 further promoted the manufacturing industry and industrial transformation of the Pearl River Delta. (Figure 3)

At present, the Pearl River Delta is no longer a “post-factory” for the passive development of Hong Kong and Macau's transfer industries. The regional production relations and spatial pattern are developing in a flat manner. The industrial space of each city has both cross-border cooperation areas and considerable autonomy, from relative subordinates to equal cooperation. In space, there is a tendency to gather in the Bay Area.



Figure 3 Evolution of the main agglomeration space of cross-border industries (from left to right: spontaneous period, transition period, official period)

3.2.2 Traffic Space

1. Spontaneous period: There are few cross-border traffic spaces, but industrial demand drives Hong Kong companies to invest in the Pearl River Delta infrastructure. For example, Hong Kong's Hehe Industrial Subsidiary will build the Guang-Shen Expressway and Huo Yingdong to build the Humen Bridge with the private construction and operation transfer mode to eliminate the space barrier of capital circulation and attract more investment. Cross-border transportation investment during this period was concentrated on the east coast of the Pearl River Delta.
2. Transition period: The government incorporates cross-border transportation into its planning strategy. Hong Kong proposes a regional express route scheme for Lok Ma Chau and Lo Wu. It will lead directly to the Kowloon Southern Link and the Island Line. The Pearl River Delta has built roads such as the Guangzhou-Macau Expressway, and the regional traffic has been further improved.
3. Official period: The cross-border communication has really arisen, the east-west connection has been strengthened, and the transportation mode has been diversified. In 2007, the Hong Kong-Shenzhen Western Corridor was completed and docked on Highway 9 in Hong Kong. In 2017, the Hong Kong-Zhuhai-Macau Bridge cross-border road was opened. In addition, the northern section of Guang-Macau and the second line of Guangzhu West Line, which were completed during 2005-2013, were linked to the east and west coasts. More closely. In addition, it also includes different modes of transportation such as intercity railways and port transportation.(Figure 4)



Figure 4 Cross-border traffic space evolution (from left to right: spontaneous period, transition period, official period)

3.2.3 Ecology Space

The cross-border cooperation in the ecological space appeared late, and there was no clear guidance until the official period.

In 2008, the "Plan of the Pearl River Delta Reform and Development Plan" encouraged the establishment of a pollution prevention and prevention joint prevention mechanism, the implementation of environmental pollution control, the construction of cross-border ecological protection zones, and the protection of reservoir catchment areas, thereby promoting the establishment of a cross-border quality life in Guangdong, Hong Kong and Macau. ring. (Figure 5)

In 2012, in the “Livable Bay Area around the Pearl River Estuary”, based on the overall layout of the Pearl River Delta Green Island Network, the “Green Network” and “Blue Net” of the Pearl River Estuary Bay Area will be further proposed to protect the cross-border ecological space. Encourage the integration of cross-border leisure life.



Figure 5 Cross-border ecological space cooperation planning (from left to right: ecosystem, green network action, blue network action) (Adapted from official planning file)

3.3 Cross-border node

After formal and comprehensive cooperation, Hong Kong and Macau and the Pearl River Delta have carried out research on several cross-border cooperation nodes, which can be divided into two types: the adjacent type geographically adjacent to the border, and the non-geographically adjacent "enclave" type. The construction of cross-border nodes is a new round of comprehensive space cooperation after the close connection between industry, transportation and ecological space. This marks a new phase of cooperation between the three places.

3.3.1 Adjacent type

There are three adjacent types: the Zhuhai-Macau Cross-border Cooperation Zone, the Shenzhen-Hong Kong Lok Ma Chau Loop and the Zhuhai Hengqin New District.

The Zhuhai-Macau Cross-border Cooperation Zone is the country's first cross-border industrial park. It develops functions such as high-end logistics, exhibition and sales, and transit trade. The purpose is to support the diversified development of Macau's economy and is also an important modern logistics business park on the west bank of the Pearl River. In addition to economic cooperation, the cooperation zone reflects the ecological governance of cross-border cooperation. The ecological management of the Yayong River is carried out in Zhuhai and Macau, including controlling pollution discharge and improving greening in the waterfront.

3.3.2 "enclave" type

There are four types of enclaves: Guangzhou Nansha New District, Shenzhen Qianhai New District, ShenZhen-DongGuan Harbor New City, and ZhuHai-ZhongShan Binhai New City, which are concentrated near the Pearl River Estuary.

Among them, Nansha New District, as a new national district, assumes the function of “one district across three cities”. The construction of the enclave once triggered concerns among Hong Kong people, fearing that the further transfer of the industry would trigger the hollowing out of Hong Kong's local industry. Therefore, in addition to economic, people's livelihood, transportation, social innovation and other functions, the most important thing in Nansha New District is to explore a new mode of cooperation between the three places – how to establish a new mechanism of cooperation and diversified cooperation channels to achieve a win-win situation.

4 Multi-level governance and regional planning

4.1 Adjustment of inter-governmental relations

At present, Hong Kong and Macau are special administrative regions. The administrative structure of the Pearl River Delta includes sub-provincial cities, prefecture-level cities, county-level cities, counties, and municipal districts. It is a cross-border area with multiple administrative structures. In different economic stages, it has also undergone several adjustments such as the withdrawal of the county to set up the city and the withdrawal of the county.

In the evolution of cross-border areas, the inter-governmental relations have undergone several adjustments, including two sets of relations: the relationship between Hong Kong and Macau and the Pearl River Delta, and the administrative adjustment within the Pearl River Delta.

After the reform and opening up, Hong Kong, Macau and the Pearl River Delta changed from the "three-country division" diplomatic relationship to the "market-led" economic cooperation relationship, driving the cross-border evolution of industry and transportation space.

However, since the three are divided into interest groups of different political entities, cross-border cooperation pays less attention to areas outside the economy, such as social security and environmental protection. During this period, in the Pearl River Delta, in order to promote capital accumulation, the government implemented a series of decentralization measures, including the withdrawal of townships in 1985 and the establishment of cities in 1993 (Guo Yan et al., 2017).

After the return of Hong Kong and Macau, the attitude of the Hong Kong and Macau government's "cross-border protectionism" hindered regional cooperation to a certain extent. It was only in 2001 that the attitude was changed and the areas of cooperation were initially expanded, including improving cross-border traffic and calling for the establishment of a free trade zone (Shen Jianfa, 2002). At the same time, the Pearl River Delta region, which is restricted by the economics of the administrative region, has adopted the district (county-level city) to integrate the inter-governmental relations, forming a pattern for the development of the surrounding areas.

After the signing of CEPA in 2003, the local governments of Guangdong, Hong Kong and Macau entered a period of comprehensive cooperation. Although administratively divided into one province and two districts, in recent years, regional concepts such as “Guangdong-Hong Kong-Macau Greater Bay Area” and “Guangdong-Hong Kong-Macau Greater Bay Area” have received increasing attention, and collaborative development has become the mainstream.

The multiple adjustments of the relationship between the two groups have promoted the cross-border relationship between Hong Kong and Macau and the Pearl River Delta and established a networked inter-governmental cooperation relationship.

4.2 Changes in regional planning

With the adjustment of inter-governmental relations, the spatial scope and planning content of regional planning in the Pearl River Delta region are also changing, which is shown in Figure 6.

During the spontaneous period, Deng Xiaoping's southern tour strengthened the influence of Hong Kong-owned overseas Chinese capital on the economic development of the Pearl River Delta. In 1994, Guangdong Province promulgated the "Pearl River Delta Economic Zone Urban Group Planning", which covers 9 cities in the Pearl River Delta (excluding Zhaoqing's peripheral number).

There is no regional planning during the transition period. The official period is to improve the content of regional planning with the expansion of the cooperation level between the three places.

In 2004, a more comprehensive Plan for the Coordinated Development of the Pearl River Delta Urban Agglomeration was promulgated. In 2008, the Outline of the Pearl River Delta Reform and Development Plan was first added to the coordination with Hong Kong and Macau. In 2012, the scope of the "Livable Bay Area around the Pearl River Estuary" was planned. Formally adding Hong Kong and Macau, it is a construction plan jointly prepared by the three governments. It is also a planning open to consult the public.

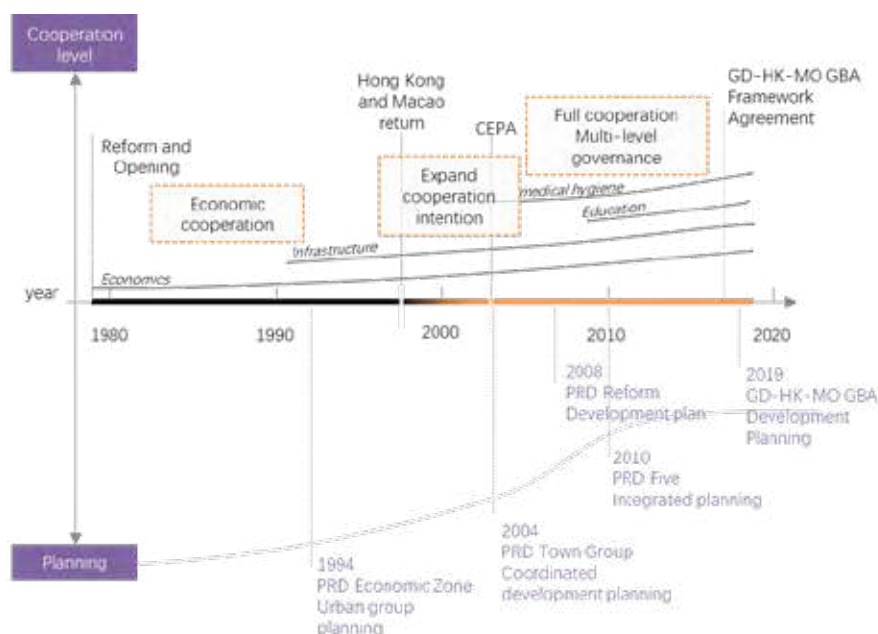


Figure 6. Evolution of cross-border cooperation levels and regional planning

The level of cooperation between the three places has been deepened. In 2017, the Guangdong-Hong Kong-Macau Greater Bay Area framework agreement was established. In February of 2019, the development plan for the Guangdong-Hong Kong-Macau Greater Bay Area was issued. This indicates that cooperation between Hong Kong, Macau and the Pearl River Delta will truly cross the border and formally become a multi-level cooperation area.

5 Conclusion and Discussion

5.1 Conclusion: The relationship between Hong Kong, Macau and the Pearl River Delta from the perspective of "space-governance"

In the past, the study of cross-border areas adopted a relatively single perspective of space or governance research. This study analyzes the characteristics and mechanisms of cross-border areas through the dual perspective of "space-governance". Studies have shown that spatial evolution and governance mechanisms are interrelated (Table 1), and the "space-governance" analysis model is effective.

1. In the spontaneous period, the capital of Hong Kong and Macau entered the Pearl River Delta across borders, triggering the reorganization of regional and urban space. The inter-governmental relations between the three places are led by economic cooperation. The series of administrative measures taken by the Pearl River Delta to adapt to the entry of foreign capital has led to the fragmentation of inter-governmental relations. In terms of regional planning and regulation, there is no formal cross-border planning, and only the urban agglomeration planning based on the economy within the Pearl River Delta.
2. During the transition period, with the return of Hong Kong and Macau, the three countries were fluctuating due to the shackles of "cross-border protectionism". Under the leadership of market capital, the cross-border relationship between industrial space and transportation space is still strengthening. The relatively developed economy of the Pearl River Delta began to integrate inter-governmental relations, enhance the status of cities such as Guangzhou, and lay the foundation for network cooperation in the next period. During this period, no plans were issued within the Pearl River Delta, but in the early analysis of regional planning, the awareness of cross-border cooperation has sprouted.
3. In the official period, the signing of CEPA marks the formalization of the partnership. Under the government's promotion, cross-border space has broken through the market economy, and carried out ecological governance and construction of integrated cross-border nodes. The inter-governmental relations between the three places have entered the multi-level governance stage, and through a series of initiatives such as joint meetings, the level of cooperation has been continuously deepened. In terms of regional planning, the content is more comprehensive, and the scope of space and participants are more diverse. Cross-border areas try to break through the shackles of borders and institutions, and truly build a new platform for multi-level and equal cooperation in economy, transportation, ecology and society.

Table 1 Evolution of the relationship between Hong Kong, Macau and the Pearl River Delta from the perspective of "space-governance"

	Space research		Governance research	
	Region space	City space	Adjustment of inter-governmental relationship	Changes in Regional planning
Spontaneous period	The PRD is a single center. HK and MO are relatively independent.	The industry first appeared in contact, and HK businessmen invested in the PRD traffic.	Divided governance and market-led cooperation. The PRD has broken down due to the establishment of the city in the county.	1989 Planning of the urban system 1994 PRD Economic Zone Urban group planning
Transition period	HK and SZ reconstructed into a core, breaking the structure of "central geography".	The industry shifts and the government considers cross-border traffic engineering.	The return of HK and MO, "cross-border protectionism" has hindered cooperation. The Pearl River Delta integrates inter-governmental relations.	2003 CEPA
Official period	GZ-FS and HK-SZ are the main cores. ZH-MO is the secondary core. The region is moving towards networking.	The industry has moved from subordinate to cooperation, and there has been an enclave/adjacent cooperation area. Cross-border traffic is increasing. Carry out ecological and environmental cooperation.	Comprehensive cooperation, under the premise of one country, two systems, carry out multi-level networked collaboration. Establish a joint meeting.	2004 PRD Coordinated development planning 2008 PRD Reform Development plan 2010 PRD Five Integrated planning 2014 PRD Planning 2016 PRD Space Planning
Future	Mature networked structure, Extend to the Pan-PRD.	From the physical space to the cultural space with a sense of belonging.	A new model of multi-faceted, cooperative and efficient.	2019 GD-HK-MO GBA Development Planning

5.2 Discussion: Future trends

According to the analysis model of "space-governance", Hong Kong, Macau and the Pearl River Delta have entered a relatively mature stage of cross-border regional evolution. According to Brunet-Jailly's hypothesis, cross-border areas will eventually establish cultural identity and ownership.

Although citizens in the Mainland and Hong Kong and Macau now have relatively consistent recognition of economic and trade cooperation, there is still a certain distance in cultural identity and attribution (Shen, 2014). With the deepening of the Guangdong-Hong Kong-Macau Greater Bay Area, the three governments should invest more in social and cultural exchanges and public service sharing to promote cross-border areas to a deeper level.

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Research on Region Governance character and mechanism of Suburban Counties surrounding Metropolitans in Central China

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Abstract: Based on the cases from central China, this study discusses the relation between regional governance and regional challenges in the suburban areas surrounding the metropolitan areas in China since the 1990s. Under the trends of globalization and metropolitanization, the spatial-temporal features, and governances are changing toward a different direction. The territorial governance arrangement is shaped by the regional competition and the goals of economic development, which is pushed by the central city through the interaction of powers from different levels of government and stakeholders, under the China's administrative hierarchy, especially the "city-leading-counties" system. One of the prominent examples is the governance arrangement of the industrial parks located in metropolitan fringe areas, which shows both changes and continuity over time. To be more specific, this study starts with analyzing the features and changes of the governance on the county regions in the special periods. Further, the study focuses on the cases studies of a type of specific spatial unit – industrial park. By analyzing the cases of three time-sequential but spatial-separated industrial parks, the researcher examines specific mechanism of the impact of external regional challenges and policy changes of governance arrangement. Central city's attempt to join the fringe area for the development of industrial parks into county territory has to comprise with the suburb county's government. Eventually, a typical region government arrangement at the metropolitan fringe area came into being. The "softer" governance at the fringe area could be divided into three phases: the separation of city and county, the collaboration of city and county, and the dominance of the central city.

Keywords: Governance arrangement, Metropolitan fringe area, Suburban counties

Introduction

Since the 1990s, a series of market reforming conditions in China has led to corporatist thrust and promoted competition among cities, aiming to gain regional central status in competition with other cities. The central city has expanded rapidly and the area has expanded to the entire administrative region. The central city is tightly connected with the peripheral areas and suburban counties, forming a greater metropolitan area. In the context of globalization and metropolitanization, the geographical uniqueness, spatial governance characteristics and governance structure of the county present unprecedented transformations and new features under the influences of societal development.

On one hand, the „city-leading-counties“ system with Chinese characteristics has significantly consolidated the power of the central city, vigorously realizing the infrastructural integration and spatial integration that promoted under the administrative force. Therefore, the regional reconstruction shares the same characteristics in the cases across Europe and the United States, such as administrative division adjustment, a certain degree of decentralization, various public-private partnerships, cross-border cooperation, etc. On the other hand, there are also the inherent characteristics of the internal system and culture, especially the complex property rights and institutions between the central, provincial, cities, counties and special administrative regions under the Chinese transformation system.

However, most of the existing researches are pure theoretical debates in macro scope. There are few fine empirical studies on specific regions as cases, and particularly on spatial governance in the suburban counties surrounding metropolitans. This paper aims to study the regional governance changes in Feixi County, a suburb of Hefei City, Anhui Province in the central region in China, and showcase a relatively complete representation of the historical section of the extent of development in this area, with particular attention to the following issues:

How have the characteristics of county spatial governance arrangements changed? What role municipal and county governments play in the transformation of urban areas? What specific mechanism should be applied during the change of county spatial governance? What specific mechanisms are mandatory under the impact of external regional challenges and policy changes on governance?

1. Research design

The geographical scope of this study is the central region, where generally considered an economically underdeveloped region largely consisting of Anhui, Hubei, Henan, Hunan, and Shanxi, and is directly radiated and affected by the developed regions in the east. After 2000, due to the influence of globalization and industrial transfer in the eastern region, the central cities have achieved rapid development, especially the provincial capitals have successively entered the developing stage of metropolitanization.

The time window of study was selected between 1990 and 2015, starting from the establishment of a cross-border economic development zone in the central cities, ending at a new round of planning compilation aimed at promoting regional integration, and the history will be traced according to the purpose of each project. There are three cases selected, they are TaoHua Industrial Park (completed), the Xingang Cooperative Park (completed) and

South China City Project (later stage), which represent the main features of the county space governance change in the previous period.

During 2017-2018, with respect to relevant personnel in policy-making in the case studies, we conducted a series of in-depth interviews with government officials, planners, academics, and directors of operations companies on specific projects. Among them, we focus on external environment, land and planning policies and the variables during project construction. We hoped that the analysis of these changes will be used to track the changes in the power structure between acting subjects, and to study the clues of county space governance changes. The research mainly adopts analytical methods on event analysis and literature analysis.

2. Changes in characteristics of regional governance -- The development of city and county integration

Feixi is located to the west of old Hefei county historically. With reference to administrative, economic or cultural aspects, it has a close relationship and integration tendency with Hefei, which is in the center of the region.

After the founding of the People's Republic of China, a series of administrative division adjustments (1952, 1958, 1961, 1983, 1997, 2006, 2011) led to a final configuration in the development of integration of Hefei City and Feixi County. From the official point of view, this integration has gone through three stages: Separation of City and County Industrial Parks --Construction Phase of Cooperative Parks -- Main City of Hefei Southwest. Efforts were made on the economy, industry, facilities and other factors, and gradually the city and county disintegrated the unfavorable factors of the district administrative economy under the separation of cities and counties established in the 1980s.

With a typical metropolitan suburban county model in the central region, the central city is anticipated to obtain more space and reduce conflicts between districts and counties. As shown in Table 2, within the context of the development of integration of the whole city and county, in the early stage, district adjustment of the county was mainly carried based on the problematic administrative division. In the latter stage, compromise and negotiation among cities and counties were the main focus. The government and related functional departments always made substantial progress. It can be seen that the integration of cities and counties is a typical urban area reconstruction led by the government. However, the government is not a completely homogenized whole, but a hierarchical system of vertical management. The coordination and conflict of internal power operations can be manifested through the space carrier peripheral development zone that is regarded as the substantial promotion of integration. Its propulsion timeline is shown in Table 1.

Table 1 , City and county integration development stage and its content

	Separation(1991-2004)	cooperation (2005-2010)	Integration(2011-2015)
main problem	Urban development direction, Administrative division adjustment, County industrialization	Unified planning of edge development zone, Partition implementation management, City and county cooperation	The development of peripheral development zones to the urbanization of diversified formats
Way of promotion	set up development zones separately on the edge of the city and county	Benefit distribution, cooperation establishment	Integrated development
Substantial progress	Discussion stage	Agreement phase	Entering the operation phase
Major events and administrative division adjustments in the development zone	In August 1991, the Hefei Municipal People's Government approved the establishment of Hefei TaoHua industrial park in Feixi County. In 1997, the administrative division of Hefei Economic and Technological Development Area(HETA) was adjusted, 16 administrative villages in Feixi county and Hefei suburban district were placed under the jurisdiction of HETA. The land use scale is 39 square kilometers, covering one county (Feixi county), one district (former suburb district), and three townships (Changqing town, Feixi county Taohua town and Yandun town).	In 2006, district-county cooperative Xingang industrial park between Feixi county and HETA, In 2005, district-county cooperative Baiyan science park between Feixi county and Hefei Hi-Tech development zone	The municipal government put forward “county breakthrough” strategy and promoted urban infrastructure, and urban public services extend to the suburban areas.. In 2012, mega-project China south city located in Feixi county ,city-county collaboration dominated by central city came into being

In the construction of the peripheral development zone, we pay attention to the following node changes: The first is a policy gap between the constructions of peripheral development zones and obtaining national policies, in another word, the development zone policies broke through the restrictions of land and urban regulations. The second is the cooperation model: how to distribute the land quota? What is the functional division of investment and management between district and county? How is the relationship changed between the province, Hefei City and Feixi County during this process? And what is the specificity of the Feixi case for the governance in the central region? Through answering these, we can gain insight into the original power framework and its changes between city and county governments.

2.1 Geospatial characteristics of peripheral suburb counties: development and construction of peripheral development zones

Because of the location and development conditions near the main urban area, peripheral suburban counties, especially the cross-border areas, have huge potential development space and less demolition required. In the upsurge period of the establishment of development zones, they are often the ideal location for central cities. At the same time, the development of the cross-border areas in suburban counties is not only a unilateral action of the city, but also a location advantage and basis for attracting urban resource spillovers and constructing urban infrastructure. The disparity and imbalance in the development of cities and counties also prompted the county to shift its focus of development from the traditional county-level town development to the peripheral development. Especially around or towards the main city development or enclave development zones established by the central city, county-owned industrial parks will often be formed and developed at opposite and peripheral location; and the county-level development shows the spatial configuration in growth around the metropolitan areas.

Such peripheral development zones refer to the development zones set up in the fringe area in the light of their own interests by the municipal and county governments. Firstly, the cities' locations are selected relatively far away from the central city, the county's are adjacent to the cities' in the opposite direction. By attracting investment, it accommodate the enterprises that withdrawn from the central city due to urban renewal, and the enterprises that industrial transferred from developed areas.

Since the 1990s, Feixi County has developed a series of peripheral development zones to the southwest of Hefei's main city. Through nearly 30 years of development, it has formed 60 square kilometers Great Taohua industry plate, with an economic volume of 100 billion China Yuan. In a word, for the main body of cities and counties, the industrial plates of cities and counties in peripheral areas are the key bearing areas of industrial economy, and the center of economic growth in the past 30 years of reform and development. These regions also reflect the change of spatial governance of counties.

2.2 characteristics of county space governance

The essence of the problems of space governance in the suburban counties originated from counties' geographical adjacency and administrative divisions, leading to the conflict and coordination on urban planning, construction, management and development. All problems were embedded in the geographical relationship between the two administrative units and rooted in this particular space. The characteristics of space became the origin of regional governance, and space was used as a means to achieve governance goals. The evidence was shown in the progress of the regional integration in Table 2 that since the integration operation (2003-2009), almost all government cooperation projects involve spatial cross-border coordination, and spatial coordination is the most important content of regional governance.

Since the establishment of HETA and the Hefei High-tech Zone at the city-county border in southwest Hefei, peripheral area like Feixi County had already been included in the their

planning. Due to various conflicts from cross-administrative regions, the municipal government promoted the simple regional integration model of administrative division of the county. Relations between city and county development zones were not cooperative, but separate competitive. In this context, the regional space was characterized by the separation between two major municipal development zones and several county industrial parks. There are also many problems in the coordination within cross-regional areas.

The single way of administrative-division adjustment is difficult to integrate the county-founded industrial parks. The development of county industrial parks faces the shortage of funds and resources, and the challenges of cross-regional coordination. Under the "city-leading-counties" system, city mastered the administrative right on resources distribution, especially land. As a result, a cooperative park model that county bargain away its space in exchange of resources was created. In the cross-regional cooperation of district-county co-governance, the district led planning of the cooperative park, from which cross-regional planning and infrastructure coordination between cities and counties would be favored.

Since 2003, with the expansion of industrial transfer in the eastern region, lack of resources that once restricted county development zones in peripheral area was no longer development constraint, and the co-governance model of district-county cooperation lost the foundation of existence. In this context, Hefei City proposed a strategy on county-breakthrough. In the investment of large-scale municipal projects, the county area was considered as the main site, with support from municipal administrative resources. At the same time, the municipal financial investment on cross-regional infrastructure construction will realize the road connection between central city and counties. In the planning, the south western region will be included in the main urban area of south western Hefei, and unit division planning will be compiled. The spatial governance of the cross-regional area has entered the governance stage of the municipal-led cooperation between cities and counties under task division. During this stage, the spatial governance was characterized by the municipal-led spatial integration model and large industrial parks model within county space. The county has become the main entity of implementation in the scope of regional governance of metropolitan integration.

2.3 Characteristics of governance structure: from separation to municipal-led cooperation between cities and counties

Corresponding to spatial governance, in the stage of separation between cities and counties, districts and counties led separately the planning and construction of development zones, and cross-regional coordination was severely inadequate. The governance structure corresponds to the city-district and county. The county industrial park was not the municipal focus, instead it was regarded as occupying the advantageous space of the peripheral area. The industrial park of the district was the embodiment of the interests of the central city.

In the stage of cooperation-park, the cooperation between districts and counties was under the municipal coordination. The central city no longer obtains the incremental development space

for the district through benefit compensation, but provides with a relatively fair partnership through the distribution and integration of resources for districts and counties.

In the stage of the city-led integration mode, it was reflected in the direct division of work and cooperation of city-county. The county gained equal importance to district due to its geographical advantages.

3. Case and mechanism analysis

Due to the complexity of each case, the paper select a few concerns in each cases (Table 2)。

Table2 The cases and a few concerns in each cases

The cases	Key factors of concern	Change in governance structure	Mechanism: the concern of factors on the change of regional governance structure
TaoHua Industrial Park	Special development zone policy The game of provinces, cities and counties in the adjustment of administrative divisions	Development zone is an important space in the administrative adjustment	
XinGang Industrial Park	Changes in urban planning and land policy Changes in investment and financing methods and improvement in integration	District-county collaboration led by the municipal government	
China South City Project (New Industrial Park)	County breakthrough strategy	City-country collaboration led by central city	

3.1 Taohua Industrial Park

Since the Reform and Opening-up, the central region followed the experience of the eastern region and advocated the development of township enterprises. But after the 1990s, in general it faced the crisis of aging in production capacity, small scale and poor efficiency, which led to a great crisis to the township economy. Concentrated industrial parks, which were set up in the mode of industrial agglomeration and investment attraction, it became a tendency to promote county economy with industrial development. In this context, Taohua Industrial Park was the first one established by Feixi County in Southwest Hefei.

Before the 1990s, constrained by regional transportation, investment environment and policies, the central region did not have the practical conditions to attract large-scale industrial transfer. With the transition from Planned Economy to Market Economy and the diversification of ownership structure, after Deng Xiaoping's South Tour Speech in 1992, the Opening Policy was carried into act in the central region. With the advantage of low-cost

labour resources, the industrial transfer to the central and western regions started, and promoted the booming of industrial parks construction. Gaining the affirmation of Anhui Province and follow-up policy, the county industrial parks undertook small and medium-sized enterprises from the spill over of the main urban area, as well as a small number of low-end manufacturing industries transferred from developed areas. However, with the establishment of HETA in central city, relying on better policy levels and infrastructure allocation, the investment of county industrial parks has been reduced.

In the process of regional governance, as industrial parks became an important land use arrangement in peripheral suburban counties, it was not only an important support for county economy, as well as an important means to prevent administrative division adjustment from municipal government.

3.1.1 changes of planning and land policy

At the early stage of the Reform and Opening-up, the characteristics of national legal system were “try-and-trial” with the priority on economic development, leading to the incompleteness of laws and regulations on the development zones. The incompleteness provided opportunities for the establishment of County development zones.

According the local government documents of Anhui Province, “the counties and towns have rights to establish industrial parks. The important towns and industrial parks have rights to occupy the lands before the development plan being approved. The development zone administration commission will have the power to manage the finance, local tax, national assets, lands, industries, economy, commodity prices, labours, personnels, environmental protection, social security and other related works. The authorization of independent power and land use autonomy rights to the administration commission actually contributed to the disordered expansion of development zones in all levels of development zones..

3.1.2 Provincial, municipal, and county games in the administrative division adjustment

The government is not just a non-homogeneous system, but also has vertical hierarchy. Provincial, municipal, and county governments have a close relationship with the urban fringe development areas, and their opinions on the administrative divisions adjustments sometimes are inconsistent. For example, the administrative division adjustment in 1997 promoted by Hefei City, intends to add the Taohua Industrial Park into the Hefei Economic Technology Area through the executive order under the „city-leading-counties” system. However, the boycott from the county and the support from the provincial government on the county’s policies eventually forced Hefei to modify the administrative division adjustment documents and kept Taohua Industrial Park in Feixi, which also laid a foreshadowing for the subsequent series of fringe development zones growth along the main city and the establishment of a development zone. Finally it forced the central city to abandon the simple promoting administrative division adjustments through executive orders.

3.1.3 Development space as a target for administrative adjustment

The „city-leading-counties“ system gave cities the power to deprive the resources of counties, but counties“ institutional independence also gave themselves the autonomy and the power to build industrial parks. The city-level implementations were „mainly simple regional integrations, having not entered a period of regional co-governance yet, which was more diverse, more complex, and more focused on consultation.

3.2 Xingang Industrial Park

Under the background that HETA was limited by space which belong to municipality and the adjustment of administrative divisions was difficult to implement after 2003, the municipal government advocates to build the District-County Cooperative Xingang Industrial Park, according to the division of labor between city and county, which is dominated by HETA and supplemented by the Feixi county government, the Xingang Cooperation Park gradually integrated the roads and municipal facilities with urban areas“, and integrated into the urban planning area of Hefei city center, providing administrative resources such as land quota from the provincial and municipal levels. The Xingang cooperation park used the city-level platform to attract investments. Under the scope of county-level power allocation, Feixi adjusted land use planning, integrated land resources, and solved specific problems such as land and farmers' demolition and resettlement under the constraints of new land policies.

3.2.1 Changes in urban planning and land policy

In 2003, to solve the disorders in the economic development zone developments at the county level after the 1990s, the central government started working to control the land market with the focus on rectifying the economic development zone. However, Anhui Province, as the key province for supervision, passed the original local documents that are inconsistent with the relevant national land management regulations and standardized land management practices according to the opinion. At the same time, the Anhui Province also cancelled the land management authority authorized by the Development Zone Administration commission. The changes specifically included two aspects: firstly, all levels of government except the State Council and provincial governments have no right to approve the establishment of economic development zones, regulate the part of the economic development zone administration commission's authority and land rights that is inconsistent with the relevant provisions of the state, nor collect the right into the local government. Secondly, the overall planning of the economic development zone should be organized by the people's government of the host economic development zone according to the master plan. The adjustment of the land use approval system after 2004 mainly includes the right of examination and approval for the adjustment, and the revision of township land use planning back to provincial government. The adjustment of basic farmland needs to be approved by the State Council. It also included the implementation of the ombudsman system for land and resources enforcement, strengthening accountability for land violations, and strengthening the role of the land sector in land use policies.

With the cleanup of the development zone and the adjustment of policy documents in 2003, the plan of the peripheral suburban counties development zone is included in the county master plan. The disorders in the master plan for development zone have been standardized. The system of urban planning work in Feixi county has been also further clarified, and the standardization and regularization have been greatly improved. Urban planning approval and licensing systems are becoming increasingly strict. The municipal government officially obtained the power of planning approval and the allocation of land quotas, becoming the main administration of reviewing and approving the county's master plans. The interests of the city also penetrated into the regional governance of the counties through urban planning.

3.2.2 District-county collaboration led by the municipal government

The significant difference from the previous stage is that Hefei no longer seeks administrative division adjustment to obtain incremental space for HETA, instead of encourages the collaboration of districts and counties. Within the newly established Xingang Industrial Park, there are 10.4 square kilometers, of construction land and general farmland and 3.6 square kilometers of the basic farmland. The agreement stipulates that the basic farmland part will be adjusted by the Feixi County Government when the land use planning is revised. Feixi County used the land new policy issued by Anhui Province in 2006 to focus on the main quotas used in the cooperative park, through the method of replace construction land between city and country. Hefei provides land for large projects through mega-project specific supply and municipal-level land elasticity quotas. Under the constraints of land policies, districts and counties cooperate with each other and develop through the exchange of space resources and administrative resources.

To establish a coordination organization for city and county cooperation, the HETA commission set up the Xingang Industrial Park Office, which is responsible for the planning and construction, economic and social affairs management, and the Feixi County sent staff to participate.

3.2.3 Changes in investment and financing methods and improvement in integration

In the investment and financing mode of county-led development zone, the municipal finance did not support the Taohua Industrial Park. The investment and financing of the industrial park had to rely on the fragile county-level government financial support to gradually improve the infrastructure construction. Due to the shortage of external capital and policy resources, the county only can afford low-level infrastructure construction, and it is difficult to compete with HETA. As a result, small enterprises with small scale and low output value are in the development zone. The land use function is mixed and highly fragmented. The overall performance is lower than the adjacent HETA. In the cooperative park model, the new investment and financing plan is led by the district investment company to build infrastructure and park development, and more reliance on the district's local finance and social capital.

Under the background of the city and county integration strategy, Integration with the HETA has realized in the plan and Xingang Industrial Park has become part of the spatial structure of the HETA and is integrated in transportation, space and land. Xingang Industrial Park can

be regarded as the expansion and extension of the general planning of the HETA in Feixi County.

3.3 China South City project

After 2009, the development of industrial park depends on the attraction of small and medium-sized industrial project was restricted by higher investment threshold and less allocation of land quota. . However, with the continuous progress of the integration of city region, the development path dominated by industrial parks gradually turns to large-scale space production of industrialization and urbanization. In 2012, new industrial park founded by Feixi county in 2019 was chosen to develop China South City's mega e-commerce logistics center in the three sites recommended by Hefei government. According to project requirements, the former plan was adjusted and satisfied the demand of land size of 17 square kilometers.

The Mega-project represented by China South China has strong supportive role in county industrialization and urbanization, which has become a typical model of county development and arouse social attention widely in this period. The development of industrial parks was dominated by one or several Mega-projects that account for the majority of city incremental development space, which affects both county's spatial form and future development direction, besides the government's fiscal balance.

3.3.1 The proposal of county breakthrough strategy with counties' increased importance in municipal administrative area

After 2009, the city government participating in the fierce regional competition was challenged by the increasingly scarcity of incremental land in the central city, the development has focus on suburban county for broader space and more convenient land supply under China's characteristic land supply policy. In this context, the municipal government attaches importance to industrial and spatial layout of the county, positively introduce projects for county industrial parks and puts forward the development strategy of county breakthrough.

The specific strategies for county breakthrough mainly include the integration of metropolitan fringe area county administrative division into the southwest central district in the newly formulated Hefei strategic plan and the promotion of interregional infrastructure construction. The TaoHua area has in fact been integrated with the Hefei central district from urban planning, construction management and economy development.

Another implication of county breakthrough is that Municipal government promoted urban infrastructure, and urban public services extend to the suburban areas. After 2006, the integration of planning and infrastructure between cities and counties was rapidly promoted, the three counties leading by Hefei were required to construct infrastructure by the same standard of central city, the public service including water supply, public transportation, gas and traffic facilities etc. were constructed to integrate urban and rural area. The significant

example is the interregional roads extension to three counties. The country road used to be built as required were upgraded to regional expressway network, the investment of expressway construction is for the municipal government while the land expropriation cost is for the counties. With the elimination of traffic barriers, the integration of cities and counties contribute to attract Mega-projects located in the suburban counties of metropolitan areas.

3.3.2 City-county collaboration dominated by central city

Constrained by central government's tighter control of land, land quota distributed by upper government besides sufficient development space is the key factor for development and possible revenue growth. Only through mega-project's additional land quota at the expense of transfer part of its administrative power can Feixi county enjoy the fruits of mega-projects development and take the lead in the political tournament with neighboring districts and counties. The representative mega-project development pattern of city-county collaboration and consultation mechanism at this stage reflects the direct intervention of municipal government upon the county administrative area.

In mega-project's special insolvency procedures, the county urban planning was revised and different departments, lower levels government and social forces would be mobilized in implementation, for example, simplified procedure and one-stop service, the privilege land and taxes policy for mega-projects and the acceleration of land expropriation, house removal and infrastructure construction.

3.4 Mechanism analysis on Regional Governance changes

Changes in county governance arrangements, especially the regional governance of the suburban counties of metropolitan areas, can be regarded as results of interaction between city and county under external factors such as external regional challenges and policy changes etc.. In the first phrase, Hefei municipal government established development zone located in metropolitan fringe areas to participate in regional competition and obtain development space through administrative adjustment on county while the incompleteness of laws and regulations on the development zones provided opportunities for the establishment of county development zones to prevent administrative division adjustment, which also brings problems such as space fragmentation and insufficient spatial integration. With the central government's cleanup of the development zones, the adjustment of policy documents and difficulties to continue administrative adjustment, marked by the establishment of the cooperative park led by the municipal government, administrative, economic resources were cooperated and exchanged between city and county, which contribute the initial development of regional integration. In the third phrase, the increasingly scarcity of incremental land in the central city while suburban counties' broader space and more convenient land supply policy drive the municipal government reconsider the development of municipal region and promoted the interregional infrastructure construction to integrate urban and rural area and the integration of metropolitan fringe area county administrative division into the southwest central district in the newly formulated Hefei strategic plan. In the representative mega-project development

pattern, regional government of City-county collaboration dominated by central city came into being through Feixi county transfer part of its administrative power to city government after evaluation of external conditions and interior resource.

In general, the territorial governance arrangement in the suburban counties of metropolitan fringe area is shaped by the regional competition and the goals of economic development, which is pushed by the central city through the interaction of powers from different levels of government and stakeholders, under China's administrative hierarchy, especially the "city-leading-counties" system.

4. Conclusion

4.1 Regional governance changes in the suburban counties surrounding metropolitans under the influence of external factors

Driven by entrepreneurialism, central city's attempt to join the fringe area for the development of industrial parks into county territory has to comprise with the suburb county's government. Influenced by the external factors such as external environment, macro-policy, land and planning policies of central China at different development stages, through continuous game among multiple subjects especially the city and county governments, a typical region government arrangement at the metropolitan fringe area came into being.

4.2 Reconstruction of Region Governance in suburban counties surrounding Metropolitans is a government-led project

In all cases of regional governance, administrative power was the most obvious driving force. The mass political and economic capital possessed by the government can effectively promote or hinder the implementation of regional governance measures, which has transformed the urban-regional reconstruction in suburban counties surrounding metropolitans into a huge government project. Influenced by totalitarianism with Chinese characteristics, county government continuously resists administrative adjustment or seeks support or permission from above on its own interests, even if only some acquiescence to local reforms, in order to obtain the legitimacy and enhance the effectiveness of governance.

4.3 Reterritorialization of different levels of government

Under the circulation tendency of capital and the penetrating force of market, the horizontal administrative boundaries between cities and counties has been gradually broken. The city-county cooperation replaced previous competition and resistance. Although it takes time to form a mature cooperation framework and consensus, the most direct, fastest and simplest regional governance of administrative division adjustment have been abandoned. In governance represented by specific projects, participation and participants vary from time to time, the degree to which participants want to co-operate depends on their understanding of the interests of the city and their judgment of the gains and losses of power (Jingxiang Zhang, 2002).

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Spatial governance and planning systems and the capacity for public control of spatial development: a European typology

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Abstract: Although the functions of spatial governance and planning systems are generalizable, 30 years of comparative studies, especially in Europe, have shown the heterogeneity characterising these “institutional technologies”. Particularly, they differ in the capacity for public control of spatial development, a crucial aspect for the life of entire cities, regions and countries. The proposed contribution builds on the materials of the recently concluded ESPON COMPASS research project to propose a European typology on this issue. Based on the opinions expressed by respective national experts, the systems of 39 countries (28 EU and 11 non-EU) are compared in relation to the mechanisms to allocate land use and spatial development rights as well as to the prevalence of public vs. private interests in guiding the development decisions. As a result, the European systems are placed on an X-Y diagram, which makes it possible to cluster them in consistent types that raise new comparative observations and general findings. In summary, the capacity for public control of spatial development looks variegated in Europe, and is conditioned by a mixture of factors. In this scenario, the different models adopted for allocating spatial development rights need to be understood in the context of actual state-market relations.

Keywords: spatial governance; spatial planning; spatial development; systems.

Introduction

The political and technical practices used to order space date back to very ancient times, and the establishment of modern states has led to the creation of their respective “systems” of spatial governance and planning (usually known as “planning systems”), which allow the public authority to guide and control spatial development in respect of property rights. Ultimately, these “institutional technologies” (Janin Rivolin, 2012) allocate the rights to use and transform the physical space through the concurrence of constitutional and legal devices, administrative provisions and tools, and the activity of technical cultures. It is needless to add that, since any social and economic activity requires a space to take place, the spatial governance and planning systems (SGPSs from now on) are determinant for the economic and social life of entire cities, regions and countries, contributing also to shape the “citizenship” affected by their action (Mazza, 2015).

The SGPSs have been subject of comparative analysis especially in Europe in the last 30 years, also for the need of mutual knowledge in the context of Community integration (for a compendium, see: Nadin and Stead, 2008, 2013). The first “comparative study” labelled as such was commissioned by the British government in order to understand the various effectiveness of public control over spatial development in few major countries of Western Europe (Davies et al, 1989). This study clarified that the “legal basis” on which the systems are pivoted constitutes a crucial element for determining the degree of certainty/flexibility in the state-market relations that concur to the spatial development. It showed in practice that, while most Western European systems are based on binding plans, which provide complete and detailed sets of rules created in advance of each punctual decision of spatial development, the British system – inspired by the principles of Common law

– is mostly based on non-binding plans, which allow the planning authority more flexibility (and discretion) in deciding case-by-case.

Without prejudicing this fundamental distinction, the first comprehensive comparative study commissioned by the institutions of the European Union (EU) highlighted that the functioning of SGPSs is characterised by various other factors, such as the scope of the system, the extent and type of planning at national and regional levels, the locus of power, the relative roles of public and private sectors (CEC, 1997). These factors contribute, together with the constitutional provisions and administrative traditions, to determine the maturity and completeness of the system and, ultimately, the distance between expressed objectives and achieved outcomes in each of them. More recent studies have also emphasized the role of “planning cultures” (Sanyal, 2005, Knieling and Othengrafen, 2009) in shaping the concrete practices through which the SGPSs make their purposes operational (Reimer et al, 2014).

However, whatever the various possible analytical distinctions among the systems, it seems clear that their effectiveness in the public control of spatial development (with the related socio-economic consequences) depends to a large extent on the specific methods of assigning the rights to use and transform the physical space (Janin Rivolin, 2008, 2017, Muñoz Gielen and Tasan-Kok, 2010). In other words, the process of operating these institutional technologies is certainly very complex but, ultimately, ‘the final output of such a process is the act of physical development (or, in some cases, the decision not to develop, but to leave the land as it is)’ (Hall, 2002, 3). The most recent comparative study on European SGPSs is the ESPON COMPASS research project, addressed ‘to provide an authoritative comparative report on changes in territorial governance and spatial planning systems in Europe from 2000 to 2016’ (ESPON, 2018a, vii). Although the goals of this research project were multiple, the raw material with which the project was developed makes it possible for the first time to compare how the rights to use and transform the physical space are specifically allocated in 39 European (EU and non-EU) countries, as well as whether the public or private interests prevail in guiding the development decisions.

Having taken part in the research, the authors of this paper have elaborated some meaningful information derived from the questionnaires compiled by the national experts, enabling them to propose a typology of European SGPSs in terms of capacity for public control of spatial development. After this introduction, the paper continues with an illustration of the research context and of the methodology adopted in the study. A following section presents the results of the analysis. The emerging European typology of SGPSs is then proposed and commented. Finally, a concluding section completes the contribution by reflecting on the findings both for the purpose of future research and for the policy implications on spatial governance and planning in Europe.

The COMPASS project and what it can say about the public control of spatial development

The ESPON COMPASS research project – launched in 2016 for a “Comparative Analysis of Territorial Governance and Spatial Planning Systems in Europe”, and concluded in October 2018 – provides a structured overview of investigations, on the one hand, to compare the state of SGPSs in the 39 countries¹ and, on the other, to understand how the EU policies contribute to the change of these systems, with particular attention to the years of the new millennium. Based on a survey that has involved national experts of the respective countries through detailed questionnaires, providing quantitative degrees of perception supported by qualitative evidence and observations, the research project concluded, amongst other things, that (*ibid.*, 28)

The overall formal structure of planning systems and territorial governance is consistent across Europe with governments managing rights to develop through a hierarchy of planning instruments and development regulation. Governments use spatial planning to manage spatial or territorial development and to engage stakeholders and citizens in that process. There is considerable variation in the precise arrangements of instruments and procedures which tends to reflect the legal and administrative structure of government. There are no other significant patterns in the variation of systems. There is strong consistency in the way that countries are reforming planning, particularly to

¹ In addition to the 28 EU Member States, the research was extended to Albania, Bosnia Herzegovina, Iceland, Kosovo, Liechtenstein, Macedonia, Montenegro, Norway, Serbia, Switzerland and Turkey.

reduce the administrative burden of decision making by simplifying plan and regulation procedures; and to provide more speedy decisions and certainty in the system.

Moreover (*ibid.*, 40),

The analyses have shown that the level of policy integration is generally increasing in spatial planning and territorial governance; that spatial planning now engages citizens and stakeholders more strongly than it did in 2000; and that in most countries, spatial planning instruments were more robust and able to adapt to changing circumstances in 2016 than they were in 2000.

In the framework of this research, ten questions addressed to national experts were considered of particular meaningfulness for the purposes of the present work (Table 1).

Table 1 – ESPON COMPASS questions used for the analysis of SGPSs (based on: ESPON, 2018b).

1.	Describe the constitutional framework for spatial planning in your country by indicating what rights exist, who holds such rights and how they are regulated and supervised (I.19*).
2.	Provide a simple diagram explaining the main steps in the process of making a plan that allocates development rights, or provides a policy framework for the allocation of development rights, as at the end of 2016 (I.20).
3.	Provide a simple diagram explaining the main steps in the process of applying for and granting of development rights (permit or permission) (I.21).
4.	Provide a diagram depicting the main planning instruments in the spatial planning system at the end of 2016 (I.5).
5.	Name the local level 1** spatial planning instruments, if any, that are part of the formal planning system in 2016. In the case of local variations choose one or two typical examples of type of instrument (I.15).
6.	For each local level 1 spatial planning instrument, describe briefly what are the main changes since 2000, and any expected changes in the near future, specifically in regard to form or character, scope and content, and procedure within (I.16).
7.	Name the local level 2 spatial planning instruments, if any, that are part of the formal planning system in 2016. In the case of local variations choose one or two typical examples of type of instrument (I.17).
8.	For each local level 2 spatial planning instrument, describe briefly what are the main changes since 2000, and any expected changes in the near future, specifically in regard to form or character, scope and content, and procedure within (I.18).
9.	Explain the extent to which each instrument was actually produced in 2016 – complete coverage, partial, patchy, or none. Are the plans produced still ‘up-to-date’, timely or relevant according to local expectations? Has the production of planning instruments improved, worsened or varied since 2000 (are more or less plans produced now according to national expectations)? What reasons explain performance in the production of planning instruments? (II.1).
10.	Explain what is the degree of influence of each planning instrument (or group of instruments) in guiding or controlling spatial development in 2016. Does the distribution and form of spatial development follow the policies, proposals and regulations set out in those instruments? What reasons explain the degree of influence of planning instruments? Has the influence of planning instruments improved, worsened or varied since 2000? (II.2).
* This number refer to the Questionnaire in which the question was listed, as well as to the number of the question within the latter (e.g. I.19 refers to question 19 from Questionnaire I).	
** The questionnaires asked to define local “level 1” and “level 2” in terms of Local Administrative Units (LAUs).	

In particular, the answers provided by the national experts to questions 1-8 have been carefully analysed, and subsequently compared in order to attribute to each SGPS an X score according to Table 2 below. Here the minimum (0) and maximum (5) scores correspond, without any attribution of value, to the extreme ideal-types of the conformative and performative models of spatial governance and planning (i.e. on the local level, general binding plans decide any detailed transformation vs. plans are non-binding and transformations are decided case-by-case; see: Janin Rivolin, 2008). On the basis of the answers analysed, the SGPSs could therefore be grouped and scored according to four progressive degrees of relevance between the ideal conformative and performative planning models. The first group includes those SGPSs in which, more closely inspired by a conformative model of planning, the public authority tends to allocate land use and development rights through general and rigid binding plans (1). A second group includes SGPSs still inspired by a conformative planning model in which, however, the common use of binding general plans is somehow attenuated by the recurrence of specific variants or other devices that allow the plans to be modified (2). A third group concerns the SGPSs in which land use rights are established in general plans but, in the apparent attempt to pursue the logic of the performative model, the binding plans that assign spatial development rights are negotiated, detailed and very

specific (3). A last group regards the SGPSs in which, more closely inspired by a performative model of planning, the public authority tends to allocate the land use and development rights on a case-by-case basis, against a background of non-binding plans (4).

Table 2 – Scores attributed to SGPSs according to respective positions between conformative / performative models of planning (authors' own elaboration).

X Score	Description
0	<i>Ideal conformative model (general binding plans decide any detailed transformation)</i>
1	The public authority tends to allocate land use and development rights through general binding plans
2	The public authority allocates land use and development rights through binding general plans, but devices that allow to modify plans (e.g. variants) are recurring
3	The public authority allocates land use rights through general plans, and spatial development rights through detailed binding plans
4	The public authority tends to allocate land use and development rights case-by-case
5	<i>Ideal performative model (plans are non-binding and transformations are decided case-by-case)</i>

Furthermore, the answers provided by the national experts to questions 5-10 have been analysed and compared in order to attribute to each SGPS a Y score according to Table 3. Here the actual model of spatial development resulting from each system is at stake, centred around three ideal benchmarks that, without any attribution of value, are: the ideal state-led model of spatial development, where the public interest dominates (3); the ideal market-led model of spatial development, where the dominance of the private interest is absolute (-3); and the ideal balance between public and private interests (0). The SGPSs could therefore be potentially grouped and scored according to four progressive degrees of relevance around those ideal benchmarks, namely: on the one hand, the SGPSs in which the spatial development is mainly driven by public interest (2) and those in which it is driven by a mix of public and private interests, with a prevalence of the former (1); on the other hand, the SGPSs in which the spatial development is mainly driven by private interest (-2) and those in which it is driven by a mix of public and private interests, with a prevalence of the latter (-1). However, due to the extreme variety of answers analysed and to some difficulty to score them the same way, the possibility of intermediate scores (0,5 etc.) was also envisaged.

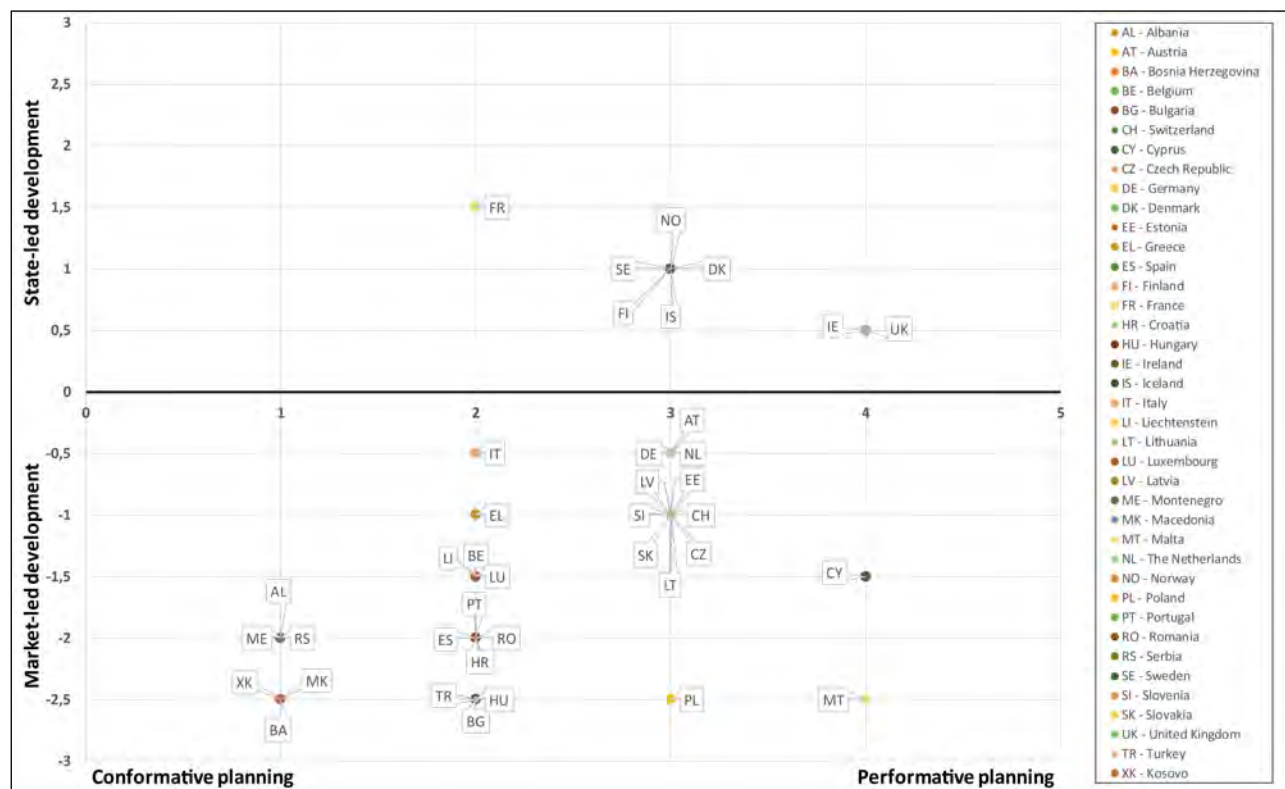
Table 3 – Scores attributed to SGPSs according to respective positions between state-led / market-led models of spatial development (authors' own elaboration).

Y Score	Description
3	<i>Ideal state-led spatial development (absolute dominance of the public interest)</i>
2,5	
2	Spatial development is mainly driven by public interest
1,5	
1	Spatial development is driven by a mix of public and private interests, with a prevalence of the former
0,5	
0	<i>Ideal balance between public and private interests</i>
-0,5	
-1	Spatial development is driven by a mix of public and private interests, with a prevalence of the latter
-1,5	
-2	Spatial development is mainly driven by private interest
-2,5	
-3	<i>Ideal market-led spatial development (absolute dominance of the private interest)</i>

How European systems are positioned with respect to the models of planning and of spatial development

In accordance with the methodology illustrated above, the 39 systems analysed are positioned in the X-Y diagram as shown in Figure 1.

Figure 1 – Positions of European SGPSs with respect to the models (X) of spatial planning and (Y) of spatial development (authors' own elaboration)



Following the X axis of the diagram, 6 SGPSs all belonging to non-EU countries in the Western Balkan region look more closely inspired by a conformative model of planning, since the public authority tends to allocate land use and development rights through general and rigid binding plans. These systems have in general a very hierarchical character and the allocation of spatial development rights is commonly issued by the approval of local binding plans, general for their administrative extension but very detailed in their form and rigid for their duration, although in some cases (e.g. Albania, Kosovo) the national authorities can directly provide building permissions through plans of national importance (Berisha, 2018, Berisha et al, 2018).

A further 13 SGPSs, which in general belong to Mediterranean countries (France, Greece, Italy, Portugal, Spain, Turkey) but also to some Eastern (Bulgaria, Croatia, Hungary, Romania) and Western (Belgium, Liechtenstein, Luxembourg) European countries, are still inspired by a conformative planning model, although the prevalence of binding urban plans is here compensated by the recurrent use of specific variants and other devices that allow the plans to be modified over time. To give just one example of how the system operates in these cases, the 1995 Turin city plan in Italy has so far been subject to around 400 variants. Furthermore, in many Italian municipalities the “variation request” is now commonplace, so that every citizen or person who has an interest in it can present projects that differ from the plan. While in Mediterranean and Eastern European countries the proximity to a conformative planning model seems to be mainly due to a path-dependence on respective administrative traditions and technical cultures (Muñoz Gielen and Tasan-Kok, 2010, Benedek, 2013, Janin Rivolin, 2017), the Western SGPSs in Liechtenstein and Luxembourg look somehow conditioned by the limited geographical dimension of countries and, in Belgium, by the actual operation of three systems of regional extension in Brussels, Flanders and Walloon (Hanocq, 2011). In Turkey, spatial planning has been subject to centralisation mechanisms since 2000. Here, the political authority attempts to centralize urban politics, to eliminate mechanisms of participation in decision making and to impose an authoritarian and top-down decision-making style as the dominant mode of decision (Lovering and Turkmen, 2011, Tansel 2018).

Almost half of the SGPSs (16), mostly located in Western Europe and in the Baltic region but also in some Eastern European countries (Czech Republic, Slovakia, Slovenia, Poland), seems to be aimed at pursuing the logic of the model of performative planning, since land use rights are generally established by general urban plans, but the binding plans that assign spatial development rights are specific for small areas (therefore subject to verification on a case-by-case basis). Furthermore, as is clear for example in Denmark, the Netherlands, Germany and Sweden, ‘binding land-use rules (whether this concerns a new land-use plan or a modification of one to create new building possibilities) are only approved once negotiations with developers/land-owners have taken place or, at least, when there is enough certainty about their successful conclusion’ (Muñoz Gielen and Tasan-Kok, 2010, 1100). Ultimately, the emergence of “development-led practices” has been recognised in the vast majority of Western and Nordic countries as an opportunity to reform the respective systems in order to achieve, albeit with mixed success, more felicitous public control over spatial development (Buitelaar et al, 2011, Kule and Røsnes, 2011, Gerber, 2016, Valtonen et al, 2017, Humer, 2018, Zakhour and Metzger, 2018). The same transition occurred in those Eastern European countries that saw the exit from the Soviet regime in the late 1980s as an opportunity to re-launch their economies through more flexible spatial development (Cotella, 2007, 2014, OECD, 2018).

Finally, 4 SGPSs that, by possible coincidence, belong to “islands” surrounding the European continent (i.e. the United Kingdom and Ireland to the north, and Cyprus and Malta to the south) are more closely inspired by a performative model of planning, because the public authority tends here to allocate the land use and development rights on a case-by-case basis, against a background of non-binding plans. As is well known, the system was radically changed in the U.K. with the 1947 Town and Country Planning Act, which attributed the right to build to the Crown (the State) and established that ‘the development plan did not of itself imply that permission would be granted for particular developments simply because they appeared to be in conformity with the plan’; rather, ‘in granting permission to develop, local authorities could impose “such conditions as they think fit”’ (Cullingworth and Nadin, 2002, 93). Then the 1968 Town and Country Planning Act assigned to structure plans the provision of strategic orientations for development and to local plans (non-mandatory and concerning only specific areas) the provision of detailed guidance on land use, establishing, despite various reforms under Thatcherism, New-Labour and recent governments, the current features of the British (especially English) system (Nadin and Stead, 2014). Very close to the British administrative and technical culture, the Republic of Ireland has adopted a similar system. The same is true for Cyprus and Malta as former British colonies (Gauci, 2002).

Looking at the Y axis of the diagram, it is worth noting, first of all, that no European SGPS appears nowadays, in the opinion of the respective national experts, mainly driven by the public interest. The system that comes closest to this definition is the French one, in which even the tendency to move from a redistributive planning idea to a more market-oriented notion has not particularly weakened the power of public control of spatial transformations (Waterhout et al, 2013). In another 5 SGPSs, that characterise the Nordic countries, spatial development seems to be driven by a mix of public and private interests, with a prevalence of the former. In Denmark, for instance, a shift from welfare strategies towards more growth-oriented policies, ‘which can be understood as a necessary change of governmental style in order to complete a shift from a demand- to a supply-led economy, has not been accepted by provincial politicians in general, and in particular those from the peripheral regions’ (Andersen, 2008, 12). In Sweden, the 1990s recession led to an oversupply of the housing and construction market, as well as to a massive privatisation process, but the municipal “planning monopoly” remains traditionally very strong, as well as the social policies and democratic welfare state (Caesar, 2016, Zakhour and Metzger, 2018). More generally, the neo-liberal turn that has also affected the Nordic countries and Iceland has given rise to new soft urban planning instruments, non-statutory planning methods and public-private partnerships which, however, have weakened the public authority’s capacity to promote the public interest only to a limited extent (Ilmavirta, 2018). The same has occurred, although to a lesser degree, in the 2 SGPSs belonging to the UK and Ireland where, despite the major effectiveness of systems in terms of public control, recent national governments have explicitly pursued neo-liberal policy agendas and market-oriented policy-making (Kitchin et al, 2012, Waterhout et al, 2013).

Contrastingly, in 12 SGPSs across Western Europe (Austria, Germany, the Netherlands and Switzerland), Central and Eastern Europe (Czech Republic, Estonia, Latvia, Lithuania, Slovakia and Slovenia) and Mediterranean Europe (Greece and Italy) Europe, spatial development seems to be driven by a mix of public

and private interests, but with a prevalence of the latter to varying degrees. The results of spatial planning in Italy are seen as a permanent mediation between public and private needs, in which ‘Patronage and familism are often associated with the establishment of urban coalitions including politicians, developers, landowners, professionals, etc. seeking to maximize urban rent through benevolent land-use planning’ (Vettoretto, 2009, 196). In Austria, Germany and the Netherlands, ‘some impacts of a more neo-liberal (political) agenda have been cushioned by national spatial policies’ (Waterhout et al, 2013, 151), although more recently the financial crisis and economic recession have put the planning culture under pressure (Buitelaar and Bregman, 2016). The major crisis that has struck Greece has also affected its SGPS, the subject of a series of direct and indirect changes with a greater effect on the promotion of private investments (Papageorgiou, 2017, Karadimitriou and Pagonis, 2019). The “managerial turn” that has occurred in the Swiss public administrations has been leading to a more market-oriented approach to face public problems, and a growing influence of flexible private-law or incentive-based instruments in land-use planning practices has highlighted a shift towards a market driven land use planning approach (Gerber, 2016). In the Central and Eastern countries that show similar tendencies, the transition from the socialist economic system to the market one has taken place in parallel with a series of structural reforms (privatization, liberalization, decentralisation etc.) which, in the field of spatial governance, tend to accelerate the release of building permits to attract and facilitate private investment (Ruoppila, 2007, Brade et al, 2009, Notermans, 2015, Liepa-Zemeša and Hess, 2016).

Another 11 SGPSs distributed across Western Europe (Belgium, Liechtenstein and Luxemburg), Balkan and Eastern Europe (Albania, Croatia, Montenegro, Romania, Serbia) and Mediterranean Europe (Cyprus, Spain and Portugal) show, albeit to different degrees, that spatial development is mainly driven by private interests. This trend appears to be more moderate in the Western countries, where however actors, operating in self-interest, frequently bypass, undermine, and reconfigure governance arrangements through informal circuits of decision-making and networked exchanges (Affolderbach and Carr, 2016). Here the setting of building permits has been oriented to the protection of private property, which hinders the government’s ability to implement a coherent spatial policy (Van den Broeck and Verachtert, 2015). In Cyprus, the increased interest of the international real estate market immediately before and after joining the EU has led to the explosion of the phenomenon of second homes (Potsiou et al, 2009). A prevalence of private interests in the spatial development is even more evident in Spain and Portugal, where the development of the urban space is often seen as a sum of private development projects, leading to frequent real estate bubbles (Mantiñán, 2010, Mirò, 2011). This is also the case in the Balkan region, where a high level of corruption, the limited capacity of the public authority to withstand the pressures and logic of the market, and a low level of administrative know-how in spatial planning have led to the privileging of private rather than public interests, even in spite of what the law establishes (Berisha et al, 2018).

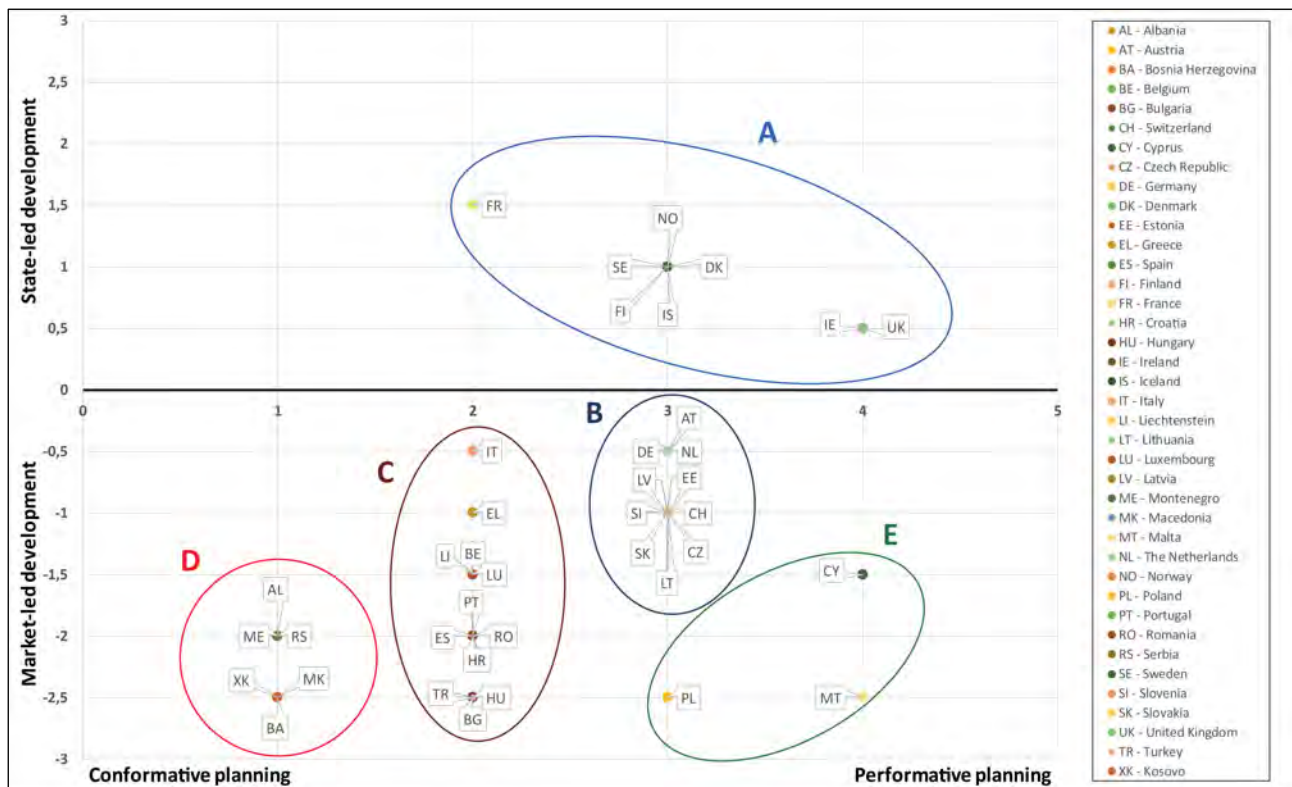
However, spatial development seems to be driven by private interests especially in another 8 SGPSs located in the Balkans and Eastern Europe (Bosnia and Herzegovina, Bulgaria, Hungary, Kosovo, Macedonia and Poland), as well as in Malta and Turkey. Although in these Balkan countries spatial planning is often considered a technical device that aims to limit the free initiative of private individuals, corruption, informality, illegal development, poor public control over spatial development – in a social contest characterized by a high level of fragmentation based on ethnic, political and economic reasons – are widespread (Boussauw, 2011, Stefanovska and Kozelje, 2012, Djurasovic, A., 2016). In Bulgaria, the power relation between state and market in spatial governance has changed drastically since the 1990s, and it seems currently that market-led development has definitively taken over from the state-led development (Slaev and Nikiforov, 2013, Kovachev et al, 2017). In Poland, about 80% of spatial transformations are legitimised through the so-called “decisions on development conditions” (*edecyzja o warunkach zabudowy*) which, on the basis of the investors’ proposals, are approved on a case-by-case basis even if in contrast with the local plan (Cotella, 2014). A prevalence of market-led development, particularly for the tourist economy, over state-led development is also evident in Malta (Gauci, 2002). Finally, a sort of “authoritarian neoliberalism” would seem to push public authorities to act as market actors in dealing with land use and spatial development in Turkey (Tansel, 2018).

A (new) European typology of spatial governance and planning systems

The analyses summarised in the previous section have led to the identification of five types of SGPSs which, with reference to the capacity for public control of spatial development, can currently be found in Europe. Without neglecting the margins of uncertainty that such complex interpretations inevitably imply, this

typology can be represented in Figure 2 in the form of SGPS clusters with close characteristics in terms of capacity for public control of spatial development, understood as the final product of the respective models of spatial planning and development. Figure 3 shows how the various types of SGPSs are mapped on the European continent.

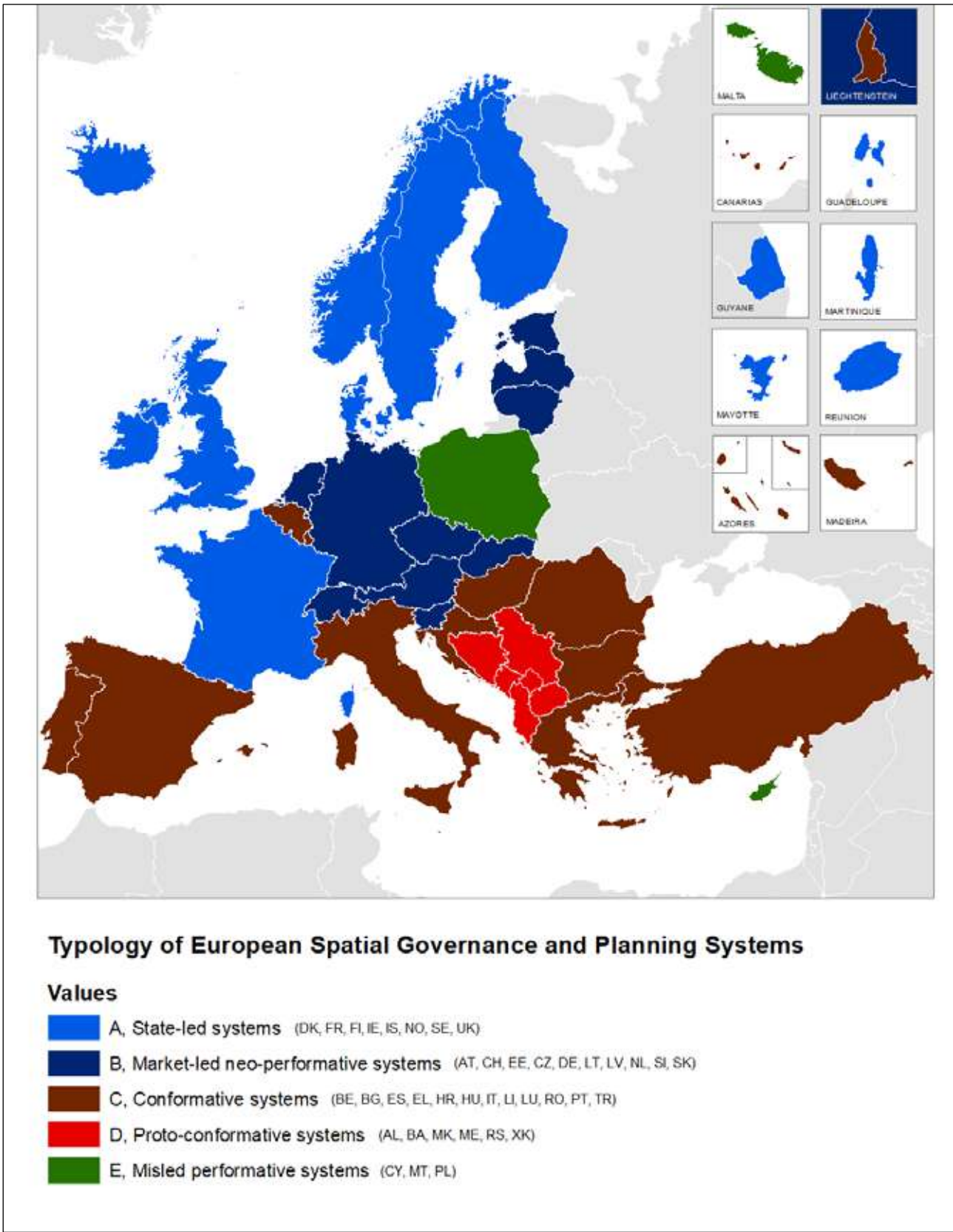
Figure 2 – Typology of European SGPSs with respect to the capacity for public control of spatial development (authors' own elaboration)



Type A in the figures, which includes 8 SGPSs that are mainly found in Northern and Western Europe, can be defined as that of the *state-led systems* because, despite the different models adopted for the allocation of spatial development rights, spatial development is here mainly driven by public interests, even if to different degrees with respect to the influence of private ones. It should be noted that most of these systems (5 out of 8, all located in the Nordic countries) are “neo-performative” in terms of allocating spatial development rights, in the sense that they generally avoid a “blind” pre-allocation through the use of general plans, preferring to postpone it until after specific negotiations with landowners and developers within detailed plans (Janin Rivolin, 2017, 1004-1006). In this framework, the minor capacity of the performative systems of UK and Ireland to guarantee the public interest seems to be due to the explicit political orientation of the respective governments, rather than to the planning model adopted. On the other hand, France seems an exception as it is characterised by a tendentially conformative system that is able to better guarantee the public interest in spatial development, due to the traditional strong role maintained by the central government in orienting the overall process of spatial governance (CEC, 2000).

Type B, which includes 10 SGPSs across Baltic, Central-Eastern and Western Europe, corresponds to *market-led neo-performative systems*, since the model adopted for the allocation of spatial development rights has the characteristics described above (i.e. the rights are assigned through detailed plans previously negotiated with the private actors) so that spatial development is driven by a mix of public and private interests, but with some prevalence of the latter. This prevalence is minimal in the case of Austria, Germany and the Netherlands, and in any case due to the more or less recent neo-liberal tendencies in the orientation of governments. It seems to be increasing in Switzerland for similar reasons (Solly, 2018). In the Baltic Republics and in the concerned countries of Central and Eastern Europe, a greater prevalence of private interests is probably due to the more difficult application of this planning model in the face of the socio-economic and political changes occurred since the fall of the Soviet bloc (Cotella, 2007).

Figure 3 – Map of European SGPSs with respect to the capacity for public control of spatial development (authors' own elaboration)



Type C, which concerns 12 other SGPSs adopted mainly in the countries of Southern and Eastern Europe, but with a few exceptions also in Western Europe, is that of *conformative systems*. Here the public authority

assigns the rights to use and develop the land through the more traditional method of binding general plans, but with the recurrent use of variants that can subsequently modify them. With the sole exception of France, discussed above, with this model spatial development is generally driven by private interests, although by very different degrees in terms of the simultaneous influence of public ones. The general tendency in this regard is that the capacity of public control is relatively less weak in the countries of Southern and Western Europe, where the systems have been established for longer periods, and shows more difficulties in the Eastern countries which, after the fall of the Soviet regime, have embraced this model of planning.

Type D, which includes 6 SGPSs belonging to non-EU countries in the Balkan region, can be defined as that of *proto-conformative systems*, since the method of assigning land use and development rights through binding general plans is based on the original and most authentic ideals of hierarchy (top-down relations between the levels of planning) and of dirigisme (state-led implementation of the plans). However, spatial development proves to be mainly driven by private interest in all these countries, which have embraced this model of development rights allocation after the fall of the Soviet regime. This type of SGPSs, even more than the previous one, seems to confirm that, in current times, ‘when municipalities fix development possibilities early in the development process, this might stimulate land price increases and might also lead to the loss of a valuable negotiation tool’ (Muñoz Gielen and Tasan-Kok, 2010, 1126).

Finally, type E concerns the 3 SGPSs in force in Cyprus, Malta and Poland and can be indicated as that of *misled performative systems*. As we saw in the previous descriptions, the public authority tends to assign land use and development rights on a case-by-case basis or through the use of detailed negotiated plans, but the overall result is that territorial development is driven primarily by private interests, with some moderate attention to the public interest only in Cyprus. In these cases, the “treasure” of public authorities that a performative model of assigning rights can generally guarantee – ‘that of being the only institution entitled to decide, with certain discretionary powers, if, when and what is allowed to be built’ (*ivi*) – is somehow given away to market forces, which have enough power to direct public decisions towards their own interests.

Conclusions

Spatial governance and planning systems (SGPSs) are institutional technologies by which, in every state of the world, the public authority guides and controls spatial development in respect of property rights (Janin Rivolin, 2012). Elaborating the materials of the ESPON COMPASS research project, concluded in 2018, this paper has compared the current capacity for public control over spatial development in 39 European countries. The compiled evidence led to developing a European typology of SGPSs focused on their main functions which, taking into due consideration some necessary warnings, opens a series of final reflections.

The warnings are especially related to the high degree of interpretation that any comparative study on such a complex issue as spatial governance and planning fatally implies. In particular, as explained above, the analysis carried out in this contribution was based on information and opinions provided by individual national experts in the framework of the COMPASS research project. Furthermore, an attempt at simplification was required to reduce the complexity of the data and ratings to a single score, with respect to the land use and spatial development rights allocation model and the public/private interest model that drives spatial development. However, the attribution of each individual score was explained in the previous sections, and the overall typology that emerges from their combinations seems to present a certain degree of coherence with respect to the current debate on the subject.

If so, one general conclusion of the comparison carried out is that spatial development is currently driven more by private interests than by public ones in the vast majority of European countries (31 SGPSs out of 39). This is not surprising and reference can be made to the discussions on the alleged “neo-liberal turn” affecting spatial governance and planning (Brenner et al, 2010), as well as on the correlated effects of the recent global crisis (Ponzini, 2016). In this context, the model of allocation of land use and spatial development rights is not in itself a guarantee of the promotion of the public interest, since the prevalence of private interest in the orientation of spatial development is found in combination with all the models analysed, although in different degrees. After all, as institutional technologies at the service of public authority, the SGPSs – whatever the model of allocating rights – can certainly be used to promote spatial development driven by the market, if this is the declared political direction of governments. But since the political orientation of national governments

in Europe is varied and fluctuating, especially in current times (Hancock et al, 2014), from a technical point of view it is perhaps more interesting to note the trend performances of spatial rights allocation models with respect to the possibility for public control of the spatial development.

In this regard, it cannot be overlooked that the so-called “neo-performative” model (which avoids a blind pre-allocation of rights by general plans, and assigns them through previously negotiated detailed plans) is the most widespread within the few *state-led systems* (type A) and that which characterizes SGPSs in which a prevalence of private interest is contained to a minimum extent (type B). On the contrary, the more traditional conformative model for the allocation of spatial development rights (i.e. their pre-allocation through general plans) is generally unable to guarantee the containment of private interest in driving spatial development (type C) and, as it seems, can work in favour of the public interest only in the very specific institutional, administrative and cultural conditions that are present in Europe only in the French *aménagement du territoire*. Furthermore, the situation worsens in those Balkan countries that have rigidly embraced the conformative model (type D) with ambiguous spatial development consequences and illegal practices. In any case, these countries, like those that have adopted the opposite performative model (i.e. allocation of land use and development rights case-by-case) in the absence of sufficient institutional guarantees of public control (type E), show above all that highly unbalanced state-market relations can end up undermining the very nature of the institutional technology for spatial governance.

Overall, the comparative analysis carried out shows that the capacity for public control of spatial development is highly differentiated in Europe, as a consequence of multiple factors ranging from the political direction of governments to the actual relations between state and market that affect each institutional context. As institutional technologies created to obtain public control of spatial development, the variable characters of the SGPSs existing in Europe are arguably the main reason for this differentiation. The different ways in which systems allocate land use and spatial development rights explain to a large extent the capacity for public control, but each model adopted must be understood in relation to the respective political and socio-economic context. It should be emphasized that these considerations remain valid also in reference to only the current 28 EU countries, which are distributed across the entire typology elaborated here, with the sole exception of *proto-conformative systems* (type D). From a research perspective, this can offer new insights in the field of governance and spatial planning, especially in the context of comparative studies increasingly oriented to assess the performance of systems. From a policy perspective, the coexistence of such diverse SGPSs in Europe also draws attention to issues of coherence as regards the EU economic, social and territorial cohesion policy, whose implementation is ultimately filtered by these systems.

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Aspern explained: How the Discursive Institutionalization of Infrastructure Planning shaped North-Eastern Vienna's Urban Transformation

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Abstract: Public perception of infrastructure planning is oftentimes simplistic: experts instruct adaptations to the physical environment in consequence of contextual structural influences. Such structure-agency imaginaries imply an argumentative bypass though that neglects discursive institutionalizations of (1) the ideal structure of society, (2) the envisioned ideal-type city, and (3) the disciplinary self-conception of “good planning” as key intermediary instances of development and change. Focusing such discursive institutionalizations thus could aid understanding and explaining the origins of the material transformation of the city. We exemplify this notion with an analysis of Aspern in northeastern Vienna and its urban transformation since 1954. We claim that its conversion from cropland to smart and sustainable development area is not just the often-cited logical result of a re-urbanization trend manifesting in a zeitgeisty form, but the path-dependent materialization of past discursive institutionalizations of infrastructure planning. Employing an ASID and discursive institutionalist perspective, we point to critical strategic action and discursive complexity reduction, the institutionalization of networked infrastructure in the planning system, and its consequential materialization in a distinct form of infrastructure development. Our analysis uncovers institutionally stable phases of infrastructure planning as well as critical transitions in the planning system – all shaping Aspern's subsequent development. Retracing this process serves as an explanation to the multi-layered path-dependency of the entailing realization of a large-scale urban development project. Herewith, the research contributes to a better understanding of the discursive institutionalization of infrastructure planning and the planning-development nexus at large.

Keywords: Networked Infrastructures, Discursive Institutionalism, ASID, Vienna

Introduction

“Study a city and neglect its sewers and power supplies (as many have), and you miss essential aspects of distributional justice and planning power.” (Star, 1999, p. 379)

Public perception of urban change is oftentimes biased by a simplistic conception of how the planning-development relation works. Planning experts with comprehensive knowledge of current and future contextual structural influences instruct physical changes to the cityscape to solve urging urban problems and adapt the city’s built environment and functional pattern to the challenges ahead. Taking an institutionalist stance, however, the practice of regulating city-building must be viewed as the result of path-dependent institutionalizations (Sorensen, 2015, 2018). These institutionalized practices and discourses that constitute a territorial planning system can hardly be bypassed (*ibid.*). Planning-development conceptions as the one described above must thus be discarded as simplistic imaginaries of structure-agency interactions (cf. Jessop and Sum, 2006, Jessop, 2008). Instead, the act of planning must be understood as a practice that is embedded in a specific functional subsystem, characterized by a historically specific institutional order (Servillo and Van den Broeck, 2012, Moulaert *et al.*, 2016). Throughout the history of modern planning, neither has the planner’s expertise, comprehensive knowledge, or his general role within this act been uncontested, nor can we consider ‘context’ an empirically sufficient explanation for urban change. On the contrary, the solidification of certain time- and place-specific ways of doing planning, the goals, norms and rules of the game, as well as the structural constraints and opportunities for material transformations are important path-shaping variables to consider in this regard (Servillo and Van den Broeck, 2012, Moulaert *et al.*, 2016).

Moving away from a container thinking of space, it becomes clear that space is a historical product, organized through a combination of economic, infrastructural and institutional-regulatory practices (Swyngedouw, 1993). Hence, space as a historical product is connected to its social organization and therefore also those power relations involved in creating space. Taking infrastructure networks as the starting point of the investigation of urban change thus sheds light on those social structures as well as path-dependent power relations. “Transformations in the orientation and structuring of urban infrastructure must simultaneously involve reshaping the social organization of power relations in both time and space and the heterogeneity of the networks” (Graham and Marvin, 2001, p. 215). Understanding infrastructure planning therefore is crucial to grasp the interrelations between how a planning system envisions itself, the organization of society and the ideal type city with the actual physical transformation of space.

Infrastructure in this paper refers to more or less stable networks, which determine the mobility and interaction of people, goods and ideas (cf. van Laak, 2018). We refer to technical networked infrastructures as material constructs, such as roads, railways or pipelines, which influence and are influenced by economic, political and social practices. As Steele and Legacy (2017) argue, infrastructure can be understood “as relational; ecological; as everyday practice; as inherently political; as embedded in questions of human and non-human justice and equity, fiscal transparency, institutional accountability; and with a particular emphasis on the critical role of infrastructure as part of a public urban commons.” (p. 2) Also Star (1999) emphasizes the relational aspects of infrastructure. For him infrastructure only becomes real in relation to organized practices, i.e. its institutionalization (Star, 1999, p. 380). This relational understanding of infrastructure networks corresponds with Graham and

Marvin (2001), who regard urban infrastructures as “heterogeneous assemblies of materials, technologies, social institutions, cultural values and geographical practices. Cities are held together by intimately linked social and technical assemblages that mutually construct one another in increasingly seamless ways.” (p. 214) In this sense, infrastructure networks are, contrary to common belief, only temporarily stabilized and only stable through their institutionalization within the planning system. They are determined by institutional relations and formations of power, control and access and can therefore be understood as a socio-political agenda themselves (Steel and Legacy, 2017). Dourish and Bell (2007) emphasize two perspectives on infrastructure: (1) infrastructure development for organizing space and society, and (2) infrastructure development as part of the collective construction of cultural meaning (p. 415).

Previous research has often focused on infrastructure networks in connection to their effects on national economies, analyzing demand and supply of infrastructure provision and understanding infrastructure as the underlying structure of economic processes and economic growth (Frischmann, 2011). Urban studies and related disciplines have in the past largely failed to treat infrastructure networks as an important field of study. For many years, the deterministic view of infrastructure networks as technocratic constructs shaping space dominated academic debates (Graham and Marvin, 2001). Especially studies on large technical systems (LTS) have tackled infrastructure networks in the most comprehensive manner until recently (i.a. Bijker *et al.*, 1987, Coutard, 2002, Hughes, 1993, Mayntz and Hughes, 1988). However, the complex issues of interlinked infrastructure networks and the way in which they “are involved in the social production and reconfiguration of urban space [...] tend to be ignored.” (Graham and Marvin, 2001, p. 30) In the last few years though, research on infrastructure networks increasingly moved towards a poststructuralist analytical viewpoint, regarding infrastructure as embedded in different complex sociotechnical, political and cultural systems, having contingent effects in different places at different times (see also Graham and Marvin, 2001, Graham and McFarlane, 2015, Easterling, 2016, van Laak, 2018). Infrastructure networks are increasingly recognized as systems, which are not only interlinked within different infrastructural systems, but also function as “sociotechnical hybrids”, where the relation to urban development plays a crucial role (Graham and Marvin, 2001). Hence, we also consider infrastructures an important variable for better understanding the path-dependent process of urban development and small-scale urban transformation in particular.

There are three important determinants for the discursive institutionalization of infrastructure development: the ideal structure of society, which makes an ideal type city necessary, which is based on the envisioned understanding of the functioning of planning. Infrastructure networks often serve as a legitimation strategy for a certain philosophy of planning, to legitimize political arguments, from economic progress and growth, economic and cultural competition between cities to technological and technocratic feasibility visions. For urban planning, infrastructure development is often legitimized as an adaptation strategy for urban growth and related urban pressures (van Laak, 2018). This is especially useful as infrastructure and cities are persistently intertwined, making the investigation of spatial transformations through infrastructure development at city level a useful starting point. Just like infrastructures are socially constructed, cities are infrastructural constructions (Graham and Marvin, 2001). Cities therefore function as sociotechnical processes, where “economic, social geographical, environmental and cultural change [...] is closely bound up with changing practices and potentials for mediating exchange over distance through the construction and use of networked infrastructures” (ibid.,

p. 10). Infrastructure networks thus are materialized social relations. Hence, employing the concept of infrastructure networks signals a pivotal responsibility or at least a universal public interest. Infrastructure in this sense is the collective subconscious of society and once established, easily transformed into daily routines and often taken for granted. Thus, infrastructure networks create technical and habitual path-dependencies, which materialize social relations in urban space. They become the very “organisation principle to everyday life”, sustaining “ever-accelerating geographies of production, exchange, and consumption” (Kirsch, 1995, p. 541). This organization system through infrastructure networks consolidates a lasting vision of the ideal-type city on different levels. Different scales interplay within arguments surrounding infrastructure networks, where changing dynamics of global political economies and societies are displayed (Graham and Marvin, 2001). “This ensures a wide variety of particular ways in which the political action of city agencies and politics intersects with that of nation states and international governance bodies, to shape the reconfiguration of infrastructure networks” (ibid., p. 114).

Infrastructure networks also often serve as a legitimization strategy for technologized planning visions. The process of infrastructure development is often obscured through the entanglement within highly technical and technocratic institutions, “driven by supposedly depoliticised, instrumental rationalities of engineering cultures” (ibid., p. 20). Processes of infrastructure development are as a consequence increasingly opaque. Infrastructure networks often pose as neutral and objective, however they are often instrumentalized to keep and enforce political, economic, social, cultural or technocratic interests (van Laak, 2018). Massey (1993) refers in this regard to “sociotechnical geometries of power”, where the combination of infrastructural, economic and institutional-regulatory practices is a historical product for the production and organization of space (Swyngedouw, 1993, p. 310). Especially the history of infrastructure became a significant object of investigation because it “becomes visible as a reformulation that feeds back specific ideas about the future into an urban imaginary” (Vyjayanthi, 2015, p. 40). Infrastructure in this sense can be understood as the outcome of processes of negotiations between different institutions, defining specific compromises for specific times. It is therefore an urgent issue concerning many disciplines beyond urban and planning studies (van Laak, 2018).

This paper therefore investigates the discursive institutionalization of infrastructure development for the specific case of the north-eastern part of Vienna. After introducing the theoretical framework of institutionalist perspectives on planning and in particular the concept of discursive institutionalism, we employ this concept to the specific case of Aspern’s urban transformation process since the 1950s. We retrace the different phases of important points in history, where shifts and continuities can be observed in the development of infrastructure networks and lastly draw conclusions on the planning-development nexus.

Discursive Institutionalism as a Strategic-Relational-Institutionalist Perspective on Infrastructure Planning and Urban Change

Studies tackling the complex relationship between the institutional subfield of planning, the process of infrastructure development and urban change demand a robust theoretical framework that enables categorization and detailed analysis of dimensions and their interrelations. Aiming at a historical explanation of small-scale urban transformation as the result of discursive institutionalizations of infrastructure, we employ an institutionalist perspective that allows us to uncover how the solidification of ideas in the planning system influences urban change (cf. Schmidt, 2012). This makes particular

sense considering the variety of arguments suggesting a close vicinity between infrastructure development and institutionalization processes (cf. Star, 1999, Graham and Marvin, 2001, Steel and Legacy, 2017).

We thus base our concept on the ASID heuristic by Moulaert *et al.* (2016), a meta-theoretical model for analyses of socio-economic development. Incorporating a wide array of theories from development-, regulation- and state theory to evolutionary economics and new institutionalism, ASID puts an emphasis on how institutional dynamics and spatialized regulation influence development (*ibid.*). The model thus also provides a fruitful perspective on the planning-development relation. ASID takes the role of strategic action, the power of discourse, the influence of institutional formations and the constraining and facilitating force of structure into account as mutually related factors of urban development. As the authors explain:

“For an adequate account of socio-economic development, one must refer to the actions that steer or interfere with the development processes, the structures that both constrain and enable action, the institutions that guide or hamper action and mediate the relation between structures and action, and the discourses and discursive practices that are part of these interactions.” (Moulaert *et al.*, 2016, p. 168-169).

Building on a Critical Realist ontology, the model’s emphasis is on the constraining and facilitating forces of structure that help explain time- and place-specific development paths and potential path-dependencies (Moulaert *et al.*, 2016). ASID thus provides a valuable basis when it comes to “making sense” of locally specific urban transformation processes and the local “planning conditions” that inform it. The four dimensions of agency, structure, institutions and discourse provide useful categories for systematically reviewing the layers that constitute the institutional subfield of planning at a certain time in a certain place, while the analysis of particular strategic-relational formations at the intersection of the four dimensions can aid explanations of how and why change occurred. The archetype process as conceptualized within ASID assumes that individual or collective agents strategically employ discourse to maintain or transform institutions and ultimately influence structure, while at the same time structural forces, institutional settings and hegemonic discourse regulate the strategic action of those actors (*ibid.*).

However, being a meta-methodology, its application in empirical analyses demands ASID to be blended with middle-range theories (*ibid.*). Since the multi-faceted definition of networked infrastructures that we developed in the introduction particularly points to the social construction of infrastructure, its relational and institutional character, we consider the Strategic-Relational-Institutionalist research approach (henceforth SRI) (Servillo and Van den Broeck, 2012) a fitting perspective when it comes to detailing our understanding of what dimensions actually constitute planning systems.

Servillo and Van den Broeck (2012) conceptualize planning systems as “a technical device embedded in an institutional frame and produced by groups of actors” (*ibid.*, p. 46). Within this model, the actual technical process of involved actors who selectively structure strategies constitutes the planning system. The planning rules and instruments, ideal-type planning approaches, the discursively constructed aims and keywords, as well as the overarching socio-political structures constitute the envioning institutional frame. The SRI herewith enriches established institutionalist planning theory that draws from sociological and historical/political institutionalism with Jessop’s Strategic-Relational Approach

(cf. particularly Jessop, 2008), stressing the social construction of planning. In doing so, the authors put an emphasis on how institutional formations of planning privilege certain actors and social groups over others. Moreover, they focus the role of strategic agency in the reproduction and reorganization of planning institutions (Servillo and Van den Broeck, 2012). Thus, it is a suitable approach to expand on with regard to the tripartite relationship of planning system, infrastructure development and urban change.

The understanding of development and change as proposed by ASID and the SRI implies three important points for the conception of infrastructure: (1) The planning and materialization of infrastructure is a deeply political process characterized by power, negotiation and strategy. Its instigation thus depends on the strategic agency of certain individual or collective actors, actor networks or social groups. (2) Infrastructure development is historically contingent. It is dependent from and influenced by an existing institutional landscape in the subfield of urban infrastructure planning and the structure of existing infrastructure networks that it is meant to complement or replace. Path-dependence thus is key to urban transformation if we look at it from an infrastructure perspective. (3) Infrastructure development is related to, inspired and influenced by multiple layers and scales of action. Phases of stability as well as incremental or radical change to the institutional landscape of urban infrastructure planning and the actual materialization of infrastructures thus must be considered the result of interrelated and interdependent activities and events embedded in certain social and institutional formations. The notion is that infrastructure is always relational, i.e. linked to other facilitating or constraining forces and events (cf. Moulaert *et al.*, 2016, Sorensen, 2015, 2018).

To make the institutional formations of infrastructure planning and development as conceptualized within ASID and the SRI approach applicable, we use the concept of discursive institutionalism, thus deploying a middle range theory to capture how planning ideas become institutionally fixed and, in consequence, influence urban development. Discursive institutionalism serves as a discourse-based explanation of how and when ideas prevail through historically determined constellations of agency within specific institutional relations, influencing urban development and change. We therefore blend Public Policy Analysis – understood as the study of how actors, ideas and institutions in planning relate (cf. Dunn, 2012) – with Critical Discourse Analysis (cf. Fairclough, 2010) of infrastructure planning policies to uncover the discursive formation of social, urban and planning ideals and their transmission into material urban infrastructures.

The concept of discursive institutionalism emerged as a critique of other forms of new institutionalism, which often overemphasize institutions while underrepresenting agency, ideas and discourses (Davoudi, 2018). This aspect is dealt with in discursive institutionalism by taking discourses and their consequences seriously and putting them in an institutional context (Schmidt, 2008). Discursive institutionalism can be regarded as the fourth and newest analytical viewpoint next to other forms of new institutionalism – rational choice institutionalism, historical institutionalism, and sociological institutionalism (Schmidt, 2012).

The analytical approach of discursive institutionalism allows to understand political processes for organizing space and the cultural construction of meaning by taking both ideas and institutional settings into account. Whereas the other forms of the planning theory strand of new institutionalism leave us with “unthinking” actors, subordinating agency to structure, discursive institutionalists have recently stressed the importance of ideas and discourses (Schmidt, 2008, 2012). Vivien Schmidt as an important

representative of this new analytical approach, investigates not only what the nature of the relationship between structure and agency contains, but also how actors change or maintain institutional practices (Davoudi, 2018). Discursive institutionalism “helps to overcome the structure-agency divide and, thereby, to explain the dynamics of change by lending insight into how actors in different institutional contexts with new ideas may overcome entrenched interests, institutional obstacles and cultural impediments to change” (Schmidt and Radaelli, 2004, p. 207). Discursive institutionalism therefore serves as an analytical approach in political science to trace how ideas are tied to action.

The main argument of discursive institutionalists is, that ideas are carried through agents, which form the basis for collective actions through discursive argumentations and interactions (Figure 1). Ideas, agents, discursive interactions and collective action all function through their institutional context, which acts as the setting, in which ideas have meaning, discourses have communicative force and actions make a difference (Schmidt, 2012).

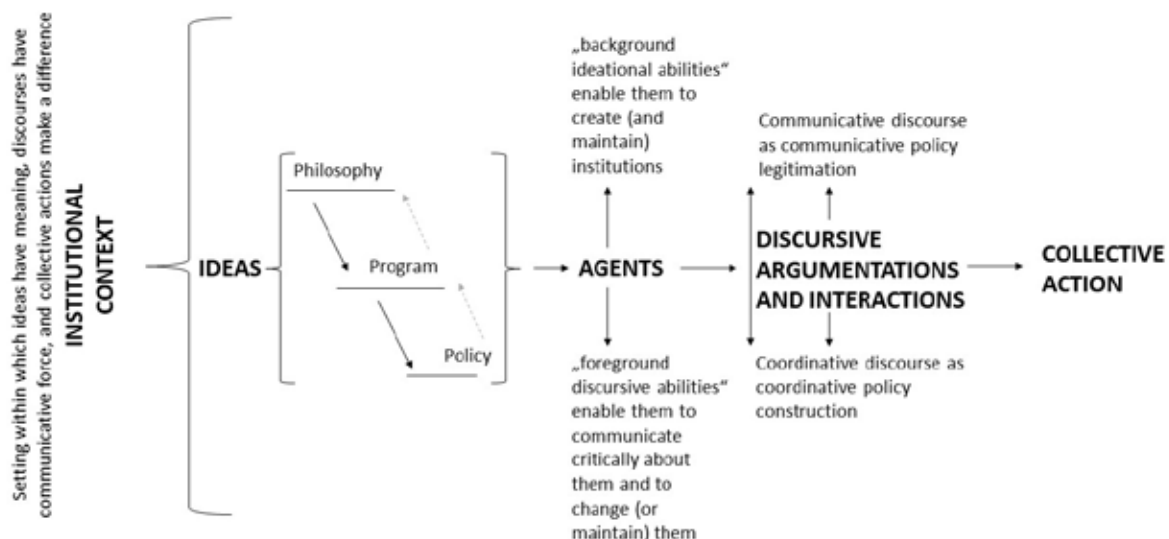


Figure 1: Building blocks of discursive institutionalism; Source: own adaptation following Schmidt (2012)

For Schmidt (2012), the institutional context is the pivotal juncture, where ideas as representations (how agents say what they are thinking of doing) are generated by actors and communicated through discursive interactions (to whom the actors say what they are thinking of doing). Thus, the institutional context determines where and when actors say what they are thinking of doing.

Ideas, discourse or discursive interactions and institutional context are the main building blocks of discursive institutionalism. Schmidt (2008) differentiates between different levels, types and forms of ideas, which are the substantive contents of discourses. Bringing discourse to the centre of analysis aligns with a constructivist perspective, where the focus is on social processes and power relations (Davoudi, 2018). Ideas form the basis, which can either appear on the first level as policies, on the

second level as programs or on the third level as philosophies, worldviews or norms. Furthermore, these levels of generality of ideas can either be primarily cognitive or normative, providing guidelines for political action and justification of policies and programs through interest-based logic or attaching values to political action and justification of policies and programs through appropriateness, respectively (Schmidt, 2008). Lastly, ideas can appear in different forms, as narratives, frames, collective memories, stories, scripts, scenarios or images.

Agents act as carriers of ideas, which form different constellations and communicate their ideas in their specific institutional context. They therefore construct institutions through their “background ideational abilities”, which enable them to create (and maintain) institutions, and their “foreground discursive abilities”, which enable them to communicate critically about the constructed institutions and to change (or maintain) them (Schmidt, 2012).

However, institutions are not only constructed by agents but also structured by discourse. “Institutions [...] are simultaneously structures and constructs internal to the agents themselves” (Schmidt, 2008, p. 314). This internal structure can also be understood with discourses, which Schmidt not only understands as the content of what is said, but also as its context of where, when, how and why it was said. Structure of what, where and how something is said is equally important to agency of who said what to whom (Schmidt, 2008). Using the term discourse indicates the ideas represented in the discourse and the interactive processes by which ideas are conveyed. Thus, discourse functions as an institutionalized structure of meaning and forms an interactive social process. Schmidt (2012) distinguishes between communicative and coordinative discourse. Coordinative discourse mainly happens among actors involved in the policy process, including “policy makers”, government officials, lobbyists, policy consultants, experts or business and union leaders, leading to the coordinative construction of policies. Communicative discourse takes place between political actors, which are engaged in presenting, deliberating, arguing, contesting and legitimating policy ideas to the public, which also includes media, interest groups, public intellectuals, social movements etc. with the goal to legitimate policies through communicative practices. How coordinated ideas of political actors are communicated depends on the institutional context (Schmidt, 2008, 2012).

For planning research and particularly for investigating infrastructure planning, ideas and discourses in their specific institutional contexts are essential to understanding their influence on stability and change and how they shape political behaviour and outcomes and thus, urban space. Davoudi (2018) argues, that especially in the context of the rich history of planning ideas, “discursive institutional analyses of change and stability in planning policies, practices and institutions can be particularly insightful” (p. 72). Moreover, Sorensen (2015) argues, that especially for infrastructure planning, where path-dependencies are a crucial dynamic, the analysis of institutions helps to understand stable phases and critical transitions within the planning system. Discursive institutionalism hence provides a fruitful method in this paper, to investigate infrastructure planning within the single case study of urban change in north-eastern Vienna. We thereby contribute to the not yet extensively empirically researched conceptual framework of discursive institutionalism and provide empirical evidence for its application. Following arguments of Schmidt (2008, 2012), where ideas act on different levels, the section below focuses on the process of how the envisioned structure of a “good” society, the philosophy or worldview, makes a “good” structure of urban space necessary as a programmatic idea, which is based on “good” planning as a policy solution, such as a strategic plan or instrument as an expression of the specific self-conception of the planning profession. How these ideas came to life and persisted or

changed through time sheds light on institutionally stable phases of infrastructure planning and critical transitions in the planning system, which shaped Aspern's subsequent development.

Discursive Institutionalization of Infrastructure Planning: The Case of North-Eastern Vienna

This paper redraws the historic development of infrastructure networks as the result of decisions at the intersection of technology, economy, politics and society (van Laak, 2018). It therefore focuses on planning institutions devoted to infrastructure development, since planning institutions “can be seen as embodiments of ideas that are in turn inspired by interests, aspirations, ideologies or practices” (Davoudi, 2018, p. 65). Our analysis builds on the collective action within the discursive institutionalization of infrastructure planning, which we regard as the materialization of infrastructure development and urban change in Aspern and its surroundings. We connect collective action to the underlying ideas and discourses mediated through agents of infrastructure planning which form specific institutional relations through their discursive interactions, thereby uncovering the institutional context through path-dependent development processes and radical changes in infrastructure planning.

Since the body of literature on the development of infrastructure networks suggests an increase in fragmentation of previously mostly integrated and standardized infrastructure systems (cf. Graham and Marvin, 2001, Marshall, 2013, Easterling, 2014, van Laak, 2018), the analysis of Vienna's North-East allows uncovering similarities and differences of the city's infrastructure development in comparison to global dynamics. In the following section we thus show how infrastructure development ideals and moments of change in Vienna's urban development path shaped the time- and place-specific phases of Aspern's transformation into its current form. We show that each phase is characterized by a distinct formation of ideas, agents, and discursive interactions, all leading to collective action to influence Vienna's north-eastern infrastructure development and, consequently, its overall urban transformation.

The institutional precondition for today's urban development in Aspern is the administrative incorporation of the 22nd district Donaustadt in 1954 after an uncertain time during and after the Second World War. The focus of urban planning was inner development due to stagnating population. Urban growth gravitated mostly to the north and south, not the north-east (Eigner and Resch, 2001, Klusacek *et al.*, 2008). However, the incorporation of Donaustadt as the 22nd district of Vienna represents a critical point in Aspern's history as it formed the basis for its future urban development.

In the 1950s and 1960s, the social welfare state was the predominant philosophy, which was underpinned by social urban planning as the programmatic idea of how to realize the ideal urban structure of Vienna (Pirhofer and Stimmer, 2007). However, this period created hardly any actual urban change in the eastern part of Transdanubia – as the 21st and 22nd district are colloquially called – as planning at that time was predominantly concerned with reconstructing residential housing and the city's population was stagnant. Although many visions from technocratic planning experts emerged, they were mostly incompatible with the social welfare ideas and thus were not incorporated into any policies. Thus, the agents of the strong local state pushed through their ideas of social urban planning

and reconstruction, while technocratic experts¹ visions were left behind. At large, post-war modernist ideas had hardly any influence on Aspern's development, since envisioned projects were implemented in other parts of the city at that time (f.e. Großfeldsiedlung in Floridsdorf) (Suitner *et al.*, 2018).

Thus, the transformation of the eastern part of Donaustadt took until the 1970s, where the airfield Aspern was closed in 1977 and flight operations stopped due to the opening of the second runway at the airport in Schwechat (Wien Geschichte Wiki, 2019a). Moreover, the General Motors factory was built at the former Aspern airfield, opened in 1982 and initially employed 1.500 people (Wien Geschichte Wiki, 2019b). However, the factory was far away from residential housing, which is why the city actively pursued transport development to connect the workers to the inner parts of the city. Moreover, in 1975 the largest shopping mall in Vienna was opened in Kagran, not far away from Aspern, which changed the functional structure of the district (Wien Geschichte Wiki, 2019c).

The underlying philosophy of the 1970s and 1980s was influenced by the shift from Fordism to Post-Fordism, which led to consumerism, the retail sector's wide-ranging makeover, and increasing inequalities – also in Vienna. However, the local state's passed on ideal of promoting equal living conditions was reflected in a new programmatic idea for the ideal city. To compensate Vienna's monocentricity, which put increasing pressure on the inner city, a hierarchical functional model including axes and centres was implemented (MA 18, 1985). One of the axes ran through Aspern, connecting it to 22nd district's established urban centre and a neighbouring municipality. These programmatic ideas were communicated through comprehensive plans, like the masterplan for transport in 1970 (MA 18, 1970) and the first urban development plan in 1984 (MA 18, 1985), and were complemented with small-scale development plans, e.g. the development plan for the 22nd district in 1972 (MA 18, 1993).

However, the ambitious ideas of connecting Aspern to Vienna's public transport system initially failed due to infrastructure costs and the increasingly complex actor structures. Although the 1970s and 1980s represented a new form of planning through comprehensive and communicative modes of development, the increasing complexity of projects and involved actors thwarted the success for the most part. Hence, insufficient job supply combined with a lack of efficient transport routes are recurrent debates in Aspern's development path.

In 1992 the city of Vienna acquired the properties of the Aspern airfield, creating the basis for on-site developments (Wien Geschichte Wiki, 2019a). At the same time, population in Vienna was growing again, thus making active acquisition of land for urban development necessary.

With the fall of the Iron Curtain in 1989, the new underlying philosophy was to promote Europeanization, integration and growth. Competition between cities and states was the driving force for development, strengthened by the programmatic idea of the European city model combined with the concept of "New Urbanity" for urban expansion (Hatz, 2009). Planning's self-conception gradually

¹ see for instance the satellite towns of Brunner (1952) or the comprehensive vision for Vienna's future development of Rainer (1962)

shifted towards planning as an entrepreneurial task with “valuable” projects of urban development (Novy *et al.*, 2001). As such, Aspern as a new urban quarter in the north-east of Vienna became the flagship project for the city with the alleged possibility to function as a bridge to the new Europe (Suitner, 2015).

Urban expansion projects were supported by new agents of urban management, routed in institutionalization processes of the 1970s and 1980s: the Wien Holding, founded in 1974 as an umbrella organization for mostly infrastructure companies, which reflected future intersections between state and market within the governance system for urban development; the WWFF (Vienna business development fund) founded in 1981, which acquired properties for companies in search for suitable development sites and was supported by public subsidies; the WBSF (Vienna land provision and urban renewal fund) founded in 1984, which acted relatively flexible under private law but was financed by the city government; and the urban development commission founded in 1985 to represent all departments and political parties to discuss urban development policy issues (Pirhofer and Stimmer, 2007). These complex constellations of actors represented the consensual planning model in Vienna. The acquisition of the airfield in Aspern is an expression of these intersections between different agents and reflects an institutionalized form of planning, where the philosophy of a provident state for future development is expressed in the programmatic idea of buying land itself in order to be able to develop a new urban quarter under its own conditions.

Shortly after the acquisition of the airfield, the City of Vienna, together with the WWFF and with the participation of the urban development commission, carried out an urban planning procedure for the development of the airfield. The resulting master plan by Rüdiger Lainer covered about half the area of the expansion plans of today’s Seestadt Aspern. 10.000-12.000 residents and 6.000 jobs were to be accommodated in the new district (City of Vienna, 2019a). However, the plan was not put into practice due to its incompatibility with the lacking infrastructural linkage of Aspern to the rest of the city.

Hence, in the 1990s, construction of transport routes was the main focus to prepare urban development in Aspern. The railway S80 and highways such as the A23 or the A22 were expanded to the north-east of Vienna to connect the area to the rest of the city (MA 18, 1994). The construction of traffic infrastructure accumulated at that time to construct high-ranking transport links to connect and upgrade the area between Danube and north-east of Vienna and thus prepare for future urban development. With Europeanization, integration and growth being the dominant drivers at that time, efficient traffic connections became mandatory prerequisites for urban expansion. The policy to reach this programmatic idea of the consensual planning model, which was an institutionalized practice since the first urban development plan was issued in 1984 (MA 18, 1985), continued in the urban development plan of 1994 (MA 18, 1994) and small-scale policies for Donaustadt (MA 18, 1998a, 1998b). The latter pled for closing the gap of infrastructure provision in the north-east and criticized Transdanubia’s lack of functional integration.

Although the vision for urban development in Aspern existed since the 1970s, it took 20 years to finally initiate the according transport links as prerequisites for the subsequent transformation process. The complex constellation of agents and ideas, which manifested in the 1980s through different organizations relevant for development processes and the lacking infrastructure provision thwarted the success of various development ideas like the first master plan for Aspern. Only the decision for the

development of the underground line U2 as a necessary precondition for infrastructure development and future urban development at the airfield led to the subsequent urban change in the 2000s.

However, the complex division of competences, especially in transport infrastructure, led to the construction of transport links mostly for road traffic, whereas public transport was caught up in difficult negotiation processes between national and municipal competencies (f.e. the City of Vienna and the ÖBB – Austrian railways). Thus, the foundation of Wiener Linien, Vienna's own public transport company in 1992 was no surprise (Wien Geschichte Wiki, 2019d).

However, it took until 2010 for the construction of today's Seestadt Aspern to begin (Wien Geschichte Wiki, 2019a). An important prerequisite was the expansion of the canal network to the eastern part of the 22nd district from 2009-2013 and the construction of a collection sewer with a pumping station in Aspern in 2013 to make the settlement in the rather flat land of Donaustadt possible (City of Vienna, 2019b). In 2010, the underground line U2 was expanded to Aspernstraße and in 2013 finally to Seestadt, thus connecting the new urban quarter to the centre of Vienna via high-ranking public transport (Wien Geschichte Wiki, 2019e). Moreover, the small-scale functional integration of the two districts north of the Danube was further intensified through the newly expanded tram line 25, which connects the 22nd to the 21st district since 2012 and the tram line 26 between the centre of the 22nd district and the eastern part of Donaustadt in 2013 (Tramwayforum, 2019).

Seestadt Aspern reflects a new planning philosophy, which incorporates place-making and management-oriented planning strategies to cope with increasing uncertainty and complexity. This zeitgeist of planning as an attempt to steer urban development by discursively preparing the direction and design of structural transformations through place-making is consolidated by the programmatic idea of the city's structure as a polycentric agglomeration, where the construction of the underground serves as a successful model and legitimation for urban development. Currently, it legitimizes a more than optimistic vision of the development of eight potential centres in addition to the six existing ones in the strategic planning for the eastern part of the 22nd district (MA 21, 2013). For Seestadt Aspern, the master plan was created as the guiding policy. However, it not only reflects the underlying planning philosophy and programmatic idea of the future city, but simultaneously influences planning orientation and future visions for Vienna, since Seestadt Aspern has turned into a prestige planning project that is "too big to fail".

Moreover, the development of Seestadt Aspern also reflects the shift from government to governance as the complex interactions between diverse groups of actors show (f.e. national infrastructure agency, municipal infrastructure agency, political ministries, regional authorities, urban development commission etc.). These agents are involved in forming different policies concerning the development in Aspern: the urban development plans STEP 05 in 2005 (MA 18, 2005) and STEP 2025 in 2014 (MA 18, 2014), the Smart City Strategy in 2014 (Magistrat der Stadt Wien, 2014) and most importantly for Seestadt Aspern, the master plan in 2006, which promoted Aspern as an independent sub-centre within the city (City of Vienna, 2019a). In 2012, the master plan for the Seestadt was refined, a detailed plan for the development of the northern section and a separate plan for the public spaces at Seestadt were developed (Wien 3420 aspern development AG, 2019a). In 2017, the latest update of the masterplan was published (Wien 3420 aspern development AG, 2019b).

Seestadt Aspern is a reflection of planning between state and market, which manifests in an almost textbook spectrum of “good planning practices”: artistic displays, assemblies, subsidized housing, district management, participation processes, passive energy offices, timber high-rise construction, and much more. Moreover, the functional integration through local infrastructure networks is the mandatory prerequisite for urban expansion in Aspern. However, the original characteristics of the old town centres and structures are ignored. Instead of population growth and housing needs strengthening the existing Aspern town centre, the development of a new district is pushed to meet the needs. As a result, the area around the former airfield is clearly different from the newly constructed Seestadt.

Since 2017, a quarter of the project Seestadt Aspern is already completed (ibid.; see Figure 2). By 2028, the project shall accommodate more than 20.000 people and almost as many jobs (City of Vienna, 2019a), making Vienna’s north-east one of the most promising development areas of the city. However, resentment and resistance towards the increasing traffic load despite of upgraded public transport options is on the rise. Thus, the recent transfer of federal road competencies allows the City of Vienna to construct part of the federal highway B3d in its own sphere of influence. This will be followed by the Aspern urban road in 2021, which will necessitate the full development of the Seestadt area (City of Vienna, 2019c).

Aerial photograph 1956



Orthophoto 2017



Figure 2: Urban transformation from 1954 until 2017 in Aspern; Source: City of Vienna (2019d)

Table 1: Discursive institutionalization of infrastructure development in Aspern's urban transformation since 1954; Source: own conception

Ideas		Agents	Discursive Interactions	Collective Action
<i>Philosophy</i>	Social welfare state	Strong local state	Visions created by technocratic experts were incompatible with social welfare ideals	1954 incorporation of Donaustadt as a district of Vienna
<i>Program</i>	Social urban planning Reconstruction	Technocratic planning experts		
<i>Policy</i>	-			
<i>Philosophy</i>	Consumerism Provident state	Slow shift towards planning as urban management	Masterplan for transport 1970, STEP 84 and "Donaustädter Bezirksentwicklungsplan" 1972 promoted axes Kargan-Groß-Enzersdorf through efficient public transport Visions were mostly incompatible with high infrastructure costs	1977 closing of the airfield Aspern 1982 opening of the GM factory in Aspern
<i>Program</i>	Functional urban model	Decentralized modes of urban planning		
<i>Policy</i>	Comprehensive urban development plan combined with small scale development plans	Diversity of actors		
<i>Philosophy</i>	Competition	Expert urban planning procedures	Development plan for the airfield by Rüdiger Lainer - > incompatible with lacking infrastructural preliminary work	1992 acquisition of the airfield Aspern by the city of Vienna
<i>Program</i>	European city model combined with "New Urbanity" for urban expansion	WWFF 1981 WBSF 1984		
<i>Policy</i>	Entrepreneurial urban planning -> "valuable" projects of urban development	Urban development commission 1985		
<i>Philosophy</i>	Europeanization, integration and growth	Amendment of the building code 1992	STEP 94, Small-scale district development plans for Floridsdorf and Donaustadt promoted compensating the lack of provision in infrastructure and Transdanubia's lack of functional integration	Construction of transport infrastructures in the 1990s (f.e. S80, A23, A22)
<i>Program</i>	Efficient traffic connection as mandatory prerequisite for urban expansion	Wiener Linien 1992 Wiener Stadtwerke as listed public company 1999		
<i>Policy</i>	Consensual planning model			
<i>Philosophy</i>	Place-making and management-oriented planning to cope with uncertainty	From government to governance -> complex interactions between diverse group of actors (f.e. national infrastructure agency, municipal infrastructure agency, political ministries, regional authorities, urban development agency etc.)	STEP 05, STEP 2025, Smart City Strategy, master plan Seestadt Aspern 2006 to promote Aspern as an independent sub-centre within the city	2009-2013 expansion of canal network to 22 nd district 2013 construction of Aspern collection sewer with pumping station 2010-today construction of Seestadt 2012 tram line 25 2013 underground U2 2013 tram line 26
<i>Program</i>	Consolidated polycentric city model Underground as a successful model for urban development			
<i>Policy</i>	Master plan Seestadt			

Discussion & Conclusion

As Aspern's urban transformation has shown, different phases of stable development and critical ruptures can be identified, which either facilitate or decelerate change (see Table 1). By employing the concept of discursive institutionalism we were able to explain how Aspern developed from agricultural land and former airfield to one of the biggest urban development projects in Europe.

While the 1950s and 1960s facilitated rarely any physical transformation as planning at that time was mostly concerned with post-war reconstruction, the 1970s have seen quite radical changes that first established in the centre of the 22nd district to slowly radiate to its eastern parts thereafter. The provident understanding of urban planning from the 1960s until the 1980s was however delayed in Aspern's development, as the acquisition of the airfield by the city in the 1990s was the prerequisite for today's urbanization of Aspern. However, the institutions created in the 1970s and 1980s prepared this change and provided the basis for Aspern's physical transformation. While urban planning in Vienna is traditionally paternalistic and, thus, top-down, the project of Seestadt Aspern itself influenced the underlying philosophy of planning's self-conception by its mere size. The project's master planning approach, its public-private financing structure and the well-orchestrated image- and place-making campaign all reflect the emergence of management-oriented urban politics and flexible governance in Vienna at the turn of the century..

The concept of discursive institutionalism thus enables us to retrace how projects, which are manifest realities today, are based on different levels of ideas from past times, which resulted from very different motives. Hence, the provident understanding of urban planning in Vienna from the 1960s until the 1980s created the basis for today's development, whereas today's urban transformations emerge from the planning ideas of the 1990s and 2000s, which were much more focused on supply-oriented approaches and strategic competition.

This paper hence has provided empirical evidence for the applicability of the concept of discursive institutionalism as an explanatory tool in urban development and planning research. Particular temporal decelerations and accelerations of infrastructure development are put in their respective institutional context, allowing a broader perspective that goes beyond reiterations of the simplistic planning-development nexus.

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Observing governance from the ‘street level’

An investigation on First Access services in Bologna, Emilia Romagna, Italy.

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Abstract: This contribution aims at addressing how institutional changes might affect the spatial configurations of services in cities. Grounding on the territorial and multilevel features of governance in urban planning and social policy fields, the analysis focuses on the provision of specific services in a selected Italian context. Starting from the assumption that space is a product of policy decisions and instruments, the paper would consider three spatial dimensions of social assistance services: the localization (where services are located in the city), the container (in which building they are located and which functions are coexisting), the content (how spaces influence the services provision). Underrepresented in the academic debate, poorly financed among the social protection measures, rarely considered from a spatial perspective, social assistance services will be analysed for their fundamental role in local welfare provision. In particular, the contribution will focus on first access services, representative of the street-level meeting between citizens and welfare policies. Starting from an empirical research led in the Social Counters (i.e. Sportelli Sociali) of the city of Bologna - Emilia Romagna, the paper will furtherly address space-related issues of social services provision, that might reshape the contact between citizens and institutions and reorient policy decisions.

Keywords: welfare; spaces; social services; first access services.

Local welfare: a planning issue?

The panorama of the welfare services provision in Europe is consistently reshaped and challenged by major social, economic and demographic changes. The combined effect of economic reorganization processes, the increasing precariousness of the job market and the shrinking of the national welfare systems, have progressively eroded the traditional social protection measures and increased traits of fragilities in many European cities (Bricocoli, *et al.* 2017). These trends should be read together with a policy rescaling toward the local level, that finds origin and definition in the territorialisation policies of the 80s (Kazepov and Carbone, 2007, Vitale, 2009), which decentralized the decisional and regulative powers in many European countries to face post-industrial societal changes and new demands of social services (Ferrera, 2008). The withdrawal of the national states as direct suppliers of social protection measures, together with a significant reduction of the public resources dedicated to welfare services, led the basis for the involvement of third sector and private actors in the services' provision, in order to maintain an adequate supply with a reduced public investment

(Ascoli and Ranci, 2003). The variety of actors involved in these welfare systems and the consequent redefinition of the role of the states in regulating their activities has been defined as welfare mix (*ibidem*). This new policy framework, that developed with specific features according to policy traditions and resources of different EU countries (*idem*), implied new patterns of governance and stimulated a renovated attention to the territorial scale as a reference to experiment policies and interventions (Bifulco, 2015, Kazepov, 2009).

In Italy these processes seem to be grounded in the normative reforms of the 90s, that were conceived to decentralize the policy decision at the local level, supported by emerging debates on vertical and horizontal subsidiarity. As in other European countries, new private and third sector enterprises started to be involved in the welfare services provision and, since their official acknowledgement in the Italian juridical system, they became part of a new territorial governance (Bifulco, 2015). This new regulative framework led the basis for the introduction of two major reforms that reshaped, and still regulate, the whole national welfare system (Ferrario, 2015, Vitale, 2009). Firstly, the reform L.328/00, that recomposed in a unitary framework all the interventions and the economic measures that have been formerly developed in a fragmented and categorized way, and established the roles, the responsibilities and the criteria of access to social services (Kazepov, 2009). This norm entailed the State obligation of guaranteeing a uniform provision of services at the national level (LIVEAS) and created a specific National Fund for the implementation of Social Policies (*Fondo Nazionale per le Politiche Sociali*). The law also introduced the so called Piano di Zona, a planning instrument for social services to be developed at the Municipal level following the guidelines of the Regional laws. Moreover, it established the criteria for the participation of the third sector and no profit organizations to the welfare services provision, acknowledging their official role in the public decision (Ascoli, 2001). A second relevant normative change has been the reform of the Title V of the national constitution (L.3/2001), that attributed autonomous decisional and regulative powers to the Region, the Metropolitan Cities and the Municipalities in all the subjects that were not framed under the direct intervention of the State, including social and urban planning policies. Since the introduction of this reform, the responsibilities of local administrations increased, as well as their economic involvement in financing policies and services at the local scale, often without appropriate transfers of resources from the central government or the necessary know-how to manage the new delegated subjects (Kazepov, Carbone, 2007, Bifulco, 2005, Sabatinelli, 2009). Many authors agree on the mismatch between the two considered reforms, with particular concerns on the regulative and decisional roles of the Regions and the Municipalities in providing and financing social services, that should have been financed by a dedicated national fund (Bifulco, 2015, Kazepov and Carbone 2007, Vitale, 2009).

Moreover, the impact of these reformistic attempts have been strongly limited by the economic crisis of 2008, that furtherly reduced the resources allocated to public administrations as well as the spending capacity of the families. The stagnation, where not recession, of the national economy, together with the introduction of austerity policies, have worsened the families conditions and drastically reduced public expenditure dedicated to welfare services provision. The consequences have been even more evident for the local administrations, challenged with the urgency of more adequate policies, with reduced resources. Furthermore, the increasing job insecurity, the ageing of the population, the new migration flows, the more frequent mobility, the more articulated life paths and the impoverishment of many families, have generated new heterogeneous needs, challenging the traditional sector-based welfare systems. In these sense, the actors of the above mentioned welfare mix have been constantly defied in finding resources and solutions beyond the traditional ones (Bricocoli and Sabatinelli, 2018).

Planning social services: where does ‘space’ fit in?

Within this changing scenario, this contribution aims at addressing how spatial configuration of social services provision is/has been shaped by different decisional levels of urban planning and social policy fields. To understand the goal of this analysis, a terminological clarification needs to be addressed. The term ‘space’ is hereby approached as the tangible result of policy decisions and instruments (Lascoumes and Le Galès, 2007)

that often belong to different policy fields. In particular, this research focuses on the spaces of social assistance services from an urban planning perspective. Underrepresented by the academic literature and poorly financed by the national social protection measures, these services are fundamental for the implementation of local welfare policies, currently more and more relying on citizens' involvement and capacitation (Bifulco, 2015). Among the complex panorama of social services, each of which involving a wide variety of actors, instruments and policy levels, the contribution focuses on First Access Social Services (from now on: FASS), defined by law 328/2000 as *the door* of welfare provision. These are the spaces where people meet the system of welfare for the first time and, by extension, where they experience contents and rationales of welfare policies through bureaucracies and bureaucrats (Lipsky, 2010). In these spaces citizens can express needs for social help and/or economic contributions, appreciating the promptness of social work or experiencing the delay of public services. Most of all, these *doors* are both the metaphorical and physical entrance to the local welfare system, where people get to know the organization and its limits.

Within a “controversial and anomalous” role of the current national urban planning discipline, nowadays welcoming as many different perspectives as are the dimensions of the urban realm (Gabellini, 2018: 9), this contribution aims at reorienting the attention of decision makers of both urban planning and social policy fields on the relevance of space in services' provision. In particular, the analysis argues the necessity for urban planning policies to focus on social services as those primarily and institutionally devoted to answer citizens' needs, and at the same time suggests a need for social policies to consider the role of the spatial dimension in welfare services provision. Focusing on FASS, the spatial configuration is here tackled in three dimensions, each of those concerning various levels of governance and scales of observation, and influencing the users' experience in different ways:

- The localization: in terms of accessibility and distance to other meaningful centres;
- The container: the physical features of the buildings in which these services are provided and the coexistence with other different functions;
- The content: the influence that interior spatial settings exert on service experiences and on user-provider relationships.

Climbing back the ladder of multilevel governance in social services provision

Against the considered territory-based policy framework, the paper focuses on FASS provision in the city of Bologna, Emilia Romagna Region, where welfare and urban planning policies have traditionally been implemented with far sighted instruments and within an extraordinary political continuity. Introduced by the Law 328/2000 to homogeneously accomplish the access to social services throughout the country, FASS have been implemented over time according to different regional laws and have been financed by the National Fund for Social Policies together with other local resources. FASS were conceived by the National Social Plan (*Piano Sociale Nazionale*, Dpr. 3/5/2001) with four main purposes: to inform, to provide help and counselling, to gather data about social needs and existing services, to promote citizens participation and community development (Pesaresi, 2008). Emilia Romagna introduced FASS with the regional law n. 2/2003, naming them ‘Social Counters’ (*Sportelli Sociali*). Following the regional guidelines, social services have been planned dividing the regional territory in districts, each of those hosting at least one Social Counter. The Municipality of Bologna introduced Social Counters in 2008, within the second edition of the Local Welfare Plan (*Piano di Zona*). Together with the new national territorialised policies, a huge process of decentralization reshaped the organization of public administration and the services provision in the city. In fact, from 2008 to 2016 welfare policies in Bologna have been managed at the neighbourhood level, where small local councils had the political and economic power to organize and provide social assistance services. The city was divided in 9 neighbourhoods and counted 10 Social Counters, one per each neighbourhood with the exception of Navile, the most populated area of the city, that had two. (Annichiarico *et al.*, 2009). Within this configuration, Social Counters were usually located in multifunctional buildings known as *Quartieri* (neighbourhoods) and worked in

strict contact with Neighbourhood councils, on which they depended. These structures hosted local administration and social services offices, school-related services and general register counters. Moreover, spaces dedicated to the activities of local associations could be found, together with multipurpose rooms for public events or collective meetings.

This configuration changed in 2016, when two intertwining reforms reshaped the entire local welfare system as well as the neighbourhood-based division of the city. The National restraints on public expenditure, together with the necessity to tackle different social and demographic challenges, led the Municipality of Bologna to rethink the structure of public administration and to reform the decentralized system of services provision (Tomesani, 2018; 2019, Evangelisti, 2018, Orioli, 2019). The neighbourhoods were reduced from 9 to 6, each of them counting around 60.000 inhabitants (see Figure 1). This implied both a significant reduction of public employees and a reconfiguration of the former decentralised administrative headquarters. The number of *Quartieri* buildings shifted from 9 to 6 and the offices of Social Counters from 10 to 6.

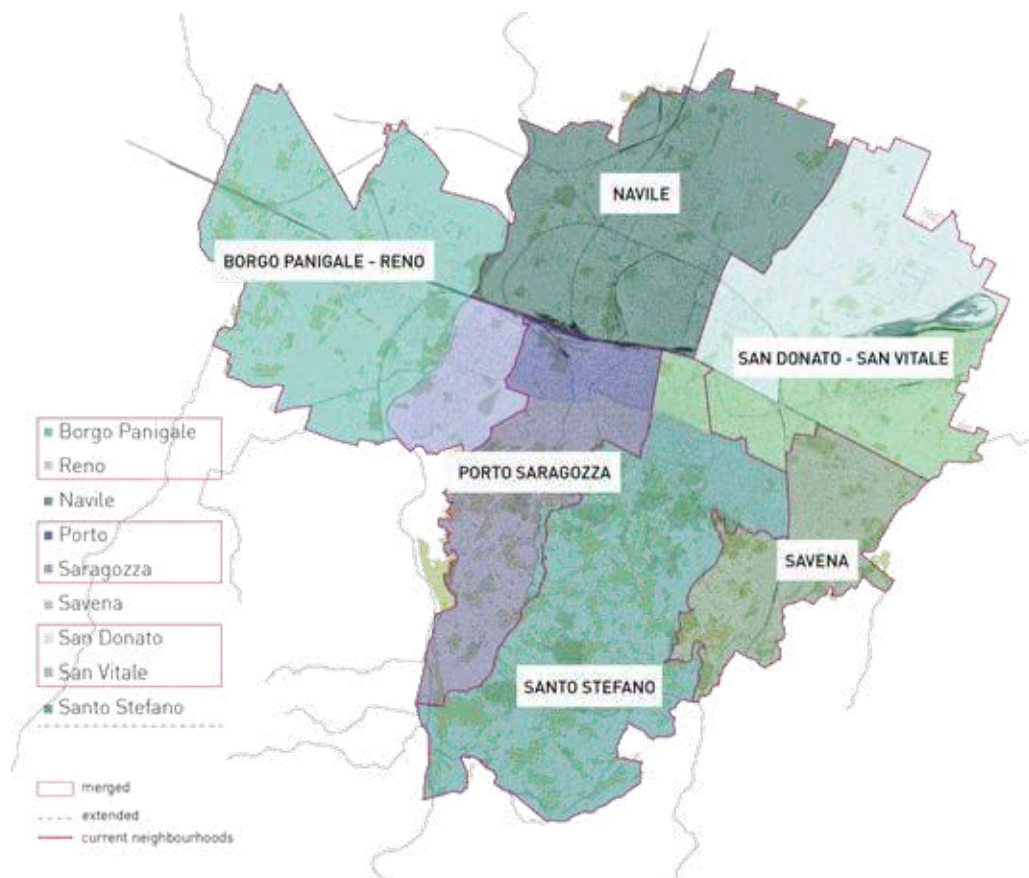


Figure 1: The neighbourhood reform of 2016. Elaboration of the author from the Open Data Comune di Bologna, 2016.

In parallel, due to the local welfare reform enacted in 2017, social services provision has been recentralized from the neighbourhood councils to a dedicated area of the Municipality named Area Welfare and Promotion of Community Wellbeing (*Area Welfare e Promozione del Benessere della Comunità*, from now on: Area Welfare). In practice, the decisional and economic powers of Neighbourhood councils have been drastically reduced, while welfare services, still relying on a territorial subdivision, became directly dependent on the public administration through the Area's chiefs. If on the one hand this new configuration in some neighbourhoods entailed a physical separation of social services offices from the *Quartieri* buildings and their services, with which significant collaborations have been consolidated over the years, on the other it was an occasion to rethink social services headquarters as independent monofunctional structures. This has to be read

together with the shift from a category-based system, that provided access to social services in different offices according to specific categories of need (elderly, disabled, adults, minors.), to a transversal one, guaranteeing a universal access in specific informative points, from which people could be reoriented to more specialized services (Tomesani, 2017). This orienteering task was assigned to local Social Counters (Regional Deliberation 1012/2014). Moreover, this reform also entailed a new Community-based welfare system (*Welfare di Comunità*), enhancing the interactions between different public actors, third sector bodies and active citizens. The idea was to promote local resources to develop a networked system of self-help, in the light of a possible ‘community taking over’¹ (Piano di Zona 2018-2020; Foschi, 2018). In this sense, social operators have been challenged to reinterpret their role as mediators between citizens’ needs and available local resources.

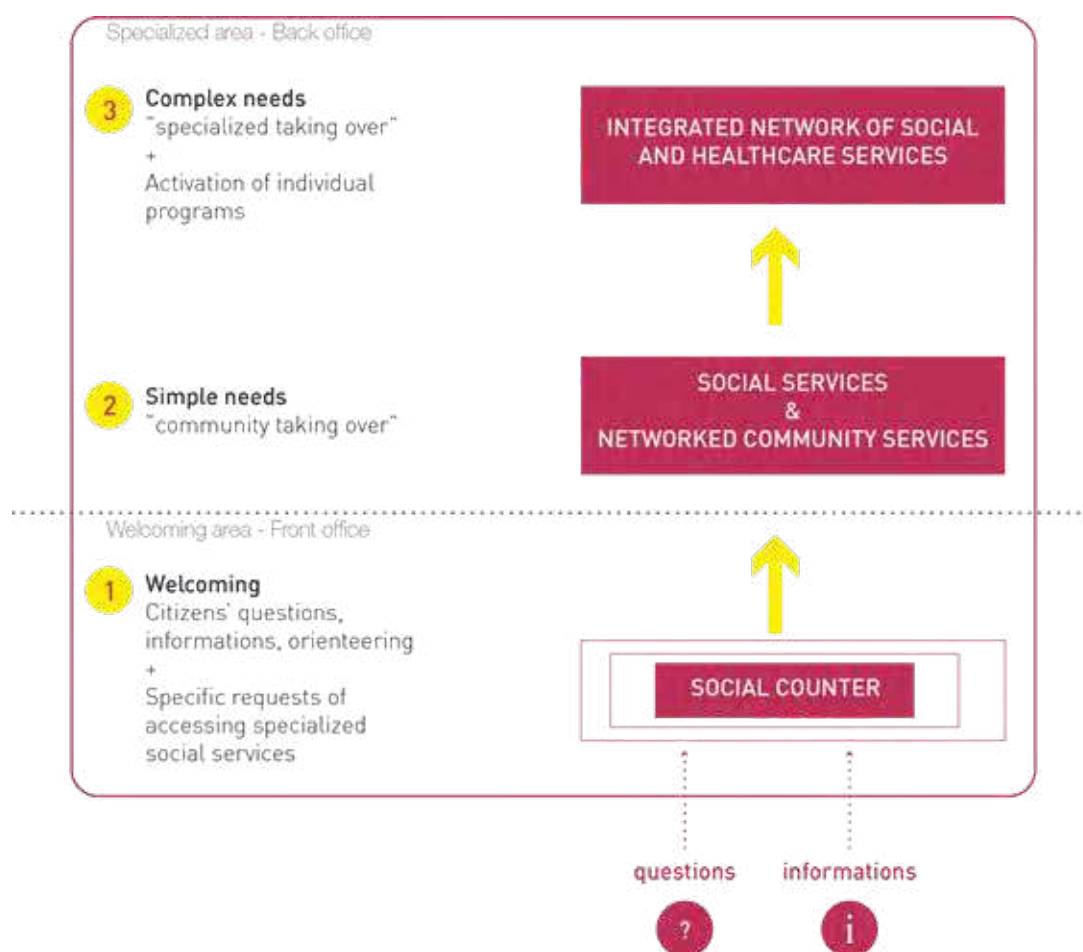


Figure 2: the pathway through the social services in Bologna. Schematic elaboration of the author from Forni, Regazzini, Paltrinieri, 2009, Tomesani, 2017.

¹ ‘Taking over’ translates the Italian *presa in carico*, i.e. the official process in which social assistants develop personalized projects for families or individuals and activate a series of ad hoc social and healthcare services.

The image represents the role of Social Counters as a *door* to access the overall local system of social services. In these spaces citizens can be reoriented to other services according to the complexity of their needs. In case of ‘complex’ needs they are taken over by the specialized social or healthcare services provided by the Municipality or other private bodies (e.g. ASP, Azienda Servizi alla Persona). In case of ‘simple’ needs, they are reoriented to a networked system made up by the Municipality, Third Sector Bodies, local formal/informal groups, etc. This ‘light’ networked taking-over is a major point of the renovated local welfare system and calls for the collaboration of different administrative levels and professional skills. In fact, the reform promotes a strong cooperation between the Area Welfare and the Area New Citizenships, Social Inclusion and Neighbourhoods (*Area Nuove Cittadinanze, Inclusione Sociale e Quartieri*), on which the reformed Neighbourhoods currently depend. The two areas collaborate through the Network Offices (*Uffici Reti*) with which the Representatives of local social services are in close contact. Born to monitor the initiatives and activities spread on the neighbourhood territory, these offices have the task to develop social inclusion through community capacitation and networking and depend on the central new-born Civic Imagination Office (*Ufficio Immaginazione Civica*). Their role is strictly related to the activities of the Urban Innovation Foundation (*Fondazione Innovazione Urbana*, FIU). This body, half participated by the Municipality of Bologna and half by the University of Bologna, organizes the majority of participatory projects in the city² and is entitled to monitor citizens needs in strict collaboration with the Network Offices, through the organization of periodic workshops named *Laboratori di Quartiere* (Tomesani, 2018). All the interactions and the interdependencies among different actors are represented in the scheme below (see Figure 3).

² The FIU’s collection of citizens requests in different areas of the city will constitute the basis for the next Urban Plan, that will be presented by the Urban Planning Department of the Municipality in 2020 (Evangelisti, 2019, Orioli, 2019, Ginocchini, 2019). This information is currently reported in the Urban Innovation Plan (see references).

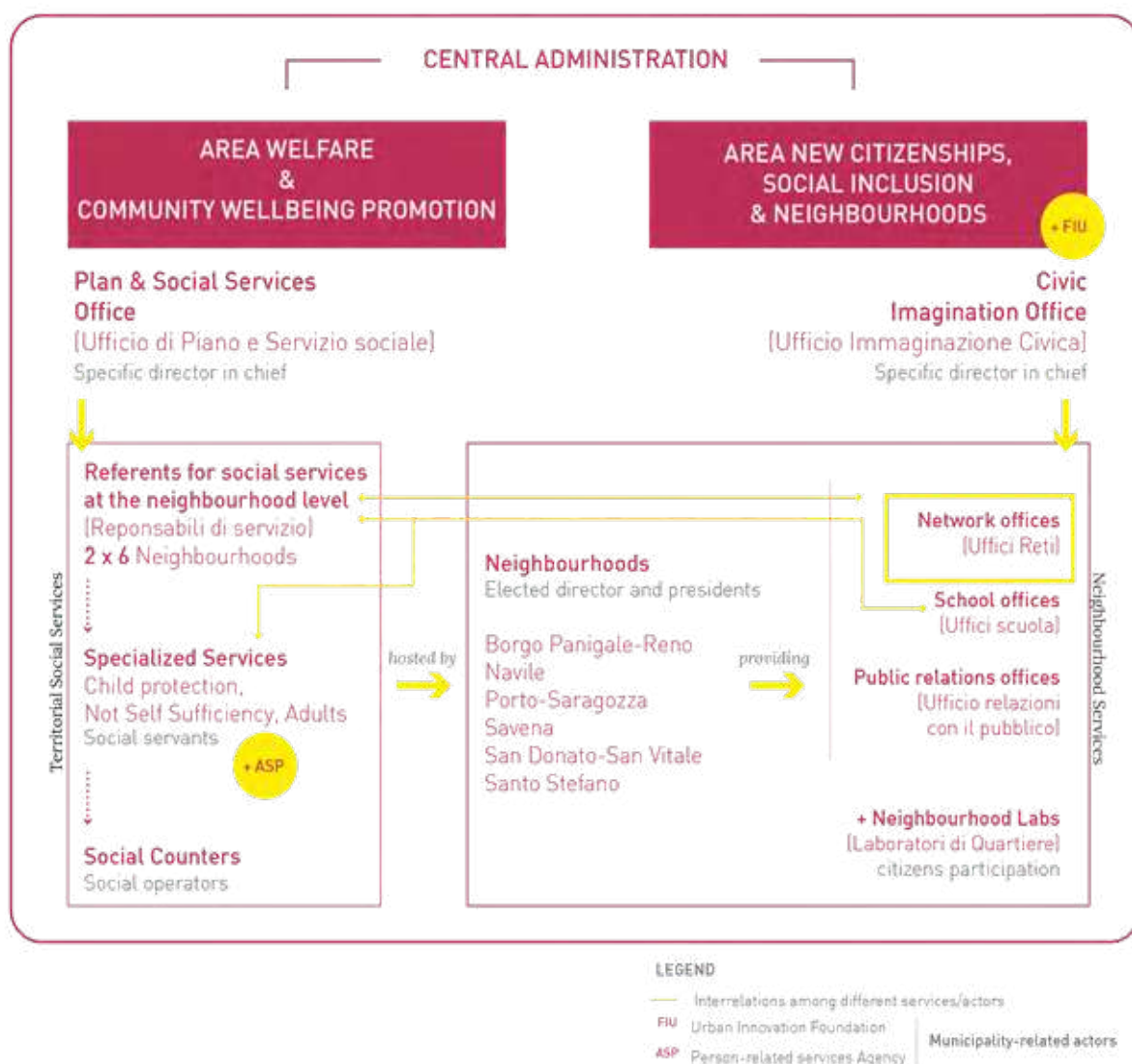


Figure 3: scheme of the governance of social services provision in Bologna. Interrelations among administrative levels and actors. Elaboration of the author from the fieldwork interviews (see references).

Against this background, Social Counters represent citizens' first access to a wide and complex system of welfare, of which they experience multiple features. The following paragraphs will be dedicated to the analysis of their spatial configuration in a specific neighbourhood of the city, chosen for its representativeness of the ongoing transformations. The aim is to show the influence of these institutional reforms on first access services through a spatial perspective (§2) The analysis relies on direct personal observations³ of the Social Counters and semi-structured interviews to key actors of the services provisions.

³ The author spent two months in the Social Counters in Bologna (February and March 2019). The direct observations have been transcribed in a logbook and are accompanied by drawings and photographs that would be presented during the conference.

Localization, containers, contents: the case of San Donato-San Vitale

The two mentioned reforms had major impacts on the spatial configuration of social services provision in Bologna. A process of redistribution of both neighbourhood councils buildings and social services headquarters started in 2017, under the coordination of the central Office for Logistics of the Municipality and the Department for Public Works, together with other involved Areas (§3). As far as concerns the spaces of Social Counters, the result of this collective consultation was a plan of the forecasted transformations and the financial measures devoted to their implementation (Bruni, 2019). Its contents were agreed by the involved central administration offices and the local Representatives for the social services (Tomesani, 2019).

Among the transformations forecasted for the 6 Neighbourhoods, the following paragraphs would focus on San Donato-San Vitale, the most representative of the ongoing changes and one of the most complex for its territorial, social and demographic features. Created in 2016 with the unification of San Donato and part of San Vitale (see Figure 1), the neighbourhood counts 65.892 residents, the majority of which are adults (45-64 years old) and young adults. Among the 35.068 resident families, 10,1% are single parents, whose 85% are single mothers with children. The social services take over 4,2% of the population, in particular families with minors (Piano di Zona del Comune di Bologna, 2018-2020). The neighbourhood is renowned for its public housing estates, hosting many low income residents since the 60s and attracting numerous foreign families. Even if they already underwent a series of regeneration programmes concerning both the physical and the social dimensions, these areas are still in the spotlight of public debates and require a prior attention in local welfare policies and services provision.

As the result of two neighbourhoods' unification, the Neighbourhood San Donato-San Vitale presents different social services' headquarters, inherited by the former decentralized organization. Before the 2016 reform, San Vitale hosted in a single structure both the local social services and the *Quartiere* council offices, not far from the city centre and well-connected by public transports (Via Rimesse,13). San Donato counted three different buildings for social services, each one addressing different categories of need, respectively located in: Via Zanolini 2, just outside the historical city walls, Via Pirandello 8, in one of the mentioned public housing estates, Piazza Spadolini 7, at the underground floor of the *Quartiere* building. Social Counters, one per each neighbourhood, were located both in the structure of Via Rimesse 13 and in Piazza Spadolini 7. This localization was the result of former political choices, strictly dependent on the pre-existent real estate asset of the Municipality. The new configuration didn't entail a drastic change, but significantly relocated services in the different existing structures as shown in Figure 4.

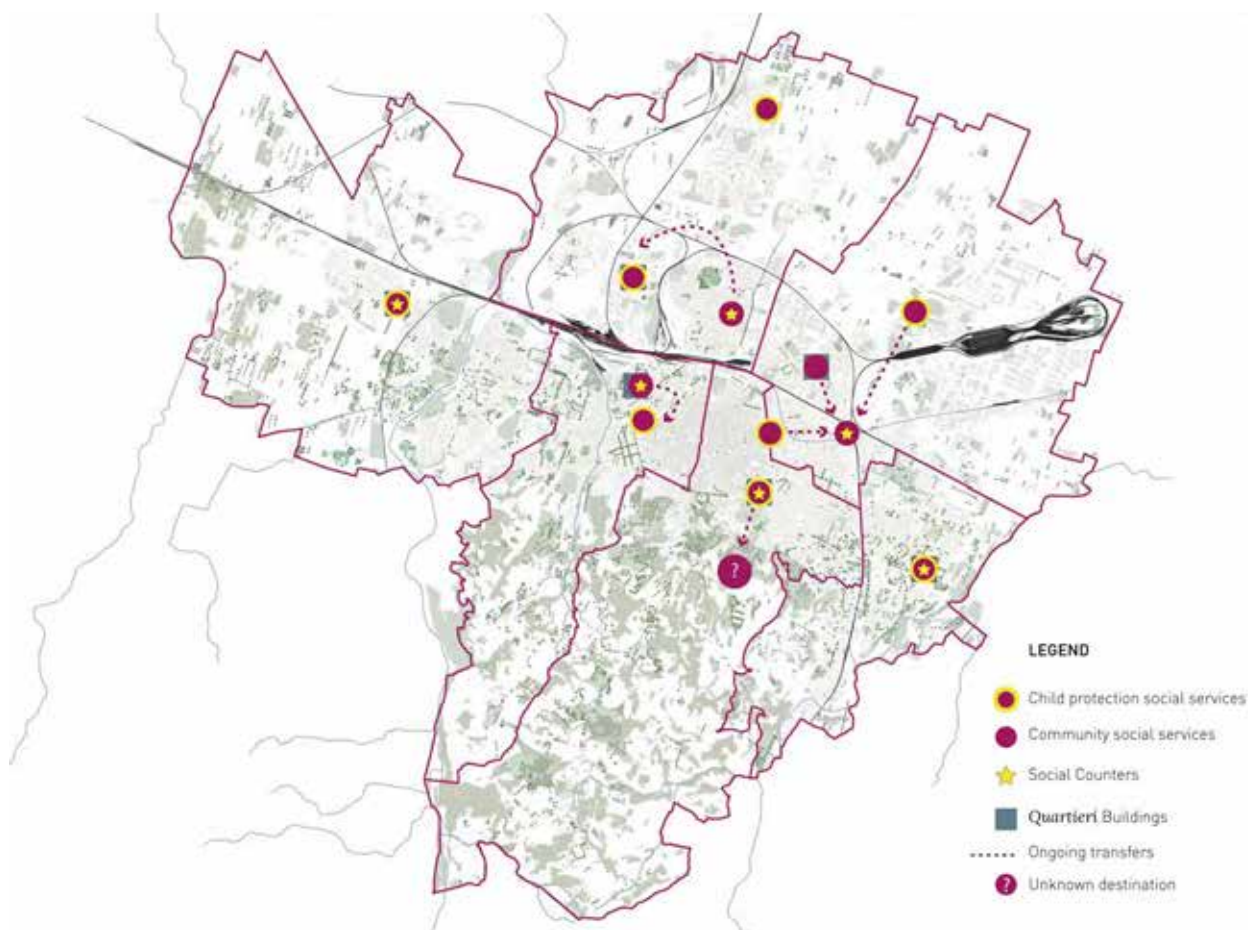


Figure 4: Localization and forecasted transfers of Social Services and Neighbourhood headquarters in Bologna. Elaboration of the author from the fieldwork, 2019.

For what concerns the spaces of FASS, the reform caused the reduction of Social Counters from two to one, due to the unification of the former neighbourhoods. Moreover, the Representatives of local social services, together with the chief of Area Welfare, the Office for Logistics and the Department of Public works, decided to aggregate all the decentralized social services – including Social Counters - in the building of via Rimesse 13, with the exception of the offices in Via Zanolini 2 and in Via Pirandello 8⁴. Originally designed as a school, this building was turned into San Vitale neighbourhood's headquarter in 2008 and also hosted a daily elderly centre and the offices of social services, located in a small portion of the ground floor. When the elderly centre moved to another dedicated structure and the Neighbourhood offices were relocated, the Municipality took the chance to plan a possible extension of the social services to the whole structure (Figure 7,8). Today, the ground floor

⁴ As the Representatives of local social services have underlined, the combination of healthcare and social services located in via Zanolini 2 and in Via Pirandello 8 is fundamental to keep the long-standing service interactions and to maintain an already consolidated political consensus which rely on the presence of social services at the local level (Representative 1, 2019; Representative 2, 2019). As a possible compromise, the Area Welfare has suggested to maintain in Via Pirandello 8 a set of scheduled social orienteering and counselling activities in place of a stable office (Tomesani, 2019).

hosts social assistants and social counters offices, while the first is almost empty, except from two offices occupied by two social assistants of ASP (Azienda Servizi alla Persona), that would be relocated during the renovation works. This project has been approved by the different Areas of the administration in 2019 and would be implemented in the next years (Representative 1, 2019). The decision relied on the semi-central position of the building, but also on the idea that aggregating all the social services in a single space would have guaranteed the continuity of contacts among the social operators, improved the users experience through the complex local welfare system and contained real estate-related public expenditure (Tomesani, 2019).

At the 'street level' – Observations from the Social Counters

The spatial configuration of Social Counters is organized in the whole city following general service guidelines provided by the Area Welfare and is generally arranged in three main spaces: the waiting room, where people are welcomed; the counters, where people are received by social operators and can express their needs; the backoffice, where social operators work when they are not at the counters and where they share doubts and information with colleagues. Then, every Social Counter in the city develops its own features according to the structure in which it is hosted. The following sections would focus on the direct observation of the spaces in via Rimesse 13, whose activities are framed in the theoretical stream of *Street Level Bureaucracies* as introduced by Lipsky in 2010. Within this framework, this paragraph aims at addressing the effects of spatial configurations on services provision, in particular during the first meeting point between citizens and institutions. The reported description and quotations are based on the authors' logbook, written in February 2019 during the site-based research. More spatial details about the user-provider relations in spatial terms are shown in Figure 5 and 6.

The main building entrance, that still brings the sign of the old Neighbourhood services, is equipped with stairs and ramps for disabled people. A glass door illuminates the reception desk from which citizens can be reoriented to different offices, and a small *waiting room* is dedicated to those users who already have an appointment with a social servant. On the left, a dark small corridor leads to a wider *waiting room* dedicated to Social Counters' wait. From this narrow space is already possible to see part of the future expansion of the services: a hole in the wall was made to test its consistency and is still open. Second-hand furniture and childish paintings representing the characters of 'Snow White' decorate this area. There's no room to swing a wheel chair or a pram, mothers should wait in the corridor standing against the walls. At the bottom of the room, a young woman sitting behind a desk welcomes people and invites them to take a number from a ticket machine. Her task is to ask them what they need and if they have prepared the correct documents to access the services. This welcoming figure is known as 'Open⁵' and has been introduced in January 2018 by the central administration to ease the working loads of social operators at the counters, saving both citizens' and employees' time in case of misleading information or incomplete documents. It is easy to understand why: in a single morning more than 60 people might come to the counter asking for economic support, social assistance, the activation of home-based services, or just to chat with someone willing to listen to them. Not everyone who

⁵ The Open preliminary filter to Social Counters is provided by a joint venture among the Municipality of Bologna, Cidas, Arci and Antoniano social enterprises. Around 20 people among 25 and 35 years old, already graduated or about to finish their studies, have been selected through a public call to welcome citizens in the waiting room, working 9 hours a week in shifts. A graduation in social sciences was not a specific requirement of the call but could constitute a preference for the selection. Before entering in contact with citizens they have followed a 4 hours training course to understand the activities of the Social Counters and few skills to manage the interactions with the public.

accesses Social Counters has experience of social services provision or is comfortable with the environment and its features or languages. *“Someone told me to go to the so called Social Counters, but I don’t know where to go...”* – asks a woman around 50 years old to the receptionist. *“I remember I went to the Social Counters many years ago, but they were in Piazza Spadolini: why did you move them? They were way more accessible over there! The Municipality never does something right”* – complains another user with the Open. People accessing the structure are generally disoriented and tend to ask for help to those they meet first. They don’t know where to go neither who is entitled to listen to their needs. A red and yellow totem with the logo of the Social Counter is located at the entrance of the small corridor, it is barely visible. This sign was thought by the central administration to homogenize the graphic identity of Social Counters, helping citizens to find this service within multifunctional structures. If they don’t find the totem or any other indications, people have to ask to, or are asked by, those they met as they step in. The first contact might be misleading: both the Open and the receptionist are not professionals of the welcoming interaction neither apprised of the overall social services provision or informed about service-related news. This might cause the unpleasant redirection of users who are struggling to find their way through welfare provision: *“Where else are you addressing me now? I have been here twice, you have always reoriented me to other services and they told me to come back here. Now I sit and wait. Full stop!”* – states an annoyed man to the Open. Despite these situations, people tend to rely on the information given at the welcoming desks, the nearest and the quickest they can find.

From the waiting room citizens are called to enter the *Social Counters*, the actual meeting points between citizens and public institutions. These spaces are enacted in small offices equipped with a desk, a printer, a computer and a board with information on the ongoing economic or social support measures. The offices are very impersonal, with standard furniture and few objects on the desk. This is mostly due to security measures introduced by the central office of logistics, concerned about social operators safety after several assault episodes. Even the position of the desk is thought to ease a possible escape of services providers, often to the detriment of users comfort. Considering the high numbers of people accessing the counters, some element of discomfort are (consciously or not) introduced to speed the meetings and receive the highest possible number of users. However, when a recipient with complex requests comes to the counter, social operators are entitled to understand his multifaceted need, to organize his/her future steps inside the social services. *“Is there an additional chair? I think it would take long and I don’t want my son to stand all the time”* – says an eighty year old man, accompanied by his son. These meetings could take from 20 minutes up to an hour, with evident drawbacks for those who stand in the tiny waiting room. On the contrary, economic supports are provided in 10/15 minutes, with a little interaction between citizens and social operators. This user-provider separation, emphasised by the presence of the desk, helps the social operator to prevent an excessive level of intimacy and personal involvement (Dubois, 2018) and to consolidate their institutional role. This attitude belongs to ‘an ambivalent identity’ of the street level bureaucrats (*ibidem*, 179), whose struggle is to balance their personal system of values, on which might rely a more or less extensive use of discretion (Brodikin, 2008; Dubois, 2018; Lipsky, 2010), and the tasks of the institution they are representing. This level of discretion not only belongs to the services provision, e.g. when bureaucrats decide which recipients deserve a support or have to be reoriented, but is also reproduced in spatial terms, when providers welcome certain users (typically mothers with children or elderly women) or protect themselves from others (typically adult men). On this purpose, street level bureaucrats tend to organize the space according to specific situations, even if it entails a violation of rules or suggestions given from the central administration. A shift in furniture’s position might facilitate the communication or impede undesired interaction according to the situation. *“You never know which is the mood of who’s crossing that threshold and how he/she would react to your statements”* – says a social operator pointing the door – *“but after years of experience you immediately understand whether is the case to take precautions or not”*. In this perspective, a very common trend among street level bureaucrats is to keep counters doors open to let people in the waiting room notice a possible difficult situation. This goes to the detriment of recipients privacy, to be universally guaranteed by right and particularly assured in services provision, but at the same time represents a fundamental strategy for bureaucrats safety.

Along the corridor, a small room dedicated to the *Backoffice* activities is shared by 4 social operators, two of them sharing the same desk. They work in shifts with their colleagues at the counters. Even if designed for other purposes, this space is frequently used for the provision of particular economic supports. At the same time, the Backoffice is also a sort of ‘outburst room’, where all social services’ employees come to take a break and chat with their colleagues. The result is an overcrowded space, where social operators have difficulties in concentrating and managing phone calls and where there is little room to accommodate recipients. Provider-users interactions are constantly limited by the presence of other social operators chatting, speaking at the phone, and entering the room. Moreover, here social operators express doubts or complaints that shouldn’t been listened by recipients in respect of the institutional image. Accustomed to uneven treatments and uncomfortable situations, users don’t usually complain about inappropriate spaces, even when they obstacle the expression of their need or undermine their privacy. Some of them try to capture other providers’ attention when social operators don’t respond to their need; others are visibly embarrassed. On the other turf, social operators take advantage of their colleagues presence to collectively solve uncertain or difficult procedures and/or to strengthen their institutional position in front of users grievances. Sharing the same space, user-recipient relationships tend to become collective, to the detriment of recipients privacy and their personal will to share his/her own needs.

As the observations show, spatial configurations affect user-provider relations and services supply in different ways. The analysed ‘moments’ of the Social Counter’s activities (welcoming and waiting, expression of the needs, backoffice activities and consultation with colleagues) are organized in specific spaces (welcoming desks and waiting rooms, counters, backoffice), each of them presenting a series of strengths and criticalities (Figure 5, 6). This rigid separation, designed following the guidelines of the Office of Logistics and the Area Welfare, is often overcome both by users and providers to adjust the service environment to different situations. Therefore, different professionals arrange the available spaces depending on users’ needs and/or services circumstances according to a certain degree of discretion. In this sense, the spaces of the first meeting between citizens and public institutions can be understood both as *site-specific*, i.e. enacted in different spaces according to the available resources, and *case-specific*, i.e. reframed according to different users’ features and demands. While encouraging new design strategies towards a more flexible spatial setting, these practices are firmly grounded in Regional and Municipal laws and guidelines that call for standardisation as a mean to guarantee a more homogeneous, universal and safer system of service provision.

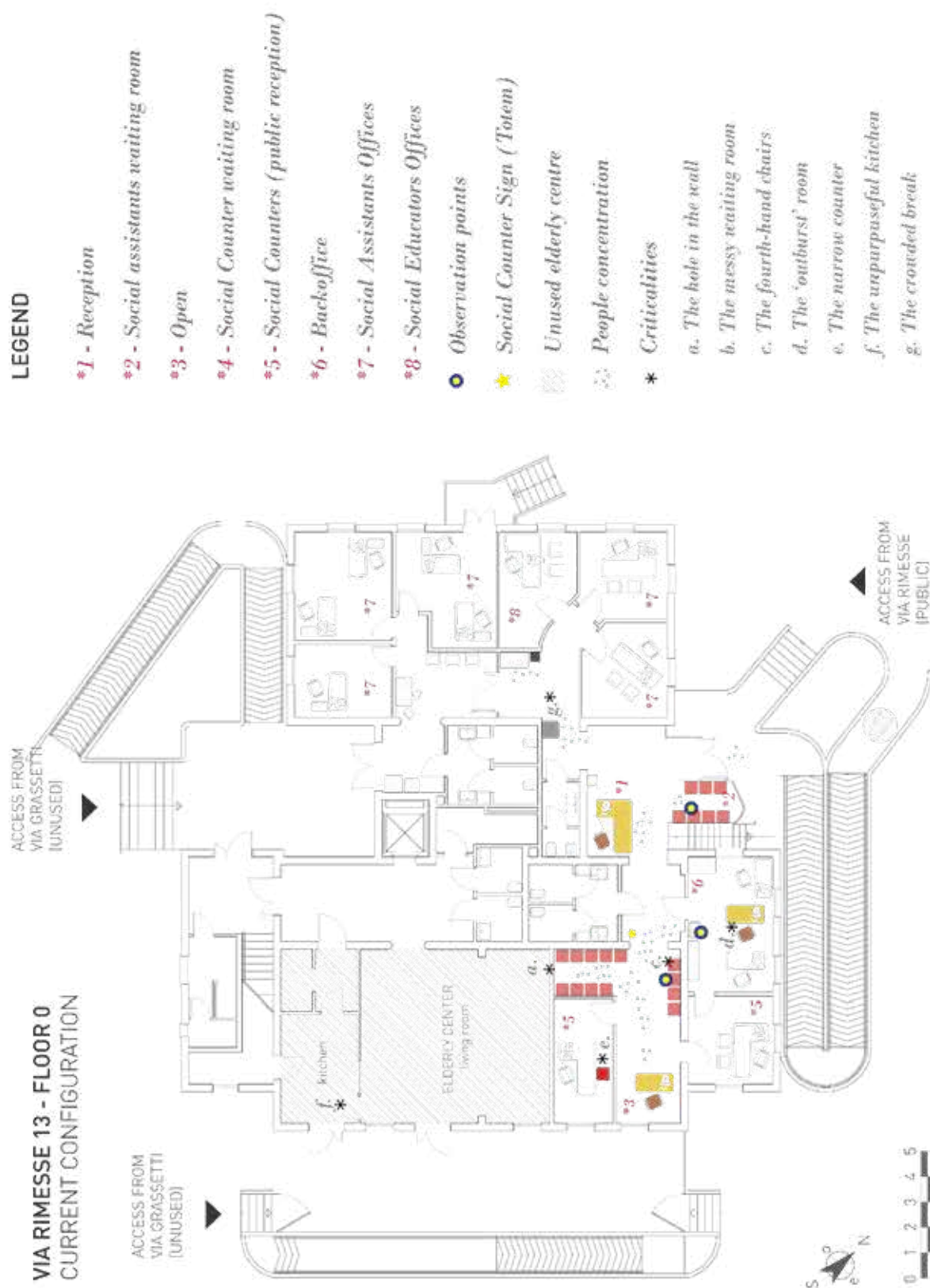


Figure 5: Plan of the building in via Rimesse 13, Bologna. Elaboration of the author from the direct observations and the cadastral plan.

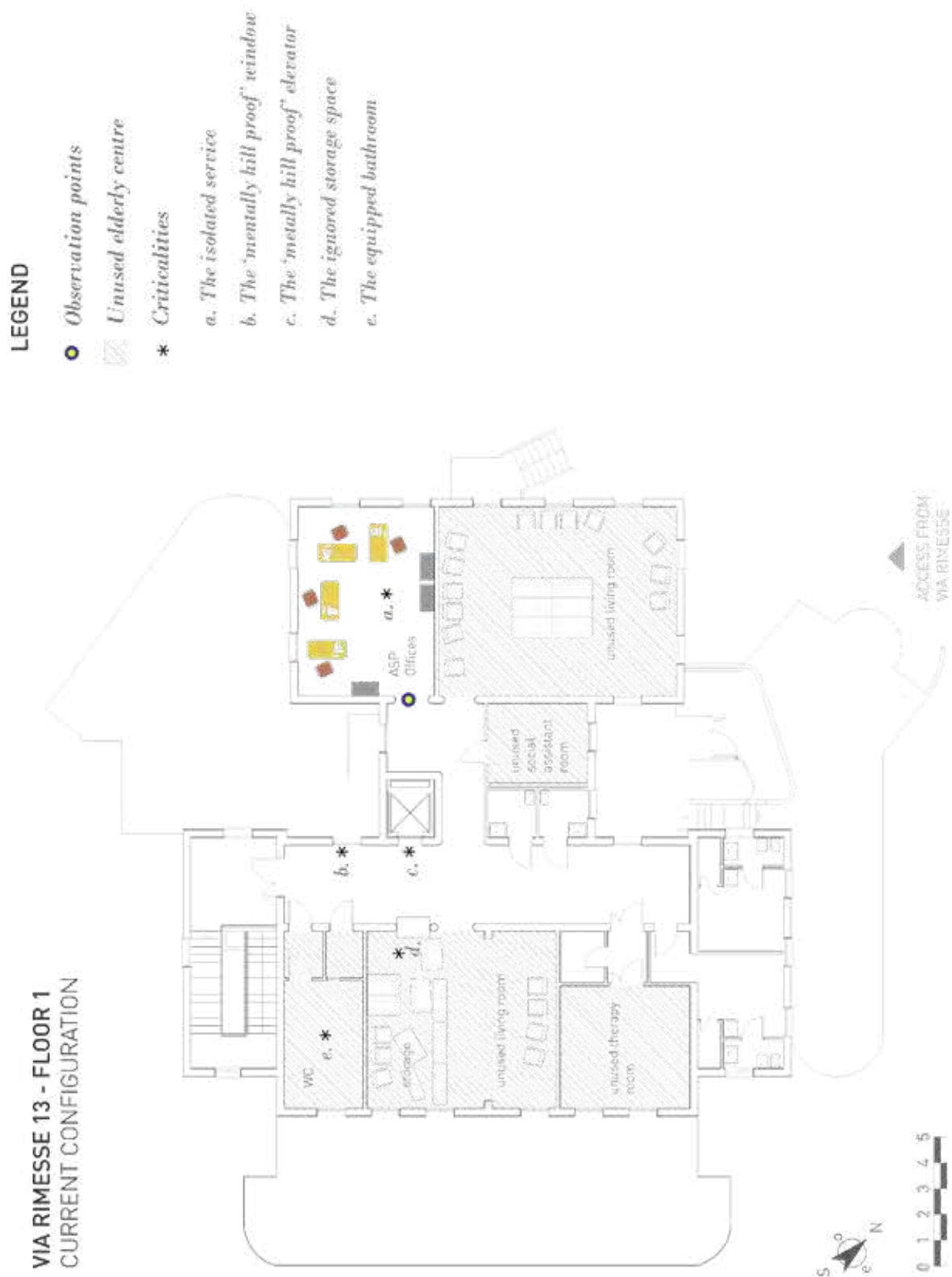


Figure 6 Plan of the building in via Rimesse 13, Bologna. Elaboration of the author from the direct observations and the cadastral plan.

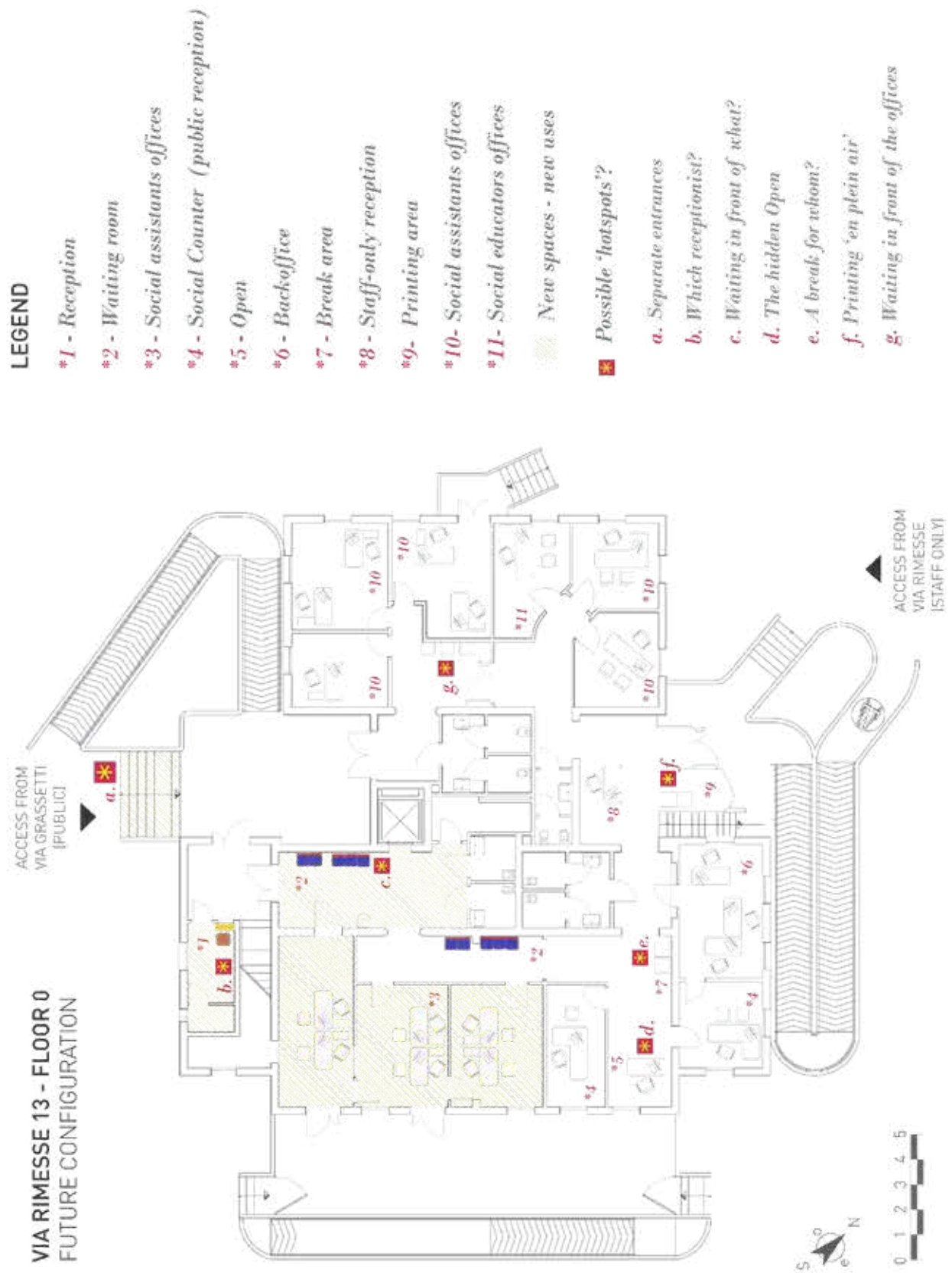


Figure 7: Plan of the future configuration of the building in via Rimesse 13, Bologna. Elaboration of the author from the design proposals of the Office for Logistics and the Area Welfare, 2017.



Figure 8: Plan of the future configuration of the building in via Rimesse 13, Bologna. Elaboration of the author from the design proposals of the Office for Logistics and the Area Welfare, 2017.

To conclude: Fine-grain analysis for wider policy orientations

The analysis developed in the previous paragraphs aims at addressing the different possible spatial drawbacks of institutional changes in social services provision from different policy perspectives. Among the FASS as traced by the national norms, the research focused on Social Counters in the city of Bologna, selected as a virtuous context of organizational and policy transformations. Grounding on two substantial local reforms that reshaped the local welfare provision, the research analyses the spatial effects of governance's changes focusing on three different dimensions: the distribution of services in the city (localization); the building in which services are provided (container); the spatial features of service provision and the user experience (the content). The analysis considers these dimensions simultaneously, basing on interviews with local administrators and social operators and grounding on personal site-specific observations.

Such a 'fine-grain' investigation is embedded in the idea that micro-scale observations could encourage further learnings on the links between different actors and policy levels and show how they are interconnected with wider systems. (Healey, 2015, 121). From this perspective, the research investigates how different levels of governance and policy instruments (Lascoumes and Le Galès, 2007) are intertwined in spatial configurations of Social Counters. Moreover, climbing back the ladder of multilevel governance, this contribution showed how different policy levels are/have intertwined in the creation and the modification of Social Counters spaces. For what concerns the National level, a major focus has been dedicated to the processes of policy territorialisation and decentralisation of the first 2000 and their partial *about turn* with the beginning of the economic crisis, that entailed a significant reduction of resources at the local level but also a drastic shrinkage of the public employees. In Bologna these phenomena led the basis for a reorganization of the neighbourhood subdivision and the local welfare reforms, implemented between 2016 and 2017. To investigate the effects of these reforms on the Social Counters, this contribution has focused on the case of San Donato – San Vitale neighbourhood. The main consequences of these normative changes can be summarized in three aspects. First, in those neighbourhoods that have been merged such as San Donato-San Vitale, the number of users have drastically increased, while social counters and social operators have shrunked, with significant drawbacks on social servants' workloads, on service localization and accessibility and on the consolidated interactions with other existing meaningful services. Second, these changes influenced Social Counters spaces, whose renovated organization led to a partial obsolescence of the existent structures and required different spatial settings that are still to be implemented. Third, social operators have been challenged to interpret increasingly different social demands with few dedicated instruments and to orient them to a variety of existing actors and services of whom they were not aware before.

Against this framework, the spatial configuration of services might be considered as both the results and the driver of institutional changes and policy choices. In particular, through spatial analysis it is possible to observe how different levels of governance are intertwined in services provision at the local level, and frame the main criticalities or advantages of such a complex system. Moreover, looking to governance changes through street-level observations of spaces and practices might lead to a deeper understanding of policy experiences and raise relevant aspects to reorient decision making processes and to develop more equal strategies of services provision.



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Institutional patterns for metropolitan governance in LAC countries

The differentiated evidence from Bolivia and Brazil

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Abstract: Within the framework of regional urbanization and post-metropolization (Soja, 2011, 2005, 2003) and global cities (Sassen 2016, 2008), Latin American and Caribbean (LAC) metropolitan areas, often grown throughout the aggregation of adjacent municipalities, under the pressure of urbanization and urban growth (Balbo, 2014) have not been properly governed (Maricato, 2011). Nevertheless, numerous cases in LAC countries show that horizontal cooperation among municipalities and vertical cooperation among the municipal level and other government levels are essential to promote shared and effective governance and territorial coordination (Souza, 2017). To do so, a multi-scalar approach (Brenner, 2016) in territorial policies should be used, implying simultaneous horizontal and vertical cooperation among government levels and actors, under a supposed direction for development.

In this light, the paper discusses empirical pieces of evidence from the observation and analysis of a range of the metropolitan configurations, where interinstitutional cooperation has played a key role in setting a metropolitan governance pattern, in improving urban management, especially in basic services.

The selected case studies are the inter-federative cooperation in the State of São Paulo (Metropolitan Regions of São Paulo and Baixada Santista), in the State of Minas Gerais (Metropolitan Region of Belo Horizonte) and some metropolitan experiences in Bolivia (de facto region of La Paz-El Alto, and de facto and de iure region of Cochabamba).

Keywords: metropolitan governance, institutional configurations, Bolivia, Brazil

Introduction

This study focuses on the multi-level metropolitan governance configurations in LAC countries, specifically in institutional and planning terms, with the awareness that metropolitan governance implies also statistical, social and economic factors and dynamics, not considered in this work. In order to clarify the scientific field of this discussion, this paper focuses on governance in spatial and political terms, and so, considers governance as a political process oriented to the allocation of rights for spatial uses and transformations, implying the actions and interactions of local actors dealing with the technical knowledge of planning practice (Mazza, 2015).

The joint analysis of these configurations is framed within the respective national planning systems in order to understand the relationship between each metropolitan governance and the respective planning systems and the main features, strengths, weaknesses, threats and opportunities of the LAC metropolitan governance. More in detail, this paper analyses different institutional metropolitan governance patterns from a range of metropolitan regions in Bolivia and Brazil, considered as a significant qualitative sample, at least because the metropolitan development in these countries was based on different relationship state-market. According to the field research carried out by the authors from January 2018 to September 2018 (data and information presented in this paper are verified up to September 2018), it emerged that Bolivia is a liberal centralized state, with a low level of decentralization and a very low institutional capacity, but a strongly mobilized population with an impact on territorial management, while Brazil is a liberal federal state, with a low level of decentralization, high institutional capacity, suffering from strong real estate sector's speculative initiatives.

In Bolivian metropolitan regions, urbanization has been mostly informal and driven by rural-urban migrations of indigenous farmer communities and results from the mix of the indigenous and post-colonial culture. In Brazilian metropolitan regions, hard urbanization has been driven by industrialization and tertiarization, resulting in a rise and strengthening of the urban middle class.

In LAC countries, the population was in 168,918 million in 1950, 645,593 million in 2017 (UNDESA, 2017), and so, in less than 70 years, the population has almost quadrupled. Considering in the same period (1950 – 2017) Brazil has shown almost the same trend (53,975 to 209,288 million) and Bolivia has shown a little lower trend (3,090 – 11,052 million). In 2018, in LAC area, that together with Northern America has the minor rural population proportion with respect to the other continents (less than 20% of the total), almost half of the total population lived in cities with more than 500.000 inhabitants and especially in cities from 1 to 5 million inhabitants and with more than 10 million inhabitants. In Brazil, approximately half of the urban population lives in the city with more than 1 million inhabitants, and approximately half of the metropolitan inhabitants live in cities with 1 to 5 million inhabitants (this paper is considering Baixada Santista: 1,853 million; Belo Horizonte: 5,972 million; São Paulo 21,650 million). In Bolivia, more than half of the population live in one of the three cities with over 1 million inhabitants (La Paz-El Alto, 1.814 million; Cochabamba, 1,237 million; Santa Cruz de la Sierra 1,641 million). (UNDESA, 2018)¹

A metropolitan region in territorial terms is a large (or mega, being this the case of Brazil, and other LAC countries such as Buenos Aires in Argentina and Mexico City in Mexico, etc.) urban agglomeration coinciding with the sum of adjacent mostly urban municipalities. In both the studied countries, this condition is verified. Both in Bolivia and in Brazil there is an official definition of the metropolitan region thanks to the formal recognition of the existence of the metropolitan regions as well as a central metropolitan policy.

¹ See also: <https://population.un.org/wup/Country-Profiles/>

Bolivia

In the Plurinational State of Bolivia, that is a centralized state, the art. 280 of the State Political Constitution (2009) affirms that a region is composed of various municipalities or provinces with geographical continuity, not crossing the departmental borders. These groups of territories share culture, languages, history, economy and ecosystems and represent a planning and management space. In case of an agglomeration having more than 500.000 inhabitants, metropolitan regions can be legally established, as planning units, i.e. they would not be levels of government.

In addition to that, the Frame Law of Autonomies and Decentralization (031/2010), in the art. 26, states that a Metropolitan Council will be established in each metropolitan region, as the higher body of metropolitan coordination. It will include members from the departmental government, every municipal government and the central State. The departmental statutes and the organic charts of the respective municipalities will have to articulate planning based on the metropolitan region and participation in the Metropolitan Council.

Within the wide framework of the State Integral Planning System (Sistema de Planificación Integral del Estado, Ley 777/2016), as briefly shown in Figure 1, planning is organized into three main levels: national, departmental and municipal, community, and into two main phases: the strategic definition, based on the Integral Development Strategy, that also defines regions, including the metropolitan ones, according to the above-mentioned legal statements.

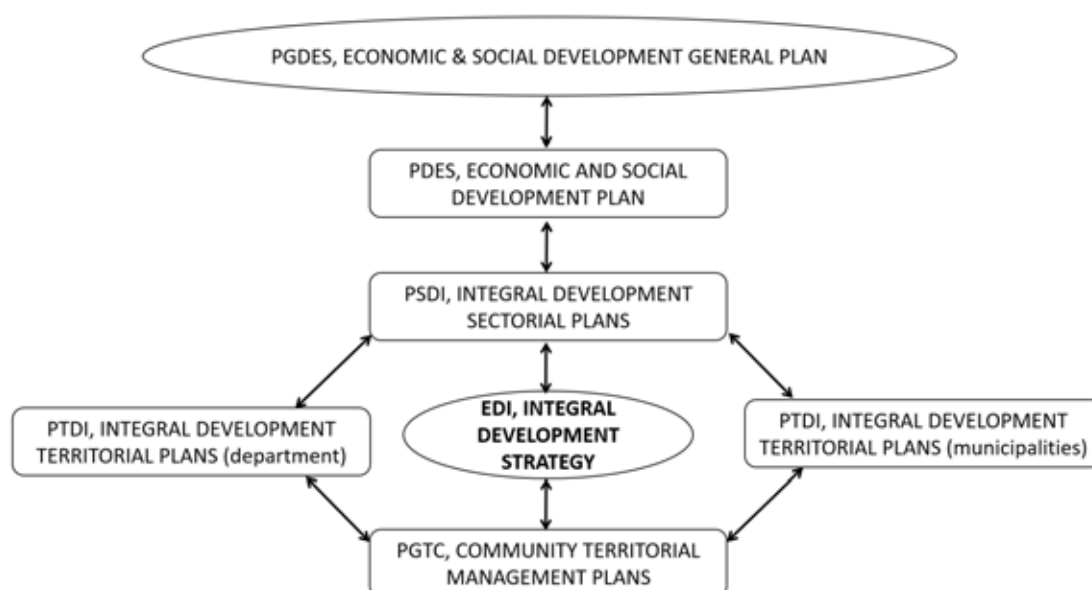


Figure 1: conceptualization of the Bolivian planning system highlighting the combination of strategy and planning

Only the metropolitan region² in the Department of Cochabamba (officially called Kanata) was legally recognized. The institutionalization of the metropolitan region occurred at the national level and was accepted by the departmental and municipal levels in a context of political affinity. Regarding the other regions, in this paper, only the case of La Paz (also called La Paz-El Alto) in the Department of La Paz is taken into consideration because of the current attempt of metropolitan institutionalization from the departmental level.

In 2014, the national Government approved the law 5332 of the Creation of the Metropolitan Region “Kanata” (2/6/2014). That legally defined the first metropolitan region in Bolivia and established a Metropolitan Council and a Metropolitan Secretary. In 2008, 2009 and 2010, three forums and two metropolitan meetings took place, and in 2010, the statutes were developed and a Steering Committee of the metropolitan community was established. Since 2012, the Committee has pursued an integral urban and rural development; a planned urban growth with regulation of land use, agriculture protection, preservation and water and recharge lands; an integral management of the basins of the metropolitan region, water integral management; and an articulated and coordinated management of economic productive and regional development.

In 2015, the Metropolitan Council approved its regulation and since its establishment up to 2017, it realized approximately 15 sessions and worked on the approval of the Metropolitan Action Plan based on a study financed by the IDB and elaborated in 2013 – 2014. According to Cabrera (Interviewed in July 2018), it was a sort of guide for the departmental government, promoting densification, reduction of land consumption, resilience, and institutional function, and overall, socially legitimated (Cabrera, Juan, interviewed in July 2018).

Although this plan was composed of near 28 projects including such fields as water and basic sanitation, urban mobility and transportation, citizenship security, adequate production and employment, social protection of the vulnerable sectors, very little has been implemented to date. One of the causes is that financing of these projects depends on the central government on the basis of agreements before the constitution of this metropolitan region. Despite the Metropolitan Council is a national planning provision and has 12 functions indicated in the regulation, the Council did not directly elaborate the plan nor it really accomplishes its functions.

In brief, Kanata is composed of 7 municipalities and was institutionalized with the national Law 533(27/05/2014). The metropolitan region was defined as a planning space, in order to promote the urban and rural integral development, the planned territorial management, including the land use and a rational and responsible territorial occupation, ensuring a planned urban growth, protecting the

² According to INE (Instituto Nacional de Estadística, Censo Nacional de Población y Vivienda, 2012), the population of this metropolitan region is 1.164.643 inhabitants (64.6% of the department), in 2.598,8 km², and is composed by the municipalities of Cochabamba (that represents more than half of the population), Colcapirhua, Quillacollo, Sacaba, Sipe, Tiquipaya and Vinto.

agricultural land productive potential, preservation and water recharge areas, and contributing to solve other challenges, shared with the Metropolitan Council.

The metropolitan agenda was originated from the Action Plan for the Cochabamba Metropolitan area (2013) financed by the IDB and composed of 19 projects distributed in 5 strategic axes (economic, social, environmental, political – institutional – science and technology). In 2014 the Kanata Metropolitan Council approved the Kanata Metropolitan Agenda (2015–2019), a document leading the actions to be coordinated at regional level and a sort of guide for the departmental government, promoting densification, reduction of land consumption, resilience, and institutional function, and overall socially legitimated (Cabrera, Juan, interviewed un July 2018). Very little of the projects have been implemented to date, one of the causes can be that the financing of these projects depends on the central government on the basis of agreements before the constitution of this metropolitan region. Despite the Metropolitan Council is a national planning provision and has 12 functions indicated in the regulation, the Council did not directly elaborate the plan of action. According to Blanco Cazas (2017, pp. 273-276), although this region was created as a planning and management space, the metropolitan financial instruments were not defined immediately, and even today some of them are lacking.

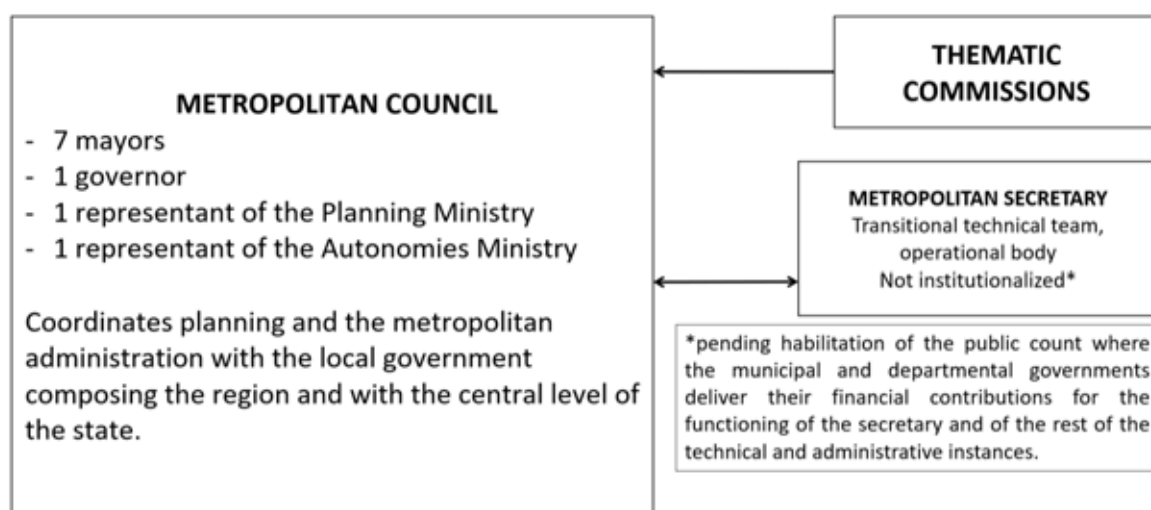


Figure 2: institutional pattern of the Kanata Metropolitan Region

The process of metropolitan institutionalization is still on-going. As shown in figure 2, the metropolitan council is composed of the 7 mayors, the departmental governor, one representant of the Planning Ministry, one representant of the Autonomies Ministry. It coordinates planning and the metropolitan administration with the municipal governments and the central State. It is supported by the activity of thematic commissions, and cooperate with the Metropolitan Secretary, that is a transitory technical and operation body, not yet institutionalized because it has not yet been habilitated to have a public count where the municipal and departmental governments deliver their financial contributions for the functioning of the secretary and of the rest of the technical and administrative instances. The art. 12 introduces the Metropolitan Companies, among the autonomous territorial entities and the central level of the State, for the performance of the metropolitan public services established in metropolitan planning and defined by the Metropolitan Council. However, after the metropolitan institutionalization in Cochabamba, the metropolitan action plan was formalized within

the Metropolitan Development Strategy, but the Metropolitan Secretary was not effectively working because it was not yet legally recognized.

To conclude, various not solved problems related to procedures have emerged. No definitive and effective metropolitan institutional governance has been consolidated so far. The change of political government from 2015, when MAS lost the elections in some municipalities, made even more difficult the metropolitan policy implementation. It seems that the metropolitan governance is not a priority, and any inter-scalar relationship between the municipality and the whole metropolitan region is not recognized. No priority has a metropolitan scale and the Metropolitan Council work is unknown. The marginalization of the metropolitan issue in the urban debate is even stronger among social actors. In general, the metropolis is perceived as a “news” diffused by media only dealing with eventual large metropolitan projects. Further, according to Blanco Cazas (2017, pp. 276-278), in 2015, the Katana metropolitan region constitution created conflicts for the municipal autonomy and gave excessive power to the departmental and national governments. According to Juan Cabrera (interviewed in July 2018), it is positive the fact that the Cochabamba metropolitanisation law is national, because in Bolivia the national laws are more influent than the departmental ones, since departments are weak, having no financial autonomy. In Cochabamba, the creation of a metropolitan fund shared between municipalities and the departmental government would not be feasible. It is the state out of the fund financing the large metropolitan projects. It would be better if the State financed the fund, and not directly the projects, i.e. not holding decision capacity on its own and impeding the action plan implementation.

The metropolitan region in the Department of La Paz³ is not legally defined nor recognized. However, it is composed of the Municipality of El Alto (860.062 inhabitants, 2.482 inhabitants/km²), the Municipality of La Paz (779.728 inhabitants, 395 inhabitants/km²), and the other six municipalities (191.560 inhabitants, 56 inhabitants/km²). According to Blanes (2006), in this area, the growth of El Alto has represented the basis for the growth of the other close urban centres. A centripetal densification process has occurred towards La Paz and El Alto, where most of the urban functions are concentrated. On the one side, urban centres are reinforced, on the other, other small centralities developed their role with specific functions such as residential, recreation, industrial districts. At the metropolitan level, there are such challenges as the mobility which cannot be tackled at the municipal level. Only between El Alto and La Paz more than 300.000 people daily commute. Both municipalities created public transportation companies and the State government created the cable car company. No common transportation management has been implemented so far and the three companies have been working separately. As one of the consequences of the absence of metropolitan transportation policies, private vehicles' mobility is the cause of strong congestion and air pollution.

³ It is located between 3.200 and 4.000 metres, and is composed of Achocalla, El Alto, Mecapaca, Palca and La Paz (Provincia Pedro Domingo Murillo), Pucarani and Laja (Provincia Los Andes), Viacha (Provincia Ingavi). 17,6% of the Bolivian population (i.e. 1.831.350 million people) live in the region.

The municipality of La Paz and the municipality of El Alto, together with the departmental government, worked on the drafting of a Metropolisation Framework Agreement. The first step was the recognition that metropolisation is a voluntary and aware adhesion and not just a legal issue. Signing this agreement in March 2016, 5 municipalities and the departmental government composed the technical committee to define shared priorities: drinkable water and sanitation, climate change and environment; mobility, human development, economic development and citizens' security.

According to Blanco Cazas (2017, pp. 276-278), in La Paz, the political change after the election in 2015 had important implications. The departmental government moved to the opposition. At the municipal level, despite most of the electors from La Paz continued supporting alternatives to the Movement for Socialism, which lost also in El Alto, the other municipalities continued supporting the Movement for Socialism. Two years after this political reconfiguration, the institutionalization process was strongly promoted by the departmental government, headed by Félix Patzi, supported by the La Paz municipal government which produced the Municipal Delegation for the Metropolisation. The Municipality of EL Alto, led by the mayoress Soledad Chapetón, despite she did not open a specific organic instance of the Municipal Executive power, was aligned with the departmental initiative. She signed the "Altopaz" agreement valid for 10 years, promoted by the Municipality of La Paz to handle common issues such as mobility and drinkable water. However, it was not possible to sign the Intergovernmental Agreement for the creation of an Economic Productive Development Metropolitan Agency (March 2016). The Departmental Legislative Assembly approved in September 2016 a departmental law which declared as a departmental priority and necessity the conformation of the La Paz metropolitan region. It also stated criteria for functioning, principles, definitions and implicitly created the metropolitan council, without mentioning the Economic Productive Development.

The departmental government is currently discussing the metropolitan governance configuration, with the other involved actors and authorities. The metropolitan forum has already been organized twice, in 2016 and 2018. This configuration is illustrated in Figure 3.

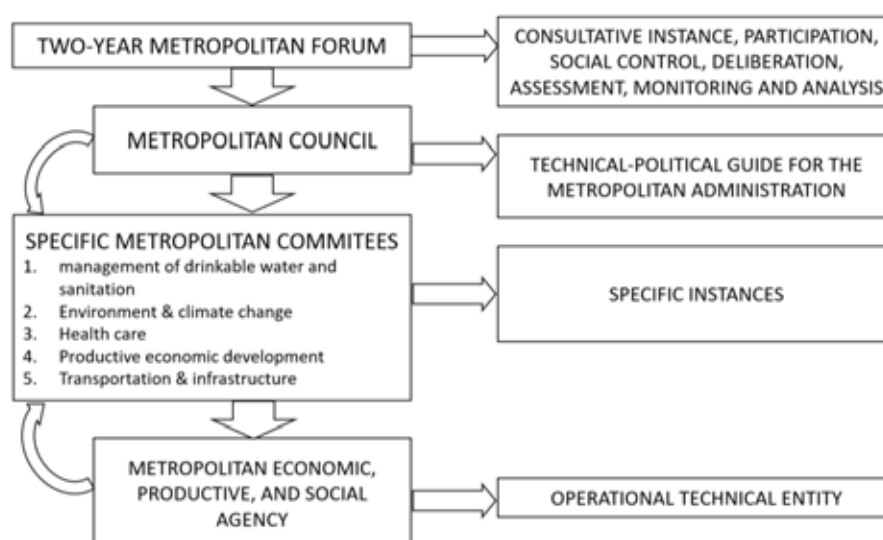


Figure 3: draft of the institutional pattern of the La Paz Metropolitan Region

In the illustrated configuration, the metropolitan forum takes place every second year. It plays a consultative and participatory role, involving the civil society, as well as monitoring and assessing the process. It dialogues with the metropolitan council, which includes the political representation of the Department, the State and the Municipalities, and is supported by specific metropolitan thematic committees. These committees have a technical and scientific role and cooperate with the executive agency, set in the department's structure.

To conclude, in terms of metropolitan coordination, this region is characterized by “soft governance”. The legislative absence of the state and the exclusion of the hypothesis of constructing metropolitan political governments determine the prevalence of soft governance scenarios, therefore situations based on the concept of inter-municipal cooperation (facultative and voluntary) to share a common vision on the problems and priorities for the territorial development and the urban projects at metropolitan scale. In fact, a first facultative and voluntary agreement between all the municipalities in the region was attempted. Among the potentially involved municipalities, only five of them signed the first version of the agreement, in March 2016. Unluckily, the concertation was further reduced to the two major municipalities, La Paz and El Alto, which continue to have no constraining agreement, that could represent the basis to build future projects and initiatives of metropolitan cooperation. Further, a relevant problem is the competitiveness and subsidiarity among municipalities within the metropolitan area. The small municipalities are afraid to lose authority in case the metropolitan region is officially established because La Paz and El Alto would play a hegemonic role. On the other side, La Paz and El Alto could financially support the other municipalities to compensate disparities.

However, although the municipalities of La Paz and El Alto dominate the scene, they are strongly dependent on the other municipalities, given historical problems of municipal boundaries that have heavily limited the action. On the other hand, permanent tension is present due to the correlation of political forces between politically official and opposition municipalities. Thus, although the cities of La Paz and El Alto are continuous in territorial terms and operate with a *de facto* metropolitan approach, and agreements and even certain tools dealing with metropolisation are in force, it seems that their feasibility can be resolved just in the political arena.

Brazil

The Federative Republic of Brazil recognizes as federative levels of government: Federation, States and Municipalities. Each federative entity has federative autonomy, and according to the Federal Constitution (1988) and the federal Metropolitan Statue (2015), each state has to legally create, define and organize the metropolitan regions, in order to improve the management of the public functions of common interest, at the basis of planning. It is worth to remark that within the federative autonomy Brazilian framework, in any case, metropolitan regions are not federative entities, their governments are not elected by people, i.e. they are not levels of government.

In the 70s the federal military dictatorial government invested in national industrialization in large urban areas and created between 1964 and 1985, the following metro-regions which are still the most important ones: Belo Horizonte (5.916.189 inhabitants), Salvador (3.899.533), Rio de Janeiro (12.377.505), São Paulo 21.391.624), Recife (4.044.948), Porto Alegre (4.318.000). Since 1988, when

the democratic Constitution was approved, regions created by the state governments were Goiânia (2.447.874), São Luiz (1.621.102), Florianópolis (1.172.076); Natal (1.587.055), Vitória (1.960.213), Baixada Santista (1.828.212), the only one not being State capital.⁴

In 2004, the State of Minas Gerais, whose capital is Belo Horizonte (BH) defined a metropolitan region as the sum of the adjacent municipalities characterized by a continuous urban fabric and the complementarity of urban functions, where the State capital is the centre and requiring integrated planning and permanent shared management by the public bodies. The metropolitan governance has to identify the public functions of common interest (activity or service whose realization by a unique municipality is infeasible or that impacts on other metropolitan municipalities). They represent the basis for the metropolitan planning, and so, issues, services, infrastructures which have to be realized by the metropolitan cooperation, and not by the individual municipality (IPEA, 2018). Inspired by the BH experience, in 2015 the Dilma's federal government approved the Metropolitan Statue, making the metropolitan planning compulsory.

As shown in Figure 4, at inter-federative level, and at an intermediate scale between Municipalities and State, the metropolitan plan concentrates the planning effort for the public functions of common interest within the metropolitan territory. According to the Metropolitan Statue, the existing municipal masterplans, held by municipalities, should adapt to the metropolitan plan. However, as already said in 2018 the obligation of elaborating the metropolitan plans was deleted by the Temer's Federal government, on the one side, arresting to the metropolitan policy process, on the other leaving the municipalities to carry on their own municipal plan, as usual.

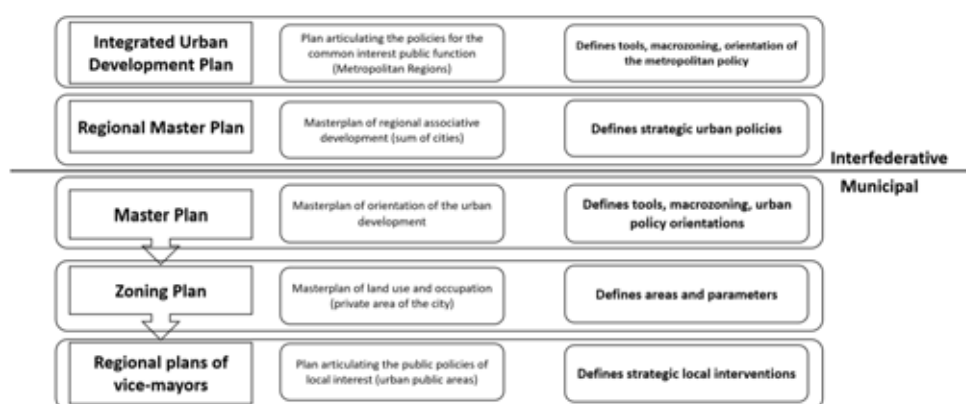


Figure 4: Interfederative and municipal planning levels⁵

The analysed case-studies are Belo Horizonte (BH) metropolitan region (MR)⁶, the capital of the State of Minas Gerais; São Paulo metropolitan region (SP), the capital of the State of São Paulo and Baixada Santista (BS), also in the State of São Paulo.

⁴ Data on population in 2017 from IBGE, 2018 (<https://ibge.gov.br/>)

⁵ Source: Intermunicipal consortium of the Great ABC and Municipalities of Guarulhos and Sao Paulo (2016), reported in IPEA, 2018

In BH, even before the metropolitan institutionalization by the State Complementary Law n. 14 (08/06/73), in 1971, a research and planning group was created, coordinated by the João Pinheiro Foundation. The Development Authority was created to promote the integrated urban and regional planning in the state of Minas Gerais. This created analyses and plans with a high technical level. However, its implementation was criticized for an excess of centralism and authoritarianism, not having effective participation of the municipalities, neither the civil society in the planning process. Despite the first configuration from the 70s, the crisis in the 80s weakened the metropolitan management system. A municipalism-based approach, as well as the interruption of the federal investments, resulted in the decline of the bodies responsible for territorial planning and management. As a consequence, in 1996, the Authority was extinguished.

Since 2004, a new institutional configuration has been debated as well as solutions for the economic impacts generated by the absence of metropolitan planning after the extinction of the authority. In 2006, the State Complementary Law n. 89 (12/01/06) in art. 88, 89 and 90 established a new model for planning and managing the region. The institutional innovations included the creation of the necessary arrangements for planning and developing the regions according to the common interest public functions.

At the beginning, the Metropolitan Conferences ensured the discussion and develop the creation of the Metropolitan Assembly (superior decisional body, including representatives of the state, mayors and municipal legislative presidents) and the Metropolitan Development Deliberative Council which is a body for the general coordination of the actions related to the metropolitan planning, with representatives of state, municipalities and civil society. These two bodies are assisted by the Metropolitan Development Agency created in 2009. This technical and executive agency carries on planning, assessing, urban regulation and support the implementation of the public functions. Finally, it was created also the Metropolitan Development Fund, in order to support the activities scheduled by the Deliberative Council, on the basis of the Integrated Development Master Plan, prepared between 2009 and 2011⁷. A shared management was established among the Metropolitan Assembly, the Deliberative Council and the Agency, implying a decisional capacity distribution among state, municipalities and civil society. The configuration of the metropolitan management created in 2006 introduced an innovative model in procedures, which foresaw the decentralization and participation of municipalities and civil society's representatives in the planning and management process.

In 2007, integrated management of the common interest public functions was promoted to make the region more competitive and increase the quality of life of the metropolitan citizens. In order to reach these objectives, between 2007 and 2009 it was defined the necessity of approving the metropolitan

⁶ It is composed of Belo Horizonte and other 33 municipalities.

⁷ Compare:

http://www.rmbh.org.br/arquivos_biblioteca/Joao_Bosco_Moura_Tonucci_Filho_Roberto_Luis_de_Melo_Monte-Mor.pdf

master plan as a planning tool, involving municipalities, the Minas Gerais State, the federal bodies and the civil society in social movements, entrepreneurship and people associations. The plan's priorities were urban space, accessibility, security, and sustainability. In particular, the plan created and strengthened the urban centralities in network, planned the expansion of the land occupation, intensified the use of the existing urban space, reduced the pressure of the peripheral urban expansion on the green areas, the rural areas and environmentally protected areas, expanded the porous urban areas, restored and revitalized the rivers, consolidated the regulatory framework for the land use and occupation.

Regarding implementation, the inexistence of an investment plan linked to the metropolitan development plan and micro-zoning weakened the legitimacy of the on-going planning and management process. Despite a state of planning more advanced than the other Brazilian metropolis, the metropolitan development plan and macro-zoning elaboration were reduced to land use, planning and management principles, without detailed content.

Further, Minas Gerais was the first State which created the concept of the “metropolitan citizen”, and so, a high level of citizens' participation. The civil society takes part in the biannual Forum and elects 2 representatives of the metropolitan citizens for the Deliberative Council. The Art. 8 of the State Complementary Law n. 89 (12/01/06) defines the functions of metropolitan common interest: transportation and road network, citizens' security, basic sanitation, land use, house gas, cartography and basic information, environmental protection, housing, health care system, social and economic development.

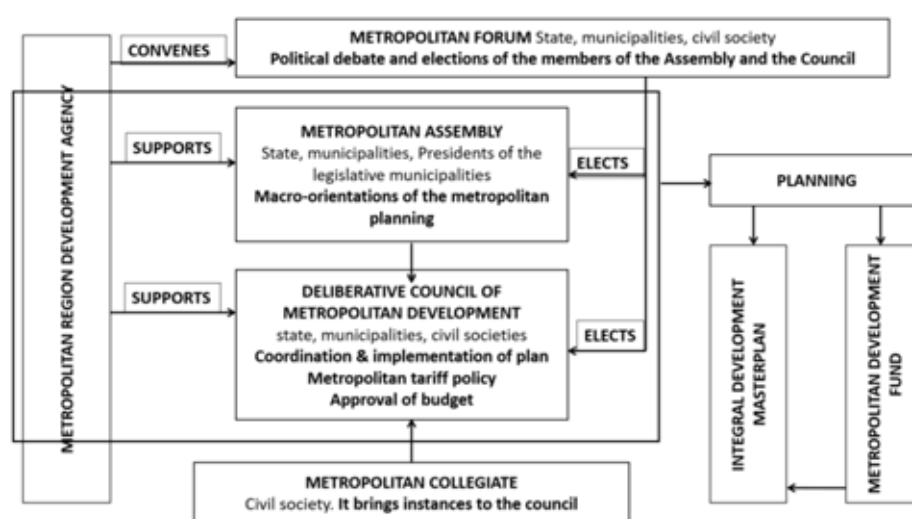


Figure 5: institutional pattern of the metropolitan governance in BH

As shown in Figure 5, the metropolitan region development agency held by the State convenes the metropolitan Forum that includes state, municipalities, civil society, carries on the political debate and elects the members of the Assembly and the Deliberative Council. Assembly and Council are supported by the Agency. The Assembly includes the political representation of the state, municipalities, Presidents of the legislative municipalities and provides macro-orientations of the metropolitan planning. The Deliberative Council includes the representation of the State, municipalities and civil societies, and carries out planning coordination and implementation of planning, the metropolitan tariff policy, the approval of the budget. The Council also receives the

contributions of the Metropolitan Collegiate of the civil society. The efforts of the agency, the assembly and the council determine the planning activity, and so elaborating the integral masterplan and setting the metropolitan development fund.

More in detail, the development agency has a technical and executive role, for planning, assessing, urban regularization, with administrative and financial autonomy. It makes viable integral development tools and the execution of the public functions of common interest, it promotes the plan implementation, it elaborates and promotes technical studies and diagnostics, it endorses and monitors plans and programmes, collects resources for the integral development, promotes the integration of the federative bodies. The Metropolitan Development Fund is composed of various representants, included the Deliberative Council of Metropolitan Development. It finances the structural projects; investments related to the public functions of common interest, defined by the plan. Finally, the metropolitan plan is elaborated and proposed by the Metropolitan Development Agency, supported by the Metropolitan Development Deliberative Council and by the Agency. It expresses the trajectories of the economic and social development integral planning based on common interest public functions.

The metropolitan region of São Paulo (SP) is composed of 39 municipalities, divided into 6 sub-regions: North, East, South-East, South-West, West, Centre. Each sub-region counts on an inter-federative public consortium, voluntarily established. In the 60s, the institutionalization process of the metropolitan region, called Grande São Paulo, was supported by the Institute of Architects of Brazil and in 1967 the Federal Constitution introduced for the first time the “metropolitan region”. In 1970 the Integrated Development Metropolitan Plan of the Greater São Paulo was defined.

At State level, in 1975, a metropolitan planning public company (EMPLASA, Empresa Paulista de Planejamento Metropolitano) was created with a technical and executive role, in order to elaborate metropolitan plans and projects. Regarding the recent period, in 2011, on the basis of the studies realized by EEMPLASA, the reorganization of the metropolitan region was defined by the State Complementary Law n. 1.139/16/06/2011 (IPEA, 2015).

That law created the Metropolitan Development Council, the main body in the metropolitan governance, with a regulatory and deliberative character, overall related to plans, projects, programmes, services and works to be realized with financial resources of the Development Fund. The Council is composed by the representatives of the state government and of every municipality. The indications of councillors have to ensure the parity between municipalities and state, accounting 50% respectively.

It is supported by Thematic and Special Thematic Committees for the promotion of studies, investigations, projects and activities related to the public function of common interest; and special thematic commissions, caring of programmes, projects and specific activities. In 2015, An Executive Committee⁸ was set to promote the metropolitan plan elaboration and go along with its development

⁸ It is composed of 18 members, being 4 representatives of the State government, 4 representatives of the Municipality of São Paulo and 10 representatives of the subregions.

up to its approval, respecting the federal Metropolitan Statue, throughout the organization of a Technical Commission and an Executive Secretary, carried out by EMPLASA and managing working groups.

The Decree n. 57.349/2011 temporarily asked EMPLASA to assume the role of Development Council Executive Secretary because of the absence of a territorial body able to integrate the organization, planning and execution of the public functions of common interest as required by the State Complementary Law 1.139/2011. Throughout State Decree 59.094/2013, the Development Fund was established, but no actions have been funded so far.

In 2015, under the Council responsibility, the plan elaboration process began. Nevertheless, since 2019, changes in the configuration have made unstable the institutional and regulatory framework of the metropolitan region. The current governor has been leading an aggressive privatisation programme and closed EMPLASA. Its functions are transferred to other governmental bodies. Simultaneously, the metropolitan plan (Integrated Urban Development Plan) was approved by the State Legislative Assembly. Unfortunately, this plan contains just the orientations for future interventions and does not set a definitive and effective interfederative governance solution for the region. Therefore, the governance in SP is in transition, making even more difficult the execution of the public functions of common interest. For the closure of EMPLASA, the region loses its main planning body for the metropolitan issues.

The Deliberative Assembly Authority with the civil society representation was established with the attribution of sharing the sphere of decision of the executive authority together with the civil society, by means of the elected representatives for the plan deliberation. It is composed of representatives of each sub-region, indicating entrepreneurs, workers, labour organizations, universities and professional categories, social movements, and NGOs. The metropolitan plan elaboration was based on a participatory approach, as in the case of the municipal master plans.

In brief, as shown in Figure 6, at the political and administrative level, there was the Civil House and Sub-secretary of Metropolitan issue of the State Government, that controlled EMPLASA, which cooperated with the Development Council. The council has a regulatory and deliberative role and contains the representatives of state and municipalities. It focuses on project, services and Works of common interest. Meetings are public, and the Development Council receives contributions from both the civil society's Consultative Council (arts. 14 and followings, LCE 1.139/2011)⁹ and Thematic and special thematic committees. The metropolitan development fund was managed by EMPLASA. But in January the Sub-secretary of Metropolitan issue was closed and in May, EMPLASA was closed too. The governor stated that EMPLASA functions will be embodied by Secretary of Regional Development.

⁹ The Consultative Council is composed of members of the civil society, state and municipal legislative powers, state and municipal executive power.

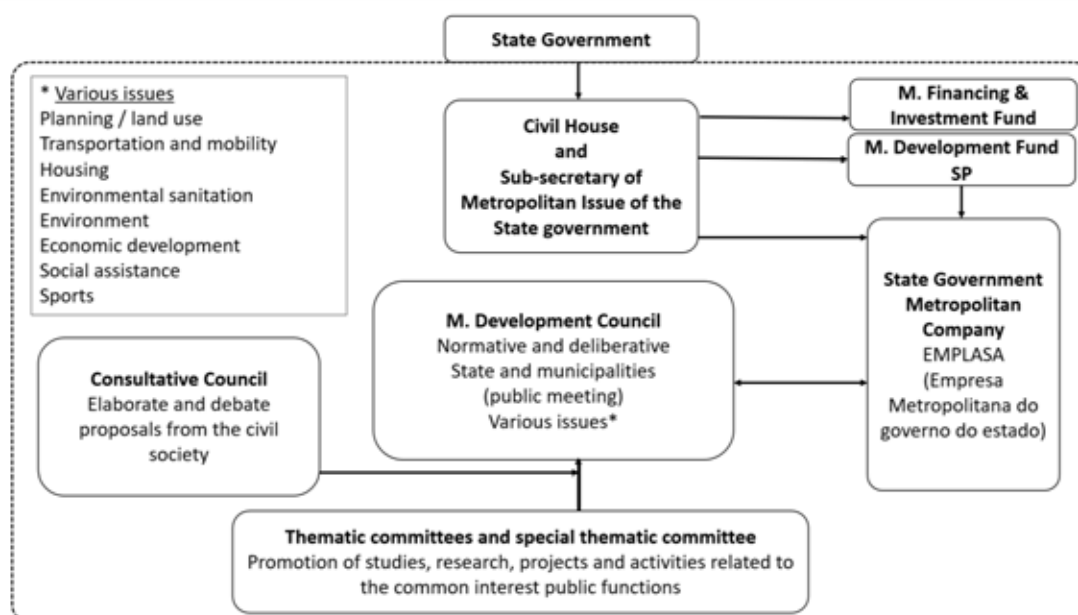


Figure 6: institutional pattern of the metropolitan governance in SP up to December 2018

Baixada Santista (BS)¹⁰ is characterized by a historical strong development determined by the intensification of the land use and occupation in the centre of the region. This was deeply marked by the scarce effectiveness of the regional planning, national structural problems and low salary urbanization process (Maricato, 1996).

The complexity of this regional solution impacted on the basic sanitation, housing, mobility, environmental and technological risk, among other aspects, and since the 60s, it has generated the rise of a movement promoting the metropolisation. Indeed, according to the Federal Constitution, the new institutional organization could contribute to facing all these challenges and impacts. This movement led to the creation of the Commission for the Metropolisation, starting from a Santos municipal legal initiative. This initiative arrived at the Municipal Council and the Legislative Assembly, involving councillors and congressmen.

In the 80s, the State Administration Councils and the Municipal Administration, in each regional government, as a State government initiative, originated the institutionalization of the regional organization. (Viana, 2010)

Since the crisis in the 90s, the political leadership has been concentrated in the Metropolisation Regional Council, a municipal initiative supporting the creation of the metropolitan region, throughout state law.

Further, the above mentioned EMPLASA was used to produce territorial data on the area. Since 1992, the priority issues have been discussed in the municipalities, resulting in the creation of a specific

¹⁰ The Baixada Santista metropolitan region is composed of 9 municipalities: Santos, São Vicente, Cubatão, Guarujá, Praia Grande, Bertioga, Mongaguá, Itanhaém and Peruíbe. Santos is the main centre; whose urban area divides the São Vicente island. In Santos, there is the most important harbour in Latin America. In its agglomeration, Guarujá and Cubatão are also included.

technical council. In 1993, the municipality of Santos created a specific secretary of metropolitan issues, orienting the regional political influence on the creation of the Baixada Santista. In 1996, as a result of the strong political pressure, the SP State formalized the Baixada Santista MR by means of the State Complementary Law 815 (30/06/1996).

However, the initial metropolitan institutional organization was not effective, having the state government an excessive influence on the other municipalities, that resulted in a governance system, partially open to civil society's participation.

The governance structure is composed of a Council with political functions, a technical agency and a fund, to finance the development and the policies related to the public functions of common interest.

The art. 3 (law 815/1996) authorized the institution of the Development Council, which should have a regulatory and deliberative character and be composed of representatives of state and municipalities in the functional field of common interest. Later, law 853 (23/12/1998) set the creation of the BS Metropolitan Agency (AGEM).

Since the creation of the Development Council in 2007, the thematic committees were activated. In 2014, the council approved the restructuration and the distribution of the thematic councils in 4 work-groups: mobility, environment, public policies and economic development, implementing a trajectory of the Strategic Development Metropolitan Plan. The reorganization foresaw the formation of a Regional Planning Group, in order to manage the new model, composed of representatives of the Council, AGEM, actors responsible for the working groups, mayors and members of the Committee of Hydrographic Basin and of the Coastal Management.

In 2002, responding to one council's request, EMPLASA prepared the Integrated Development Metropolitan Plan with a participatory process. It proposed objectives and trajectories but did not indicate actors and actions. Thus, in 2014, a plan promoted by the Council was defined. It represented an innovative regional plan in the SP state. It is composed of 26 sectoral objectives and 179 actions, as the result of the simultaneous participation of municipalities and civil society, throughout public meetings and consultation. The process began with a series of meetings with municipal actors, then with state, federal and private actors. The objective of the plan was the definition of a metropolitan scenario, based on macro-strategies for the metropolitan sustainable development in 2030.

Thus, the institutional structure has been reorganized, as well as the thematic committee, in accordance with the regional planning groups, trying to respect the metropolitan plan. By the same way, the metropolitan governance is influenced by a deliberative participatory authority having the representation of the civil society, who could ensure the democratic character of its management. The Development Council is composed of representatives of the municipalities and of the state government secretaries, indicated by the governor (art. 10 of the Complementary Law 760/1994).

More in detail regarding the agency, according to law 853/1998, AGEM is the executive body of the governance system, aimed to integration, organization, planning and the execution of the public functions, collecting its own tax revenue, or the ones which are delegated or transferred, including fees and prices for the services; monitoring the execution of the laws related to metropolitan regions, applying the respective fines, in the exercise of the police power; establishing objectives, plans, programmes and projects of common interest, as well as monitoring and assessing execution; promoting the misappropriation of public utility goods, when it is necessary to realize common interest activities; keeping updated and diffusing the statistical data and other information, necessary for the metropolitan planning; exercising other attributions which are legally transferred.

Among the thematic committees, the one on planning and economic development is responsible for the elaboration of the metropolitan plan from 2016. It is composed of representatives of the state and

municipalities. Currently, a group composed of members of the civil society enlarges the participation in the process.

From 2013, the first step was the technical assessment of the existing plan and projections, the final definitions of scenarios and the metropolitan plan consolidation. The metropolitan plan introduces the state strategic planning structure, even based on the macro-metropolitan action plan. In a future vision, 2 macro-objectives were established: consolidation of the urban development (i.e. housing, mobility, sanitation) and support to the economic development. With the Metropolitan Statue, AGEM presented to the Economic Development and Planning Thematic Commission, the document entitled Inter-federative Challenges of the Metropolitan Management. In this document, the body stated that the metropolitan region already had an orientation to Integrated Urban Planning; a macro-zoning arising from the Ecological and Economic Zoning, regulated by the State Decree 58.996 (25/03/2013); regional sectoral plans; monitoring system of actions in bidding phase; Public Metropolitan Fund, created and regulated in 1998; cooperation agreements, signed with regional deliberative authority of the Committee of the Hydrographic Basin and Coastal Management.

Thus, AGEM promotes objectives, results and strategies proposed in the plan, using the micro-zoning tool, regional sectorial plans and the municipal master and sectoral plans of the municipalities. Doing so, the agency suggests improvements in the Inter-federative Governance Structure and adjustment regulations and civil society participation. Thus, the AGEM needed to improve participation in the plan's elaboration and deliberation. The plan was presented in April 2016. In 2017-2018, the existing metropolitan plan was converted into the format required by the Metropolitan Statue, using a participatory approach.

Regarding financing the metropolitan actions, the fund, created by the Law n. 815/1996, and regulated by the State Decree 42.833/1988 and 56.635/2011, aims to finance the integrated planning and the related actions, referring to the public functions of common interest between the state and involved municipalities. It is participated by AGEM, Bank of Brazil (BB), and the beneficiaries. However, most of the financed projects are proposed by the municipalities integrating the MR and are addressed to investments in strategic sectors. The resources stem from the state (50%) and the sum of municipalities (50%).

In brief, The executive power is given the competence to establish the Development Council and the Metropolitan Development Fund. The Development Council approved in 2017 the law project that converted the existing plan into the new format, foreseen by the Metropolitan Statue.

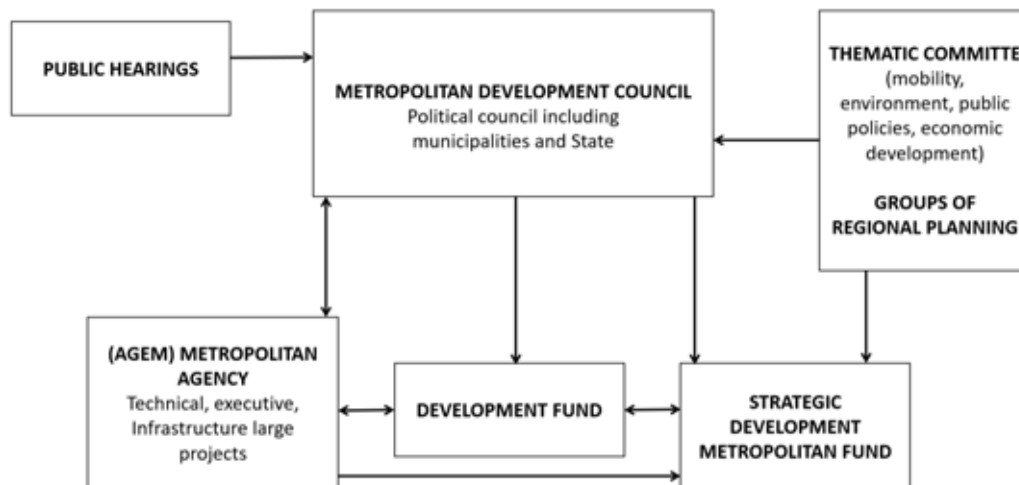


Figure 7: institutional pattern of the metropolitan governance in BS

As shown in Figure 7, the metropolitan agency has a technical and executive role and focuses on infrastructural large projects. The agency cooperates with the Metropolitan Development Council that has a political role and includes the representation of municipalities and state. The Council receives contributions from the public hearings and thematic committees and the groups of regional planning. This cooperation permits to manage the development fund and the strategic development fund.

Conclusion

The cases show some pieces of evidence, important to understand institutional, political, administrative and planning aspects of metropolitan governance.

- Metropolitan institutionalization is defined by an over-local legal provision, so the role of the intermediate bodies (departments in Bolivia and States in Brazil) is essential and implies to decide if the legal recognition and definition of metropolitan regions have to occur at the national or intermediate level. In any case, it seems that an institutional bottom-up approach based on inter-municipal cooperation is not sufficient to activate the metropolisation process, except for Baixada Santista.
- Consequently, basic features of metropolitan regions and their institutional organizations are defined by an over-local legal provision, determining possible conflicts of competences with municipalities, especially if they are autonomous and are given a strong planning capacity.
- A political representation takes part in all the institutional patterns, so metropolitan governance is never considered just as a technical issue. On the contrary, a political value is recognized, even if it has not always implied a strong strategic approach in metropolitan planning so far.
- However, metropolitan institutionalization is considered a strategic initiative and implies the definition of strategic projects, but in many cases, the bodies which should lead the metropolitan governance have no sufficient financial capacity and autonomy and these projects are often financed by over-local levels which follow other logics and priorities.

- An operational agency, having a technical and executive role, is used to carry out the metropolisation process, with a more pragmatic approach to balance the institutional inertia in front of important institutional reorganization and ways of thinking.
- That being said, at the territorial level, metropolisation grows independently on the legal metropolitan recognition, so institutionalization of metropolitan regions is more a regularization and organization of existing territorial processes than a planning activity, even because in many cases the public decision-making is not as fast as territorial social and economic processes.
- In this perspective, the intermediate levels such as departments or federative states have a key role in leading and facilitating the process, especially in case of different political positions of municipalities on common issues.
- Metropolisation deals with the shared definition and implementation of the public functions of common interest. This is an issue, strongly debated in Brazil, but it is the basis of metropolitan management, that unavoidably starts from sharing a vision of the present and future metropolitan space.
- Regarding sharing, pro-active participation of all the municipalities is fundamental also to avoid or limit regulatory conflicts between municipal and metropolitan inputs and plans. At the same time, metropolisation implies a scaling up in local policies, so deals also with a scaling up of citizenship rights. In many cases, rights - and the Right to the City - could not be any more ensured by one single municipality, but by their aggregation.
- Finally, looking at implementation, when planning is weak or uncertain, single large urban projects are more often financed. They could bring immediate benefits to local communities but they also contribute to the spatial disarticulation of these ungoverned metropolitan regions.

Those being observed, regarding metropolisation, these cases highlight a strong relationship between the national and the local level, i.e. all the analysed metropolitan institutional patterns are framed within the respective national planning system. In the same measure as ordinary planning is not effective whenever it is not accompanied by a coherent financial budget for planning activities and implementation, also metropolitan policy needs to be directly financially supported. This point also deals with the fact that implementation is complicated whenever the body having decisional capacity on planning does not coincide or is not coordinate with the body managing the public budget. It is even worst if these bodies are located at different levels.

To conclude, the paper focuses on the problem of governing metropolitan regions which have often grown ungoverned. The weakness of the institutional implementation autonomous power of municipalities in these countries makes weak (or absent) also the horizontal cooperation at the metropolitan scale, and often the capacity to activate bottom-up institution initiatives. It implies that there is a predominance of vertical relationships and of top-down initiatives because even when local

authorities are formally autonomous, the financial resources could be managed at the over-local level. Thus, the legal institutionalization cannot ensure effective metropolitan governance, whether no financing is ensured for metropolitan planning definition and implementation, and metropolitan cooperation is more effective when it starts from the bottom up initiatives.

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Territorial planning and urban transformative capacities. Preliminary reflections on the case of Valencia in Spain

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Abstract: The role of urban areas for sustainability transitions is crucial. Urban unsustainability problems seem to be persistent and a sense of urgency about how to speed up purposive urban transformation is growing. Accordingly, the research community is paying increasing attention to place-based approaches to identify the essential factors for accelerating urban sustainability transitions. This work-in-progress is based on Wolfram's urban transformative capacity conceptual framework (2016) for the analysis of the transition processes in the particular case of Valencia, Spain. The aim is to apply the framework as an analytical tool and to develop an exploratory assessment based on in-depth stakeholder interviews which identifies strategic implications for policy making and urban planning in order to accelerate transitions. In particular, the role of spatial planning (and planners) at metropolitan level have been examined in relation to its capacity of translating and incorporating innovative practices to accelerate urban sustainability transitions. At this level, implications in terms of rationalities, governance, instruments and techniques are shown in the conclusions. Although the research is circumscribed to the city of Valencia, its implications may be valuable for other contexts to enable comparative research.

Keywords: spatial planning; urban planning; sustainability transitions; Valencia

Introduction

Cities and territories require new forms of planning to face global sustainability challenges. Climate change is already a well-known problem. Significant impacts on human and natural systems have been related to climate change (Intergovernmental Panel on Climate Change [IPCC], 2014). Between 1990 and 2015 anthropogenic green-house gas emissions due to energy production increased by 45 % (International Energy Agency [IEA], 2018). Furthermore, cities are responsible for more than 70 % of

global carbon emissions (United Nations Human Settlements Programme [UN HABITAT], 2016). According to the United Nations, 55 % of the world's population live in urban areas (United Nations, Department of Economic and Social Affairs [UN DESA], 2018). Consequently, the role of cities for sustainability transitions is crucial. In addition, urban unsustainability problems seem to be persistent and a sense of urgency about how to speed up purposive urban transformation is growing. The academic community is paying increasing attention to place-based approaches to sustainability in order to address its spatial dimension and to identify the essential factors for accelerating sustainability transitions at urban level. Also all these challenges require territorial governance actors and institutions who deal correctly with uncertainty and complexity.

The city of Valencia seems particularly suitable to analyze urban transformation capacities through spatial planning in Spain. Valencia is the third largest city, just behind Madrid and Barcelona. The whole metropolitan area includes 1.5 million people. According to the first Dobris Assessment report (European Environment Agency [EEA], 1995), the *Valencian Huerta* is recognized as a very singular landscape in the Mediterranean region. This historical vegetable market garden, which surrounds the city, is crucial in terms of the urban transition singularities of Valencia (Figure 1 and Figure 2). The Huerta is also a cultural landscape of interaction between humans and nature throughout the centuries. The Historical Waterscape of the Huerta of Valencia is said to be one of the Globally Important Agricultural Heritage Systems (GIAHS) by The Food and Agriculture Organization of the United Nations (FAO) in 2019¹. It has a medieval design irrigation system and it connects the three water ecosystems of the metropolitan area of Valencia: the Turia River, the Albufera Lake Natural Park and the Mediterranean Sea (Melo, 2018). However, this landscape has not been a government priority since the river flood of Valencia in 1957. After this catastrophe, urban planning was focused on urban and infrastructure development in place of the Huerta (Miralles, 2018). Furthermore, this landscape has been pressurized by recent expansions of the city. Artificial surface of the Metropolitan Area of Valencia increased by 8000 ha during the period 1984-2011 (Fernandez and Lopez, 2015). The urban sprawl was accelerated by the Spanish property boom from 1998-2008 and its consequences motivated new social movements to protect the Huerta (Palau-Salvador *et al.* 2019). In 2000, a *popular legislative initiative* collected 118,000 signatures in favour of a law and a specific spatial plan to protect the Huerta. Both were not finally approved until 2018 (Miralles, 2018). Throughout all these years until the Territorial Action Plan of Huerta de Valencia (PAT HUERTA) was approved in 2018, disruptive initiatives to protect the Huerta have emerged; and the city presents a balanced leadership among public institutions, stakeholders, civil society and private sector initiatives (Palau-Salvador *et al.* 2019).

¹ The Food and Agriculture Organization of the United Nations (FAO). Globally Important Agricultural Heritage Systems (GIAHS). Date of access: 25/10/2019. <http://www.fao.org/giahs/en/>

Figure 1: The Huerta of Valencia map. Source: PAT HUERTA, 2018.



Figure 2: The Huerta of Valencia image. Source: PAT HUERTA, 2018.



The purpose of this paper is to inquire into the potentialities of Wolfram's urban transformative capacity conceptual framework (Wolfram, 2016) for the analysis of the transition processes with regard to the city of Valencia in Spain. Urban planning policy field is recognized as having a key role in developing transformative capacities (Wolfram *et al.* 2019). For first time, we discuss the current transformative capacity of Valencia through the articulation of the different components of Wolfram's conceptual framework in relation to the Huerta spatial plan processes. The aim is to reflect on the methodological implications of applying the conceptual framework as an analytical tool and to develop an exploratory assessment to identify strategic implications for spatial planning and policy-making. In particular, the role of spatial planning, institutions and territorial actors has been examined in relation to its capacity to translate and incorporate innovative practices to accelerate urban sustainability transitions.

The next section describes the theoretical framework of this research and lays out Wolfram's conceptual framework. Subsequently, the methodology is described for data collection, assessment and interpretation. After that, the findings of this research are shown and discussed. Finally, highlights and main conclusions about key implications for research and policy are presented.

Theoretical framework

Sociological and institutional theory definitions emphasize transitions as radical transformations, their structural character, multiple causality and co-evolution and a shift in the dominant rules of the game. For Grin *et al.* (2010:1) transitions are a "radical transformation towards a sustainable society as a response to a number of persistent problems confronting contemporary modern societies". Rotmans *et al.* (2001:16) defined transition as "a set of connected changes which reinforce each other but take place in several different areas such as technology, the economy, institutions, behaviour, culture, ecology and belief systems. A transition can be seen as a spiral that reinforces itself; there is multiple causality and co-evolution caused by independent developments".

Transition and transformation have often been used with similar meanings because both words refer to radical and large-scale changes in complex societal systems but they have a differentiated focus and not exactly the same implications (Hölscher *et al.* 2018). In the field of urban studies, while transformation embraces both the process and the outcome of systemic change, transition would only refer to the former. In consequence, 'urban transformation' seems to be more adequate to achieve sustainable development as a normative goal and an open-ended process (Wolfram *et al.* 2016). In fact, sustainable urban transformation has been used to emphasize the structural level of transformation processes involving radical and multi-dimensional change to reorient urban development towards sustainability (McCormick *et al.* 2013). That way, sustainable urban transformation would encompass "both sustainable urban structures and environments and (radical) economic, social, cultural, organizational, governmental and physical change processes" (Ernst *et al.* 2016:2988).

At a theoretical level, different transition schools have different approaches to address this issue (Frantzeskaki *et al.* 2018): (1) Technical innovation systems focused on the emergence of new technologies and the related institutional and organizational changes. (2) Strategic niche management approaches focus on niche creation, proliferation and replication to enable transitions through strategies such as shielding, nurturing, empowering... (Hoogma *et al.* 2002). (3) A socio-technical

systems approach to explain technological transitions as the result of dynamics at three levels (niche, regime, landscape) (Rip and Kemp, 1998, Geels 2002, Geels and Schot, 2007). (4) Transition management approaches are based on governance framework to influence transitions in a more sustainable direction. Including an overall process approach and methodologies to setting the scene, envisioning, backcasting, building arenas... (Rotmans *et al.* 2001, Loorbach, 2007, Wittmayer *et al.* 2018).

On the one hand a multi-level perspective from the socio-technical systems approach (landscape, regime and niches), emphasizes the tension between emerging niches and stabilized regimes as the specific dynamic with the potential to bring about sustainable change (Geels, 2004 and 2011). From this perspective, a transition implies fundamental change of a regime's culture, structure, and practices (Loorbach, 2007) as a consequence of the tensions between the functioning of the regime and the landscape, the stress of internal mismatches in the functioning of the regime and the pressure of alternative innovative options (Frantzeskaki and De Haan, 2009). On the other hand, a multi-actor perspective (agency, networks and governance) gives importance to governance and the role of actors in sustainable urban transitions which have been receiving growing attention while recognizing its importance in influencing systemic change processes (Frantzeskaki *et al.* 2018). Following Grin *et al.* (2010), societies are made of interconnected networks of actors that interact in many ways, at different levels and within diverse social realms. In that way, Fischer and Newig (2016) explore the role of actors in transitions to sustainability and identify different ways to categorize them: as niche, regime or landscape incumbent actors, as belonging to different societal realms or governance levels; or as being intermediaries. While trying to classify them as supporting or opposing urban transition, they find that in fact “actor roles in transitions are erratic, since their roles can change over the course of time, and that actors can belong to different categories” (Fischer and Newig, 2016:1).

Despite all of this, a claim for the lack of attention to agency, power and politics has been made as subjects of contestation, conflict, power and vested interests have often been overlooked (Frantzeskaki *et al.* 2018). On one side, Gillard *et al.* (2016) claim that in order to be transformative, transition approaches have to incorporate social theories where power, politics and social relations are central to account for the institutionalized values, worldviews and discourses that are involved in social change. On the other, Avelino *et al.* (2016) develop a multi-actor perspective to understand politics in transformative change and who is involved in the decision-making process. They conceptualize the shifting power relations amongst actors with an emphasis on the empowering and disempowering processes. Recognizing the important role of governance, power and agency implies the assumption that the urban transformation processes are shaped and modulated precisely by the interactions amongst actors within the framework of societal structures. In this way, understanding actor's worldviews and strategies to influence sustainability transition and assessing who are the different actors exercising power and what are the shifting power relations amongst them becomes a crucial question.

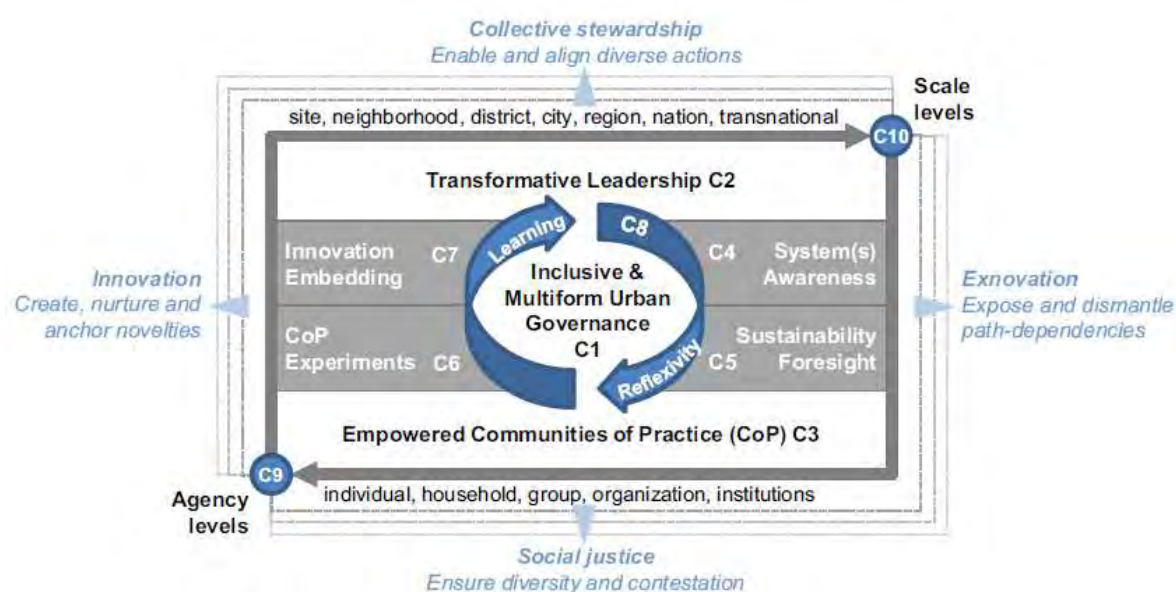
Considering all these perspectives, urban sustainability transitions are empirically and conceptually distinct from sector-specific transitions. Previous contributions on sustainability transitions have largely taken a domain-oriented approach (energy, water, food, etc.). Urban sustainability transitions involve the alignment of resources and actor constellations across domains within a given geographical setting. Therefore cities are the places and scales where the multiplicity of different dimensions concerning sustainability transitions come together, including the role of civil society

(Frantzeskaki *et al.* 2017). After that, urban planning and transition management complementarities have been highlighted (Wolfram *et al.* 2019). Furthermore, the urban planning policy field is recognized as having a key role in developing transformative capacities. In fact, Wolfram *et al.* (2019) suggest challenging and reinventing urban planning as a key arena for developing urban transformative capacities in relation to its potential cross-sector, multi-scale, multi-actor, place-based and comprehensive approach.

By inquiring into urban sustainability transition through spatial planning, this paper draws on Wolfram's holistic conception of urban transformative capacity "as the collective ability of the stakeholders involved in urban development to conceive of, prepare for, initiate and perform path-deviant change towards sustainability within and across multiple complex systems that constitute the cities they relate to" (Wolfram, 2016: 126).

As shown in Figure 3, the framework is composed of 10 interdependent components. The first three are related to agency-core analysis and interrelation forms (C1-C3). C1- 'inclusive and multiform urban governance' assess stakeholder involvement in urban planning, diversity of formal and informal interactions among territorial actors and quality of intermediaries. C2- 'transformative leadership' asks who are the individual or collective leaders in the public, civil society or private sector. And C3- 'empowered communities of practice' identifies the autonomy of the communities to achieve their needs. Five components (C4-C7) are linked to critical capacity development processes. C4- 'system awareness' checks systems analyse and path-dependencies understandings. C5- 'sustainability foresight' gives importance to participatory visioning and alternative scenario designs. Component C6- 'practical experimentation of communities' evaluates new innovative solutions. C7- 'innovation embedding' identifies access to resources and regulation flexibility for innovation. According to Wolfram (2016), C8- 'reflexivity and social learning' is a vital component required to feed outcomes of all four processes through monitoring system change and collective reflexivity. The last components show up capacity development needs occurring at different C9- 'agency levels' and C10- 'scale levels' as relational dimensions needed for change (Wolfram, 2016).

Figure 3: Components of urban transformative capacity. Source: Wolfram *et al.*, 2019: 439.



Methodology

Research methodology is based on qualitative methods including semi-structured interviews and analysis of research papers, spatial planning documents and regulation. This preliminary piece of work follows successful applications of Wolfram's conceptual framework in sectoral-oriented research. It mainly takes references from urban regeneration (Wolfram, 2018) and energy governance systems (Wolfram, 2019). Primary data was collected through semi-structured interviews with 9 selected stakeholders (Table 1) who were involved in current spatial planning processes with regard to the PAT HUERTA of Valencia approval in December 2018. Complementary primary data was also gathered through local events and meeting attendance (3 in total). In order to receive first impressions of the spatial planning process, the interviews were realized between January 2019 and May 2019 through a systematic coverage and balanced representation of critical stakeholders: government agencies (regional and local), civil society and Non-governmental organizations (NGO), academia and intermediaries.

Table 1: List of stakeholders selected for personal interviews

ID	Affiliation	Stakeholder group
V1	Director. Spatial Planning Division (<i>Generalitat Valenciana</i>)	Regional government
V2	Secretary. Spatial Planning Division (<i>Generalitat Valenciana</i>)	Regional government
V3	Planning Service (Valencia-Municipality)	Local government
V4	Per l'Horta	NGO
V5	CERAI	NGO
V6	Cercle (Coop.)	Intermediary (private)
V7	The Water Tribunal of Valencia (since 960)	Intermediary (public)
V8	Urbanism department (<i>Universitat Politècnica de València</i>)	Academia
V9	Geography department (University of Valencia)	Academia

In each case the interviews were recorded and one-hour long. The questionnaire was composed by the 10 components of the urban transformative capacity framework which were already subdivided in 18 subcomponents by Wolfram (2018 and 2019):

- C1.1 actor diversity
- C1.2 inclusion support
- C1.3 intermediaries
- C2 transformative leadership
- C3.1 social needs focus
- C3.2 community empowerment
- C4.1 system analysis
- C4.2 path-dependency
- C5.1 knowledge production
- C5.2 sustainability vision
- C5.3 alternative scenarios
- C6 disruptive experimentations
- C7.1 resource availability
- C7.2 organization adjustment
- C7.3 reflexive regulation
- C8 social learning and reflexivity
- C9 working across agency levels
- C10 working across scales/tiers

In addition, interviewees were also asked to assess the 18 sub-components of the framework on a 5-level Likert scale. The interviewees' assessment scores were aggregated by subcomponents in order to display the stakeholder's overall vision.

Secondary data from spatial planning documents, research papers and the media were analysed to contextualize information from the interviews. All collected data allowed our research team to judge the 18 subcomponents and factors within a researchers' Likert-scale. Since these individual stakeholder assessments drew exclusively on their perceptions of reality, whereas the researchers' assessments show overall insight. This differential assessment between stakeholders and researchers was also useful to enrich discussion and conclusions.

Urban transformative capacities through spatial planning in Valencia

At the beginning of the 21st Century, all the research papers and media showed Valencian spatial planning as an inconsistent policy field. This tradition of comprehensive planning absence has been further developed in previous investigations (Segura-Calero, 2017). In this way, Valencian territorial developments were led by urbanization like a 'tsunami', especially in coastal areas where the residential impact of mass tourism reached its height. In particular, in the city of Valencia urban sprawl was also accelerated by the Spanish property boom, increasing soil selling on the outskirts of the city and the Huerta (Fenandez and Lopez, 2015), which also augmented not only environmental but also administration costs in the Metropolitan Area (Gielen, 2015). The lack of urban planning at metropolitan scale (45 municipalities) seems to have been persistent until the Huerta Law and the PAT HUERTA were approved in 2018. There was a 50 year-long local community claiming process to protect the Huerta of Valencia until the *popular legislative initiative* was proposed in 2000, which collected 118,000 signatures (Miralles, 2018). Now we can recognize a current political change and new community potentials towards sustainability transformation through challenging and reorienting spatial planning in Valencia.

On the word of stakeholders (from V1 to V9), the PAT HUERTA urban planning participation processes were the most resourceful, diverse, extended and inclusive that they have attended. The PAT HUERTA participation tasks were started in 2006 as a serious administrative effort to achieve knowledge through formal processes but also informal meetings (V1, V4, V5). It was recognized especially relevant in terms of diverse governance and network forms (V9). In spite of the obsolescence top-down governance system and stakeholders' interest (V3, V6, V8), those new participation experiences have been considered as having a great success. Nevertheless, there still remains a lack of confidence and cohesion among territorial actors (V6, V7).

The roles of intermediaries are always crucial in relation to governance and stakeholders' interactions in spatial planning. But usually those intermediation tasks are derived to the private sector during spatial plan's elaboration processes in Valencia (V9). Despite this, the *Huerta Council* was recognized by the PAT HUERTA and the Huerta Law, which is under constitution at the moment (V1, V2, V6). It was set up as an official intermediary and management entity that represents all the Huerta stakeholders. The expectations are great but there is only another one-year-old metropolitan entity as reference: the Transport Metropolitan Authority, which coordinates mobility issues among Valencia metropolitan actors (V1).

On the one hand a new political will was particularly essential to achieve the PAT HUERTA approval. Also this leadership was articulated by singular regional administration planners who introduced and articulated the *green infrastructure* concept and open strategic spatial planning processes in Valencia (V1, V2, V9). Furthermore, the municipality of Valencia and the mayor played an important role in favour of Huerta protection (V2, V3). On the other hand, social movement leaderships strengthened community visions towards sustainability and fed them into the local and regional arenas (V2, V4, V9). For example, there are emergent disruptive communities to protect the Huerta and its own way of life. *Per L'Horta*, who are the heirs of the *popular legislative initiative*, or *Salvem movements* are involved in every metropolitan territorial conflict of Valencia (V2, V4, V5, V9). Non-governmental environmental organizations at national level were not so relevant in these local matters (V4). Nevertheless, agro-food collectives such as CERAI in favour of Food sovereignty are emerging as communities of practice (V2, V4, V5). Farmers' associations such as *La Unió de L'auradors i Ramaders*, also contributed to spatial planning processes as stakeholders in the Huerta of Valencia. The academics' role was also relevant in terms of co-production of knowledge and highlighting the Huerta through research. The *Cátedra Tierra Ciudadana* is one important institution from the *Universitat Politècnica de València*, where the Historical Waterscape of the Huerta-GIAHS proposal emerged. It is a space for research, critical reflection, exchange, training and dissemination around the agronomic and social sciences (V9). However, there is a general lack of critical resources and broad mass of people to achieve all those communities' aims (V6, V8).

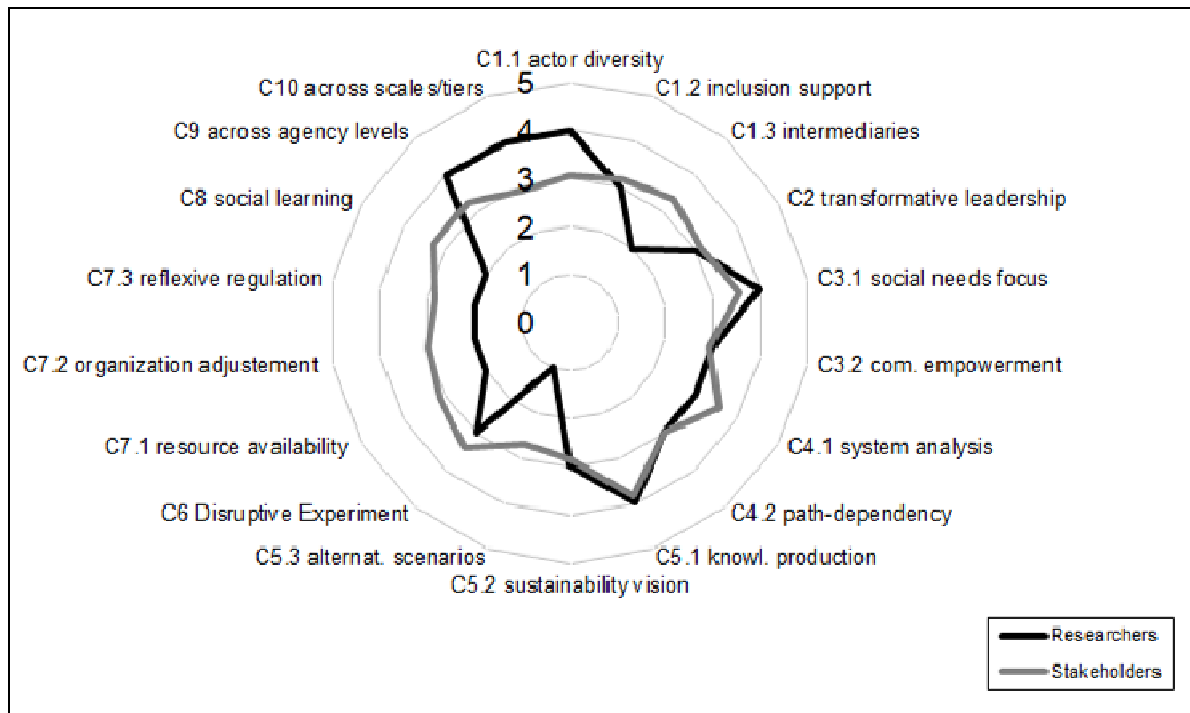
As indicated by all stakeholders there is not shared vision but a partial one which provides orientation. Also they recognize that alternative scenarios and future pathways are not correctly developed in the PAT Huerta (V1, V2, V4, V8). Furthermore, there are not clear and shared baselines indicating the way to go in terms of sustainability. In absence of administration systematic awareness, there is an important know-how in managing conflicts (V1, V2). The main conflicts in the Huerta have been related to property rights and the dilemma *production vs. protection*. Meanwhile, there are informal dedicated analyses of governance structures and systemic relations in the Huerta by different collectives. In this way, the co-production of knowledge reaches its height in the Huerta and especially in the diagnosis of the PAT HUERTA (V4, V5, V8, V9). Although unsystematically, stakeholders are able to recognize institutional path-dependencies, barriers and drivers for change. Meanwhile, innovation practices to solve these barriers are possible but the comprehensive character of spatial planning implies complex sectoral regulation and coordination issues. Non-governmental stakeholders consider the regulation flexible but institutional administrative structures are still slow to support innovative practices towards sustainability.

In general, there are an absence of accountability practices and monitoring tasks. According to interviewees, a new sensation of institutional transparency improvement has been noticed within this PAT Huerta elaboration process but it still remains reduced. The Huerta Council would be in charge of those management issues (V1, V2, V6). Throughout all these years, this planning experience has involved formal and informal reflexivity and social learning processes but without systematic and continuous management.

Discussion and conclusions

The urban transformative capacities of Valencia are now further deepened by juxtaposing stakeholder and researcher views on all 18 subcomponents of the framework (Figure 4). The current section discusses and compares the principal findings and identifies emerging lessons.

Figure 4: Differential assessment of urban transformative capacity through spatial planning in Valencia. Author's note: (scale: 1=very weak, 2=weak, 3=average, 4=strong, 5=very strong).



Agency and interaction forms (C1-C3)

As stated by stakeholders, PAT HUERTA participation processes have been inclusive and further developed than ever before but governance system and networks seem still to be in development. We can recognize important underestimations in stakeholders' marks for actor diversity because they don't have an overall picture of governance networks. There are a good number of social collectives sharing and supporting a vision towards sustainability but there still remains a lack of space for them due to the administration conservative development pathways. Furthermore, stakeholders' intermediary scores tend to be much higher than those attributed by the research team. This overestimation reproduces government interviewees' predictions on the Huerta Council which is not constituted yet. In fact, there are no official networking or stakeholder discussion spaces beyond the plan elaboration process for the moment.

In spite of all of these factors, there are diverse and strong leaderships but the old and well-known barrier between urban and rural thinking emerges. Generally there is no cohesion between these actors but both collectives have a clear focus on social needs and sustainability.

Core development processes (C4-C8)

In general, stakeholders' capacity development process scores are overestimated. This reflects the perception of PAT HUERTA processes as a positive and even radical change compared to urban planning of the past. However, the researchers' point of view is quite critical due the lack of administration transformative structures and the insufficient access to resources, which avoids disruptive initiatives and experiments. In turn, flexible regulation to support these innovative initiatives has been detected but there is a sense of excessive bureaucracy by stakeholders. Otherwise, stakeholders and researchers share knowledge production component scores but not for the same reason. While stakeholders have a positive point of view due the bad experiences in the past, researchers' perceive a lack of coordination and systematization. In fact, reflexivity and social learning (C8) is considered in the average score for the same reason. In spite of reflexivity and social learning being complete and extensive during all the spatial plan elaboration process; these spaces to reflect on were not developed systematically but through informal pathways. According to researchers, monitoring tasks should be further implemented to guarantee the feedback quality and future reorientation of urban spatial planning.

Relational dimensions (C9-C10)

According to the differential assessment graph (Figure 4), general researchers' critical point of view towards sustainability has been noticed but not in working with relational dimensions. While working across agency levels and political structures is never easy, urban planning emphasizes and involves these issues by definition. Multi-actor, multi-scale, multiple political levels and cross-domain issues have been considered throughout entire planning processes. However, horizontal and vertical integrations still remains a key weakness. In this way, there is recognized a traditional Spanish spatial planning lack of integration, coordination and cooperation among public administrations at different levels is recognised which suggest that much more effort is needed.

In conclusion, this preliminary piece of work shows insights in applying Wolfram's framework through spatial planning. The overall findings highlight that assessing transformative capacity towards sustainability helps to design approaches for unlearning the urban planning conservative paradigm and pathways. In this way, this research paper is also claiming for a greater shift to enhance envisioning, sustainable foresight, working with alternative scenarios, reflexivity and social learning in planning. Such a shift implies redesigning current structures and processes. Furthermore, community resources, networking, collective visioning and intermediation mechanisms have been considered underdevelopment drivers towards sustainability in Valencia. Finally, this research work offers significant potential to enable reflexivity among stakeholders regarding key transformative capacity strengths and weaknesses.

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URBAN RENEWAL MECHANISM IN MINORITY NATIONALITY AREAS OF CHINA IN THE NEW ERA

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Abstract: With the development of society and economy in China, old cities need to transform to adapt to the modernization so that urban renewal is carried out in many cities. But China has something special that many urban areas are inhabited by minority nationalities. How to define the public interest in the process of urban renewal is complicated, the institutional problems are difficult and general theories and practices of urban renewal cannot be applied in such areas so there are few good practice in China now. A complete mechanism for this is essential. This article studies on renewal mechanism in the aspect of protecting public interests in minority nationalities areas. Firstly, a social research on different interest groups of minority areas in Changji is carried out to figure out what they are concerned about in urban renewal process; then a study on current cases of urban renewal in the existing minority areas is done to probe into the results and problems and combine with some theoretical analysis a complete summary can be made ; finally according to all the results mentioned above specific mechanism , implementation strategies and policies for the urban renewal process in these areas can be summarized.

Keywords: Minority Nationality Areas, Urban Renewal, Regional Transition, Mechanism

1.Introduction

China is a multi-ethnic country. The large-scale of mixed living and small-scale of centralized residence is a major feature of minority nationalities in China. The renewal of regions and cities with rich ethnic elements, faced with difficulties in the wave of urban renewal, has gradually become a factor that cannot be ignored. Compared with the development of ordinary cities , scholars in China have gradually realized that these cities need some special renewal models to move toward a better future.

Minority nationalities areas are defined as contact areas functioning as a whole in minority city & region. Having become an important part of these city & region after thousands of years of evolution, they inherit the indispensable urban cultural context. For the minorities living here, this is not only the physical space that carries their daily work and life, but also the destination of their inner heart. Their self-esteem and security should be preserved in the mainstream of Han culture in these areas. .

As these city & region change with modern theories and forms, minority nationalities areas have no choice but to be adjusted accordingly at recent atmosphere. Moreover, the current wave of urban renewal has begun to sweep across a large number of minority regions in China, especially in the western part of the motherland. The way of renewal is still a traditional frame, which is undoubtedly a disaster for them. We need a new mechanism

to guide the urban renewal of such cities, and we must not let their features disappear in the wave of urban renewal. This article are based on this background and work for it and is formulated by the following framework shown in Figure 1:

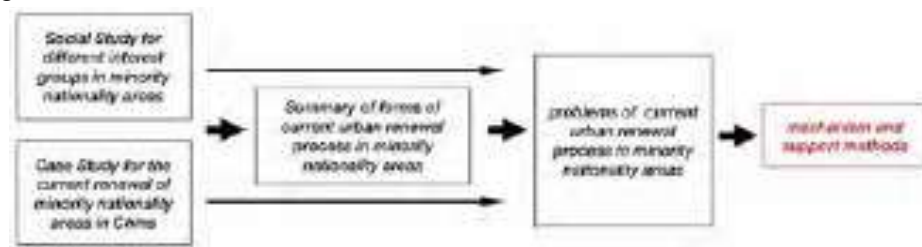


Fig. 1. Research framework

2. Social research for the different interest groups in minority nationality areas

Since there are at least five interest groups (government, estate developer, citizen, minority nationalities and religious organization) in minority nationality areas, what they want and what they think is most important in the urban renewal process are something essential to this study. We carried out some questionnaires of them and make a summary:

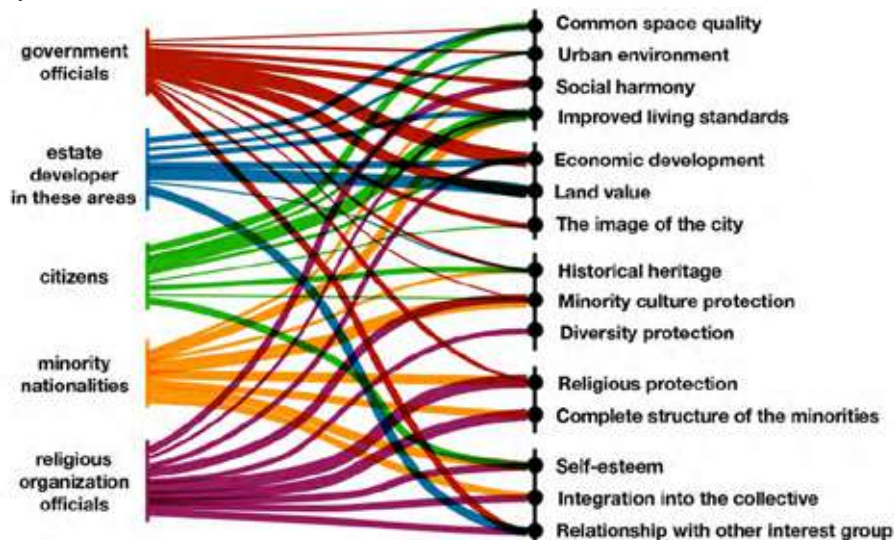


Fig. 2. Social research result

As is seen in Figure 2, what they are concerned mainly focus on five aspect: living condition and social environment, city economy and development, history and culture, religious and minorities, relationships and self-condition. For instance, government officials mainly focus on improving living standard, economic development and making full use of land value; minority nationalities concentrate on protecting historical heritage, minority culture, religious elements and complete structure of their community; religious organization officials think that relationship with other interest group is important, and they focus on religious protection and minority structure protection, and both minority nationalities and their organization officials consider self-esteem a priority and they want to integrate into the collective. These results are references for what we lack in current renewal process of minority nationality areas and can be a support for the withdrawal of the mechanism.

3. Study on current cases

Since there already have been many minority nationality areas in China on which modern urban renewal processes are carried out, this part will analysis some typical examples and point out their implementation effects and problems. These (mostly end up with failures) will provide reminders for our next actions and are beneficial to the withdrawal of the mechanism.

Case name: Beijing Niujie

Strategies: Niujie is one of the earliest ethnic minority areas to start urban renewal. The update mainly adopts a development mode that favors high intensity, and only retains the mosque (also just the formal demand), but completely replaces the original spatial structure with the modern update method of the minority cultural shell.

The program is centered on the Niujie Mosque and builds a gradually increasing building around the radio. The planned height at the north end is 60 to 65 meters. The large public buildings on the east and west sides of Linniu Street are 50 to 55 meters, and the south is 50. Meter. A commercial street with ethnic characteristics was built: a commercial street with ethnic characteristics was formed on both sides of the street.



(Fig. 3 : Comparison chart before and after the update of Beijing Niujie, source: Yang He. *Jamaat: Sub-social research in the city* [D]. Tsinghua University, 2004.)

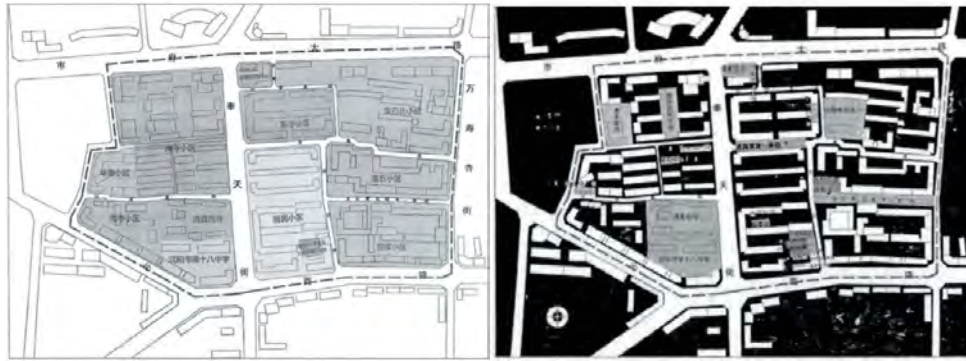
Implementation effects & problems: This update has many obstacles in actual operation: there are 45 multi-storey buildings in the core area of Xinniu Street. The original bungalows will be demolished. Among the 42 towers, 18 commercial houses and 24 relocated residential buildings, this development has caused population density. The sharp increase and the proportion of the Hui population have fallen sharply, and the demographic structure has changed dramatically.

At the same time, the policy of housing reform lacked continuity. The amount of mortgages returned was high, and many residents were unable to move back. At the same time, the traditional living structure and social structure were broken, and the original Hui residents were artificially dispersed. The multi-ethnic mixed population increased and became weaker. The function of the temple system, the number of ethnic issues increased

Case name: Shenyang huihui campus

Strategies: This update is biased towards high-intensity development, trying to adapt ethnic minorities to our modern lifestyle, the so-called modern Islamic ethnic style, and building an Islamic style city that integrates cultural education, business office, business and business, sightseeing and tourism;

According to the overall goal of the plan, the transformation of the area will highlight the characteristics of Islamic architectural style in the appearance of the building, showing the rich Islamic national characteristics and the characteristics of the times.



(Fig. 4 : Land-use and texture, source: Li He. *Research on the renewal planning of urban minority traditional settlements* [D]. Northeastern University, 2011)

Implementation effects & problems: The update evaded many issues, such as the wishes of ethnic minorities, how traditional buildings and neighborhoods are handled, how development is carried out, and how local residents are placed. Muslims have the habit of living in a concentrated way, and they have a living need to live around the temple. Therefore, the Muslim people are reluctant to stay away from the temple and the problem of relocation is very high; Because the living habits of the Muslim people require the simultaneous construction of the custom of the Muslim people and the special design of the house, these increase the speciality of development and construction, investment costs, etc.

Case name: Beijing Jintaili

Strategies: This program is a medium-to-high-intensity update mode that is slightly biased towards development. The Jintaili ethnic community is located on the side of the political center of Beijing. After the implementation of the demolition and relocation policy, some surrounding communities are retained as historical heritage, and the other part is included in the process of urban renewal. The Jintaili ethnic community has experienced the process of urban renewal without exception, from the layout of the Hutong complex to the depth of space compression.

Implementation effects & problems: While not considering the opinions of local residents, due to the special geographical location of the Jintaili community, the Jintaili community cannot build a variety of social public facilities. Residents in the Jintai area must re-adapt to the modern lifestyle. The diversified development of the city has caused residents to lose their sense of belonging and direction. The medium and high intensity development model completely lost the historical and cultural significance of the colony.

Case name: Yunnan Chuxiong

Strategies: This update is actually a low-intensity development. Mainly through the implantation of industries in the inhabited areas, the development of culture, tourism and commercial, etc., while supporting the development of special breeding, ethnic handicrafts and ethnic tourism in minority areas. In this way, we try to promote the development of surrounding plots and increase fiscal revenue to facilitate the subsequent update process.

Implementation effects & problems: From the perspective of the overall level of economic development of the whole city, the development of tourism industry is slightly insufficient compared with real estate business. The proportion of tourism revenue to the GDP of the city is still at a low level, and its contribution to the urban economy is still insufficient.

Case name: Lanzhou Xiyuan

Strategies: This update is essentially a large-scale, medium-strength development that is similar to Niujie but has lower strength. The purpose is to maintain the core position of the mosque, give priority to the accessibility of

the mosque, design the road network structure with the mosque as the core of transportation, appropriately widen the main roads and branches within the area, and form a complete homogeneous road network.

More attention is paid to the shaping of diverse communication spaces. The mosque square makes the most important communication space inside; the living square should also be appropriately added in the settlement area; consider the traffic connection between these open spaces. Reasonably controlling the height of the building around the mosque effectively highlights the dominant position of the mosque in the skyline.



(Fig. 5 : Urban Renewal Program of Xiyuan Hui Community in Lanzhou, Wang Zhiyuan. *Research on Space Renewal of Lanzhou Xiyuan Hui Community in Urban Design Dimension [D]*. 2016)

Implementation effects & problems: It is more like the destruction of a protective coat. Only the mosque is considered. The surrounding development is only based on the premise of highlighting the status of the mosque. It essentially destroys the population structure and life mode of the ethnic minority areas. Nor did it follow the opinions of the local residents. It is likely that only a mosque shell was preserved in the end, and other national cultures no longer existed.

Case name: *Shenyang Xita*

Strategies: This update is primarily a low-development model for micro-implantation. It mainly includes the transformation of the two functions of business and residence: the commercial side is to solve the imbalance of time and space in the format through the participation of Hunchun Walking Commercial Street.

At the spatial level, there are three main levels: the spatial structure of the block, including the control of the "axis", the control of the "nuclear" and the control of the "slice". The axis is the two commercial landscape axis streets, and the core is the control of several spatial nodes. The area is the seven communities in the Xita area; the spatial texture of the continuation block should be repaired as much as possible in accordance with the original texture of the historical block.



(Fig. 6 : Urban renewal texture map of Xita, Zhao Bao. Urban renewal research in Xita area of Shenyang [D]. Shenyang Jianzhu University, 2012.)

Implementation effects & problems: Too idealistic, although the interventional approach of the two pedestrian streets seems to protect the history of the region, in fact, this form of intervention has closed the neighborhood, actually running through the interior but not making it truly open and The surrounding area is integrated. Moreover, the full text is judged from the top down, and the opinions of the aborigines are not investigated. An economically inefficient development model cannot allow the economy to revitalize.

Case name: Huhehaote

Strategies: Adopting a traditional medium-strength development model that is slightly biased to the reserved part, the area is divided into five areas, namely, the key style protection area with the halal temple as the core, the traditional style residential area, the Niujie Huimin modern residential area, the Huimin area and the municipal level. Commercial area. The traditional festivals of the Hui people are combined with the business, and the tourism industry is driven by the tourism industry. The update model combines a “top-down” planning control with a “bottom-up” small-scale update. Both protection and development, including the protection of the space texture with the mosque as the core and the protection of the traditional residence style of the Hui people, also include the protection of the non-physical environment such as the social structure and lifestyle of the Hui people's settlement.

Implementation effects & problems: This plan is a relatively rational and feasible solution. It is necessary to test whether the retained residential and traditional areas can be well integrated with the municipal commercial facilities. Whether modern residential areas and traditional residential areas will occur will occur. Differences in residents' psychology, etc.

Case name: Guangxi Gongcheng

Strategies: It mainly adopts low-intensity protection development and provides certain financial support for the self-renewal of the ancient town through the development of tourism, culture and commerce. At the same time, the original government single protection subject is transformed into a multi-subject with the participation of the government, developers and local residents. Construct a cultural display system, maintain the integrity of the old city pattern, and connect a new and old twin city through traffic and green corridors to build a new and old characteristic city. Reasonable organization of the surrounding traffic flow, setting up appropriate parking lots in each import and export, rationally arranging surrounding bus lines and temporary parking stops for taxis; restricting transit traffic crossing in historical blocks.

Implementation effects & problems: Because of the lack of funds, and the illusion of simply making money through tourism and cultural propaganda to fill the city's renewal of funds, in fact, low-quality tourism cannot lead to the accumulation of funds, the interior of the old city is basically no vitality.

4. Overview of case study and summary of the problems

Table 1. The mode and feature summary of case study

Mode	Content	Advantages	Disadvantages	Cases
Low-intensity protection development	Through industry-driven, market-oriented, policy support, etc., through tourism planning, implanting industry, cultural propaganda and less space interventions as intervention methods	Completely retaining the life style and social structure of core buildings, traditional streets and ethnic minorities, and having certain significance for areas that wish to be completely preserved as historical and cultural heritage.	The spatial pattern of decline is likely to be difficult to adapt to modern needs. It is difficult to truly develop these industries, and the financial benefits are very low. At the same time, ethnic minorities are not truly integrated into the process of urban development.	Guangxi Gongcheng; Yunnan Chuxiong; Xinjiang Kashi
Development mode of medium and low intensity through streets	It is based on the implantation of a pedestrian street and the passage of the transportation system. By creating a minority-style street, the originally closed settlements will be opened up, and the development of the original local block will be promoted.	Relatively small intensity, retaining certain traditional elements, and introducing external flow of people, seems to change the situation of spatial occlusion in most minority areas.	Most of them forced the settlements to open with several large roads, but the relationship between pedestrian streets and neighborhoods was not well demonstrated. The scale of pedestrian streets was rarely the original traditional street scale. At the same time, the surrounding traditional neighborhoods will be gradually eroded.	Shenyang Xita;
Retain core building, medium strength full development model	Retain the core building, complete the medium-strength commercial/residential development, and highlight the status of the core building from the overall space image, and build some small-scale streets and pedestrian streets.	The overall height of the space is not high, it can really highlight the spatial status of the core building. If it is made into a boutique space, it can become a more pleasant business and tourism environment.	In order to emphasize the prominent position of the religious core building in space, it has actually destroyed its central position from all aspects of the residents' hearts and social functions. Conservative development of medium intensity, in the long run, the economic development of the city is also relatively low.	Lanzhou Xiyuan; Beijing Jintaili; Henan Guancheng
Medium and high intensity hybrid development mode	Partition the colony and develop and mix different modes. High-intensity commercial development, modern housing development, traditional building protection mode, tourism development around the core building, etc.	The more mature and effective methods in the current case can make the characteristics of each space come into play. At present, it seems that it can also bear the heavy responsibility of the core area of the city and protect the cultural heritage to a certain extent.	Whether local residents accept this approach and the integration between old and new	Huhehaote
Retain only core buildings, high-intensity full development model	Retain only the core building perimeter for completely modern high-intensity development, residential, commercial, etc.	Fully modern high-intensity development, this kind of comparison can stimulate the economic development of the city, and the value of the land is also fully utilized.	What is caused is more social impact, destroying the structure of ethnic minority groups, causing dissatisfaction among indigenous peoples, etc., so the government should be cautious in this way.	Beijing Niujie; Shenyang "Huihuiying"

For the ethnic minorities, the normal activities of their religious activities, the completeness of the people and the spatial structure of the neighborhoods in their settlements, the respect and protection of their living customs and dependent spaces, the guarantee of their core architectural functions and status are the interests they pursue.

For the public, the original form of settlement will inevitably cause the space to be inward and occluded, the space cannot be enjoyed by the public, and it will become an area that blocks the overall public space structure of the city. At the same time, the general public needs for minority culture and business. There is a certain discrepancy between the business required for the living activities of the ethnic minorities themselves. For the government, the residential and neighborhood forms of the settlements can no longer carry the value of the land, and the settlements are mostly located in the center of the old city, with the city. Development, the importance of these plots is increasing, and the existing forms are difficult to adapt to the needs of urban development.

The specific update means/implementation difficulties, first of all, are mostly top-down judgments, and the decision-makers of ethnic minorities are not included in the development process. Therefore, the voices of a large number of oppositions are often updated. Secondly, only the implementation is considered. The ethnic minorities within the renewal scope basically do not consider the division of labor of their complete social structure system in the whole city, so most of them will lead to the destruction of ethnic minority ecosystems in the city; in addition, the subject of renewal is too single, and there are few multi-subjects. There is no unified agency for the linkage; in the end, the treatment of the core building is too formalistic, and the settlement itself should be a complete ecosystem. It is impossible to achieve a truly effective urban renewal without grasping the characteristics of the areas inhabited by ethnic minorities.

5. Conclusion: Mechanism and support methods of the urban renewal process

Based on all analysis and studies carried out above, a contact mechanism of renewal of minority nationalities areas is put forward:

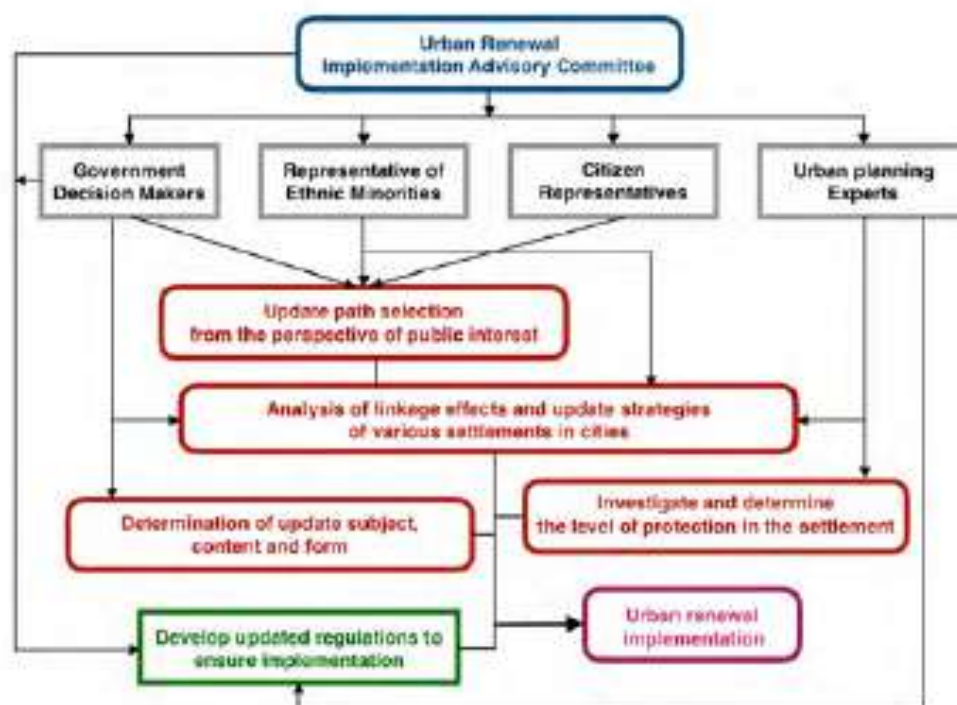


Fig. 7. Urban renewal mechanism of minority nationality areas

Based on all analysis and studies carried out above, a contact mechanism of renewal of minority nationalities areas is put forward:

5.1 The government should first ask professionals to investigate and determine the level of protection in the minority nationalities areas.

Determine the remains of the historical value of the settlement, the existing buildings (especially the core

buildings), the neighborhoods, and the completeness of the living structure of their circles of social (most important). This is to determine whether the block is only preserved as a valuable historical building group, or as a complete/partially complete area with a variety of features to participate in the subsequent urban renewal process, or it is very unlikely that the reservation will be completely renewal.

The existing cases of urban renewal in all ethnic minority areas have not solved this problem well. Regardless of the urban development, the settlements will gradually be eaten away. The settlements themselves often have no foresight and choice.

5.2 Analysis of the renewal path from the perspective of public interest.

This is one of the core contents of urban renewal work in minority areas. It is a more complex definition of public interest that requires us to fully investigate and evaluate. For example, low-intensity tourism development and high-intensity residential development are relatively common practices at present (as cases show), the former is a more balanced approach, want to protect the public interest of ethnic minorities, and want to give due consideration to government revenue, but also try to make them open public space. However, according to the case analysis, only considering the balance the consequences are not often useful. The tourism is inaccessible and has not obtained much financial benefits. The value disappears, and the space quality is not high, it has become a low-end public space; as for the latter, such as Beijing Niujie renovation, is a more extreme practice, only retaining the core building, and other basically developing high-intensity residential areas, which actually is a practice of basically abandoning the public interest of ethnic minorities, but it has formed a public space with relatively high utilization rate, and has fully exerted the value of the land. To some extent, it is a completion of urban renewal.

Comments on cases as Niujie are mixed. However, because there are so many stakeholders involved, it is not necessarily good to try to accommodate the balanced approach of all stakeholders. The specific choice of the renewal path should be carried out under the consideration of multiple interests. In the end, it should be considered that there should be trade-offs and emphasis. It should be affirmative to renew the operation with one party's interests as the main body. So depending on social study, renewal path should be determined in this step.

5.3 Determine the subject, contents and forms of the renewal.

According to the results of the public interest survey, the main body and content of the implementation are often different. In the cases of tourism development, the main part is market intervention, through the implantation of some industries, the transfer/lease of land and building ownership, and appropriate commercial adaptation, which is essentially a low-intensity development biased towards the industry. The model, based on traditional space, the government formulates appropriate policies and guides, is the implementation method of this kind of situation; similar to the high-intensity development model of Niujie, the government recovers the land, develops through the estate developer, and retains some core buildings. Characteristic public activity space, this kind of model is the government-led market operation, a more common and traditional top-down development path; it can also carry out bottom-up development, raise funds or government subsidies, and give appropriate to ethnic minorities. The right to freedom and the distribution of professional guidance, to make their own renovation and industrial upgrading. This advantage can maximize the ecology of ethnic minority areas and make the settlements truly preserved as historical remains. Accordingly, the specific method to be adopted should be comprehensively considered in combination with the survey results of the first and second steps. Then government can start to find the exact organizations to take in charge of each part of the renewal.

5.4. The linkage analysis and renewal strategy determination of the other minority nationalities areas in the same city.

According to the case study, the cities inhabited by ethnic minorities generally have very close associations between the various settlements: the demographic composition has a certain correlation, the core religious buildings generally have a division of responsibilities, and some special activities will be held in various

settlements. There will also be certain kinship.

Once we renew one of the areas, the most important thing is to clearly define the relationship with other settlements: operations such as relocation of people and changes in functions will inevitably have a wide-ranging impact. It involves the resettlement of minority populations after the house demolition and other functions to be relocated, and how to replace if not migrate the initial population. One of the important features of urban renewal in ethnic minority areas is systemic and linkage, which leads to the whole body. Therefore, the renewal of any ethnic minority area is actually a city's overall project, so that the renewal of the entire city can achieve better results.

5.5. Forming the Urban Renewal Advisory Implementation Committee to supervise for this process.

At this stage, urban renewal supervision system involving minority nationality areas is still a traditional one. Taking the urban renewal rules of Shanghai as an example, the land planning management department is responsible for the coordination, supervision and implementation of urban renewal, and other relevant departments cooperate in fulfilling various duties within the scope of duties. But in fact, this set is difficult to implement in minority areas. Within the ethnic minority there are their deliberations and management organizations, as well as the will of the imams as their spiritual leaders.

Urban renewal in ethnic minority areas should set up a special organization, which is composed of government policy makers, representatives of ethnic minorities, representatives of ordinary citizens, and professional planning and design personnel. This will not only ensure that the interests and opinions of them are fully heard. It is also possible to let the implementation measures released in the name of being widely accepted. All the contents of the previous period can be submitted to the professional department for planning and design.

In addition to the implementation mechanism, urban renewal in minority areas requires certain policy conditions and other support:

5.6. Guide all types of people in minority nationality cities to establish a view of public interest

Establishing correct public values is the premise of the greatest synergy between urban renewal work in minority areas, and it is the concept guarantee of renewal success. Governments, developers, and residents are the representatives of government power, market power, and social power in the traditional residential neighborhood renewal activities. Their value orientation and corresponding behavior have different effects on the public space inside the block. Therefore, in the renewal of traditional residential quarters, we should first establish correct public values and coordinate the interests and goals of all parties: we should regard "people-oriented" as the basis of public values and ensure social justice. In addition to establishing the correct value orientation, the government must guide developers and residents to form a value orientation that can be coordinated and unified through publicity and education, administrative regulations, and organizational management. In terms of developers, we should strengthen our sense of social responsibility and unify the realization of economic benefits with the creation of social values and the protection of cultural values. Residents should take the initiative to improve their own quality, not only strengthen their ability to protect their legitimate interests, but also actively participate in the movement to protect the city's history and culture and safeguard the public interest.

5.7. Develop appropriate policies and regulations to ensure implementation

In order to bring the renewal and renovation of ethnic minority neighborhoods to the right direction and to prevent improper development behavior, corresponding policies and regulations must be formulated. Developers are profitable. At this time, the government needs to formulate policies to guide them, so that they can coordinate the contradiction between economic interests and historical and cultural protection and social equity. Encourage developers to adopt correct compensation through appropriate compensation and incentive measures. Renewal the development method.

The measures that the government can take include economic compensation, credit support, and the development of floor area rate awards. At the same time, the construction of the legal system should be

hierarchical. In addition to the overall control and national regulations such as the Urban Planning Law and the Real Estate Law, various special regulations and local regulations should be formulated according to specific conditions, such as targeting ethnic minorities. Special regulations and local regulations on religious building protection, residents' demolition and resettlement, and public participation in district renewal.

5.8. Extensively guide the public and engage in public participation

In the renewal, a special competent department should be set up to fully mobilize the enthusiasm of all parties. It is necessary to involve them in community building in various forms, to promote the connection between residents while achieving specific community development goals, and to enhance residents' sense of community pride and belonging. The prominent feature of community development is the emphasis on broad public participation in community affairs and the legal definition of community development programs to benefit low-income people.

6. Summary

The urban renewal of minority nationality areas is difficult, and the reality does not allow us to make mistakes again and let these spaces with historical and cultural values gradually disappear. This paper mainly discusses the contradiction between the urban renewal of ethnic minority areas and the general urban renewal from the contradiction of public interest and the dilemma of implementation through case studies and theoretical analysis, and then proposes a five-step mechanism, from the evaluation of the value of the settlement to the establishment. The implementation committee will carry out the progress of the city to ensure the smooth development of urban renewal in ethnic minority areas. Finally, support measures will be proposed to assist the implementation of urban renewal work.

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Grand Paris or Île-de-France? Comparing two institutional models for transitioning to sustainable transport in the Île-de-France region

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Abstract: Since 2000, the Paris region has seen a substantial transition in transport governance, as the regional transport authority shifted from the control of the state to the region. Additionally, the state created a new entity, the Société du Grand Paris (SGP), to develop a rail network, the Grand Paris Express. This research explores these institutional changes, seeking to understand both how the new institutional forms came about and what these new forms enable and constrain, particularly with respect to creating a more just and sustainable city. This research is a comparative historical case study from the 1990s to the present, looking at two processes of institutional change occurring at different scales within the same place. It uses Kingdon's three-streams model to assess the opportunities and moments for institutional change. The two processes reveal many of the tensions in governance debates, with the more formal regional authority having greater democratic accountability than SGP. Additionally, as SGP began shifting to the construction phase, its public engagement came to resemble that of a more formal and accountable transport provider, as the agency encountered communities that would feel real material changes from its projects.

Keywords: governance; sustainable transport; political windows, institutional analysis

Introduction

In 1996, dual crises of air pollution and public transit strikes forced attention on the growing transport problems in the Île-de-France region and the need to shift away from private vehicle travel (Zittoun, 2013). The Green Party made transport one of their signature issues, and politicians on the left began pushing for more investment in public transport and cycling. These efforts have brought results. Since 1997, the region has built 7 tram lines, extended 4 metro lines, and reallocated over 100km of road space away from cars to buses, bikes, and pedestrians, most notably the pedestrianization of the banks of the Seine. In addition, the city of Paris set up some of the first municipal bike and car share programs and adjusted parking pricing to encourage drivers to leave their cars at home. The policies have demonstrated results, with car traffic on Paris roads falling 46% from 1992 to 2015 and the modal share by car falling 10 percentage points in Paris and 7 percentage points in the suburbs (Heran, 2017; Halpern and Le Galès, 2018). The shift to sustainable mobility has also moved across the political spectrum, as politicians from both the left and the right tout policies to encourage public transport and cycling.

The story of Paris's significant mode shift over the past twenty years coincides with a story of increasing decentralization of power away from the state toward the region and localities. At the start of the 1990s, the national government controlled nearly every piece of transport infrastructure in Île-de-France, whether as the head of the local transit authority, the major shareholder of the two largest transport providers, the owner of the major roads in the departments, and the regulator of traffic with Paris proper. Today, the president of the region heads the transport authority, one of the transport providers has decentralized its offices and embedded officers within departments, the roads are being progressively transferred to departments and municipalities, and the mayor of Paris has just won the right to enforce her own traffic laws.

As the decentralization finalized, however, the state reasserted itself in the transport conversation with the creation of the Société du Grand Paris (SGP), an institution created with the sole purpose of constructing four new metro lines in the Paris suburbs. The lines are financed separately from other

transport infrastructure, and the regional transport authority does not retain oversight. Yet while the creation of SGP was a state project, the suburban ring subway project existed for a long time in the regional consciousness. The political coalition that made the Grand Paris Express possible includes not only the state but also networks of local and regional actors who carried the project over the long term.

Participation played a legitimizing role for both regional control and the SGP. Regional control was premised in part on the idea that as a major funder of transport projects, the region should participate in the decision-making. At the same time, both regional and local governments were making efforts to be more accountable to citizens, a major tenet of Bertrand Delanoë's 2000 campaign. Participation as legitimacy was an even stronger anchor for the SGP, which engaged in a large formal concertation process around the Grand Paris metro system and the idea of Grand Paris itself.

The institutional changes around transport governance reflect a spectrum from hard to soft governance, that is, the formal transfer of power from the state to the region, the creation of the Type II institution of the Société du Grand Paris, and significant background networking and moments of political influence. The benefit of the lens of soft governance is that it shifts the focus from the decision itself to the networks of influence and power that set the premises for the decision and the subsequent implementation (Moos, 2009). If we also take a normative stance of seeking a just transition toward sustainable transport, we can ask to what extent the various institutional forms contributed to such a transition, where justice refers both to attention to the least well-off and to the inclusion of diverse voices in the process.

To explore this question, we conducted a content analysis of official reports, and documents produced by experts. As the Grand Paris Express project is better documented than the smaller sustainable transition projects, we supplemented with interviews with planners involved in the significant smaller transportation projects, particularly the Plan des Déplacements Urbains and its flagship project, the Mobilien bus network.

Political windows: the failure of state-led transport governance and the rise of the region

While Paris has had a regional council since the 1980s, it was historically relatively powerless, both within the region and compared to other regional authorities. In 1994, for example, the regional council ceded input on the joint State-Region infrastructure plan to the technical representatives of the national government (Gonzalez Alvarez, 2006). Similarly, while negotiations with the transport operators were technically done in collaboration with the region, the region held very little power or technical capacity.

As the current transport paradigm came under threat in the early 1990s, the governance mechanisms were equally implicated. In particular, the lack of power for the Paris region not only ran counter to the trend for decentralization, but it also was evident as a culprit in Paris's delay in sustainable transport programs relative to other areas. Nantes and Strasbourg were developing tram networks and reimagining parking policy while the Île-de-France remained stuck in a car-oriented mindset with public transport projects that were both duplicative and overbudget. Public transport priorities were set by competing companies rather than a regional entity.

Public transport in the Île-de-France region is provided by two state-owned companies and a group of smaller operators. RATP, formed in 1949, owns the exclusive right to operate the Métro system and bus network within the Metro system boundaries. Their right expires in 2024. SNCF, the French national rail provider, operates a regional commuter rail network (known as Transilien) and shares operation of the regional express rail (RER) network with RATP. Bus service outside of the boundaries of the RATP monopoly but inside the region is provided by a number of smaller service providers, organized as Optile.

Responsibility for transit network planning was held by the Syndicat des Transport Parisien (STP) until 2001, when it became the Syndicat des Transport Île-de-France (now known as Île-de-France Mobilités). STP was controlled by the national government, which held the majority of seats on the

board. Major funding was provided by the state and by the *Versement Transport*, a payroll tax levied on businesses with more than 11 employees.

As resistance grew to auto-oriented development, the existing structure was inadequate. In particular, regulation of soft modes and of the roadscape that could be allocated away from cars to buses, bikes, and pedestrians, occurred at the municipal level, but such modes crossed municipal boundaries. In addition, the large infrastructure projects that RATP and SNCF wanted went over budget and did not address the new shape of the city, in which the center of Paris was being depopulated in favor of growth of jobs and population in the suburbs. Instead of suburb-to-suburb travel, both companies focused their attention in the 1990s on projects to relieve congestion on the main East-West connections through Paris, RER A and Metro line 1. The projects, the construction of the RER E by SNCF and of Line 14 by RATP, absorbed the bulk of the financing in the state-region infrastructure contract.

As an alternative, the near suburbs, which fell within the RATP boundaries, were demanding more capacity for suburb to suburb trips, as well as Metro expansions. The department of Seine-Saint-Denis worked with RATP to bring trams, which had proved successful as an agent of urban regeneration as well as transport, to the Paris region, opening T1 in 1992. The department of Hauts-de-Seine followed with T2 in 1998. Within Paris, Mayor Tiberi began exploring a tramway on the Parisian side of the Boulevard Périphérique, and installing bus lanes on the Petite Ceinture, the busiest bus line in Paris. Part of the focus on surface transportation was due to a desire to directly take road space from cars, but it also represented a financial reality, as the twin tunneling projects in Central Paris did not leave space for a suburb-suburb metro. Thus, in places where an elected body could begin to wrangle local communities and elected officials into road space reallocations and new forms of transport investment, it was happening, but that kind of control was not available at the regional level.

The rise of the region and the shift to sustainable transportation entered through the same political window. The idea of the political window comes from John Kingdon (1995), who posited that policy change comes from three streams, one of problems, one of policy solutions, and one of politics. Political windows open when problems rise to the top of the agenda in moments of political opportunity when solutions are available. The political opportunity for both was the relative failure of governance in transport, combined with the end of long-standing conservative rule in the Île-de-France region on the backs of a corruption scandal. In 1998, Jean-Paul Huchon from the Socialist Party was elected head of the region, marking a significant political shift. He lobbied for the region to have increased powers within the STP. The idea of the region playing a significant role in governance had been in the solutions stream since the 1982 decentralization law which put all the regions except Paris in charge of their own transport. Commissions in 1992 and 1994 had explored how to shift both decision-making power and financing to the region, but the political window was not open until the end of the 1990s when the region was ready for significant change (Larroque et. al., 2002).

The Green party took the same opening to push for sustainable transport policies. While the Socialist party won the regional elections outright in 1998, Mayor Delanoë had to enter into coalition with the Greens and Ecologists in Paris. He gave them the transport portfolio under the direction of Green Party member Denis Baupin. Delanoë permitted them free rein as long as there was significant public engagement. For the Mobilien bus priority project, staff from the city and the RATP held public meetings in each arrondissement, in addition to hosting an extra-municipal committee on transport. However, the participation, particularly the arrondissement meetings, were not effective participation, as the implementation decisions were largely based on politics and technical factors rather than engagement. The city director of the Mobilien project recalls sitting in public meetings with Baupin and not even being allowed to respond to angry residents. Baupin told him not to bother, as the project would be implemented anyway (personal interview, 2019).

Alongside the regional efforts, Delanoë began working with the inner suburbs on a project called Paris Metropole. While this collaborative project spanned beyond transport, it paralleled efforts by the city of Paris to create a surface transportation operating authority that would control roads, parking, and surface transport. The city pushed for such a secondary operating authority during the regional takeover process. Though the authority has not yet been created, close cooperation with the

neighboring communes remains a priority for the city and was a central goal of the 2018 bus network restructuring (personal interview, 2019).

Political windows: the genesis of Société du Grand Paris

Just as the regional takeover of the transport system was underway in 2004, engineers at RATP returned the idea of a suburban ring metro to the public discourse, under the name of Métrophérique (Auzannet, 2018). This was at least in part a play for the organization's own survival, as EU regulations were likely to open up its networks to competition at the end of the monopoly period in 2024-2030. At the same time, it was also a sound strategic move, as the suburb-to-suburb metro had been in the solutions stream since a report by the Regional Institute for Urban Planning (IAURIF), written for the regional takeover of the infrastructure planning process. Now that the region was in charge, and one which prioritized the needs of the relatively left-leaning inner suburbs, it was a good moment to push for it. However, the region placed the project in the regional plan as one project in many in an attempt to spread the plan across the region. The Arc Express project did not become a signature plan until the national government re-entered the picture.

In June 2007, Nicolas Sarkozy, only recently elected, announced his support for the Métrophérique during the discours de Roissy (Delourme, 2018). It was the first time that the government took a position on the suburb-to-suburb metro. Moreover, Sarkozy launched the Grand Paris initiative, a broader effort to rethink metropolitan Paris and a counter to the left-aligned Metropolitan Conference. Sarkozy turned the Grand Paris project into "a war machine against Jean-Paul Huchon, the socialist president" (Levy, 2010). He therefore appointed Christian Blanc as head of a state-led Grand Paris project to counter the decisions of Huchon. Blanc's approach was inspired from the financing of the Parisian metro more than a century before: very long term loans. Blanc turned the Grand Paris Express into a flagship - platform: technological performance, elaborate design and architecture for the train stations, infrastructure, cultural programming, and amenities delivered in addition to the core transportation network.

Nearly all of the Grand Paris Express planning happened among a limited number of people, and their work "vanished into the cigar smoke of their boss, Christian Blanc" (Levy, 2010). Christian Blanc became the face and the father of the Grand Paris Express, but after the discursive work performed to legitimate regional takeover, new discursive work was needed to legitimate this small, state-led project. Enter the founding discourse of Grand Paris, given by Nicolas Sarkozy in 2009 and the grand concertation, involving international architects and a formal, state-led engagement process.

The formal state led engagement process began September 30, 2010. It was guided by the Commission Nationale du Débat Public (CNDP) (Levy, 2010). The first order of business was deciding whether to present the "Grand Huit" transportation network (proposed by the State) alone or to the "Arc Express" transportation network (proposed by the Région):

- The "Grand Huit" (130km) went beyond the existing metro network and loomed large, offering to cover the grande couronne Ouest (Versailles/Saclay) and Est (Noisy-Champs/Roissy), while crossing through Paris
- The "Arc Express" (60 km) offered two tangential lines in the petite couronne, in the North (Nanterre/Bobigny) and in the South (Meudon/Créteil), with an extension to the grande couronne towards Noisy-le-Grand.

While relations had been poor between Christian Blanc and Huchon, Blanc's successor Maurice Leroy bridged the gap, opening the concertation to both proposals and beginning the negotiation process with the Region Île-de-France during his time as Ministre de la Ville (November 2010- May 2012). The way it differed from the first stage, was that it was clearly inscribed in a search for consensus with a larger pool of decisionmakers at different levels. It was formalized through the creation of the informal Club du Grand Paris which gave a seat at the table to the presidents of the department councils, the prefect of the Region (the national government's representative in the region), international architects, Paris

city hall, and representatives of the transportation sector. As one of the goals was to fix the lack of connectivity for the territories of the eastern *banlieues* of Seine-Saint-Denis: the decision process to create the metro line 15 Est generated a negotiation process with Claude Bartolone, at the time the Socialist president of the Seine-Saint-Denis General Council. This support from socialist Bartolone allowed to ease negotiations with the Region, which also had a socialist majority.

These three stages of technocratic expertise legitimized by formal concertation, regional negotiation, and the work of the departmental councils summarize well how this convergence of interests among the State, the Region, the mayors and the departmental councils paved the way for formal concertation. Métrophérique was a solution with a large latent coalition of actors that had been subsumed by other problems and the lack of an institutional structure to implement it. It had lain so long in the solution stream, however, that once the other two major projects were completed (RER E and Line 14), it was politically powerful to both the newly empowered region and a state entity looking to make a mark. By the end of the negotiation in 2012, Jean-Paul Huchon could write in a *Le Monde* op-ed, “The Grand Paris Express is not a luxury, it is a priority investment...It is not a technocratic project, it is a democratic project.” (Huchon, 2012).

Unlike in the case of regional empowerment, the political stream did not serve the same opening function for the Grand Paris Express. Instead, the political challenges of a regional and state government that were in opposition led to a proliferation of institutional actors in an already crowded scene. Since January 2016, the Grand Paris counts several institutional actors: the state, the region, SGP, the Préfet of the Île-de-France region, and Métropole du Grand Paris, which combines 131 municipalities regrouped into twelve territories (T1 to T12). The prerogatives of these actors have been defined thanks to the MAPTAM law, voted in November 2015. The law also officializes the use of public-private partnerships as go-to tools, formalizing them and making them a part of the new governance model strategy. It also revolves around a formalized participation tool, through the Commission nationale du débat public (CNDP), which researchers define as a “procedural concession” (Blondiaux, 2008), characteristic of the fact that since the 1980s, deliberative processes have gained traction, in the context of a crisis of representation, contestation of traditional forms of technical and scientific expertise (Bacqué & Sintomer 2011, Le Goff 2011).

The classic distinction between the *laissez-faire* approach to Anglo-Saxon liberalism where infrastructure provision might be seen as more subject to the pressures of private developers, and the French welfare state model is no longer that accurate. This opened the way to a slow but steady trend of public-private partnerships à la française, first made possible by the limited Loi d'Orientation Foncière of 1967 (Pollard 2018, Béhar et al. 2018), made systematic in 1985. The Grand Paris governance model epitomizes this shift, since the 2016 inauguration of political institutions in charge of planning and policymaking was preceded by the creation of the Société du Grand Paris in 2010, a single purpose company in charge of the development of the extended Grand Paris Express public transportation system (Enright 2016).

Participation, legitimacy and change

Discourses on how pragmatic and innovative these concertation processes were, formulated in order to secure the legitimacy of development projects, have started to be conceptualized in recent years. Practitioners in Paris refer to a “new generation” of urban development projects that distinguishes itself from traditional French planning. The recurring shifts referred to include a much more complex role given to real estate developers, as well as an extended range of new stakeholders involved in design, implementation and programming along public institutions. Yet, one major traditional standard remains, which is the use of discretionary expertise, and the exclusion of users from the decision-making process (Enright 2016, Béhar et al. 2018). This opens the way to arbitrary site selection, financialization, delegation of traditionally public services to the private sector, and as mentioned previously, minimal and carefully orchestrated citizen participation, seen most often as a threat to the regulatory viability of the project (Béhar et al. 2018). Behind the pragmatic and innovative governance

tools designed and implemented by a progressive mayoral administration, or campaigns of "Réinventons"¹, path-dependency prevails (Enright 2016).

The rhetoric of pragmatism and innovation behind the public-private implementation process, as opposed to a slower traditional public planning process, even becomes a justification for discretionary expertise in the hand of local elites (Béhar et al. 2018). Such a paradox is conceptualized as "urbanism 1.0" by Dominique Lorrain, who argues that behind rhetorics of pragmatism and innovation, the Grand Paris policy programs are developed in a very opaque discretionary way (Lorrain 2018). Yet the policy streams literature suggests that for implementation to occur, they will have to eventually enter into the political light, and in doing so, can at times be shaped to regional priorities.

The major argument about the role of experts that we can extract from the chronological study is that the Grand Paris is inscribed in a very old-school French framework: the Grand urbanism, the "Grand Project" (or major works) and the centralized *dirigiste* administrative model (Gonguet, 2015). Even though it appears as "new urban politics" based on growth coalitions and public-private partnerships (Enright, 2016), the first stages of its implementation were thus characterized by very limited participatory processes. The pre-implementation process involved "starchitects" and internationally renowned consultants, as a way to give a sense of imagined solidarity and legitimization to a rather top-down decision-making process. The sole shift is in the state's goal, which appears to be more market-oriented than in past decades: " authority is made polymorphic, consensual, participatory, and contractual, and spatial policies are increasingly oriented toward private concerns " (Enright, 2016, 27). Yet it would be a stretch to too firmly link participatory politics to private concerns. Models of participation less explicitly oriented to economic development, like the region's anti-car policies, can have participatory processes without public-private partnerships.

Conclusion Moving forward, what are the challenges and opportunities for each model?

While the concertation may have lent legitimacy to the Grand Paris project, implementation has stumbled. The Cour de Comptes, a national auditor, opened an investigation into the SGP underlying financial mismanagement (estimated at 13 billion euros) and suspicion of favoritism linked to Grand Paris Express contracts (Le Figaro, 2019). The investigation led to a follow-up by the Parquet National Financier (PNF), which tracks financial crime. There has also been delays in delivering construction for the Olympics, the full network will never be ready in time. The government will soon present a revised schedule to stop the delays and avoid the rising costs. Tensions between lines needed for the Olympics and lines needed to improve access for residents have led to mayors protesting the delays and refusing to make required payments (Gregoire 2018, Gregoire 2019).

The main point of criticism thus far is that it is hard to build legitimacy around a project supposed to "govern" for 12 million residents, and also the selection of priority neighborhoods and projects is not efficiently correcting territorial inequalities, and that it serves mainly the purpose of densifying and gentrifying neighborhoods located in the direct vicinity of the Grand Paris Express extended public transportation network. On the regional side, the region struggles from its sheer size and diversity. The "dusting" of projects across the region that imperiled the Arc Express in the first place continues to be a problem, perhaps more so now when the region is governed by a conservative elected from the outer ring suburbs, who owes no favors to the socialists in Paris.

Another major thread that runs through both stories is the role of the state-empowered technician. In both the Grand Paris Express and bus improvements, the main technical actor is RATP, which is state-controlled. RATP generated the vision for Mobilien, the structured regional bus network, and for the Métrophérique that spawned both the Arc Express and the Grand Paris Express. RATP engineers also staffed Christian Blanc, himself a former RATP head. In both cases, however, RATP has been losing ground. In the region's case, RATP is facing the loss of its monopoly on the bus sector in 2024, and the region is preparing to guide more of the technical planning and contract supervision. Instead of being the main engine of ideas, RATP may become just another operator. In the Grand Paris Express, RATP is losing out to public-private partnerships, already playing a role as a competitor. In

¹ Participatory campaigns to reinvent the governance model in Paris prior to its official inauguration.

one case, the experts are becoming subsumed to politicians, while in other, they follow the guise of the market. Who then generates the solutions that populate the solution stream?

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Governance and power in the metropolitan regions of the Randstad¹

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Abstract: Urban growth and new patterns of urban flows demand new scales and forms of governance since administrative borders often do not reflect contemporary functional relations such as labour and housing markets. To address these issues, new arrangements for metropolitan governance have been developed across many countries. These arrangements can take many forms but often seek to reduce administrative fragmentation and manage complex issues beyond the municipal scale. These arrangements are often collaborative and negotiated; competences and processes of deliberation and decision-making are not closely defined by the rule of law. Their strategic capacity or powers are derived from ‘resources’, ‘process’ and ‘meaning’. This paper compares these three types of power in the governance arrangements for two Dutch metropolitan areas: Amsterdam and Rotterdam The Hague.

Keywords: Metropolitan regions, governance, power, Randstad

1. Introduction

Trends in decentralisation and globalisation are increasingly testing the capacity of regional economies to adapt and exploit their competitive advantages, while also offering new opportunities for regional development. All levels of government are rethinking their strategies for building competitive, sustainable, inclusive urban territories (OECD, 2016). Effective relations between different levels of government, as well as greater participation by citizens, firms, education and research institutions, and other non-state actors are required in order to improve the delivery and quality of public services (OECD, 2016).


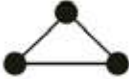
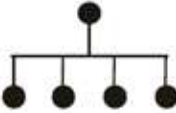

In practice there has been a rapid growth in consultation and coordination structures in response to the growing spatial interaction and integration at the supra-local level, including metropolitan regions (as well as other types of regions). The private sector and voluntary actors are increasingly participating in the management of territories. Government itself has become a multi-actor system as policy sectors (the proverbial silos) have their own agenda while the range of semi-autonomous governmental agencies add to administrative complexity (e.g. airport and port authorities, public transport providers and their managing authorities).

This has resulted in the pursuit for new governance arrangements for metropolitan areas. The OECD (2015) distinguishes between four broad categories of governance arrangements that can be found around the world (Figure 1): (1) informal/soft co-ordination, (2) inter-municipal authorities, (3) supra-municipal authorities and (4) special status of ‘metropolitan cities’ (Figure 1). Each of these arrangements is associated with different levels of competences and different types of instruments. These categories are not mutually exclusive: different

¹ This paper will also be published as a chapter in a book on the Randstad by Routledge (Series Regions and Cities) in a slightly revised version in 2019/2020.

arrangements may coexist in the same country, and even within the same metropolitan area (OECD, 2015).² More than half of the metropolitan governance bodies across the world rely on informal or soft coordination arrangements.

Figure 1. Broad categories of metropolitan governance arrangements

<p>Informal/soft co-ordination. Often found in instances of polycentric urban development, lightly institutionalised platforms for information sharing and consultation are relatively easy both to implement and to undo. They typically lack enforcement tools and their relationship with citizens and other levels of government tends to remain minimal.</p>	
<p>Inter-municipal authorities. When established for a single purpose, such authorities aim at sharing costs and responsibilities across member municipalities – sometimes with the participation of other levels of government and sectoral organisations. Multi-purpose authorities embrace a defined range of key policies for urban development such as land use, transport and infrastructure.</p>	
<p>Supra-municipal authorities. An additional layer above municipalities can be introduced either by creating a directly elected metropolitan government, or with the upper governments setting down a non-elected metropolitan structure. The extent of municipal involvement and financial capacity often determine the effectiveness of a supra-municipal authority.</p>	
<p>Special status of “metropolitan cities”. Cities that exceed a legally defined population threshold can be upgraded into a special status as “metropolitan cities”, which puts them on the same footing as the next upper level of government and gives them broader competencies.</p>	

Source: OECD, 2015: 21

This paper examines the nature and powers of governance arrangements in two Dutch metropolitan areas both situated in the Randstad: Amsterdam and Rotterdam The Hague. To do so, it draws on the work of Healey (2006) and Haran (2010). Both Healey and Haran identify a triad of similar (but differing) factors influencing the decision environment. Healey draws on the work of Giddens (1984) in her analysis of institutional adaptation and change, identifying three key flows which shape the materialities and identities of actors and create the structural forces that they experience: ‘material resources’, ‘authoritative resources’ and ‘ideas and frames of reference’. Meanwhile, Haran draws on the work of Lukes (1974) and distinguishes three dimensions to explain the way power is used to organize the relationships between the actors involved in regional governance: ‘resources’, ‘process’ and ‘meaning’. In this paper, the powers derived from ‘resources’, ‘process’ and ‘meaning’ are used to structure the analysis and comparison of governance arrangements in the two Dutch metropolitan areas.

The *power of resources* has close ties to Healey’s dimension of ‘material resources’. For Healey, material resources refer to goods and assets, technologies, finance, labour power. Under the power of resources, Haran refers to information, knowledge and expertise, political access, control of money, rewards and sanctions including the mechanisms for their distributions like laws and regulations when referring to resources. In this paper, legal competences for different activities (e.g. spatial, transport and economic development) are also included under this form of power.

² For example, a metropolitan area may adopt one arrangement for a specific public service but another arrangement for other services.

The *power of process* is related to Healey's flow of authoritative resources, which includes regulatory power, the power to regulate the behaviour of others through formal and informal norms, codes, and laws (Healey, 2006). Haran (2010: 49) refers to the power of process as the power of actors to prevent certain issues from reaching collective decision-making agendas. This paper considers the power of process by analysing the actor network and the relations between them.

The *power of meaning* is closely linked to Healey's flow of ideas and frames of reference, the power to generate new imaginations and shape identities and values (Healey, 2006). According to Haran (2010), this power relates to the capacity to shape the perceptions and beliefs. In spatial planning this is closely related to visioning, the creation of 'images of the future' (see also Shipley, 2002) which is often intrinsically linked to visualisation and map-making or 'framing with images' (Faludi, 1996; Zonneveld, 2005). This power relates to how the structure of both metropolitan regions is perceived.

The analysis presented in this chapter is based on a mixture of primary and secondary sources, building on earlier related work by the authors (including Zonneveld & Spaans, 2014; Spaans & Zonneveld, 2015, 2016; Spaans & Stead, 2016). The paper is divided into six main parts. It continues with an overview of recent international trends in metropolitan governance. It then presents a summary of trends in sub-national governance in the Netherlands. This is followed by analyses of power in the metropolitan regions of Rotterdam The Hague (MRDH) (section 4) and Amsterdam (MRA) (section 5). It concludes with a reflection on the extent to which the powers of metropolitan governance in the two cases coincide and have experienced similar changes.

2. Trends in regional and metropolitan governance in an international perspective

2.1 Trends in regional governance

Building on the work of Lidström (2007) and Fürst (2009), a number of closely interlinked contemporary trends in regional governance can be identified across Europe and beyond (Stead & Pálné Kovács, 2016). These trends can be summarised under five headings: (1) redefining of the role of the nation-state; (2) the strengthening of lower levels of self-government; (3) increasing diversity, variation and even asymmetry of governance; (4) increasing marketization of the public domain; and (5) shifting rationales for intervention.

Redefining of the role of the nation-state

The establishment and gradual expansion of the EU has changed the role of national borders and has transferred decision-making powers both upwards and downwards: to the supranational and sub-national levels. European regional policy, primarily through the Structural Funds and Cohesion Funds, has contributed to the establishment of new regional bodies (or the strengthening of existing bodies) in various countries to administer European regional policy resources. At the same time, territorial management and planning approaches in member states are being increasingly shaped by European policies and initiatives (e.g. structural fund rules, environmental management and nature protection directives). Meanwhile, the role of the nation-state has been challenged from inside in some cases where demands for separatism or self-government have been made, motivated by regional culture or identity arguments.

Strengthening lower levels of self-government

In many European countries, examples can be found where functions have been decentralised from central government to local and regional levels of government. In some countries, this has happened as a result of the reorganisation of sub-national government, either by amalgamating municipalities or regions, or by creating new regional levels of self-government. Reforms in sub-national government have been enacted in various countries where comprehensive reforms of the whole structure of local and regional government have

taken place, including amalgamations of municipalities and regions, and the transfer of functions between different levels of government (see for example Galland & Enemark, 2013). In some cases, however, reforms to government structures and competences have not always been accompanied by corresponding shifts in funding allocations for a variety of reasons including the political difficulties or complexities of fiscal reforms (Maier, 1998; OECD, 2001).

Increasing diversity, variation and even asymmetry of governance and government

This tendency towards diversity can be seen as the result of empowerment of lower levels of government. Not only is the scope for variation between sub-national units greater, some units are also permitted to follow their own paths that may differ from the general national pattern. Various types of asymmetry can be distinguished: political, administrative and fiscal (Loughlin, 2007).³

Increasing marketization of the public domain

The increased involvement of non-state actors (including the private sector) is one of the central dimensions of the shifts from government to governance (see for example Kooiman, 1993). Many functions that were seen as typical public responsibilities during the peak of the welfare state era (when government rather than governance prevailed) have more recently either been privatized or are run jointly by public and private providers. Public organizations are increasingly taking an ‘enabling’ role where other actors are the providers of public services. In many countries, the welfare state has been reconfigured in ways that makes it less centralized and less redistributive, and more oriented to promoting the role of the market. Outsourcing is one of the ways in which non-state actors (including private and non-profit) are increasingly involved in delivering goods and/or services, a trend closely associated with the emergence of new public management. Governments can outsource the delivery of services in two ways: providing technical support (e.g. consultancy or back-office functions for government); and delivering goods or services directly to the end user on behalf of the government (e.g. public transport or waste disposal services).

Shifting rationales for intervention

Territorial governance is being redefined in the light of important societal challenges, new powers and responsibilities (see above) and new attempts to increase the societal relevance of planning. Across Europe, territorial governance is being recast as a way of managing the increasing interdependencies of actors involved in territorial development (Stead & Meijers, 2009). Because the competition for various goods and services often extends well beyond national boundaries, the pressure to introduce governance reforms to respond to these challenges has increased. Moreover, the internationalisation of trade, education and communication is also contributing to shifts in the way in which territorial governance is practiced and conceptualised.

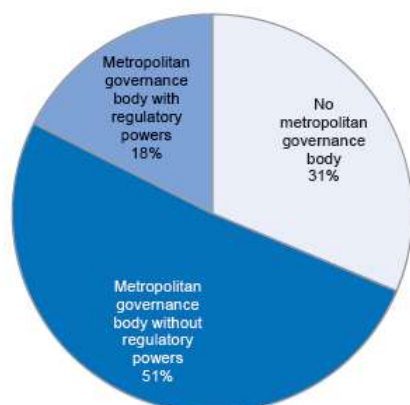
2.2 Trends in metropolitan governance

Metropolitan governance bodies – bodies aiming at organising responsibilities among public authorities in metropolitan areas (see also Figure 1) – are extremely common in most OECD countries. Very few countries have no metropolitan governance body at all (see Figure 2), although rarely are all metropolitan areas in a country covered by a metropolitan governance body. Since the 1990s, there has been renewed momentum in the creation of metropolitan governance bodies (or in the reform of existing ones). According to the OECD Metropolitan

³ The ‘special’ and ‘ordinary’ regions in Italy provide one example of political asymmetry and diversity within a state. Different forms of territorial administration within the UK provide one example of administrative and fiscal asymmetries, where the three territorial offices representing Scotland, Wales and Northern Ireland have distinct relations and arrangements with London. Meanwhile, in Spain, the Basque Country and Navarre have more financial (and legal) autonomy than the rest of the country, and exhibit fiscal asymmetry.

Survey held in 2013 (Ahrend et al., 2014), more than two-thirds of OECD metropolitan areas currently have some kind of body or agency responsible for metropolitan governance (Figure 2). However, not all these bodies have many, or even any, legal powers.

Figure 2. Share of OECD metropolitan areas with a body responsible for metropolitan governance



Source: OECD, 2015

A majority of metropolitan governance bodies work on regional development, spatial planning and transport. However, considerable diversity exists in their legal status, composition, power, budget and staff, and consequently in their impact on policy design and implementation. Within OECD countries, around 80% of metropolitan governance bodies work on regional development, over 70% on transport and over 60% on spatial planning. More than half of metropolitan governance bodies are active in these three fields at the same time (OECD, 2015).

Metropolitan-wide planning can be achieved by either formal and informal institutions or a mix thereof depending on how sectoral competencies are divided. The effectiveness of either institutional approach depends to a large extent on the types of issues that a territory faces, the relationships among the actors, the resources at their disposal and, in general, the capacity to implement a common agenda. The policies of upper level governments, regional or national, have a major impact on the adoption of inter-municipal or metropolitan planning frameworks. (OECD, 2017: 142) The majority of metropolitan governance bodies in the OECD tend to involve forms of informal or soft co-ordination; less than a quarter of OECD metropolitan areas have governance bodies that impose regulations.

Links to political authority are directly tied to an entity's capacity or to raise funds independently and to establish binding regulation (the 'power of resources'). Informal forms of metropolitan governance can struggle to implement a common agenda where major trade-offs are required and have weaker connections to the citizens they govern in terms of democratic legitimacy and accountability. Despite these drawbacks, there are many reasons why metropolitan areas have chosen to adopt more informal approaches to metropolitan collaboration, including the critical role they play in establishing a common metropolitan agenda (OECD, 2017: 150).

Intergovernmental transfers are highly instrumental across OECD countries in establishing metropolitan forms of governance. In the Netherlands, however, such mechanisms are not currently employed. Here, the national government funds large projects of metropolitan importance directly particularly in the domain of transport and infrastructure, rather than being funded by metropolitan regions as these regions lack taxation tools.

3. Searching for regional governance in the Netherlands

Many of the general trends discussed above were also visible in the Netherlands. Here too, the 1990s marked an important point in the search for new forms of metropolitan governance. However, the quest to find regional and metropolitan governance structures started a few decades earlier while becoming highly frenetic in the years after 1990. Quite typical for the Dutch case is the fact that more than one spatial scale was involved: the level of the entire Randstad as well as the level of its two constituting ‘wings’ and the urban regions within these wings.

3.1 First efforts to find ‘suitable’ regional governance arrangements

The present administrative structure of the Netherlands goes back to the 1848 constitution which defines two levels below the national level: provinces and municipalities. In those days there were 11 provinces and more than 1,200 municipalities. Today, by comparison, there are 12 provinces and 355 municipalities in the Netherlands. Not surprisingly whether municipalities could effectively deal with spatial development became an issue in the years to come. Discussions gained momentum during the first decades of the twentieth century as urbanisation started to become a regional phenomenon through suburbanisation and rapid urbanisation, in particular in industrial and mining areas and in the west of the country. From the 1910s onwards strong pleas for regional spatial planning were made, in particular after 1924 when a large international conference on this subject took place in Amsterdam. As at that stage there were still more than 1,000 municipalities, planners called for giving planning competences to the provinces. However, national government regarded this as far too centralistic (Faludi & Van der Valk, 1994). Regional planning issues had to be dealt with by (voluntary) cooperation between municipalities.

After the Second World War the Netherlands embarked on a long quest to find suitable governance arrangements, most specifically for metropolitan regions (Needham, 2014: 94-98). For instance, the national so-called Second Planning Report of 1966 proposed to add a fourth administrative layer in selected urban regions. This asymmetric solution (only applicable in a part of the country) was eight years later followed by a proposal to create a fourth level across the entire country through 44 districts (*‘rayons’*) with planning and implementation competences. This idea was soon abandoned as in 1976 a new coalition government proposed to maintain the three levels of administration but to regionalize the middle – provincial – layer: from 11 to 26 provinces. In follow-up proposals the number went down to 24 and 17 respectively. Massive opposition from politicians, administrators, academics and civil society at large eventually led to the withdrawal of all legislative proposals in 1983. Regional governance had to be achieved through municipal cooperation and the capacity to do so had to come from the application of the so-called Joint Regulations Act (WGR: *Wet Gemeenschappelijke Regelingen*) of which a first version dates from 1950. What this act does is opening up the possibility of cooperation between provinces, municipalities and water boards, but without directly elected councils: the watershed with a full-blown administrative layer. After the collapse of the plans to establish ‘new style’ provinces a new WGR came into force on January 1, 1985. A principle objective was that all the present cooperation provisions had to be bundled and integrated to foster effectiveness and transparency, with the provinces in a kind of supervisory role. This ‘conclusion’ (i.e. intermunicipal cooperation) would only hold for a few years.

3.2 Opening Pandora’s box once more

The economic recession of the 1980s particularly effected the four largest cities of the Randstad. Mid-1988 government decided to install a heavy-weight advisory committee to evaluate policies with an effect on the social-economic position of these cities, the so-called Montijn Committee. One area this committee specifically looked at was local governance. The main conclusion was that voluntary municipal cooperation based on the WGR was insufficient. The advice what to do was twofold and essentially multiscale: (1) create four

regional municipalities in the Randstad; and (2) create an Administrative Platform Randstad. How the second proposal was taken up we will discuss in the next sub-section.

On the basis of this advice and a range of other studies and advisory reports, government decided in 1993 for the top-down creation of so-called city-provinces in seven regions, including Amsterdam, Rotterdam and The Hague (the other regions were Utrecht, Arnhem-Nijmegen, Eindhoven and the Twente region in the east of the country). This would have to be achieved in a processual sort of way, instead in one single step. The route was laid down in the 1994 'Framework Law Administration in Change' stipulating the establishment of *mandatory* municipal cooperation bodies in the seven regions in preparation of full-blown city-provinces. The temporary regional constructs acquired the rather unattractive name of 'framework law areas' (*kaderwetgebieden*).

How the situation would have to look like was clarified in a 1995 legislative proposal concerning the Rotterdam region: the new Rotterdam city-province would be formed by existing municipalities and the creation of new municipalities by splitting up Rotterdam. A similar trajectory was foreseen for Amsterdam. The idea that both Rotterdam and Amsterdam would 'vanish' led to a massive civil society uprising though. Making use of local referendum regulations a referendum was organized in both cities. The liquidation of the Rotterdam and Amsterdam municipalities was rejected with a vast majority (Lambregts et al., 2008). Initially government wanted to push through the idea of city-provinces but this idea had to be abandoned as parliamentary support in the end proved to be lacking, even in the government coalition.

In the light of history it did not come as a surprise that government changed to the trajectory of intermunicipal cooperation once more. By January 1, 2006 the Framework Law was withdrawn and a new Joint Regulations Act came into force. This version of the act provided additional competences in the field of spatial planning and public transport for the seven areas mentioned above plus one region in the south of the Limburg province. They acquired a highly bureaucratic, technical sort of name: WGR plus regions. The new competences for the public bodies created by WGR plus included the making of mandatory regional structure plans (*structuurplannen*). However, this latter competence did not last very long. In 2008 a new Spatial Planning Act came into force which took away the plan-making competences of the WGR plus regions (Janssen-Jansen, 2011: 264). Parliament considered the democratic legitimization of WGR plus decision-making as rather poor.⁴

This in itself shows the vulnerable political basis of asymmetric solutions which sit somewhere between the standard, countrywide administrative layers. For this reason it should not come as a surprise that just after eight years after they came into existence all WGR plus regions were abolished by January 1, 2015. A major reason for giving back competences to provinces and municipalities was the perceived lack of democratic legitimacy of the WGR plus regions (OECD, 2017) although this was not a dominant issue when they were created. Responsibilities for transport and related funding from national government were returned to the provinces, except for the provinces of South-Holland and North-Holland, which they had officially lost since the 2005 WGR plus Act. In South-Holland the areas of the two WGR plus regions were combined to form the Rotterdam The Hague Transport Authority (see next section). The Amsterdam WGR plus region, without any change in its perimeters, became the Transport Authority Amsterdam (TAA). Both transport authorities are mandatory forms of cooperation sharing the same legal basis. Both form the commissioning authority for public transport by bus, tram and underground railway (excluding the services of the national railway company). They also finance improvements to the regional infrastructure for goods vehicles, cars, bicycles and public transport, so investments in physical infrastructure. Both

⁴ https://www.denederlandsegrondwet.nl/id/vilqfxp1clz9/intergemeentelijke_samenwerking (accessed June 12, 2019)

entities are strictly briefed to limit their activities to transport and in no way expand their actions to other areas. As we will see in the next two sections issues outside (public) transport are addressed to network-type arrangements called metropolitan regions (Figure 3).



Source: MRDH (2014): 7

3.3 The emergence and downfall of Randstad cooperation bodies

Since the Randstad concept was invented as a planning concept at the end of the 1950s it was national government which was in charge of a spatial strategy for this area. However, in the early 1970s some sort of cooperation between the provinces of North-Holland, South-Holland and Utrecht started under an acronym which only civil servants can invent: Dripo (a Dutch acronym for 'three provinces'). In 1975 it was the South-Holland executive taking the initiative to broaden and deepen the cooperation by suggesting that also the four main Randstad cities should participate. However, the other two provinces feared that these cities would dominate. North-Holland was anxious that Amsterdam would reach out to the Green Heart (Quist, 1993: 30-32). This proposal and 'Dripo' in general faded into oblivion after a while.

Amidst the economic recession of the 1980s cooperation between the three Randstad provinces picked up again in various domains from 1985 onwards, including spatial planning (Quist, 1993: 49). The province of Flevoland started to participate as an observer as its main city Almere as a new town played a key role for the northern part of the Randstad. In 1994 this province became full member of *Regio Randstad*, since 1991 the official name for cooperation in the domain of planning (Lambregts & Zonneveld, 2004: 314). As an expression of a desire to deepen the cooperation the Randstad provinces decided to base their cooperation under this banner on the Joint Regulations Act.

Cooperation in the Randstad seemed to intensify even more when as of September 2002 not only the four main Randstad cities but also the WGR plus city-regions around these cities joined Regio Randstad. The joint provisions arrangement was adapted and from that moment

cooperation was not only multi-actor but also multi-level, involving twelve actors. Cooperation had a twin objective: (1) to strengthen the international competitive position of the Randstad and (2) to improve quality of life (Lambregts et al., 2008: 50).

This expansion from four to twelve Regio Randstad actors could be regarded as a logical consequence of yet another Randstad organization: the Administrative Committee for the Randstad (BCR: *Bestuurlijke Commissie Randstad*). This rather giant negotiation platform included the twelve Randstad authorities and no less than five ministries. It was created in 1997 to renew the covenants between national government, provinces, urban regions and municipalities on housing allocation and production (Dijkink et al., 2001: 30). Later on its tasks became much wider: not only the coordination of central government's spatial investments in the Randstad but also to discuss Randstad-input for the fifth national planning report which would see the light in 2001 (Lambregts & Zonneveld, 2004: 314).

Changes in government coalitions, in nearly all cases preceded by national elections, played an important role in the changing perceptions how to (re)organize regional governance as discussed above. Likewise changing perceptions about the importance of the Randstad for the country as a whole and the perimeters and internal structure of the Randstad had similar repercussions. Mid-2002 a new coalition government took office which was less convinced of the need to put the level of the Randstad at centre stage (Lambregts et al., 2008: 51). The Randstad was divided in four programme areas and concrete policies and investment strategies were coordinated with the authorities in each of these four regions (Amsterdam; Utrecht; Rotterdam The Hague; and the Green Heart). However, a later coalition government again attached greater importance to the Randstad. Warned by ever lower rankings of the Randstad in international comparisons it established a high level committee which was asked to advise on its administrative structure. The assumption was that administrative bustle (*'bestuurlijke drukte'*) was seriously undermining all efforts to improve the competitive position of the Randstad. Early 2007, in a few months time, this committee issued the daring advice to create one single metropolitan government for the entire Randstad that would take over a range of (mainly planning) competences of the provinces and the four WGR plus regions.

Another coalition than the one which established the Randstad advisory committee set aside this strongly formulated advice. Weary of governmental reform in general, support for this negative decision came from several research and advisory bodies. In 2006 the Netherlands Institute for Spatial Research published an elaborate report showing that the Randstad is not a single, integrated urban region but on the whole is formed by two sub-regions (Ritsema van Eck et al., 2006). About a year later the OECD acknowledged that although the Randstad may represent a relevant scale in relation to certain issues, it did not consider the introduction of a Randstad authority a necessity and instead favoured the strengthening of the governance capacity of city-regions (OECD, 2007 as discussed by Lambregts et al., 2008: 52). On top of that at parliamentary request, the Netherlands Institute for Spatial Research (De Vries & Evers, 2008; see also Evers & De Vries, 2013) made a comparison between the governance within the Randstad and how this is organized in a (small) sample number of other urban regions: the general assumption is that the situation in the Randstad is far worse when compared with examples abroad. The assessment agency concluded that this is definitely not the case. In 2008 the government advisory council on spatial planning recommended that the creation of coalitions around strategic projects is far more effective than an overall restructuring of the administrative system (VROM-Raad, 2008).

By the time this latter advice was published the twelve partners of Region Randstad already took the decision to end their cooperation body by January 1, 2008. Two dominant reasons are named in a frank letter by its chairman, the Crown's Commissioner of the province of South-Holland (Franssen, 2007): (1) Randstad Region partners are becoming ever less prepared to prioritize the Randstad scale; and (2) the present organisation is too heavy

and too 'administrative' while the shared ambitions are too weak. The letter also points out that there is no match between how Region Randstad works and how government organizes programmes which seek to support the economy of the Randstad. Under the so-called Randstad Urgent Programme which started in 2007 all (35) projects are supervised by high level administrative duos: one administrator from national government and one from local government, a sort of implicit reply to the VROM-Raad advice.

Since the disappearance of Region Randstad in 2008 there is no longer a cooperation body at this level. However, 'Region Randstad' is still used as a label for various joint lobbying and promotion activities by the four Randstad provinces in Brussels.

4. Metropolitan region Rotterdam The Hague

4.1 Introduction

In the early 2000s, the southern Randstad or South Wing became conceptualized as one of the urban networks in the Netherlands. This new national planning concept meant that groups of cities could form networks tied together by functional relations, physical infrastructure and connected government. When the director of the Department of Spatial Planning and Transport in the province of South-Holland assumed office in 2002, he set up the South Wing Studio (*Atelier Zuidvleugel*). His opinion was that the South Wing was suffering from an abundance of plans, strategies and fierce competition between local planning actors and municipalities and that an institution which would be independent from daily political routine and which would have time to reflect would help the province as well as other planning actors to develop a regional frame of reference for decision-making (Balz & Zonneveld, 2015: 877). The focus of this Studio was design-oriented and helpful in bringing relevant stakeholders informally together and introducing them to the level of scale of the southern Randstad.

Around the same time (in 1997) an informal multi-level government cooperation in the southern Randstad was set up (Dijkink et al., 2001). Members included the province, the two main cities, the two WGR plus city-regions and three WGR regions. This Administrative Platform South Wing (*Bestuurlijk Platform Zuidvleugel*) covered the city-regions of Rotterdam and The Hague with extensions towards Leiden to the north and Dordrecht to the south to improve the coordination of urban development in the area. Its aim was to undertake preparatory work for a new covenant between the region and national government regarding investments in infrastructural and other spatial projects in the southern Randstad (Dijkink et al., 2001: 30). In 2000 the decision was taken to make the Platform a permanent structure supported by a small secretariat located in the House of the Province of South-Holland in The Hague. It did not have decision-making or executive tasks, but formed the setting for negotiations with central government in investments in which the province had the strongest agenda-setting role (Spaans & Zonneveld, 2016).

The Metropolitan region Rotterdam The Hague or MRDH (*Metropoolregio Rotterdam Den Haag*) arose in 2010 when national government announced the abolishment of the WGR plus city-regions. As the WGR plus city-regions were also the transport authorities for their territory and as such received considerable national budgets for public transport, the announced abolishment initiated a quest for these budgets and intensified the power play between municipalities and province. A new arrangement had to be set up to replace the city-regions. One option was that the infrastructure tasks would go to the province. The mayors of both Rotterdam and The Hague chose to block off this route as this meant that a large central government budget would find its way annually to the province. The Metropolitan region placed itself at the forefront. In the law regarding the abolishment of the WGR plus regions, national government indicated that because of the complexity in the Randstad wings the new transport authority would cover the geographical area of the Metropolitan region Rotterdam The Hague. But the exact elaboration was left to municipalities and provinces. This resulted in the Metropolitan region becoming the transport authority and resulted in a formal

arrangement: fixed perimeters and formal duties (which go hand in hand) but – like the city-regions before that – without an elected council. In December 2014 a joint provision was signed for the transport authority. On January 1, 2015 all eight Dutch city-regions were abolished and the MRDH formally appointed by central government as the Transport Authority.

As MRDH gained in power, the informal cooperation for the larger area in the southern Randstad – the Administrative Platform South Wing – repositioned itself in 2016 as Network Southern Randstad focussing on strategic spatial-economic issues and cooperation with national government on national public investments in this field (Zuidvleugel, 2015).

As said the current Metropolitan region Rotterdam The Hague (MRDH) was formed by the integration of the two former WGR plus city-regions of Rotterdam and The Hague. The MRDH cuts a large chunk out of the territory of the province of South-Holland as it houses more than 60% of the population and 36% of the land area. The geographical area that spans 23 municipalities which vary considerably in population size and nature. It covers a metropolitan authority tasked with transport and economic development responsibilities for this territory. One of the core ambitions of the MRDH authority is to bring the economies of Rotterdam and The Hague closer together while generating growth and well-being (OECD, 2016).

4.2 The power of resources

The previous section explained that the MRDH emerged as a new metropolitan-scale institution with the ambition of becoming the transport authority but at the same time it also embraced additional ambitions. While in the stage of emergence the MRDH envisaged an even broader scope, it narrowed down to a twofold focus: transport authority and economic development. The broader scope at the start covered three coherent strategies (1) to exploit the potential of being a single daily urban system by improving internal connectivity; (2) to make better use of, and invest in the knowledge and innovation potential of the region; and (3) to fully exploit the wide diversity in amenities, services and landscape assets of the region (Meijers et al., 2013).

When we compare the two pillars of the MRDH, the Transport Authority (TA) is much more formalised and with a considerable higher budget than the economic development pillar. The MRDH's budget is composed of public transport subsidies from national government⁵ and contributions from the participating municipalities for the economic development pillar. Important to stress is that MRDH has only limited possibilities to broaden its financial resources as it is not allowed to levy taxes or impose other fees or charges. In the Netherlands most taxes are collected at the national level and then redistributed to the local and provincial levels. Municipalities collect approximately one sixth of their budget by levying local taxes.

In 2019 the budget in the field of public transport was 0.74 billion euro (the budget is not indexed which means that its value is going down due to inflation), which is used both for operation of public transport and investment in new infrastructure. The Transport Authority pillar employs 56 full-time staff in 2019⁶. Legal competences and financial resources in the field of economic development are much more limited, which is also reflected in a more limited staffing: 12 full-time staff members in 2019. For this task the MRDH does not possess any 'hard tools' as its responsibilities are based on a voluntary agreement among member municipalities without any enforcement mechanisms. The annual budget of about 4.8 million

⁵ Largely based on the Broad goal-oriented grant for transport (BDU or *Brede Doeluitkering* in Dutch) which is a financing programme for regional traffic and transport projects funded by central government.

⁶ Data from Metropoolregio Rotterdam Den Haag (2018) *Begroting 2019 en meerjarenbeeld 2020-2022* Metropoolregio Rotterdam Den Haag, Rotterdam: MRDH.

euro (for 2019) comes primarily from the municipal authorities, in the form of a fixed amount per resident from each member municipality: 2.58 euro in 2019. According to the OECD (2016) such a funding arrangement for the economic pillar of the MRDH is common across the OECD and that its per capita budget is comparable to other informal metropolitan associations without regulatory powers, but that in terms of staffing the MRDH has a smaller secretariat compared to other OECD metropolitan governance bodies that oversee a similar population size. A remark is however that the MRDH has a more limited set of responsibilities.

4.3 The power of process

Shifts in leadership form an important underlying reason for the emergence of the MRDH. For a long time there have been tensions between the three major appointed administrators – the mayors of the two main cities of Rotterdam and The Hague and the Crown's Commissioner of the province of South-Holland⁷. This did not help to function as a cohesive policy network (Spaans & Zonneveld, 2015). When in 2008 in both Rotterdam and The Hague new mayors were appointed matters changed drastically politically. Although they were from two different political parties they got on very well which their predecessors certainly could not. It is through them that there is now the MRDH as a genuine politically approved informal governance arrangement (Spaans & Zonneveld, 2016). Although the MRDH and the province of South-Holland had a problematic relationship at the start, their co-operation has improved since then (OECD, 2016: 12). As both governance bodies each have their own responsibilities in a partly overlapping geographical area they simply have to cooperate in economic and transport planning. After the abolishment of the WGR plus city-regions in 2015, the Province of South-Holland and the MRDH signed a management agreement in 2016 and renewed and refined this in 2018, which focuses on the common fields of traffic and transport and economic business climate. The Network Southern Randstad complements this cooperation.

The MRDH has been established in a formal joint arrangement under the Joint Regulations Act of 2016 (MRDH, 2018a). The voluntary, bottom-up collaboration among municipalities is a positive, distinctive feature of the MRDH compared to other OECD metropolitan regions built around two large cities (OECD, 2016: 148). The organization mirrors how provinces and municipalities are organized: a General Board and an Executive Board which cover both pillars of the MRDH. The current organisation of the MRDH reflects the balance between the two major cities on the one hand and the smaller municipalities on the other. The Executive Board includes the mayors of Rotterdam and The Hague (who act as chair and vice-chair) and representatives from three other municipalities. and prepares decisions for the General Board.

The mayors of the two major cities rotate every two years as the chair of the General Board which is the highest decision-making body of the MRDH. This body comprises 27 members and meets four or five times a year. Representatives in the General Board have a varying number of votes, depending on the population size of the municipality they represent⁸. Decisions within the general management require an absolute majority of votes, but given the Dutch culture of political consensus, it is generally expected that most decisions will be taken unanimously. Interesting is that the two major cities together do not have the majority of the votes although they represent more than half of the inhabitants of the MRDH (OECD, 2016: 145). The hesitation of some of the smaller municipalities to join the MRDH due their fear of being overruled by the two cities was taken away by this. Member municipalities are represented in different administrative committees.

⁷ Mayors and Crown's Commissioners are appointed and not elected in the Netherlands.

⁸ Each representative of Rotterdam has 15 votes, each representative of The Hague has 13 votes, the representatives of Delft, Zoetermeer and Westland have 9 votes and so on, up to the smallest municipalities, whose representatives have 2 votes each (OECD, 2016: 145).

Although the MRDH as a governance body is not directly elected, it can be considered as indirect legitimacy: bottom-up from the local level. Residents of the MRDH are given the right to speak at MRDH meetings. Participation is possible if the resident has an interest in a topic that is on the agenda of the meeting⁹.

4.4 The power of meaning

The MRDH deliberately restricted itself to the policy fields of transport and economic development. Responsibilities of the Transport Authority MRDH relate to public transport in its territory, while the province has competences (and related budgets) for provincial infrastructure (roads and waterways). As OECD (2016) puts it: economic development is a competency of the province but it is also a field of work of the MRDH. The responsibilities for spatial planning however have remained a function of the province. The initial sensitivities between province and MRDH made probably had as a result that the MRDH did not want to give fire to any additional potential problems. It therefore did and still does not develop any development visions on maps for its territory; if any they take the form of pictures and text than maps (see Figure 4).

Figure 4 Meaning of MRDH



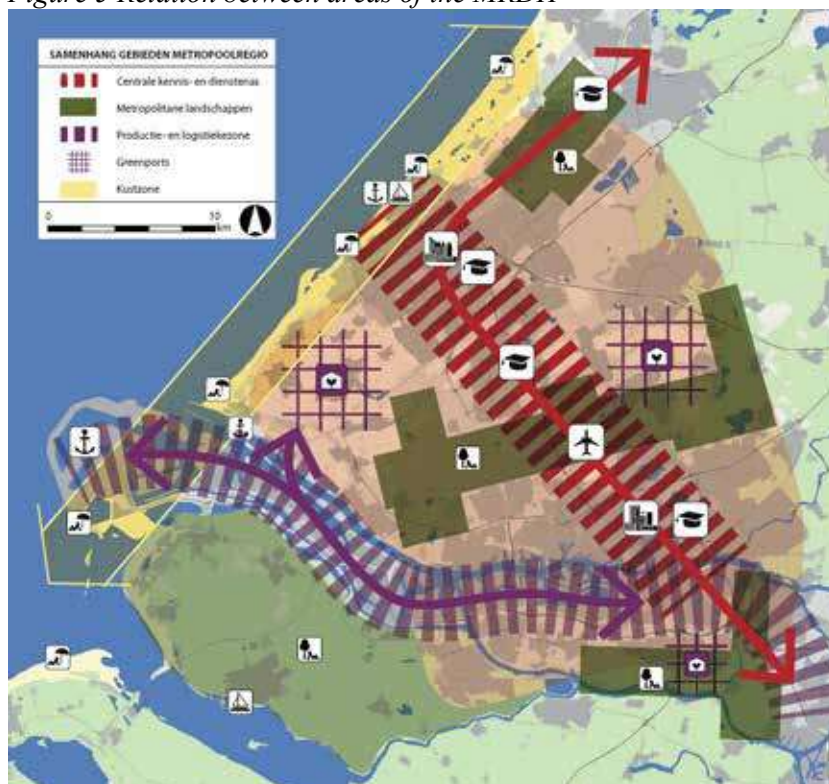
Source: MRDH, 2018b: 8

Publications on the website of the MRDH hardly include any visualisations and those included refer to visual analyses as in the MRDH Atlas (MRDH, 2014). Meaning in the sense of ‘framing with images’ is not applied by MRDH. The aim of the MRDH to increase economic growth by fostering economic integration of the region, may need spatial planning policies by the province that contribute to this goal by providing sufficient space for the economy to grow (OECD, 2016: 125). Achieving these ambitions require that policy areas of both MRDH and province are well co-ordinated. Figure 5 shows an attempt by the MRDH to stress the importance of such an integration by relating economic clusters to each other. But

⁹ <https://mrdh.nl/bestuur> (accessed on April 23, 2019).

this type of visualisation is often a one-off use and is not used in external framing of the MRDH area.

Figure 5 Relation between areas of the MRDH



Source: MRDH, 2014: 80

5. Metropolitan Region Amsterdam and Transport Authority Amsterdam

5.1 Introduction

Cooperation in metropolitan regions is often multi-scalar as we have seen above. The Amsterdam region is an obvious example as there are two cooperation structures which cut different slices out of the wider area spatially connected to Amsterdam while they also have different ‘powers’. First there is the region covered by the Transport Authority Amsterdam (TAA). Legally it is the successor of the WGR plus city-region Amsterdam, terminated on December 31, 2016. The new entity grounded on the Joint Regulations Act took over. The boundaries did not change: the area includes 15 municipalites, all within the province of North-Holland. The land area is 38% of the territory of this province and it houses roughly 54% of its population (about 1.5 million), percentages which are comparable with those of the MRDH.

The second, much larger entity is the Metropolitan Region Amsterdam or MRA (*Metropoolregio Amsterdam*). Having a population of about 2.5 million it is located in two provinces: North-Holland and Flevoland. Based on a covenant signed on March 6, 2017, its membership includes 32 municipalities, the authorities of the two provinces just mentioned as well as (and that is highly interesting) the Transport Authority. The MRA covers a large area: 59% of the geographical area of North-Holland falls within the MRA and no less than 77% of its population. The figures for Flevoland are 42% (area) and 69% (population). Comparable with the MRDH is that the Transport Authority Amsterdam falls within the OECD category known as ‘inter-municipal authorities’ while the MRA obviously fits within the category of informal or soft co-ordination.

The MRA and even more the TAA has a track record in cooperation going back in time. The MRA cooperation started in the late 1990s under the banner of North Wing Consultation (*Noordvleugeloverleg*). After seven high-level conferences joined by administrators from the entire area, the structure was consolidated in its present, elaborate form. The smaller scaled Informal Agglomeration Amsterdam Consultation (*Informeel Agglomeratie Overleg Amsterdam*) started about 30 years earlier, in 1969 (Van der Lans, 2006). It went through successive periods of ever stronger cooperation, each phase indicated by a slightly different name, eventually leading to the present legally based stage of Transport Authority (see Lambregts et al., 2008; Haran, 2010; Janssen-Jansen, 2011; Levelt & Janssen-Jansen, 2013; OECD, 2016; 2017).

5.2 The power of resources

If we compare MRA with the TAA then obviously the first one is lighter in the sense of not having a statutory basis. In theory the cooperation within MRA could also be based on the Joint Regulations Act, but politically this was not acceptable amongst its membership (Stadsregio Amsterdam, 2016: 5). In essence the MRA is a network although one could argue like the OECD does (OECD, 2017: 153) that it is also a political body as it is based on a political agreement, discussed and accepted amongst all its members, meaning 32 municipalities and two provincial councils. Although ‘light’ the predecessor of the MRA, the North Wing Consultation was considerably lighter as there was no written agreement at all. Its main resource was based on *process*: meetings between administrators on a regular basis leading to several political agreements (we will come back to this below). The fact that this kind of cooperation has continued for nearly two decades and is politically formalised in a covenant basically means that although MRA lacks the ‘power to implement’ (OECD 2017: 157) it created a valuable resource namely trust.

Having no power to implement means MRA cooperation is ‘cheap’ in financial terms. Organisationally the cooperation is based on annual contributions from its members. As specified in the 2017 covenant the municipal members contribute € 1.5 per inhabitant. While in the MRDH this is 72% more, in the MRA also the provinces contribute. North-Holland pays the same as Amsterdam and Flevoland the same as its biggest town, Almere. Both North-Holland and Amsterdam also contribute extra to the Economy Platform, one out of three platforms (see below). For 2019 this leads to a budget of about € 8.25 million (MRA, 2018). About a quarter of this budget is needed for running the MRA bureau. The total number of staff is limited: about 12 fte (MRA, 2016; 2018). As the MRA is not a legal entity all staff members work on the basis of secondment from municipalities, especially Amsterdam. There is a strong multiplier effect in terms of manpower. According to a rough estimate (MRA, 2016) about 60 tot 80 fte across all MRA members are working on the implementation of the so-called MRA agenda, plus the cooperation itself like the preparation of meetings (see below).

The transport authorities in the Amsterdam region and the Rotterdam The Hague region have similar competences. The budgets are different though. Annually the TAA receives about € 390 million from national government, which is much less compared with the MRDH as the latter region has a far more complex urban structure. Every year there is about € 4.5 million available for research while the TAA bureau (mainly staff) costs about € 7.5 million (VA, 2018: 20) which is about four times more compared with the MRA. This means that about 3% of the annual budget is not directly spend on (public) transport and infrastructure.

Both the MRA and the TAA spend some of their budget on research. The MRA focuses on analyses of the housing market, the state and structure of the MRA economy and on energy transition. The TAA has a much larger research budget and the focus is primarily on accessibility studies. One particular project is about the modelling of (future) transport called VENOM: Traffic Model Metropolitan Region Amsterdam (VENOM, 2016). Interestingly the research area is not the TAA region but the MRA area. The spatial logic is obvious: the TAA

area does not cover the functional urban area of Amsterdam while the MRA area does much more strongly. This is reflected in the VENOM partnership which is currently in its third period (2017-2020). Next to the TAA, partners include the two provinces involved in the MRA, the Ministry of Infrastructure and the municipality of Amsterdam plus ten other local, regional and national partners.

5.3 The power of process

This particular power or capacity is about how shared policy agendas come about and how the TAA as well as the MRA creates authoritative capacity within their constituencies as well as within their broader political context. As both entities are situated between constitutionally defined administrative levels with directly elected councils, a rather crucial issue concerns how legitimacy and accountability is organized while at the same time dominance of Amsterdam is mitigated. The latter is a more sensitive issue compared with the MRDH as Amsterdam in terms of population and economy heavily dominates the MRA and even more the TAA.

Comparable with the MRDH the TAA has a General Board (called Regional Council) as well as an Executive Board. The Regional Council has 51 members. Although the number of seats a municipality has is related to population size the Joint Provision uses a gliding scale. While more than half the population of the TAA lives in Amsterdam, the number of seats in the Council is less than a quarter. Members are appointed by the municipalities through their councils and the majority is recruited from these councils. The Council decides on the distribution of the financial funds across (four) programmes and projects. The Daily Board is rather small, with four members. The chair is an alderman of Amsterdam, holding a portfolio which includes transport and mobility.

The MRA has what the OECD calls a ‘flexible geometry’ (OECD, 2016: 177). Concrete activities and work processes rest on platforms. Of the three platforms the Transport Platform works quite exceptionally: most MRA municipalities do not participate in this platform, only those parties which participate in the TAA. The municipalities which do not participate in the TAA are represented by the two provinces. The MRA Mobility Platform obviously functions as a kind of interface between the MRA and the TAA. Some projects falling under this platform are not even limited to the perimeters of the MRA, in particular a project called MRA-E which seeks to stimulate electric transport in all municipalities not only in North-Holland and Flevoland, but also neighbouring Utrecht.

The Economy Platform focuses on employment and competitiveness. One of its main feats it inherited from the period of the North Wing Conferences which preceded the MRA cooperation, namely the decision made at the fourth, 2005 North Wing conference to establish a platform to create a joint policy on the development of locations for offices and trade and industry: PLABEKA (*Platform Bedrijven en Kantoren*). As municipalities in the Netherlands tend to compete with each other in this area (Needham, 2007: 74-75), this is no mean achievement. Connected to the Platform Economy albeit not a genuine MRA ‘institute’ is the Amsterdam Economic Board. The composition follows the classic triple helix formula. It has an advisory role both for the Amsterdam municipality as well as the MRA.

Most MRA municipalities are represented only indirectly in the Platform Economy as nearly all municipal members participate on behalf of one of the seven MRA *sub-regions*. This implies not only that MRA co-operation is characterised by a flexible geometry, but is also multiscalar. Sub-regions play a crucial role in the Territory Platform which of all three platforms has the broadest focus. However, the platform does not call itself (in translation) Spatial Planning (see for this interpretation OECD, 2017: 149). The Dutch equivalent (*ruimtelijke ordening*) has the connotation of defining land-use through zoning plans. As this is a statutory competence this could not be dealt with by a network organization as the MRA. However, within the Territory Platform municipalities in MRA seek to coordinate house

building programmes, on the level of the sub-regions as well as on the level of the entire MRA. This is roughly the housing equivalent of PLABEKA. Both arrangements obviously have spatial implications, but the legally binding decisions on land-use are taken by the individual municipal councils according to the credo to be found on many MRA webpages and in published material: no competences are transferred from the participating authorities to the MRA.

There are connections between the three platforms. These are dealt with by four so-called portfolio consultations, their members are recruited from the ranks of municipal aldermen as well as the two provincial executives. The domains covered are: Sustainability; Building and Housing; Landscape; Art, Culture and Heritage.

5.4 The power of meaning

What capacity do the TAA and the MRA have to shape perceptions and beliefs, both within the partnerships as well as the outside world? In its publicity material the TAA emphasizes its *functional* relevance: ‘working for a region in which people can quickly and easily reach their destination’ (TAA, n.d.). Interestingly, if one visits the website and clicks on ‘area’ the menu does not only show the municipal members but also the MRA which suggests that the TAA is not just active within the perimeters of the area formed by its 15 municipal members but in a much wider area, forming an integrated mobility system.

As the TAA is a mandatory form of cooperation, there is less need to work on its profile and relevance. In contrast, the MRA is a voluntary sort of organization with a much wider focus and a much bigger area compared with the TAA. There is therefore much more needed to show relevance, in particular to keep its membership together. In such a context framing becomes particular important: creating perspectives how to understand or perceive a particular, complex situation (Rein & Schön, 1993), in this case an area. This can be done through words and images.

To start with the first, two particular concepts are important. Going through the material produced within the context of the MRA, there is a particular emphasis on the Metropolitan Area as a *daily urban system*, a space forming a coherent area for its inhabitants.¹⁰ This obviously suggests it is only ‘natural’ to regard this area as a logical object of policy cooperation.

The second highly relevant concept here is the conception of the North Wing of the Randstad as Metropolitan Region Amsterdam. At the 7th North Wing Conference, December 2007 the decision for the name change was taken, only two months after the decision to abolish the Randstad Region. Both events were connected to each other. North Wing obviously is linked to Randstad as the concept originates from a discussion about its structure and morphology. Doing away with the Randstad paved the way for another ‘label’, much more attractive due to the connotation of an area being a metropolis: a world class regional city, based on Amsterdam.

Also images play a role in the perception of the MRA. Early 2008, after a year of intense debates, conferences and design studios a 138 pages vision document was published (MRA, 2008). Its key image served as a kind of logo for the years after (Förster et al., 2016: 17-20) (see Figure 6).

¹⁰ See for instance: <https://www.amsterdam.nl/bestuur-organisatie/volgs-beleid/ontwikkeling/metropoolregio/> (accessed 15 May 2019).

Figure 6 The 2008 vision of the MRA



Source: MRA, 2008: 50

In 2016 a new policy map has been created. This time it is not called a development vision but an action map (*actiekaart*). It is part of a glossy of 60 pages bearing the names of dozens of authors, under the auspices of the Platform Territory (MRA, 2016). It is not a replacement of the development vision but an addition, showing all the projects which are carried out in the region over a period of about four years (2016-2020), obviously suggesting the MRA cooperation has drive, momentum and practical relevance.

6. Conclusions

The Netherlands is obviously no exception when it comes to the rescaling of governance. What is striking is the duration of the ‘quest’ and the many turns that have been taken over the course of time. The four broad categories of metropolitan governance arrangements as identified by the OECD have all been discussed at some stage. A fifth model was also considered: an new fourth layer of administration across the entire country, including elected councils. The fourth model, special status of metropolitan cities (the proposal to create city-provinces) finally seemed to become the trajectory for seven regions but resistance from civil society and eventually parliament led to the option of inter-municipal authorities (the WGR plus regions).

Government and parliament has changed its mind time and time again: the perceived lack of democratic legitimacy was the insurmountable stumble block. Since 2010, just two metropolitan regions exist in the country, both situated in the Randstad. In these two regions, there is currently a supra-local authority in the domain of (public) transport with some measures to safeguard some form of legitimacy by giving elected members of local councils an advisory role. The two authorities are almost exclusively dependent upon government funding as municipalities (and provinces) have a very slim tax basis. Clearly, the abolition of the multi-purpose city-regions in the Netherlands runs counter to trends in metropolitan governance as observed by the OECD.

For a large-scale Randstad authority, governance complexity simply proved to be too great while the level of functional integration between the various parts of the Randstad, as expressed by for instance commuting patterns, is lacking. Next to the two statutory Randstad

transport authorities soft-coordination takes place under the banner of ‘metropolitan regions’. The MRDH is more focused on economic development while the area is the same as that of the transport authority. The MRA is much more comprehensive in its ambitions and is ‘working’ for an area almost twice as big compared with the Transport Authority.

Looking at the MRDH and MRA in more detail, we arrive at the following conclusions in relation to the three categories of power on which our analyses are based. When it comes to the *power of resources* both regions are almost exclusively dependent on national government funding, at least in the transport domain as already stated. Outside this domain there are (very) limited resources for staff and projects, although especially in the MRA there seems to be a large multiplier effect in relation to staff due to the comprehensiveness and multi-scalarity of the cooperation.

From the perspective of the *power of process* we conclude that the two metropolitan regions seem to slowly converge in the way in which they are organised. Both have, for instance a daily board and a supervisory board, the latter mostly recruited from municipal councils. Nevertheless they also show two major differences: the province (i.e. North-Holland and Flevoland) is a prominent participant in the MRA and joined as of the start. At the phase of emergence of the MRDH the province was even foreclosed. Currently the province participates in some of the MRDH committees.

The second major difference is geographical in nature: even though there might surely still be discussion about the exact external borders, it is the intention of the MRA to be inclusive and cover the whole daily urban system of Amsterdam in its metropolitan governance arrangement. In the MRDH two urban agglomerations (Leiden and Dordrecht) which functionally are part of the daily urban system in this area are not represented in the metropolitan governance arrangement. From this perspective there seemed to be a fundamental flaw in the set-up of the arrangement. This may have an impact on the degree to which policy integration in the focus policy areas can be reached.

With respect to the *power of meaning* we observe a major difference in the fact that the MRA is actively using visions, maps and spatial images as a way of bringing coherence in the issues at table between the actors involved and in the projects and programmes at stake in the region. Accessibility, economy and spatial planning seemed to be much more aligned than in the MRDH where spatial images are nearly non-existent and spatial planning is not a policy field with which it wants to relate. Economic development is the the integrating frame here.

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Institutional change and regional transition

Advisability of Reintroducing the Building Code document to Canton Sarajevo Spatial and Urban Planning Legislation

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Abstract: In most European countries urban planning is a process controlled by many instruments, among which is a building code document. Sarajevo, as a part of former Austro-Hungarian Monarchy, got its first Building Code in 1880, followed by a second Building Code in 1893. Ever since, the Building Code Document is missing in Sarajevo's spatial regulative, which resulted in unclear building procedures and urban "cacophony". In 1936, there was an attempt to make a unified Building Code for all cities in former Kingdom of Yugoslavia, but it failed in its implementation. Today, in Canton Sarajevo, the procedure of obtaining the urban permit has no clear structure and rules for how to build in a specific urban area. Obtaining the building permit depends on individual aesthetic criteria of municipality clerk who is creating an individual frame of rules. This makes procedures unclear, not transparent and often open for corruption. The result of unclear procedures is urban and architectural "cacophony", which is especially visible in the urban area of Sarajevo valley. Situated in South East Europe, after the fall of Berlin wall in 1990 the city has faced some dramatic changes due to Yugoslav wars and the transition processes, among which is transition from the former socialist political and economic system to the capitalist system which specifically affects spatial planning and development process.

Keywords: Building Order; City Transformation

Introduction

From when exactly do we have written traces of the idea of order in European urban planning and how exactly did this idea transit from the Ancient times until today? Most European cities have ordained urban planning systems and the building code as an urban planning instrument, but what happens in those European cities whose idea of order was somehow lost in transition during the last century and they don't have building code for more than a hundred years? Is it advisable to reintroduce a building code document in former socialist countries in Europe and how it can affect its spatial planning systems?

Building code document is a spatial and land-use planning instrument which is constantly being novelized by a specialized boards and committees responsible for urban planning. It is the reason why in a contemporary urban planning management different models are being developed to optimize all planning processes and to ensure fulfillment of the urban planning goals through urban planning instrument realization.

In this PhD Research, which is still being conducted by the researcher, past review studies are given for the research subject which is "Introducing a building code document" in cities which previously did not have this kind of documentation, specifically to Canton Sarajevo. The main goal of the research is developing a model which will enable systematic management of urban planning process. Starting



hypothesis of the research is that it is advisable to reintroduce the building code document to Canton Sarajevo Spatial and Urban Planning Legislation. The research is referring to Architecture and Urban Planning as the main area, as well as Urban Legislation, as a sub area.

The results of the research have both scholarly and managerial perspectives in Canton Sarajevo spatial planning education and management.

The idea of order in European urban planning

One of the first systematic attempts to create written rules for cities was that of Vitruvius in his book from the first century B.C.-The Ten Books on Architecture (Vitruvius, 1914) known as *De Architectura*. Idea of Order existed in Ancient Greek architecture and city planning, but not in an ordained written form as Vitruvian Books, therefore this absence of such a document will motivate Vitruvius to write it. According to McEwen (McEven, 2003) Pierre Gros, "...the acknowledged leader in current Vitruvius studies" (Gros, 1971), "...concluded that Vitruvius's project was essentially normative one, motivated by the desire for rational systematization" (Gros, 1973). The Ten Books on Architecture will remain the reference for normative form in architecture and town planning until the late 18th century: "The only major work on architecture to survive from classical antiquity ...the treatise known to posterity as *De architectura* in time became the text of architectural theory to which, at least until the 18th century, all other texts referred" (McEven, 2003). The Age of Humanism led by Trisino, Palladio and Alberti will give its interpretation of Vitruvian order in architecture and urban planning, but it will not produce a new normative form (Wittkower, 1988). Absence of new normative form in architecture and urban planning will last until the 17th and mid-19th century when first London, and then Paris, facing the problems of hygiene in the city will take the whole set of actions for ordering their cities in a new form. This waste set of actions taken to transform growing cities in 19th century will be characterized as Haussmanization and cities like Vienna or Barcelona will follow its logic of order in urban planning. Law, order, uniformity – all these are special product of Baroque Capital (Mumford, 1970). Because of the new order we may speak of the width of streets, building heights, façade treatment, boulevards, railway stations and city networks (sewage, water etc.). It will make an introduction of a modern city development as we know it today.

This idea of order based on classical principles will remain in Europe until the appearance of Bauhaus, Cubists and Le Corbusier whose idea of urban order will be diametrically opposite to the comprehension of a city development until then. Burchard quotes Saalman who points out the ambivalence of Congrès Internationaux d'Architecture Moderne (CIAM) led by Le Corbusier towards Haussmann while seeing him, on one hand as a nineteenth century prophet of the new planned order (Burchard, 1974), while on the another hand Haussmann's idea of order, though, would be severely criticized by Charles-Édouard Jeanneret - Le Corbusier and CIAM for not going further with Paris transformation: "It is not that Haussmann and Napoleon III went too far, but they did not go far enough" (Burchard, 1974). Le Corbusier went far enough and proposed first "La Ville Contemporaine" in 1922, and then "La Ville Radieuse" in 1935 (Curtis, 1986), the new urban order of a city for three million people (Mumford, 1970). He drew mechanic-centric plans for monumental skyscraper cities, with multiple streets (Mumford, 1970).

Le Corbusier's Ville Radieuse idea affected many cities: "Le Corbusier's numerous urban projects of the 1930s show how he attempted to modify his abstract typologies to a variety of pre – existing topographies and cities" (Mumford, 1970).

His student Juraj Neidhard spread his ideas of the new order in Sarajevo and other cities in former Yugoslavia, after his experience in Le Corbusier's Atelier in Paris from 1933-1935 (Kapetanović, 1990). Karlić Kapetanović wrote: "While other architects of Sarajevo designed primarily urban residential buildings in the spirit of modern movement, Neidhard – bearing in mind the CIAM conclusions – was building a vision of social standard which was completely adapted to the building and visual trends of modern architecture in symbiosis with the autochthon traditional Bosnian house, with prevalently Oriental concept" (Kapetanović, 1990).

La Ville Radieuse preceded to the postmodern age of our cities and the postmodern idea of order: "This concept of order as an internal organization (or contract), based upon flexible relationships, rather than upon categorical bonds, has no longer any relationship with either the old absolute totalitarian – continual and stable – notion of classical composition or with the modern – more relative, removed and fragmented (but equally determinist) – position. Rather it relates to a more open and paradoxical conception of the idea of order as disposition... A new type of flexible order that shows itself more predisposed to the generation of open dispositions (processes) than to that of closed designs (objects)" (Manuel Gausa, et. al., 2003).

This new idea of order, but foremost, switch in urban scale characterizes works of Rem Koolhaas (Koolhaas & Mau, 1995). Verschaffel, when writing about Reading Rem Koolhaas mentioned that Koolhaas poses vitally important questions: "What is going on? Where does the specific combination of an unlimited growth, demographic explosion, globalization and capitalism lead to? What does it do with the World?" (Verschaffel, 2013).

But before Koolhaas's distinguished criticism: "... the ideas and concepts underlying the western architectural tradition we still use to 'navigate' through these turbulent times are not in themselves wrong or meaningless, but belong to a very specific context and history, and should not be considered essential or eternal, and not valid everywhere. Europe is not the measuring stick for the world" (Verschaffel, 2013), we will go back to the 19th century and European idea of order, which was transposed in a document called Building Order/Building Code / Code Civil / Bauordnung / Regolamento edilizio etc.

Building Code Document History

Paris was the first European capital to establish the building code document, due to specific circumstances in the city's history and precedent laws and subordinate regulations, brought from the end of 18th to the middle of the 19th century.

Landau in his analysis on Paris street fabrication wrote: "Hygiene and health, after the terrible epidemics of cholera in 1832, typhoid fever (there were 7,000 deaths from typhoid fever between 1872 – 1877), and tuberculosis are at the center of the concerns of the technical elite and those responsible for the disease – administration. The issues of water supply and sanitation in the city are among the most urgent to address. The smells – Paris smelled bad – are omnipresent; realistic literature testifies to this. Aeration, ventilation, dust control mobilizes the research and innovation capabilities of engineers and companies. The aspiration to comfort and well - being, carried by the new urban social layers, poses the problems of distribution of energy to individuals: heating, electricity, telephone. The issue of daily migrations, pedestrian traffic, private cars and public transport remains a hunting problem for everyday life and the growth of the economy" (Landau, 1992).

Landau gave very precise description of the processes which lasted for a century and have led to regulation modification and completing in a document named Code Civil in French, or a Building Code

in English. The new regulation form of urban planning was rapidly accepted in other European countries, or more precisely empires, among which was Austro-Hungarian Empire, at the time and its capital Vienna: "... we talk about a big project, a Program, according to Haussmann's definition, which had to be "completed" and "perfected" to transform the old Paris. It seems that Joseph Alexander von Hübner, Austrian Ambassador in the Second Empire period, shared Haussmann's opinion. He knew Haussmann privately, met him often and considered him the inspiration and soul of all those works which he admired in French capital. It is interesting to notice that the ambassador stayed in Paris from 1851 to 1859, and soon after, Vienna will announce the competition for systematization of the Ring, which will provoke Austrian Capital to experiment with its own model of urban reconstruction, different from Paris, but at the same time, analog to the French capital, by the initiatives for the role of public buildings and introducing the infrastructure networks" (Tamborrino, 1998).

Anna Hagen, when writing on Viennese building codes and planning instruments in the 19th century elaborates on four important dates in Vienna's building regulation history in 19th century: 1829, 1859 and 1868 and 1883. Under the circumstances like historic urban circumstances of Paris – cholera epidemic (Hagen, 2015), no sewage and water system, it was obvious that the city had to organize itself in a new way.

Hagen concludes that urban form is a sum of all the elements which form the city in relation to building regulations (Hagen, 2015). She quotes Harald Stühlinger defining two different levels of building standards that influence the city's image. On one hand, there are hard factors, such as building dimensions and street width, and on the other hand, soft factors, such as details of the surface design elements such as paving or façade openings and protrudes (Hagen, 2015).

Vienna, as the capital city of the Austro-Hungarian Empire spread the idea of order in urban planning in all parts of the former monarchy.

Sarajevo, as a part of the Austro-Hungarian Empire got its first building code and regulatory plan, shortly after the Annexation of Bosnia and Herzegovina. Before elaborating on Sarajevo building code regulations, we will analyze in brief Sarajevo urban history background.

Sarajevo Urban History since Ancient Times

Sarajevo was inhabited since Neolith. Today's main Sarajevo roads are situated on Roman *Cardo* and *Decumanus*, with its crossing in the city center, near today's building of the Institute for public Health (Mutapčić, 2018).

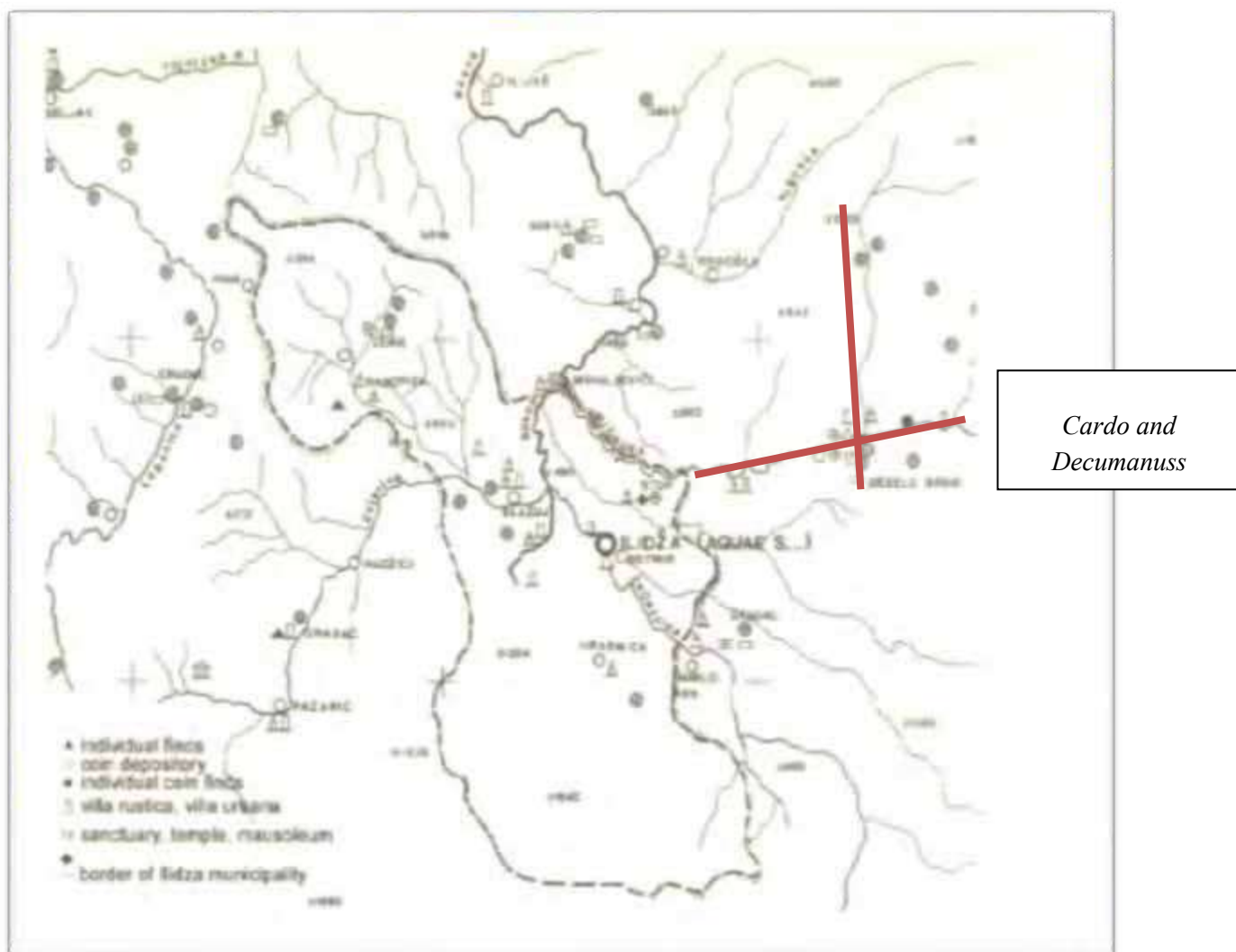


Figure 1 Roman City (SOURCES Bublin M., Sarajevo throughout the history – from Neolithic settlement to metropolis)

The name Vrhbosna (Verboxenie) as the name of the region to which Sarajevo belonged officially appeared only in 1244 (Skarić, 1937). We have very limited knowledge of this period, apart many particularly beautiful tombstones with drawing engravings (Bos. stećci¹) which have been founded in Sarajevo area” (Skarić, 1937).

¹ Stećci – see Figure.2



Figure 2 Stećak
(SOURCES Institute for
Canton Sarajevo
Development Planning)



Figure 3 Sarajevo in the Middle ages (SOURCES Bublin M.,
Sarajevo throughout the history – from Neolithic settlement
to metropolis)

Turkish invasion begun in the 14th century. The city has been built on the both sides of Miljacka River around deputy's castle (Tur. Saray), which has been built on the left river Miljacka's bank. The name Sarajevo is combination of two words in Turkish: castle (Tur. Saray) and field (Tur. Ovasi) meaning the field around the castle (Skarić, 1937). The logic of Ottoman city was to build the city center in the valley and residential areas on the hills. The city center (Tur. Čaršija), was situated in Baščaršija², the name which remained until nowadays. The population of Sarajevo was partly employed in the army and partly were tradesmen, merchants and craftsmen, who had their shops in Baščaršija (Skarić, 1937).



Figure 4 The formation of the City in the Ottoman period (SOURCES Bublin M., Sarajevo
throughout the history – from Neolithic settlement to metropolis)

² Baščaršija - Sarajevo Old City, the city center



Figure 5 Sarajevo in the XVI century (SOURCES Institute for Canton Sarajevo Development Planning)

Sarajevo residential houses (see figure 6), built in neighborhoods (Bos. mahalas) on the hills, were amphitheatrically surrounding Baščaršija in the Ottoman period. The houses had, wherever it was possible, a garden of the same size as a house...The reason, Skarić wrote: "...was the love, which characterizes Sarajevo citizens until nowadays, for nature, greenery and flowers" (Skarić, 1937).

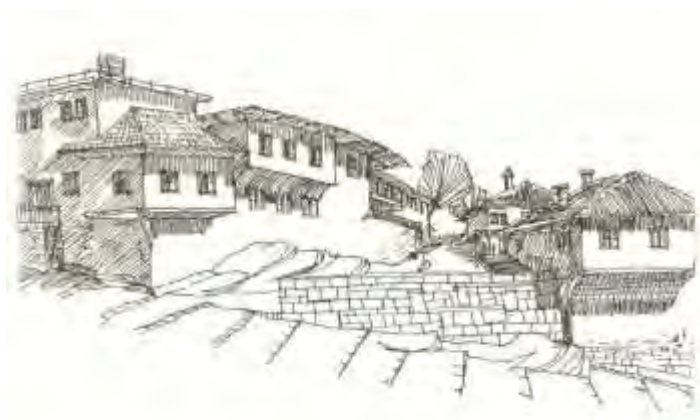


Figure 6 Residential areas in the Ottoman period (SOURCES Bublin M., Sarajevo throughout the history – from Neolithic settlement to metropolis)

On August 19th 1878 Austro-Hungarian troops have occupied Sarajevo, capital of Bosnia and Herzegovina. On February 17, 1908 Bosnia and Herzegovina got its Constitution and on June 15, 1910 the first parliamentary sitting of Bosnia and Herzegovina Parliament took place. The city was developing. It was changing its appearance. It was losing its decidedly oriental character and was increasingly becoming a European city (Kreševljaković, 1969).



Figure 7 Sarajevo in Austro-Hungarian period (SOURCES Bublin M., Sarajevo throughout the history – from Neolithic settlement to metropolis)

During the period of the Kingdom of Serbs, Croats and Slovenes and the Kingdom of Yugoslavia (1918 – 1941), between the two world wars, Belgrade has become the capital of the Monarchy, while Sarajevo lost its role of the capital city.

Bosnia and Herzegovina became part of the Independent State of Croatia (NDH) in 1941. The Sarajevo County has become the seat of the Great District of Vrhbosna. As the state declared to be supported by the Nazi Germany and Fascist Italy NDH regime started to implement race laws (Nurnberg laws and decrees, Law for the Restoration of the Professional Civil Service etc.), which ended up with the massive liquidation of Jews, Gypsies and Serbs. During 1944, allied forces bombarded Sarajevo several times.

Communist party and partisans entered the liberated city as winners on April 6, 1945. It was essential to make legislative base for huge reforms of the society and among first laws were: Agrarian Reform and Colonization Law in 1945 and Workers Self - Management Law.

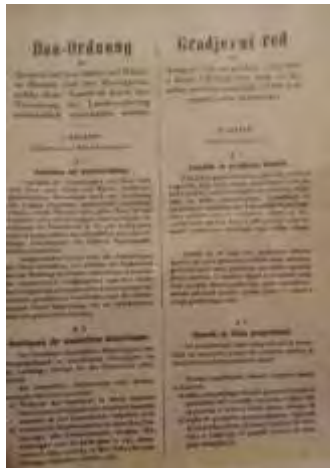


Figure 9 The Building Code 1893 (SOURCES Archive of Bosnia and Herzegovina)



Figure 10 Regulation of river Miljacka basin during the period of Austro – Hungarian Monarchy (SOURCES Institute for Canton Sarajevo Development Planning)

There were few attempts to create the new building code: in 1936 during the period of the Kingdom of Yugoslavia and in 1976 when the City Assembly wanted to create set of rules, although only for housing buildings. It was the Decision on general technical conditions for design and construction of residential buildings and apartments.

The Decision on general technical conditions for design and construction of residential buildings and apartments and the Project of Research and organization of drafting the urban norms on content of neighborhoods were serious attempts to introduce higher standards and building quality in residential architecture and urban planning and a good preparation for its implementation in the City of Sarajevo Land-Use Plan for the period 1986 – 2015 in the eighties, but the whole process was interrupted by the Yugoslav wars.

Yugoslav wars culminated with the siege of Sarajevo, which lasted from April 1992 till November 1995. It was: “the worst conflict Europe has seen since 1945, with more than 250,000 deaths and two

million people displaced.” (Benkova, 2016). This tragedy for the City ended up when the Dayton Peace Agreement (UN, 1995) was formalized on November 21, 1995 in Dayton, Ohio and signed in Paris, almost a month later. The Agreement, signed by the presidents of Republic of Bosnia and Herzegovina, Republic of Croatia and Federal Republic of Yugoslavia: “brought an end to the tragic conflict in the region” (UN, 1995), by subdividing the Republic of Bosnia and Herzegovina into two Entities: the Federation of Bosnia and Herzegovina (FB&H) and Republika Srpska (RS) and a special unit – the District of Brcko (DB). The Entities are divided with the “inter-entity boundary line” (UN, 1995).

Today, Canton Sarajevo is one part of former City of Sarajevo (Bos. Grad Sarajevo), which was consisted of ten municipalities and covered the area of 2,096 km². Another part of the former City of Sarajevo is in Republika Srpska and it is called East Sarajevo (Srpsko Sarajevo on the figure 10). Parts of municipalities Stari Grad, Novo Sarajevo, Novi Grad, Ilidža, Trnovo and the whole municipality of Pale belongs today to the City of East Sarajevo.

Canton Sarajevo covers the area of 1,277 km² or 60, 92 % of the former City of Sarajevo’s territory. Canton Sarajevo has its Constitution (Sarajevo, 2019), upon which it is consisted of nine municipalities. Today’s City of Sarajevo administratively is consisted of four central municipalities (Stari Grad, Centar, Novo Sarajevo and Novi Grad) and it covers 141, 5 km² (see Figure 11).



Figure 11 Outline border – former City of Sarajevo, Grey area – Today Canton Sarajevo, Federation of B&H Entity Darker grey area – today City of Sarajevo, White area – Srpsko Sarajevo (today East Sarajevo), Republika Srpska Entity (SOURCES Bublin M., Sarajevo throughout the history – from Neolithic settlement to metropolis)

In today Bosnia and Herzegovina each entity and all ten cantons in FB&H have their own legislation framework, which makes: "rather un-coordinated system, both vertically and horizontally" (ESPON, 2018).

The milestones of Sarajevo Spatial planning legislation can be seen on the following timeline:



Figure 12 From the building codes in 1880 and 1893, Building Law and building code in 1936, General Urban Plan in 1965, Spatial and Land-Use Plan in 1986 to new Spatial Plan in 2006 and Land-Use plan currently in procedure from 2016 (SOURCES Institute for Canton Sarajevo Development Planning)

The Spatial Planning Tools in Canton Sarajevo are hierarchically organized as in the following table:

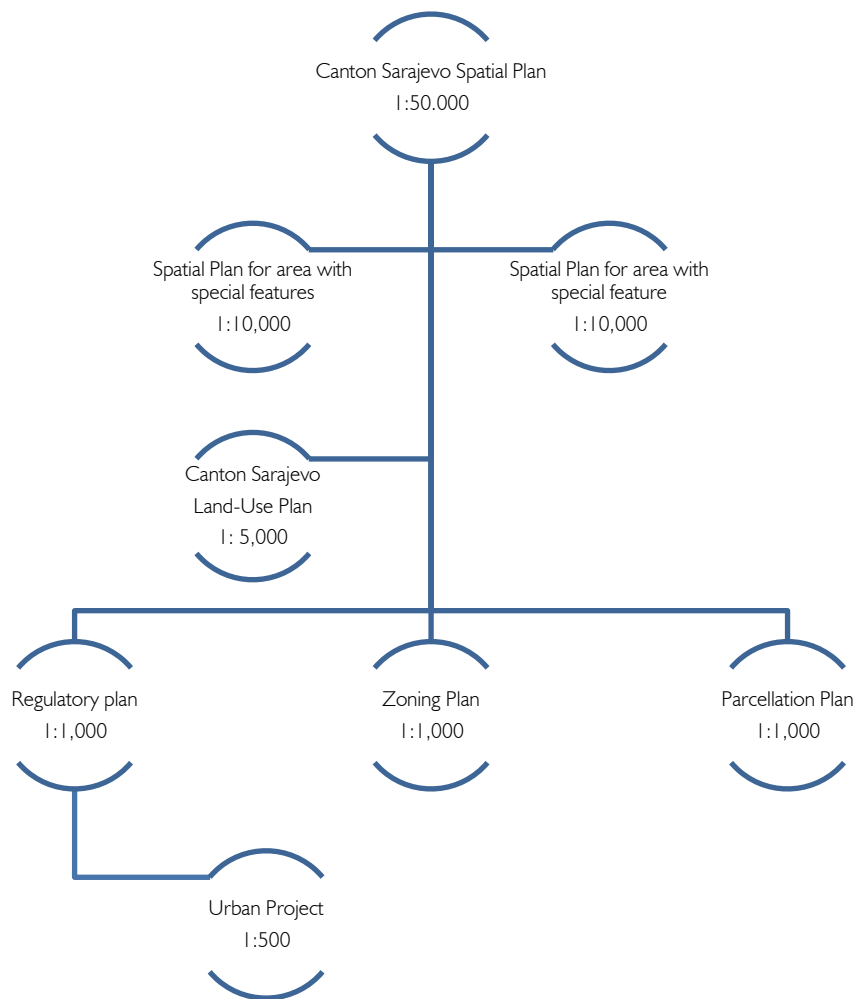


Figure 13 Spatial Planning Tools Hierarchy in Canton Sarajevo (SOURCES Institute for Canton Sarajevo Development Planning)

The elements and the content of textual and graphical parts of the spatial planning documentation are defined by the Decree on uniform methodology for creating the spatial planning documentation. Textual parts of spatial planning documentation are the following:

- Text of a Plan,
- Decision on Plan Implementation and
- Decision on Plan Adoption.

It is important to emphasize that the Decision on Plan Implementation is a legislative form which can be, to certain extent, comparable to a content of a building code, although in a very limiting form. It is written by an urban planner who prepares a plan and it varies from plan to plan in its content.

Graphical parts of a plan vary in accordance with spatial planning documentation level and type of a plan.

According to Canton Sarajevo Spatial Planning Law spatial planning documentation is basis for obtaining planning permission. Planning permission is issued based on urban and technical conditions

interpreted by municipality individual and his or her aesthetic criteria and ability to understand spatial planning documents and valid legislation, which makes the whole process challengeable in the matter of objectivity and rationality. There is no manual, nor additional spatial planning document in a form of an instrument which could easily be understood by authorities and citizens in a complex process of spatial planning documentation implementation and what is more important, which will make the process of obtaining the planning permission transparent, objective and based on equal right for all interested stakeholders.

Moreover, from the early nineties until today there is an "institution" of the "professional opinion", which can be demanded by a municipality in specific cases (when there is no valid detailed spatial planning documentation) for the purpose of obtaining a planning permission. This document may pose in question the objectivity in the legal procedure, since the professional opinion is written by an individual or a group of professionals organized in boards or comities, upon "not formally defined aesthetic, environmental and any other criteria" which is, as commented by Aganović in 1991: "...professional and social alibi for illegal procedures, brought in the municipalities... which is provided by "special", or "professional boards", in every municipality separately, without uniformed impact of the city on these processes, notwithstanding all passed spatial planning documentation of various government levels and responsible institutions" (Aganović, 1991a). Existence of a building code on a city/cantonal level for each city/canton in contemporary urban circumstances of Federation of Bosnia and Herzegovina would certainly give the solution which would contribute to extinguishing of improper forms such as professional opinion etc.

The problem of informal settlements has become official through the process of legalization, which became the only housing policy for informal building areas. Beside social, economic and political aspects of the phenomena, informal settlements may be connected to spatial planning documentation frequent renewal, but as well as to absence of certain rules and regulations for the areas in which informal settlements are erected. The solution for this phenomenon was given in the City of Sarajevo Council report from 1991: "...proper exploitation and channelizing of enormous potentials of private investments and initiatives, should be given through uniform and rigorous criteria at the City level" (Aganović, 1991b).

The last time the building code was mentioned and commented among City's spatial planners and professionals was at the Symposium „Sarajevo – Town and Region in Time and Space in the Year 2000th“, which took place in Sarajevo on April 23 and 24, 1981 and was organized by the Academy of Sciences and Arts of Bosnia and Herzegovina, University of Sarajevo and Town Council of Sarajevo: „Fortunately Austro-Hungary hasn't interfered in old parts of the city, apart for exceptional cases, the rigorous „Building Code for the city of Sarajevo“ was implemented, bureaucratically narrow-minded, but at least respected, which prevented more serious violations of the public interests“ (Academy of Sciences and Arts of Bosnia and Herzegovina, University of Sarajevo, Town Council of Sarajevo, 1982).

The severe criticism of the building code document was moderated with the recognition of this document's main objective - protection of the public interest.

After the urban development peak that Sarajevo has reached in the eighties, urban decay has started. It was precisely described in the report by the former Head of the Institute for the City Planning Development Midhat Aganović released by the City Assembly in 1991. We will not go into all fields

of this brilliant and primarily realistic work has embraced, but for the purpose of this research we will mention, as Aganović has written, the necessity to introduce urban standards: "Mentioned deformities in the City's spatial development are caused by: ...- the absence of urban norms, the absence of scientific work and the professional interest for this problem" (Aganović, 1991c).

Aganović continues: "Standards, norms and other regulations on preparation and equipment of residential areas, which are being implemented in the City are highly beyond our realistic economic possibilities. The City doesn't have any urban standards. Our residential areas and apartments in those areas, which have been built in the recent years, are not any different from the neighborhoods built in the European countries, whose gross domestic product (GDP) is even ten times bigger than our GDP" (Aganović, 1991d). The author, rightly, made the connection between the standards and the economy, but what is more important, he made the comparison between the standards in Sarajevo and the standards in the European countries, which is one of the main premises of this research.

Aganović was precise about the root of the problem: "Every municipality, upon its own standards, or with no standards at all alienates those values, without which urban life can hardly be performed" (Aganović, 1991). The author was considering public space, parks and plants, when speaking of urban quality life (Aganović, 1991e).

He was: "Amazed that in our society and the City hasn't matured yet awareness of the necessity to create and to enact uniform standards and norms in the field of spatial, urban planning and housing that would be the expression of our objective possibilities and needs-appropriated to the reached and planned level of the overall development. That is why we can't be surprised that enormous financial means have been invested to pretentious solutions which have accompanied our planner's efforts and aspirations to accomplish, in the recent 20 years, urban and communal standards of highly developed societies, whose GDP is beyond 20.000\$" (Aganović, 1991f).

In the end Aganović concludes that: "To ensure function of all integral parts of the City's complex and unique organism, the City should take the responsibility to: ... - create the development documentation, surveys, expertise, analysis, norms, standards and other enactments related to the City's life and development" (Aganović, 1991g).

Midhat Aganović, as one of the city's key figures in the field of spatial and urban planning during the communist period, was concerned with Sarajevo's future development in the beginning of the nineties. The situation will be aggravated with the war destruction and the post war reconstruction of the wounded urban tissue and the society, but the main problems of the urban development will, unfortunately remain until today.

In 1999 Federal Ministry of Spatial Planning and environmental protection with IMG (International Management Group) have published the Manual of standard building specifications for architectural design, norms, standards and other sign and execution of works of construction, reconstruction, sanitation and adaptation.

After overviewing the content of the Manual, published in 1999, and analyzing the manual itself we may conclude that its purpose was to summarize and to make data base of all valid norms in building and planning praxis in Bosnia and Herzegovina, in both Entities, yet it was not written in a form of a

building code. Its (Manual's) segments, though, are comparable to certain segments of building codes in European countries.

The Manual which was mentioned above was the only attempt in the postwar years, in Sarajevo, to make, at least, as a brochure, the comprehensive overview of all the standards which building code may contain.

Spatial planning tools in Canton Sarajevo, currently, do not recognize building code as a mandatory document. So-called Decisions of Implementation which are mandatory elements of every spatial planning document textual part are not unified in its form, for all spatial planning documentation, nor are classified according to canton municipalities. They (the decisions of implementation) are written by the planners and can't create systematic elaboration of all the factors of an urban form.

Creating of an urban form is the main purpose of a building code. Stühlinger is defining two different levels of building standards that influence the city's image, or city's form: hard factors, such as building dimensions and street width, and soft factors, such as details of the surface design elements such as paving or façade openings and protrudes (Hagen, 2015), by which we may conclude that this basic distinction can be used for creating a building code document. All city elements contribute to its urban image: "Very often the unjustifiably neglected details (park benches, fountains, squares, street illumination, sculptures etc.) can contribute significantly to a nicer and more humane way of living and the overall beauty of city landscape" (Bublin, 2008a).

Some of the authors of articles and books about spatial planning and urbanization process in Sarajevo, in the post war years, have recognized the need to: "...institutionalize the legislative and managerial environment for the preparation and realization of development programs and plans" (Bublin, 2008b). They do not speak about the building code specifically, yet it may be interpreted as a clue in that direction: "in contemporary developed societies, cities are institutionalized, which means the existence of certain public institutions with transparent work. Those cities have codified their laws, city regulations and standards, which is a basis for city functioning and development" (Bublin, 2008c).

Building code is as an instrument of controlled spatial and urban development, because. "...cities, as the most complex social systems, may function and develop only if properly managed, since the practice of spontaneous development no longer works out (Bublin, 2008d). There is a relationship between a building code, as a public policy instrument and the land-use planning: "There are number of public policy instruments that can affect land use. Most important among them are land-use regulations imposed through the land-use planning process and environmental and building code regulations" (OECD, 2017).

The importance of a building code is sublimated in the following sentence: „At present, public policy uses primarily two mechanisms to intentionally influence land use; it allocates public investments across space and it restricts how individuals and businesses are permitted to use land. Its main instruments are the spatial and land-use planning process and environmental and building code regulations“ (Bublin, 2008e).



Figure 14 View from one of Sarajevo informal settlements towards residential blocs built in the eighties (SOURCES Johann Jessen, Ute Margarete Meyer and Jochem Schneider, 2008. *Urbanity and the Planning Culture in Europe* - Barcelona, Amsterdam, Almere, Manchester, Copenhagen, Leipzig, Sarajevo, Zurich. Stuttgart: Wustenrot Stiftung (Publ.).)

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04. Institutional change and regional transition

The new dynamics between regional and urban governance: rural areas as connection element

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Abstract: The dynamics of the expansion of the territory make us think about the fact that territorial development does not exclusively concern urban transformations but also synergistically involves rural areas. As part of the ongoing PhD thesis (tutor Prof. Maurizio Carta) we analyse the richness of the relationship between urban and rural and the vision of a landscape that is not only made of intensive production. The involvement of themes that can interact with each other makes it possible to strengthen the quality of production and its physical extension. This contribution considers the presence of networks among the agricultural entrepreneurs and it discusses the territorial context and the local communities. The synergies between users and rurality, not only intended as agricultural production, lead to a new competitiveness in this field. The increase in productivity is promoted through innovative processes that use new technologies and the social involvement connected to the quality of agriculture. The case of the Inner Area of Madonie is an example: a territory that has led to think of innovative strategies spread throughout the territory and not aimed to a single Municipality, to cope with the development difficulties connected also to the morphology of the site.

Keywords: rural areas, agriculture, landscape, local development

Introduction

Many European countries, in particular Italy, are characterized by the variety of issues concerning their territory. Specifically, Panunzi (2017) states that geography and landscape find their own representation in social, cultural and economic characteristics. These components inevitably interact with each other and, at the same time, cause gaps between the various territories more through human action than natural causes. The differences are reflected between north and south as well as between city and countryside, leading to the need for a rebalancing that leads to the overcoming of marginality, for a sustainable revival in the cultural and economic sphere. The Italian territory, given the different naturalistic and environmental conformation, is characterized by different levels of spatial periphery and infrastructural, social and economic disadvantage (Marchetti *et al.* 2017) but also by wealth of resources and natural heritage in the cultural, landscape and biodiversity fields. These conditions are

found in the territories identified as inner areas¹, which are affected by the actions that humans have performed on the quality of nature and are characterized today by demographic problems although they are highly polycentric and with a widespread historical and territorial heritage (Marchetti *et al.* 2017).

For many years the inner areas have been labelled as marginal and difficult contexts, characterized by difficulties in production and habitability. In these areas it has thus intervened with the logic of economical subsidies instead of using programming strategies. The absence of specific strategies led from the mid-nineteenth century to large migratory waves and, consequently, to the abandonment of fields, pastures and villages, despite the quality of floristic and faunal biodiversity, landscape, cultural heritage and food and wine (Marchetti *et al.* 2017).

As far as the production of the agricultural sector is concerned, especially in the South of Italy, agricultural employment rates in the inner areas are higher than those in other areas, even if intensive and mechanized agriculture has resulted in a reduction of the number of people employed and the depopulation of these areas with population transfer to the cities (Moroni, 2008). Today, employment in agriculture (Istat, 2010) for young people under 39 is equal to 9.97% in Italy and 12.01% in Sicily. The trend towards the abandonment of agriculture shows contrasting values in the percentage of the number of farmers up to 39 years in Italy (-0.47%) and in Sicily (+ 1.69%). Even the percentage of part-time management of agricultural enterprises has high values in Italy (98.30%) and in Sicily (99.50%). Values indicative of the fact that the income deriving from the agricultural activity alone is not sufficient for the complete sustenance of the entrepreneur (Mortellaro, 2017). However, there is an important presence of quality brand productions in Italy (1.56%) and in Sicily (2.67%) which lead to the activation of local production routes (D'Angelo, 2015). Therefore, the strong rural potential of inner lands, particularly in the Southern part of Italy, can be a strong point in local development strategies. Thus, policies to enhance natural resources are activated to promote agricultural products by the means of appropriate territorial marketing strategies (Mortellaro, 2017).

Polycentric territorial development and the overcoming of boundaries

The territory and, consequently, the planning are currently subject to a change in their nature. The change in the territorial balances, connected to the displacement of the population from the hilly and mountainous areas (population decrease) to the flat areas and to the cities (increase), has been developing in the last years (Palmieri, 2017). The decrease in the population that has characterized (and is still marking) a specific and significant portion of the national territory has worsened, as a consequence also of the country's financial crisis. This decline has led to an institutional weakening,

¹ The inner areas are defined by the SNAI as areas distant from the centers offering essential services (education, health and mobility), rich in important environmental and cultural resources and highly diversified by nature and after anthropization processes (SNAI, 2013).

the contraction of services and public facilities (Borghi, 2017) and a change in the capacity of channeling broad public resources, often understood as a form of assistentialism (Provenzano, 2015).

The relocation of the population to the cities and the decrease in rural areas in favour of urbanization processes are highlighting new dynamics within the territory that lead to think of the latter not as an element in itself, but as a system consisting of networks and capable of generating innovation (Carta, 2014).

Therefore urban planning processes are increasingly looking outside the municipal boundaries and, therefore, to systems and networks between municipalities through instruments such as conventions, inter-municipal unions, consortia, valley or river communities, program agreements. These are forms of relationship, which have given the possibility to elaborate common strategies able to overcome the limits of the administrative boundary. It is possible, in this way, to promote development in different sectors that can also concern surrounding municipalities with similar interests, because they share the identity of the place to which they belong and of the social groups related to it (Pazzagli, 2017).

Therefore, it is necessary to work on the knowledge, on the valorisation and on the integration into a system of the territorial heritage, because the activation of these endogenous values contributes to improve the quality of life and to generate new lasting economic flows (Magnaghi, 2010). Territory, environment and landscape capture value as common goods and as a model for sustainable development from an economic, social and environmental perspective. Values that also concern, perhaps mainly, the inner areas that need knowledge of the resources and of heritage of the territory as exclusive and non-reproducible resources (Becattini, 2015). The transformation of these territories, also characterized by the presence of towns with small population and territorial surface, was regulated in Italy in the 1990s by the Law on local autonomies (Law 81/1993) and on the decentralization of functions and administrative simplification (Laws 59/1997 and subsequent, known as "Bassanini reforms"). Not surprisingly, in this period the "identity associations" had spread: those are relations between the Municipalities that deal with typical products or cultural heritage and associations for the protection of the cultural, environmental, tourist, food and wine heritage. Factors that, despite having experienced difficulties in the following decade, have been leading in recent years to the territorial promotion of small Municipalities located in inner lands. Furthermore, these factors are allowing the relaunch of local development and the enhancement of the cultural and identifying heritage of the territories. Therefore urban planning processes are increasingly looking outside the municipal boundaries and to systems and networks between municipalities through the concept of urban regions (Balducci, Fedeli, Curci, 2017). The dynamics once linked to the urban sector have today shifted to the new regional dimension, consisting of networks (not borders) and the generative power linked to the social, environmental and economic system. This polycentric complexity of the territory leads to a territorial development that does not exclusively address urban transformations, but that actually ends up in synergistically involving rural areas. The territorial system aims to include urban and rural areas within a system that can be read as unitary by the dynamic structure of the "rur-urban archipelago" (Carta, 2017). This model combines the polycentrism of the territory with the identity that typifies the territory itself, experimenting innovative forms of planning that guarantee a new balance between rural and urban and highlight, in the relationship between urban and rural, both productive and environmental visions. The network system is made up of connections that are not only immaterial (Barbieri, 2015), but also material ones that increase the efficiency of territorial systems to make them developed and economically advanced.

Strategies for the renaissance of rural areas

The implementation of innovative policies concerns not only local development, but also rural development, starting from the presence of a current situation in which marginal areas, particularly in the South, have suffered over time from fragility due to the economic and productive fabric and to public administrations also for the realization of basic services (Vinci, 2010). The national scenario, supported by statistical analysis, currently sees a continuous increase in the conditions of marginality due to economic and social fragility. This situation is related to the demographic decline due to depopulation and emigration and, in areas mainly devoted to agricultural production, also to the decrease in both employment and economic development.

This representation, however, is followed by the presence of global, community and national strategies referring to the 2014-2020 programming which also promotes actions related to rural areas, although they are often parallel and not connected to each other.

An example is the global action of the 2030 Agenda for Sustainable Development: an action program involving 193 Organization of United Nations (OUN) member states.

In rural areas it intervenes on food security and, more generally, on sustainable nutrition and agriculture. This serves to obtain sufficient food throughout the year with sustainable cultivation and food production systems, keeping the ecosystem and the diversity of seeds and plants to be cultivated intact. The Agenda also deals with the environment and, in this case, with the healthiness of the water, guaranteeing its sustainable management and adequate hygienic conditions, making it clean and drinkable. From an economic point of view, the program wants to promote lasting, inclusive and sustainable growth to promote innovation. These aspects concern, in addition to agriculture, the industrial sector, supporting the entire economic development and well-being, using technological development and research.

At the same time, actions are being promoted for a new rur-urban collaboration that will allow the development of rural areas starting from the adoption of a decentralized urban organization capable of facilitating the growth of potential and the reduction of territorial differences. As in the case of INTERREG IVC projects, funded by the European Union Regional Development Fund, which often aim at urban-rural cooperation for the implementation of practices related to economic, environmental and innovation aspects.

In parallel, strategies of Italian interest are implemented, as in the case of the National Strategy for Inner Areas named “Strategia Nazionale per le Aree Interne” (SNAI). This strategy, in the rural areas, aims at their promotion through strategies aimed at developing places such as the reversal of the decrease in the used agricultural surface and of the number of farmers in the rural areas identified on the basis of the classification of the national territory. The National Green Community Strategy that promotes economic development with both productive and environmental value is an example. The Green Communities are defined by communities that are formed, compacted and facilitated through actions that develop the attractiveness of a public able to become an active part of the dialectical exchange between nature and culture (article 72 of the law 28 December 2015 n. 221). It also favors the presence of a sustainable development plan that looks at energy, the environment and the economy.

Parallel to these strategies, the Rural Development 2014-2020 of the National Rural Network must be considered through the involvement of different stakeholders, highlighting opportunities for young people and promoting innovation in the agri-food and forestry sector by identifying a financial security to manage national and regional level programs, co-financed in a multi-year framework.

The “Resto al Sud” measure involves the regions of Southern Italy and considers the difficulties young people face in finding employment and the difficulties of the agricultural sector. The goal is to start up businesses to develop the economy in the agricultural sector. In accordance with this measure, the rule on the whole of unused lands named “Banca delle terre abbandonate o incolte” provides for the identification of lands and areas built in a state of abandonment by the Municipalities, in order to be assigned in concession for agricultural activities.

Sustainability and circular economy in rural areas

The propulsive centers, expensive in the use of raw materials, have had a different use of resources than the internal areas due to the physical distance that often separates the two realities. Thus, the internal areas have managed to preserve social, environmental and identity values: a necessary starting point for re-thinking relations with the rural dimension and for generating new forms of creativity. Therefore, we need a model capable of implementing a process that is able to fully use the resources that characterize the territory without, however, exhausting them in order to increase the life cycles of resources (Webster, 2015). Especially for small towns, we need to adopt strategies aimed at sustainability: reducing the consumption of soil in the recovery of the relationship between humans and nature and recycling of production waste (Carta, 2015b). Through a more conscious use of the available raw materials, it is possible to operate in accordance with local, sustainable and environmental development² starting from new strategies linked to social and economic development connected to the identity of the territory. The ability to a continuously renew, activate or reactivate places and resources, in order to facilitate opportunities for cultural, social and economic growth (Carta and Lino, 2015). Thus we arrive at the hypothesis of a "2.0 local development" (Carta, 2015a) which considers innovation as the possibility of a new metabolism for the local territory. Local innovation considers the use of the circular economy (McDonough and Braungart, 2002) as a method capable of restoring the initial capital and allowing new flows of goods and services. The principles of the circular economy are reflected not only in the consolidated city, but also in rural areas, relying on an economic and productive aspect that is increasingly diversified by the production of edible products and promotes new economies around local identities, in particular in territories from the historic agricultural vocation. The model developed by Webster (2015) links biological instruments and technical tools to determine a circular economy model. The relationship between technical tools of the circular economy (recycle, renew and regenerate, re-use and redistribute, maintenance) and

² Local development is not intended as an endogenous development, with a decisive and exclusive role for local agents and with an obligatory development path (Coffey-Polese 1984). Its meaning is connected to the plurality of development models and to the interaction between local subjects (public and private) that share a development idea based on the valorization of the resources of the territory (Garofoli, 1999).

biological tools (agriculture, re-establishment of the biosphere, biochemical raw materials, biogas, anaerobic disposal and composting, extraction of biochemical raw materials) generates new models of economic development and self-sufficiency (Guallart, 2014) capable of relating aspects of a technical nature with biological elements. The ideals transmitted by the circular economy are a fertile field, particularly in territories with a historically agricultural vocation, where new knowledge on the use of resources can allow the overcoming of the ideal that sees productivity as a factor of greater importance than the quality of territory (Bisciglia *et al.* 2019).

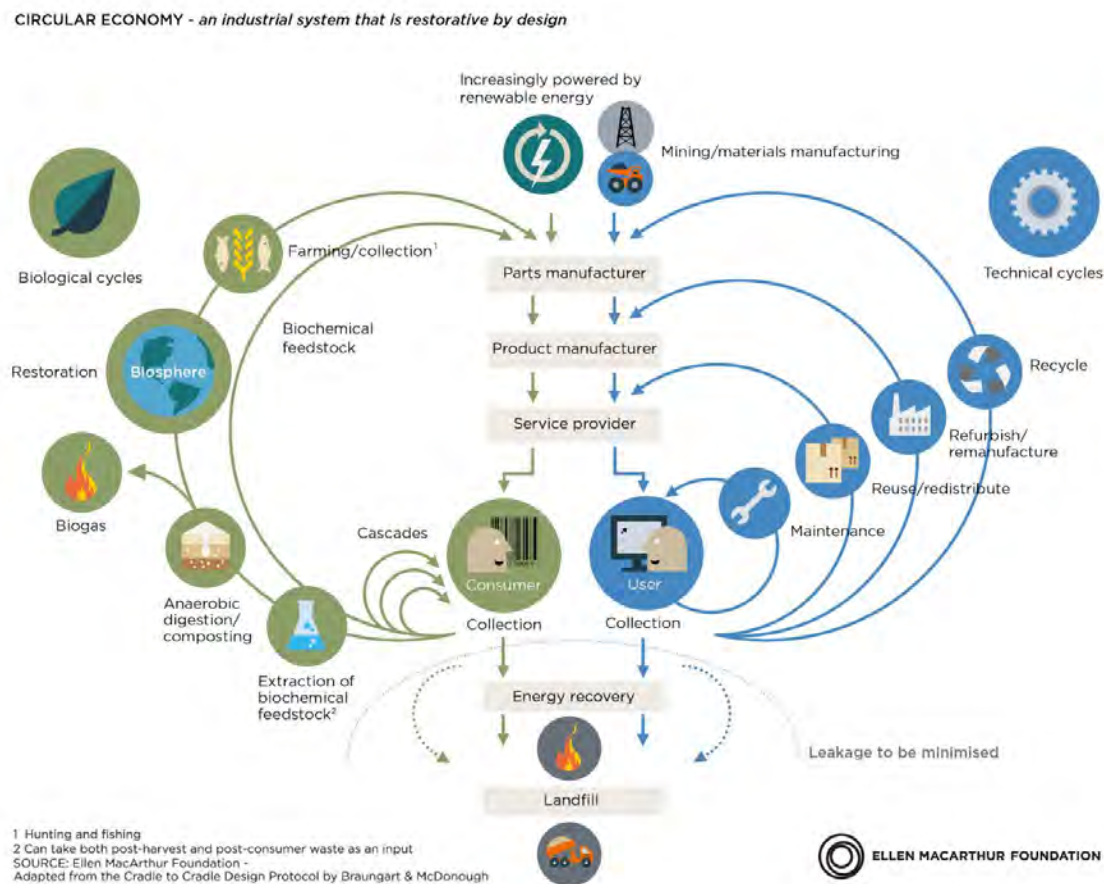


Figure 1. Use of resources in a circular economic system. Source: Webster, K., 2015, *The circular economy: a wealth of flows*, (COWES: Ellen MacArthur Foundation Publishing)

There is an ideal that looks to the green economy for the clean and safe production of goods, materials and energy, for the reconstruction of natural ecosystems and for the reduction of emissions and pollution factors, with greater efficiency in the use of non-renewable resources (Webster, 2015). This, however, once again leads to a reading of the territory that differs from its identity and from the landscape peculiarities, which are capable of adding value to the entire system. Polycentric territorial development requires a wide-ranging sustainable approach and considers the economic, social and environmental aspects. In addition to the circular economy, in economic matters it is necessary to look at economies increasingly geared to the intangible aspect. As Carta (2015b) states, we need economies based on access rather than on property, on sociality rather than on egoism, on well-being rather than on having, on efficiency rather than on consumption or on the sharing economy. In the environmental topic, strategies are needed to reduce the ecological footprint by upgrading the

agricultural activities and increasing the quality and uniqueness of the products. Furthermore, in the social topic, coordination between public and private actions and the empowerment of local communities is needed (Carta, 2017). All these actions are driven by recovery, recycling and restarting of communities, productions and settlements.

Rural development between sustainability and agriculture

The development of rurality is implemented in rur-urban life models not only aimed at marginal contexts and at the quality of agricultural production, but also connected to new features and services (Magnaghi *et al.* 2010). Their task is to give an innovative and multifunctional role to the open spaces and agricultural spaces of small and medium urban contexts with an environmental, landscape and settlement vision.

The development of rurality that follows these principles wants to overcome the utilitarian vision of the environment and the territory, focusing on the territorial continuity and on the integration of activities in rural areas. These must be able to involve farmers in the production of market goods and in the realization of services through practices of territorial governance of economic, social and cultural value. The territorial continuity guarantees a synergy between city and territory, in which the city forms an inseparable body with its territory (Cattaneo, 1972) and carries on the good conduct of the campaign and the quality of life in the city.

The objectives of rural development look at multifunctional agriculture for the development of local agro-urban systems and at the development of agricultural parks in not only fragile territorial contexts but also metropolitan ones (Vinci, 2010). To do this we need a progressive development and growth of awareness with respect to the recognition of the essential role of the rural territory and of proximity agriculture as factors not only in maintaining and offering the main ecosystem services, but also as a determining factor of local development and innovation (Magnaghi *et al.* 2010).

Therefore, for the recognition of the value of the territory, and in order to promote innovation and local development, it is essential to adopt interventions that focus on environmental sustainability.

The resulting data of the institute for environmental protection and research named “Istituto Superiore per la Protezione e la Ricerca Ambientale” (ISPRA) show data on land consumption in Italy in 2016. From these it is clear that the last few decades have been characterized by an unhealthy relationship between humans and nature, which has led to a condition of reduction of natural resources and an increase in the consumption of soil due to the implementation of continuous building processes.

In this context, the presence of responsible planning devoted to environmental sustainability carries forward political management and economic growth along with ecological value (Cohen and Nagiski, 2016). Therefore the role of rural areas within territorial systems is relevant, given the importance of production, but also of natural, social and cultural values. Therefore rural areas play an essential role in sustainable development and their preservation and protection is necessary (Lekić *et al.* 2018). As regards the purely agricultural aspect, in order to adopt actions aimed at sustainability and that, at the same time, look at economic growth, it is necessary to fight both the excessive use of land due to the intensification of agriculture in the most productive areas, and the tendency to marginalization and

abandonment of agricultural land in less productive areas. These dynamics have an influence on the environmental sustainability of the agricultural sector in territorial terms. They find a role in the social (ability to increase job opportunities and access to resources and services inherent to agricultural activities), economic (profitable use of resources in the area, or without the loss of quality and resources) and environmental (landscape, biodiversity and quality of natural resources) field.

In the sustainable development linked to rurality, in addition to the issues related to agricultural production, the additional activities that concern rural areas, although not directly connected with the agricultural production itself, must be included.

Sustainability applied to rural areas must make it possible to avoid the presence of new phenomena of rural depopulation thanks to interventions connected also to social and cultural areas.

The presence of social problems in rural areas has led to the development of strategies and policies aimed at the development of sustainable rural communities starting from the *plans for residences* (The rural coalition, 2010). Traditional agricultural systems and other activities, such as crafts, can contribute to the sustainability of rural areas by proposing strategies able to strengthen the sense of place of the residents and transform the local community into a more resilient and adaptive socio-ecological system (Gobattoni *et al.* 2015).

The productivity levels of the rural areas must be raised through a renewal of the collaboration between public and private sectors capable of generating collaboration networks between the various subjects through the implementation of specific actions.³ These interventions aim to enter the territory and generate new networks capable of generating new services and new economies starting from the already existing identities.

Reference models for rural development

In the rural field, relations between development and agriculture are increasingly intense. Synergies that involve different subjects and which, together with a vision of rurality separated from the agricultural activity alone, lead to a new competitiveness of the primary sector.

The presence on the territory of innovative processes related to the theme of rurality, allows the definition of new relationships but also facilitates the partnership between public and private, the activation of new circular economies and the use of technologies and territorial development laboratories applied to the rural theme.

³ They are: the use of platforms accessible both physically and virtually. Digital sensors and instruments for monitoring the pedoclimatic conditions related to production. The sharing of public and private spaces and services to reduce management costs and increase efficiency. Circular economy. The innovative re-use of agricultural production waste. New job opportunities not only in agriculture but, more generally, in manufacturing. The activation of territorial development laboratories (living labs and incubators of ideas) to generate innovative companies.

The case of Rural Hub is an example, later Rural Hack: a hackspace coordinated by Prof. Alessandro Giordano of the University Federico II of Naples, which has put together rurality and technology. In fact, Rural Hack interweaves the agricultural production dictated by the rural tradition with the technological innovations of young digital and agri-food entrepreneurs.

In the last few years in Campania there has been a trend reversal, from a statistical point of view, capable of increasing the employment rate of young people in agriculture and also the growth in the number of registrations in agricultural schools. Rural Hack pursues a new rural economy to make territory, society and economy coexist through companies that look not only to the economic aspect, but also to the quality of the territory and of the environment and social involvement.

The usefulness of the combination of technology and agriculture for the protection of the environment and productivity is evident, for example, in the case of the San Salvatore company in Paestum: a producer of wine. During the manufacturing processes, the presence of a parasite was found, which may occur only in certain conditions (temperature, soil pH, humidity); this forces them to apply specific treatments periodically. The use of sensors, able to detect the presence of those specific characteristics, allows the company to carry out the treatments at that precise moment, thus using the technology to save time and money, reduce pollution and, at the same time, make the activities of the company more productive.

Another way to connect technology and agriculture has been carried out by Farm Hack: an open platform based on an open source technology that aims to unite anyone who wants to collaborate and contribute to the creation of resilient agriculture. Farm Hack is an American platform that connects farms of different sizes (large and small) to each other to increase local economies and improve productivity and profitability of sustainable agriculture and local production. The Farm Hack community makes it possible to share the creation of tools for agriculture aimed at sustainability in production. An example is Culticycle, which replaces the tractor in the operations of cultivation and sowing without the use of fuel, or Fido which introduces a technological system for monitoring greenhouses.

FarmHack involves 35 retailers in Europe (in particular France, Germany and the United Kingdom) and the United States of America. The number of users now referring to Farm Hack is today 189 users, who can relate to each other through a platform divided into 9 main categories (including technologies applied to agriculture, job opportunities, agronomy), which contain within them 222 topics and 1.500 posts.

Another significant example, in the mix between quality of agricultural production and social involvement, is CumpaRete. This association, today, connects 19 Cilento (a specific part of Campania) companies in order to define a network among the local producers of the region. The objective is linked to cooperation and innovation in agriculture, with the idea of bringing together lands of different sizes and networks among farmers. They indirectly intervene on the landscape and, therefore, on the environmental quality.

The network has not only an environmental value, but also an economic one. The presence of socio-cultural relationships centered on relationships of sharing and interpersonal collaboration puts entrepreneurs in communication with different interests. In fact, these deal not only with agricultural

production, but they find in agriculture a differentiation of the services to be offered and possibilities of production and transformation, both in methodologies (innovative or traditional) and in the finished product.

Innovation in the agricultural field involves going beyond the use of agricultural land for food production purposes. This can allow purposes that can permit the limitation of the abandonment of agricultural activity and the consequent environmental degradation.

There are uses aimed at the production of agro-energy (especially biogas, starting from the exploitation of agricultural raw materials and residual substances of all kinds), to agro-cosmetics (research and development of products deriving from the agricultural sector), to tourism (tastings, naturalistic excursions, involvement in harvesting or sowing activities, show cooking), to the pharmaceutical industry (production of plants for pharmaceutical use).

New urban-rural relations for sustainable development

The implementation of sustainable processes, dedicated to multi-functionality and sustainability of the territory, contributes to detecting the potential of the relationship between urban and rural areas in order to promote new synergistic forms of governance. Starting from the overcoming of administrative boundaries, it is necessary to look at the enhancement of natural and cultural resources and innovative strategies for development in agriculture, in order to strengthen the economic, cultural and environmental profitability that comes from the establishment of a rural-urban network approach.

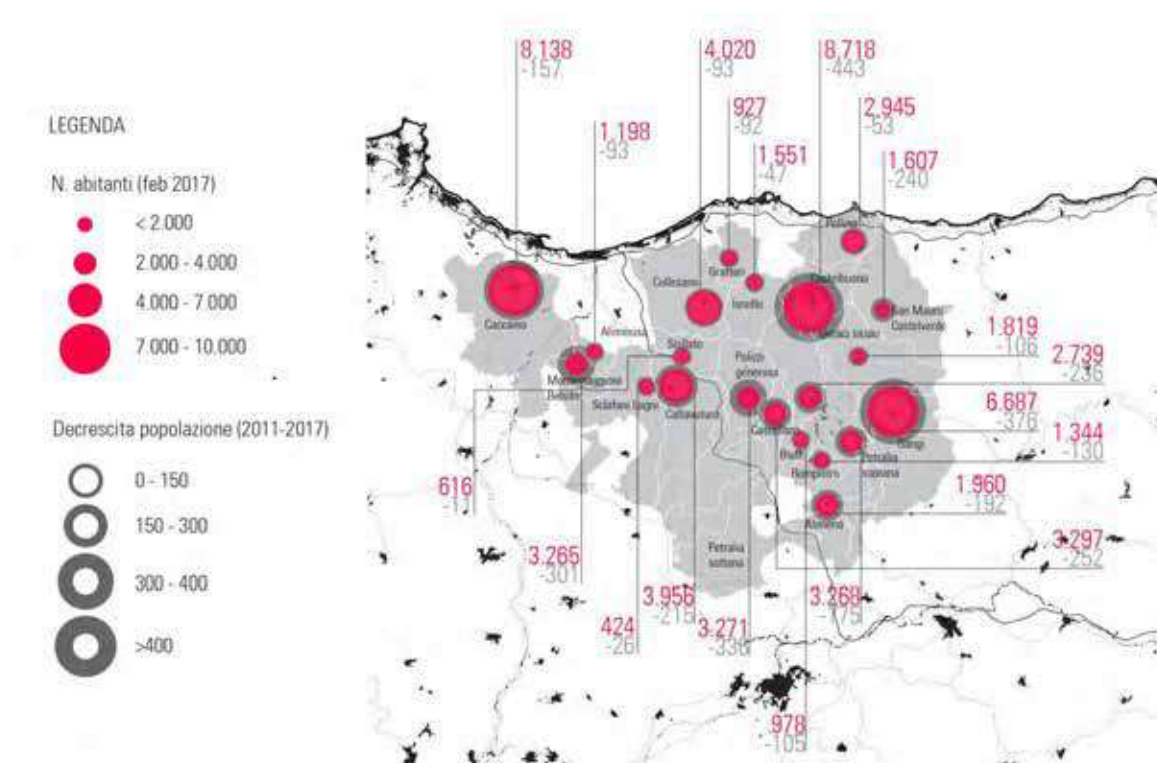


Figure 2. Population decrease in the municipalities of the Madonie Inner Area. The author has processed the image. Data source: <http://demo.istat.it>

The case of the Inner Area of Madonie is an example: a territory characterized by an extension of 1814,40 km² and the presence of 62.728 residents⁴, which makes a double reading possible. The municipalities belonging to it, in fact, have a dual approach: the identified Municipalities (as in national law 56/2014) are part of both the metropolitan city of Palermo (with the same boundaries of NUTS3 level) and the network of the inner areas of Madonie (national strategy). Economic and social fragility is connected to the demographic decline due to depopulation and emigration and, in the areas mainly dedicated to the primary sector, also to the decrease in both employment and economic development. This double reading is a symptom of the heterogeneity of the readable Madonite territory as a rural settlement model characterized by the presence of "islands of excellence" of the Sicilian cultural and landscape (Carta, 2016) capable of establishing relations both internally and with other "islands" external to the identified 'archipelago'. The Madonie territory has the ability to establish relationships both internal and external to the identified network, because it is recognizable as an active socio-economic actor. Furthermore, the presence of both human and economic capital and landscape and cultural values identifies the need for new and different methods, approaches and tools for territorial planning (Orlando, 2016). In addition to having the characteristics described, the Madonie Inner Area has been chosen as an experimentation area by the SNAI thanks to the use of strategies capable of generating innovation, as well as new and differentiated resources for the territory. The case of the Madonie development society named "Società di Sviluppo delle Madonie" (SoSviMa) is an example: a public-private association that interacts with public and private subjects of the Madonie in order to promote development of appropriate strategies for the use of the local resources. SoSviMa has a different area of action than the one identified by SNAI because it brings together a total of 29 Municipalities. In fact, some municipalities in the Imerese area, Caltanissetta and Enna are also included.

The strategies adopted for the development of the Municipalities of the Madonie area that historically have an agricultural vocation involve innovation to different parts of the territory. It is precisely in the agricultural sector that strategies have been developed for uncultivated and abandoned land, but also training courses for unemployed citizens in order to increase the employment of young farmers.

The energy needs of the Madonie territory are today met through renewable energy sources only with a percentage equal to 52% of the total energy requirement. A part of these renewable energies is replaced by the production of energy from biomasses: a figure destined to grow, based on the "Accordo di Programma Quadro", signed in September 2018. Specifically, the areas dedicated to agricultural production and interested in the creation of a network of small platforms for the treatment of woody and agricultural biomass are: areas with extensive crops (580,000 ha); olive groves (75,000 ha); vineyards (39,000 ha); orchards and citrus orchards (15,000 ha).

For agricultural production, some specific productions have been recognized as Slow Food Presidia:

- Scillato apricot (150 Q / year),

⁴ The data have been processed starting from the census data and the data relating to the surfaces of the administrative units. The author has processed the data.

- *Ape nera sicula* honey (1.5 T / year),
- *Badda* bean (15 Q / year)
- *Manna* (1500 kg / year)
- Polizzi pepper (1500 kg / year)
- *Provola delle Madonie* (59 T / year).

To these products must be added others that have not been awarded particular certifications, but which are recognized as identifying productions of the territory (*Basilisco* mushroom, Polizzi hazelnuts, *origano Vulgaris*, *Crastu* oil, Petralia Soprana salt) which are however a value for the madonite system.⁵

With the contribution of the Slow Food Foundation for Biodiversity, farms are engaged in the recovery of local varieties of ancient grains and olive oil, of which the Condotta Slow Food Alte Madonie is proposing the enhancement for the specific nutritive and pharmaceutical characteristics, together with the other productions of the Presidia. The promotion of typical products exceeds the theme of production and also involves agritourism initiatives. The multifunctionality that allows the rural environment allows to connect the productive activity of the agricultural and pastoral companies with the tourist activity in the rural areas.

The distance of the inner areas from the metropolitan propulsion centers has allowed the Madonie to maintain social, environmental and identity values. Today they allow to rethink the territory starting from the relationships with the rural dimension. In fact, in addition to productive specialization, there are attempts to enhance the natural and cultural heritage. Their development makes it possible to think of new forms of experiential tourism capable of involving both the resident population and external users. The values, differentiated among the single municipalities, were evaluated on the basis of the qualitative and quantitative methodologies developed in the field of research of Local Cultural Systems (Carta, 2003), which evaluates the cultural, naturalistic, touristic, agricultural, productive components in order to identify the peculiar identities and specializations and, therefore, the attractiveness of a given territory.

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⁵ The data are based on the 2017 production year. The author's elaboration was made starting from interviews with Slow Food managers.

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PA06

Methods and technologies
for transformative planning

Methods and technologies for transformative planning

Territory as media and social media as territory

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Abstract: How can planners find within social media new spontaneous ways through which people imagine, represent and socially produce a territory? This is what I have investigated in a peripheric neighborhood of Rome, trying to highlight how, through the acknowledgement of digital habitat embedded in a territory, it is possible to understand citizens' narration and hopes for their territory, as well as to find new ways to enhance participatory processes. I investigate how the habitat developed through a daily and routine use of mobile technologies of communication could make emerge new action spaces. I have identified insurgent democratic practices and new ways of citizens' engagement with their own city political issues, given a recurring distrust regarding official and established politics. Hence, since physical territory is a media of a diverse range of social relationships, also social media have become a portion of that territory where people can develop debates and conflicts regarding "major" themes and the image they would like to build for their territory. If researchers and planner accept that these contradictory and emotional digital places are in fact new portions of territory, alternative imaginations of space can be identified, generating new forms of collective appropriation of urban space.

Keywords: Social Media, Social production of space, Participatory processes, Ethnography.

Introduction

How our ways of inhabiting the city have changed after the spread of digital media?¹ This is what I have investigated in a peripheric neighborhood of Rome, Italy, conducting a three-year-long ethnographic research inside several Facebook groups related to that territory. To answer to such an open question, first we need to think the practice of "dwelling" a place as the production of locality process (Appadurai, 1996), that is the meaningful context for individuals' and groups' action. This context is practiced in the everyday life, through the social practice of imagination (ibid.). Defining dwelling as a production of meaning process, a suitable course of action cannot be to observe digital media use as an analytical tool that can guide us through urban space (Ratti, 2018), but rather analyse the spread of narrations and auto-representations that this technology allows. This form of communication is mostly visual, and it can be produced by international organizations but also by countless individuals in their daily routine, and is starting to characterize more and more our everyday life, narrating our places, the space we cross and the kind of sociality we use in them. Observing this narration, the territory results as a hybrid between physical and digital spaces whose boundaries and meanings are

¹ The terms to refer to the variety of artifacts that can hook up to different portals on the web are at the same time many and few. I propose to define them in general as digital electronic media or more simply digital media. The term "media" comes to refer to the ability of these artifacts to create networks of communication between people and spaces. The electronic and digital adjectives serve instead to qualify the type of reference technology, i.e. technologies that are powered by electricity and which are developed on (or can be reduced to) a binary code.

constantly being negotiated. The individual finds himself to be knotted in this encounter. Moreover, the production of meaning, not being centralised but scattered, breaks the traditional border of social classes, allowing new forms of debate, confrontation and discussion between people and groups.

Identifying these changes could be very important for planners: the spreading of narrations producing the sense of places, presenting themselves as a fundamental part of the inhabiting process, lead to the origin of hate speeches and invention of stigma, but also of new forms of participation and collaboration, new ways of regrouping with neighbours in order to take care of the territory, making an effort to produce it as a meaningful context. Thus, we are in front of new spontaneous ways through which people imagine, represent and socially produce a territory. If researchers and planners accept that these contradictory and emotional digital places are in fact new portions of territory, they can play an important role in these processes. Accepting the importance of online debates within the production of local imaginations, even when they are unpleasant, is a necessary step forward that we have to take to help new forms of collective appropriation of urban space developing, and also to counteract against various form of hate speech.

Also, Considering the territory as a media of social relations and the same media as a part of the territory, it is possible to observe their relation to see in what terms they contribute to help individuals and groups to cope with the intricate and often indecipherable interaction that is the relationship between global possibilities and local capacities. To address these issues, I committed myself into the habitat developed through a daily and routine use of mobile technologies of communication, internet and the social media of Montesacro, a peripheric neighborhood of Rome.

Field study and method

The choice of this particular area of the Italian capital is not accidental. First of all, I needed to indagate the use of these technologies not on exceptional cases, but on practices linked to the everyday routine within urban space. In this sense, my research can be defined as a “anthropology of ‘us’ “, meaning an ethnographic research geographically and socially distant from classical and ‘exotic’ cases of study. The protagonists of this research, the inhabitants of the “III Municipio”, also called “Montesacro”, are in fact people from middle class, and the neighbourhood itself is a liminal area of Rome, geographically and socially. The “III Municipio” of Rome is a rather extensive area of the capital², characterized, as is easy to imagine, by a variety of neighbourhoods with different historical and social characterization. Located in the northeast area of the capital, it is undergoing changes due to a moment of expansion, generational change and especially the emergence of new forms of associations and forms of land management from below. It is an area marked by a certain geographical and social mediocrity. The word should not be understood in the negative sense, but instead indicates how this area is inhabited by a middle class and is geographically in the middle of different trajectories. Its "natural" border is the GRA³, which divides it from the countryside and from the many neighboring municipalities; the area is also crossed by two road axes that are historically a link between the "true" center and the "real" suburbs outside the motorway ring: the Via Nomentana and the Via Salaria. The two ancient "vie consolari" are the roads built by the ancient Romans which, starting from Mentana in the Lazio region and from Porto D'ascoli on the Adriatic Sea, cross in the III Municipio to arrive at Porta Pia and Piazza Fiume (city centre). The Tiber laps the western border of the quadrant, while it is the smallest Aniene river to cross it, one of the main tributaries of the river that gave birth to the capital. Referring to the common sense and the ways in which this territory is represented, apart from rare exceptions, it appears to be a rather anonymous area; in Rome in fact you can hear about (more

²According to official data of December 2016, it counts 205,019 inhabitants

³ The “Grande Raccordo Anulare”, the highway that surrounds the almost entirety of the city of Rome.

or less rightly) of criticality as Tor Bella Monaca or Corviale, or of upscale places such as Parioli and the Prati district, or, of course, of the "most beautiful places in the world" located in the historical center. But you will hardly hear about the III Municipio, for better or for worse. This is not an area known for its social or economic criticalities (even if present), nor for particular qualities (although existing). Of course, it's an hour's drive from the countryside, but it doesn't take much less time to get to the Colosseum.

Starting from this self-perception detected in the territory, it is possible to imagine the necessity of its inhabitants to produce a new meaning, also to respond to the changes in action. Montesacro is therefore a precise context, a small-bourgeois area of the Roman suburbs, within which to observe the uses of digital media and the paths traced by them, at the individual and collective level, so that we can identify continuity and disjunctures in the locality's production processes and in the management of the urban space.

Having to work within such a vast territory, I chose to divide it into several cases of study. In this paper I will focus in particular on the case study regarding what happens within Facebook groups related to the Municipio. I have approached this context through the classical methods of ethnography. On the one hand, I tried to build networks of knowledge within the territory, attending various public occasions or simply strolling around, on the other, I joined the various Facebook groups to which I was interested, first getting to know the managers and moderators and then entering into their daily life. The next attempt was to unite the two contexts into one where I could pass seamlessly from an offline meeting to a chat or observing a post uploaded to Facebook.

I also tried to observe the use of Facebook and in general digital media within a precise frame, that of "incidental narration" (Bausinger, 2011). In fact, I noticed that the use of these technologies, and in particular the stories uploaded on Facebook that we are going to talk about, were not performed in a way obvious or blatant, but exploiting one of the most recent features of digital media: their "incidentalness". If, in fact, until a few years ago also an action like the Internet connection was marked by a whole series of rituals capable of putting them "outside" the normal flow of a day, the use that today we make of even the most futuristic technologies - Let's think about how "magical" is that my voice or my face can be heard and seen live at the other end of the world - is no longer an exciting and exceptional fact, limited to a precise context, as could be the games room of a bar or the computer of your office. Today digital media are used in a routine manner and subjected to the context, almost hidden and, in fact, incidental. The narratives of the territory in which we live made online, which we are now about to meet, are thus presented as incidental multimedia narratives, narratives calibrated through the affordances and the languages of digital media.

Narrating the "other"

During my research within this territory, I confronted myself with different contexts and different people: I met young adults who were moving alone for the first time, I entered some schools and I interacted with many of the groups created on Facebook with reference to the Municipio or to the various neighbourhoods that are part of it. In this paper, I will focus in particular on what I could observe by inserting myself in the circuits of these Facebook groups.

Within these spaces, I have identified insurgent democratic practices and new ways of citizens' engagement with their own city political issues, given a recurring distrust regarding official and established politics. Focusing on immigration policies and the consequent production of identity, I observed how citizens, through continuous and conflictual micro-narrations of their neighborhood life, produce stereotyped representations of the "other". At the same time, these micro-narrations have led citizens to reflect on both their attachment to the territory and transformative actions capable of producing a different one. So, now we will observe how by setting the ethnographic gaze on the processes with which stereotypes and even hate speeches are produced, it is possible to identify the reasons behind these processes and to imagine intervention strategies to shift the attention on forms of construction of community and bottom-up design practices of the urban space.

First of all, I have to describe what kind of people daily attend these Facebook groups. These groups can be composed of a few hundred people or touch peaks of 30000 users, but of course not all the members of the groups participate actively in their lives or the discussions that are born within them. The people who are engaged daily in these discussions in fact tend to be individuals between thirty-five and seventy years of age. They are people who live the changes of their territory and in general the changes that are summarized in the words "globalization" and "modernity" through a growing feeling of insecurity.

The novelties brought by these processes make less strong the "traditional traditions" (Bausinger, 2008) on which the groups model their daily routines, thus leading to the emergence of these feelings of anxiety, frustration, forms of displacement (de Martino, 2002) that must be solved by rebuilding the meaning of living in a given context. In this territory and in general throughout Rome, this problem is addressed mainly through the construction of the rhetoric of "degradation".

To make understandable the "disorder" that they experience in their daily lives, the inhabitants of Montesacro imagine a minority "which is determined [...] as "contaminated", and then becomes scapegoat of the "disorder" [...] which crosses current local social dynamics» (Simonicca, 2009, my translation), which is often detected in immigrants and secondly in younger generations. This disorder, therefore, is articulated within the word "degradation". For this rhetoric to work, however, it must be articulated, discussed, put into play. As I have seen during my research, the space for public discussion within the III Municipio is very little. This happens, on one hand, because of the growing distrust of institutional spaces for these discussions, on the other for the actual absence of physical places where to meet. The groups on Facebook have then slowly become the favourite places for these discussions, both when it comes to groups created by some political association or volunteer, but especially in larger generalists groups where the discussions seem to arise in a "spontaneous" manner.

In fact, within these groups it is very difficult to discuss political issues and in particular the topic of immigration. Looking at the case of one of the largest of these groups, we see how before we can enter to be part of it, we should stop to read a hefty regulation. Among the most repeated rules there is the prohibition to discuss the topic "foreigners" or "immigrants", penalty the ban, i.e. the expulsion from the group. Within the guidelines in fact, it is specified, precisely in relation to these rules, that its purpose is to build a lost idea of community, providing a platform where to exchange ideas, information and simply know each other in the scraps of time offered by the frenzy of everyday life, between neighbors who inhabit the same territory. To pursue this goal, you must avoid any discussion that could overturn the limits of education and become infuriating, create quarrels and long even endanger the integrity of the group

So what are the prohibited arguments? They tend to be summarized by the golden rule of the group, also positioned graphically above all others and detached in the body of the text: *You cannot talk about politics*. The concept is reiterated more precisely: "One cannot speak of Roman politics or worse national". The following rules appear to be a series of postulates of the same, or however clarification to indicate any theme that can slip into a discussion between opposing parties with different interests.

It is not therefore allowed to speak of religion, because at the end of the day everyone can believe what he wants in respect of others; you cannot talk about football (the combination between the two arguments does not want to be sarcastic), since undoubtedly the discussion would slip into unreasoned arguments and therefore in discussions; it is forbidden, clearly, in any way to talk of issues concerning race or nationality. In a nutshell, you must not speak of any form of alterity, which is in fact declined in some equally prohibited generic themes: the Rom, the immigrants (again), the vegans and the animalists (a sort of home-made foreigners), the gender and, finally, the cyclists.

These rules can make you smile as much as worry, but their sense is obvious: discursively exclude all otherness, create a forced localism that tries to conceal that in Montesacro there are not only white heterosexual omnivores

(and to what it seems no lovers of cycling) but also second generations, Rom, homosexuals, vegans etc. The reason is not necessarily an antipathy towards these categories, indeed, but just the willingness not to address these topics for which the group is simply not ready.

And yet, the political issue, articulated mainly through "the problem of immigrants", is the most addressed on these groups, through very special tactics (de Certeau, 2001).

In fact, these attitudes are opposed with particular sagacity to two strategies: that explained in the regulations of the groups that basically prohibits even just to appoint the other and the less visible but very powerful of the judgement of the society (ivi). In fact, at formal level, being racist is absolutely deleterious and disadvantageous. The common sense seems to think our society as naturally anti-racist, also thanks to many campaigns to raise awareness of the topic. In short, racism understood as the act of formulating discriminatory judgments on a person as belonging to an ethnicity or nationality other than their own is cleared at several levels as something wrong.

So how do these people evade the formal and moral prohibition of defining the characteristics of the other? By engaging in the rhetoric of degradation, they document, almost always through the use of photographic images, various problems of the area due to the presence of an "other" and its attitudes.

By inserting myself within all these groups I could see how my Facebook home was quickly flooded with photographs able to document the "degradation" in every way possible. For example, often appeared photos of garbage bins whose contents had been spilled outside. Among various accusations to the municipal waste management system, there is no shortage of comments like: «Someone did the shopping, huh? », indicating how some "stranger" had searched in the trash something to take away. On the same trend travel the many photos of the "remnants" of the abusive markets near the metro stations "These here make everywhere dirty and steal customers from the ITALIAN shops that pay taxes". A broken fountain testifies that "it has been tampered with... Someone takes a shower and then the water no longer passes, because it is clogged the drain». And if it is not repaired is because then "comes the sly that if the disassemble and if the pieces came". The photo of a car with a broken window, the window of a shop that has suffered the same fate and others, do not simply tell a theft, but bring the discussion quickly to move on the number of "foreigners" that has been increasing in the last years.

The perpetrators of this degradation, however, never appear in photos and only after some time are nominated within the speeches. The other is defined in these examples as a ghost that hangs over the territory, however invisible.

The alterity in fact appears personified in its different representatives only when this image can testify the existence of a single value that seems to be transversally shareable: the sacrifice for the territory. Who wants to fight a racist post seen a few hours earlier, not being able to start a discussion on racism because of the regulation, shares the photo of a "foreigner" at work while cleaning the sidewalks in exchange for little money, with a sign at his side that explains how he wants to integrate with the work and demonstrating gratitude and certainly not 'begging for pity'. This seems to be the only way to remind everyone that "immigrants" are always human: communicating their willingness to sacrifice themselves free of charge, or almost, to contribute to the territory where it arrived.

There are therefore two ways of defining the other within the groups, one in negative and the other, theoretically, in positive. In both cases the discussion takes on tones capable of attracting the attention of the moderators only after some time. In the second case, that of the "foreigner" good and worker, the discussions begin only when someone doubts the honesty of the operation, implying that it is only a farce, maybe foraged by someone who earns something behind. In the first case, however, the discussion degenerates when someone finally names the other as guilty of the degradation portrayed in photos, whether it is the Rom, one of the most

popular culprits, or the more generic "blacks", "Africans", "refugees". If someone tries to question the actual guilt of these people or, worse, try to justify them by talking about the social reasons behind any degrading gestures, then accusing those who brought into play the presence of the other on the territory to have prejudices, the debate is unleashed.

"Who thinks it is right to help these poor people... Realize that soon they will not ask for more, but take what they need and it is your fault» is explained very often in the comments; as you can see the accusation of racism is fought with that of "perbenismo" ("perbenism") that is the will to treat well someone who evidently does not deserve it for the purpose of being "fashionable", to resemble young people and therefore not be considered "old", inadequate or ignorant. These would be the only reasons for defending foreigners, without a real awareness of the problems of the territory and above all an interest in finding a real solution.

Through these indirect tales, the debates and the ensuing conflicts, come to produce the two extreme boundaries in which the other as an individual can be defined, both reasoned through the mediation of the physical space and the relationship with the territory. The other can be totally predatory and disinterested in the territory, or it can be totally aimed at sacrificing itself for it, thus making itself worthy of consideration.

At the same time, they also build two polarities of the attitude that is correct to maintain when we talk about certain issues: you cannot be racist, but, of course, it is equally shameful to be a "perbenist".

Indeed, perbenism is the biggest problem according to these people, because it prevents us from catching the real crises and because it would be the tool that politics uses to prevent dissent and exploit tragic situations for profit purposes. «I am more afraid of the perbenists. I put everything in the same basket? Tell the raped girls. I just want to find out that we're proud to be Italian». Of course, even those who fall in the other side, that of racism, are controlled. After having undergone the righteous ire of those who believe that these are shameful behaviours, not only their posts are often erased by the moderators, but they are also regiven by those who share their battles. Racism is, to all intents and purposes, wrong, one must be able to define the other as dangerous and liable to be eliminated without being racist. They are rhetorical that have a very delicate balances and whose dynamics may seem absurd if viewed from the outside, but that work in their context, precisely because they are based on the precise tactics.

As this dynamic may seem poor in meaning, it is precisely the one through which is built the imaginary in relation to the arrival of migrants in the territory. To grasp its effectiveness and the ability to continually build and reiterate such strong stereotypes about the "other" and the "us", we must therefore grasp the narrative and everyday aspect of it. What I have just told can look like an extreme situation, but in reality it is part of a sphere of very common behaviours, of which all of us in some measure are carriers, aimed at trying to include certain concepts in the "common sense" of our own group. This is what the researcher has to do, try to understand how and under what conditions the ways of building the "common sense" carried out on Facebook are capable of producing certain social effects. To think about in the dynamics just told, there was nothing that was not already said talking about racism; What is peculiar is the way of giving value to a discourse that is formally discredited at institutional level. The sum of each of these small subjective and occasional stories succeeds in fact (at least in the eyes of the group) to evade this problem by constituting itself in what we could define a "collective narrative", that is, something whose size and scope is more than just the sum of the individual parts.

It is precisely when the participation in this collective narrative becomes a kind of a daily ritual that its power and the capacity of its concepts (for example the arrival of the other linked to the degradation of the territory) become almost obvious and come to light. The continuous sharing of images with the more or less concealed purpose of narrating the other becomes almost a performance to be staged, able to become central in the description of the other, but especially of the territory itself and its inhabitants. These performances seem to have almost the value of rituals: they are in fact repeated in a form that, although not explicitly defined by any

authority, is quite recurrent and fundamental because they can survive the censorship. In addition, these performances seem able to define the membership of a cultural group by acting through the simplification of the characteristics of the "us" and the "other". They are therefore daily narratives capable of constructing taxonomies, i.e. rules for classifying behaviours and individuals. It is precisely through these rituals that the inhabitants of the III Municipio (re)produce the relationships between the different "collective identities" that recognize and put in hierarchical order their values. (Simonicca, 2006)

The definition of the "other" and of the "us" that is built within this dynamic reveals therefore also the deepest motivations for which it is put in place, which are then those proposed already by the regulations of the groups: to recreate a neighborhood idea that is supposedly lost in the past and make sense of the disorder present in the territory.

A few months after the end of my ethnographic research, I decide to return to attend the different Facebook groups regarding Montesacro. I am in front of a post that has obtained hundreds of responses and interactions. Within it is asked a simple question: "Who still thinks that Rome is the most beautiful city in the world?"

The answers I can read in the comments reveal something surprising. In fact, they summarize with great efficacy, in their accumulation during the hours, all the discussions, the comparisons, the shares of photos and in general all the conflicts and all the narratives that had alternated on the Facebook wall of the group in the precedent months.

Some in fact respond with photos of some famous monument, as if to say that Rome is still beautiful, despite the difficulties of the moment. Someone respond that something is actually changing for the worse and it is finally time to ask these questions; someone else instead perform effective summaries of the various discussions between racists and perbenists, proving to remember them all perfectly. All those debates and all the narratives do not seem to have been lost in the powerful and unstoppable flow of the social network, but instead they are inserted not only in the memory of the people, but in their routines, in the daily ways of production of locality. The continuous reference, implicit or explicit, to what has already been discussed on the groups is not linked to the "infinite memory" of the Facebook platform, because some posts that are cited are far dozens of minutes of scrolling the mouse along the wall of the groups, as long as they have not been deleted by the moderators. While "lost" in the flowing of Facebook, the discussions have therefore left a sign. Arrived in January of 2018, I return to include in my routine the observation of groups and participation in their activities and I realize that something has actually changed. The "War Bulletin", the endless succession of photographs concerning different types of degradation, has not disappeared, but has changed to some extent.

The biggest change is perhaps the almost total absence of narratives concerning the "other". To comment on the various photos regarding the degradation, you no longer end up talking about the "foreigner" as the main culprit. I want to be clear, I do not mean to say that racism has disappeared from Montesacro, but simply that the incidental narratives no longer find appropriate tactics to construct a deterministic relationship between the presence of the other and degradation. The question that arises to me is: why? It does not seem to me possible that this change could simply be due to an increased ability of the moderators to expel and censor those who assume racist attitudes, nor that simply the subject has passed out of fashion. The other did not disappear only in narratives aimed at defining it as a cause of degradation, but also in those photographs in which it is portrayed at work for the common good of the territory. It is therefore possible, and it is this possibility that I want to explore now, that precisely the characteristics of the incidental narratives for how they are performed on Facebook have had an effect on the construction of these speeches.

As I hope to have clarified, the deepest purpose of the discussion fossilized for months on the subject of the "other" was not so much to discuss the figure of the foreigner, but to define an "us", the identity of the inhabitants of Montesacro. In particular, the "us" on which they, the members of the groups, are that figure put

in crisis, disoriented and apparently incapable of finding themselves in the current structure of the neighbourhood. The rhetoric of degradation and also the various culprits from time to time identified serve in fact to articulate in a sensible way (which, I want to specify again, does not mean appreciable, but only meaningful) the feeling of displacement, of an emotional detachment that the inhabitants of Montesacro live towards their neighbourhood and their city. And it is this detachment, it seems to me, the main problem that is dealt with through the incidental narratives, not so much that a road is impassable because of the holes in the asphalt, that the trash bins are crowded in another street or that there is a growing number of black people waiting for the bus. In fact, to create a discussion able to accumulate almost a thousand answers is not a technical question like «how come the municipality is struggling to manage the cleanliness of the neighbourhood?», but a much broader, almost existential question: «Why did we stop thinking that Rome is the most beautiful city in the world? And, if it's not the most beautiful city in the world, what city do we live in then? And what role do we have in it? ». To understand the almost dramatic extent of this question it is necessary to enter deeply within the cultural intimacy of the inhabitants of Montesacro as Romans and of the relationship that the citizens of the capital build with the history evoked by the City.

«The monuments are no longer enough! We hide behind the monuments, but we do not live in it, it is true that Rome sucks» Screams a lady in one of the comments to the post in which this question was posed. «If you go abroad even once you realize that no major city is reduced in this state».

In the game between global imaginations and local possibilities, the territory came out defeated and they together with it. They cannot adhere, nor want, to those global imaginations that excite their children or grandchildren, they cannot escape from the Roman reality, physically or figuratively: they cannot, in short, ignore Rome. On the other hand, they are not even able to ignore that something is wrong in Rome, which perhaps is no longer the centre of the world, but a periphery. And it's not even the most beautiful city in the world. To affirm that the monuments are not enough to guarantee a certain quality of life means to break up in a violent way that relationship naturalized between physical and historical quality of the territory and quality of the life of the inhabitants: to have an archaeological finding under their own house is not very useful if they no longer know what role to occupy in the globalized world. One of the most effective imaginations to be put to work to produce the locality in the Roman context cracks, to the point of bringing the inhabitants of the district to seek other rhetoric in which to take refuge.

The relationship with the territory is therefore damaged, not only because of the difficulty of managing the changes, but especially because the inhabitants feel that they cannot intervene on the territory, not to have any form of agency on it. The discursive expulsion from Montesacro leads to subtract the space of the Facebook group to the dynamics of the social network to make it the place to rediscover this role. While the loss of a producer of meaning such as the history of Rome leads to a different one, this feeling of insecurity and uncertainty leads to the genesis of episodes of violence, albeit at the moment only verbal, in an excess of and self-determination, strengthening the essentialization of cultural diversity (Appadurai, 2005); whether this diversity is found in "foreigners" or in the youngest, it is still in a "other".

The incidental narratives that occur online present themselves to some extent as forms, perhaps not strictly of "active citizenship", but certainly as a way to regain an agentivity with respect to the territory. These modalities mainly consist in identifying the ethical and moral qualities capable of keeping the neighbourhood networks in their feet. This however means that to find the meaning of living in Montesacro, outskirts of Rome, it is not enough to rely on the physical qualities of the territory, intending with these also the cultural heritage constituted by monuments and historical sites, but it is necessary to rediscover a certain quality of the citizens.

«Of course, Rome is the most beautiful city in the world. It's not an answer to your question, it's a fact. Us Romans however, we are assholes»

This is the argument that, in more or less similar forms, begins to return in the comments to that post I was talking about earlier and this seems to me a positive consequence of the discussion: the awareness of the need for a certain degree of engagement in daily life which one cannot do less to feel full-fledged inhabitants of their own territory and the rediscovery of the value of neighbourhood networks and of a collective and non-individual approach to the policies of management of the neighbourhood.

This is one of several case studies with which I have compared myself during my research. In other cases as in this, the interaction between digital platforms and territory is the one that exists between two different spaces capable of being mediums of various forms of social relations.

In fact, physical space has always been a medium of communication, in the sense that it has always been able to generate "meaning" in relationships. It is a medium insofar as it is able to influence (but not to determine) action, but also built through social action. The territory as a social and cultural product presents itself as the medium of that intricate and often indecipherable interaction that is the relationship between global possibilities and local capacities (Bonis, 2001). The novelty to be taken into account is that parts of those platforms created by the digital media and managed by international organizations can be tactically torn (de Certeau, 2001) and sewn up within a local context. Precisely these spaces subtracted and localized informally become the privileged places of the social and political discussion of the neighbourhood, those where, even if in an incidental way, more strongly is practiced an idea of neighbourhood as space of the meeting between contiguous, the comparison and the "free" exchange of opinions and information, whose only advantage is the establishment of a better community, although the forms through which this happens are often very conflictual.

Conclusion

I believe that the conclusions I have just tried to draw can open up to a number of considerations in relation to possible future scenarios, in the field of social research but not only, on which I would finally like to concentrate.

Firstly, by reasoning on the methodology of research, it seems to me increasingly difficult to imagine future investigations in the field that, in any context, can be exempt from working within the digital territories as in the "physical" one. I hope it is evident the importance of these spaces in the daily life of those who have access to it and consequently how it is no longer possible to think of a work on the field that does not consider the enormous agglomeration of meanings and narratives produced; this would lead to the exclusion of a fundamental part of the social life of individuals.

But I think that reflection on the subject should not stop at the point of view of "pure" research (as long as it can exist). Instead, we can reason on these issues also in proposing action-research practices. If it is true that in the digital portions of the territory, which are performatively and continually produced, the discussions appear to be extremely polarizing and violent, I think this happens because the spaces of the social networks remain in our society among the few where it is still possible to articulate a debate, to trace a space for conflict (even violent), to build a space for its own diversity (real or suppository). Moreover, precisely because of the possibility to "domesticate" our own digital spaces that is offered by the various platforms that possess them formally, the possibility of customizing them and making them familiar, they are often closer and intimate (Herzfeld, 2005) of many physical places, which especially in the context of the city are increasingly difficult to "modify" by an average user. Thus, what is encountered within these intimate spaces and "neighbors" assumes a value and meaning much more important than what comes from external sources, even when they are official. A council, an opinion, even a medical or generically scientific information, are easier to accept if they come from someone who is actively and politically engaged within these networks, just like, in our daily lives, we more easily accept advice from a friend or relative than from a stranger. In this sense, I think it is necessary for us researcher to be more inclined to "get our hands dirty", to accept that even behind the rhetoric and the most unacceptable

speeches, is concealed the attempt to find a sense of one's existence, remembering that this is a common trait of that humanity that, in any case, unites the researcher and the subjects of any study.

In the case of rhetorics such as racism, the aim is to be able to deconstruct that and to propose an idea of humanity that is more *sensible*, i.e. that has more meaning, of that proposed by racism. This certainly is not a simple task. Researchers must agree to lose themselves between networks (digital and not), sometimes to compromise, to displace themselves, in order to find themselves together with the people with whom they work. I would say that in this there is nothing to lose, if not our certainties.

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Technology readiness for cities: the near-future case of autonomous passenger drones

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Abstract: Autonomous Aerial Vehicles (drones) are a transformative technology at the cusp of being adopted for real world passenger transport in cities (Moore, *et al.*, 2018). Passenger drone research remains focused on the advancement (Gao, *et al.*, 2018), opportunities (Zhang, *et al.*, 2018) and technology readiness (Torens, Dauer & Adolf, 2018) of drone features and systems. The technology-focused planning literature dominantly focuses on Smart City frameworks for enhancing technology integration into urban planning (Caragliu, Del Bo & Nijkamp, 2011), with an emerging focus on the implementation of specific technology strategies (Bayat & Kawalek, 2018; Yigitcanlar *et al.*, 2018). However, the literature stops short of interrogating the technology readiness of cities that will inevitably attempt to implement specific technologies (i.e. autonomous passenger drones) into their urban fabrics. That is, cities will be pressured to allow (or race to adopt) fleets of drone taxis to ease pressure on already stressed and near capacity ground transport networks; but where will drone operations be seen as safe, practical, desirable, or at least tolerable, additions to the urban rhythm and hum? How compatible are existing urban development patterns and policies to a future that includes aerial passenger drones landing in neighbourhoods and buzzing across their skies? This paper summarises the currently known opportunities for aerial passenger drone technologies for improving urban system performance and proposes an inclusive method for cities to enhance their readiness for the forthcoming technology. The method is applied to the city of Brisbane (Australia's third largest city) to explicate the practicality of interrogating city technology readiness in the context of aerial passenger drones, highlight jurisdictional and governance tensions, and detail learnings from implementing the method with implications for smoothing the transition to implementing transformative technologies.

Keywords: Transformative technology, autonomous aerial vehicles, technology adoption methods technology readiness

Cities with flying cars in a not-so-dystopian future

In 1927, Fritz Lang brought forward a dystopian vision of future cities in the visually stunning silent film, *Metropolis*; characterised by the densely packed skyscrapers, with aviation placed at the heart of the city. Aviation has since been elevated as a core economic feature of cities, with Kasarda's (2004) Aerotropolis and Stevens, Baker and Freestone's (2007) Airport Metropolis concepts focusing on the interdependence and synergistic opportunities of cities and air transport infrastructure. Within the context of urban planning, aviation has almost always been seen with respect to its utility for connecting cities to the rest of the world – allowing planners to promote ground transportation routes that align with passenger and cargo movements through the urban and hinterland environments, and that zoning appreciates the noise footprint and physical separation of structures required of flight activities. However, any science fiction fan seeing the 1989 sequel, *Back to the Future II*, saw a future where the skies above cities were not filled with aircraft, but with flying cars. When everyone has a flying car, there's little need for the *Metropolis*-style airport at the heart of the city. Fast-forward three decades, and suddenly we are in a future where personal on-demand aircraft are becoming a reality.

In 2018, Uber Elevate announced its intentions to begin commercial flight operations of a fleet of electric vertical take-off and landing (eVTOL) aircraft, which would open up new transportation opportunities for on-demand aviation (Uber Elevate, 2018). This proclamation suddenly became more real when Bell (an established helicopter manufacturer) announced its partnership agreement with Uber Elevate as the preferred supplier of air taxis at the Consumer Electronics Show in January of 2019 (Engadget, 2019). Projections estimate that an eVTOL flights dramatically reduce travel times, for example commuting 55.4 miles between San Francisco and San Jose could be reduced from 1hr 40mins to just 15mins but only cost 16.2% more than a regular uberX fare (Uber Elevate, 2016). Essentially, Uber Elevate is proposing on-demand personal intra-urban air transport that will be priced to be available to the general public. While much of the focus for the rapid emergence of the technology has been on the readiness of the technology for the market, there is a question posing as the proverbial elephant in the room:

What is the readiness of cities to adopt this near-future technology?

For some cities, the approach appears to be akin to a technology start-up company, where experimentation and failing fast to learn success (see Zellner and Campbell, 2015), frames their risk appetite. Abu Dhabi for example, announced its appetite to trial the (at the time commercially untested) Ehang 184 drone taxi in early 2017 as part of the city's goal to automate at least 25% of intra-city journeys by 2030 (Olsen, 2017). Singapore also gave the green light to German company Volocopter to begin inner-urban flight testing as soon as the second half of 2019 (Robertson, 2018). While city-states may have the available urban densities, funding and alignment of governance structures to facilitate the rapid integration of technologies into their urban fabrics, cities that are framed by speed-limiting bureaucratic and regulatory hurdles may struggle to prepare their urban infrastructures, stakeholders and interconnected systems for adopting autonomous and/or piloted airborne drone taxi systems. This paper proposes a framework that could be used by cities to self-evaluate their current maturity or readiness for this technology, as a means of helping cities prioritise and resource activities that (if desirable) pave the way for airborne taxis. The framework is discussed in the context of Brisbane, Australia, due to the progressive policy environment for unmanned aircraft

systems (UAS), and highly interconnected and overlapping jurisdictions that highlight potential complications for technology adoption.

Adapting a Big Data adoption model for airborne drone taxis in cities

For a decade, Big Data has been seen as the technology that all organisations, cities included, should buy into. While a plethora of authors have provided advice on specific technologies and skills required to make *Big Data happen* in organisations, Davenport and Harris (2017) provided clarity to organisations, large and small, when it came to understanding *are we ready for Big Data, and if not, how do we get ready for it?* Their DELTTA model and stages of analytical maturity provide sounding boards for organisations to evaluate their capabilities and deficiencies against an array of criteria that are essential for creating technology adoption strategies. DELTTA, as a model specifically developed to make explicit the functional requirements of Big Data, stands for the way the organisation uses (D)ata, how data is treated as an asset for the (E)nterprise, the level of support for Big Data approaches by the organisation's (L)eadership, how data is used to support the defining and achievement of (T)argets, the resourcing of (A)nalysts to support the organisation's aspirations and use of data, the integration of the (T)echnology required to advance Big Data use in the organisation, and the sophistication of (A)nalytical techniques applied within the organisation. These functional requirements become the criteria by which an organisation assesses its resourcing and competence to determine the *maturity* of the organisation with respect to Big Data. Davenport and Harris (2017) define five levels of maturity: Stage 1: Analytically impaired; Stage 2: Localised analytics; Stage 3, Analytical aspirations; Stage 4: Analytical companies; and Stage 5: Analytical competitors. There are finite descriptors for each level of maturity for each of the DELTTA criteria, which can be found in Davenport and Harris' (2017) book.

By assessing the maturity of an organisation across each criteria, areas of strength and liability can be identified to aid decision making for resourcing, change, and development. By deconstructing the model into a process to first create the criteria for the model, and then populate the model with objective levels of maturity, a framework can be created to assess the readiness of a city for a new technology. This is demonstrated in the following section, where this approach has been applied to the context of Brisbane, Australia.

A framework for assessing the readiness of Brisbane for airborne drone taxis

Mobilising Healey's (2007) revelation that "the relation between planning activity and its context [...is...] an activity in which context and activity are co-constitutive and co-generative", the act of reviewing and refining a planning jurisdiction's capabilities and readiness for a new technology creates a moment of opportunity to refresh its assumptions of power and inclusion in the context of technology adoption. This presents the first step of the process for creating the framework – *defining the reference group*. For example, transportation networks in Brisbane have largely been negotiated between State and Local Government planning jurisdictions. The prospect of including an intra-urban airborne transportation option into the city's suite of transportation modes (which currently include public rail and public bus, along with roads, toll roads, toll tunnels, etc.) legitimises new stakeholders with legitimate power to require specific design features and system oversight of how the airborne drone taxis intend to interface with the built environment. These stakeholders include the Civil Aviation Safety Authority (CASA), the country's aviation safety regulator; and Air Services

Australia (ASA), the country's airspace operator. Further, it's important that experts in the technology are legitimised into creating the framework in order to ensure that any assessment of readiness is accurate to the technical requirements. Experts could include design engineers of shortlisted airborne drone taxi operators, academics with rich technical knowledge of UAS requirements, or independent UAS engineers. Any attempt to construct the technology readiness framework for airborne drone taxis should include these stakeholders.

The second step in the process is to *define an array of criteria* relevant to the contextual and institutional requirements of readying the city of the technology. Deconstructing Davenport and Harris' (2017) original model provides some insight into the normative aspects required for technology adoption. This includes (1) the compatibility of existing infrastructure systems to take advantage of the new technology, (2) how stakeholders appreciate and include the utility of the technology into its operating fabric; (3) the interest and support of top leadership with respect to the technology; (4) the prevalence of use of the technology to achieve relevant goals for stakeholders; (5) the human resource capabilities and capacities to understand and apply the technology to support the goals of stakeholders; (6) the technical/physical requirements to support the adoption and use of the technology; and finally (7) the level of sophistication applied to integrate the technology into existing and emergent routines. In the context of the technology – airborne drone taxis – the criteria for the framework are defined in this paper as:

1. *System compatibility*: How will airborne drone taxis interface with the urban environment (i.e. need to take-off and land)? What hazards exist, and will they require specific standards for identifying sites for operations (i.e. are there existing sites, or is there a need to build new/bespoke landing pads to accommodate the technology)?
2. *Stakeholder adoption*: To what extent do residents, workers, tourists, etc. expect the technology to be desirable and in demand for their daily activities? How will the placement / availability of landing pads impact on the ability of airborne drone taxi services to be adopted into the routines of residents and other travellers?
3. *Leadership support*: To what extent to leaders of salient stakeholder organisations demonstrate a willingness to adopt, even champion, the inclusion of airborne drone taxis?
4. *Integration*: To what extent can the technology improve the city's goals for "an easy commute", "connecting communities" and "embracing innovation" (Brisbane City Council, 2019)?
5. *Expertise*: To what extent are planners empowered to transform the urban environment to leverage the opportunities created by airborne drone taxis?
6. *Infrastructure*: To what extent is the city and its stakeholder willing to invest in creating new or adapting old spaces to integrate airborne drone taxis into the urban environment?
7. *Scheduling*: To what extent is the city and its stakeholders able to adapt existing transportation routines and behaviours to create seamless flows of people with the support of airborne drone taxis?

These seven criteria provide a starting point from which levels of maturity can be defined - between veritable luddite and world-leading exemplar - for the integration of airborne drone taxis into the fabric of the city. Defining the maturity levels is the third step in developing the framework and requires careful consideration of the practicalities of bringing together diverse stakeholder needs to

pre-empt the opportunities and hurdles that are possible in the context being examined. The example below provides some insight to the levels of maturity expected from the diverse array of interests present in the case of Brisbane:

- *Stage 1: Unwilling to participate.* This is characterised by stakeholders who are potentially hostile or unwavering in their opposition to the notion of airborne drone taxis in Brisbane.
- *Stage 2: Cautious but willing.* This is characterised by stakeholders who may distrust the technology, or distrust one another, but are open to negotiate and review the facts to determine if the technology is plausible.
- *Stage 3: Recognition of importance.* This is characterised by stakeholders who agree on the potential utilities, benefits and hurdles present for the technology, and are actively seeking opportunities to solve problems and create synergies amongst stakeholder interests. This could include the reserving of space in carparks for future landing pad developments and changes to regulations.
- *Stage 4: Realised value.* This is characterised by stakeholders who have adopted new processes and invested in change to support the adoption of airborne drone taxis. This could include the creation of new organisations and/or regulatory bodies to support and oversee operations and physical changes to the urban environment.
- *Stage 5: Hallmark of the city.* This is characterised by stakeholders who actively champion the technology with external stakeholders, demonstrating that airborne drone taxis have become a distinctive feature of living in Brisbane. This could be characterised by joined-up infrastructure to ensure flows of people from one mode of transport to another is seamless.

With the levels of maturity now defined, the fourth step is *applying the framework to the context* – mobilising the expertise and diverse views amongst the reference group to critically evaluate the readiness of the city to the technology. This requires careful consideration for how each of the levels would be characterised for each criteria, essentially creating a five by seven evaluation matrix that would be applied to the context of adopting airborne drone taxis into the city's suite of transportation options.

The research framed in this paper has not progressed beyond this point at the time of writing. However, the remaining steps in the process are easy to explain and will of course be more difficult to implement. Step five requires *open consultation amongst stakeholders* to explain the maturity of the system of stakeholders, as well as identifying the maturity levels of individual stakeholders. This allows for transparency in identifying strengths and limitations amongst stakeholder capabilities, capacities, and compatibilities of their interests with one another. Davenport and Harris (2017) suggest that when planning to shift from one level of maturity to the next it is prudent to do so only after all criteria have reached a similar level. That is, it may be a fruitless exercise to invest energy and resources to enhance Infrastructure from Stage 3 to Stage 4 if Stakeholder Adoption remains at Stage 2, as a sceptical community may only become more resistant to negotiations if development was to take place before they had their concerns heard and advocated.

What is important to recognise for the framework is that it is a live tool that should be (step six) *updated throughout* the course of attempting to evaluate and potentially adopt a technology into the city's ways of doing things. The framework encourages ongoing critique and development, and maintaining an eye on how debates and decisions for resourcing transformative change impact on the overall *health* of the multi-stakeholder technology adoption effort. As such, the framework is presented as a tool for planning and technology decision making.

Transformative planning requires tools to foster agility

Planning for transformation often focus on socio-spatial and institutional dimensions (Friedman, 1987). In this paper, the focus is at the level of specific culturally embedded assumptions and habits (Healey, 2007) with respect to the task of adopting a specific technology into already defined planning regimes and relationships. That is, by undertaking the task of preparing the urban environment, stakeholders and interfaces between the city and other jurisdictions (i.e. civil aviation authorities / regulators) the city acts as a facilitator between the service providers (airborne drone taxi operators) and its market. Without the support of local planning initiatives, technologies that require specific physical interfaces and social awareness are impeded, if not totally rejected, from the possibility of technology adoption. Even if the populace of the city is in favour of adopting a specific technology, if the physical environment is not suitable, then the ability for the technology to operate is void. For this reason, it is imperative that cities continually scan the environment for emerging trends and technologies that may require a significant change in the physical environment, and poll its populace for their desirability. Where there is an expected desire and positive outcome for the city, the use of a systematic approach to investigate, understand, decide and act on emerging technologies is prudent, and fosters the agility of the city to more readily adopt transformative technologies as the technologies mature in the technology readiness scale.

For those who used to look up with awe at helicopters flying executives around Manhattan, it appears that your day to take to the sky is coming soon. The airborne drone taxi won't be the last technology to transform cities, but it appears that it will be the next.

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The system of socio-spatial diversity monitoring in the city of Gdansk, Poland

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Abstract: This paper presents methods for the system of socio-spatial diversity monitoring in cities on the example of the a monitoring system for degraded and regenerated areas in the city of Gdansk. The main focus is on the use of spatial databases for the monitoring system and the possibilities of using its results for further work - especially spatial planning or scientific purposes. In the beginning, the author will discuss the conditions for the implementation of monitoring in Polish cities - the legal basis, data availability and institutional support for the spatial monitoring processes. Next, data sources and methods of the implementation of monitoring will be discussed, along with an indication of the most difficult obstacles and ways to overcome them. The next part will present the chances of using monitoring data both for the needs of spatial planning and for scientific purposes, for example in the characteristics of Gdansk residential areas and assessment of their level of social capital. The study aims to lead to a discussion on the willingness of municipal units to conduct effective spatial monitoring and the use of its results for real changes in the urban space.

Keywords: socio-spatial diversity, monitoring, regeneration processes, factorial ecology, sustainable development

Introduction

From the very beginning of its existence, cities were places that gathered people with different social status. With the development of urban civilization, resulting in an increase in the number of inhabitants and their territory, the problem of the social diversity of cities has deepened considerably. Some scientists, however, believe that the main reason for this is the growing number of social characteristics that distinguish urban residents. Shevky and Bell (Shevky and Bell 1955, 3) regarded the city as *'a product of the complex whole of modern society; thus the social forms of urban life are to be understood within the context of the changing character of the larger containing society'*. Nevertheless, cities do display distinctive residential patterns and such areas may be termed morphological regions, neighbourhoods, urban social areas or urban regions, according to the type of approach and the semantic tastes of a researcher (Knox and Pinch 2000).

The paper presents the main conclusions from the implementation, conduct, and evaluation of the system of socio-spatial diversity monitoring on a micro scale in the example of city of Gdansk¹. The focus is on the monitoring system for degraded and regenerated² areas which is a part of Gdansk Municipal Regeneration Program. The article also considers how monitoring can serve to improve the efficiency of the spatial planning system for long-term sustainable development.

First, there is a need to establish definition needed to the discussion. It is fundamental to present the idea and assumptions of factorial ecology, which is the theoretical basis for the creation of the socio-spatial diversity monitoring of Gdansk. As Michael Pacione explains (Pacione 2005, 371) *'factorial ecology offer a means of constructing urban social areas based on a mathematically rigorous procedure and using a larger set of diagnostic variables than the seven employed in classical social-area analysis'*. In addition to, and sometimes instead of, classic dimensions represented in Murdie's model (Murdie 1969) it is common for factor ecological analyses to identify other dimensions of residential differentiation (Knox and Pinch 2000). Social-area analysis based on factorial ecology has been used in many studies as a tool for constructing a social typology in the city, as well as a prelude to the ecological analysis of social characteristics such as crime, social activity or electoral behaviour. Moreover, as Paul Knox and Steven Pinch declared, factor analysis *'it is now generally the preferred approach for dealing with the complex question of measuring urban sociospatial differentiation'* (Knox and Pinch 2000, 105).

Institutional and legal framework of socio-spatial diversity monitoring in Poland

At the outset, it is worth emphasizing that there are no legal provisions in Poland that contain a require of socio-spatial diversity monitoring in municipal spatial policy. The only legal requirement connected with the monitoring of urban space is contained in art. 32 of the Act of 27 March 2003 on Planning and Spatial: this regulation obliges the municipal offices to realize an analysis of changes in spatial development at least once during the term of office of municipal council, which is five years. The mentioned article does not indicate any detail or method of how to monitor these 'changes in spatial development' - in practice this unfortunately means that most of municipal offices do not conduct any spatial analysis, and only submit statistical data (such as the number of building permits, the number and the area of local spatial development plans or the area of transformed agricultural land).

Clearly this does not mean that spatial analysis is not carried out by Polish municipal offices at all. Mainly in larger (more than 200,000 inhabitants) Polish cities, usually the capitals of voivodships,

¹ Gdansk is the port city in northern Poland, a capital of Pomeranian voivodeship, with 466 631 registered inhabitants in the end of 2018 year.

² It is important to clarify the definition of the regeneration used in the paper, which comes from the Polish legislation (Act on regeneration, 2015). The regeneration process is defined as *'a process of counteracting crisis situation in the degraded areas, lead in complex approach due to integrated actions in favor of local community, space and economy, concentrated territorial, conducted by regeneration stakeholders, basing on local regeneration program'*.

there are special units within the municipal office, which are dealing with analysis, especially for the needs of spatial planning. Nevertheless, the issue of socio-spatial diversity analysis remains the domain of Polish universities. There are several well-known Polish geographers which are focusing on socio-spatial diversity like Grzegorz Węclawowicz (1988, 2007), Henryk Domanski (2004) or Stanislaw Liszewski (2009). Liszewski (Liszewski 2009) has been writing that in order to determine the socio-spatial structure of the city, it is necessary to look for regularity in the spatial distribution of social groups of its inhabitants and the connections that occur between them. Indication of where the social groups are located, the comparison of their living conditions and the consideration of why certain socio-spatial structures have been created in the city are according to Grzegorz Węclawowicz (Węclawowicz 1988) the main goals that should be accomplished by the study of the socio-spatial diversity.

However, what is worth emphasizing is that the monitoring system discussed in this paper was created in the municipal office, specifically in the Gdansk Development Agency, which is a municipal institution responsible for spatial planning. A direct cause to initiate the system of socio-spatial diversity monitoring in Gdansk was the Municipal Regeneration Program (MRP). It is a strategic document which includes diagnoses, plans and coordinates actions to achieve the expected changes after regeneration process. It is also used as an integrated regeneration project which is required for financial support for regeneration activities from EU Funds (Axis 6 of the European Social Fund and Axis 8 of the European Regional Development Fund) through Regional Operation Programs. Since 2015 the regeneration processes in Poland are being conducted out within the Act of on Regeneration, which enrolments obliges municipal offices to fulfil the guidelines set by the experts representing Marshals' Offices (polish provincial offices) during the preparation of the MRP. The Act on Regeneration also includes the obligation to rely on the analysis in the designation of regeneration areas and in their monitoring, which, combined with different regional guidelines, contributed to the creation of many various methods of spatial analyses concerning on changes in urban space, especially with differences on the scale of detail.

A system of socio-spatial monitoring in Gdansk – study case

As it was mentioned, the system of socio-spatial diversity monitoring in Gdansk was created for the Municipal Regeneration Program. Initially it was assumed that it will aims at assessing the degree of program implementation progress, identifying barriers, difficulties, but also new areas requiring support outside regeneration and degraded areas. After time, its scope expanded. It is worth mentioning that analyses for the needs of MRP are carried out in several areas using a variety of methods, and the monitoring is only the first step - the next are the survey of residents and the observation of the implementation of individual projects. However, this does not change the fact that in practice the monitoring system initiated for the needs of MRP became a full-fledged analysis of socio-spatial diversity in the city and a valuable material for many other studies and actions.

Gdansk monitoring system for the Municipal Regeneration Program distinguish oneself among other Polish cities systems, above all due to the exceptional scale of detail, reaching results aggregated separately for each hectare of the inhabited area of the city of Gdansk. The majority of Polish municipal offices carrying out spatial monitoring only to the level of settlement units or, in the case of larger cities, districts. In the case of the monitoring in Gdansk, every effort has been made to obtain as much detailed data as it is possible.

The distinguishing feature of Gdansk monitoring system is also its frequency. According to Gdansk MRP itself, the analysis will be realised in the cycles of at least 3 years - however, the success of the first socio-spatial diversity analysis has made the monitoring regularly carried out every year. Such a frequency of repeated analyses allows to observe even the smallest changes in the city social area. It also enable to look for a correlation between the analysis results and current local or global events more precisely, than it would be possible in the case of monitoring with three-year cycles.

The socio-spatial diversity monitoring covers whole area of the city of Gdansk. After considering the availability of spatial data and after selecting the indicators for analysis, it was decided that their results will be presented only for inhabited areas - this also means that the total area covered by monitoring changes every year (mainly because new residential buildings are created). However, this does not prevent the possibility of comparing the annual results, because the synthetic index is calculated individually for each hectare of the inhabited area in the city of Gdansk. The aggregation of data into one-hectare squares allows an easy comparison of selected areas according to the values of indicators, as well as it simplify the creation of a synthetic index summarizing the results of all components indicators used for the analysis. A comparison of the results of the analysis of the socio-spatial diversity for the selected area of Gdansk in two following years is presented in Figure 1.

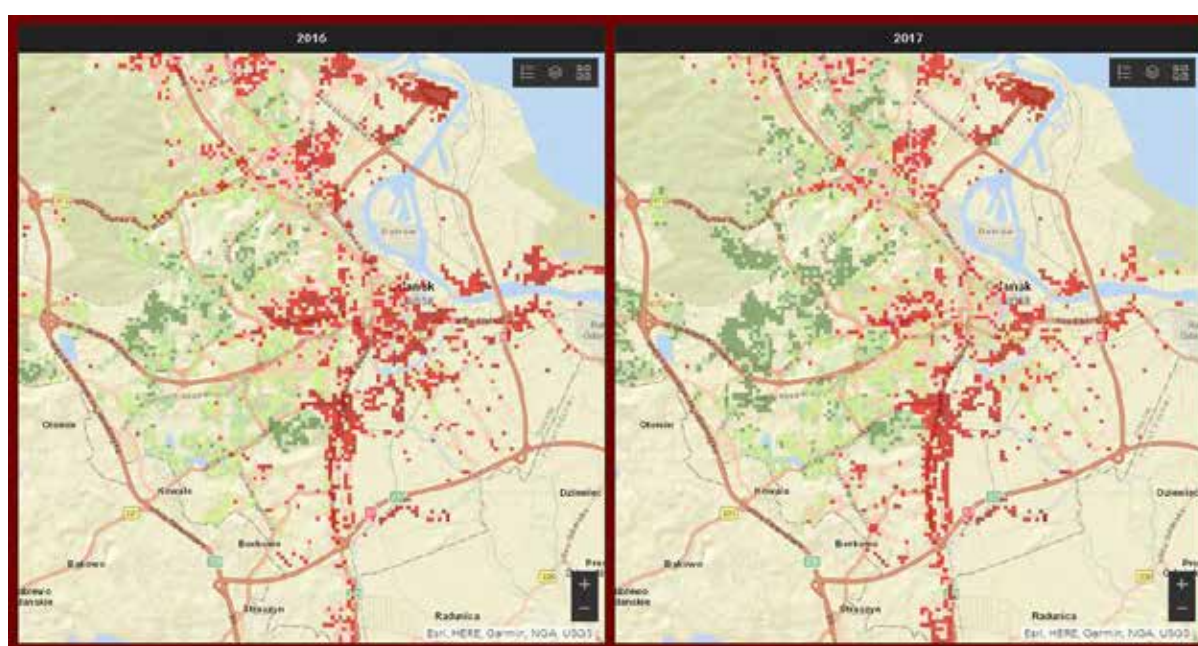


Figure 1 The comparison of the results of syntetic index of the Gdansk MRP monitoring in 2016 (left) and 2017 (right). Source: Gdansk Development Agency (<https://tiny.pl/twt1l>, access: 05.05.19)

As mentioned earlier, the system of socio-spatial diversity monitoring in Gdansk is based on the principles of factorial ecology. *'Factorial ecology employs the multivariate statistical technique of factor analysis in order to derive a smaller set of diagnostic factors from an initial larger set of variables measuring the social, economic and demographic characteristics of census tracts in a city'* (Pacione 2005, 371). The method of obtaining and processing data in accordance with the principles of factorial ecology is presented in Figure 1.

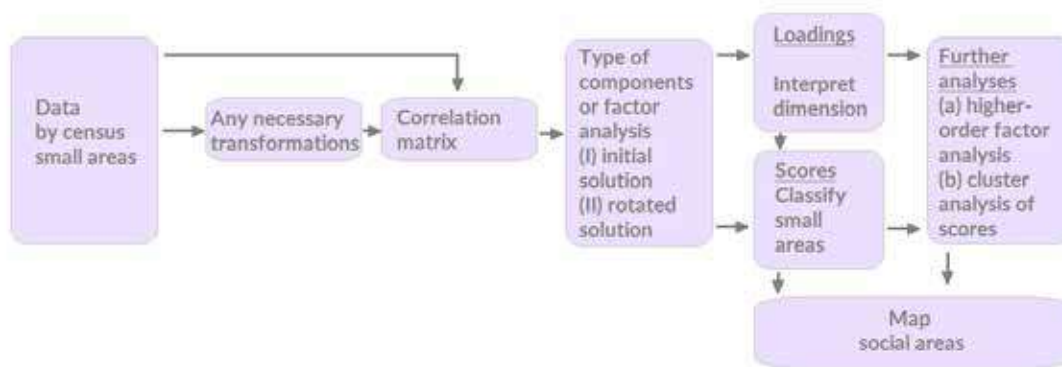


Figure 2 The method of factorial ecology. Source: Own study based on Pacione 2005

The system of socio-spatial diversity monitoring in Gdansk is based on synthetic indicators. The census data for synthetic indicators are always from the previous year of the analysis year. Additionally, for the base year for the whole monitoring system, the year 2016 was recognized. It will additionally refer to research in the following years. The selection and sourcing the appropriate census data was a key decision, but also the most time-consuming stage in the implementation of the monitoring.

In the first place, the choice of indicators was based on guidelines from national, provincial and local level documents. The main recommendations for the selection of indicators were:

- The guidelines of the Polish Ministry of Development;
- The guidelines of the Marshal's office (which is managing the disbursements of the funds from Regional Operational Programs and the EU),
- The indicators and goals adopted earlier in the diagnosis to and in the project of MRP for the city of Gdansk.

In this way, ten issues were selected - five social issues and five functional issues - for which appropriate (possible to be assigned to the location) indicators were sought. The socio-spatial diversity analysis is carried out in a set of permanently fixed 20 indicators for the social and functional domains. Table 1 presents the set of indicators with its sets.

Table 1 Twenty indicators used in Gdansk socio-spatial diversity monitoring. Source: own study based on Turzynski et al 2016

SOCIAL DOMAIN	EDUCATION	SAFETY	SOCIAL CAPITAL	DEMOGRAPHY	POVERTY
	<i>the percentage of graduation</i>	<i>the crime rate</i>	<i>the voter turnout</i>	<i>the dynamics of population</i>	<i>the poverty rate indicator</i>
	<i>the exam results</i>	<i>the family violence rate</i>	<i>the civic budget turnout</i>	<i>The population aging</i>	<i>the rent debt rate</i>
FUNCTIONAL DOMAIN	ECONOMY	ENVIRONMENT	SOCIAL SERVICE	HOUSING	INFRASTRUCTURE
	<i>the level of unemployment</i>	<i>the noise exceeded</i>	<i>the availability of health services</i>	<i>the percentage of old buildings</i>	<i>the availability of sewerage systems</i>
	<i>the social entrepreneurship</i>	<i>the availability of green areas</i>	<i>the availability of public transport</i>	<i>the standard of living</i>	<i>The availability of water supply network</i>

The data selected for the analysis were aggregated to the lowest possible level – the address points, which were the joining point for all data used in monitoring. In selected cases it was only possible to obtain data in area aggregation (school districts, electoral areas). In such cases, a value of indicator for an area was assigned to each address point in this area. For transforming census data into spatial data the geographic information systems (GIS) tools were used. GIS applications allows to process spatial information, edit data in maps, and present the results of all these operations (Maliene 2011).

Next, all the indicators were valorised. The appropriate classification of stimulants (indicators such as entrepreneurship or electoral turnout) and the destimulants (crime rate, poverty) was important for the proper synthesis of their results. The fundamental stage in creating the index of synthetic socio-spatial diversity was giving validity to individual component indicators. Giving appropriate weight to the indicators required extensive knowledge, discussion but also intuition. Synthetic indicators used in socio-spatial diversity monitoring presents values on a conventionally accepted scale, in percentage to the assumed reference value or in another way allowing for the interpretation of the state or trends. Individual geometric cartograms were created for all indicators used in the analysis. They are presented in a figure 3

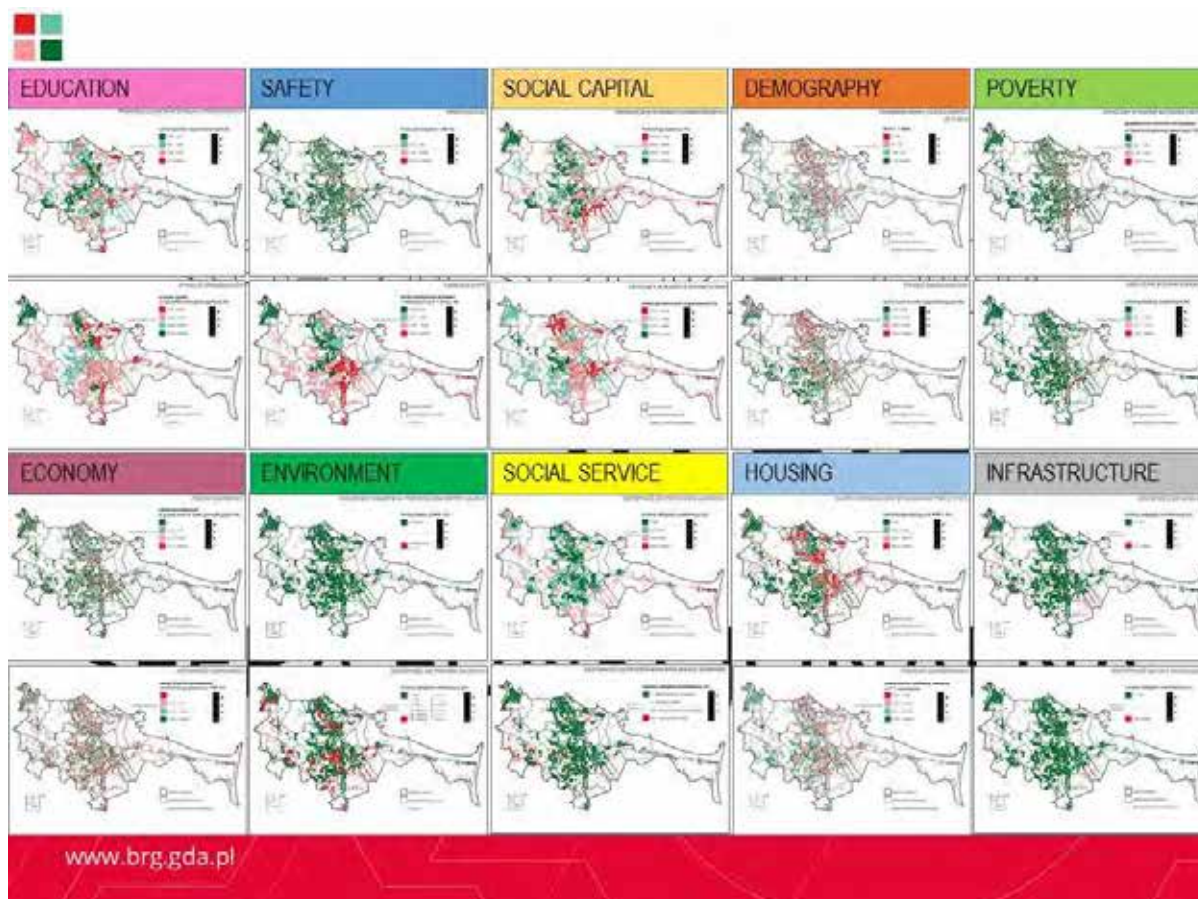


Figure 3 A set of result maps of particular components of the socio-spatial diversity monitoring in the city of Gdansk for 2017. Source: Turzynski et al 2018

Running a system of socio-spatial diversity monitoring in Gdansk has encountered many problems along the way. The greatest barrier was the availability of appropriate census data that could suitably represent this issue. It can be regarded as a success that twenty indicators have been selected and they are indicating various aspects of life of the inhabitants of Gdansk. However, the lack of availability of fundamental data usually used to determine social diversity, especially those relating to the sphere of social classes, has contributed to the disregard of this important aspect directly. Many of the census data are considered by the Polish law as sensitive data (such as, for example, wealth or income level) so that they are not available even for public or scientific institutions - even for the needs of research - all in the name of the protection of personal data. This does not mean the sphere of social classes has been completely ignored in the study. Using the data collected by municipal institutions (for example, the Municipal Social Aid Center) created indicators such as the synthetic poverty rate, housing standard or rent debt ratio in together allows to determine the generalized picture of social classes distribution in the city.

Another important barrier in initiating the monitoring system was the lack of regularity in statistical surveys conducted by the Polish Statistical Office (PSO). This office is responsible for such data as the size of households, the level of education or national and ethnicity affiliation of the population.

These data are collected through the National Census of Population and Housing³ - a nationwide common survey program which consisted in involving census enumerators visiting all inhabited units and noting down information obtained directly from respondents on census forms. Last census took place in 2011, and there is no reason to believe that another will take place soon. The Polish Statistical Office justified the reason for this state that "such organization of the census turned out to be very expensive and laborious" (Polish Statistical Office 2014, 1). Therefore, despite the large potential usefulness of data collected by PSO in research on socio-spatial diversity, the irregularity of their collection excludes them for monitoring purposes.

Last but not least, the colossal problem in implementing the system of socio-spatial diversity monitoring turned out to be lack of awareness among employees of public units, which are collecting census data, on the meaning and rules of the spatial databases. Although the subject of GIS is not a novelty in Poland; despite the fact that the majority of universities conduct teaching courses in this field; even though GIS is becoming more and more popular in many spheres of public life, including marketing and advertising - despite all these premises, knowledge about the principles of data collection for future spatial database purposes is still underestimated. Unfortunately, even within one municipal office, the procedures of collecting registration data are varied, also in the case of the data attribute fundamental for monitoring method - the address, or more precisely the form of naming of address points. The problem exist because Polish streets are often called in honour of commonly respected people also known as patrons. Some institutions indicate names of such streets only with the last name of the honoured person, others use the last name with the surname, but there are also those which additionally add professional and military titles of the patron, such as a doctor, a colonel or a priest. Unification of the data record initially took a considerable amount of time. When data sets were collected again for the purpose of the next monitoring, a special application was created using SQL code, which automatically reduced various ways of saving addresses to one common form of address description through programmed name correlations.

The problems mentioned above are just some of the barriers faced by the authors of the Gdansk monitoring system of socio-spatial diversity. Among the others, one can mention the change in the method of classifying the source data about the civic budget (one of the indicators from the social capital sphere) or the change of the national education system (through the abolition of middle school) along with the change of school district's boundaries. Nevertheless, the results of monitoring are considered as a very useful imaging of the Gdansk urban space. These maps do both: confirmed the theories of social inequality between the upper and lower terrace of Gdansk (as the younger upper terrace has much better living conditions than the lower terrace) and also indicated new areas that are at risk of social degradation. Still, only long-term monitoring (at least five-year long) will allow for a meaningful analysis and then one can draw conclusions that will enable the elaboration of the necessary corrective actions.

³ More information about the census is available on the Statistics Poland website: www.stat.gov.pl/en/national-census/national-census-of-population-and-housing-2011/

Future use of socio-spatial research results

The system of the socio-spatial diversity monitoring was initiated in Gdansk only two years ago and has already gained recognition. The spatial analysis at the micro scale was appreciated by the regeneration committee (a council of residents, an advisory body in the processes of regeneration), experts from the Marshal's Office, spatial planners and officials working in the municipal office. The cartograms with partial results of the monitoring, which are made available in the form of an interactive maps, are particularly popular. The main recipients and their ways of using monitoring results for purposes other than MRP are presented on the figure 4.

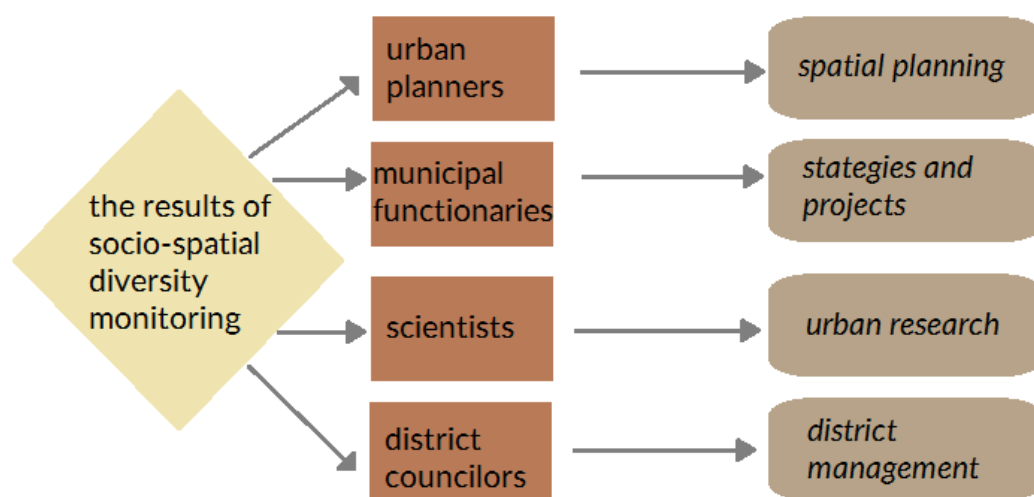


Figure 4 Current wide use of the results of the monitoring. Source: own study

The author of this article is also one of the authors of the described monitoring system. For a young scientist, whose research are concentrated around Gdansk neighbourhoods - their neibourhoodliness and their importance to the creation of social innovation - participation in the study of the distribution of socio-spatial diversity together with the subsequent consideration and analysis of the results had a significant scientific value. The work on the monitoring left a mark on many stages of the author's scientific work regarding the classification of the neighbourhood space of the city of Gdansk. Firstly, the synthetic collection of data on electoral districts or school districts allowed for these aspects to be taken into account in the delimitation of the borders of Gdansk neighbourhoods. Secondly the initial picture of social classes and the social capital level distribution in the city contributed to the assessment of the social cohesion of the neighbourhoods. The scientific application of Gdansk socio-spatial monitoring results may be significantly wider, which is why the Gdansk Development Agency makes them available online in the form of open data.

Lesson learnt

The publication of results of the system of socio-spatial diversity monitoring initiated discussions about the participation of the city's unit in research on the city space. So far, significant majority of spatial and social analyses (including those for the needs of development strategies) realised in Gdansk, as well as in other Polish cities, have been outsourced to expert companies, think-tanks or

universities. Currently, the possibilities offered by GIS tools allow for the more active participation of the municipal office itself in the analysis and research of the city space. This solution has many strengths - the office is the administrator of the necessary census data, well knows the needs and the purpose of the analysis and it has a broader knowledge about possible sources of deviations. In order to not be left behind by the developing research techniques, this approach requires constant dialogue with scientific units as the ones that lead the way in initiating and disseminating new research methods. The second necessary condition is also the requirement of continuous training of municipal office employees in the field of spatial databases and GIS itself, broadening knowledge about them and cultivating good practices.

Running a system of socio-spatial diversity monitoring in the city of Gdansk has shown that this topic is not yet properly installed in the realities of Polish institutions. At the same time, the process of work on monitoring and the response to its publication showed how much research of this kind was needed. Analysis of socio-spatial diversity on a micro scale, in reference to each hectare of a residential area is considered an innovative solution on a national scale. Another novelty is the fact that the monitoring system has been developed and run fully by the municipal planning unit. This is the first step for greater involvement of GIS tools in municipal offices, but also, it's a sign of a greater openness to prototyping, testing new solutions and new methods in Polish administration.

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Urban Planning and Nature: Parametric Modelling as a Tool for the Responsive Greening of Cities

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Abstract: Using advanced parametric computational tools – and considering variables such as the size of urban areas, their population and recommended indicators of amount of green space and its proximity to residents – this paper proposes an approach to simulate optimum urban morphologies based on the application of defined large-scale green planning models such as the green belt, green wedges and hybrid approaches. Parallel patterns of growth and shrinkage have marked cities in the last decades. Furthermore, planning cities for climate-change related events and social transitions is a pressing action. Yet, while there has been an upsurge of research on the beneficial effects of green spaces and their efficient planning and implementation in cities, explorations regarding standard-based spatial simulation and modelling of future green scenarios need further research. This paper first contextualises current processes of urban and landscape transformations. Secondly, it defines the parameters used in the model and assesses the performance of selected green planning models. Finally, it shows how the proposed computational approach could become an effective quantitative tool for improving the processes of envisioning future sustainable and re-natured urban environments.

Keywords: spatial simulation; parametric modelling; green spaces; green areas; planning models

Introduction

Planning for climate-change related events and social transitions is a pressing action. With predictions of an increase of urban population to 70% by 2050, with potential resultant natural capital loss, discourses on re-naturing cities, nature-based solutions and green infrastructure have recently come to the fore as paradigms for the re-conceptualisation of sustainable and resilient urban scenarios. The benefits of nature for humans have been systematically studied across several disciplines and promoted in public policies worldwide, including the provision of adequate amount of accessible green space in cities. For instance, the United Nations Sustainable Development Goal 11 states that by 2030 cities should provide universal access to safe, inclusive and accessible green and public spaces.

While the multiple benefits of ecosystem services in urban areas have been boasted, urbanity remains an important value in urban design and planning discourses. The question of balance is important, but often not precisely posed in urban studies. Current understanding of cities as significant *loci* for the integration of ecological and socio-cultural systems points to the importance of urban form in supporting or hindering such relationship.

Given the need for cities to both accommodate anthropic needs and non-human life, while reducing our impact on the planet; an integrative and systemic approach to planning and delivering new, greener urban environments is required. As such, explorations regarding standard-based spatial simulation and modelling of future green scenarios need further research. The central aim of this article is to investigate how the use of planning models could allow cities to be greener by the virtue of their form. Through a parametric computation modelling approach and considering key indicators for the amount and distribution of green spaces in urban areas, it explores the potentialities and shortcomings of models such as the green belt, the green wedges and hybrid approaches. In so doing, it analyses how the application of such green planning models perform in terms of proximity of residents to green spaces. Subsequently, the article discusses how hybridism can lead to optimum urban morphologies. The proposed approach allows green infrastructure solutions to maximise the benefits of each individual strategy, helping generate hybrid, site-specific and responsive visions for environmentally just greener cities.

Cities and green space planning models

Perspectives from urban planning and design on the roles of urban form in providing a framework for a harmonious relationship between built-up and green areas have regained attention. Lynch (1981) detailed city models such as the Core, Start City and Linear City; which were subsequently investigated by Frey (1998) in relation to sustainability indicators. Building on these studies, this paper explores such typologies at city scale, focusing on how associated green planning models based on the green belt, green wedges and hybrid approaches including greenways perform in terms of provision and distribution of green spaces.

Green belts have, since Howard's Garden City idea, marked planning debates. Originally conceived to control urban sprawl, create a buffer zone between urban areas and safeguard agricultural land; already in the early twentieth century green belts received severe condemnation for strangling the cities' ability to expand and for keeping most of the open spaces at the fringe, away from the densely populated central urban areas, where most of people lived (Eberstadt, 1911). Eberstadt's criticism with regards to the unbalanced distribution of green spaces in green-belt cases was aimed at the very core of its inherent structure: that it can allow for the outer ring of urbanization direct access to green space, but not for the inner areas. In the current context of global population growth, this model has been deemed inflexible to cope with the need to accommodate more urban dwellers, to enhance the presence of nature in cities and to bring ecosystem services close to inner-city dwellers (Amati and Taylor, 2010; Lemes de Oliveira, 2019).

The green wedges model is defined as a particular articulation between open and built-up spaces in which wedges of greenery opening out towards the edge of the urban area are interspersed between development areas. It was conceived as a way to ensure that urban growth could happen without compromising the amount of green spaces available in cities and their accessibility to inhabitants. (Lemes de Oliveira, 2017). If provision of large-scale green spaces close to dwellers is this model's main intrinsic positive characteristic regarding its form, its main shortcoming is the potential disaggregation of built-up areas as the wedge widens beyond walkable distances. Size matters also as it has an effect on the range of human activities and ecosystem services possible (Forman and Godron, 1986). Stockholm's Regional Plan, for instance, defined that green wedges should be at least 500m. However, examples vary and in cases, in their thinner ends, green wedges can become more alike tree-lined streets and greenways, and in the other end of the spectrum, urban forests.

Greenways, as corridors of landscape through an urban area, offer flexibility in implementation. Normally narrow in width and long in extension, such areas have the potential to reach various portions of the urban fabric, providing excellent accessibility (Ahern, 1995; Hellmund and Smith, 2006). Examples such as Cheonggyecheon in Seoul, Madrid Río Park in Madrid and Emerald Necklace in Boston are associated with watercourses and present varying widths from nearly 40m to more than 250m. Greenways' often-narrow width can be limiting to the provision of activities and ecological functions (Smith and Hellmund, 1993).

The question of quantity, accessibility and distance

The question of how much green space cities should have as well as their adequate distribution have been objects of much consideration. The provision of ecosystem services is dependent on adequate amounts of natural environment provided and the larger the space the more ecological habitats and human activities can be accommodated. The benefit being directed both at human and other species. Various studies found that the total amount of green space within the living environment seemed to be the key variable to directly influence people's health (Keniger *et al.*, 2013; van den Berg *et al.*, 2015). For instance, De Vries *et al.* (2003) reported that the total amount of green space within the living environment is a crucial factor, and that an increase of only 10% of green space could result in the decrease in the number of symptoms equivalent to a reduction of 5 years in age. In addition, such effects could be seen within a 3km radius.

The identification of clear standards is problematic, as many terms with varying definitions and interpretations are used, such as open spaces, open areas, green spaces, public spaces etc. However, area-based and population-based indicators have been considered. With regards to the former, already in the 19th century classic planning treatises such as the tome by Baumeister suggested a ratio of 50% of open spaces and that of Stübgen 30% of green spaces (Baumeister, 1876; Stübgen, 1890). The ratio of 30% appears in several approaches in planning history and bears relevance with contemporary targets, as can be seen in the cases of New York (The City of New York, 2011) and Copenhagen, which have each a quarter of their area destined to accessible green space; and London, with over 30%. The surge of eco-cities in China in the early 2000s saw ambitious targets. For example, Songdo in South Korea was planned to have 34% of land dedicated to green and blue spaces and Dongtan in China, to be close to 40% (Lemes de Oliveira, 2013).

In regards to a population-based approach, it is noteworthy mentioning the one defined in the UK by the National Playing Fields Association. Originated in the 1930s, it defined the Six Acre Standard (24,000 square meters/1,000 people). This has served as a benchmark in various plans since the post-war period. At the beginning of the War, the average open space provision for some of the largest cities in England was less than 3 acres (12,140 square metres) per 1,000 people (Lemes de Oliveira, 2017). Abercrombie and Foreshaw's County of London Plan 1943 aimed for seven acres per 1,000 people, four within the boundaries of the council and three beyond. For the Greater London Plan 1944, Abercrombie increased the ratio to 10 acres per 1,000 people. Highly influential, this plan became a fundamental reference for planning cities and regions in the postwar period. The Six Acre Standard is still applied today.

Proximity to a green space within a 10-minute walk (800m) frequently appears as a key indicator (Fields in Trust, 2018; Frey, 1998). Yet, several authors relate walking time, distance and size of green spaces (Stessens *et al.*, 2017). For instance, the Accessible Natural Greenspace Standard (ANGSt) recommends that all should have access to green space of at least two hectares in size, no more than 300 metres (2-3 minutes) from home; a 20 hectare site within two kilometres (25-minute walk); one 100 hectare site within five kilometres; and one accessible 500 hectare site within ten kilometres of home. When focusing on walking distances, studies tend to limit the distance considered up to 3km. Maas *et al.* (2006), for instance, showed that in areas where 90% of the environment around the home was green, only 10.2% of the residents felt unhealthy, compared to 15.5% in areas where only 10% of the environment was green. This was also perceived in the range up to 3km. Figure 1 shows the parameters employed in this study.

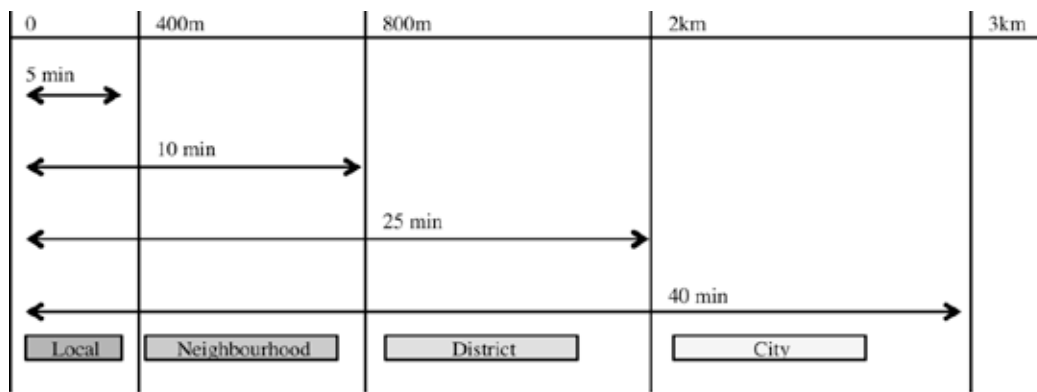


Figure 1. Correlated *time-distance-scale* parameters to urban green spaces

Distance decay in the use of green spaces is commonly found, with high association between distance and use (Nielsen and Hansen, 2007). Grahn and Stigsdotter reported that green spaces within 300m of home rendered on average 2.7 visits a week, but if the distance was of one kilometre the frequency of visits dropped to once a week. Notwithstanding this, larger green spaces even if further away often allow for a wider range of activities for various groups (Lemes de Oliveira, 2017). Taking distance, walking time and size of green spaces in consideration, Stessen *et al.* (2017) brought together these key indicators in relation to the different urban scales, from local to metropolitan. This article builds on this approach to inform the computation model and test the planning models described previously. It focuses on the area-based approach as described below.

Modelling balance between urbanization and green spaces

Methodology

The computational model was created using Grasshopper, an algorithm-based plug-in for Rhinoceros. It allows for the concomitant managing and manipulation of several parameters and simultaneous visualisation of outcomes. The model combined information about a city's size, amount of green space required and accessibility on foot according to their distribution in the key green space planning models under study. The computational model allows for the analysis of cities of virtually any size. However, this paper concentrates on medium-sized cities, applying the models on 40 km² and 70 km² using 30% green space as a constant (figure 2-4).

The model was employed to explore the intrinsic potentialities and shortcomings of such green space planning frameworks. The accessibility to green spaces in each green planning model was measured and compared. The idea of a nested hierarchy as described in Stessen *et al.* (2017) was used in seeking common ground in relating multiple scales both of urban areas and green spaces, and the time dimension. The analysis is kept to local, neighbourhood, district and city scales. As such, the percentage of areas accessible within 5 minutes, 10 minutes, 25 minutes, and more than a 25-minute walk have been measured and visualised for each of the green planning models.

Specific indicators for the green space planning models were limited to achieving a width of 500m at the centre of green wedges; a minimum width of 40m for the thinner ends of green wedges and for greenways; and in the case of the green belt that it was concentrated outside the urban fabric, and distributed as one or two green belts.

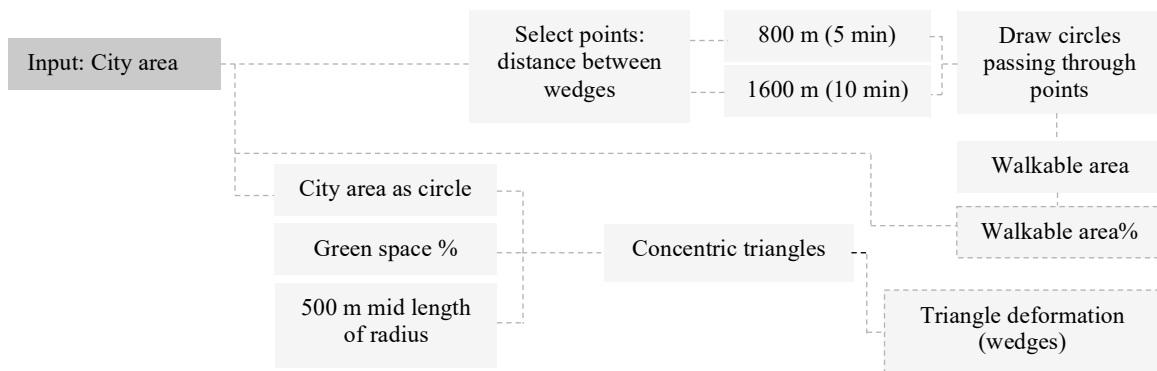


Figure 2. Diagram explaining the modelling methodology using grasshopper for the green wedges example

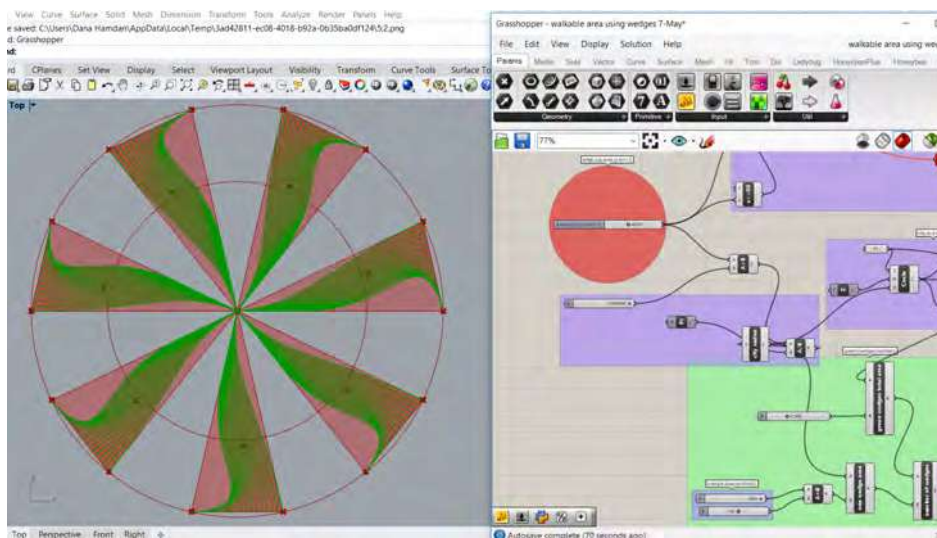


Figure 3. Generation of the green wedges using the grasshopper script

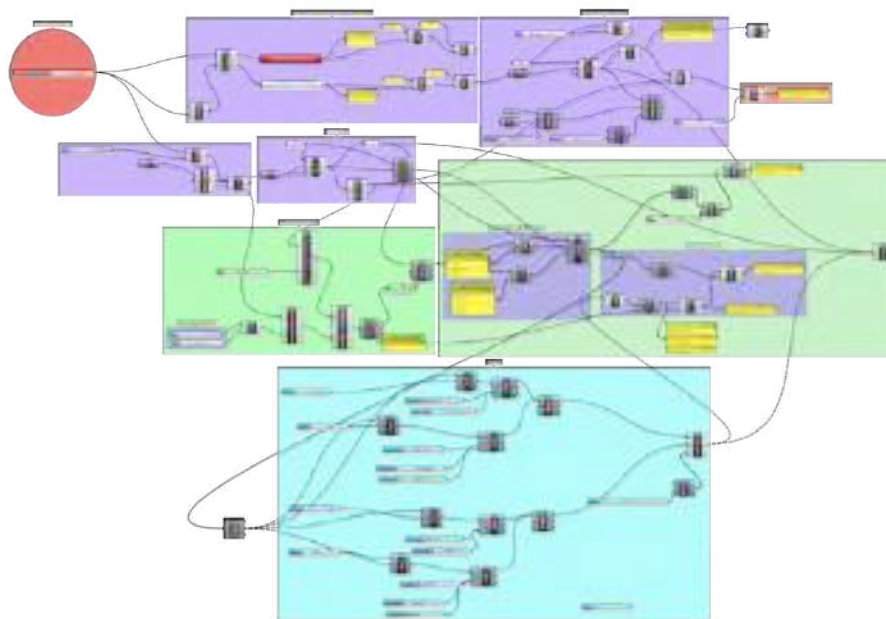


Figure 4. Full script of the generation of green wedges

The green space planning models

[Green belts]

Two green belt cases were applied to two city sizes, for a total of four test models. The first case presented the entire green belt, which is assumed as 30% green space of the city's total area, as a single belt on the perimeter of the city. This was applied for the 40 km² and 70 km² cities. The second case involved splitting the assumed 30% green space into two green belts: the first one at the perimeter of the city and the second at half of the city radius, functioning as a greenway. Similarly, this was applied to the 40 km² and 70 km² cities.

In the first case, belt widths amounted to 583m and 772m for the 40 km² and 70 km² cities respectively. The percentage of the area accessible within a 5-minute walk are 27.7% and 23.7%, reaching 52.9% and 44.2% when considering a 10-minute walk. Just over 86% in the smaller city and 75% in the larger have access to a green space within a 25-minute walk (figure 5). In the second case, belt widths are narrower, amounting to 385m and 500m for the 40 km² and 70 km² cities respectively. The accessibility ratios rose to 60.1% and 42.2% within a 5-minute walk and to just above 97% and 82% within 10 minutes (figure 6). Clearly, the two-belt model provides significantly higher walkable area, especially in creating zones within 5 and 10 minute walking distances. In the smaller city nearly 100% of the built-up area is within a 10-minute walk of a green space. In cities of both sizes, this model ensures that 100% of the urban area can access a green space on foot within 25 minutes. On the other hand, it is worth stressing that the analysis focused on accessibility to green spaces, hence does not consider the ecosystem services that can have better performance for instance at larger continuous green spaces, which could suggest a better performance for the single belt model.

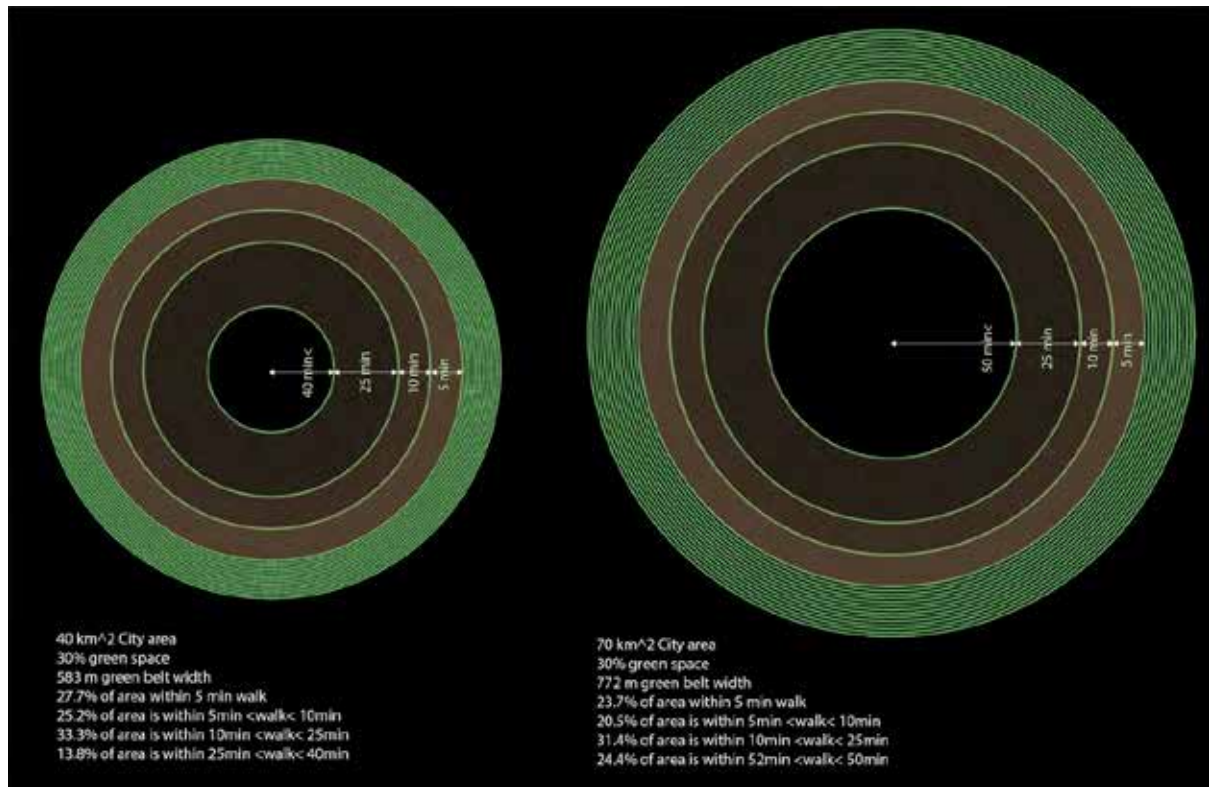


Figure 5. Walkability assessment of a single green belt at the perimeter of a 40 km² city (left) and a 70 km² city (right)

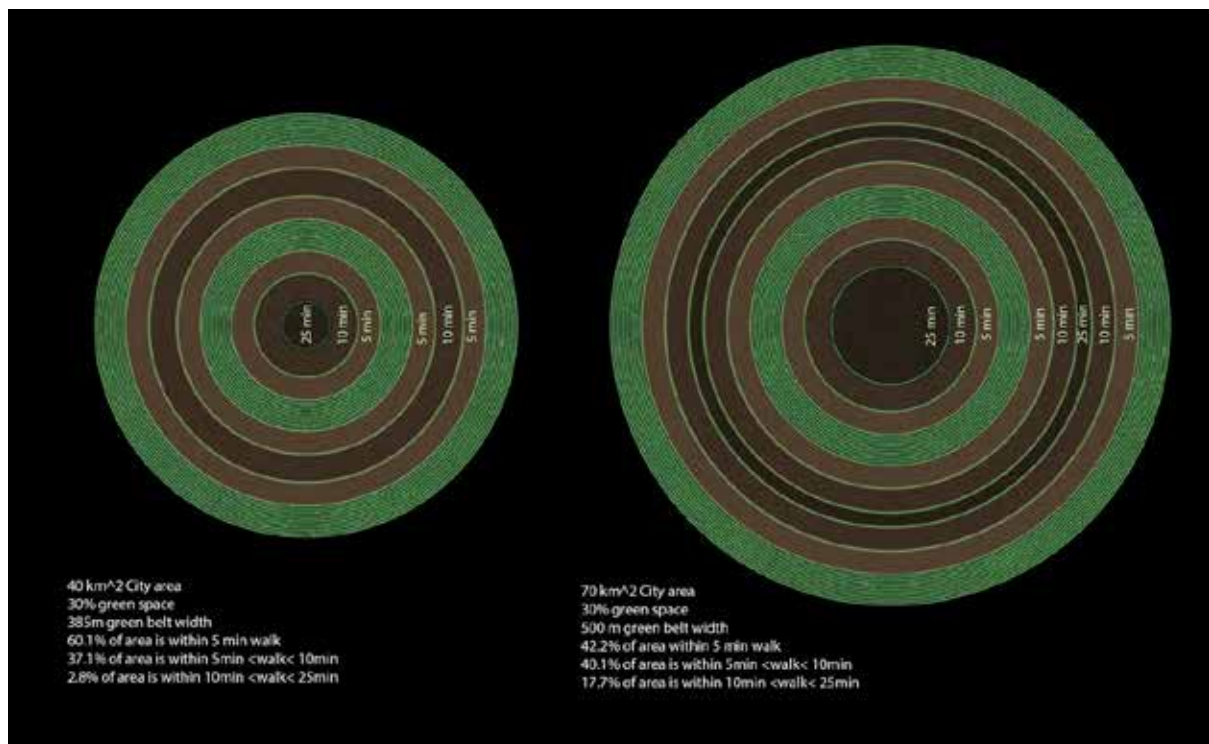


Figure 6. Walkability assessment of two green belts at the perimeter and mid-radius of the city. Applied to a 40 km² (left) and 70 km² cities (right).

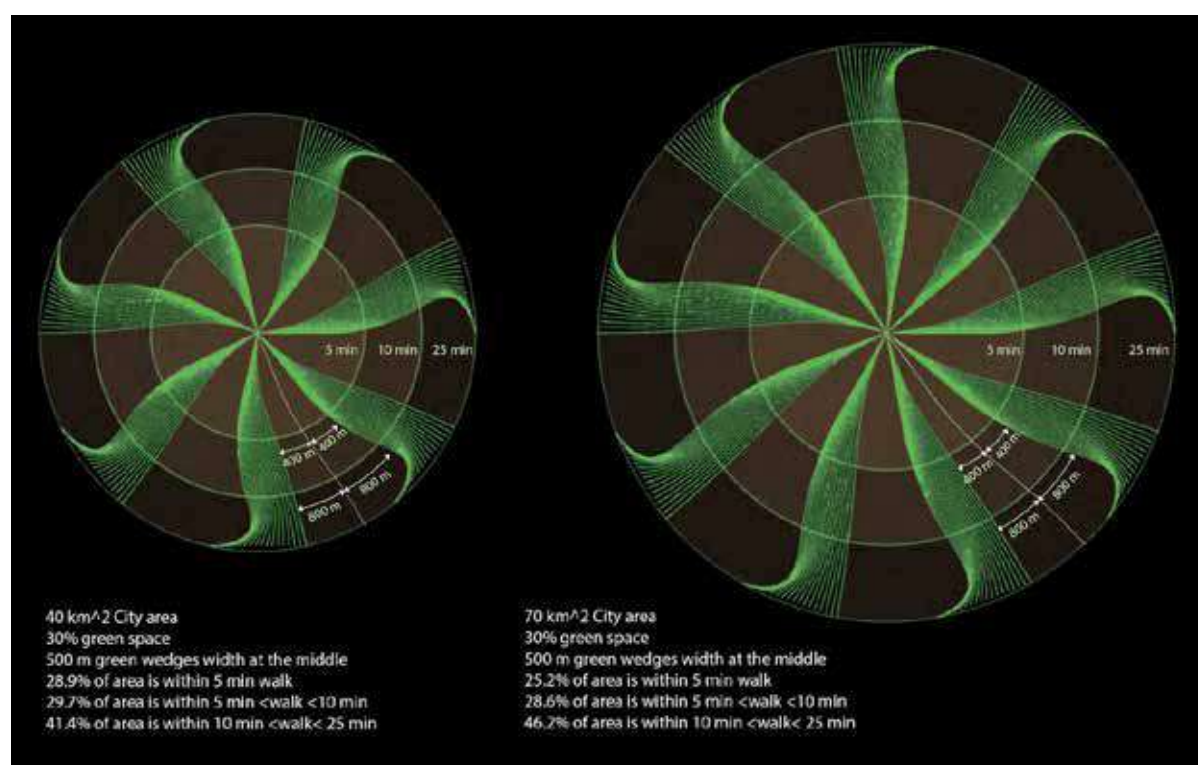


Figure 7. Walkability assessment of green wedges model applied to a 40 km² (left) and a 70 km² city (right).

The green wedge model was also explored. The created algorithm calculated how many green wedges were needed using as inputs the city size, considering 30% of the city area as green space, which was split into equal parts equally distributed, and 500m as the minimum width of the wedges at the middle. Such 500m cross-section at half the radius of the city was employed in order to facilitate the provision of a range of ecosystem services in the green wedges (Lemes de Oliveira, 2017). The location at which the distance between the green wedges is 800m (5-minute walking time to a green wedge from the centre line) was defined in the algorithm using basic trigonometry. Similarly, the distance of 1600m between the wedges (10-minute walk) and less than 4000m (less than 25-minute walk) were graphically represented (See figure 7).

The model generated 7 green wedges for the 40 km² and 9 for the 70 km² cities respectively. The percentage of the total area accessible within a 5-minute walk are 28.9% and 25.2%, reaching 58.6% and 53.8% when considering a 10-minute walk. Both cities would allow for all to access a green space on foot within a 25-minute walk.

The green wedge model is better performing than the single green belt model in terms of accessibility for both city sizes across the different scales. However, the two-belts model also provides 100% coverage within the 25-min range and significantly outperforms the green wedge model in the local and neighbourhood scales, as when placed at the end of the 10-minute zone it provides a counterpoint to the wedge's tendency for distances to increase as they widen towards the edge of the city.

When discussing performance measures of green spaces, green wedges (as represented in the models) could create a more fragmented urban form in comparison with the single green belt model, as well as less continuous green space. However, the longitudinal distribution of green space across the radius of the city can provide better distribution of green areas across the city's different zones, which can contribute to a more equitable

provision, as well as facilitate certain ecosystem services such as air flow and exchange and reduction in the heat island effect.

[Combined model: green belt and green wedges]

In order to analyse the combined effect of green belts and wedges on accessibility to green areas on foot, two scenarios were considered for both the 40 km² and 70 km² city areas, for a total of 4 tests models. All the test models have 30% green space of the city area. The first scenario uses 4 green wedges, while the second considered the same number of green wedges as in the models presented previously (7 and 9 wedges for the 40 km² and 70 km² respectively). The width of the wedges was kept as 500m at the middle of the radius for the 7 and 9 wedges. The width of each green belt is 120m and 170m for the two city sizes, which was calculated parametrically using the algorithm to ensure that, combined with the wedges, the total amount of green space reached 30% of the total area. It is worth pointing out that the model allows for a range of combinations of sizes for belts and wedges, for instance where the wedges can be thinner and the belts thicker. However, in this paper we limited the analysis by treating the wedges' thickness as a constant, consequently allowing the belts' thickness to vary.

In the 40 km² city, both models with 4 and 7 wedges achieve 100% of green space accessibility within a 10-minute walk, with the latter performing better in the 5-minute range (64.2% compared to 54.4%). In turn, in the larger city, the 4 and 9 wedges combined models achieve 100% accessibility within the 25-minute range and the same ratio (77.8%) at the 10-minute range, with the one with more wedges performing better (59.5% compared to 39.3%) within the 5-minute walking distance (see figure 8). When analysed against the non-hybrid models, the combined wedge-belt models of 7 wedges for a city of 40 km² and 9 wedges for a city of 70 km² outperform all the other models.

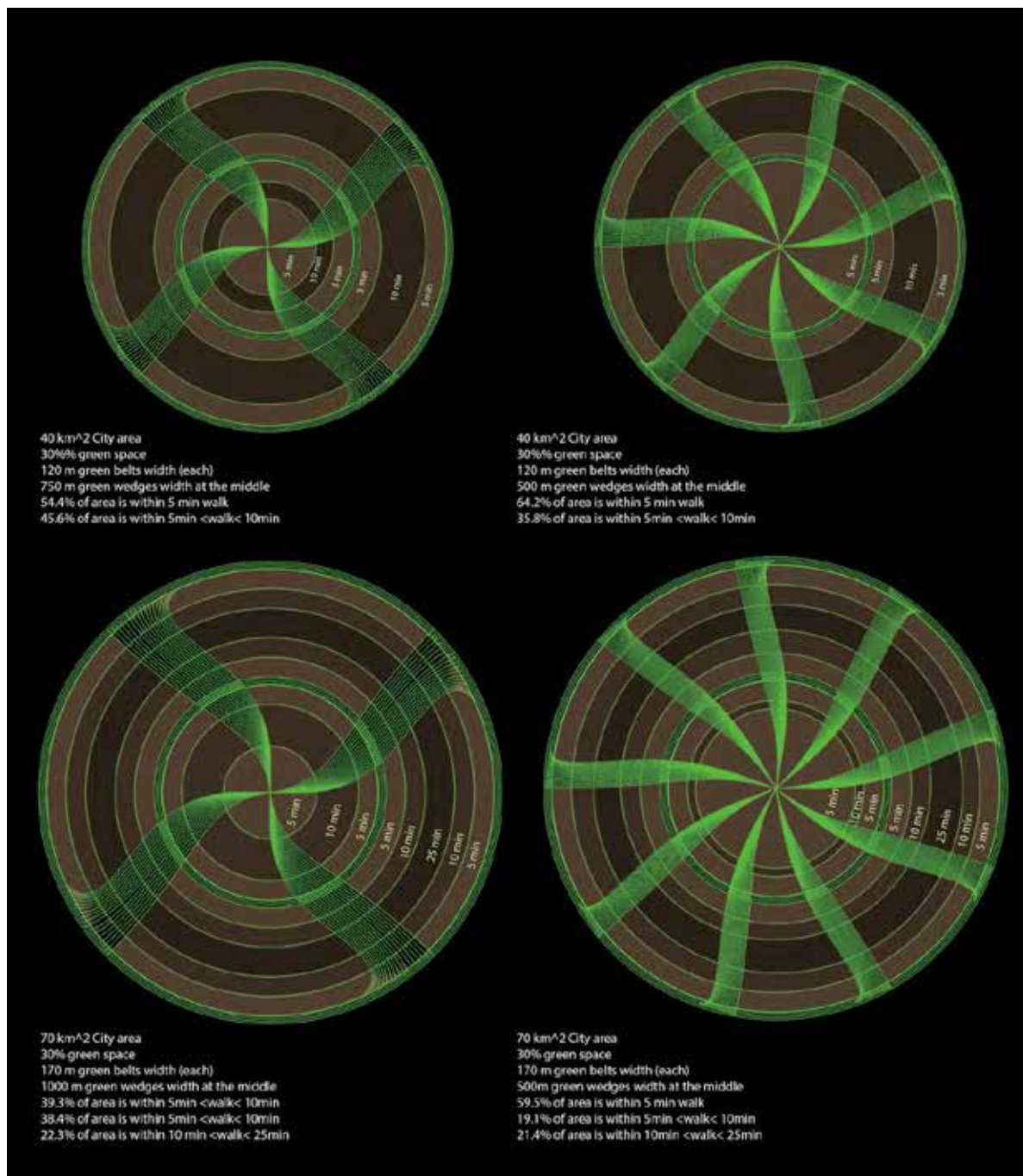


Figure 8. Walkability assessment of combined models of green wedges and green belts applied to a 40 km² (top two) and a 70 km² (bottom two) city using the following possible distribution of the wedges: 4 wedges (left) and 7 and 9 wedges (right), and two green belts in each scheme.

Table 1. Summarises the walkability performance of each of the green space planning models

Green model	5 min walk	5 min<walk<10 min	10 min<walk<25 min	More than 25 min walk
Single green belt	27.7%	25.2%	33.3%	13.8%
	23.7%	20.5%	31.4%	24.4%
Two green belts	60.1%	37.1%	2.8%	N/A
	42.2%	40.1%	17.7%	N/A
Green wedges	28.9%	29.7%	41.4%	N/A
	25.2%	28.6%	46.2%	N/A
Combined wedge-belt (4 wedges)	54.4%	45.6%	N/A	N/A
	39.3%	38.4%	22.3%	N/A
Combined wedge-belt (7 and 9 wedges)	64.2%	35.8%	N/A	N/A
	59.5%	19.1%	21.4%	N/A



Conclusions

This paper shows that city models can be valuable imprints for the re-balancing of our cities and nature, and in particular to the provision of ecosystem services close to where people live, work and recreate. The definition of parametric modelling tools that allow for concomitant consideration of a range of attributes related to the size and distribution of both green and non-green areas can support cities in defining re-naturing strategies, in particular in times of change. Urban form matters with regards to the provision of adequate amounts of and accessibility to green spaces in cities.

The standard green belt model can concentrate the largest amount of green space and provide good accessibility to green spaces in the outer fringes, at the expense of accessibility from the central area, which falls out of the 25-minute walking range. The green wedge model in turn allows for good accessibility across the city. The research has shown that its application alone can ensure that nearly a third of the built-up area can be within a 5-minute walk of a green area and close to 60% of the city can be within the 10-minute range. Additionally, this model ensures that 100% of the city is within the 25-minute walking range and that an equal distribution of green spaces across the city can be achieved. They can also provide a direct green link between the city centre and the non-urban areas. The two-belt model presents the highest performance of the non-hybrid models, with the large majority of the city within the 10-minute range (See table 1).

The combined wedge-belt models with 7-9 wedges are the highest performing in terms of walkability. They can also provide enhanced environmental benefits. The wedges are connected by the belts, and the green space reaches all the zones of the city including the city center. This is unlike the two-belts model where the two main green spaces do not reach the central zone of the city, which usually is where the urban heat island effect can be more manifested.

Given the fact that cities are undergoing constant transformation potentialised by competing pressures and challenges, seeking socio-cultural and ecological-environmental equilibrium is crucial for the ongoing sustainability and resilience of urban habitats. Parametric tools can allow for the manipulation of complexity in inputs and continuous assessment of outputs. The range of planning models can flexibly consider aspects of urban cohesion and the maximisation of specific ecosystem services in the decision making process, contributing to the creation of cities in balance with nature.

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Short Review of “Mapping the Landscape of Behavioural Theories: Systematic Literature Review”

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Abstract: The “behavioural” approach is receiving increasing attention in many disciplines, however, there is yet limited understanding of the available theories and how they can be applied. Through a cross-disciplinary literature review, this paper identifies 62 behavioural theories from 963 publications and classifies them into four groups: (1) those that explain the factors that affect behaviour such as the theory of planned behaviour and prospect theory, (2) those that focus on behaviour change strategies such as nudge theory, (3) those about learning and conditioning such as reinforcement learning theory, and (4) those that focus on the modelling such as neural networks theory and game theory. Based on the review, the paper discusses the lack of understanding of terms, classification, guidance on the use of appropriate theories, inclusion in data-driven research and modelling, and dialogue between theory-driven and data-driven approaches. Furthermore, it emphasizes the role of behavioural theories in bridging the divide between the traditional theory-based, aggregate, quantitative and equation-based approaches and the new data-based, disaggregate, qualitative and language-based approaches such as agent-based modelling. This conference paper is a shortened version of: Kwon, H.R. and Silva, E.A. (2019) Mapping the Landscape of Behavioural Theories: Systematic Literature Review, *Journal of Planning Literature*.

Keywords: behavioural theories; data-driven research; theory-driven research; agent-based modelling

Introduction

The term “behavioural” in the context of behavioural sciences has become fashionable in recent years as an innovative and alternative approach in many disciplines, including those closely related to planning. Along with this trend, many academics and practitioners have developed interest in applying various behavioural theories in their research: neural networks theory, reinforcement learning theory, game theory, the theory of planned behaviour, nudge theory and prospect theory to name a few. Understanding and applying behavioural theories can be greatly beneficial in many disciplines including urban and environmental planning because behavioural theories can take into account a variety of factors that affect people’s decision-making process and provide a framework to model, explain and predict behaviour which may enhance the effectiveness of policy design and behaviour intervention.

Although many of the theories about human behaviour have been in existence for some time, the concept of behaviour is so broad that it is difficult to figure out which theories can be considered behavioural theories across all fields of academic research. Some existing literature attempted to review and summarize behavioural theories, mostly focusing on behaviour change and intervention, for example, in the health sector (Michie *et al.*, 2005; Munro *et al.*, 2007; Davis *et al.*, 2015), environmental science (Morris *et al.*, 2012; Schlüter *et al.*, 2017) and transport (Savage *et al.*, 2011). While the UK Government Social Research (GSR) produced a behaviour change knowledge review for more general application by contacting key individual experts (Darnton, 2008, p.

75), there is not yet a publication that systematically reviews the academic journal database across all disciplines to provide a comprehensive landscape of behavioural theories. In addition, there is much more room to synthesizing how we conceptualize, model and formalize behavioural theories in the era of data-driven research and big data analytics in addition to guiding our understanding, selection and use of behavioural theories for particular uses.

To fill this gap, this paper takes a step forward from the existing literature by performing a systematic literature review using ‘all database’ in the Web of Science (WoS) to identify theories of general human behaviour across disciplines. At present, only a few popular behavioural theories are being applied in planning such as the theory of planned behaviour in transport (Castanier *et al.*, 2013) and prospect theory in housing and real estate (Dunning, 2017). By taking a general approach rather than zooming into the planning-related fields, this paper presents a comprehensive list and map of behavioural theories that have potential to be applied in planning.

This paper will first explain the methodology of the review and provide a conceptualization of the type of behaviour. Then, it will present a comprehensive list, classification and map of the 62 behavioural theories and analysis of the selected literature. Finally, discussions will be made about the implications for further research and the importance of behavioural theories in the era of big data analytics. The complete version in the *Journal of Planning Literature* provides tables, diagrams and in-depth analysis that are not discussed here in detail, and provides two appendices with further information regarding the key theories and publications (Kwon and Silva, 2019).

Methodology

There is an immense amount of literature on behavioural theories across disciplines: 96,700 publications on WoS all databases contain “behavio(u)ral theor(ies)” in topic from 1900 to 2017 (Web of Science, 2018). To filter the most significant and relevant papers.

First, from all database on Web of Science (WoS), we used the search keyword “behavio(u)ral theor(ies)” for title only and received 963 results in the time frame from 2000 to 2017. Second, we used different thresholds for times cited according to the year of publication and narrowed down the results to 467. We tried to include more recent publications to observe the current trend of research method while being stricter to older publications to only include the ones that were fairly recognized by other researchers. Third, we further narrowed down the publications to 156 by limiting the scope to general human behaviour in a general living environment, i.e. excluding non-human behaviour and specific behaviour such as patient behaviour regarding medication. Fourth, we listed 87 theories used in the 156 relevant results with the following information: founder, year of publication, number of WoS search results (2000-17) and search keywords used, top 5 research areas, top 3 publication years, and a short definition of theories based on the literature review (Appendix A: see Acknowledgements). Fifth, out of the 87 theories, only those with more than 10 WoS search results (2000-17) were kept, resulting in 62 theories. From the 156 publications, 47 that cover all 62 theories were chosen as key publications.

Classification and mapping of the selected behavioural theories

We conceptualized “behaviour” as a process where a stimulus (or situation) gets imposed on a person, he or she develops intention (or motivation), and this leads to a response (or decision) and decided to call a theory a “behavioural theory” if it explains some aspects of this response- or decision-making process. Then we classified the 62 theories into four groups based on their focus: 1) factors that affect intention (17 factors), 2) strategies that influence intention, 3) learning and conditioning that modify response, 4) and modeling of response.

The first group focuses on the factors that affect the process of decision-making. The theories from psychology tend to focus on more subjective and personal factors like attitude, subjective norm, psychological distance, fear appeal, beliefs and values, and heuristics while theories from sociology tend to focus on social interaction. On the other hand, the theories from economics, business, management, and finance tend to focus on more objective and non-personal factors like different interests, institutions, and rationality and utility. Also, some theories originate from one discipline but are mostly used in other disciplines, for example, behavioural economics is largely about applying psychological theories to economics such as prospect theory.

The second group focuses on the intervention strategies to influence the decision-making process and gets used largely in public policy to affect pro-environmental and pro-social behaviour such as nudge theory and behavioural spillover theory, and business management to affect consumer, employee, and business behaviour such as behavioural priming theory and diffusion of innovation theory. The third group concerns learning and conditioning theories from psychology that can modify the response which are largely applied in computer science lately for the topics of artificial intelligence and machine. Finally, the fourth group focuses on modeling the response-making and decision-making process, which includes more mathematical elements compared to other groups. Such theories about modeling get used in the areas of computer science and neuroscience the most for modeling techniques such as machine learning, agent-based modeling, dynamic network analysis and microsimulation. We included these theories as behavioural theories because, while they do not directly provide an explanation about how behaviour works, they help us model and understand the response- or decision-making process and are crucial theories that can link the behavioural approach with data-led research in the era of big data analytics.

Analysis of selected literature on behavioural theories

The list of 156 publications includes more of the recent publications possibly due to the selection threshold by times cited in the methodology. 87% of the literature are articles in a variety of journals while the rest are books or book chapters, in research areas mainly psychology, social sciences, computer science, environmental sciences, transportation, and engineering. 66% of the publications are available in full text online, free to many educational institutions. Also, 70% of the 156 publications were classified as empirical, i.e. using real world data and 30% as theoretical. Regarding the research method, most publications (97%) were identified to mainly use a quantitative approach, i.e. numbered data analyzed using statistical procedures, while only 3% mainly employed a qualitative approach although these two approaches are in a spectrum rather than being dichotomic.

As for the data collection methods, first-hand survey was the dominant method followed by interview, second-hand database, and simulation. Some innovative methods were observed, such as observation of investment decision-making behaviour through an online computer game, a survey using a web page with a user interface to collect carbon footprint report, and analysis of multi-object tracking behaviour by conducting simulation exercise on participants. With regard to the analysis method, regression was being used most frequently followed by correlation analysis, structural equation modeling and factor analysis and path analysis. As for the sample size, publications had 100 to 499 samples the most, followed by 500 to 20,000, less than 100, and big data such as 104 weeks of transaction screening through simulation with an ambiguous unit of data. Out of the 156 publications, the most frequently occurring theory was the theory of planned behaviour (in 33 publications) followed by prospect theory (in 11 publications). The summary of these 156 publications can be a useful guide to get an overview of how behavioural theories have been used in research since 2000 and what the current trends are (Appendix B: see Acknowledgements).

Discussion and conclusion

To better understand the landscape of behavioural theories, this paper performed a systematic literature review of 963 publications and identified 62 key theories. These theories were then classified into four groups (factors, strategies, learning and conditioning, and modeling) based on their focus and were mapped in a diagram with

the labeling of which research area the theories originate from. As a result, the literature review pointed to the following discussion points, which are the areas that require further research.

First, this paper's literature review suggests the lack of understanding of behavioural theories and behavioural sciences. The definition of "behavioural theory" is yet unclear that depending on how broad and narrow the definition and criteria are, some theories identified by this paper may not be considered behavioural theories and other theories outside this paper's list may be considered behavioural theories. Also, the understanding of what "behavioural sciences" entail is vague. A better clarification of the available theories and the fields involved is important to be able to transfer models and compare results.

Secondly, there is lack of classification of the type of behaviour and behavioural theories. Because different behaviour gets affected by different variables, classification of behavioural theories can help researchers identify which theories to use based on the purpose. While this paper attempts to classify the theories of general human behaviour across all disciplines in four groups, there is a lot of room for improvement, for example, identifying the hierarchy, family tree and overlapping concepts of theories.

Thirdly, there is a need to develop more guidance on the selection and use of appropriate behavioural theories. Lack of guidance often leads researchers, policymakers and practitioners to choose more common and well-known theories rather than the ones that may suit the target behaviour and population better and to only loosely refer to theories rather than using them rigorously. While the concepts of behavioural theory and behavioural science have an evolving nature with dynamic patterns within the debate, it will be greatly beneficial to have a table that shows a clear connection among the list of theories, key variables, the types of behaviour, and the social or environmental context that they are applicable to in the future with more in-depth analyses and comparative studies.

Fourth, behavioural theories can be more included in data-driven research and agent-based modelling. Computer science, artificial intelligence, and big data analytics are very important in the behavioural research at present, all part of the bigger effort towards the development of data science which is closely related to planning in the era of smart cities. The traditional theory-driven approach is largely linked with global equation-based modeling (EBM) while the new data-driven approach is closely linked with new language-based coding constructs such as agent-based modeling (ABM). Today, these approaches are gearing hybrid models (Wu and Silva 2010; Silva 2004; Wu and Silva 2013, Silva 2011) and such hybrid approach can suggest a new direction for the modeling of complex urban systems as part of the planning support science, for example, for the efforts to establish a "digital twin" of a city to aid planning-related decision-making. Behavioural theories can play a critical role in bridging the traditional theory-based, aggregate, quantitative and equation-based approaches with the new data-based, disaggregate, qualitative and language-based approaches such as agent-based modelling (Parunak, Savit, and Riolo, 1998; Ahmed and Klischewski, 2017).

Finally, behavioural theories are ever more important because they can answer "how and why", provide rationale for the rules, variables, assumptions and parameters of models, and help researchers generalize results (Wise and Shaffer, 2015). Furthermore, this paper proposes complexity theory as the overall theoretical concept (de Roo and Silva, 2010) and suggests that behavioural theories can play an important role in spatial planning in the bigger picture of integrating spatial and a-spatial approaches of modelling human behaviour.

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A Transdisciplinary Perspective on City Technologies: Touchpoints between Informatics and Urban Disciplines

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Abstract: Current digital technologies are not oriented to support the practices of transformative planning and more in general the management of complex social processes in urban environments. The active engagement of scholars and urban practitioners in defining nature and applications of future city technologies meant to address this type of challenges is crucial. However, this path requires to move beyond the disciplinary boundaries and conventional research practices of urban disciplines. Assuming a transdisciplinary perspective is essential to effectively combine the consolidated knowledge on city dynamics and urban transformations developed within urban disciplines with the knowledge and expertise in the design of digital technologies in the domain of Informatics. To contribute in establishing synergies for developing a transdisciplinary research agenda on city technologies, this paper outlines a schema for bridging urban disciplines and informatics, in particular, Urban Planning, Urban Design and Urban Studies on one side, and Computer-Supported Cooperative Work, Human-Computer Interaction Design and Information Systems on the other side. This work maps correspondences and affinities between different fields on both sides, highlighting some essential approaches or concepts in each of them that could benefit from the integration with their counterpart in order to advance our understanding on how to rethink digital technologies for serving social change aims and transformative planning practices.

Keywords: Transdisciplinarity, City technologies, Transformative planning, Social Change

1. Introduction

Nowadays digital technologies applied in cities or to city activities are focused on monitoring urban infrastructures and environmental parameters, elaborating the fluctuations of individual behaviours and social trends from online social networks, and analysing and predicting part of urban phenomena mainly related to traffic issues and energy consumptions. As expected in every other sector of activity, like public administration or enterprise, the practice of urban planning is supposed to benefit from the application of these technologies by improving the capacity of planning departments and professionals to make informed decisions and implement better management of local resources. However, none of these technologies takes into account the essential aspects of transformative urban planning practices such as the negotiation among different stakeholders

involved in urban transformations, the mediation between divergent goals and socio-economic and political instances, the collaborative construction of plans, projects, policies, initiatives for generating local development.

Current urban technologies, intended as technologies looking at the city in its tangible dimension, both physical and functional, are not meant to address the needs associated with the social and political complexity of cities that are only partially reflected by the physical and functional transformations of urban environments. The practical consequence of this state of affairs is that current technologies can provide limited support to the collaboration between urban practitioners and stakeholders engaged at a local level. But at a higher level, this technology gap led to identify a new class of digital technologies, that I am going to call city technologies, that are meant and designed for supporting social change processes in urban regeneration initiatives, co-production of services, and establishment of open governance models for urban resources.

Research on how to design these city technologies presents countless challenges and obstacles. By focusing only on academic milieu, the main challenge is actively engaging scholars and urban practitioners in defining nature and applications of future city technologies at a theoretical and empirical level by undertaking paths beyond the disciplinary boundaries and conventional research practices of urban disciplines. Indeed, while transdisciplinarity is recently gaining popularity in urban research, embracing a transdisciplinary perspective for transferring concepts, theories, and methods consolidated in urban disciplines to new objects, digital technologies and not plans, is not immediate or easy.

This transferring of concepts and methods across disciplines to practically address socially relevant real-world problems (Scholz 2000, Klein 2002 and 2012, Nicolescu 2006, Wickson et al. 2006) requires first to understand logics and approaches of unfamiliar fields and research contexts, and secondly to critically reflect on what disciplinary contributions our discipline can bring to the process. To contribute in establishing synergies for developing a transdisciplinary research agenda on city technologies, this paper outlines a schema for bridging urban disciplines and informatics, by mapping the correspondences and affinities between different fields on both sides, and by highlighting some essential approaches or concepts in each of them that could benefit from the integration with their counterpart.

The remaining of the paper presents the rationale for embracing a transdisciplinary perspective on the design of city technologies (section 2), and then traces the respective contributions of urban and informatics disciplines on this topic (sections 3 and 4) to conclude with their mapping (section 5).

2. Embracing a Transdisciplinarity Perspective

There is a growing consensus on the position that developing information technologies for addressing urban challenges requires a transdisciplinary approach to keep an ecosystemic and ecological vision of issues and specific dynamics of a city environment and accordingly designing the appropriate technological solutions (Foth et al. 2011, Bilandzic et al. 2011, Kukka et al. 2014). On the other side, research domains that traditionally adopted a transdisciplinary approach to deal with issues related to urban ecology models and urban sustainability opened their sphere of interest to information technologies that nowadays are an avoidable component of city life (Black et al. 2005, Buizer et al. 2011, Du Plessis 2011, McPhearson et al. 2016).

Transdisciplinarity (TD) is conventionally considered as complementary to multidisciplinary and interdisciplinarity (Nicolescu 2002 and 2006, Ramadier 2004, Max-Neef 2005, Darbellay 2015), and specifically oriented to address complex multidimensional problems by serving broader goals across multiple disciplines (Klein 2004, Russell et al. 2008). In this sense, urban problems are the most emblematic examples of wicket problems (Rittel and Webber 1973), and they are the privileged domain of investigation and

experimentation for TD research (Klein 2002, Ramadier 2004). In particular, rethinking existing technologies to better support city processes requires knowledge and expertise on different aspects of the problem and practices related to the use of technology in different urban contexts.

To deal with complexity, Transdisciplinarity is characterized by methodologies oriented toward experimental pluralistic disciplinary fusions. At the same time, Transdisciplinary methodologies and approaches are expected to be responsive to the unpredictable changes and fluctuations of context and problems under analysis (Wickson et al. 2006, Klein et al. 2012). Within this frame, “scientific rigor” is defined as taking into account all existing information to build the arguments and the proposals for addressing a problem (Nicolescu 2002). In this type of explorative processes, Transdisciplinarity become a “*conceptual tool to produce interlanguages*” (Klein 2002) and a “*space for synthesis across, between and beyond disciplines*” (Nicolescu 2002).

In order to outline how holistically approach the research on the design of technologies for cities by adopting a Transdisciplinary perspective, I considered:

- Urban Planning (UP), Urban Design (UD) and Urban Studies (US) because of the stratified, consolidated and applied knowledge about city dynamics and urban transformations
- Information Systems (IS), Computer-Supported Cooperative Work (CSCW) and Human-Computer Interaction Design (HCID) as sub-set of Informatics disciplines characterised by a focus on developing technological solutions embodied into complex social settings.



Fig. 1 Diagram of the proposed disciplines to bridge in the research on city technologies

These disciplines have in common the following three essential characteristics:

- **intrinsic permeability**, because all of them are interdisciplinary fields incorporating and transforming external inputs and knowledge from social science, humanities, or engineering
- their **normative nature**, usually expressed by converting theories and empirical findings into normative knowledge for the transformation of the context in which they operate through planning and design interventions.
- their **future-oriented approach to the analysis of current problems** driven by the purpose of understanding how the presents conditions could progress or be innovated.

However, the linguistic differences between the two macro-domains of Informatics and Urban research, and the common misconceptions that experts of one side frequently have about the nature, methods and scope of their counterparts constitutes major obstacles to create a bridge among them for facing the challenges of defining

better technologies for cities. To facilitate the definition of an interlanguages among the selected disciplines and the construction of a common operational space, in the next two sections I am going to highlight the major types of contributions that each discipline can bring to the research and design of city technologies, as well as their complementarity in terms of topics, methods and strategies.

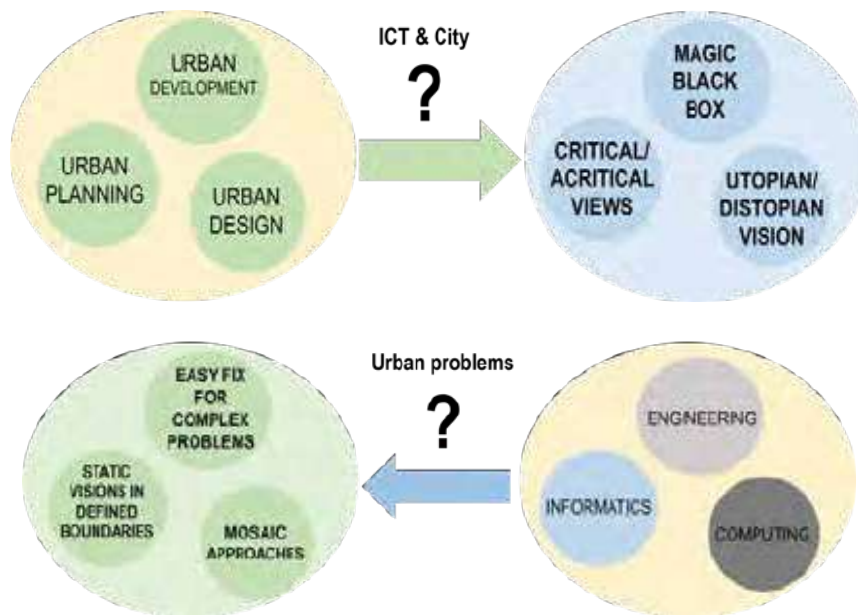


Fig. 2. Illustration of some common misconceptions and positions about urban disciplines and informatics regarding Information Technology and Cities

3. Integrating Urban Disciplines in the Research on City Technologies

The wide macro-domain of research on cities and urban phenomena includes several disciplines, among which many have goals not directly related to the active transformation of the urban context, such as geography, sociology or political science. While their contributions are often essential to clarify important aspects of city dynamics, the approaches and practices of urban planning and urban design (and partially urban studies as well) have substantial affinities and potential application in the research on the design of city technologies. These affinities, in addition to the points highlighted above, can facilitate the construction of a bridge between urban research and research in informatics.

The key type of contributions of these disciplines to the research concerning city technologies come from:

- a) the **Approach of Urban Planning** in building shared rules within frameworks of competing goals (economic and social, but also among different stakeholders)
- b) the **Design Tactics of Urban Design** to shape public spaces for multiple types of users, activities, systems of values and meanings associated to the “urban interfaces”
- c) the **Scope of Urban Studies** to identify the factors determining the local development and build conceptual tools to interpret urban phenomena.



Fig. 3 Schema of the elements extracted from urban disciplines applicable in the research on City Technologies

a) Urban Planning

Urban Planning as academic discipline and professional practice includes both urban planning and city planning traditions, respectively defined as “*design-oriented physical planning*” and “*policy-oriented socioeconomic planning*” (Gleye 2015). Under both perspectives, there is often a convergence of urban planning theories and practices on defining and constructing shared negotiated rules in the public interest, and instantiating these rules in plans or policies to infrastructure future public and private actions for the transformation of a territory considered as built environment complex, economic area or socio-political entity.

While the focus of Urban Planning is on the physical and functional transformation of territories, the modalities to approach the problem of defining shared rules among different stakeholders (public and private players operating in the city) could offer a fundamental contribution in the design of city technologies. Indeed, city technologies cannot simply follow the rules of commercial applications focused on individuals as customers, but requires to be integrated in more complex logics and dynamics shaping the city context. This requires to move the unit of analysis from the individual to upper level social structures (groups, organisations, communities, networks) embedded in a dense net of formal and informal norms regulating their reciprocal interactions and their action in the city.

The need for a shift from the paradigm of the “*user-centred design*” to the “*stakeholder-centred design*” is already indicated as one of the major future challenges for digital technologies (Forlizzi 2018, Forlizzi et al. 2013). To this regards, the lessons learned from the experimentation of collaborative planning practices as well as the insights coming from the critiques to their limits (Innes et al. 1999, Booher et al. 2002, Healey 2003, Brand et al. 2007, Innes et al. 2010, Gunder et al. 2018) and the inputs of communicative, pragmatist and phenomenological approaches to planning issues (Friedmann 1987, Forester 1988, Whittemore 2014, Gunder 2010, Gunder et al. 2017) could provide a solid base to build stakeholder-centred design practices looking at the same time at the public interest and at the practical matters of contextual constraints. However, it is important to acknowledge that the “*design dimension of planning*” as defined by Punter and Cardona is one of the most silent and untraced areas of urban research despite its importance, and therefore not necessarily the practice of planning that is grounded on design plans, policies and interventions is adequately conceptualised (Punter & Cardona 1997).

The second important aspect concerning the peculiar way in Urban Planning to approach the construction of shared rules in multi-stakeholder frameworks is the conceptualisation and pragmatic handling of power-related issues (see Schragger 2016). Power and unbalanced forms of power between different social formations in the urban area seems to be an inescapable condition of any city dynamic, both at individual and collective level (Castells 1978). Most of XIX-XX centuries top-down approaches of urban planning tended to favour established forms of power sustained by central and local governments in charge of urban transformations. However, for decades and in particular in the XXI century, the effort of urban thinkers and practitioners start to focus on the way to re-centre and distribute power in civil society acting within and around the net of norms regulating urban life (Friedmann 1987, Miceli 2012, Gunder et al. 2018). In this sense, the radical theories and practices in urban planning such as the “*assemblage theory*” (see Farias 2011 or Gunder et al. 2018 for a detailed account) bring a unique perspective on power relationships: they exist and are not necessarily balanced, but can be actively shaped and reshaped through interventions that enhance the agency of the different actors in the city (De Roo & Hillier 2016). Therefore, the knowledge of power relationships is seen not as an end as common in critical studies, but as a means for action in complex real settings where contingencies profoundly determines whether and how it is possible making plans, projects and policies.

The analytic, pragmatic and strategic approach to power dynamics cultivated in urban planning practices and partially reflected in urban planning theories can be translated also in the analysis and design of Information Technologies. In this new domain, this kind of approach can help designers, researchers, and technology providers in developing a lucid understanding of the consequences of complying, pushing or attempting to disrupt current power dynamics through specific design choices, and by leveraging on the understanding of the current state of affairs to decide the appropriate strategies to pursue these goals. In particular, the approach of urban planning is valuable to frame the design of city technologies as the design of an intangible urban infrastructure based on the social, political and economic reality of cities. Moreover, there is already a fundamental awareness in this discipline that “*Urban planning is all about information*” and that “*Information is power*” [Forester 1988] because determine what we can or cannot understand, transform, negotiate in local actions. This awareness should make easier transferring logics and methods to handle and assess urban information in the domain of Informatics that is literally build around the management of information in digital systems.

What I tried to highlight with the above mentioned arguments is that the contribution of urban planning to the design of city technologies has no reason to be self-referential and focused to understand how to use already existing technologies, or rather limited within the sphere of GIS technologies because of the familiarity with the visual modelling of cities and urban phenomena through maps. On the contrary, it can be extended to rethink the assumptions and systems of technology-mediated relations among people operating in urban environments.

In particular, the inputs of Urban Planning approaches are therefore essential to the research on city technologies in two ways:

- for developing better models of the users of digital technologies in cities and more comprehensive models of urban activities as multi-actor activities
- for structuring transferable strategies to compose different interests and priorities of a variety of city stakeholders intended to be the targets and users of digital technologies in urban environments.

b) Urban Design

Urban Design as complex polymorph and integrative field of design practices for centuries, and more recently established also as academic discipline, concerns primarily the design of the public interfaces of the city by taking into account history, culture, politics, economy of places (Cuthbert 2008 and 2011). On this ground, Urban Design principles are historically aimed at shaping places by reflecting the “*dynamic multiplicity*” of city actors and their needs, perspectives, aspirations (Madanipour 2006), as well as at creating spaces intrinsically opened and able to communicate specific values and identities while leaving the “users” free to use that spaces in multiple ways (see e.g. Carmona 2014, Moughtin 2007, Burton et al. 2006, Sternberg 2000, Trancik 1986).

The importance of transferring urban design principles to inform the design of digital technologies for creating virtual public interfaces supporting people’s interactions in cities is already acknowledged and examined by recent works (De Wall 2014, Arango 2018). But what is worth mentioning here is that emerging but influential schools of thought in the design of digital technologies pushes for re-orienting the Research and Design agenda toward principles very much closer to theories and practices typical of Urban Design. For instance, by supporting the value of pluralism in the different views and uses of digital artefacts, by avoiding to flatten users to universal reductive models and considering them as embodied in social and cultural systems, by considering designers as advocacy leaders for groups marginalised in the current practices of technology development, by supporting participatory practices involving the public in setting goals and solutions of technology stratified within an ecology of other technologies already in place (Bardzell 2010).

On this background, the inputs of Urban Design tactics can benefit the research on the city technologies in two ways:

- by helping to model the fluidity of roles and identities of people in the city, and support their agency accordingly to these roles and identities as goal for city technologies
- by hybridizing the design of tangible and virtual public interfaces to make digital environments more consistent with the openness and fluidity of urban systems reflected in city technologies.

c) Urban Studies

Urban Studies is the wide field studying problems, solutions and processes of local development through the analysis of the context in its socio-cultural aspects, focusing on the interactions between people and urban environments, and looking at the organisations of urban systems. Urban studies correspond more to the definition of a common interest across multiple disciplines, than being a domain with defined boundaries, and incorporates the strands of social sciences, political science, urban economics and humanities (Hutchinson 2009) framing local processes as multi-dimensional processes, in which the cultural, economic, social, political components of the context are strictly interdependent and require to be analysed and assessed in an integrated way.

The focus of Urban Studies is mainly theoretical and empirical, instead than applicative as Urban Planning and Urban Design that usually convey the understanding of the context in interventions as plans, projects or policies. As regarding the theoretical contributions, the key inputs of Urban Studies concerns mainly the interpretative frameworks of city dynamics, such as for instance the ASID model (Agency, Structure, Institutions, Discourse model) developed by Moulaert et al. (2016). The value of these models for the design of city technologies rely on the fact that they provide a general schema to build the understanding of local phenomena to be supported by

or through technology, going beyond the observable elements that are the main object of current urban deterministic and predictive models.

As I going to explain below, the study of people and organisational practices in their context is the backbone of disciplines such as Computer-Supported Cooperative Work, but it is relevant also in Information Systems research and in Human-Computer Interaction Design. However, models and analytic framework developed in Urban Studies can extend and deepen the analysis of practices in city context by considering also the structural and representational components of social interactions and consequently their potential transpositions in a virtual shared space. This is particularly important for the development of future digital technologies as “*common artefacts*” accordingly to the definition of Bødker (2015), shared by a multiplicity of actors interacting in a dynamically changing context shaped by a variety of factors and dimensions difficult to analyse and transpose in design solutions (Bødker 2006).

As regarding the empirical contribution of Urban Studies to the design of city technologies, there is also the possibility to build on the critical factors studied in urban transformation projects, city management and social initiatives for orienting the definition of the scope of technology as support to the everyday practices of local stakeholders.

In synthesis, the inputs of Urban Studies in the research about the design of city technologies could support:

- Analysing the landscape of existing technologies under the light of the applicative scenarios in different urban settings
- Modelling the specific role of new technologies in these settings
- Connecting the contingent observations referred to specific technologies in specific contexts to higher-level schema and dynamics, helping to reason on the invariants and contingent uses of technologies in cities.

Within and across the disciplines of Urban Planning, Urban Design and Urban Studies (beyond the theoretical and methodological inputs mentioned before), there are also specific thematic clusters such as the research on Smart Cities, Urban Governance, and Sustainability that are relevant for defining nature and function of city technologies.

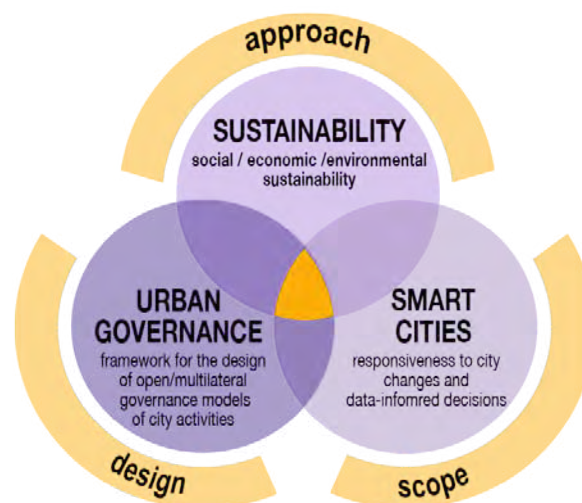


Fig. 4 Schema of the elements extracted from the thematic clusters on governance models, ICT and sustainability issues.

4. Combining the Understanding of Cities and Technologies in Informatics

Computer Science and Informatics are two denomination often confused, or used as synonyms or simply preferred to indicate both accordingly to different traditions in Europe and USA. Nevertheless, they cover different domains related to the study, design and development of information technologies. Computer Science addresses the mathematical modelling of information and operative flows, concerning the internal features, structures, and behaviors of computer systems. Informatics addresses at the same time the technology and its context, focusing on technology design, information system development, human-computer interaction and management of technology in different operative environments (an extensive introduction on the different use of Computer Science and Informatics can be found in Smutny 2016). In addition, there is a third segment of disciplines dealing with information technologies that is Engineering, covering the study and development of software, hardware and infrastructural components of information systems. Lastly, there are also disciplines such as Socio-Technological Studies (STS) focused on studying technologies in their context, but centred on the social components of this interactions instead than on the design of new technologies. In this work, I limit the discussion to a subset of disciplines in Informatics including IS, CSCW and HCID.

Moving from Urban disciplines to Informatics, the research interest in cities is related to the revolution of the computers moving from working environments to everyday life activities as prefigured almost three decades ago (Grudin 1990). Indeed, the Grudin's expression "*the computers reach out*" refers to the fact that digital technologies started since 80's to deal not anymore only with tasks to be accomplished through the use of specific hardware and software solutions, but with the challenges of social progress supported by information technologies. Nowadays, Urban Informatics (Foth & Choi 2011) and Urban Computing (Zheng et al. 2014) are emerging as domains studying urban contexts through/with/for technology.

As highlighted in previous work (Lupi & Antonini 2019), Urban informatics, has the broader scope of rethinking the urban experience through the support or mediation of technology. Differently from Urban Computing, it is based on studying the context to define new potential solutions and intervene to sustain technology-driven changes. While the terms Urban Computing and Urban Informatics are often used interchangeably or as synonyms¹, there are fundamental differences in their goals and orientations, as well as on the technological solutions developed relying on them. Indeed, Urban Computing, like every other sub-domain of computing disciplines, is primarily aimed to extract, organise, elaborate data related to the urban fabric or produced within systems acting as a proxy for urban social dynamics such as online social networks (Zheng et al. 2014). The means to achieve these goals rely on computational methods based on the definition of appropriate algorithms to operationalise and make more efficient or effective the data elaboration for specific purposes and applications. On the contrary, in Urban Informatics, the approach to the development of technological solutions for cities is based on framing the problem to be addressed as a socio-technical problem based on the three pillars of places, people, and technology (Foth 2008) and deeply relies on participatory practices and critical explorations of technology in urban contexts. For these reasons, a solid bridge between urban disciplines and Informatics can find its founding stone in Urban informatics, more easily than in Urban Computing.

¹ Michael Batty, one of the main champions of the "Urban Science" as a new discipline combining data science and urban modelling, is actively involved in the research on "computational planning" and uses the expression "Urban Informatics" to actually indicate "Urban Computing". The same use of the expression "Urban Informatics" is conventionally adopted by most of the scholars in urban disciplines working on Planning Support Systems and Geographical Information Systems.

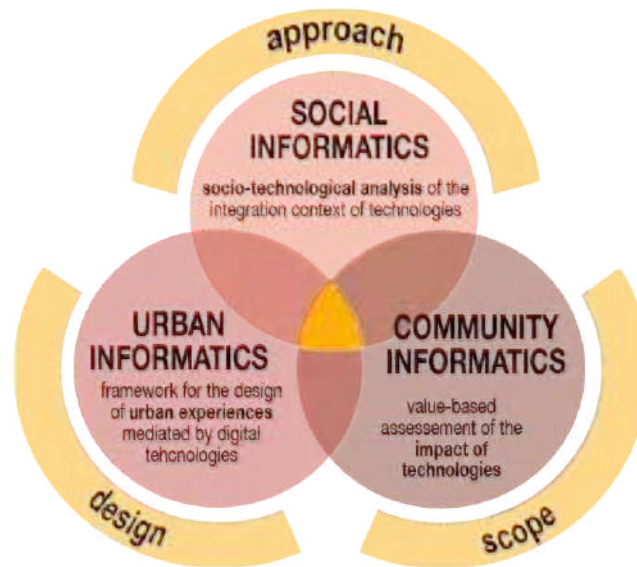


Fig. 5 Schema of the elements extracted from the informatics thematic clusters applied in the present research.

In the design and research on city technologies, it is essential to consider also the perspectives of Community Informatics and Social Informatics². They respectively focus on linking the use of technologies to local development opportunities (Gurnstein 2007) and exploring the issues deriving from the design, implementation and use of technologies (in particular web-based technologies) within specific organisational and social contexts (Kling 2000, 2007, Kling et al. 2005, Sawyer 2005, Sawyer & Eschenfelder 2002).

Urban, Community and Social Informatics provide therefore complementary lenses on technologies in city context (Fig. 5). Urban informatics offers a methodological framework for the design of urban experiences mediated by digital technologies (Bilanzic et al. 2011). Social Informatics provides the theoretical foundation for the analysis of the context in which technologies are integrated, rooted on a systemic visions of roles and relationships within social systems (Kling et al. 2005). Community Informatics set the background for the definition of the scope of city technologies in reference to people empowerment, social change and impact of technology on everyday life (Gurnstein 2007).

By looking at the intersection between Urban, Community, and Social Informatics, CSCW, IS, and HCID had been considered in particular reference to :

- d) the **Approach of CSCW research** for understanding nature and practices of cooperative activities supported or potentially supported by digital technologies
- e) the **Design orientation of HCID** (as branch of HCI) for clearly connecting people's needs to specific choices to consciously design the interactions between users and technologies in their context of use
- f) the **Scope of IS** of connecting human processes and information through the development of knowledge systems (Fig. 6).

² Urban, Community, and Social Informatics are not disciplines but thematic clusters uniting researchers working on similar topics, but using different theories and methods, similarly to sustainability or urban governance studies. For instance, see Sawyer & Eschenfelder 2002 about the nature of Social Informatics.

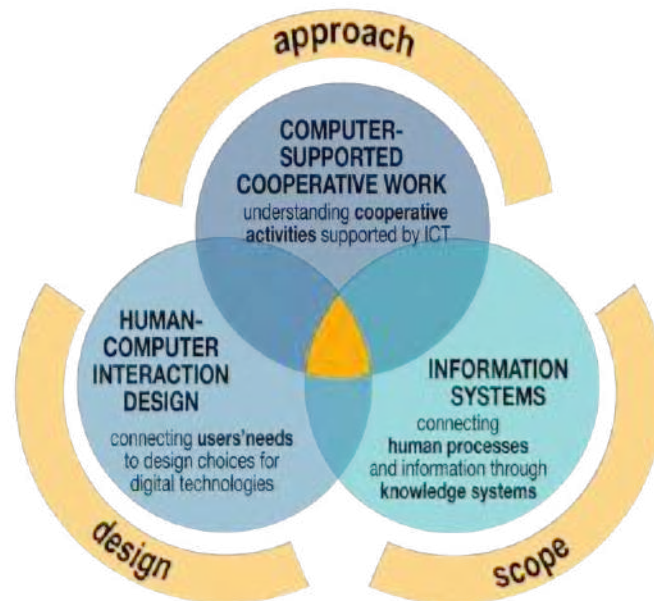


Fig. 6 Schema of the elements extracted from system design disciplines applied in the present research

d) Computer-Supported Cooperative Work

CSCW is the discipline studying how information technologies can support collaborative activities (Castersen & Schmidt 1999). The specific term “*cooperative work*” has been chosen to indicate that the object of interest are not only the activities of groups (sharing the same goals), organisations (sharing protocols) or a collectivity (sharing responsibilities), but more in general the activities performed by “multiple persons working together to produce a product or a service” (Bannon & Schmidt 1989), in the same space or distributed, in synchronous or asynchronous ways (Penichet et al. 2007), and driven by a plurality of goals, norms, value systems, contingencies.

The essential contribution of the consolidate knowledge on cooperative activities and systems in CSCW for urban technologies had been already acknowledged by scholars working on the use of technologies for planning purposes (Silva 2010) or on the construction of geographical information systems (Laurini 2014). Indeed, even though urban disciplines have the potential to unfold the physical and functional correlations of city activities, deeply understanding the “mechanics” of social interactions, as well as their translation in appropriate tools for making people collaborating through technologies, requires to rely on external disciplines having a compatible focus (practices) and orientation (openness to multi-dimensionality of the observed phenomena and problems).

Since its foundation in the ‘80s, the primary area of CSCW research has been the working environments (organisational and inter-organisational) and not urban settings. However, in recent years, a growing engagement with topics and studies outside common work contexts led CSCW community to deeply investigate location-based systems and how their uses, impacts and solutions are associated with the spaces and places (in urban settings or in the public sphere more in general) in which cooperative activities are performed (see e.g. Ciolfi & Bannon 2005, Dourish 2006). This strand of research provides the basis to already extend the concepts elaborated by studying working environments to new applicative scenarios defined by city stakeholders relationships and related activities in urban dynamics. Building upon that, the key concepts and analytic frameworks developed in the CSCW discipline can inform the research and design of city technologies regarding:

- the development of tools conceived as a “*common information spaces*” (Bannon & Bødker 1997) shared by a plurality of actors implementing their activities in the shared space constituted by the city
- the analysis of the applicative scenarios of city technologies for the appropriate support to local coordinative, cooperative and collaborative practices

e) Human-Computer Interaction Design

Human-Computer Interaction Design is the field at the intersection between Human-Computer Interaction (HCI) and Interaction Design. HCI is the discipline studying the interactions between human and technological systems relying on cognitive science, human factor engineering (a field including psychology, sociology, etc.) and computer science (intended as both computing and informatics) (Dix 2009). Interaction Design is the wide field of the “*design of interactive product to support people communicate and interact in their everyday and working lives*” (Preece et al. 2015). HCID³ originates from the convergence of the two fields grounded on scientific (and humanistic) knowledge on one side, and design methods and practices on the other side, combined around shaping of experiences mediated or supported by technologies (Fallman 2003, Forlizzi et al. 2008).

Differently from CSCW or IS, the primary focus of HCI (and HCID) research are users as individuals (and not groups or organisations), assumed as voluntarily interacting with technologies. This particular focus has severe limitations to address the study and design of technologies to support city stakeholders in their actions. Indeed, as well-known in urban disciplines every type of social and practical interaction in the city (technology-mediated or not) is always overdetermined, and not voluntary, if not in part. On the other side, the HCI field is theoretically and methodologically equipped to analyse and conceptualize the experiences associated with these interactions in urban context and intentionally shaping integrative technology-mediated experiences. The inputs coming from HCID can be combined in the research on city technologies for:

- Integrating the models of the City reflected in these technologies, by taking into account an experiential perspective for the description of urban systems and activities
- Combining the design and research explorations across real-world experimentations, by isolating what is specific of interactions in urban settings respect to other settings
- Connecting Users, City as context and the role of technology in an organic interactional model.

f) Information Systems

Information Systems is the discipline examining technological systems and social systems and the phenomena emerging from the reciprocal influences between these two systems (Lee 2001) for “*the effective design, delivery, use and impact of information and communication technologies in organizations and society*” (Avison & Fitzgerald 2003). One of the most prominent concerns of Information Systems research is how can we design better information systems to help organisations and society to work better from a strategic, economic, management, and social point of view (Avison & Elliot 2006, Baden 2010). Thus, Information Systems is a

³ See the schema of the convergence between Hci and Design at: <https://hcid.sice.indiana.edu/>

design-oriented disciplines having the purpose of structuring the knowledge incorporated in the operational context of technology and in the processes to be supported by technology. Similarly to the use of the context analysis in urban planning or urban design for making plans, projects, and policies, the context analysis is used in Information Systems for designing knowledge structure and architecture of digital technologies.

Under this perspective, it is easy to understand why the earlier conceptualizations and models about smart cities and smart city technologies had been elaborated primarily in the field of IS, and not in urban disciplines (e.g. Nam & Pardo 2011, Chourabi et al. 2012). Indeed, the relationships between technology and the city framed in relation to national and local governmental structures or businesses is an important strand of research in IS. However, the hybridization with urban disciplines for generating an open model of the city not only as a corporate/government entity could potentially help also in building also better information systems to support urban activities.

The inputs of Information Systems research for city technologies can:

- Rely on the extensive corpus of frameworks, theories, conceptual tools developed in IS for dealing with design and research problems concerning a wide range of technologies, by assuming a context-sensitive perspective
- Build upon the existing frameworks for the assessment of technologies to examine the specificities of the processes, activities, organisational and inter-organisational interactions in urban context and, then developing specific assessment protocols for city technologies.

5. Concluding notes

The previous sections outlined a general schema for bridging urban disciplines and informatics, in particular, Urban Planning, Urban Design and Urban Studies on one side, and Computer-Supported Cooperative Work, Human-Computer Interaction Design and Information Systems on the other side (See Fig. 7). Their hybridization is essential for designing new technologies to address more effectively contemporary city challenges, to sustain social innovation processes at the local level, and to enable new distributed and collaborative governance models for city services and resources. Indeed, while a common approach in urban research is investigating how to apply already existing technologies to planning practices and urban initiatives, this is not enough for pursuing transformative planning aims by exploiting the potentialities of digital technologies because the appropriate solutions are not there yet. Transdisciplinarity as approach and research framework can provide the foundations to enhance the generative and future-oriented nature of consolidated knowledge on cities of urban disciplines in new domains for defining the scope, role and applications of appropriate city technologies.

The contribution of the paper is two-fold. At a methodological level, it exemplifies the adoption of a transdisciplinary perspective to bridge distinct knowledge domains by focusing on high-level similarities and complementarities in theories and research practices having a concrete problem in mind, that in this case is understanding how to rethink digital technologies for serving social change aims and transformative planning practices. At a practical level, the synthetic presentation and discussion of disciplinary fields that are often unfamiliar to urban researchers and practitioners indicate some possible entry-points to approach their theories and methods and experiment their application in urban research. On the other side, the paper highlighted how the importance of urban disciplines for developing new theoretical foundations for city technologies do not rely on the technical and procedural knowledge usually associated with planning activities, but on valuable skills and understanding of social dynamics in urban environments. A transdisciplinary research agenda on city

technologies can be developed starting from a shared awareness of the contributions of each discipline across different domains.

Future works will formalize the transdisciplinary research framework built on the disciplinary roots selected and discussed in this paper, and will report on the application of this framework in past and on-going projects finalized at the development of city technologies.

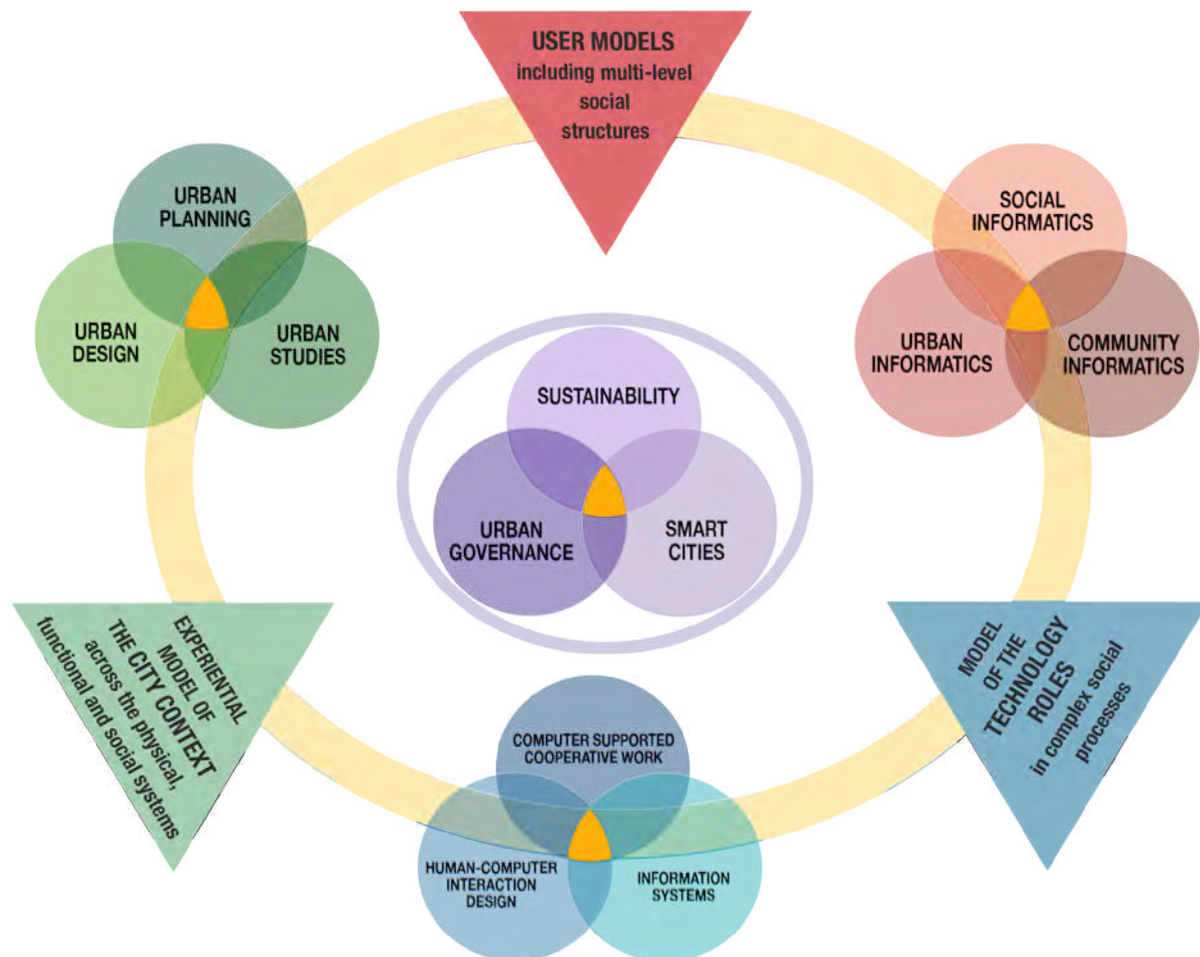


Fig. 7 Schema of the transdisciplinary integration of the disciplines and thematic clusters presented in this work

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Methods and technologies for transformative planning

Towards a better understanding of upcoming challenges related to technology and data usability within design practice. Key reflections from a collaborative process in Amsterdam city.

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Abstract: The digital turn of the twenty-first century has unleashed an unprecedented amount of high quality data. Whereas most industries have eagerly taken advantage of this information to cut costs and improve their products, designers are still searching for an instrumental approach to implement data as a design tool. Technology companies and research institutes seem to have the tools to investigate today's challenges for better cities. However, their tools are not reaching into the design practice. We argue that we need to start a dialogue between the worlds of design, data and technology to find out what the real value is of big data for the spatial design disciplines. We propose to run an experimental case study using data as force of design and share our findings with the discipline. This paper describes and reflects on a process carried out by a project funded by Creative Industries NL and the Municipality of Amsterdam to develop a Smart City-Scan (an experimental data-driven Sustainability Scan) applied in the city of Amsterdam. This project aims to map spatial challenges and opportunities for sustainable and resilient urban design, hereby creating an integral foundation for healthy urban ecosystems. The Scan is executed in collaboration with experts on sustainability, data analysts, decision makers and other urban design offices through a series of six workshops. In conjunction with this paper, we will reflect on the role of these discussions between academics and practitioners aiming to bridge the rift between theory and its application within practice, specifically regarding research on potential technological methods and tools which could be potentially useful for daily practice struggles. This paper aims to provide insights on the content discussions carried out, but also reflects deeply within the methodology and potential outcomes obtained from the multidisciplinary discourse of shaping the smart city scan.

Keywords: sustainability design; collaborative planning; urban analytics; multidisciplinary design

Introduction

Global challenges of air pollution, climate change, increasing socioeconomic inequality and the disruption of the phosphorus cycle have given rise to a number of globally shared ambitions such as the Paris Agreement and the UN Sustainable Development Goals. These ambitions have profound spatial implications, including large-scale implementation of infrastructures for renewable energy, expansion of green-blue networks and providing better accessibility to services to vulnerable populations. Such complex issues require a new generation of tools and methods in order to make adequate decisions; we cannot design the 21st century with the tools of the 20th. Yet, as we approach the middle of the 21th century and face crises unlike any others before, urban designers seem to

stick with old tools and methodologies to solve these issues. Medicine is not practiced with outdated technology; why should urban design be different?

While urban complexity increases rapidly, cities face the demand to comply to the urban agendas (such as SDG, WCR, WEEL, Breem, and so on) which define the pathway towards more sustainable and healthier urban environments. This tension between the rising complexity and the demand to develop more sustainable and healthy cities lands on designers' desk as one of the most important contemporary challenges. It demands the reflection about how could we approach to achieve those sustainable goals. Which are the available tools/methods that we can use to make it possible? What is the role of designers into this technological and data era? In regards of responding to this, Offenhuber and Ratti in the book "Decoding the city"(2014, p.7) argue a key point:

But planners, policy experts, and economists are no longer the only specialists responding to these challenges. New actors enter the stage and bring new approaches to the field. Perhaps the most significant developments have happened in the domain of data-intense methodologies.

Those new actors are related to the understanding the city as a complex system which demands the use of complexity tools such artificial intelligence, and complex theory of cities in order to approach it. As De Roo and Silva argue in their preface of "A planner's encounter with complexity":

[...] planners need to understand that complexity is not a notion expressing basic feelings about an encountered situation. On the contrary, it goes far beyond that. Complexity stands for a 'reset' of our positivist mind frame, to be able to view the world differently, to make the switch from 'normal' science to a 'post-normal' science...which represents an understanding of reality that could very well be more promising than the reality proposed by 'normal' science (2010,p.17)

Many authors in the past has framed differently the idea of complexity, but all of them aimed to try to unravel that complexity as key aspect for the potential successful design outcomes (Alexander 1964; McLoughin, 1969; among others). This complexity gives meaning and breaks our established routines, this is the driving force of serendipity in cities, which promotes uncertainty and unexpected dynamics within the urban scene.

The demand of performative analysis

Understanding urban complexity overlaps with the sustainable goals aforementioned above. This stress designer's situation and pushes them to have the urgency of find tools and methods to unravel complexity. This urgent agenda demands shift from the most fixed and static vision of cities originated and established during the last centuries and move further on methods and tools towards the understanding of performance of cities as a way to get closer to read urban complexity.

To the extent that these technologies (and how we use them) influence how we experience the city and the choices we make there, they challenge the role traditionally played by architects in shaping the urban environment, a tool which has historically –with a few notable exceptions- focused predominantly on the organization of space and material in terms of built form (Shepard, 2011, p.10)

Cities performance shows us the contemporary demands, which is essential in order to promote more healthy and inclusive cities. Understanding how space is used, we could approach how space could be better shaped. This is a matter of starting to use the advantage of our existing knowledge of the data available on performance in cities, and thereby, understanding that design could promote more accurate and tailored solutions to the performative demand.

In order to approach how we could understand the performative side of cities, it demands an update and advanced understanding of the contemporary technologies and data sources available. The digital turn of the 21st century



has unleashed an unprecedented amount of high quality data. Whereas most industries have eagerly taken advantage of this information to cut costs and improve their products, designers are still searching for an instrumental approach to implement data as a design tool. The first companies to extract this information and apply it to the built environment are companies that are not traditionally associated with the design of cities. Tech-giants like Cisco, IBM and Microsoft are developing data-driven systems to advise urban planning authorities on transport, waste management, law enforcement and energy use.

Some of these projects provide insights about the integration of data and technology into the design disciplines. Take for example Alphabet's (Google's parent company) Sidewalk Labs in Quayside, Toronto. The neighbourhood is described as being "built from the internet up ... merging the physical and digital realms" and advocates underground waste disposal, modular timber-frame construction methods and deep-water cooling systems. Although these ideas in themselves are not innovative, the fact that they are integrated and monitored with the assistance of technology is.

Moreover, they are combining its tech-centricity with a collaborative and community-oriented approach to decision making. Projects like Sidewalk Lab seem to offer a new way of looking at urban planning, bringing new questions to the table about the position of the design disciplines in the 21st century in relation to innovations in data and technology.

The endless debate

Although apparently technology and data seem normalized within design practices, the reality is that design discipline is still and continuously in an endless debate around the question: is data and technology useful for design practice? Are they replacing designers' tasks? Are they a threat or a useful tool?

This has been continuing debate for over fifty years. It oscillates like a pendulum between two extreme opposite positions. On one hand, we have the technocratic discourse believing that technology and data will come to solve all our issues. Cities are understood as a mathematical issue which can be tackled from a systematic approach, by simply generating the right formula we could solve urban problems. On the other hand, we have the humanistic discourse which believes on cities as a composition of human's interactions where systematization or formulas have nothing to say. The cities are understood as a composition of complex networks, therefore demanding a collaborative and inclusive decision-making process as a key method to understand and intervene on urban networks.

Both discourses are part of our contemporary practice, and although these were discussion from fifty years ago, it is still present on our everyday life. From Adam Greenfield stating "technology will kill us" till SideWalk Labs applying the use of data as the solution to cities' issues with a non-transparent and out of design discipline understanding. The debate about if design and decision making in cities should be informed by data and till what extend, it is not an old debate. Indeed, it is a contemporary debate which keeps oscillating between the two extreme opposite positions unless practices and theories start to make the extremes converge.

In the endless debate whether technology and data add value in design practice, there are usually two main arguments: 1) the threat towards human driven design, and 2) the ethical use of the tools and data. In regards the first argument, we could say that the starting point of discouraging the use of technology as a universal solution of cities raised around the seventies. Indeed, the article "Requiem for large scale models" published by Lee (1973) was an inflection point on the debate of the potential results that technology was offering. While the technological revolution promoted the idea of design and planning as a mathematical exercise, the technology and data availability was not the most suitable one in order to be able to tackle the urban complexity in our cities.

There was a need at that time for better analytic and quantitative procedures, and there was also a need for the development of theory. Now, the need for both theory and method is even greater. It is not about our intent to

discourage those who would apply quantitative methods to urban problems, but, rather, to redirect their talents into more valuable pursuits than repeating the mistakes of the last decade. (Lee, 1973, p.163)

The contemporary availability of data and technology

Almost fifty years later, we still reflect on the need of both theory and methods to give us tools and better understanding of urban problems. The difference today is that we do not lack either technology or data. While fifty years ago a computer used to take spatially half of a room, nowadays those computers are carried in our bags everywhere. It is not just about their size, but their capacity which is largely bigger than what those fifty years old computers were able to process. Hence, if we reduce space and increase power of those technologies, the equation of its usefulness and usability within design practices should be updated as well.

Although in a completely different scene and with completely different status of availability of data and technologies, why is seem data still a threat to designers? Coming back to the words from almost fifty years to read the still valid Lee's article (1973, p.176):

If planners fail to adopt and adapt theory and methodology as these become available, they will find themselves working less and less on the problems; on the other hand, if planners pick up ideas naively and uncritically, the field will simply jump from fad to fad. Somewhere between lies the optimum path.

Design practice needs to understand the role of the current technology and data available in order to commit to accurate, rigorous and potential successful outcomes from its practice. Hence, it is demanded designers reflecting on the usability, the usefulness and the way these technologies and data resources could potential support their daily activities.

However, even if this reflection is urgent, design discipline generally keeps oscillating whether it is suitable using data and technology either because of the fear of stealing its practice or because of the sensitivity of the ethical dimension, big companies -which are far away from what the ideological core of understanding what design is- are taking over projects and processes. They do not hesitate on experimenting the usability of technology and data, they do not doubt that complexity demands advanced tools and methods.

As important as understanding what tools, what data, and how to implement it on design practices, there is the need to gather the knowledge and experiences which already are leading towards a rupture of the oscillations of the endless debate between technocratic and humanistic. The balance between hard and soft data is a reality in contemporary practices which aim to promote a combination of the most quantitative and qualitative approaches in order to take advantage of best tools and complexities. Then they could approach analysis and interventions with a more accurate and rigorous knowledge of the urban problems.

During the endless questioning dynamic of whether data will make designers obsolete, or whether it kills the creative process and the romantic side of the profession. Other, more optimistic practitioners see the potential in big data analysis, arguing it could save time and inspire new spatial answers to contemporary questions. Regardless of which side you are on, it seems that there is a rift between the worlds of data and design. Spatial designers in practice seem largely unknowing of the potentials, challenges and risks of using big data analysis as a design tool and enter the debate with mere emotion and intuition. It is time for the debate to be fueled with empirical arguments.

The action then is not just the reflection, but the discussion and the dialogue to use this research as a gathering tool of experiences and potential outcomes from theory and practice. An empirical research to understand by dialoguing which tools and methods could potentially be useful and meaningful on design daily practices.

Tech companies and research institutes seem to have the tools to research today's challenges for better cities. However, their tools are not reaching into the design practice. As such, we argue that we need to start a dialogue between the worlds of design, data and technology to find out what the real value is of big data for the spatial design disciplines. We propose to do so by running a real-world test – an experimental case study – using data as force of design, and share our findings with the discipline.

This paper analyses and reflects on the results of an empirical process based on the development of six workshops reflecting on the data and technology usability and usefulness within design practice. It applies specifically to Amsterdam city and it is realized by a project called “Smart City Scan Amsterdam” lead by FABRICations design office in coalition with the CTO Innovation office of Municipality of Amsterdam and the GIS Lab from University of Amsterdam. The project is funded by Stimuleringsfonds Creative Industries of Netherlands with the CTO Innovation Office from Municipality of Amsterdam.

Smart City Scan of Amsterdam. Project overview.

The Smart City-Scan of Amsterdam aims to map spatial challenges and opportunities for sustainable and resilient urban design, hereby creating an integral foundation for healthy urban ecosystems. The Scan is executed in collaboration with experts on sustainability and data analysis, decision makers and other urban design offices through a series of six workshops.

The relevance of the project stems from the belief that information technology and data is changing the discipline, and that all spatial designers share responsibility in responding to this. The Smart City- Scan case study essentially serves as an example to inform and promote debate on the use of data for sustainable urban design. Throughout the workshops, the public debate, the report, and the project aims to illustrate and discuss the following points:

- What data is available and useful for designers and which sources to use;
- How to process data using indicators and technology;
- How to translate building standards, academic research and ambition documents into measurable indicators;
- The obstacles between the world of tech, sustainability, design and finding ground for mutual understanding between big data analysts and urban designers;
- The potential of using big data in urban design and to what extent the research process can be automatized, sped up and quantified using information technology and big data;
- Potentials of applying big data in making sustainability assessments, and;
- Future growth opportunities of the spatial design disciplines; i.e. whether urban design should adopt big data technology as an integral research capability.

In order to explore the role of data and technology in the design discipline it is proposed as case study the city of Amsterdam with the following coalition which contribute on different roles: 1) The Municipality of Amsterdam being advanced in urban data collection and in their urban agendas, they provide the data and the setting for the case study. 2) GIS (Geographic Information Systems) Lab, University of Amsterdam which has the technological expertise to ensure the correct use of the data and the tools. 3) FABRICations in charge of transforming data into spatial assessments that can inform the design process.

The research project will be based on the validated Sustainability Scan methodology which FABRICations developed over the past 10 years. The Sustainability Scan investigates the built environment using a holistic framework of Six Themes of Sustainability (Future Urban Regions, 2015), including vital economy, sociocultural solidarity, healthy living, material cycles, resilient systems and energy transition (see Figure 1).

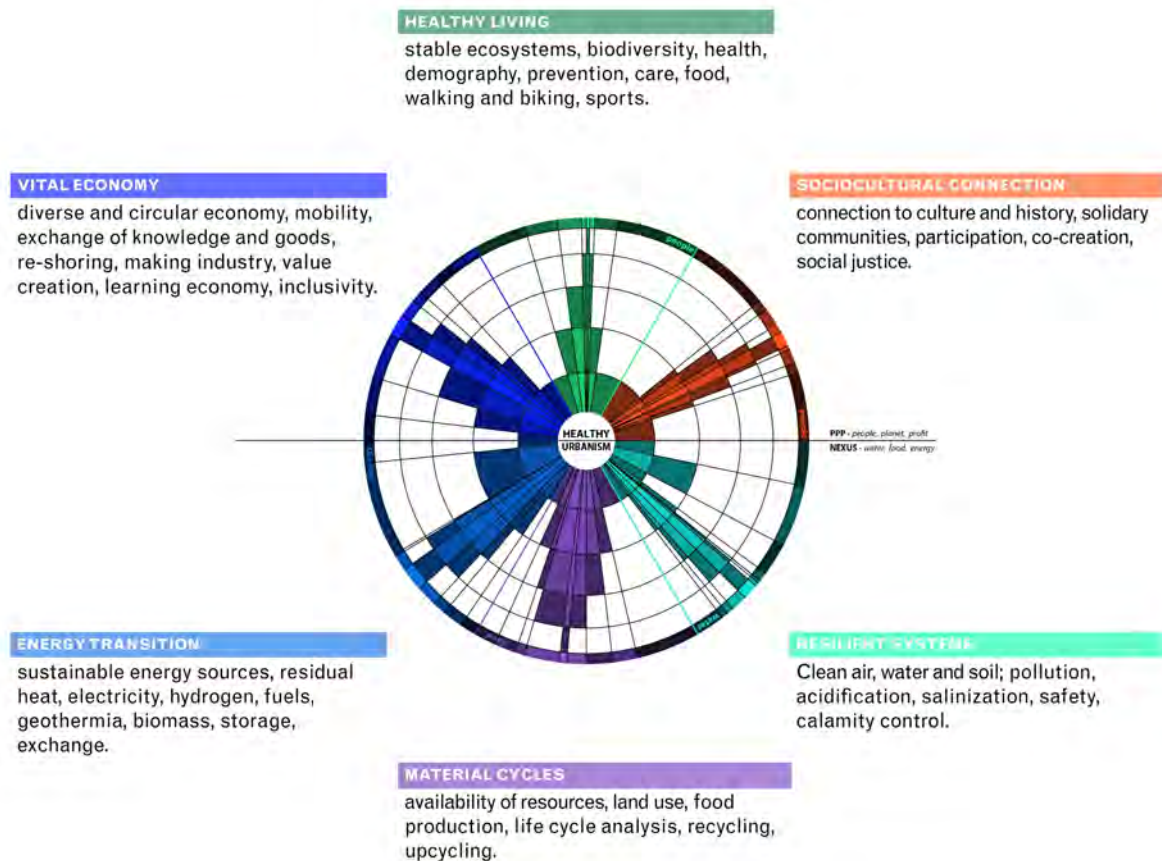


Figure 1. Six themes diagram. Future Urban Regions Research..

Six workshops. Key actors.

Six workshops were planned with two-week intervals between them. Each workshop discussed one of the Six Themes which are the theoretical background of the urban analysis within Amsterdam (healthy living, vital economies, sociocultural connected, material cycle, resilient system, energy transition). Each workshop will be composed of experts on the theme, data analysts, decision makers and practitioners. The goal of the workshops is to exchange knowledge between disciplines regarding indicators, data and technology, in order to create mutual understanding between target groups and to receive critical evaluation about the Smart City-Scan.

As key actors during the process, and mainly regarding the workshop participation, has been identified three target groups that were reached during the workshops:

- Design Practitioners Designers are included in the research process in the form of workshops and will be invited for the public debate. Furthermore, the findings of the Smart City- Scan itself (i.e. opportunities and challenges for sustainable urban design) will be of use to design practitioners working on projects in Amsterdam.
- Decision and City Makers Decision makers from municipalities and central governments and city makers (i.e. real estate developers) are an important target group for the project. The

project aims to inform them on the spatial requirements for sustainable city development, on how data can be applied to assess them and how they can contribute to promoting data-driven urban analyses. We also aim to inform them on data that would be relevant for urban designers, but that is currently missing.

- **Research Institutes.** The academic world has been exploring the potential of data-driven design for the past few years. The issue is that their progress has not been adopted by the design practice. The project aims to build a stronger connection between the academia and practice when it comes to implementing big data analysis in the spatial design disciplines. Similar to the previous target group, the project also aims to inform them on data and technology that would be useful for urban designers, but that is currently missing.

Key reflection 01: a multidisciplinary approach is a myth

Multidisciplinary is defined as the combination of several academic disciplines and professional specializations in an approach to a topic or problem. In this vein, Smart City Scan aims to modify the conventional methodologies promoting a collaborative approach. The root of this approach is promoting discussion and the stakeholder together in the beginning rather than approaching collaboration just as a check on the results already decided on previous stages.

Although the participatory approach of the six workshops was attracting diverse disciplines together. The aim to promote and then observe the interactions between diverse disciplines that could be generated. The overall idea was to gather key actors who are involved at any level/scale to the specific theme addressed on each one of the six workshops. The key groups involved: data/technology experts; designers; policy-makers; practitioners; and researchers.

Elaborating a quantitative analysis on participation from the diverse target groups approach (Figure 2), we could generally conclude that researchers have been the ones who most attended, while designers the least. This might be related to their different policies in regards of workshop attendance but might be also potentially related to the amount of invitations sent.

In addition, what needs to be highlighted is that design offices were counted as group units while researchers were individual (i.e. there were several moments where researchers from the same institution carried out different projects and research). Indeed, it was easier to find more individual researchers than several design offices. It is important to understand those details under the quantitative analysis between disciplines before doing assumptions on what profile of attendant was more attentive.

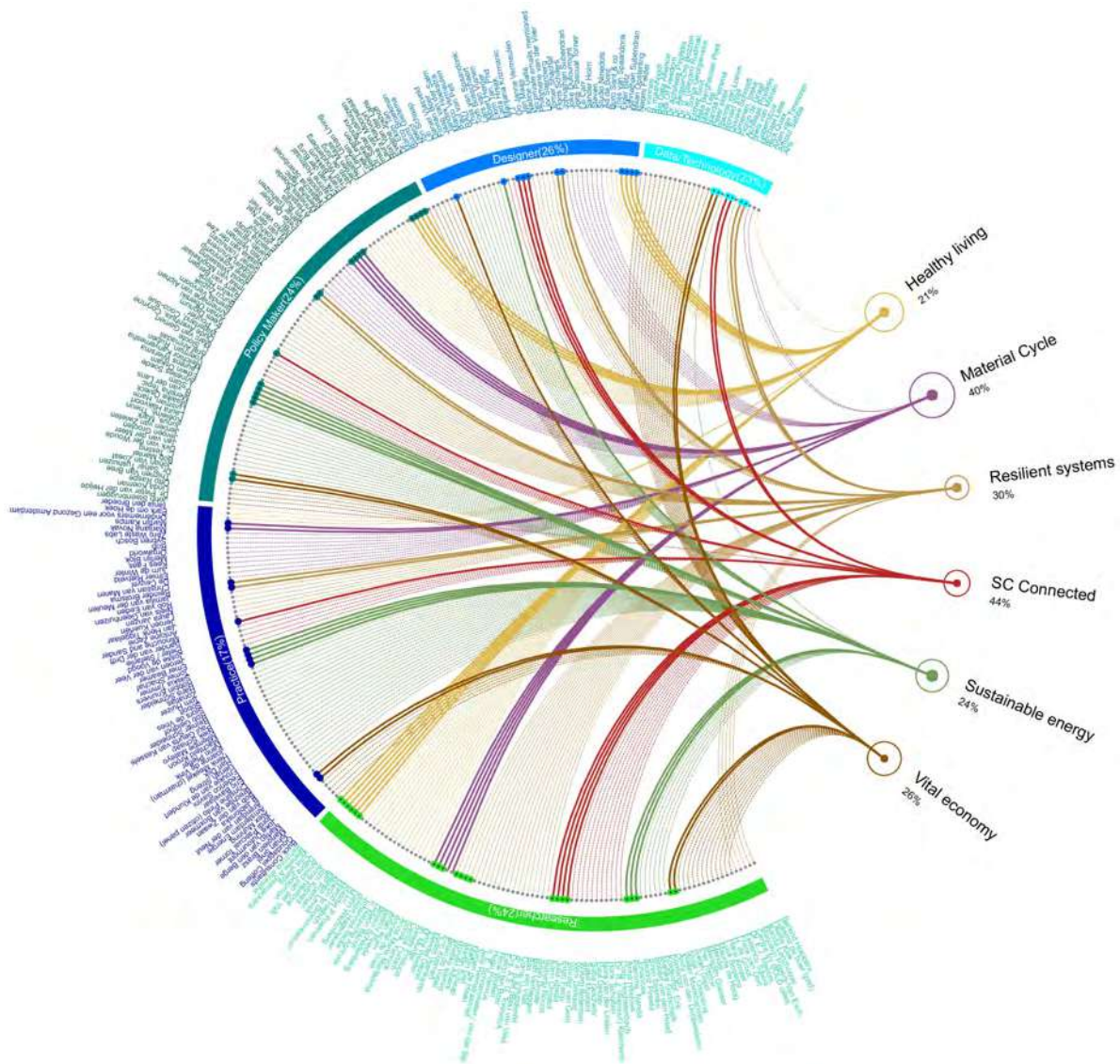


Figure 2. Six workshop quantitative participation analysis. Smart City Scan project, FABRICations.

Besides the quantitative side of participation during the workshops, at the level of qualitative interaction we found a general pattern during all the workshops: experts and key decision makers within a topic did not of one another, or even more important, they did not know what the others were developing either as research or praxis. One of the most common comments in the feedback section organized from the workshops was related to the interest from participants to know each other since workshops became a platform to facilitate a multidisciplinary knowledge exchange.

Hence, it is interesting to highlight that during the participation most of those researchers and practitioners were claiming that within their own projects they have a multidisciplinary approach. However, to what extent is the exchange between multiple disciplines really occurs? Is it usually a private exercise inside of specific teams? Is it not important to externalize efforts to understand other discipline's concerns/visions?

In order to respond to the question, the workshop provided a clear vision of the two main challenges that Smart City Scan project should face regarding multidisciplinary and that will be worth to keep researching and experimenting: on one side the importance of visualizations as potential tools to facilitate communication, and on the another hand the demand to also show the spatial implications as a way to increment the interconnectivity and

common agreements between the participants in order to understand complex urban issues from a multidisciplinary approach.

Regarding the communication, it was found that while most of the participants were linked by the understanding of the topic itself, the type of words and concepts used demanded several times clarifications and promoting of collective understanding of the language used from the facilitators. Regarding the collective construction of knowledge it was found that most of the participants had their own line of work. Indeed, for several of them it was difficult to leave behind in order to open to other's understanding and point of view of the same theme.



Figure 3. Six workshos. Highlighted photos. Smart City Scan project, FABRICations.

If what has been witnessed in the six workshops is remotely showing part of the reality, then a multidisciplinary approach is a myth. Therefore it is necessary to ask ourselves: how do we overcome the words which are mere definitions and pursue truly collaborative processes which aim to establish a common language of communication between diverse disciplines, in order to promote the construction of a collective knowledge? There is where the two challenges converge into a common goal which needs to be faced from the design practice as well as from the theory: a truly multidisciplinary process.

Key reflection 02: Data labyrinth

Data is our daily reality. We are in the era of digitalization generating an intense production of digital information every second through any activity we do. Beyond the ethical concerns (which would be addressed in the next point), there was a common concern occurring systematically along the six workshops related to the accessibility and availability of data.

In the near term, sensors will be integrated into nearly all parts of the physical urban fabric, creating a 'digital skin' composed of connected, digitally enabled objects, network nodes, communication devices and posts for monitoring and analyzing data fed into servers. (Rabari, & Storper, 2014; p. 27)

So if the data production and storage is our contemporary reality, its usability should be reflected in our contemporary practices and research. Why are designers lack to take the full advantage of data usability? As

Batty (2013; p.192) mentions: “These datasets are everywhere, although are often locked away from those like ourselves who wish to mine and interpret them for purposes of understanding and design.”

Data has become the holy grail of any urban analyst. However, the reality is that in regards to the accessibility of data it is either private (i.e. pay walls or privacy concerns) or if it is public it is encrypted. Hence, data is becoming a labyrinth for designers who aim to find the right information in the right format. The availability of data is a multidimensional issue, however, the reality is that every time the discussion about data availability appeared within the discussions of the workshop, there was always someone saying: “that data is available”. However the way it is available makes a significant difference for the user. The online availability of these data sets is merely is not sufficient (which may not necessarily be the case for other disciplines), the user should be able to extract and process the information to see its full value (cvs, shapefile, raster, dxf,, etc).

These issues are important if we begin to talk about the way designers use information to inform their design projects. In order to maximize the data usage, the possibility of integrating such information in their current systems and technologies is vital. Otherwise, practice reverts to conventional tools with the fear of having to invest significant time and effort on updating software, finding the needed layer within the data labyrinth and exhausting large amount of time processing the encrypted data formats. Designers demand data that is easily treatable and easy to integrate to their current tools.

Beyond the concerns regarding data availability and accessibility, the relationship to ownership seems rather interesting. Data is not the same universally, nor it is its accessibility. Therefore, the time invested on understanding (decrypting data) which specific data sources and software to be used will be entirely irrelevant in the next project due to varying contexts. This promotes a sense of skepticism with designers who find difficult believe the worthiness of data where the main goals of a project could be compromised due to the effort required in processing data. When the search for data becomes the project, designers lose hope on its usefulness.

The ownership of data is intrinsically related to the institutional composition of every location. Although there are some universal and worldwide data sources (such as Open street map or Google), design at its traditional scales (regional, city, sector, block, public space or building) demands accurate information. As scalability is important, the fact of using rigorous data is the same, since most of the works related to designers are meant to become physical future realities. This implies having official and institutional data sources, which are differently arranged both in structure and accessibility. In those cases, the availability is directly related to the ownership of the data.

Through the workshops, the discussions become pivotal regarding availability, accessibility and ownership. Although the original aim for the Smart City Scan was to pursue what the idea of Big Data meant to the designer, it slowly became clear that it was not about the amount of data they could get but rather to seek what was the right data. Therefore, the clarity on the conceptual question is key to not get lost in the sea of data. The question will guide an effective and productive data search which will lead to support to answer it.

Through those workshops, a reflection comes up: designers do not need big data, they need the right data. The question now revolves around the accessibility. How does an individual navigate through the existing labyrinth of data? It will depend on the ownership and availability of the data sources. However, if there is something to be can taken away from the Amsterdam case (knowing that it exemplifies an open data source for urban problems) is the importance of generating right coalitions with the owners of the right data demanded. But also, about imagining and hacking the pathways towards to the conceptual aims. The design concepts will guide the data accessibility rather not the other way around.

Key reflection 03: The ethical dimension of data

During the six workshops the ethical side of the data usability has been one of the main concerns from participants. It required a significant effort in each workshop to debate till what extent data inclusivity and the influence it had

on decisions made under interpretations on the final outcomes. However, regarding the ethical use of data is demanded to approach it as a key reflection on the project. However, in regard to the demand of the ethical use of data, it became a key reflection in the project.

While being confronted with the two extreme approaches (technocratic vs humanistic) oscillating on a pendulum, an interesting approach to these struggles from an ethical dimension began to take shape. Data is not the devil, but requires mindful use under specific principles. Indeed, in the first workshop about vital economies in Amsterdam, there were two key participants from “Tada” who work towards an understanding of the ethical dimension of data in order to make better cities. The website of the company states:

Data: a promise for life in the city. Data enables us to tackle major problems of modern cities, making them cleaner, safer, healthier... but only as long as people stay in control of the data, and not the other way round. We – companies, government, communities and citizens – see this as a team effort and want to be a leading example for all other digital cities across the globe. To get started, we have come together to set out the following shared principles. <https://tada.city/en/home-en/>

As they were key actors in introducing to organizers the demand to incorporate the ethical dimension of this project while it is important to mention their principles. They summarized their idea of how to use data in an ethical way. Their six principles are: 1) Inclusive use promoting equality; 2) Control promoting that data and technology contribute to the freedom of people, so the people stay in control over their data; 3) Tailored to the people which defends that humanity always come first leaving room for unpredictability; 4) Legitimate and monitored providing control to the citizen and users over the design of our digital society; 5) Open and transparent about what type of data purposes and outcomes; 6) From everyone – for everyone, which demands the data from government authorities, companies and other organizations from the city should be open and everyone could benefit from it.

These principles could potentially sound as a utopia, but indeed, after six workshops discussions about what data/ownership and the way it is exploded to develop interpretations, it is key to maintain those principles as guide towards being in control of the usability of certain data sources and technology.

Key reflection 04: Fieldwork is not out of fashion

“Not everything that can be counted counts, and not everything that counts can be counted.” This statement made by Albert Einstein is key in this reflection about how qualitative approaches could potentially complement the quantitative ones. In regards to the methodology that was used to approach the six themes as preparation (i.e. preliminary computations regarding each one of the six themes) there was a underlying criticism made by many participants; the use of a computational method will unravel complexity so designer will believe data as a totalitarian true ignoring their own knowledge and experience. The project was far away from this assumption, but became a leading and systematic criticism during the socially themed workshops. The main insight from participants was that in order to develop a deep knowledge of the urban challenges regarding those themes, a perspective from the other side (soft data) was crucial to consider.

[...] the models will be built through machine learning, how to understand and run cities will manifest itself largely without the need for any deep domain knowledge about cities – their history, their politics and culture, their political economy, their inequalities and tensions and battles, their modes of governance, their environment. (Interview with Rob Kitchin, p. 110)

Where will be the experience, insights, and intuition of experienced designers if we are driven by technology rather than the other way around? Cities are complex systems which are comprised of intricate socio-economic networks which cannot be easily computed. Even less the interrelations between those networks. Therefore, there is the need and the logic of integrating the hardest and most soft way of analyzing the cities.



Hard facts and models trump other kinds of knowing and undermine and displace other scientific forms of urban knowledge that are less systematic and continues, such as policy analysis, interviews, focus groups, surveys, etc. So as a new form of knowledge is developed, other forms are potentially sidelined. That, I think, will be to our detriment because for all the hoopla about big urban data and urban science, it has numerous limitations, including methodological and technical shortcomings and data quality issues. I would prefer to think about big urban data as complementing –non replacing- other urban knowledges. It's not necessarily better: it offers another perspective. (Interview with Rob Kitchin, p. 110)

In order to promote inclusive readings of the environment, it must be viewed through the lens of technocratic and humanistic methodologies. As many participants mentioned, it is key from their experience and practice to work with and for the people related to the issues. For instance, during the socio-cultural connected and healthy living workshop we received reoccurring and persistent remarks of 'not without fieldwork. As one participant mentioned clearly during healthy living workshop: "this project lacks the qualitative approach".

However, in the same discussion, another participant clarified the interesting gap of data sources, which unbalanced the conceptualization of healthy living systems. In this case regarding playgrounds, she elaborated the critique based on children dynamics who are not monitored, and who do not provide data on apps or google. It demands a qualitative approach. This tendency potentially and several times leads to data driven analysis that tends to ignore or even overlook urban issues which are based on experiential that cannot be tracked by data monitors.

A simple analysis of data is not enough. A process in which a qualitative approach is necessary to go beyond and more in-depth into reading social dynamics. However, it seems clear that a coexistence of a qualitative and quantative analysis can be complimentary. And, if design can seek a balance, then it will be able increase its accuracy and overall productiveness in urban analysis.

Key reflection 05: The trap of blind spots in the interpretation of data

Blind spots are one of the crucial issues in regards to data interpretation. It became the bottom line under several workshops , mostly within the socially driven groups. The data produced, gathered, and interpreted usually becomes fact. However, and as one of the participants mentioned during the socio-cultural workshop: "data needs to be processed to become information". If we refer to social data, then the way it is processed, and the assumptions developed become a key part of the question.

They (cities) are affected by structural forces and political and business decisions made in a multitude of places. They are full of millions of people who act in all kinds of ways and are thoroughly infused with culture, history, and politics. Even with more data, new analytics, and enhanced computation, it is therefore very difficult to create robust models of city development, and even more difficult to translate these contextually into policy. (Interview with Rob Kitchin, p. 110)

As Kitchin argues, the city goes beyond a static and physical environment. Indeed, if we aim to understand the most social themes and the urban challenges related to them (such as vital economy, socio-cultural connected, healthy living) it demands an understanding of the social dynamics of the city. Certainly, a performative analysis of the city. This discussion usually belongs to the idea of the blind spots, which are the realities we suppress from our interpretations on data. This relates to the idea of black boxes, which stem from the assumptions arise when data is treated through diverse technologies (such as modeling).

There are two examples that can clarify this black box concept. During the healthy living workshop a participant explains that if a dataset from Strava is used in order to understand the optimal spaces of exercise are, we are understanding the users (producers of data) that are providing key data which could be interpreted as a pattern or tendencies of spaces of high attractiveness. However, if the goal of the analysis is to encourage people to do more

exercise and encourage healthy living conditions, then the data source of strava is not appropriate. It creates numerous blind spots. The strava data set solely represents the population practicing exercise, it does not represent the population that do not use application. It means that the use of this data misaligns itself with the target group that needs to be addressed. The combination of blind spots, narrow interpretations and assumptions could potentially lead to conclusions that are misleading.

“This is classically known as a ‘black box’. What goes in and what comes out are known exactly, but the process by which one is transformed into the other is a mystery.” (Lee, 1973, p.167). The author promoted the idea that technology could potentially have interesting usability but not before understanding its limitations: “A balance should be obtained between theory, objectivity, and intuition”. (Lee, 1973, p.175-176)

Future research

This paper is part of a five-phase project. The first phase as the theme’s hypothesis and the second as a gathering of knowledge through the six workshops. In parallel, as the transition from the participatory process move towards the computing phase, it is now a process of which in depth interviews with key participants from the workshop promote the creation of coalitions for the development of computations. These coalitions differ from decision makers, experts, and researcher who are providing the key insights to build six test cases of the usability of technology regarding the six themes. This transition helps to go beyond these five-key reflections of the workshops, towards an in depth theme specific analysis in aims find the right conceptual ideas to be tested.

After the computation and assessment phases (parts three and four), the project’s aim to conclude with a public debate as the final phase. This discussion will be comprised of the entirety of workshop participants to come together and discuss the reflections and computation results. After, the validation of these outcomes and reflections, they will provide the design practice an additional perspective. A viewpoint that is empirical in which the main challenges, advantages and disadvantages of data and technology usability are made visible. Ultimately, the reflections and key outcomes will help guide and support designers with their agendas of making cities more sustainable and healthier.

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Track 5. Methods and technologies for transformative planning

LANDSUPPORT, a decision support system for territorial government

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Abstract: The objective of LANDSUPPORT is the construction of a smart geoSpatial Decision Support System (S-DSS), providing a powerful set of decision supporting tools – that will be open and freely accessible through the web – devoted to (i) support sustainable agriculture/forestry, (ii) evaluate their interaction and trade-off with other land uses, including spatial planning and (iii) support the achievement of selected land policies of both EU and UN agenda, with special emphasis to the key, “achieving a land degradation-neutral world” and climate change mitigation goals. By doing that, LANDSUPPORT will reconcile urban regeneration policy ambitions with operational reality addressing the often overlooked support for planning/management actions at the very local scale. In fact, only by this approach incorporating the local dimension it is possible to produce DSS tools to simultaneously fulfil all high demanding specific challenges such as the evaluation of “land use trade-offs”, “incentivising real actions / behaviour / investments” contributing to “sustainable management of land resource” and considering societal needs. This is exactly what the high performing LANDSUPPORT integrated scientific approach promise to do, unlike the aggregated Territorial Modelling Platform already in use for the ex-ante evaluation of EC policies.

Keywords: Decision Support System; Land take; Soil sealing; Spatial planning

Introduction

The project Horizon 2020 LANDSUPPORT (www.landsupport.eu) aims to develop a geospatial Decision Support System (DSS), based upon the Web and open-access, which points at contributing to the development and implementation of land utilization policies in Europe and will promote an integrated and participatory approach to rural development and environmental policies. Some features (land-take, green infrastructure) are particularly useful for territorial planning and environmental evaluation, understood as both strategic environmental assessment both environmental impact assessment. The INU (Italian National Urban Planning Institute) contributed to the project and attended to the presentation of alpha version of web platform, presented at the general assembly of research group in Balatongyörök, Hungary, from 27th to 29th of May 2019.

The project is built upon the experience grown during several experiments and successful projects, like “SoilConsWeb” (www.landconsultingweb.eu) and “Soil-monitor” (<http://www.soilmonitor.it>) with the collaboration of different research units. The system contains roughly 100 DSS instruments, dealing with topics of strategic interest: agriculture, environment, planning. Users can display data for the selected periods and area of interest, and then they can access modelling and services provided by LANDSUPPORT project, using



different scales. Results are shown through maps, graphic figures and reports able to be exported and allowing comparisons between different scenarios. The project integrates existing databases, with different scales, with new high-performance modelling tools that simulate agriculture and silviculture, land degradation and environmental issues.

The system will be based on cutting-edge technologies for the development environment, high performance calculation and massive raster data management and will be validated by remote sensing data. LANDSUPPORT aims to integrate decisions on many geographical scales into a single set of instruments, allowing to coordinate policy ambitions for agricultural and environmental sustainability with local operating realities, that are very often overlooked. A test will be carried out on four geographical scales: EU, national (Italy, Hungary and Austria), regional (an Italian and a Hungarian region) and local (pilot sites in Austria, Italy, Hungary, Tunisia and Malaysia). The project also provides for the organisation of end-user workshops during the development phase and training courses as soon as a first subset of tools is available. One of the Italian areas of experimentation will be the Cilento National Park, thanks to the collaboration with the LUPT Centre of the University Federico II of Naples (coordinator of the experimentation prof. F. D. Moccia).

Construction of the decisional system

With the Work Package 1, the tools of LANDSUPPORT are optimized on the basis of real demands coming from policy-makers, farmers, territorial planners and land managers at the European, national and regional/local level. The activities in the WP1 are connected to the approach of the living laboratory developed in WP7 and WP6. As first footstep of the DSS development, Work Package 2 is establishing the base of services for LANDSUPPORT, harmonized with the integrated management of raster data, vector data and metadata, that allow "any queries, in any moment and on any dimension" to be managed as explorable data. Work Package 3 will be based on this platform and develop a multi-scale and modular modelling system that will be at the heart of LANDSUPPORT's DSS tools. Meanwhile, Work Package 4 will collect, pre-process and provide a portfolio of Earth observation maps (EO) and outputs of Copernicus Sentinel satellites, with the aim of enabling continuous monitoring of highly dynamic land surfaces and providing biophysical vegetation variables, in order, evaluate and validate model results.

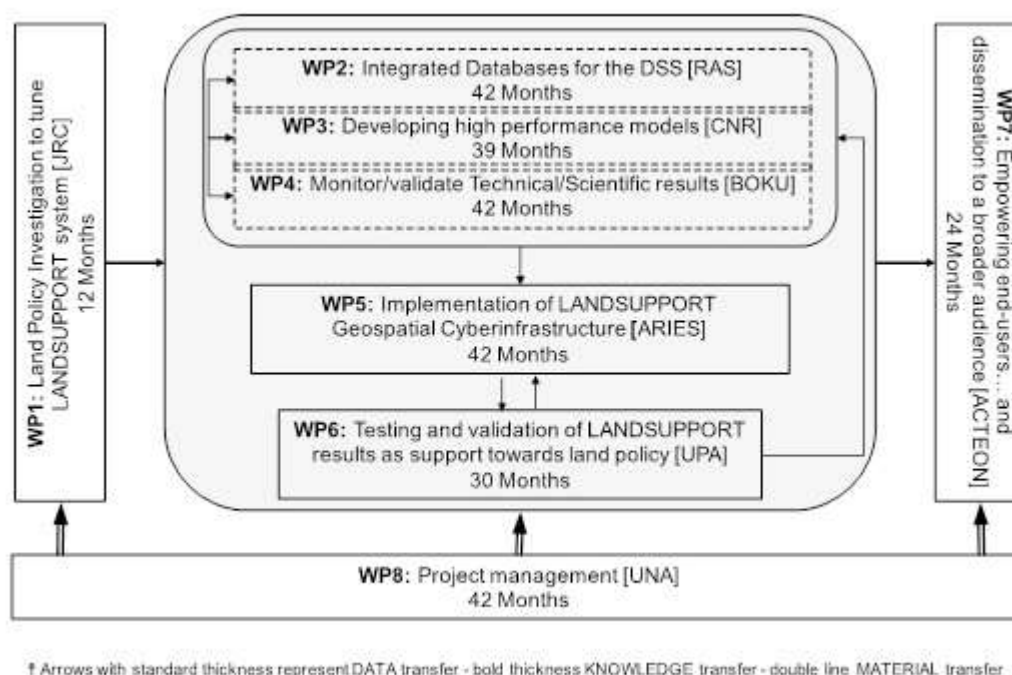


Figure 1. Project diagram. Source: Moccia, Sepe and Terribile (2018)

At this point, the core of DSS will be completed, therefore the Work Package 5 will come into play, designing and developing a highly customized LANDSUPPORT spatial DSS web application, as well as integrating engine modelling and data levels into the web-based geospatial-cybernetic infrastructure (GCI). The living-lab process is developed on two work packages, namely WP6 and WP7. In WP7, the operational needs of future users (policy makers, farmers, space planners and other land managers) will be explored during dedicated workshops at national and local level. The WP6, then, will test, evaluate and validate the results and products of LANDSUPPORT together with future users. Moreover, WP7 will also include capacity building activities with future users, as well as communication, awareness and dissemination activities aimed at a wider audience. Work package 8 includes all project management and coordination activities, while work package 9 includes all activities to meet ethical requirements.

Soil consumption, urban planning and ecosystem services

Soil consumption is one of the most severe degradation processes of ecosystems, because it is responsible for drastic limitation or even complete removal of essential ecosystem services. Although important European policy documents (Roadmap to a Resource Efficient in Europe - SDG'S) promise to mitigate this phenomenon, there are still no clear signs of change and land consumption continues to grow alarmingly worldwide. As stated by Moccia, Sepe and Terribile (2018) "We believe that immediate action is needed to reduce the gap between major policy statements and the lack of operational and scientifically robust tools to tackle land consumption". These instruments must aim to support the decisions of politicians and all those who have the task of managing, controlling and contrasting this harmful phenomenon.

Soil consumption can also be faced through an innovative web platform designed to determine different indices related to the quantification of this degradation phenomenon. The "ground consumption" function (landtake) was one of the main functions present in the previous experience of the web-GIS (Geographic Information System) Soil-monitor designed by the CRISP (Centro di Ricerca Interdipartimentale sulla "Earth Critical Zone")

Centre. The land take tool will be a powerful support to the ex-ante assessment of new urban development actions or new green corridors in the hands of European spatial and urban planners and planning public bodies. All European municipalities and other public bodies dealing with spatial planning and agriculture and not having specialised expertise. Thanks to LANDSUPPORT website, on-the-fly they can assess metrics/map/statistics/reports about soil consumption/land fragmentation, simulate land use change scenario, land use change and much more at no cost. This paramount objective will not be achieved by a top-down approach but rather by empowering any final end-user about the impact of planning. LANDSUPPORT, in fact, implements on a European scale the previous experience of web-GIS Soil-monitor - specifically designed for Italy. It is useful, in this regard, to take up the salient points of the previous experiment lead by INU Campania on Soil-monitor. The Soil-monitor platform, while being a prototype of a geospatial cybernetic infrastructure, has shown that - thanks to research - it is now possible to reduce the distance between the major environmental policy statements (e.g. SDG) and the direct implementation of measures to reduce land consumption. Soil-monitor has also been designed to support some national policies related to land consumption (AS 1181, AS 2383, Act n. 86 of 22/05/2015, Act n. 221 of 28/12/2015) associating actors related to scientific research with population, settlement, politics and economy. In order to maximise the reliability of the results delivered by the web platform, the data used for calculations are provided by ISPRA (Italian Institute for Environmental Protection and Research) with high spatial resolution. The coherence of the calculation procedures of various indicators of land use and urban and territorial planning has been tested by the National Institute of Urban Planning. The measurement and quantification of soil consumption performed by the Soil-monitor had the merit of raising awareness of the phenomenon. The calculation has been designed and implemented to be adaptable in relation to the available hardware resources, allowing real-time answers even for the most challenging indicators (for example, the fragmentation of rural and urban landscapes) required for large geographical areas of interest (a province, a region or even the whole Italian territory). The codes have been written in CUDA-C and use NVIDIA graphics card processors for massive parallel computation. The Soil-monitor made it possible to quantify:

1. Changes in land use at different times.
2. Fragmentation of rural landscape.
3. Loss of ecosystem services.
4. The impact of ecological corridors restoration.

LANDSUPPORT, on the basis of these premises, can have as its objective the mitigation and the achievement of neutral land consumption on the European scale. Beyond land consumption, another important application for planning is the “fragmentation” and the implementation of the ecological network. The Observatory on soil consumption of the INU Campania tested the Soil-monitor tool on May 10th and 31st, 2017, at the Computer Laboratory of the LUPT (Laboratorio di Urbanistica e Pianificazione Territoriale) Centre - University Federico II. Fifteen INU members took part in the test, which included a guided test and three sessions of test related to the use of indicators on land consumption, ecological fragmentation and urban hierarchies. In order to improve the application and make it more accessible to potential users, a subsequent experiment was carried out on a specific but significant territorial area, coinciding with the metropolitan area of Naples.

The results obtained from the use of indicators belonging to Soil-monitor were compared with the environmental analyses and the proposal of the main ecological network of the Territorial Coordination Plan of the Metropolitan Area of Naples (PTC) adopted in January 2016. The results of the test were presented in the 2017 Report of the Research Centre for Soil Consumption (CRCS). The results of that research are, in part, here proposed again, in order to illustrate the application at the planning level.

Territorial planning, especially in metropolitan contexts, must deal with the changing landscape, due to the persistent phenomenon of soil sealing that causes the loss of ecosystem services. Indeed, the fragmentation of ecosystems, produced by soil consumption, has a significant impact on services related to the protection of biodiversity. The Campania Regional Territorial Plan (PTR in Italian) of 2008 states that the spatial and

ecological fragmentation of the regional territory is one of the main causes of landscape degradation, and provides indications to pursue the objective of “defragmentation” through multiple interventions at different scales: regional, provincial and municipal policy guidelines for agriculture and major infrastructures design. In fact, agricultural areas, if reorganized according to environmental sustainability principles but without losing productivity, may constitute a small network of links between areas which are best preserved from an environmental point of view and which have a high level of bio-permeability. Major linear infrastructures (motorways, railways, reclamation channels, main power lines) if designed or restructured with suitable criteria, could be a complement to the backbone of the regional ecological network, contributing to the connection of large natural areas. The analysis of soil consumption led by ISPRA emphasizes even more clearly the absence of large areas with a high level of bio-permeability. The metropolitan scale thus becomes an interesting area of analysis, in order to monitor the impact of land consumption on potential green infrastructures of the metropolitan area of Naples. The web platform is an innovative tool that interacts with the ISPRA databases and the GIS information platforms, allowing not only to evaluate, monitor and quantify land consumption within municipalities, metropolitan cities and Italian regions, but compute and compare ecological indicators of great interest for environmental analysis. The web platform allows users to select any portion of territory, being able to provide as output not only the amount of land consumed over time, but also the impact on soil of a new urban settlement or ecological corridor.

Within the web-GIS can be applied and calculated two macro-categories of indicators:

- land change matrices and land cover - indicators based on Corine Land Cover map;
- land use indicators.

The latter group includes the most ecologically sound indicators such as “fragmentation” (urban and rural) index. Specifically, the layer of the Provincial Ecological Network (REP in Italian) of the Provincial Plan of Naples has been superimposed with the indicator of the rural fragmentation of the Soil-monitor showing that the REP, even if more detailed than the RER (Regional Ecological Network), does not intercept the difficulties due to the fragmentation of the area. Instead, fragmentation monitoring induced by land use allows the identification of possible connecting elements and the estimation of their fragility in order to identify planning actions.

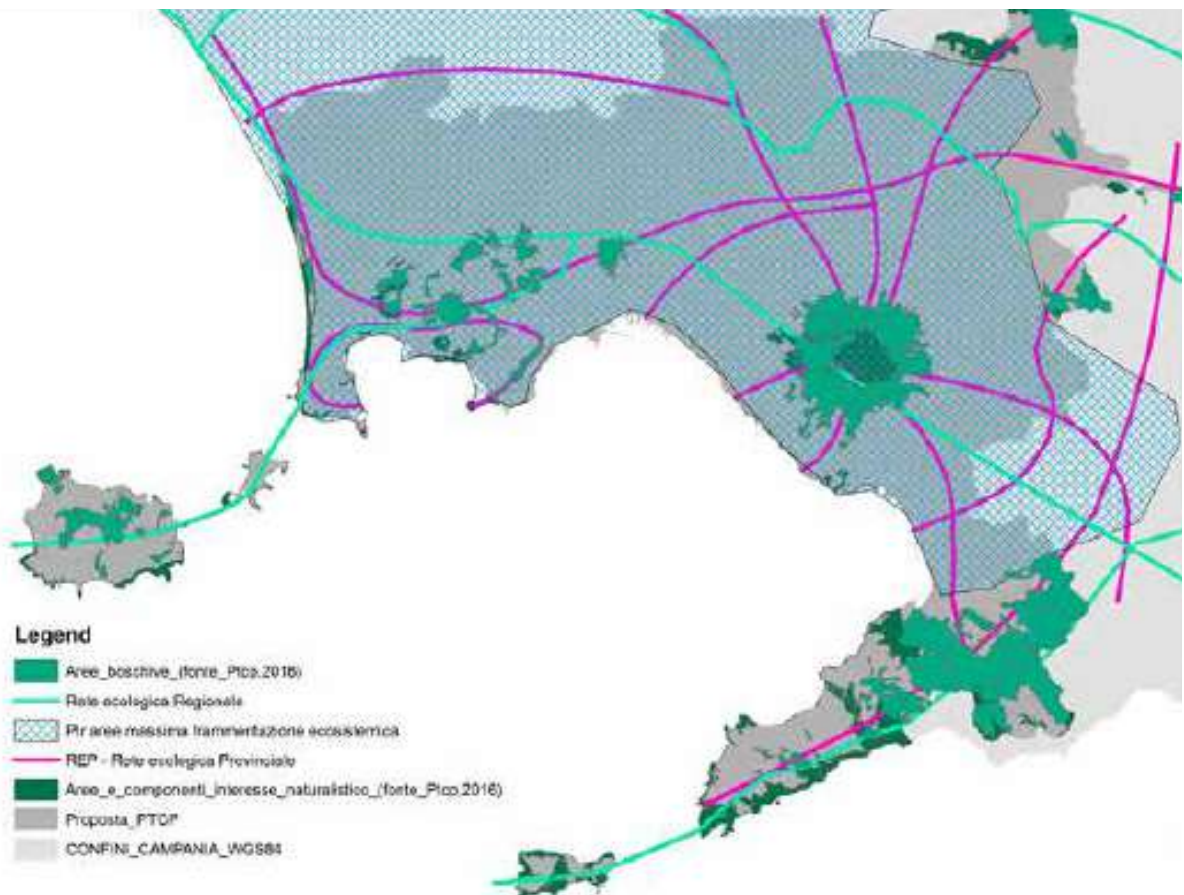


Figure 2. Ecological network. Source: Coppola, Grimaldi, Langella (2017).

The analysis of the environmental system is based on the analysis of the core areas or parks and protected areas and biodiversity starting from the reading of the Corine Land Cover map. The fragmentation map allows identifying different types of fragmentation, urban and rural. If in Soil-monitor the resolution was quite modest and suitable for the large scale (resolution of 200 metres), the resolution of LANDSUPPORT - that comes from the use of the Copernicus system - is greater (the cells are 20m x 20 m) and therefore are more useful at the urban scale.

Decision support systems applied to urban planning

As was underlined by Moccia, Sepe, Basile, and Terribile (2018) in modern society, one of the most binding problems for planners is certainly the mitigation of soil consumption and land sealing. The key role given to the mitigation of soil consumption by Moccia et al. (2018) lifts the interest of the tool on urban rather than territorial issues, since soil sealing - determined by the coverage of lands with impermeable materials, which partially or totally inhibits the ability of the soil to perform its vital functions - is a problem mainly concentrated in metropolitan areas.

Soil sealing, or the permanent covering of part of the ground and its natural soil with artificial materials (such as asphalt or concrete) for construction, for example, of buildings and roads, is the most obvious and widespread form of artificial cover. Generally, part of the settlement area is watertight, while gardens, urban parks and other green spaces must not be considered (European Commission, 2013). Other forms of artificial soil cover range from total loss of “soil resource” through removal by excavation (including open-cast mining), to partial loss, more or less remediable, of functionality, due to phenomena such as compaction, e.g. unpaved parking areas (ISPRA, 2018). Soil sealing is the main cause of soil degradation in Europe, since it involves an increased risk

of flooding, contributes to climate change, threatens biodiversity, causes the loss of fertile agricultural land, natural and semi-natural areas; together with urban sprawl contributes to the progressive and systematic destruction of landscapes, especially the rural ones (European Commission, 2012).

The data coming from the new cartography SNPA (Sistema Nazionale per la Protezione dell'Ambiente) show that, at the national level, artificial coverage of soil has increased from roughly 2.7% in the 1950s to 7.65% (7.75% net of the surface of the permanent water bodies) in 2017, with an increase of 4.95 percentage points and a percentage growth of more than 180% (and with a further 0.23% increase in 2017). In absolute terms, land consumption now affects 23.063 square kilometres of the Italian territory with a net growth of 5.211 hectares (52 square kilometres) in 2017 due to the difference between new consumption (5.409 hectares, 54 square kilometres) and restored soil. The most affected areas are the northern plains, the Tuscan axis between Florence and Pisa, Lazio, Campania and Salento, the main metropolitan areas, coastal areas, in particular the ones along the Adriatic Sea and within Liguria, Campania and Sicily (ISPRA, 2018).

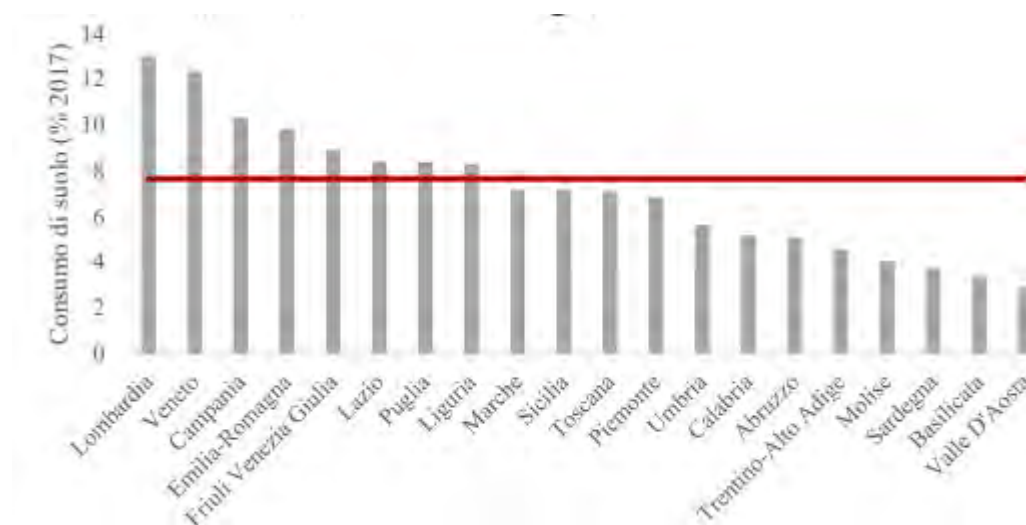


Figure 3. Land consumption at regional level (% 2017). In red the national average.
Source: ISPRA, 2018.

The most striking effect of soil sealing is certainly related to water management. The complete sealing, in addition to reducing water infiltration, prevents evaporation and transpiration, decreasing soil moisture, which - among other effects - is no longer able to function as water reservoir, also decreasing the ability to recharge the aquifers. The inability of sealed areas to absorb most of the water greatly increases the surface flow and can facilitate the transport of contaminants to nearby areas (Coppola, 2016). The industrial decline of some cities has led to the abandonment of large, currently unused, sealed areas (brownfields), and on the other hand has encouraged the migration of the population to areas of new expansion, often taken away from agricultural areas or green areas (woods and forests).

Services	Indicators	Calculation tool
Carbon storage and sequestration (flow and stock)	Amount of carbon captured from natural and semi-natural forest ecosystems	Formulas taken from academic literature
Habitat quality	Presence of biodiversity according to land use classes “on the assumption that areas with a higher quality of habitats host a higher wealth of native species and that the decrease in the size of a specific habitat and its quality lead to the decline of the persistence of species”	InVEST software Habitat Quality model
Agricultural production (flow and stock)	Average agricultural value associated with land use classes	Data Agency of Revenue LIMIT: territorial extension ISTAT agricultural regions
Wood production (flow and stock)	Wood extension	CUAS
Pollination	Presence of pollinating species	InVEST software Pollination Crop model
Micro-climate regulation	Thermic increase associated with increasing energy costs	
Removal of particulate matter and ozone	Removal of two air pollutants, atmospheric particulates (PM10) and tropospheric ozone (O3), by forest ecosystems	GIS software
Protection from erosion	Potential erosion of soils	InVEST Software Sediment Delivery Ratio (SDR) software
Availability of water	Storage capacity and retention of water by soil and subsoil; degree of permeability and slope	InVEST Software Bigbang 1.0 model (developed by ISPRA)
Regulation of the hydrological regime	Reduction of the fraction of water flowing to the surface and its speed and availability of water in the soil and recharge of the aquifers	InVEST Software Bigbang 1.0 model (developed by ISPRA)
Water purification	Soil depurative ability	NDR model (work in progress)
Support to human activities	Scarcity of soil resource	Suitability

Table 1. Ecosystem services. Source: ISPRA, 2018.

It is worth remembering that, in the 1990s, there was a loss of 10 hectares of land per day in the EU solely for the construction of new motorways. In these areas the loss of soil functions is practically total, and also the adjacent areas, generally not sealed, are often severely damaged by contamination due to traffic and road maintenance products. Very often the expansion of inhabited centres corresponds to the construction of buildings in fertile areas of the territory, more subject to natural phenomena such as flooding. For example, the airport of Rome was built in an area characterized by soils of good fertility, or the numerous industrial settlements built with the funds of the “Cassa del Mezzogiorno” in the productive plains of southern Italy

(ISPRA, 2016). The comparison between urbanization and land use capacity classes (Land capability classification) showed that urban expansion has affected areas with high agricultural production potential. Such instruments should become an essential part of urban plans, industrial development plans, etc. with the aim of highlighting the risks of degradation, or ultimate loss, arising from inappropriate uses of the soil resource. Some indicators of ecosystem services have been suggested for the implementation of the new web-GIS LANDSUPPORT, namely the most accredited ones by the ISPRA Report and those of the Research Centre for Soil Consumption (CRCS).

Services	Indicators	Calculation tool
Micro-climate regulation	Difference in the level of cooling between “zero option” and various projects in relation to the presence of weak population groups	n. of inhabitants weighted with intensity of class change
Nature-based reconstruction	Potential reconstruction Recreation Opportunity Spectrum	GIS software ESTIMAP model (Zulian et al., 2018; Zulian et al., 2013)

Table 2. Ecosystem services. Source: Cortinovis and Geneletti, 2018.

Services	Indicators	Calculation tool
Cooling caused by green urban infrastructure	Shadow effect	% area covered by shadow / open space area
	Evaporation - transpiration	ETA

Table 3. Ecosystem services. Source: Zardo, Geneletti, Pérez-Soba, and van Eupen, 2017.

Conclusions

Despite important European policy documents (COM 571, 2011; SWD, 2012) aiming at zero net land consumption by 2050, it seems necessary to introduce the principle that actors causing soil sealing should be obliged to re-establish the original state of the soil before the intervention or, alternatively, to compensate the community for the loss of the resource. Certainly, as many observers argue, to be effective, the fight against soil consumption must be carried out through the tools of urban planning and landscape planning, and this happens very rarely (Artmann, 2014).

Careful and skilful planning, and choose building techniques with limited negative effects, could minimize soil sealing. Spatial planning can involve large areas through the protection of natural zones and agricultural soils, but also by strengthening these areas and creating a green network of connection, in order to increase the resilience level of territories. Spatial planning can affect municipal planning with technical measures related to implementation planning through densification, i.e., building taller buildings, thus entailing limited land use. This must necessarily be combined with the challenge to climate change, where planning must take on a central role, able to guide transformation, especially in urban areas.

Acknowledgements

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A knowledge-driven approach to urban transformations: densification strategy of the central parts of Bergen, Norway

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Abstract: The municipality of Bergen has launched a radical strategy for densification. A total of 50 percent of the need for new housing should be covered within Bergen's central parts. Bergen is the second largest city in Norway and it is known for its intimate relations between a beautiful west coast landscape and, from a Norwegian perspective, a dense urban structure. Much is at stake when introducing a radical program for densification. A report has been prepared that records the area's character and identifies and analyses potential transformation areas. With assistance from Western Norway University of Applied Sciences and consulting firm Asplan Viak, GIS is used as a tool for obtaining operational information and analysis models. The work has been financed by the Ministry of Local Government and Modernisation. Information is provided about what characterises and distinguishes Bergen's central parts. A new analytic GIS-based tool is developed for measuring the spatial attributes that constitute an area's attractiveness. This tool combines the Space-Syntax and Spacescape methods. Eleven major transformation areas are identified and issues such as ownership, possible obstacles to implementation and overall potential for development are analysed. A step-by-step implementation is proposed and recommendations are made which address critical obstacles.

Keywords: densification, transformation, Space Syntax, Spacescape

Introduction

In 1990, the dominating planning paradigm focused on transforming the inner-city public spaces from car-dominated areas to pedestrian-oriented areas. As a starting point, the question was raised: What are the basic characteristics of the cityscape? To answer this, a study was implemented showing the overall and local relationships between the natural landscape, the built-up environment and the public spaces. The method used was handmade black-and-white sketches carried out by skilled architects (Hansteen, 1991). The gained knowledge was important for establishing a successful long-term process of transforming dilapidated public areas into attractive, lively urban places. The municipality of Bergen has received several national and international prizes for this turn-around operation.

Today, almost 30 years later, the challenges are different. In the light of sustainable urban development, the task is to find out where and how to implement profitable and environmentally friendly densification. Since the 1990s, a revolution has taken place within information technology. Instead of handmade sketches in black and white, we have a number of electronic tools at our disposal for analysing complex environmental situations.

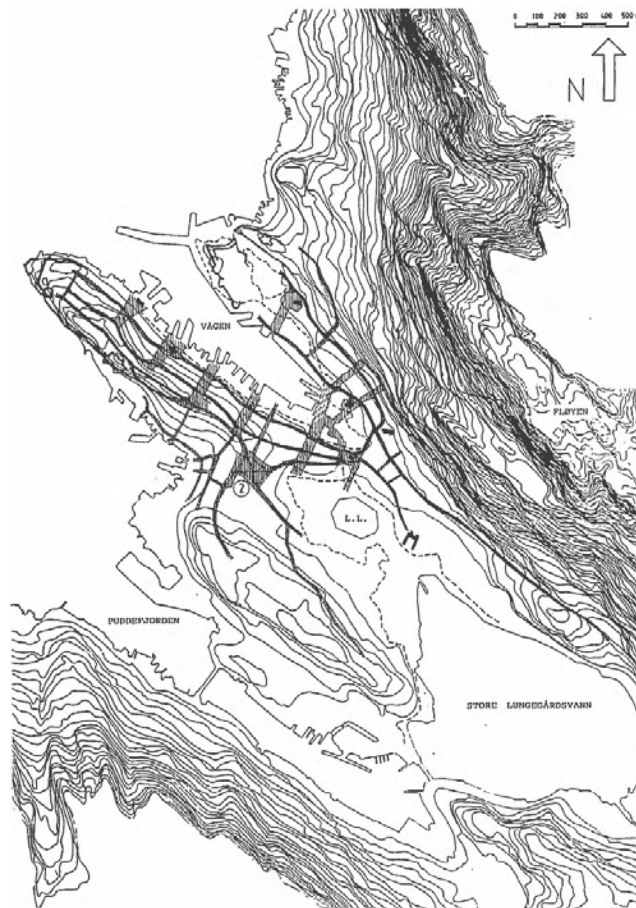


Figure 1 The character of Bergen drawn in 1991. Plan- og bygningsetaten, municipality of Bergen

In Bergen, a number of overall resolutions have been approved in order to enhance the urban environment. The major goals of the earliest resolutions are to reduce greenhouse gas emissions and to stop the growth of private car transportation. The time of urban sprawl is history. The city structure of the future is the compact city, where the inhabitants have short walking distances to their daily activities and public transport hubs. As a result, the city council has ordered an overall and long-term strategy for densification within the central parts of the municipality.

The central parts of Bergen are expected to facilitate half of the new housing stock, which is approximately 10,000 new dwellings until 2030, and another 5,000 later on. This is supposed to take place within that is already the most compact part of Bergen, an area that is already largely filled with different kinds of building structures. It contains protected heritage objects of local, national and international importance. The city's dense structure, resulting from its situation between steep mountains facing the fjords, forms the basis for a special urban atmosphere, which many regard to be Norway's most beautiful city. By introducing a radical vision for densification, much is at stake.

This leads to the necessity of a thorough investigation on urban standards and qualities. Considering these severe challenges, the question was raised: can environmental values be measured, and can geographic information systems as part of a positivistic tradition serve as a reliable tool for analyses and feasibility studies, or are we still better off with hand-drawn maps as part of a hermeneutic tradition?

The Norwegian Ministry of Local Government and Modernisation financed this work. The Ministry has demonstrated particular interest in whether and how the GIS-based Space Syntax and Spacescape methods could be integrated into one common methodology for identifying densification potentials in the study area. A special feature of Space Syntax and Spacescape methods is that they enable correlations between spatial configuration and socio-economic parameters related to city planning. This forms the background for the feasibility study: Densification strategy of the central parts of Bergen.

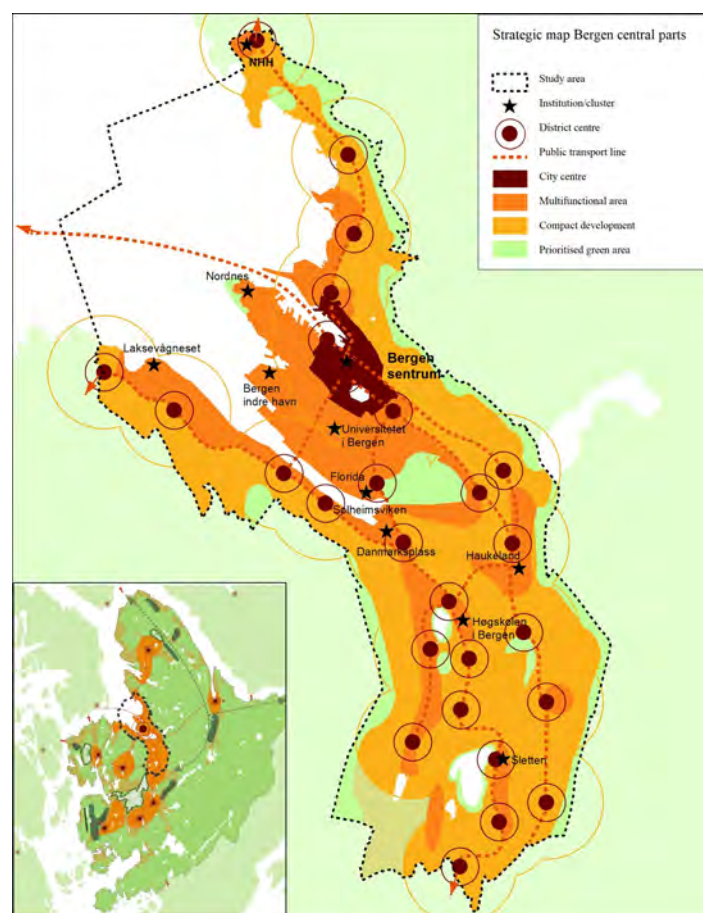


Figure 2 Strategic map for Bergen's central parts containing the city centre core, smaller subcentres, a high-priority network for public transportation, multifunctional areas and other areas prioritising compact urban development. Plan- og bygningsetaten, municipality of Bergen

The authors' contributions

Hans-Jacob Roald has been the project leader within the municipality of Bergen, during the project's constitution and implementation. He worked spare time at the Western University of Applied Sciences and is now full-time associate professor (Dosent) at the university. He was also project leader analysing the cityscape of Bergen in the 1990s. Remco de Koning has contributed to the project with Space Syntax analyses of the area as part of his doctoral research work. Acknowledgement goes to Asplan Viak AS with Trygve Andresen, who has been the project's main external consultant.

Methods

This section sets out the used methods, which are organised in two stages:

- Preliminary studies
- Applicable GIS analyses.

The preliminary studies consists of five parts:

- Clarification / appraisal of the investigation
- Creating a basemap
- Mapping building typologies
- A provisional Spacescape analysis
- A Space Syntax analysis

The applicable GIS analyses are delivering the feasibility results and are organised into four levels:

- Statistics and registrations of population trends
- Mapping individual characteristics
- Designing analyses in the form of overlapping maps
- Advanced numerical analyses of different characteristics

Preliminary studies

Densification was categorised into three different strategic approaches, following Sandkjær Hansen (2015):

- Expansion: expanding the development of the city beyond the municipal plan boundaries, i.e. towards the waterfront and the green areas in and around the city;
- Transformation: changing the structure and function within the built areas;
- Intensification: achieving higher utilisation within existing structures.

Our area of investigation is located in a valley of about 7 kilometres in length and 2 kilometres across, between steep mountainsides and the fjord. All major and important communication lines are located at the lower parts of the valley. It proved difficult to establish satisfactory access between the overall public transport network and suitable areas for city expansion on the mountainsides. Regarding expansion towards the waterfront, the most relevant areas were already in planning processes categorised as expansion. Possibilities for intensification are addressed in a later stage. The task for this study was therefore to focus on identifying and analysing possible larger transformation areas.

Creating a basemap

A basemap was created from 160 basic statistic units (called *grunnkrets*, see Figure 3). Each of these units can refer to and convey data from the National Statistics Agency and to planning and property information with the municipality of Bergen as source. By designing maps based on these units, it became possible to overlap and convert information and thus gain new knowledge. One challenge was

to assess what kind of information is relevant for co-relating with a view to gain relevant new knowledge. The second challenge related to the amount of information that can be shown in one map. A map that contains too much information can lose its meaning.

A variety of building customs

The project integrated and refined a map produced as part of a master thesis at the Norwegian University of Science and Technology (NTNU) (Lindau, 2015). The map shows that our area contains a conglomerate of building traditions. This diversity is a value in itself. The map forms a good basis for discussions addressing all new building projects, how they will interact with the established surroundings.

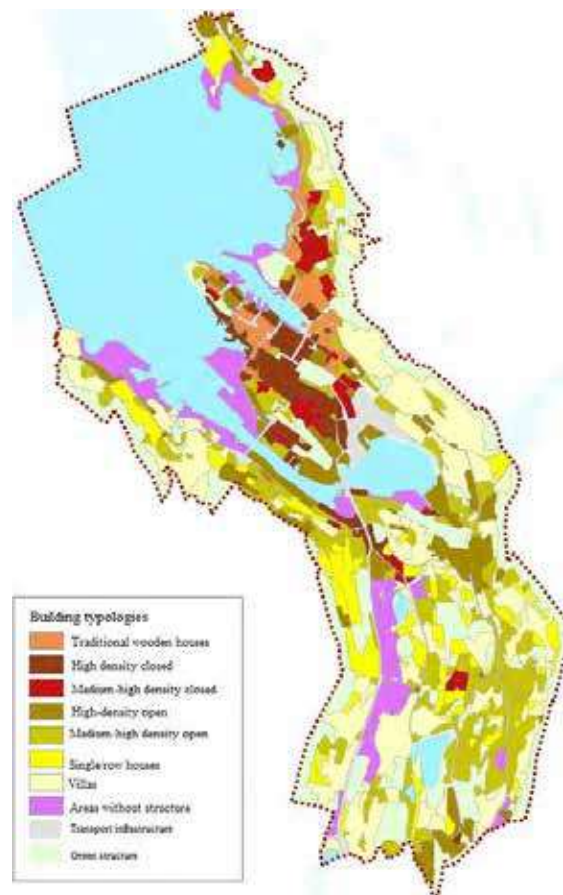


Figure 3 Base map showing building typologies

Spacescape

The consulting firm Asplan Viak conducted a feasibility study of the area based on the Spacescape methodology. Spacescape was developed by the Royal Institute of Technology (KTH) in collaboration with the Stockholm-based company Spacescape (2013). Spacescape operates with what is called the densification matrix (see Figure 4). The densification matrix is a model for carrying out comprehensive and holistic analyses based on a number of issues within the main themes *Driving forces* and *Obstacles*. In our case, a study done according to the densification circle, appeared not to be operational in the context of Bergen. This does not suggest that the model is wrong in itself. The

Swedish examples using the densification circle have been used on far larger areas than ours in a different geographical context.

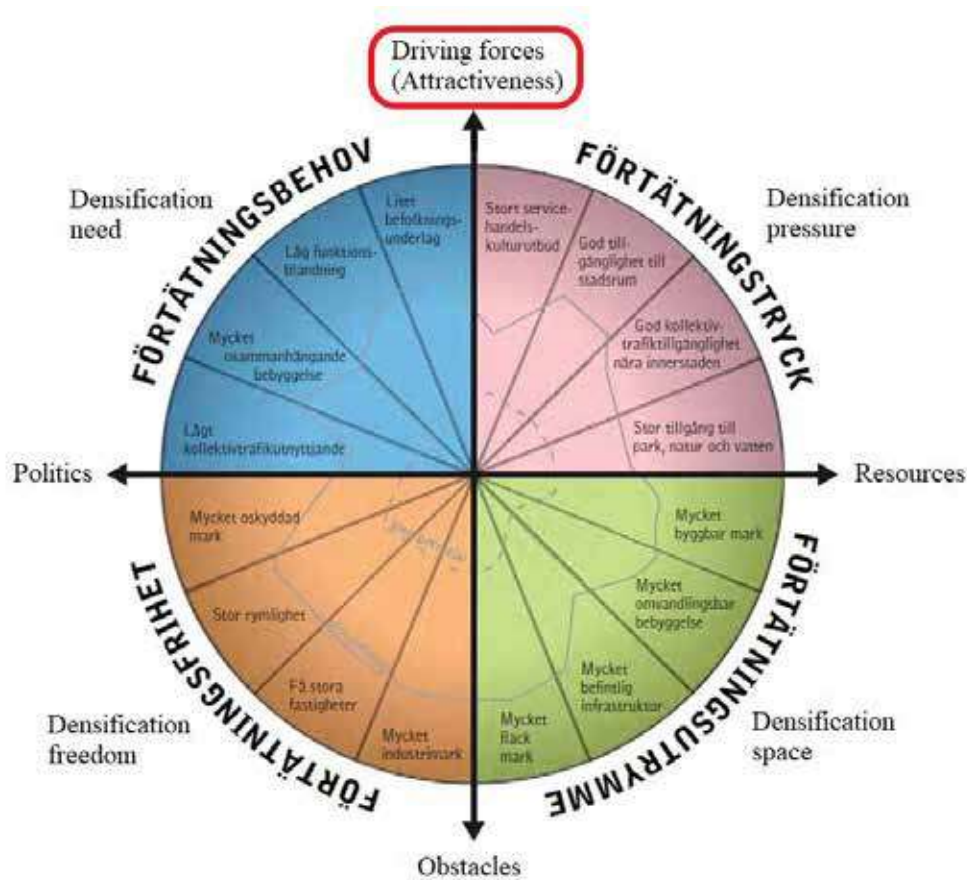


Figure 4 Densification matrix by Spacescape (2013)

Another experience is principal. Is it possible, or even desirable, to implement holistic comprehensive analyses for a city? Our statement was that no, one can never commit a city to any kind of formula once and for all. As a result, we chose to pick elements from one half of the circle, which are the themes identified as *Driving forces*. We decided the name *Attractiveness* to be more appropriate.

Space Syntax

A Space Syntax analysis was carried out. The Space Syntax method was developed by Bill Hillier and his colleagues at London's Global University. The methodology analyses the spatial conditions of the streets and road network at different scale levels, based on the total number of directional changes for each street segment relative to all other streets. It is a form of accessibility analysis. The methodology has been tested in different parts of the world. Streets with high spatial integration values tend to have the highest amount of people using them as a destination or as part of a shortest route to their destination. This is also known as the theory of natural movement (Hillier, 1998). It is also an indicator for the attractiveness for economic activities, and a mutually reinforcing process called the natural movement economic process (Hillier *et al.*, 1993). Moreover, highly integrated areas often have a high degree of functional mix and building density. The latter finding has been subject to theory building in recent years, and given the title the theory of the natural urban transformation process (Ye and van Nes, 2014).

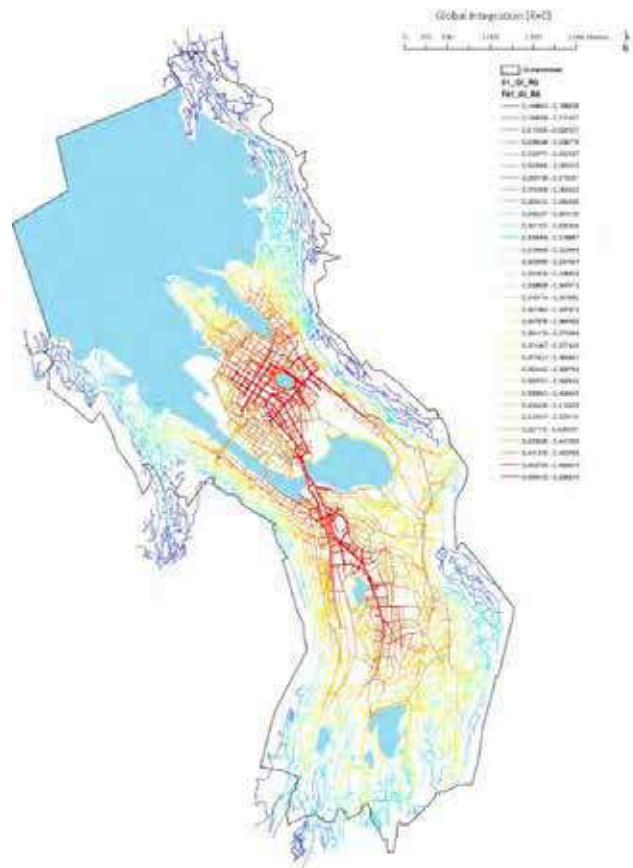


Figure 5 Space Syntax analysis of the study area – Global Integration ($R=n$)

Results

First, population trends, age distribution and relocation were examined. First, the period 1980 – 2000 was addressed. The registrations show a decline in the population of 7 000 residents across the area. The geographical dispersal of the decline was surprising. It was during this period that the Government and the municipality invested large resources in order to upgrading renewal of the city centre with award-winning projects, as a result. This did not result in immediate population growth. When considering the period 2000 - 2017, the picture is completely different with a rise of 15 000 residents (Bergen Kommune Plan- og bygningsetaten, 2018). Here too, the trend took place well distributed throughout the area. An explanation might be that the rise of housing standards that took place in the centre core in the 1980s and 1990s resulted in an increasing positive image of urban living in general. In addition, a broad range of radical environmental measures were carried out from the year 2000 onwards. A number of institutions for higher education were either reinforced or established. All these efforts might have laid a broad foundation for a rise of residents throughout the area.

Who are these new inhabitants? An answer might be found in Figure 6 showing the population profile of 2017, comparing the population profile within the study area with the entire municipality of Bergen. The differences are significant. For the study area, the share of the population between the ages of 1 and 20 is far lower than the average, while the share of the population between 20 and 40 years is far higher. Where do they come from?

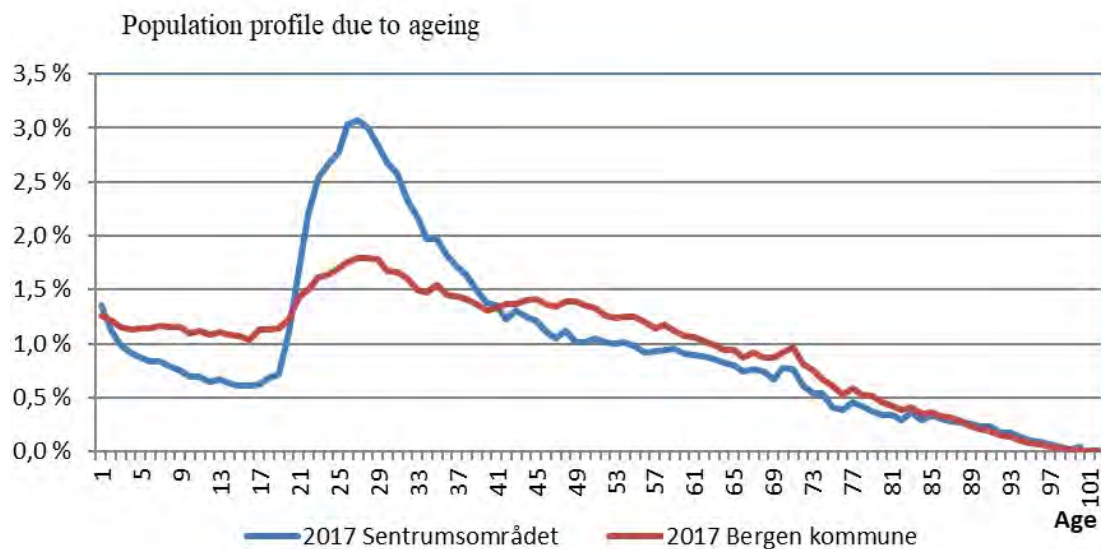


Figure 6 Population profile due to aging for the study area (blue) and Bergen municipality (red)

A survey of migration to the municipality again presents a clear picture. The municipality of Bergen consists of eight districts. Two of these districts are situated within the study area. The vast majority of people moving to the municipality prefer to live in these two districts. For the other six, the changes are marginal.

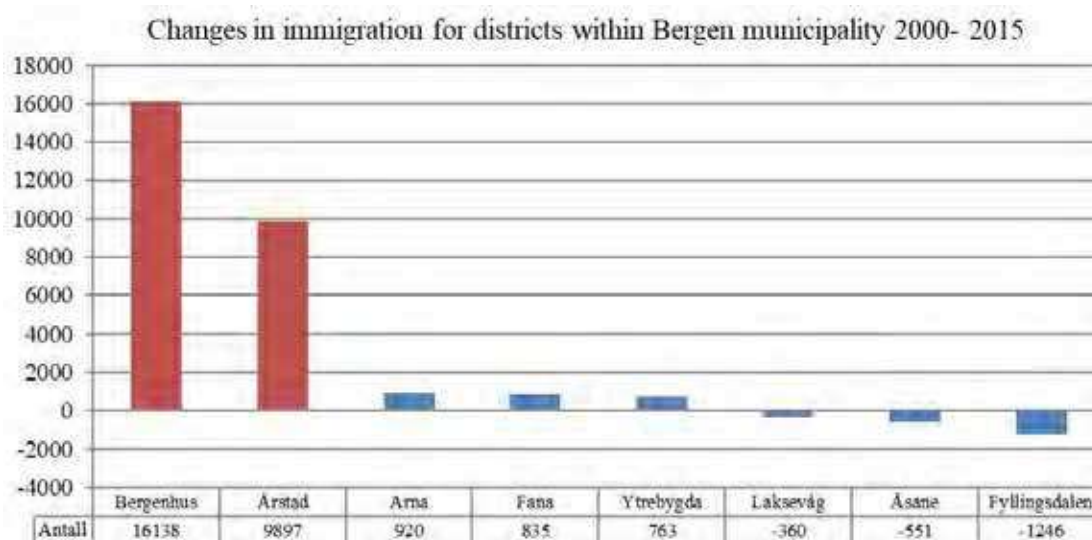


Figure 7 Changes in immigration for districts within Bergen municipality 2000-2015

Mapping single characteristics

A number of thematic registrations have been conducted. Knowledge related to issues such as density of working places, housing, service provision and more, has been produced and presented on maps. Information related to current planning strategies, production of plans, communications has been produced and presented.

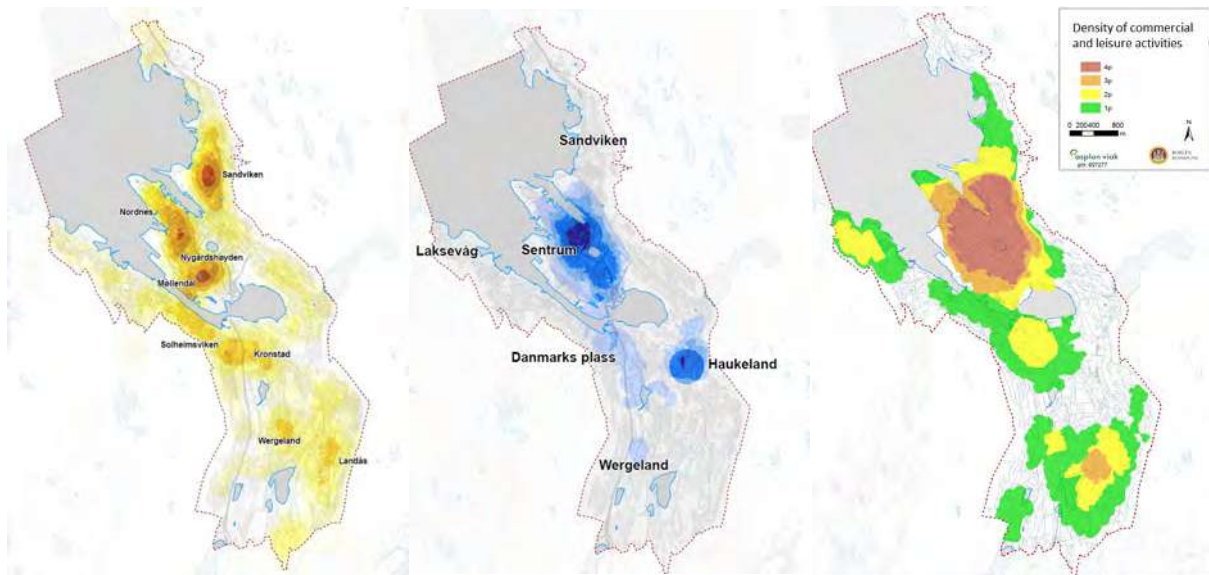


Figure 8a housing density (left), 8b workplace density (middle), 8c density of amenities (right)

Designing analyses

The easiest way to conduct map-based analyses is to add two or more maps to each other. An example is an analysis in order to define the compact city. Four topical maps were added to each other. The first three dealt with functionality and density. Figure 8a shows housing density, Figure 8b density of working activities, and Figure 8c urban activities such as trade, public and private service, culture and education.

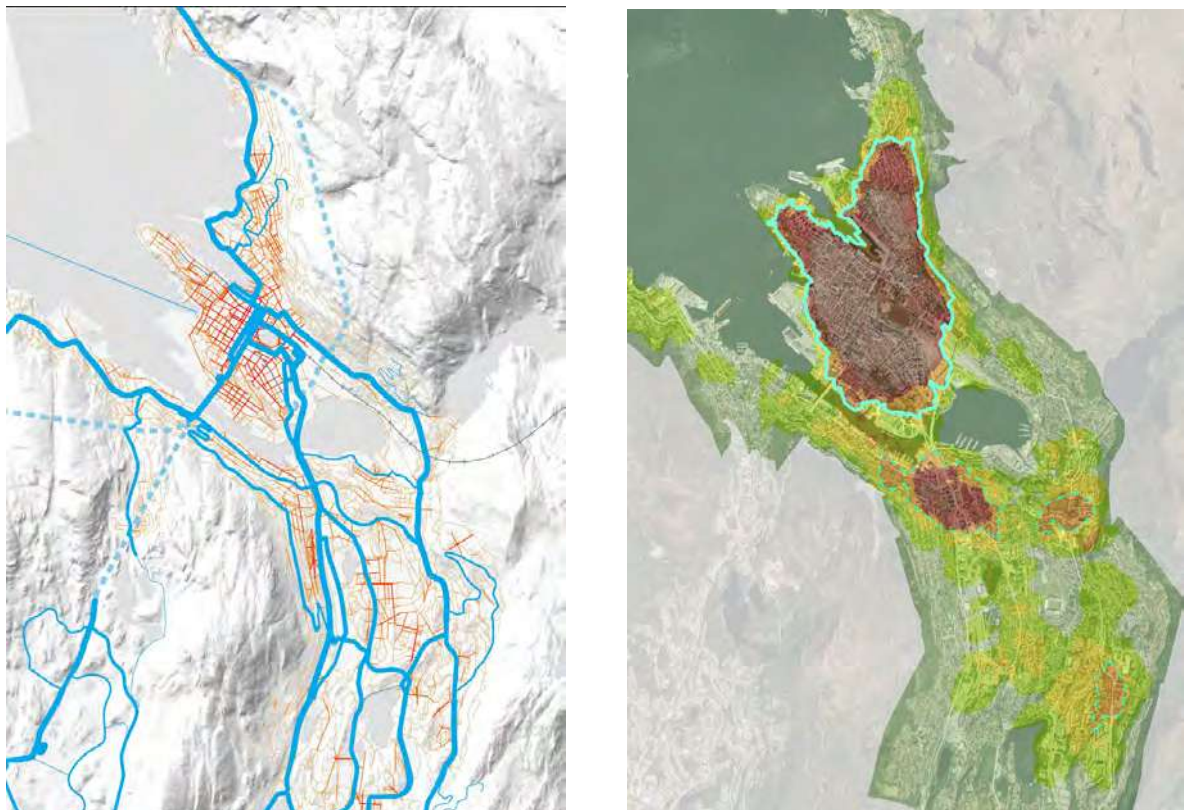


Figure 9a (left): high-frequency public transport (blue) and local integration ($R=3$);
Figure 9b (right): proximity to multifunctional areas

Figure 9a shows the degree of accessibility to high-frequency public transport combined with the Space Syntax analysis. Our hypothesis is that the combination of density of functions and good accessibility produces a picture of the compact city (Figure 9b), in this case the compact city of Bergen, and the picture is quite clear. The city centre is undisputed the most compact part within our area.

Analysing attractiveness using numerical analyses

To analyse the attractiveness of Bergen, eight variables were analysed. The choice of these variables was a result of discretionary assessment. The Spacescape method operates with seven variables. The difference is that contrary to Bergen, sun conditions were deemed irrelevant in Stockholm. Furthermore, a regular street structure was considered important for Stockholm, whilst Bergen has a more pluralistic urban structure. In addition, the population's socio-economic status and living conditions were considered relevant for Bergen, and not for Stockholm.

The following topics were mapped and weighted.

- | | | |
|----|---|--------------------------------------|
| 1. | Proximity to the city centre core | Very important 0-4 points (17%) |
| 2. | Proximity to urban businesses | Very important 0-4 points (17%) |
| 3. | Proximity to public transportation hub | Important 0-3 points (13%) |
| 4. | Exposure to sunlight | Important 0-3 points (13%) |
| 5. | Socio-economic living conditions | Important 0-3 points (13%) |
| 6. | Proximity to a waterfront | Important 0-2 points (13%) |
| 7. | Access to a park | Moderately important 0-2 points (9%) |
| 8. | Proximity to an integrated street structure | Moderately important 0-2 points (9%) |

The summary map of Figure 10 shows great variations. The main message is that the centre and its immediate surroundings have high and above average attractiveness. The other areas in orange and yellow have medium attractiveness, with the exception of the areas that lie to the west, which are below average attractiveness. There is a clear similarity between the most attractive areas and the map showing the compactness of Bergen; the more compact, the more attractive city. Furthermore, the city has a clear, more attractive “east end” and a less attractive “west end”. Especially in winter, the east side has far better sun exposure than the neighbourhoods on the shaded slopes to the west, something which is reflected in the areas’ socio-economic performance.

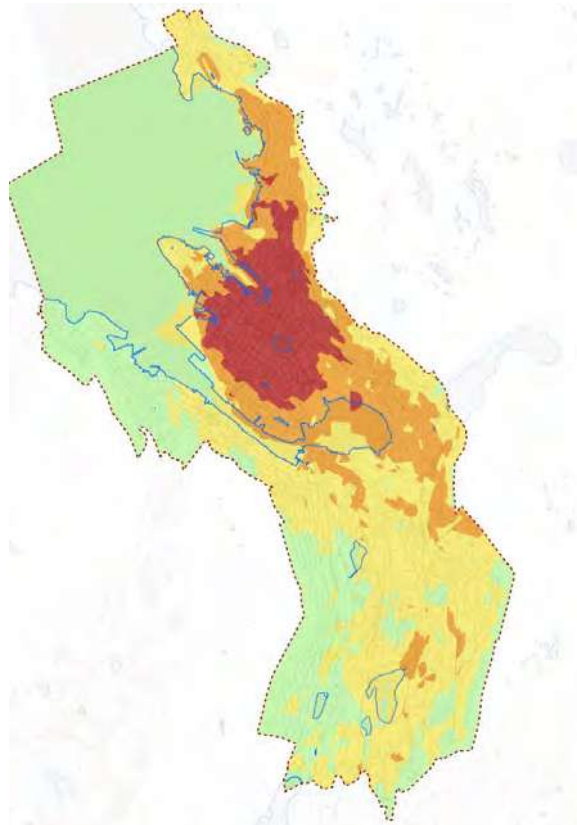


Figure 10 Summary map attractiveness

Findings

Eleven major transformation/development areas were identified. These were analysed according to attractiveness, ongoing planning activities, ownership, potential obstructions related to implementation and capacity. The total capacity for the eleven development areas was summed up. The potential is considerable with room for realising approximately 10.000 new dwellings and 1.000.000 m² public programme. Based on a discretionary assessment, a division was made into 50% dwellings and 50% urban functions. This could increase the total housing stock with as much as 25%. This will in turn trigger a need for several new schools, kindergartens and nursing homes.

When it comes to implementation, all densification projects are difficult to implement. Moreover, some areas are faced with critical factors such as unclear ownerships or underlying diffuse agreements. Such areas are considered immature regarding starting a planning process, or even programming. Most of the critical factors are related to factors outside the power and authority of the municipality.

Two interesting overlapping maps were designed. The first combines the eleven development areas with land ownership (Figure 11a). For some development areas, the public sector is the dominating owner. As for others, the private sector is the dominating owner. When it comes to planning and implementation, the strategy dealing with privately owned land is quite demanding regarding fulfilling public goals, in this case cross-sectoral goals specified by the municipality. A challenge the municipality has to face is that the central government has organised its activities into a large number of companies acting as if they are private and with economic income as a prime objective.

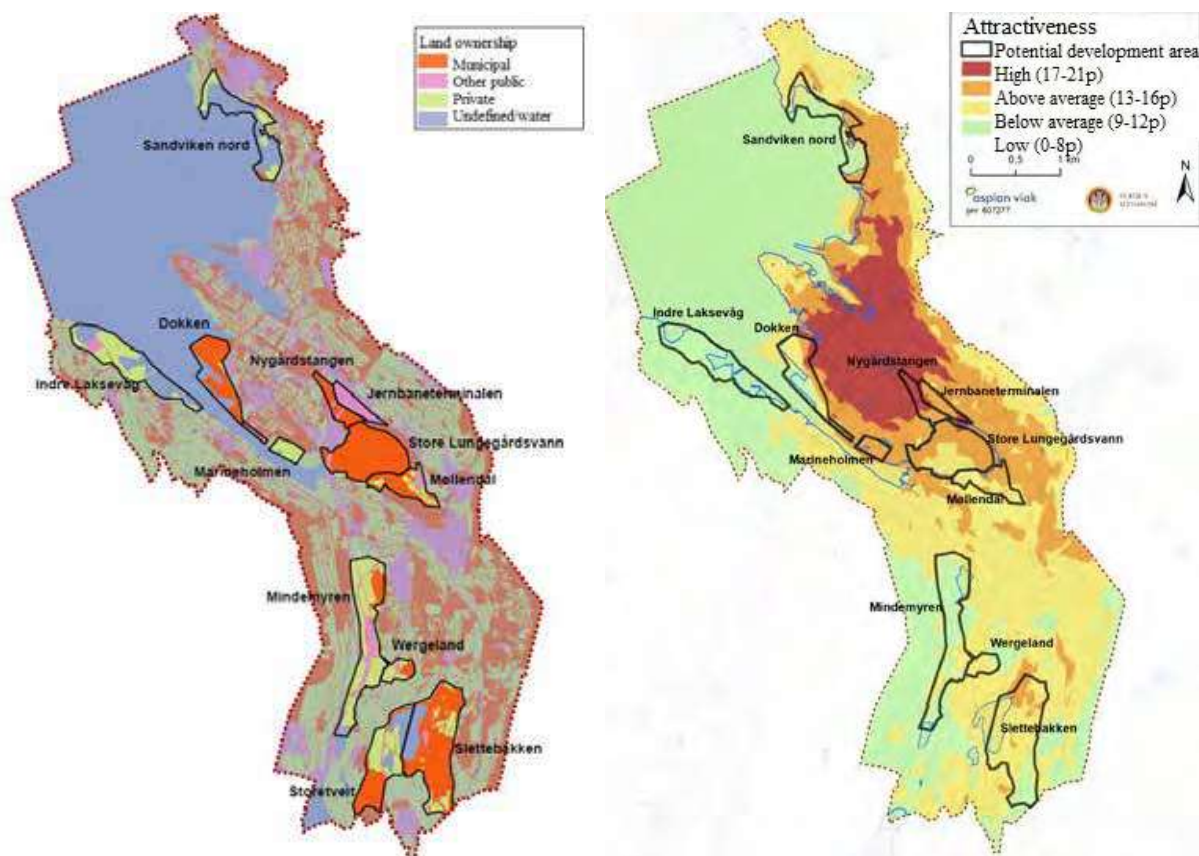


Figure 11 development areas overlapped on a: land ownership (left) and b: summary map attractiveness (right)

In the second map (Figure 11b), the eleven development areas are added to the summarising map of the factors that were determined to contribute to attractiveness. This map demonstrates a great variety of degrees of attractiveness within the different development areas.

Conclusions

The densification strategy study has been interrelated as part of the study program at the Western Norway University of Applied Sciences, both the application of urban analysis in itself and the development of GIS based methods. The relevance of the content of the urban analyses is underlined by the facts that they are a result of a request from the City council and The Norwegian Ministry of Local Governmental and Modernisation. The methods that were used serve as examples on how to use and compose GIS analyses for a given area. Advanced numerical analyses are used to teach and encourage students to design complex analyses that address divergent challenges and use and investigate different sorts of parameters.

The study presented in this paper has delivered on the requests from the central governments. A methodology for investigating potential densification areas in the city of Bergen was put forward, and a new method for analysing attractiveness was produced in which Space Syntax and Spacescape are integrated. The launched densification strategy offers an opportunity for politicians and citizens within the municipality to discuss expectations, preferences and priorities, and subsequently building programmes for each of the development areas seen in a long-term and holistic perspective.

Considering the compact city, attention should be paid to areas outside the compact centre: specifically the three semi-compact areas, the public transportation hubs, and the low-density neighbourhoods in general.

The first recommendation that is made is for the local government to concentrate its attention and efforts on the eleven major development areas that were identified. This is where the potential for development and, in the long term, the benefits will be greatest. This applies to the use of administrative competence and capacity as well as the effect of planning efforts. Second, a systematic implementation is recommended. A timetable for implementation was drafted. The areas that were confronted with critical factors concerning implementation were placed at the end of the time table. The time horizon for implementation is recommended to be extended from 2030 to 2050. Setting a hard target of densifying the compact urban valley by building 10.000 new dwellings, and thus increasing the number of residences in the Bergen valley with 25 per cent within 12 years, could have a negative impact on the standards of quality that are desired. Already, examples of densification projects that do not hold desirable qualitative standards have been seen. Furthermore, a long-term strategy ought to be rooted in coordinated, long-term public budgets. In Norway, many planning activities are initiated by the private sector, leading to a number of examples where the need for social infrastructure has been overlooked. It is evident that if the initial densification projects do not pursue quality and create enthusiasm, the whole linkage between sustainability and densification can fall.

The map showing great varieties of attractiveness within the eleven development areas (Figure 11b) sends an important message to the involved stakeholders, both investors and planning authorities. By deconstructing the attractiveness map, we can uncover which factors score high or low and thereby which factors should be refined or strengthened in order to raise the attractiveness of the area. While topological aspects such as sun exposure and view are difficult to alter, others, such as accessibility, diversity, and access to amenities, public transport and green areas can be improved. For areas with lower attractiveness, these factors deserve extra attention, creative ideas and higher economic efforts.

This raises a major challenge. One basic prerequisite for urban transformation in the Norwegian planning context is that as a rule, developers, mostly private partners, are obliged to cover the expenses on necessary new infrastructure. This is enshrined in a so-called predictability decision, a decision that gives the municipality a mandate to demand financial contributions from the developers through a formalised economic development deal. Here, one is confronted with a dilemma. For the most attractive areas, it can be expected that the developer is willing to accept relatively large investments in new infrastructure. Attractive areas will be even more attractive. For the areas with low attractiveness, the situation is different. It can be expected that the opportunities for profit are lower and, as a result, the opportunities for greater joint contributions to lift the quality of the public domain could be lower. This can result in a negative spiral where the areas that require the most efforts and resources, will receive the least. This finding can contribute to the debate on relations between transformation, the predictability of decisions and living conditions.

Previously, the central government had a policy and a rather high budget for improving living conditions. Grants for public investment in socio-economic vulnerable areas were considerable. Now, the central governments have almost abdicated their earlier obligations and left the responsibility for planning and financing almost entirely to the municipalities and the local private investors. This article invites to a debate about on the state's almost inadequate housing policy.

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São Paulo City GIS Platform: GeoSampa

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Abstract: Information Technologies are changing paradigms bringing new challenges to Public Administration and its structures need to be renewed in all aspects, not only in technological and material resources, but also in the cultural models and processes in public government. Ethics in the manipulation and processing public data is necessary in the federal, regional and municipal levels. However, it is within the local power sphere where the information and construction of registries occurs in a more sensitive way, due to the direct contact with citizen and society in general. Also, the Local Power is the federative body responsible for the main urban problems of Brazilian cities, accountable specially for Urban Public Policy. Within this perspective, the article presents as object of analysis the recent experience of the city of São Paulo through the city GIS called “GeoSampa”. This platform is part of the Municipal Information System (article 352 of the 2014 Master Plan) and it is a structural element of the Local Urban Public Policy. The GeoSampa initiative has shown to be innovative and resulted in a positive impact for the city and for the local government. But despite the achievements, it is necessary to evaluate the challenges that GeoSampa brings to the surface.

Keywords: GeoSampa, Planning Support Systems, (Big) Spatial Data Sources, Public Database, Public Administration.

Introduction

The objective of this article is to analyze the experience of the GeoSampa, an urban webmap platform of São Paulo city, also part of the Municipal Information System (article 352 of the PDE 2014) and a structural element of the Urban Public Policy of the Municipality of São Paulo. The objective is to understand the role of GeoSampa in its two fronts of action: as an instrument of transparency policy and free access to public data and as a binding tool for decision making, in *lato sensu*, in territorial policies. We will seek to understand the role of GeoSampa within the institutional structure of the city of São Paulo as public policy, the scope of the instrument and its challenges.

Information Technologies have brought new paradigms and challenges to Public Administration in all aspects, not only in technological and material resources, but also in the cultural models and processes in public government. It is common to encounter lack of integration and inability to share information between departments in Local Public Administrations. In case of the city of São Paulo, the systems of several municipal bodies have been developed over the years in an individualized way and according to the institutional demand. For example, some of the data base often populated without any

institution of a standard and without normative binding that determines its legitimacy. This scenario resulted in a non-standard or redundant information, not reliable for corporate use.

On the other hand, structured and strategic data bases are often susceptible to restriction culture, as they are considered classified data. In general, government departments which have some structure to maintain a organized data base, often do not allow the usage of the data outside of their department. In the city of São Paulo these situations were very common, once public servants do not have free data access culture and practices. Also, they were afraid to be held accountable in case of wrong or mistaken information. Although such information should not be opened to public use in general, specific groups of power end up having access to that information in order to guide their own interests.

Overcoming this scenario, the city of São Paulo built a strong integration of cadastral data of its different departments and implemented a transparency policy through the construction of the city GIS, called "GeoSampa". This platform was launched in december of 2015 and is known to be the main portal of detailed and georeferenced information about the city of São Paulo. The publication of the data is organized by thematic layers that can be linked to the departments and bodies responsible for that specific data.

The intensive usage of this webmap enlarged the access to urban and territorial information, preserving the confidentiality of sensitive attributes to citizen protection. We will try to understand the role of Geosampa within the institutional structure of the city of São Paulo as an essential element of Public Policy, the scope of the instrument and its challenges.

Urban Information and data in São Paulo

GeoSampa is managed by the Production and Information Analysis Coordination (GEOINFO), a department under the responsibility of the Municipal Department of Urban Development. In general terms, GEOINFO is a traditional department within the structure of the city of São Paulo, which originates in the former General Coordination of Planning (COGEP) instituted in the early 1970s and was directly linked to the mayor's office. With the development and improvement of governance and public management, the COGEP was dissolved during the 1980s and was divided into three departments that are responsible for urban planning in the city: the Department of Urbanism (DEURB), that monitors in macro-level the application of the city urban direction determined in the Master Plan; the Land Use Department (DEUSO), which has as its primary responsibility the control of land use and occupation; and the Information Department (DEINFO), currently GEOINFO, which was responsible for consolidating the statistical and spatial information and analysis to support the development and improvement of the urban policy of the city of São Paulo.

The COGEP detachment to the mayor's office demonstrates institutional relaxation in terms of territorial policies: if COGEP was previously directly linked to the highest decision-making and directing body of the city, from the 1980s it became only a secretary. It demonstrates that urban and territorial policy no longer forms part of a strategic vision of government and becomes just a government agenda. DEINFO then becomes part of an Urban Planning Secretariat (now Urban Development Secretariat) and no longer a strategic support body to the city highest power. We will

see later that this current institutional structure can be a barrier to the evolution of GeoSampa as an effective tool for decision making in urban and territorial policies.

The 1990s were marked mainly by the resumption of the construction of a democratic process in Brazil as a whole, as well as strengthening the municipal power over federal and state power allowed by the Federal Constitution of 1988. In this sense, if before the main political guidelines and strategic decision-making processes were still centralized at the federal level, since 1988, the institutional responsibility, especially in what concerns urban issues, is linked to the Municipalities. This strengthens the demand for the Municipality to have total control of its territory and increases the pressure over the municipality to respond urban problems more quickly. In addition to several other factors, the city of São Paulo, through Decree nº 33.532/93, creates the Geographic Information System for the Municipality of São Paulo (GIS-SP), with the purpose of start the work of building a unique information system integrating the various systems and databases dispersed throughout the institutional structure of the city.

Despite the creation of a GIS by legal determination of a decree, the activities of integration and systematization proved to be a very arduous task, since the work culture of the different department were unlike and conflicting. In addition, there was no general understanding of the importance of standardized, effective and organized data collection. Also, the integration of system sometimes was not really a welcoming policy inside technical departments, once it would demand even minor modification in the workflow. Thus, the initiatives for the implantation of the GIS-SP, although important, were very timid and without great advances during the decade of 1990.

In the early 2000s, one of the main products of this period was presented to the city hall technical departments: the implementation of an internal digital map to the city's network called "Geo.SP" (Figure 1), in which the official fiscal information and hand-written documents of public lands could be verified. Also, the historic orthophotos were available in the platform. This tool was for internal use to assist the analysis and answers of the technical level documents within the administrative processes.

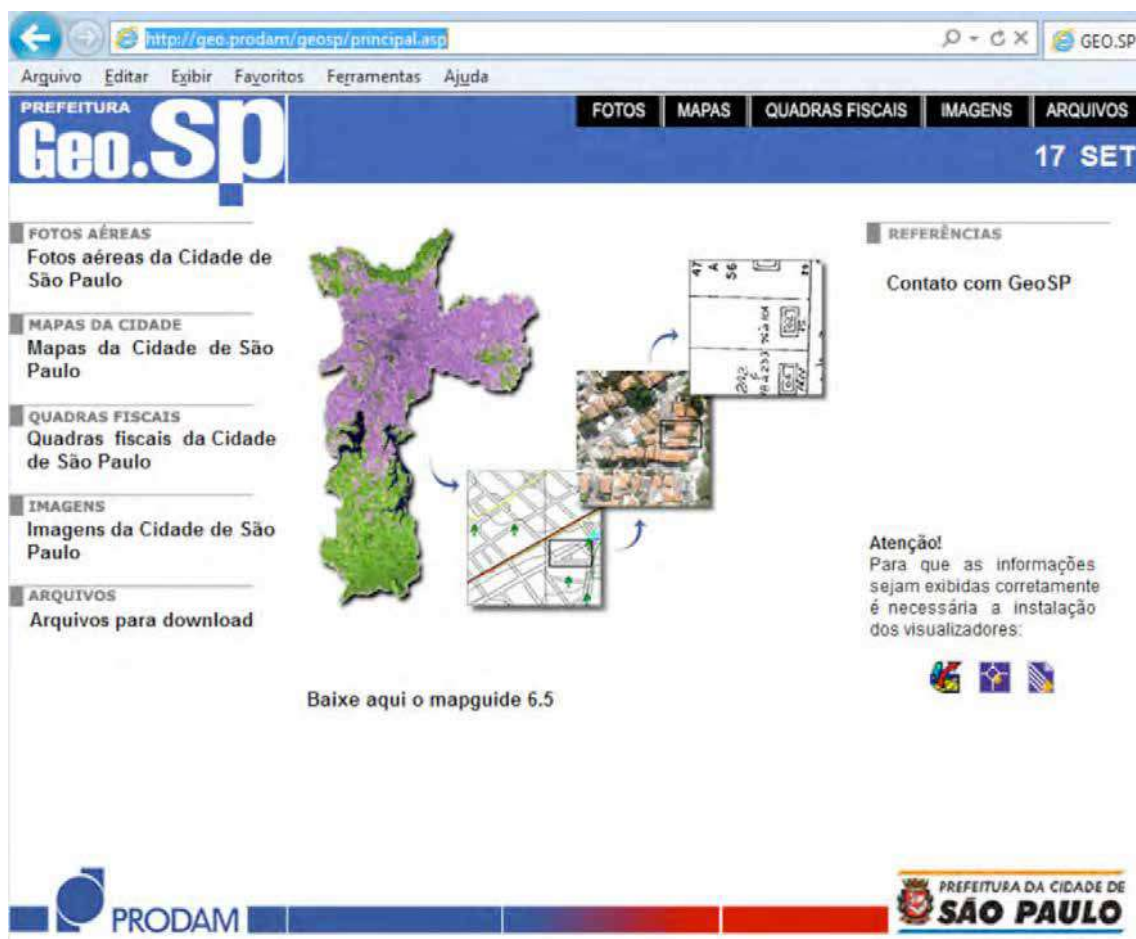


Figure 1: Geo.SP platform – digital map os São Paulo in the early 2000's.

Source:https://mundogeoconnect.com/2014/arquivos/palestras/8_mai_b-andrea-croso-weick.pdf

In 2007, the Digital City Map (MDC)(Figure 2) was also developed and made available internally. Based on the flight survey carried out through 2004 to 2005, this map is an evolution to Geo.SP since it brings the possibility of layering the different urban information, making it one of the main working tools for the technical analysis of doubts related to the space and territory of the city (WEICK, 2014). The blocks and lots (parcels) of cities were returned on the administrative base map, taking an important step towards the future composition of GeoSampa. Until then the city had never had the vectorization of the layer of parcels, main key as a space unit for the integration with other registers and applications of public policies.



Figure 2: Digital City Map (MDC) launched in 2007.

Source: <http://www.cobreap.com.br/2013/trabalhos-aprovados/2904.pdf>

The two experiences reported above demonstrate the care that these data were treated by being made available only internally to the city hall for exclusive resource for consultation and analysis for lower levels of decision-making, which we will call in this article of 'technical decision-making'. It should be noted that the data were available for consultation only, and raw data were not available for free handling. Moreover, although they were not characterized as classified information, their disclosure was refused by the information agencies.

GeoSampa and Urban Data

Starting in 2013, the GIS-SP working group is strengthened and building a truly corporate tool becomes a government goal. Thereby, with the necessary political support to acquire financial,

material and human resources, GeoSampa (Figure 3) is developed not only for internal consultations, but for the citizen in general reversing the logic adopted until then in which the data and the information of the city were being preserved under the discourse of a supposed secrecy.



Figure 3: GeoSampa *internet* platform.

Source: geosampa.prefeitura.sp.gov.br

It is important to emphasize that public data are extremely important for the configuration of a democratic city. However, it is necessary to evaluate the border between free access to information and citizen data protection. This is a subject that we do not intend to discuss in this article, but its understanding and delimitation is important to avoid the mining and transformation of the public data into a merchandise.

Together with the portal construction activities, GEOINFO were carried out to integrate the various technical teams that work with data and information in an attempt to verify an effective information policy. This group worked on several work fronts, such as verifying the existence of a repeatable database with the same content, unifying those datas and finally validating the information with the competent information body. Another important work was the construction of an understanding of what is a corporate information and the awareness that the transparency and provision of data for public access is also a duty of the server. Despite the efforts, cultural barriers and accountability of the human error of the public servant that eventually public registries may have, still inhibits the realization of a totally open system. As improvements, we have the internal awareness that information can be covered with secrecy at the same time that part of it can be made available to the public, which allowed the availability of GeoSampa.

Internally to the municipality, there was a migration in 2013 of the use of the MDC for GeoSampa in a natural and spontaneous way, since GeoSampa has more visual and easy communication resources that interact better with the final user. To this module, the technicians of the city call *GeoSampa intranet*. This versions contains a lot more layers than the free opened GeoSampa, since more and more departments started to engage on sharing their information in the platform, with the condition of

being released internally only. It is certain that this great hub of information help public servant to better analyze problems and make minor decisions on their daily work. Therefore, among other uses, GeoSampa intranet became an enhanced tool to help with the 'technical decision-making' process.

After the tests and improvements, in 2015 GeoSampa is made available to the public with free access. We will refer to this module as *GeoSampa internet*. We must remember that for the citizen this is the first urban data platform that has been made available, which is why it is so important as a landmark in the policy of access to information. Another important aspect of GeoSampa internet is that the information is available in many different ways, not only for consultation, but also through open source data allowing the final user to manipulate and use them freely. Certainly, it is an important experience if we compare with other cities in national scale. GeoSampa internet had helped not only citizens to access informations of a complex zoning law for instance, but also, and specially, the real estate agents and several research centers. It means that to handle all GeoSampa internet potential, the final user has to have a previous knowledge of map language, for example. It is true that in certain level, a map already is a technical basis language, but as a challenge to complete better transparency policy, GeoSampa internet needs to improve better communication aspect to reach more out democratically.

As we can verify, GeoSampa allowed databases and informations previously dispersed within the different departments to be organized, treated and made available to free access. Moreover, it allowed the policy of transparency of information reach another level of performance and responsibility acknowledgement by the city hall. However, it is important to verify the potentialities and the challenge that the current scenario proposes for the instrument.

GeoSampa as instrument of Urban Policy

GeoSampa as verified embodied the responsibility of being an essential element in the data transparency policy. If before, Geo.SP and MDC, created mainly to support the interests of tax by Treasury Secretary, were used only for minor decision-making, GeoSampa, besides allowing an improvement in the decision-making instruments by the technical team, made the information access policy of the city of São Paulo reached another level. However, we must discuss the real potential of an integrated system such as GeoSampa in the construction of a territorial public policy, its role and the possible impacts.

Article 352 of the Master Plan establishes the Municipal Information System, which was later regulated by Decree nº 57.770/17. By reading both legal texts it is understood that GeoSampa is not only a GIS, but also a urban planning system to help higher decision-making levels to design better plans and policies. In this sense, it seems that GeoSampa as currently dictated does not yet play a binding role for decision making at governance and strategic levels, which in this article we will call 'government decision-making'.

In order to reach this level of impact, it is necessary to analyze the institutional structures of the city hall. Recapitulating, the body responsible for the management of GeoSampa is GEOINFO, a department linked to the Secretariat of Urban Development. In addition to the technical management of the platform, GEOINFO has had as its function to carry out the various integrations of the teams,

also aligning concepts and understandings about what is ‘data’ and what is ‘information’ within the city of São Paulo. However, we understand that there are limitations to its performance since it does not have any power to regulate broadly over other secretariats of the city hall. In this sense, the department centrally linked directly to a higher decision-making over all secretariat, as was COGEP previously, seems to be a better fit structure for GeoSampa to evolve as an effective tool in strategic decision making. It is worth mentioning that GeoSampa contains information about the territory in a broad way and knowledge of the territory is paramount for any public policy, not just urban development policy. GeoSampa would be than a strategic tool at the service of high levels of decision-making, not just decisions related to urban development. However, centralizing the performance and management of GeoSampa to the mayor's office, for instance, also does not seem to be an optimal solution, once the data transparency policy, more than simplify data access, also includes the *bona fide* of the information.

Regardless of the solution to be adopted, it is important to bring freedom to the managing body to regulate the integration of the information of several secretariats without bureaucratic ties so that they can break traditional cultural barriers like those that tend to treat all the information as confidential and that duplicates databases for not trusting other internal departments.

Final Conclusions

The intent of this article was to discuss the potentialities and challenges that current scenario brings to GeoSampa. Throughout this paper we verified the changes of the role of GIS in the city of São Paulo, since the evolution from an internal tool for ‘technical decision-making’ to become a reference on transparency policy. Although this development there is an public interest, provided by law, to use GeoSampa as a ‘governance decision-making’ tool. To achieve this level of performance this paper brought suggestions that may help improve GeoSampa as a governance tool bringing the managing body in a strategic position allowing it to centralize the regulation of how public data may be used to support ‘governance decision-making’. This would bring more transparency on the reasons and arguments adopted in any territorial public policy.

Concluding, for this new phase of evolution and growth of the GIS application in the city of São Paulo, to really go beyond the scope of a ‘technical decision-making’ tool to a ‘governance decision-making’ tool, it is fundamental to consolidate a strategic vision of the its use, applied from the transversality between databases, now facilitated by many mechanisms of the I.T., giving continuity to the updating, crossing and availability of its datasets.

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Exploring the relationship between urban vitality and the distribution of amenity typologies

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Abstract: The availability of large datasets containing spatiotemporal information about human mobility in cities can reveal useful insights about how people use urban space across different times, and be employed to improve urban qualities. Urban vitality represents a critical quality, strictly related to the continuity of the presence of people in places. Vitality may be significantly driven by the types of amenities distributed in the city. This work explores the quantitative relationship between urban vitality and the variety of amenities in London, employing datasets sourced from smart cards, social media and activity location. Vitality is calculated as the temporal variation of patterns in the presence of people in a place. It is compared with the amenity typologies located in such place, combined through a clustering analysis of the spatial distribution of amenities across the city. Results suggest that urban vitality increases in areas with a variety of typologies acting in synergy to attract people, rather than in areas characterised by a predominance of a specific type of activities. This paper enhances the theory-informed quantitative understanding of urban space, integrating data analysis methods with urban planning: this approach has significant potential for informing robust and holistic policy and decision-making.

Keywords: urban vitality; urban amenities; cluster analysis; spatial distribution.

Introduction

Urban amenities represent points of attraction in the mobility patterns of cities and may act as drivers for the liveliness of places. For this reason, the spatial information about urban amenities is commonly used in urban analysis as an established and reliable source of spatial information for understanding dynamics in cities.

This work attempts at exploring the quantitative relationship between the urban vitality and the location and spatial distribution of amenities in the city, also following the suggestion made by Jacobs (1961) regarding the spatial features fundamental for vitality. In order to evaluate the results obtained using the new sources of human mobility data recently available, this paper selected some urban data sets that are widely used in urban analysis and are well-established as reliable sources for the description and the understanding of how urban space works.

This paper investigates how the different typologies of the amenities located in a city might influence the variation of its vitality over time. The values of hourly temporal trends of urban vitality, calculated as in (Sulis et al., 2018) employing human mobility data sourced from the smart card and social media data sets, are compared to the spatial distribution of amenity typologies using POIs sourced from Ordnance Survey. In particular, vitality values and temporal trends are compared to specific combinations of amenity typologies, which are calculated through a cluster analysis that associate areas showing the similar spatial distribution of typologies. Evaluating the

quantitative relationship between these two spatial features is relevant to understand if the vitality of a place may be driven by a specific typology of activities, or if the synergy amongst different types contributes to the continuity of the liveliness and presence of people across the day.

This work represents an example of how it is possible to combine new and standard data sourced and methods and integrating them into the procedures employed for analysing and planning urban space. Quantifying the relationship amongst urban metrics that also describe different spatial domains (i.e., mobility and morphology) possibly result in unveiling how spatial elements and phenomena characterising a place interact and influence each other. This aspect represents a significant factor to consider when planning and designing any development in cities: tasks such as urban strategy, modelling and policy-making would all benefit from the results of this analysis.

This paper is structured as follows: after a presentation of previous work, the data description and methodology employed in the work are illustrated. After that, the paper describes the results related to the correspondence between the temporal patterns of vitality and those of amenity distribution in a place, highlighting the main results. The discussion of the results, the relevance of the approach and the limitations of the methodology concludes the paper.

Previous work

The recent deluge of spatial information (Batty, 2013) coming from different technological sources and devices recording the human-space interaction has made possible for researchers to explore urban dynamics in cities from an unprecedented level of detail, how people move around in cities, also from a temporal perspective. Numerous studies explored the spatiotemporal patterns of human mobility in cities employing different data sources (Isaacman et al., 2010; Noulas et al., 2012; Hasan et al., 2013; Hawelka et al., 2014; Lenormand et al., 2014; Louail et al., 2014; Grauwin et al., 2015; Zhong et al., 2016).

Besides more general approaches, some investigated very specific ideas related to human mobility, i.e., the digital signature of mobility patterns of specific city users as tourists (Girardin et al., 2009), the patterns of preferences of people within a neighbourhood (Calabrese et al., 2010), or the patterns of routine of users in the district (Cranshaw et al., 2012), unveiling patterns at a very detailed scale. All these studies contribute to unveil urban space in terms of how it is used, somehow adding a quantitative perspective to the quality of spaces that were estimated with more empirical tools (Gehl, 2010).

Amongst urban qualities, liveliness or urban vitality (Jacobs, 1961) represents a critical one to understand how successful a city is. Recent work attempted at quantifying this quality using extensive data sets about human mobility recently available (Sung et al., 2013; De Nadai et al., 2016), also considering the fundamental features of temporal continuity highly regarded by Jacobs (Sulis et al., 2018).

To explore more human mobility and what drives it, some work also employed multiple data sources to explore the relationship between different urban features such as human mobility and the locations of urban activities (leisure, commercial etc) to establish if human activity is driven by that and to which measure. Previous work shows interesting results in terms of comparing the average values of human activity (from mobile phone data) and location of urban amenities (Reades et al., 2009), or the correspondence of absolute values of vitality (as a proxy of human activity) and specific categories of amenities related to leisure (De Nadai et al., 2016).

Following these work, and the idea suggested from Jacobs of the importance of variety in amenities in relation to urban vitality, this work employs the hourly values of urban vitality calculated as the temporal variation of the presence of people in urban places in (Sulis et al., 2018): the variation is calculated at three different temporal scales (hourly, daily and weekly), employing human mobility data sourced from the Oyster smart card and the

Twitter platform. The vitality values are compared to the spatial distribution of urban amenities related to the leisure domain, in the attempt of evaluating the quantitative relationship of these features and the possibility of amenity location driving the level of the liveliness of places in the city of London.

Data description and methodology

Description of data

This work investigates the quantitative relationship between urban vitality and the distribution of POIs in cities. The analysis explores how the different combinations of amenity typologies located in a place (the mixed-use mentioned by Jacobs, 1961) influence the temporal patterns of vitality in cities. This approach may reveal more accurate insights about a specific combination of amenities possibly driving the vitality of a place. The metric of vitality was calculated using different sources of human mobility data as presented in (Sulis et al., 2018). These values are here compared to spatial information about city amenities collected from Ordnance Survey.

The data set sourced from Ordnance Survey contains information about the location of Points of Interest (POI) in London. The POI categories selected for this analysis are related to the leisure domain, since the focus of this analysis is on urban phenomena influencing the presence of people in urban public places: only the categories related to non-shopping leisure (e.g., eating out, tourist attraction, entertainment) are selected, following the idea of streets as public space. Figure 1 shows the spatial distribution of the data included in the Ordnance Survey data set, and it illustrates the density of amenities within the London wards.

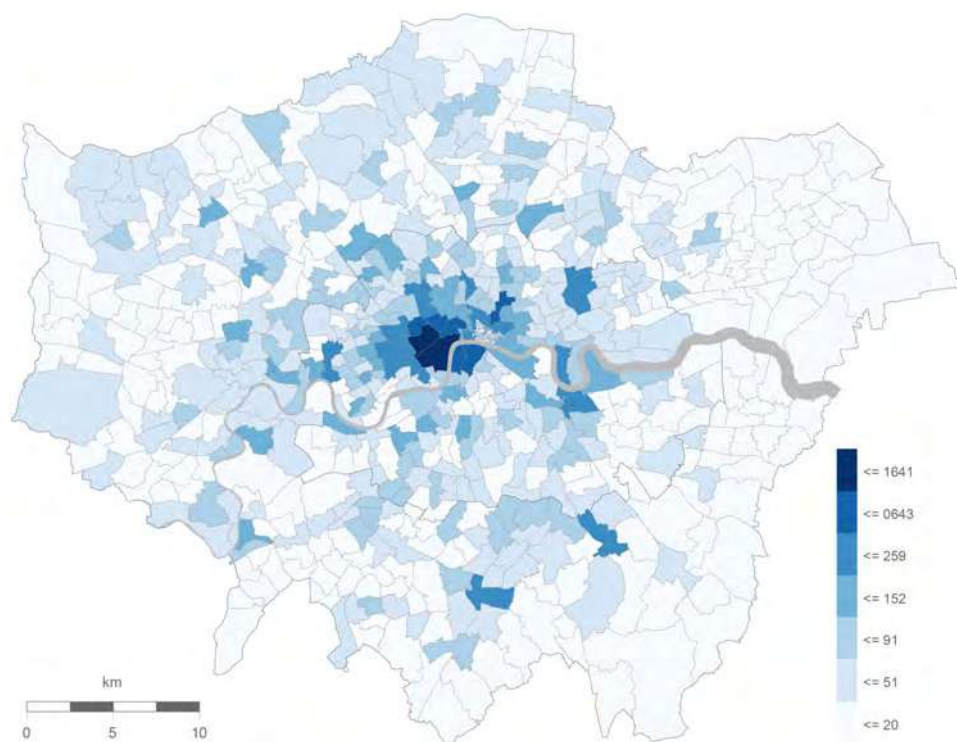


Figure 1: spatial distribution of urban amenities

The main advantage of employing this type of data is that it represents a source of spatial information about cities that is frequently used in urban planning and considered a well-established and accurate source of data for investigating the use of places and the mobility of people in cities. Furthermore, the information supplied by this type of data, especially the geographical location and the category of the activity, can be combined with other

metrics about urban places, e.g., human activity density obtained from the other data sets, making possible to investigate the relationship amongst the different types of data describing the same urban phenomena.

The possibility of enriching the data with additional information (e.g, opening hours) and the detailed categorisation of amenities also makes possible to explore how specific typologies drive or influence more than others the human mobility patterns and the presence of people in places during specific times, and the impact of this possible influence.

Methodology

At first, a profile of the amenity distribution characterising each area of the study is extracted from the data set: this profile contains the total number of amenities for each typology present in that area. These distribution profiles are then used to run a cluster analysis to infer the similarity of the areas according to their patterns of amenity distribution, assigning each area to a specific group. This approach represents a more accurate method for representing the specific characteristic of each area concerning the spatial distribution of urban amenities than the simple sum of activities located around each place. The labels assigned to the areas are subsequently compared to the temporal variation of vitality, to observe if they are recurrently associated, and eventually verify the correspondence between a specific combination of amenity typologies and the liveliness of a place.

The distance metric considered to be the most appropriated to be applied in this specific case is the Jensen-Shannon Divergence (JSD), applied to calculate the distance metric amongst the amenity profiles of the research areas. This method is specifically designed to measure the similarity between two (or more) probability distributions P, Q : in this case, it is measuring how similar the spatial distribution of amenity typologies is between two different areas in the city. The JSD metric is calculated according to Equation 1 below:

$$JSD(P||Q) = \frac{1}{2} \cdot D(P||M) + \frac{1}{2} \cdot D(Q||M)$$

The square root of the divergence is the equivalent distance metric required for the cluster analysis. In this case, the JSD is applied to a matrix of vectors, with each vector representing the POI distribution calculated for each research area. The matrix employed in the analysis has been normalised in advance by the sum of the activities located in each area.

After calculating the distance metrics, the analysis requires a suitable algorithm to cluster the distributions of POI typologies. In this case, the one chosen for the cluster analysis is HDBSCAN. Results of the cluster analysis are presented in the following section.

The labels obtained in the cluster analysis of the profiles of amenity distribution are compared to the trends of the temporal variation of vitality. This comparison detects the occurrence of the same association between amenity labels and vitality trends in the areas, which may be used to unveil if the specific distribution of amenities in an area influences the liveliness and the continuous presence of people in a place. To compare these two features, the analysis employs a confusion matrix. The algorithm counts each time that the same pair of vitality trend and amenity label are associated. This value may be employed to evaluate the relationship between the vitality of an area and the diversity of amenities in the same area.

The code used to calculate the confusion matrix is the following:

```

L = len(np.unique(df['vitality_labels']))
B = len(np.unique(df['activities_labels']))

labels_M = np.zeros((L, B))

for i in df.index:
    x = df.iloc[i]['vitality_labels']
    y = df.iloc[i]['activities_labels']

    labels_M[x, y] = labels_M[x, y] + 1

```

The confusion matrix is calculated for different combinations of labels:

- temporal variation of vitality (week) + distribution of POI typologies;
- temporal variation of vitality (weekend) + distribution of POI typologies.

The results (illustrated in the following section) show which amenity labels are more frequently associated to a specific vitality trend and pattern of human activity in a place, corresponding to a specific distribution and amount of amenity typologies. This correspondence might suggest that a particular combination of typologies influences and possibly drives a certain level of vitality in an area. These results, also showing different label associations occurring during week and weekend days, can then be used to further analysis and empirical investigation.

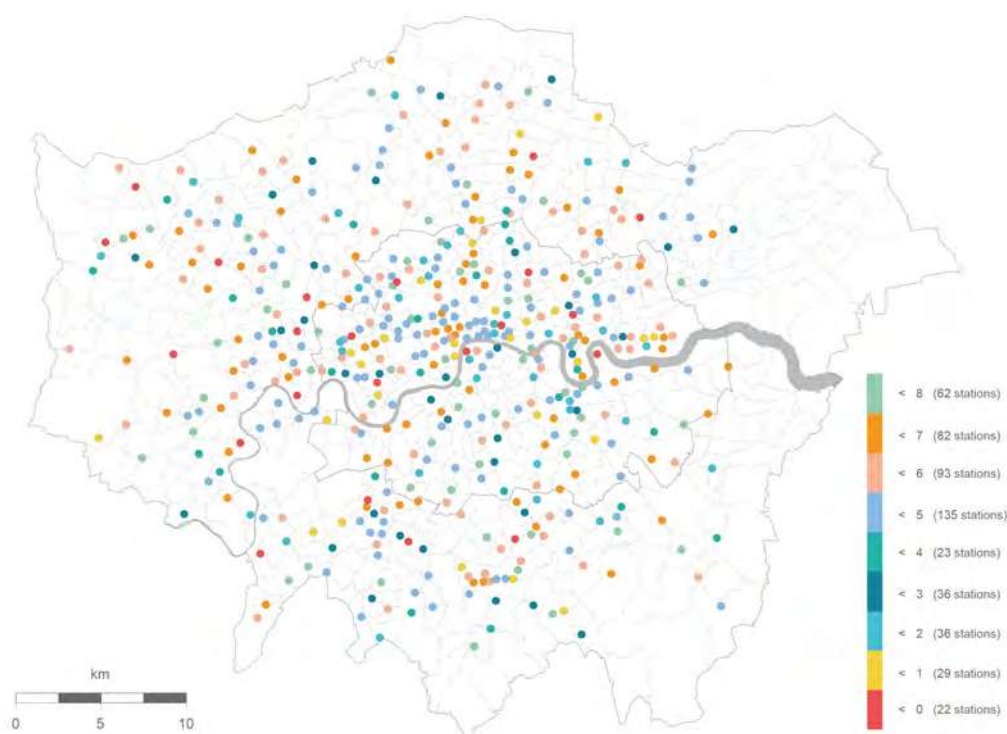


Figure 2: spatial distribution of labels in London

Results

This section presents the results of the cluster analysis applied using the Jensen-Shannon distance and HDBSCAN combination. Observing the spatial distribution for each label (Figure 2), it is possible to obtain revealing insights about the patterns of similarity of amenity distribution in the city of London.

Labels 5 and 9 appears to be the more varied and balanced ones, with the presence of many typologies related to city attractions and entertainment. Label 5 appears to be the most common label, with an even distribution around the city. This aspect may be related to the fact that the analysis considered areas very closed to the public transport network, which generally acts as an attractor for activity locations. Other interesting labels to observe in relation to the combination of amenity typologies are the labels 1 and 6. Label 1 shows a spike in the presence of restaurants in the profile, and it appears to be mainly located in the inner area of the city. Label 6 instead appears to be quite evenly distributed on the map, whereas the profile shows a significant presence of libraries amongst the other typologies.

These labels are compared to the temporal trends of vitality using a confusion matrix. The results show a neat distinction in the label associations during the weekdays. The majority of the associations occurs with label 5 and label 7, which correspond to two rather different amenity distribution profiles. The temporal trends of vitality associated to these two labels are also different: trends representing a temporal continuity in the vitality are associated to label 5, which presents a nicely balanced distribution of a variety of amenity typologies (eating, entertainment, attraction). On the other hand, the vitality patterns characterised by a two-peak profile are predominantly associated with label 7, showing a presence of amenities pertaining exclusively to the eating category. In the weekend, the majority of label associations are still occurring with label 5 and 7; however, the distinction in the vitality trends appears less defined, therefore more analysis is required.

The most representative associations of vitality trends and activity distribution labels are illustrated in Figures 3 - 4 below.

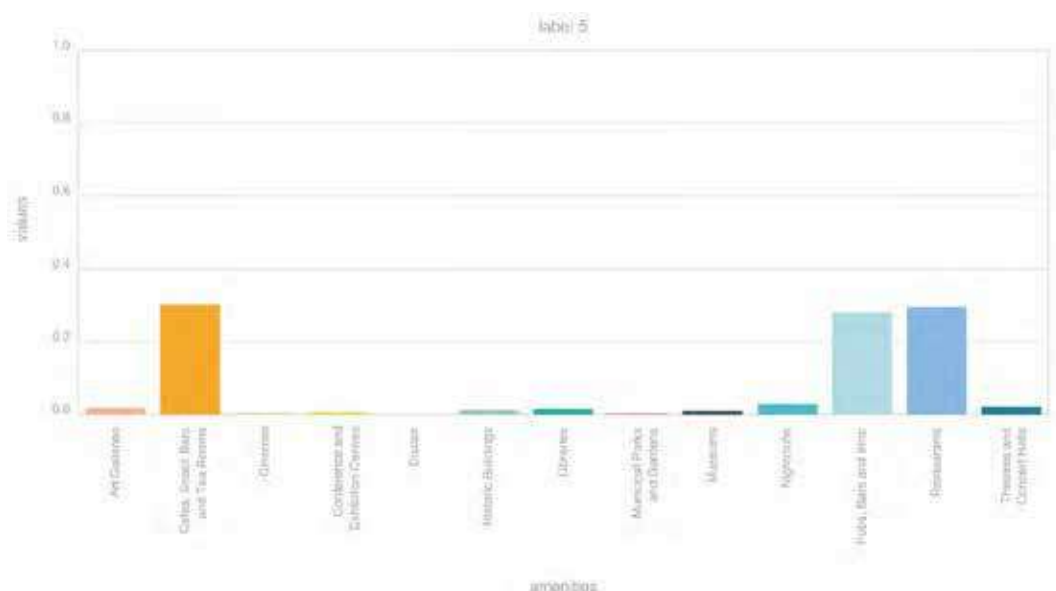


Figure 3: typology distribution for label 5

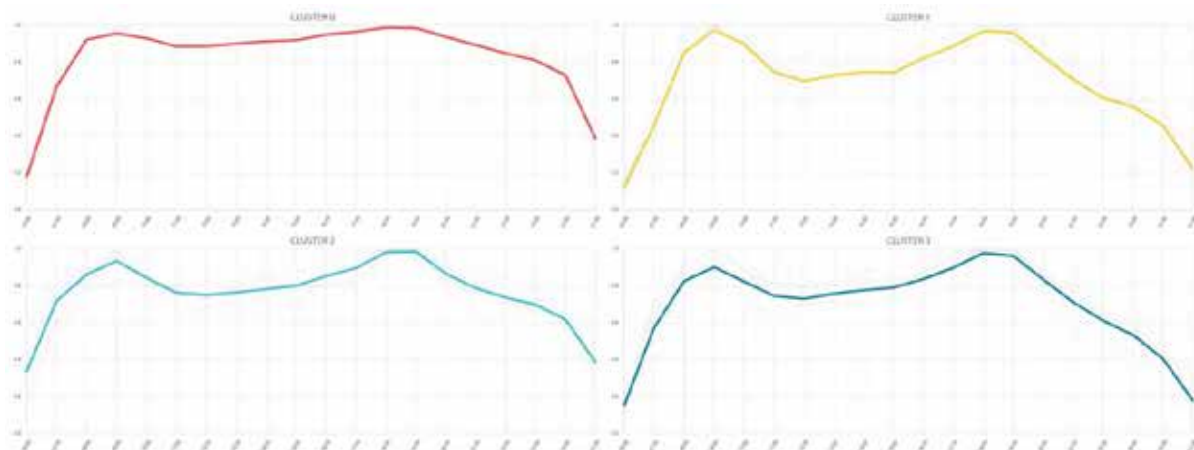


Figure 4: temporal trends of vitality associated with label 5

Discussion

This section discusses the results obtained in the analysis, also in light of the relevance and the potential applications in the urban planning methods. Firstly, it is important to underline how this work showed that it is possible to explore and measure relationships amongst different spatial features of the same place employing a quantitative method. Estimating this relationship represents an additional enhancement in the process of unveiling details about the spatial phenomena occurring in cities.

About the relationship between vitality trends and specific combinations of amenity typologies, results do not appear to present a specific association of precise vitality trends with activity labels. What can be noticed, however, is a clear distinction in the association between continuous and two-peak vitality trends and specific distributions of amenities. In particular, results seem to suggest that the continuity in the patterns of vitality (and therefore human activity in places) might be influenced by a balanced variety of activities located in the area (in this case, different leisure activities). This aspect may represent a hint towards what Jacobs described, that the mixed use of amenities contributes to attracting different people for different purposes, therefore ensuring their presence during the day and resulting in the vitality of a place. On the other hand, the two-peak patterns appear to be mostly associated with less varied amenity distributions in the areas. This may suggest that the presence of people in such places is mainly concentrated around specific times of the day (e.g., opening hours of certain amenities).

Unveiling such information about spatial features represents an advantageous factor to be employed in urban planning. Understanding which combination of amenity typologies (which types and in which quantities) most influence the liveliness of a place, and its success in behaving as a public space, is a very relevant element for both analysis and planning phases. It represents a condition that can also be employed in policy-making, for example to target areas that appear to be more secluded in terms of human mobility patterns and the use of the space at different times in the day. Identifying the most successful combinations of amenities that are contributing to the liveliness of a place can also be employed to intervene in other areas with specific policies targeting either the typologies of the amenities to locate in the area or the opening hours of activities already existing, in combination to other urban elements present in the area.

All the aforementioned examples about the applications of the metrics into the planning procedure must inevitably be evaluated considering the existing context and urban situation of the city, district, neighbourhood where the urban development is happening. Most importantly, a critical point to highlight here is that the metrics employed are context-sensitive and prone to a certain level of uncertainty. The urban context on which the spatial analysis is performed results into the metrics being specific to that context: they cannot be applied lightly to other urban

situations, or generalised into overall standards. The approach and the methodology can be adapted and applied to other case studies and data sets, contributing to comparative analyses of the same spatial phenomena occurring in other cities.

One of the limitations of this study is related to the data sets employed in the analysis, in particular concerning the accuracy and the availability of the amenity location data obtained from the different sources. Whereas it is important to make the data available and open to everyone since it is built thanks to the users' contribution (as it is the case of OpenStreetMap), the completeness and the homogeneity of the data collected may lack in quality. On the other hand, the accuracy and details of the Ordnance Survey data set employed in this analysis come at the expense of the availability and usability of data for everyone. Another limitation is related to the technique used in the cluster analysis: the HDBSCAN algorithm labels some of the objects as noise, making necessary to reassign some of these objects to the closest cluster. Despite this limitation, this type of cluster algorithm appears to be the most suitable for the data sets employed, based on the evaluation of the preliminary results obtained with other techniques.

Conclusion

This paper illustrated an attempt of establishing the quantitative relationship between the temporal patterns of the vitality of a place and the specific combination of amenity typologies present in the same place. This relationship is explored using a comparison between the temporal variation of vitality and the spatial distribution of amenity typologies in each area.

The results obtained from the analysis suggest that a quantitative relationship might be established between the liveliness and presence of people in a place and the number of activities of that place. Results also suggest that certain combinations in the distribution of amenities (a balanced variety of different amenity typologies) appear to be associated with specific temporal trends in vitality. This might represent a hint that the former might drive or at least encourage the latter. This hint can be further explored in future work both with data analysis and empirical research in the urban space.

The method and results presented in this work also represent an example of the potentialities intrinsic in combining new and standard spatial information and techniques into the methods conventionally employed in urban analysis. Unveiling how different spatial elements characterising the same place interact and influence each other represents a relevant aspect that may inform and support urban planning in many different phases.

This approach also contributes to two other objectives for urbanism:

- integrating different types of data sets, using big and small data together, and attempting at establishing the relationship between different types of urban data pertinent to the same urban context and influencing the same urban phenomena;
- showing how new data sources can be successfully integrated with conventional data sources in urban planning and analysis.

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The mapping of historical streets on social media: a case study based on image recognition and semantic recognition

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Abstract: In the age of social media, the interaction of online and offline activities has produced a more diverse form of interaction between people and space. Weibo is the largest social media in China, where users share their insights by uploading photos and text. Historical streets carry important urban cultural imprint while its protection is facing the problem of enhancing attractiveness under the rapidly urban development. This study collected the Baidu Street View image and geo-tag Weibo photo of Hengfu historic conservation. Images were recognized through the machine learning algorithm, in order to realize the accurate measurement of the image elements. Building and greenery were the focus of attention of the crowd, and some streets have improved people's contact with greenery through the design of vertical greening. Second, we combined the campaign of the hot events such as 'Leave fallen leaves' in social media, with the semantic recognition of the text of users 'Weibo'. This paper analyze how the streets interacted with the online crowd with the help of social media, and analyze why some streets are more attractive while others lack attention and record, and put forward suggestions for urban design of historical street in future.

Keywords: social media, machine learning, historical street, visible greenery

Introduction

The rapid spread of information has greatly affected the behavior and needs of people, thus reconstructing the needs of people for physical space. For example, the appearance of Amazon and other online retailers make thread to normal bookstores. Some independent bookstores have been revitalized by the use of social media campaigns to strengthen their ties with the community (Ryan, 2017). Readers share the bookstores they've been to and advised book on Instagram. Independent bookstores host many events to bring people together and provide more personal customer experience.

As an important component of urban space, streets also face the same situation. Video games, animation and internet reduce people's interest in outdoor activities. It's important to realize people's attitude about urban space through traditional field study and social media. For urban designers, it's reasonable to connect the advantages of social media and physical street space. The quality of street

space affects the experience from pedestrian, the vitality of public activities, and even the shaping of urban characteristic (Jacobs,1961).

The use of social media in design is accompanied by a shift from top-down to bottom-up perspectives. With the help of new technologies, we could better measure urban space and evaluation from human-scale (Ye Y,2018;). Sina Weibo(microblog) is the largest social media platform in China, with 411 million monthly active users in 2018. Users can sign the location when they reach the urban physical environment and publish relevant text and pictures to describe the activity experience. As a kind of Location Based Service data, Weibo data is widely used in social activity, tourism evaluation and crowd flow (Jiang, W,2015; Wu, L,2014; Yan, L,2018;). Yan analyzes the relationship between Weibo check-in data and air pollution. It's found that air pollution has a negative impact on urban activities. Weibo pictures based on street position also reflect the arrival of users and a record of urban life, and a small number of studies use it to research about urban image, urban memory and other topics.

Literature review

The use of social media in urban planning and urban design

Research on social media and planning focus on the distribution of urban activities, public participation, urban heritage conservation, and so on. Social media contain a wide range of feelings and memories related to the urban past (Van,2019). Storytelling and mapping could be used to invited citizens to join in historical area conservation, providing opportunities to understanding urban history and big events.

In China, social media enable planners to focus on a wider range of information and to communicate planning information (Sun,2013). Sun host a talk about change from AutoCAD to Sina Weibo. There was an example that one planner protested about unreasonable demolition of historical buildings through Weibo and caused a lot of retweets from planners to citizens. Traditional media also reported this situation and finally the government canceled the demolition and promised to protect those buildings. Although it's difficult to deeply discuss professional knowledge though social media, we can use it to collect voice from citizens and present planning views.

Image recognition and urban design

In recent years, with the development of new urban science (Michael,2013), image recognition, machine learning and other new technologies have been applied to urban studies. Image recognition is one kind of new technology that use Convolution Neural Network Algorithm to extract image elements. At Urban scale, researchers used a large number of images from interaction website to social media. Palomares studies the distribution law of tourist hotspot in 8 major cities in Europe based on Panoramio Pictures (GarciaPalomares,2015). There was some interesting things like connection between urban image and pictures which people post in the website (Liu,2016).

At street scale, Street View can be used to accurately measure the morphological and factor of urban space (Yu,2018) . Some map website like Baidu and Google have collected multi-year streetscape photos then could be used to study the quality and spatial change of streets in Beijing (Tang,2018). With image recognition, street view could accurately measure the city environment space, refines the related streets streetscape research to improve street quality.

Table 1. Urban Study used Image recognition

Research aspect	Urban scale		Street scale	
	Urban Image	Tourism	Quality of street	Street Greenery
Analysis point	Image features, architectural colors	Tourism agglomeration and urban spatial perception	Time-phase change, physical and interface features	Visible street greenery, accessed street greenery
Data source	Image interaction website (Flickr)	Image interaction website, social media	Street View	Street View
Typical Research	Liu selects the photos from Panoramio and Flickr, using the deep learning technique to identify and classify the photo contents (Liu,2016).	Based on Panoramio Pictures, Palomares studies the distribution law of tourist hotspot in 8 major cities in Europe. The tourist route and activity space of local residents are analyzed (GarciaPalomares,2015).	Based on multi-year streetscape photos, Tang studies the quality and spatial changes of streets in Beijing (Tang,2018).	Li X uses Google Street View to measure the proportion of street greening, compared with the living environment of residents. (Li,2015).
Research features	Use a large number of open source image data and recognition technology. Compare the images of different cities horizontally.	Users take the upload photos spontaneously, and consider subjective feelings and objective vitality distribution	Because the streetscape images can be collected for many years, it is beneficial to the measure the quality and characteristics.	In-depth study of street Greenery, a street space element is perceived by residents in daily contact

Method

Research framework

As seen in Figure 1, to map the historical streets on social media, this study selects visible street features, recorded street features and people's recording about program 'Leave fallen leaves' as the major study objects. First, street networks of the area were collected from Open Street Map(OSM). This is for subsequent image collection and presentation on GIS. Baidu Street View(BSV) was collected through the Baidu API by Python. Second, we collected text and picture from Sina Weibo during August, November and December, 2018. Text posted during the Program period were analyzed through semantic recognition to find out what's the focus of people's expression about this programme.

Third, the measurement of visible and recorded street features were achieved by image recognition. We used TensorFlow, a neural network algorithm platform developed by Google and Cityscapes Training set, a datasets in driverless environments launched by Mercedes-Benz. Both BSV and pictures from Weibo were analyzed to get human-scale indicators which had rarely been studied before. Image recognition could classify the features such as greenery, sky, building, people, road, etc. We can find out which road or what features is more recorded by people. Finally, based on the analysis on the program ‘Leave fallen leaves’, this study figure out the hot words and organizers’ reaction to social media views.

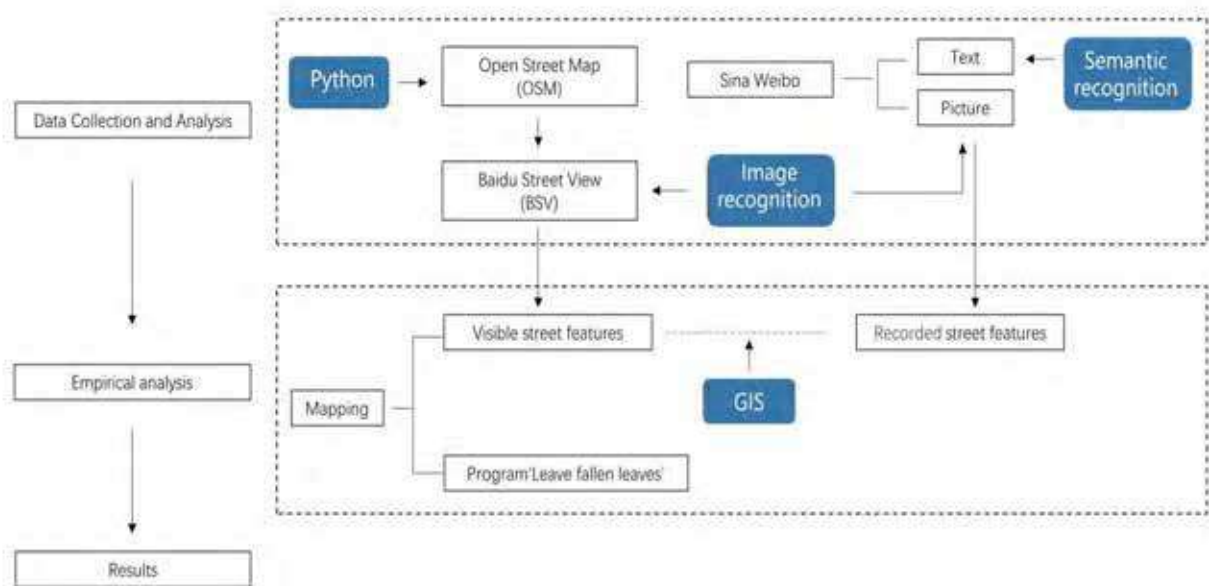


Figure 1. Research framework

Study area

For this study, we selected the Shanghai Hengfu historic conservation area, of around 7.75km², as the study area(Figure 2). It's the largest historical conservation area in Shanghai central urban area, with the highest number of style-protected roads. The consevation area formed its style in the first half of the 20th century, with 66 roads and a total length of 9.78km. The streets in the area have pleasant scale and embody the characteristics of modern space form and public activity place in Shanghai.



Figure 2. Shanghai Hengfu historic conservation area

Data collection and analysis

The measurement of street features started from the collection of Baidu Street View and Weibo pictures. The study was carried out in the winter of 2018 to collect 66 streets in the area (Figure 3), the total street length of 9.87km. The average sampling spacing is about 25 meters and a total of 4,159 sampling points are identified. The Baidu Streetscape API (<http://api.map.baidu.com/pano>) is called by Python via HTTP URL to obtain Street View images from the perspective of each sampling point. The study crawl a total of 4159 BSV images (image resolution of 512*256 pixels), covering all areas of the Hengfu historic conservation area.

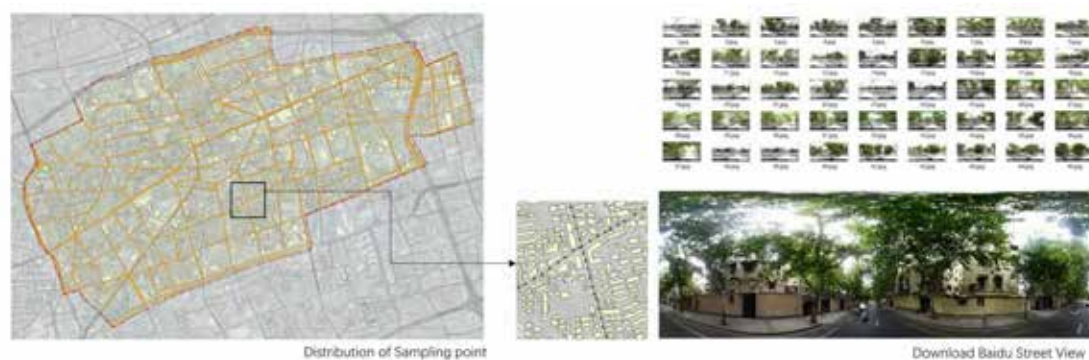


Figure 3. Baidu Street View Data collection

The neural network algorithm platform is developed by Google TensorFlow and Mercedes-Benz launched the Cityscapes training set, with the help of machine learning automatic image recognition. The Street View pictures are divided into roads, sidewalks, buildings, vegetation, skies and other elements (Figure 4.). The sampling point results are then based on the ArcGIS platform, through Spatial Join analysis to each street, to achieve visual rendering of the results. Pictures from Weibo are also analysis by image recognition.

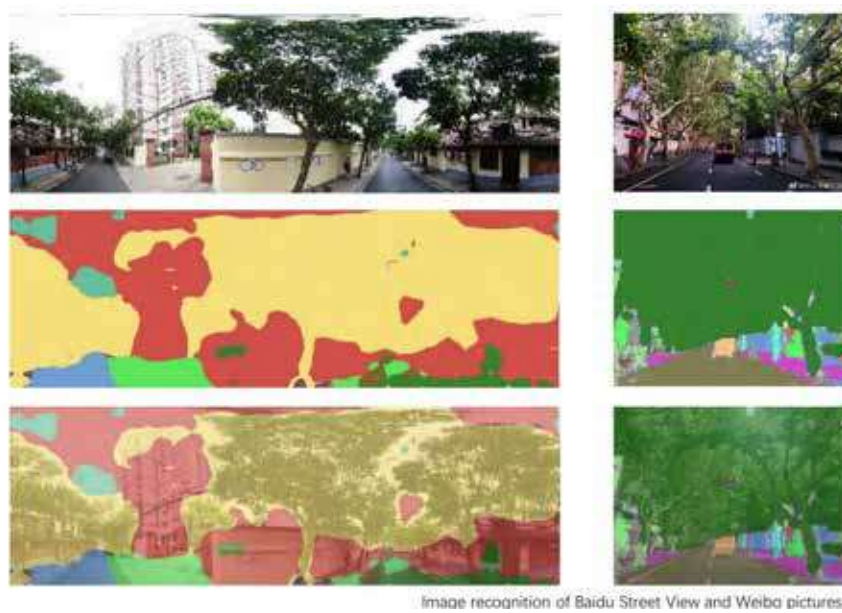


Figure 4. Image recognition of Baidu Street View and Weibo picture

After text was collected from Weibo, Semantic recognition could quantify feature words extracted from the text to represent the information. Social media is an effective window to observe human emotions. This study uses Jieba (<https://github.com/fxsjy/jieba>), the best Python Chinese word segmentation module.

Results

The vitality of different historical streets

This study collected a total of 878 photos from Hengfu historic conservation in August, of which 349 photos were collected from Rd.Wukang (Figure 5) . We filter the upload valid photos with street view, including portraits, building facades, streets views, road, etc., to reflect the user's attention to the street. It's reasonable to exclude those invalid photos including food, indoor, selfie, emoticon that do not reflect the street space. Style-protected roads collect more Weibo photos in quantity and density, indicating that people pay more attention to the streets and particular streets are more energetic. People focus on some historical buildings like Normandy Apartments as 66 photos are about Normandy Apartments of 349 photos collected based on Rd.Wukang

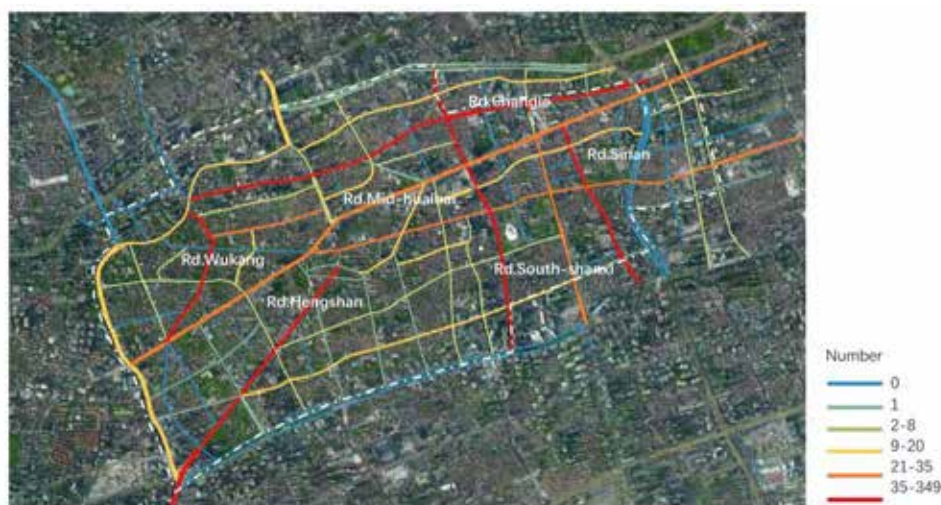
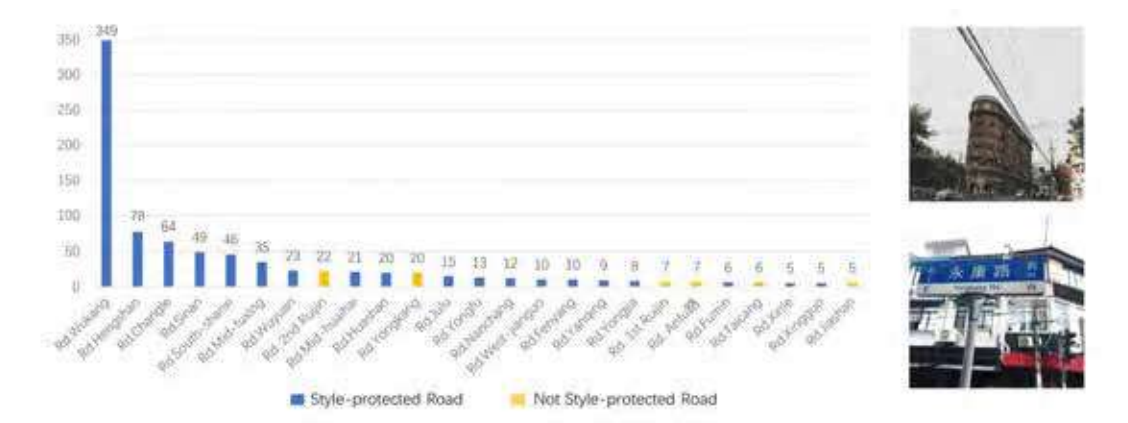


Figure5. The number of Photos uploaded on Weibo in August, 2018

The comparison of visible and recorded street features.

From the result in Table 2. It's obvious that in reality Greenery(57.3%) , Sky(21.5%) and Building(14.0%) are the main component of street views. We could find that Building(38.5%) , Greenery(28.8%) and Sky(4.9%) are the focus of attention of the crowd. As we all know, there are a lot of protected buildings and style-protected roads in this area. It's special cultural atmosphere attracts special shops and hot restaurants to open in this area. Many citizens and visitors enjoy going to Hengfu historical conservation area and taking pictures of some hot restaurants or historical buildings. Some microblogs mention walking activities about historical buildings which leaders would plan walking route and introduce their history. Those activities also increase the volume of Weibo pictures about buildings. They post their experience and photos on social media to show their feelings. It's interesting to figure out that the greenery of BSV is nearly double than that of Weibo picture.

Table 2. Image recognition result of Baidu Street View and Weibo Pictures(%)

	Road	Sidewalk	Building	Wall	Fence	Pole	Vegetation
Weibo pictures	0.090	0.032	0.385	0.016	0.015	0.007	0.288
BSV	0.013	0.015	0.140	0.001	0.011	0.002	0.573
	Terrain	Sky	Person	Bicycle	Car	Truck	Motorcycle
Weibo pictures	0.011	0.049	0.038	0.003	0.016	0.023	0.002
BSV	0.010	0.215	0.004	0.001	0.007	0.006	0.001

By assigning the greenery value of each sampling point to the nearest street segment, the visible greenery of each street segment can be obtained by the average. The average visible greenery of all street is 58.23%, of which the visible greenery of style-protected roads is 63.39%, the visible greenery of other roads is 50.22%. Walking in the style-protected road can experience a richer street greenery and bring more happiness. Roads like Rd. Julu and Rd.Hengshan have higher visible greenery while some highways like Rd.Yanan have lower visible greenery. The urban street landscape includes the public space formed by the natural history and the walking trees in the space, under the guidance of the Protection Plan of Shanghai Historic District, the street space and the walking tree are used as the greening subject in the open space of the scenic area, and the "need to increase the scope of greening planting" in the non-greening land has a positive effect on the results of the current high visible greenery.

Comparing the results of Street View image recognition with the results of Weibo photo image recognition (Fig. 6), there are three kinds of cases that can be explored in greenery:

- (1) The high rate of greenery in BSV and Weibo pictures, that is, the perceived record of street greening in urban space by users, such as Rd. Hengshan (Street View greening rate 51.92%, Weibo photo greening accounted for 37.4%), Rd. Julu Road (Street View greening rate of 72.4%, Weibo photo greening accounted for 35.91%)
- (2) Greenery in BSV is high while in Weibo pictures is relatively low, that is, the greenery in urban space is not perceived by users, or other content attraction is higher. For example, the Weibo photos of Rd. Wanping and Rd. South Xiangyang focus more on small shops or building facades.
- (3) Greenery in BSV is high while in Weibo pictures is relatively high, that is, the greenery in urban space is magnified and get more record. For example, Rd. Yongjia and Rd. Anfu maintain great greening landscape. Urban design increase the vertical greening, enhancing the crowd's perception of greening. It may be considered to increase vertical greening in subsequent street design if it's appropriate. And it would increase the perception of greening among the population.



Figure.6. The comparison of greenery

The discussion about ‘Leave fallen leaves’

Since 2013, Shanghai has conducted the program ‘Leave fallen leaves’. It is expected that in mid-November, most of these landscape roads, which do not sweep the leaves, will enter the best viewing period, and the falling leaves will be woven into a variety of "carpets". So that the autumn in Shanghai is full of vitality and temperature. In 2018 there are 34 roads were chosen as Landscape Road, involving district Huangpu, Jinan, Xuhui and so on. The program started at 2018/11/15(Figure.7).



Figure.7. The timeline of ‘Leave fallen leaves’

Hengfu historical conservation area is in District Xuhui and some roads are chosen as Landscape Road. Last year officers invited some artists to create some art work which is about ‘Silk road’, an ancient commercial road connecting Eastern and Western. The exhibition started in 2018/11/23 and contained 12 sets of art work which use leaves, branches, soil, stone and other elements. While one day later some complains about the exhibition appeared on social media because citizens thought those work is too surprising and strange. As seen in Figure.8, it could be track that on Nov, 24 and 25 there was a peak to identify more than 20 users had posted program-related microblog. Some microblog directly expressed their opinions to organizer that those art works were not fit landscape. Some planners also share their opinion about artwork and how to better treat fallen leaves. On Nov,26 the organizer quickly changed the artwork and replied to people on social media.

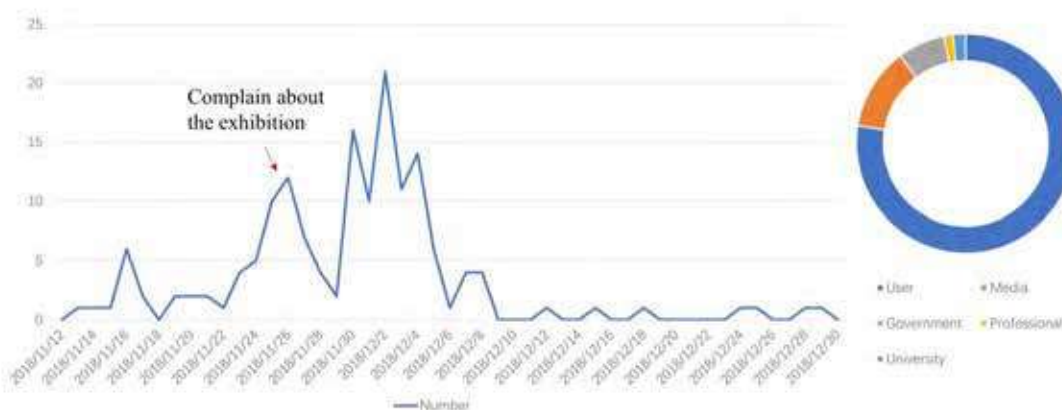


Figure.8. The number of Weibo post during the program

Since December 1, Shanghai has been in the most beautiful leaf season and there were 2nd peak of the discussion. Many people went to the landscape streets and post beautiful pictures on their social media with tag #Leave fallen leaves. With the track of tag, we collect text and conduct Semantic recognition to figure their attitude and emotion. As seen in Figure 9, the words in the top ten of the release volumes are ‘Fallen leaves’, ‘Leave’, ‘Shanghai’, ‘Landscape’, ‘Rd. Fuxing’, ‘Sidewalk’, ‘Citizens’, ‘Beautiful’, ‘Work of art’, ‘Question’. It shows people keep the program in close connection with city and even a specific road. Some microblog mention those art installation just copy an icon and carry a subject directly to Shanghai without creation, triggering more discussion. Although there were some complain before, we figured that ost people expressed a positive attitude about the program and share their thanks to the beauty of street.



Conclusion

This study attempted to map historical streets on social media with the help of new urban science. By the help of new technologies like Image recognition and new urban data, the visible and recorded street features could be measured. Building, greenery and sky were the focus of attention of the crowd. It's also helpful to organize walking activities to help people focus back to streets. Through the comparison of two kind of pictures, we find some streets have improved people's contact with greening through the design of vertical greening. The streets interacted with the online crowd with the help of social media. The case from 'Leave fallen leaves' show what's peoples' attitude about street landscape. Urban planners may use social media to get people's attitude and conduct public participate.

Despite the contribution of this study in mapping historical streets on social media, there is some limitations that require further research. For example, if the difficulty of collecting Weibo text and pictures by Python could be overcome, the quantity of objective would increase and present more objective state. Furthermore, the attraction of streets is also connected with the type of shop and activities hold by businessman, it would be better to join more social activities and expression on social media.

Contribution

Conceptualization, H.T. and W.W.; investigation, H.T.; data curation, H.T.; writing, H.T.; review and editing, W.W.

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Community-based data for a new taxonomy of abandoned places¹

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Abstract: Abandoned places are common "everyday" landscape elements whose characteristics are not always adequately known. It is necessary to activate innovative knowledge-making tools to understand the complexity of these places in order to fill the lack of information concerning their characteristics and the relationship between their fragility and the repercussions on physical space. Open data represent a great opportunity to produce new knowledge both for the preservation of a vulnerable heritage and to support urban regeneration processes. Through open-data participatory mapping actions, the community knowledge can easily emerge in a structured way. Official digital sources are often unable to adapt and upgrade processes of place knowledge making. For this reason, a set of digital infrastructural facilities must be conceived and implemented, adopting the most advanced information technologies, in order to produce open-source, interoperable and interactive Dataset. The digital infrastructure requires a wide variety of heterogeneous data sets, collected and managed to remain open both for endless sharing and for technical verification actions. Openstreetmap is an emblematic example of a re-adaptable tool for mapping abandoned places: the modular depth of its geodatabase allows it to be customized with great ease. Using this tool, the information is made accessible to a large community to be used and shared.

Keywords: Abandoned places, Spatial analysis, Big data, Open data

Introduction

The fragilities of the Italian territory are characterized by a multiplicity of 'minor' aspects that are difficult to detect, map and interpret. Abandoned places are very common 'everyday' landscapes elements which are not always characterized by widely evident phenomena of environmental and physical degradation. It is necessary to activate innovative knowledge-making tools to read and to understand the complexity of this places, filling the lack of information concerning their characteristics (i.e. taxonomy, localization, etc.) and the relationship between their fragility and the repercussions on physical space. Open data and citizen science represent a great opportunity to produce new knowledge both for the preservation of vulnerable urban landscapes and to support urban regeneration projects and policy decisions. Through open-data participatory mapping actions,

¹ Sections 1, 2 by Emanuele Garda; section 3 by Stefano Saloriani; section 4, 5 by Daniele Villa.

the local and community knowledge can easily emerge in a structured and organized way. Official digital sources are often unable to adapt and upgrade processes of place knowledge making. For this reason, a set of digital infrastructural facilities must be conceived and implemented, adopting the most advanced information technologies, in order to produce open-source, interoperable and interactive Dataset (i.e. Landscape Digital and Geographical Models). The digital infrastructure requires a wide variety of heterogeneous (qualitative and quantitative) data sets, collected and managed to remain open both for endless sharing and for control and technical verification actions. Openstreetmap is an emblematic example of a re-adaptable tool for mapping fragile and abandoned places: the modular depth of its geodatabase allows it to be customized with great ease. Using a tool like OSM, the risk of making the information inaccessible and non-reusable is avoided ensuring that a very large community (i.e. citizen, policy makers, stakeholders, etc.) can use and share. In this way, the raw material of territorial research becomes a common ground without complicated steps that may ease further subsequent interpretations and actions.

In the following sections, this paper describes some characteristics of the abandoned places phenomenon and the mapping of buildings or areas made by different actors (public institutions, universities, local associations). It is to be taken in consideration that there are many taxonomies and ways to define the abandoned places and that the mapping case studies are responding to an increasing need of information. In those experiences, the authors set limits to build the last sections of this paper in which is underlined the importance of the new typologies of data collection and re-use in a more updated and open methodology.

Neglected spaces and territory

Quiet villages, rural settlements, huge factories, neighborhood shops, interrupted construction sites: in recent years the abandonment of places has generated a massive variety of examples. This kaleidoscope of materials, geometries and memories is shifting the debate to the description and interpretation topics starting from the deep and extended changing in the territory (Merlini, 2009)

The universe of non-used spaces is composed by different places and vocabulary studied by many authors: keywords like *Terrain vague* (Solà-Morales, 1996), *Vacant land* (Pagano and Bowman, 2000), *Shrinking city* (Oswalt, 2005), *Junk space* (Koolhaas, 2006) and *Terzo paesaggio* (Clément, 2004) are the most explicit demonstration of this fertile debate. As mentioned, the recent economic, financial and social mutations are changing and increasing the new examples of abandonment in addition to what is present already namely a past situation in which for the society was common the alternance between use, disuse and reuse of the territory.

After the “dismissal brownfield” era a huge need of knowledge and interpretation update is emerging within a radical and profound renewal phase of urban planning discipline (Di Giovanni, 2014), is emerging a huge need of knowledge and interpretation update. At the same time, some central expressions appear in an increasingly plural debate: for example, some recent re-use oriented research have placed emphasis on the concept of recycling whose importance has increased adding new

significance at the social and economic means (Viganò, 2011) of re-use².

The “Re-cycle–strategie per l’architettura, la città e il pianeta”³ exhibition at MAXXI in Rome or the “Re-cycle Italy”⁴ national research need to be read in their capacity of activate a new research (and project) path.

There are some characteristics that are causing a variety of the abandoned place that could be used as a guide, individually or combined, for the analysis and project objectives.

The structure and the ways in which the various buildings are composed and characterized in the spatial asset represent one important condition. In the urban space it is possible to find single abandoned buildings with different volumes and functions or complex structures of many buildings. Another important interpretation is the moment of construction that, combined with the original function, allow the definition of specific historical phases.

For a better understating of these places, a crucial role is played by the causes of abandonment that may led them to a slow and progressive agony or rapidly occur after an unexpected event (landslides, earthquakes or floods). In the first case, the elements of a long decline are usually stratified (Marini, 2016) and combined in the so called “ghost town” as for example (Civita di Bagnoregio, Balestrino, Craco, Pentetattilo etc.). Here, the voluntary emigration, the decline of vital traditional economic sectors, the political events, the different forms of environmental risk and marginality (Teti, 2017) led to a radical decline.

From a geographical point of view, the abandonment is a multi-level phenomenon that combine different “spatial orders (Bolocan, 2014). There are at least five levels of extension:

- “Micro-abandonment”⁵ that may affect individual units such as dwellings, shops or small businesses located in the same architectural volume or in the same block⁶.
- A second level is composed by entire buildings with any kind of functional distinction, for example rural settlements, industrial buildings, commercial buildings, shopping malls, etc.
- A third situation is defined by abandonment processes that affect wide parts of the city. This happens in urban settlements with huge productive platforms whose decline follows constantly the traditional industry decline.
- A situation in which an entire city is abandoned, such as the already mentioned “ghost town”
- The last case is the abandonment of large geographical areas including buildings and open spaces such as the so called “inner areas” in Italy. These contexts had experienced a steady decline in population and in economic activities that is leading to a complete emptiness.

Atlas and abandoned places

The archipelago of mute rubble and ancient ruins (Tarpino, 2012), described in the previous paragraphs, ensues the increasing need of knowledge about abandoned places. As mentioned, it is a plural and continuously in mutation geography affected by nonstop re-colonization and new abandonment processes that needs to be understood (quantity, localization, morphology, function etc.). For these reasons, recently we have assisted to an increasing number of initiatives aimed to grow

² Recycling is “non è semplicemente riusare, ma, seguendo l’analogia con il mondo organico, proporre un nuovo ciclo di vita, assumendo che di vita e di cicli si tratti e che l’analogia contenga ancora qualche utilità” (Viganò, 2011).

³ The exhibitions materials are reported in Ciorra, Marini (2011).

⁴ It is a Project of National Interest (PRIN) funded by the Department of Instruction in 2011.

⁵ To better understand the micro-abandonment concept see Garda, Gambazza (2016).

⁶ There are similar examples in Antwerp where inside the XIX century “urban belt” there are many abandoned places that gives space and porosity to the city (VIGANÒ 2010, p.197).

the awareness regarding the abandonment spaces. More than 90 cases can be found on the “Osservatorio del riuso”⁷ website and we group them in three different categories: (i) Observations promoted by public institutions of local or regional importance (ii) Research and exploration promoted and produced in/by the universities (iii) Bottom-up experiences promoted at local level by associations or informal groups of citizens. The first category must include the census of the abandoned places made by Lombardy Region, Assimpredil, Ance and Provinces in 2008-2010. It is a partial mapping of the entire regional territory that leads to the recognition of 745 brownfield sites. This first project led to the creation of a free database⁸ and an accessible web portal that didn’t received any updates since the opening. It has an accurate scale of details despite the extent of the census, and it is possible to find information about the perimeters of the areas, the buildings, the urban destination and their constraints. A second example is the “Degraded and abandoned areas and buildings” database of the Milano Municipality, available on its Opendata web-portal⁹. This case was started in 2014 and finished in 2019 with the adoption of the new planning document (PGT) of the city. Compared to the previous case this census has a local scale and it is focused on the need to recognize a plural geography identifying different situations especially at the functional level (dwellings, shops, businesses, production, etc.). The third case is the “Census of the public real estate”. The Department of the Treasury annually updates it and allows the users to download all the information available in a .csv format. It has a good detail scale with a quite complete set of information but there is not the possibility to visualize the database on a webmap directly on the Department of the Treasury website (in the previous cases was possible). In order to visualize the information, an expert user should geo-locate the address of each space or combine the data with some dataset of the cadastre. This is a limitation in the possible use of such an important dataset. Another institutional case was made by the *Diathesis Lab*¹⁰ of the University of Bergamo between 2013 and 2014. This research found 805 abandoned areas using both quantitative and qualitative criteria. The results are online on a web platform¹¹ but the data are not available for the download. The scale of this contribution is vast and the information are divided by the municipal boundaries without the spatial location of the abandoned places. There are not registered update since the project conclusion.

A second University experience is the “Atlas of abandonment” made by the University Statale di Milano and the PIM¹² in 2016. In a two years process, 580 unused areas in 38 Municipalities of the Metropolitan City of Milan for a total of 776 hectares have been analysed. This case recalls the taxonomy mentioned above finding many examples of abandoned places. As for the previous research, data download it’s not possible and the updating of the information seems interrupted.

Moving to the association levels and citizen groups, many examples can be found. The first one is *[im]possible living*¹³, an abandoned spaces re-activation experience based on community knowledge as a first source of information. They had created some call for ideas to find new functions for some

⁷ <http://www.osservatorioriuso.it/> (last access in May 2019).

⁸ <https://bit.ly/2JAD4pC> / (last access in May 2019).

⁹ http://www.comune.milano.it/wps/portal/ist/it/servizi/territorio/Immobili_degradati (last access in May 2019).

¹⁰ It is the “Rifo/it rigenerazione urbana e restituzione del suolo. Aree dismesse e obsolete i Lombardia” project, done by Bergamo University coordinated by prof. Emanuela Casti

¹¹ <http://rifoit.unibg.it/rifomap/> (last access in May 2019).

¹² <http://www.pim.mi.it/atlanter-abbandonamento/> (last access in May 2019).

¹³ <http://blog.impossibleliving.com/> (last access in May 2019).

empty space. Nowadays this case is not active anymore, but their approach remains crucial and replicable.

Moreover, there is the project of *Triesteabbandonata*, a story-telling project composed of photographs and abandoned places descriptions. In this blog the download of the dataset is not allowed, and the places are not located in a map. This experience deserves to be mentioned for the use of a tool such as the photography to describe the phenomenon in a qualitative way and thus renouncing to the comprehensiveness but underling the complexity of the abandonment. The *Coalizione Civica* association has started a census of un-used buildings in Bologna ¹⁴ with the aim to sustain social and cultural operators that are involved in the temporary re-use of abandoned places. The most important goal of the association is a web maps (produced using MyMaps by Google) that allows the download of the data related to more than 400 un-used mapped spaces. Even it is not an “official” dataset and sometimes is unformalized or incomplete, it remains a huge support for the citizens.

The last case is related to the discontinued railways that are a particular category in the galaxy of the abandonment. We are referring to a specific case composed by built materials, open spaces and the physical infrastructure. In particular, the example of *Ferrovie Abbandonate*¹⁵ collects in a non-public or open database the information related to more than 7.500 km of abandoned railways. Since it is a peculiar abandonment category subjected to slow changing or conversion processes there is no need to guarantee a constant updating of this database. After the first collection of information the project is focused on the organization and promotion of cultural events to strengthen the sensitivity for the disused railways enhancement. This case is emblematic both for the multifaceted nature of these spaces and the reasons of the abandonment and for their geographical location. Unlike the previous cases associated with places in large urban areas (Bologna, Trieste and Milan), the abandoned railways concern peri-urban or extra-urban situations.

Observing all the cases mentioned, this contribution developed a comparison that reveals some common points between the experiences. Specifically, the public initiative projects suffer from the lack of a constant update of the information collected. This is the case of the Lombardy Region database but also of similar initiatives such as the regional Umbrian database whose information dates back to 2012 (<http://geo.umbriaterritorio.it>). Sometimes the problem lies in the structure of the data which cannot always be reported on the map easily (i.e. the case of Department of the Treasury), or the data are not enough complete because the surface or the function of the places are missing. This very last point is related to the scale of the project that when is broad could lead to a loss of the detailed information.

For the research and exploration promoted and produced in/by the universities the biggest problem is the impossibility of data reuse by third parties. This has to be added to the lack of information updating as for the institutional projects. Further, the research are characterized by a certain degree of sectoriality so the information are often concerning only one building typology or a single function. It is important to underline that these experiences are able to combine several research methodologies ranging from surveying, to photographic stories, to infographics up to written stories. This means that the contributions made by this researchers and universities are dealing in a correct way the taxonomy of the abandoned places using many tools to understand it.

¹⁴ <https://www.coalizionecivica.it/mappare-territorio-vuoti-urbani-bologna/> (last access in May 2019).

¹⁵ www.ferrovieabbandonate.it/index.php (last access in May 2019).

The temporality seems to be the major characteristic of the bottom-up experiences promoted at local level by associations or informal groups of citizens. Cases like [im]possible living are closed because the association or the promoter of the project fails to build a solid base formed by other citizens who continue in the activities of census and updating (end of funding, closure of associations, etc.). These initiatives are mainly characterized by the precision in the identification of information, as it is the result of a direct knowledge of the cases. Another feature is the scale of analysis usually limited to some areas of specific interest (municipal boundaries, neighborhoods, etc.) since the objective of the project is to reveal problems or giving a voice to citizens who perceive little interest by the institutions. As mentioned, the most important aspect of this category of projects is their collaboration and involvement with the citizens and their knowledge of the places.

So far, the phenomenon of the place abandonment is multiscale and composed by a huge taxonomy of materials. This complexity must be included in the forms of representation and census that need to have a wide degree of flexibility accomplished by using many tools (maps, storytelling, photos, different scales, different actors, etc.). The possibility of updating the data is a crucial issue because the phenomenon is in continuous changing and the possibilities to obtain funds to do the analysis are decreasing. In conclusion, it is important to underline that having an open dataset or a platform that can be flexible, modifiable and adaptable becomes fundamental for this type of project. Moreover, it is essential to promote initiatives to be shared with the citizens and their knowledge in order to involve and empower them.

Open Data and VGI as enabling infrastructure

As mentioned, a key factor, especially for the mapping projects of abandoned places, is the possibility to (re)use and update the information. Unfortunately, many datasets are based on old survey even if their structure and level of detail is complete, complex and rich. An approach that could help in solving this problem is the paradigm of OpenData production: “an information that can be freely accessed, used, modified and shared by anyone and for any purpose, subject to the requirements of origin (attribution request) and opening (sharing in the same way) (Open Knowledge Foundation 2016). Recently, it’s becoming clear the importance of this kind of approach because we are witnessing to a great revolution that involves the territorial information systems. The access to geographic information has drastically changed in the last ten years with the introduction of terms such as Neogeography (Turner 2006), Volunteered Geographic Information (Goodchild 2007) and web-mapping (Plewe 2007). Particularly interesting for this contribution are the Volunteered Geographic Information (VGI). These are georeferenced information coming from collaborative mapping projects that represent the set of geographic information generated and shared by a community of users (Goodchild 2007). Between the most known project we found OpenStreetMap¹⁶ (OSM;<http://www.openstreetmap.org/>) and Wikimapia (<http://wikimapia.org/>) inspired by the Wikipedia approach, Google Map Maker (<https://www.google.com/mapmaker>) and Mapillary

¹⁶ OpenStreetMap is the most widely used collaborative mapping project in the world. It was founded in 2004 with the aim of creating a world-wide map constructed and editable directly by users, freely shared and usable by anyone with an ODbL license (Open Database License).

(<https://www.mapillary.com/>).

The VGI represent an innovation in the panorama of geographic data especially as a potential tool for solving the previously mentioned problem of cartographic material update involving the citizens knowledge. This is important for the public bodies mostly when the official cartography is lacking (Haklay et al. 2014). The constantly modifiable nature of the information characterizes the VGI as a new concept of knowledge: a cartographic representation that puts the "absolute power of the map, which admits neither criticism nor correction" into crisis. (Farinelli, 2003, p. 37). More and more open data-VGI hybrid systems are proving to be the most effective enabling technologies vectors for innovative methods of mapping and enhancement of fragile and abandoned areas. This depends on many different factors but, first of all, on the possibility of interpolating extremely diversified data families coming from sources closely linked to the territory: this allows to make visible parts of that kind of local embedded knowledge that is often hidden or partially forgotten. In other cases the use of local information sources is able to detect elements of the cultural landscape that are abandoned only because they are no longer part of the collective memory or have ended up unused due to an inability to enhance the stratified and lesser-known weave of our territories. The following case study is a very suitable example to understand the need to identify new tools that allow to better identify those 'minor aspects' discussed at the beginning: sometimes 'making visible' is the first concrete step to activate and make possible collective re-use and boost policies.

The case of the Sabbioneta embankment: making fragility visible.

In many cases, territorial fragility is not strongly evident, above all when the texture of the landscape is rich in anthropic, urban and cultural places of great relevance, as in the case of most of the Italian territory. Building awareness and looking in deep at latent fragility also means to focus the great variety of non-outstanding landscapes, according to the interpretation coming from European Landscape Convention, including the so-called everyday landscapes, recognizing them as rich grounds of potential resilience for positive transformations aiming first of all at the quality of life for people.

In order to mitigate weaknesses, while first of all making visible and then boosting non-outstanding landscapes' partially hidden potentials, the importance of open-data based knowledge and awareness actions is increasingly evident both for enhancing and supporting decision-making processes and to promote good practices in the management of the cultural landscape.

A possible example can be represented by the pilot action "Cerchio d'Acqua" (<http://www.amiciambientesabbioneta.it/cerchiodacqua/>), which focused on a network of hydraulic and landscape elements partially abandoned and hidden in the agricultural area around the well-known small city of Sabbioneta. Sabbioneta is a very rare example of walled newly founded renaissance town designed in the late 16th century by duke Vespasiano Gonzaga in northern Italy on a sandy bank of the Po river. Sabbioneta was inscribed in the UNESCO World Heritage List in 2008 also because of its uniqueness in representing the concept of ideal city planning, maintaining a structural relationship with the agricultural and water landscape. The main idea of "Cerchio d'Acqua" action (a 2y. research activity founded by local and regional authorities) is to push the gaze of its citizens outside the superb renaissance walls to recognize and enhance the tiny but important specific elements of the landscape connected to water management as a significant part of the original project of the city. To realize new landscape knowledge and tools designed to map and improve citizens involvement, the project developed an approach aimed at the interaction between different geospatial FOSS (free and open source software): a digital ecosystem that allows to map, visualize, share,

participate.

The first approach involved a detailed OpenStreetMap-based cultural landscape re-mapping. The geo data uploaded to the OpenStreetMap DB enabled the implementation of a brand-new tailored FOSS geo-blogging app designed for the local community use to start shared maintenance processes, landscape self-protection, and achievement of effective recovery and improvement of the water small embankments (arginelli fluviali). The shared boost of the cultural landscape has developed also through collective meetings and walks outside the walls along the huge water embankments system: this is why it was necessary to think about the use of a free web-based tool able of stratifying the 'ways of looking at the landscape' that citizens have experienced during the project: the result is a massive visual survey, inside and outside the town, developed through Mapillary and integrated into the communication channels of the project.

This sort of approach, in addition to making easier and more efficient the integration of very different digital tools may represent a step forward for overcoming some recurring critical issues in local projects of fragile landscape enhancement:

- very often the territorial information sources are ancient, analogical and difficult to find: the digitalization is therefore a primary necessity that cannot be postponed;
- digitize to then re-hide information in closed and proprietary systems generates the same future inconveniences;
- the growing social demand of sustainable cultural tourism around non-outstanding landscapes requires a growing availability of functional, open and updatable datasets;
- the creation of FOSS and open source digital hubs makes it possible to keep local projects alive even after they have ended through an incremental storage of data that can be reused at any time;
- we need to rethink the potential of ICT in a more inclusive perspective in order to better support the bottom up processes of awareness and collective participation, also for this reason the crowd based Wiki-like model continues to be a winning reference.

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PA07

Community-based planning and social innovation

The self-build housing in Madrid (Spain): 40 years of struggle

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Abstract: In a context of increasing commoditization and financialization of housing and the city as a whole, the self-construction of "informal" housing has constituted an alternative in many countries both in the North and in the Global South, however precarious it may be, for those who have been excluded from the "formal" system. Although these forms of production tend to be considered residual in the Global North, they keep creating dissident spaces that interrupt the process of accumulation of capital and challenge the private property, which is one of the fundamental pillars of capitalism.

This article analyzes the policies and actions carried out in Madrid (Spain), from 1978 to 2018, in relation to self-built settlements. This analysis shows how the policies and actions carried out have been determined by the place occupied by the affected community, both physical and social, as well as by the way that community is linked to the rest of the power structures.

Information regarding historical cases has been collected from existing official documentation, as well as through interviews with the actors involved in them. An analysis of current policies has also been carried out through action-research carried out in a self-built settlement for three years. The information collected has been processed through an analytical framework based on the Giddens' approach, with a focus on the role of two key actors: the state and the community (allocative structures and authoritative structures).

It is considered that this work contributes to assess the achievements of innovative community-based practices, such as the *"Plan de Remodelación de Barrios"* as well as the results of such practices in terms of satisfaction of community needs and of deeper structural changes.

Keywords: Social innovation, conflict, space of autonomy, bottom-up processes.

Introduction

UN-Habitat estimated that, by the year 2020, 1.392 million people will live in *"informal"* settlements, double what was estimated in 1990 (UN-Habitat, 2007, Table B3). Housing is an asset that is increasingly inaccessible to the lowest income groups. This has contributed to the development of "alternative" forms of access to land, housing, or basic services such as water or energy, constituting a significant way of building the city (Davis, 2001; Pastrana et al., 2012; Vaccotti, 2017). This model of self-production of space has become, for many people, the only way to access housing or basic services in the city, even in very precarious conditions (Secchi, 2013).

These forms of self-production of space, commonly called "*informal*", have been occurring to a greater or lesser extent throughout history, and highlight how, despite the efforts invested in formalizing urban life and its development, the formal system seems to represent only the tip of the iceberg of a deregulated subsystem, partially regulated or not regulated (Herrle & Fokdal, 2011).

The concept of "*informality*" has been defined and redefined since the 70s. At first it was considered only as an appropriate concept to define the "survival" mode of the urban poor. In the 80s and 90s the term "*informal*" was adopted by experts in housing and planning, and applied to self-produced settlements by low-income communities. Although, studies such as those of Durand-Lasserve & Royston (2002), have highlighted how "*illegality*" has been used as a pretext to carry out massive eviction processes of the most deprived sectors.

From this perspective, more and more authors question the usefulness of the term and put the focus on the need to analyse the phenomenon from its complexity, that is, from a more holistic perspective that allows to link the economic, social and governance factors that make it up (Álvarez et al., 2015; Alfaro et al., 2018). In this sense, Álvarez et al. (2019) affirm that "*informality*" is first and foremost a political question, which has to do with the place it occupies, a certain community, within the social space and the way in which it is linked to the rest of the power structures.

The objective of this article is to analyse the policies carried out in the Community of Madrid (Spain), in relation to self-managed settlements, in the last 40 years (1979-2019). This work has been based on the case study method (Yin 1994) and focuses on the analysis of the patterns of relationship between actors and the way in which this determine access to housing and basic services in the city (Herrle & Fokdal, 2011, Alfaro et al., 2018). To this end, the policies carried out in Madrid against self-induced settlements from 1979 to 2015 have been analysed, as well as the current process of "*dismantling*" one of the last settlements self-managed of the Community of Madrid, Las Sabinas (Móstoles) (2013-2019). It is considered that the comparison of the results obtained, in both cases, helps to show the extent to which the implemented policies have been determined, as Álvarez et al. (2019) affirm, by the social place occupied by a certain community and the way in which is linked to the rest of the power structures.

The article is organized as follows, after this first section of introduction, the results obtained in both cases are presented to finally draw conclusions.

Policies in relation to self-managed settlements in Madrid (1979-2015).

This section briefly presents the context, that gave rise from 1979, to two processes that occurred in parallel: on the one hand, the "Plan de Remodelación de Barrios" (PRB) (1979-1998), as response to the demand of the working class of a decent house, at the beginning of the democratic period, and, on the other, policies aimed to serving of the population considered "marginal" that were planned in parallel to the PRB and that were developed until the closure of the "Instituto de Realojamiento e Integración Social" (IRIS) in 2015.

Context (1936-1979)

At the end of the 50s, as a result of the migratory field-city processes, self-produced settlements accounted for 16.6% of residential land in Madrid (Carmona and Rodríguez, 2007; Lago, 2014). During the Franco period, the administration pursued self-produced settlements and neglected the demand of these families for access to decent housing and basic services, claiming that these were neighbourhoods built "*illegally*" on rustic land. Facing the institutional abandonment, around 300,000 people continued self-building their homes and self-managing their access to basic services. Over the years, these lands were gaining centrality and in 1963, were declared urban land and plans proposals began that, under the pretext of improving hygiene conditions and the urban environment, assumed the eviction of families to new peripheries. In this context the neighbourhood associations and those who supported them, mobilized by rejecting official plans and demanding "*decent*

housing, here and now!". Their struggles were gaining legitimacy and managed to transfer the idea that they should be allowed to remain in the periphery that they had been colonizing.

The "Plan de Remodelación de Barrios" (PRB) (1979-1998)

In 1979, in the context of a recently inaugurated democracy, the PRB, led by the neighbourhood associations, was implemented. The PRB was a process of more than 15 years of negotiations between the actors involved, affected, institutions, technicians, etc. Once finished, had been achieved (Castro & Molina, 1996) the rehoused in-situ 150,000 people in 39,000 houses and, thus, the opportunity for these families to consolidated the efforts invested in their neighbourhoods for decades. The houses were granted under ownership, which allowed families to remain in them over time, since the financing conditions were very favourable (less than 10% of family income).

Although around 3% of the families affected by this process were excluded of the PRB, of these 93% were gypsy families. A community historically, socially and economically discriminated (Montes, 1994). From that moment, the self-managed settlements in Madrid stopped being a generalized problem that affected broad sectors of society and became a problem of "marginal" sectors. In 1984, the Housing Institute of Madrid (IVIMA) aimed at promoting housing ownership for the middle class is created, while a plan to "*control the phenomenon of shantytowns*" was developed.

Housing plans for the "marginal" population (1986-2015)

In 1986, the Consortium for the Relocation of Marginal Population (CRPM) was created with the aim of "*eradicating*" the slums of the city of Madrid (located 87% in the districts of the South-East) and take advantage of the land freed for *the new* urban developments in the city. In the 12 years since the creation of the CRPM, only 35% of those initially involved have been relocated, of which 55% are in neighbourhoods known as "*special types*", that ended up turning into ghettos, or provisional camps that ended up lasting decades. The failure of this experience, as well as conflicts between different levels of administration for the management and development of these processes led in 1998 will close the CRPM and the Institute for Re-housing and Social Integration (IRIS) was created. The IRIS started with the recognition that all families had a right to decent housing and conducted a new census of families who were living in self-managed settlements. According to Nogués (2010), between 1998 and 2006, 43 "*slums*" were "*dismantled*" and 1,223 homes were adjudicated, located 90.5% in the South and South-East of the CAM (in the lower income municipalities). It is estimated that the investment in flats by family relocated was about € 110,000, which was equivalent to a floor in property regime, although the families were relocated on a rental basis. There is no information on whether all the displaced families were relocated or not, although it is known, for example, that between 2005 and 2006, 421 "*slums*" were demolished and 232 families were re-housed, which indicates that at least 55% of them were in those years of the families affected by these "*relocation*" processes were seen on the street without a housing alternative, and forced to "*start from scratch*" in others self-managed settlements such as La Cañada Real or Las Sabinas (Móstoles) that were never included in the censuses of the IRIS. In addition, there is no official information available about how many of the families who were relocated under social rent have been able to stay in the flats, since the payment of housing, community and services entailed 50% and sometimes even 95% of the income of these families. With the outbreak of the crisis in 2007 the situation is only getting worse, the precariousness of the families increases while the administrations are without liquidity, which led to CAM selling, in 2013, around 2,000 social housing to "vulture" funds. According to unofficial sources (El Plural, 20/07/2013), it is considered that the last house delivered to a "*slum*" by IRIS was carried out in 2011. In 2015, it was estimated that around 4,000 families were still living in self-managed settlements in the CAM and the public administration decides to close the IRIS and start up the Social Housing Agency (AVS), integrating in the same agency the IVIMA and the IRIS, two institutions that had been created to respond to the demand of housing, a demand that since the crisis of 2007 had only increased.

In almost three decades, since the creation of the CRPM to the closure of the IRIS (1986-2015), it was observed that, unlike the PRB, these processes were led by public administrations, without participation in the decision-making process of the affected by them. In 30 years, barely relocated to 4,000 families, 10% of those who were rehoused in half the time in the PRB, these rehousing not only were not in-situ but in 90% the homes granted were located in the South-East periphery of the CAM (in the municipalities with the lowest incomes). In addition, the houses were granted on a rental basis, with no public information on how many of the families affected by these processes were left out of the rehousing and how many remain today in the flats in which they were rehoused. The analysis of the current relocation process of the Sabinas (Móstoles), which is presented below, is carried out, among other things, in order to clarify what happens with these issues in a relocation process.

Policies in relation to self-managed settlements in Madrid (2015-2019): The case of Sabinas (Móstoles).

In 2015, the AVS inherits from the IRIS the relocation agreement, signed between CAM and the municipality of Móstoles, from the settlement of the Sabinas. A neighbourhood located in the path of the Guadarrama River, along 4 cores (2 in Móstoles and 2 in Arroyo Molinos), which have been self-managed for decades and which is estimated to comprise some 375 families.

After decades of institutional abandonment in which families have to self-manage their access to water, energy, and live without waste collection service, without access to public transport, etc. Finally, in 2013 the relocated agreement was signed. This agreement establishes the obligations of the two administrations involved (financial contributions, actions to be developed, etc.), as well as the requirements that families must meet to be rehoused, among which is set: a minimum registration of 5 years in the town and not having been awarded public housing in the last 20 years. According to the information provided by the social services of Móstoles, at the time of signing the agreement 45% of those affected by it does not meet the requirements, so the alleged "*relocation*" process implies the "eviction" without any housing alternative for these families, something that goes against Article 47 of the Spanish Constitution.

Although the agreement is signed in 2013, the "*relocation*" process does not begin until 2018. This delay is due, among other things, to the fact that the municipality does not provide the corresponding funds until 2015, and although the families suffer the consequences of 5 more years living in precariousness and uncertainty, there is no consequence for breach of it for the respective administrations. In addition, when the AVS starts the relocation, it maintains the requirements established in 2013, so in practice a 10-year census is required and not 5 as established by the Decree approved in 2018 by the AVS. On the other hand, so far the agreement has been carried out exclusively, in only one of the four nuclei, which is inhabited by 90% by gypsy families from other self-managed settlements from which they were evicted without any alternative housing. In this neighbourhood of 100 families, 50% do not meet the requirements established in the agreement (the majority does not comply with the registration requirement, despite the fact that almost all of them have been in the neighbourhood for more than 5 years), while, no any alternative being foreseen for this families. From the information available it is known that 40 homes have been granted under social rent, 84% located in the South-East of Madrid, about 50 km from the centre. Of these, at least 20% have been rejected or are in the process of doing so due to a break with their social fabric, distance or the impossibility of facing the payments that sometimes involve up to 100% of family income.

In the case of Las Sabinas (Móstoles) the results obtained show how once again the plans for the population considered "*marginal*" have been carried out without the participation of the people affected in the decision-making processes. This has led to the fact that despite the fact that more than 5 million euros have been invested, they have been used inefficiently and inefficiently. The administration continues to blame the "*victims*" without questioning their mismanagement and their inability to sit down and negotiate the process with the people affected by it.

At present, there is still no precise census of how many families live in self-managed settlements in the CAM or in occupied dwellings. Given the lack of effective response from administrations and the context of housing emergency in Spain (Gutiérrez, 2018), it is expected that "*informality*" will continue to increase.

Conclusions

The objective of this article is to analyse the policies carried out in the Community of Madrid (Spain), in relation to self-managed settlements, in the last 40 years (1979-2019). This work has been based on the case study method (Yin 1994) and focuses on the analysis of the patterns of relationship between actors and the way in which this determine access to housing and basic services in the city (Herrle & Fokdal, 2011, Alfaro et al., 2018). To this end, the policies carried out in Madrid against self- induced settlements from 1979 to 2015 have been analysed, as well as the current process of "*dismantling*" one of the last settlements self-managed of the Community of Madrid, Las Sabinas (Móstoles) (2013-2019).

- The analysis of the PRB, has shown how a process led by those affected achieved the relocation in-situ of 150,000 people in 39,000 homes granted under ownership and under very advantageous financing conditions (close to 10% of family income). that has allowed these families to consolidate the efforts invested over the years.
- However, this process leaves out just 3% of the population, in a 93% gipsy population, a historically discriminated community (Montes, 1994). Since then, the self-managed settlements in Madrid have become a problem of "*marginal*" sectors.
- Since then, all of them, the CRPM (1986-1998) and the IRIS (1998-2015), as well as the AVS (2015-current), have excluded those affected from the decision-making process. This has meant that in more than three decades the 10% of the population that relocated to the PRB has barely been relocated in just 15 years. Of the current process in the Sabinas is also observed that the "*relocated*" process, is foreseen without housing alternative for the 40% of those affected, something that goes against Article 47 of the Spanish Constitution itself. In all cases in which housing has been granted, this has been on a social rental sistem, representing between 50% and 100% of the income for some families. In addition, the houses have been granted each time in peripheries furthest from the centre.

In short, the comparison of the results obtained helps to show the extent to which the implemented policies have been determined, as Álvarez et al. (2019) affirm, because of the place a community occupies within the social space and the way of linking that they achieve to generate.

Finally, note that although the results obtained in this research are context-dependent, it is considered that similar results could be obtained in other cases in similar conditions of violation of rights and unequal power relations.

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New roles for Administrations, Planners and Citizens in the Self-organization view

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Abstract: In contemporary debate about citizens self-organization it emerges the ambiguous role of practices, and policies in response. These can create a new way to intending the city through the creation of new institutions, or commodifies and privatize social services. Some of these practices can be de facto an enclosure to a close community of people, while others can provide public services as or more effective than the institutional ones (Cellamare, 2012). Using the category of spatial justice as a framework to read the practices of self-organization and the policies linked with them can provide some tools. Spatial justice can provide some questions regarding openness and fairness (Soja, 2010; Falco, 1978). About the right to the city, it is possible to use it as a category for trying to understand how citizens are involved in the design of the city as a whole (Lefebvre, 1968; Harvey, 2012). Both of them can generate a number of single groups of citizens and single spaces or can create synergies with effects among every part of the city. Citizens self-organization left some questions un-answered: about the role of public administration, especially if practices step over legal / illegal border and recall the concept of justice.

Keywords: citizens self-organization, spatial justice, right to the city, new institutions

Introduction

The paper compares two municipal policies, aiming to regulate citizens self-organization: the law n. 446/2016 of the city of Naples *Identification of spaces of civic relevance to be inscribed in the category of Commons* and the *Guidelines for the cooperation among citizens and administration for care and regeneration of Commons* approved by the city of Bologna in 2014.

These deliberations are interesting to be compared as they are an attempt to regulate citizens participation and self-organization, but produces different results, in terms of freedom for the citizens in acting / self-regulating / organize themselves, in terms of the role they design for citizens and public administrations, in terms of promotion of the right to the city and generation of spatial justice. The two policies result from different social contexts, political interactions and historical moments.

The *Guidelines for the cooperation among citizens and administration for care and regeneration of Commons*, approved by the city of Bologna in 2014, aim to create a legal framework to let citizens take care and manage public places (both buildings and open air). These civic spaces are here named Commons. The Guidelines are the result of a participatory process. In the process, taken as case study, four groups of citizens asked and obtained spaces to take care of. LABSUS (an association of professionals with the aim of promoting citizens participation) followed the process to help in solving problems faced by citizens and administration. Another objective of the Guidelines is to ease the cleaning of the historical porticoes that characterize the city's historical centre: as the porticoes are protected as historical goods, normal people couldn't make any interventions, even for their maintenance.

The law 446/2016 of the city of Naples is the last of seven public acts that the city of Naples produced to recognize and safeguard the Commons (intended here as the output of social interactions) from privatisation. The laws are the results of a long participatory process carried out especially with people involved in the creation and government of the commons (the community), and other citizens. The laws aim to design new regulations to recognize the plurality and the mutability of the community governing of commons.

The paper compare the two policies, through the framework provided by the concepts of spatial justice and right to the city. This is a theoretical paper, so it won't deal with case-studies. The aim of the paper is to compare the municipal laws and to define if right to the city and spatial justice could be tools to evaluate policies. Case studies are intended as the most important part in the evaluation of policies. On the other hand, it is useful to have some tools to evaluate policies before their approval.

Spatial Justice is intended here as the social wellbeing produced through the set of spatial elements that influence everyday life. Space is not an unmodifiable element in the human experience, but as an element which can improve or worsen life conditions by its modifications. In this sense Spatial Justice is strictly connected with the *Right to the City*, intended as the right of people to manipulate the urban space in function of the society they want to live in (Harvey, 2008).

The contribution is organized as follow: the first part will describe the concepts of Right to the City and Spatial Justice. The second part will describes the two policies, their conditions and context and their outputs. The third part will compare the policies, in terms of consequences, power and distribution of responsibility among citizens and institutions. The conclusion will put what emerges through the comparison in relationship with the concepts of spatial justice and right to the city, to see how the policies generates or go against the two.

Spatial Justice and Right to the city

Spatial Justice and Right to the City are political concepts: it is not possible to give a definition of both without explicit a standpoint (Fainstein, 2010). In particular the Right to the City can have different definitions, more or less radical.

Spatial Justice regards the spatial and environmental items that contribute to or generate social justice (Soja, 2010). In this field it is possible to remember the human factor, as pointed out by Harvey in *Social justice and the city* (1973): people with higher incomes or higher instructions have more chance of enjoy amenities. On the other hand the perception of the value of facilities and public services can change depending on the everyday life. The creation of amenities is strictly connected with the use of the buildings. In this paper social and Spatial Justice is intended as a responsibility of Public Institutions, in a political arena.

The Right to the City can have different meanings. Since its formulation, in 1968 (Lefebvre, 1968) the concept had two possible interpretations: a radical one, meaning the right to change the city to reach an environment more just, pleasant and democratic. This should be achieved through the direct action of citizens, supposed as equally participant in the building of a new city and a new society (Lefebvre, 1968; Stanek, 2011; Mayer, 2012). The second interpretation is less radical, meaning the right of citizens to access the services a city can offer. Both way are a claim toward a more just society. The difference is in the deepening of the changes that are intended to be needed to achieve a just society in a just city: for the last interpretation, citizens are intended as users, while for the first one they are intended as builders/creators. In this paper the Right to the City is intended as the right to build the city as the society people want to live in, giving the city as the physical image of the society (Harvey, 2008).

People often take the urban environment as a backdrop. Since it hardly changes with the same fluidity as other elements of daily life, it is perceived as fixed. Narratives about urban development and changes often are around great projects. The consequence is that people have little regard for spatial justice and it is an unusual category

in the demands of social justice. Notwithstanding public space is perceived in general as a main part of the public sphere. So its privatization, or the denial of access and free use of it to groups of people can be intended as an impoverishment of the democratic life in general (Bollier, 2014), and an act of injustice.

Yet there are many space-dependent factors that affect daily lives (Soja, 2010): paths people have to do to reach points of interest, accessibility of spaces and their use for collective purposes, quality and quantity of urban amenities and services people have near their houses. All of these factors contribute to form part of what can be defined as indirect income (the possibility of people to have a good quality of life using public services instead of personal incomes), especially when it comes to the quality and quantity of public services available near home. However, with regard equipments, it should be noted that their presence is not enough: to be able to enjoy certain conditions are necessary. David Harvey in *Social Justice and the City* (1973) call them *amenities* and says that they are individuals who have a higher income or more capacity can more easily enjoy them. Luigi Falco in *Gli standard urbanistici* (1978) points out how important the equal distribution of public services on the city territory is, as it is difficult for people of popular classes to reach them. Therefore, the distribution of high quality public services within urban areas contributes to the rebalancing (or imbalance) of the quality of urban life – the quality of everyday life among citizens. The same can be said about accessing and using public spaces (both in the open and in the buildings) to spend leisure time, organize collective activities, recreate or do political activity.

Due to the diffusion of neoliberal policies and the welfare state crisis, there is a progressive reduction in public services in terms of quality and quantity. As a result, people are increasingly forced to use their own resources to satisfy their needs. These resources can be both economical or social ones. The results can be very different. On the one hand, for example, there is the creation of public policies from the bottom (Paba, 2010), which have a positive impact on the society as a whole. On the other hand there can be created practices of closures, dependency, privatization. The main problem in both cases is the exclusion of people who don't have resources, neither economical, nor social ones. The very excluded are to remain excluded.

To give an example of the difference among the different practices, it is possible to refer to the practices about the recovering of urban spaces. Facing the erosion of the public care of spaces and gardens (as public administration can use less resources in hiring people for these kinds of job), we see the flourishing of re-appropriation practices such as those of community gardens, or phenomena like *Retakers*, or *Angeli del Bello*. These groups mainly organize themselves around the necessity of cleanness of the urban environment. So they organize days in which invite citizens to clean streets, walls, gardens, and public spaces in general. In their cleaning desire, they include also wall paintings and street art. And urban populations that create disorder, like homeless, mendicants, hawkers, and so on.

But where creative space-sharing practices are established, which actually produce an increase in the quality of life for the neighbourhood, it is possible to talk about the creation of commons. According to Harvey in *Rebel Cities* (2012): *The common is not, therefore, something that existed once upon a time that has since been lost, but something that is, like the urban commons, continuously being produced. The problem is that it is just a continuously being enclosed and appropriated by capital in its commodified and monetized form, even as it is being continuously produced by collective labour.* (ivi, p. 77).

Comparing these two examples of ways in which citizens intervene in urban spaces, it is possible to see some ambiguities in people interventions and involvements. For this reason, in this paper it is proposed to use some tools or framework as guidelines to see the practices. Also it is important to explicit the point from which the practices are observed.

Bologna: “Guidelines for the cooperation among citizens and administration for care and regenerations of commons” (2014)

These Guidelines were approved by the city of Bologna in 2014. They were written in cooperation between the Public Administration of Bologna and LabSus, an association created to promote the idea of subsidiarity, intended as cooperation between citizens and Administration in the management of urban spaces and public services. The core of the Guidelines are the Collaboration Agreements, which are subscribed between Active Citizens and Public Administration. These agreements are conceived as a tool to give citizens more possibilities of acting in line with the general interest, but are not really innovative in the distribution of power or responsibility among the actors. In general, Active Citizens have the responsibility of taking care of a civic good (a building, a garden, ...): they have the responsibility of management, cleaning and little maintenances. To make changes or going over these boundaries (e.g. self-building of furniture, adaptation of the space, self-representation in the space – Pasquali, 2008) they have to ask permission, following the same rules of public spaces (professional design, buying furnitures, security controls). In some cases citizens have to insure their activities with a private company, using their own money. In a case of conflict between Active Citizens and Municipality, the second will have the final word.

The agreements signed among citizens and administration contain:

- a) the objectives of the collaboration;
- b) the duration of the collaboration;
- c) the modes of the collaboration, the roles of the subjects, the reciprocal commitments and the limits;
- d) the modality of the collective fruition of the common;
- e) the consequences of eventual damages and the insurance;
- f) the guarantees against damage;
- g) supports given by the City to active citizens (including the eventual coverage of the insurance costs);
- h-m) other things as the supports of communal employees, the publicity of the agreement, the property of the furnitures and other objects.

From the spatial point of view it is important to note that the changes that active citizens can make to the space, as well as furnitures they want to put in, to use it best or to adapt the space to their exigences or to express themselves, are subject to the same rules as the ones to make in the classic public spaces. There is the need of a professional design even for minor changes. Active citizens cannot self-build, but they can find the money by fundraising. In case of damages, the responsibility is in charge of citizens.

Moreover the document indicates that the city promote the social innovation and the creation of collaborative social services. The public administration considers its buildings and spaces as resources for collaborative services and urban creativity.

Naples: “individuation of spaces of civic relevance to be inscribed in the category of Commons” (2016)

The four Deliberations of the City of Naples are the result of a long participatory process: a dialogue between the Municipality and the people involved in the care and government of abandoned places, which were recognized as common and appropriate by the community. In particular the City recognize the existence of some places which are characterized by frequent and lively social interactions, intergenerational solidarity, innovation, common elaboration of thinking and deep roots in the territory.

The fourth Deliberation (the last one), approved in 2016, says: *In the municipal territory, certain buildings and / or areas owned by the Municipality of Naples that are currently used by groups and / or committees of citizens according to logic of experimentation of the direct management of public spaces, thereby demonstrating in such a way that they perceive them goods as places that can be used collectively for the benefit of the local community, experiences that in their factual expression have been configured as "Houses of the People", places*

of strong sociality, elaboration of thought, intergenerational solidarity and deep roots in the territory. Thus the law identifies two paths for the management of these buildings: the first one is the entrustment of the building/space to a well-defined legal entity following an agreed management plan; the second one is based on the recognition of that good as civic and collective use (a sort of renewal of a traditional Italian institute for collective properties and commons).

The second institute appears more interesting. It can be classified as a retro-innovation: the renewal of an ancient use in a contemporary framework. In Italy (as in other parts of the World) the “civic uses” are an historical institute in which are formalized the collective properties and the collective rules of management (and use) of common goods. Most of the civic uses that are currently still existing are localized in the countryside, but there are many traces of commons even in the urban spaces (urban spaces used as commons. See Belingardi, 2015; Rao, 2008; Kelly, 2011). The innovation of the Naples’s deliberation is the fact that this policies distribute the responsibility of management and care of a civic to an informal group of people, recognizing that they have the interest in take care of it (as demonstrated by Elinor Ostrom, 1990), commons are the best way to preserve a good, by using it).

While the Guidelines of Bologna are criticized for not taking in account of the existing practices, because their design was based on new experiences, a limit of these policies can be found in the opposite. The dialogue is among the city’s administration and existing practices already stables (as they can be). The deliberations consist in the recognition of commons already created by a community, without taking in account practices that are at the beginning, or commons that are still to be recognized, but have the potentiality.

Anyway the publicness of commons, their connections in the social tissue of the city, can inspire more communities in taking action. One of the characteristics listed by Paba in his description of the *public policies from the bottom* (Paba, 2010), is: “*si diffondono (e mutano nella diffusione) per disseminazione, gemmazione, contagio, imitazione - adattamento, proliferazione orizzontale*” (ivi, p. 108). Moreover in some cases the absence of rules, even if is perceived like the absence of a guidance, can be a help for a community to find its own way of self-organizing.

Comparing the policies

After this brief description of the two policies, here is presented a comparison of the both, based on three different items: the decision (meaning who decide that a place is a common), the resources (meaning how are found the resource for its management), the govern (meaning who decide about the rules for governing the common).

1. The decision: who decide that a place is a common?

Answering this question means to answer a more general question about the power of self-determination of a practice and the power inhabitants have in the general plan of the city, or in the decision about urban spaces.

In the Bologna's Guidelines the decision is in charge of the public administration: there is a City Committee that periodically identifies among the assets of the City some places (buildings or open air) in partial or total disuse or deterioration which are liable for care and regeneration interventions to be realized through partnerships between citizens and the municipality. The liability is based on location, structural and functional destination. The Guidelines indicate the possibility for active citizens to choose the building or space to take care of, but it is not clear under which conditions the public administration will accept.

The policies of Naples indicate as “commons” building or areas used by citizens accordingly: is the use, the “experimentation” made by groups of citizens that gives the status to the space. So the City recognize the practices as they exists, and don't determinate the citizens actions before. The policies descend by the current

debate about commons at international level. In particular the debate is about the essence of commons. This is due to the fact that different authors and disciplines have different definitions (Belingardi, 2015). Currently most of the theorists agree in saying that is the community action of government to give to an asset the status of “common” (Giardini, 2010; Mattei, 2011; Dardot and Laval, 2015). In particular Dardot and Laval (2015) in their definitions of “common goods” (biens communs in french) wrote that the use of a good (communs) is so much important that the lemma can easily loose the “good”. As already said this can represent a problem in the moment of creating a common, because the process of creation can imply the illegal appropriation of a building (as it is demonstrate by the stories of the ones already declared commons by the Administration). On the other hand, if the community has the duty of the recognition by acting accordingly, this cannot be assumed by the public administration.

From a general point of view, the Guidelines started with four cases, but since 2014 have been signed more than 110 agreements between the public administration and active citizens. Some of them are already finished, and some other were about cultural actions (performance, readings,...) or one-day actions of cleaning which doesn't concern recovering or maintaining specific areas or buildings.

The Naples' policy recognize seven building as commons. It is not clear if there will be other deliberations to recognize other practices, that can start in the future or are already running but are not included in the list. Surely there are some other practices which strive to be recognize as common.

2. Money and work: who gives resources for caring a common?

The Bologna's Guidelines indicate that the Municipality can contributes to covering the costs incurred in carrying out the care or regeneration actions of urban commons. Among these costs can be included the design, the fee of professionals, the (private) insurance (in some cases) and other costs that cannot be covered trough the municipal assets (tools, workers, or other). One of the objectives of the Guidelines is maintaining a good urban environment with a minor cost for the public administration, so they encourage active citizens' fundraising. The municipality facilitates citizens' initiatives to raise funds for the care or regeneration of urban commons, guaranteeing transparency on the destination of the money collected and on their timely use. In the agreement it can be planned a variable commitment mechanism of municipal resources, increasing with the growth of resources earned by active citizens.

The Municipal policies of Naples poses the question of the economical valorization in a wider framework: the aim of governing a commons is not in the practices itself but in the general repercussion in term of social and cultural services the governments generates. The policy therefore says that the public administration is committed in finding through participative procedures way to generate income to sustain economically the recover and the government of the commons. To be precise, the policy indicate the activities as commons, and the building as the civic environment that host the development of the common. For this purpose it is possible to search and find new way of innovative financing (e.g. crowdfunding, fundraising, ...).

3. who govern the common and take the decisions / what commoners – active citizens can do

The Bologna Guidelines indicate that the management of the commons will be planned in the agreement. Active citizens are allowed to do what is contained in the agreement. Differences and changes in the management or in the care of the space could generate the interruption of the agreement by the administration. Also active citizens are not allowed to make any change in the space without authorization. All the actions of care are decided in the agreement and it is not clear how active citizens or public administration can talk about any changes that is needed. The absence of such a space is quite important: as the whole policy is based on citizens volunteering, the actions of caring and managing can be guaranteed only in presence of time and competences of people, that can change (while can change the everyday life conditions of active citizens).

The institute of civic use of the Naples' policies gives the control on the space to the commoners: people who use it, care about it, and govern it. This kind of control is not like the absolute property right conceived in the age of the Enlightenment: commoners don't have the right to destroy, damage, dismiss or sale the common. In this framework, they can act as they collectively decide, also basing of availability and competences and life conditions of the commoners.

The comparison here is only roughly outlined. For a deeper analysis of the two policies more items and characteristics should be compared. Overall it would be necessary to study the effects of the policies, the practices that generate, and for this a deeper analysis is needed. However the purpose of the paper is a theoretical comparison.

For a final comparison the two policies are analysed in terms of generation of Spatial Justice and Right to the City.

Using the category of spatial justice as a framework to read the practices of self-organization and the policies linked with them can provide some tools. Spatial Justice can provide some questions regarding openness and fairness. These questions could be: are people increasing or reducing the spaces they can freely use? Are people increasing or reducing the places in which they can create community (as these spaces can be both public spaces, or collective/commons spaces)? Are people increasing or reducing the time to travel from their home to points of interest (including public services, cultural services, recreational and common places, public spaces,...)? The two policies take in account the spatial distribution of the practices?

Both the policies here presented point to the recovery and sharing of abandoned or unused spaces (and in this sense can facilitate the access to the spaces for citizens). The openness of the spaces will mostly depend by the practices. The Bologna Guidelines tends to individuate a defined group of people to care the commons, while the Naples policies tend to spread to an undefined community the action of *commoning*. On the other hand Naples' policies explicitly talk about strong and lively social interactions, intergenerational solidarity and so on, as characteristics for a practice to be recognized as common. In this sense it is possible to say that the last one is a policy that guarantees more Spatial Justice than the first one. Spatial distribution of the commons is not taken in account by the policies, even if it is possible to say that in general the increasing of places that can be used by citizens foster Spatial Justice.

About the Right to the City, it is possible to use it as a category for trying to understand how commoners and/or active citizens are involved in the design of the city as a whole. Both of them (citizens and commoners) can generate a number of singles practices and singles spaces or can create synergies with effects among every part of the city. The questions emerging from the Right to the City issue could be: how many practices and how many people are involved both as protagonists or user of the spaces? Which is the role citizens have in the modelling of the rules to govern/take care of the common? Are active citizens/commoners intended as privileged actors in the design of the city as a whole? Which is the role citizens, active citizens and commoners have in the govern of public spaces and in the planning of the city in general?

The answers to such numerous questions can vary quite a lot depending on the openness of the city administration and its objectives and policies; also they can vary depending on the strength of the practices and their ability to build network.

About the two policies here presented, it is possible to note that the number of Agreements of Bologna is higher than the number of Commons of Naples. But it has to be taken in account that the Agreements can have a short duration (even only a day), while the Neapolitan Commons are intended to last for a long time. About the design of the city in general, it is not mentioned in the two policies, but the Neapolitan one was designed through a dialogue between citizens and administration, while the one of Bologna was the result of a participatory process,

that involved only four practices. The results of both in terms of spreading the practices and the management of public spaces in general should be seen in the future.

Conclusion

In the paper are compared two municipal policies about self-organization of citizen. The comparison evidences some difference in the philosophy of the policies and in the conception of the action of citizens. To evaluate the policies in deepen it is necessary to compare the effect they will have and the practices they allowed and created. Finally the comparison of the two policies is interesting in how they understand the role of (active) citizens and public administration, and the self-organizing practices.

In the Bologna Guidelines active citizens self-organize themselves in order to help the public administration in the management of public spaces. So their role don't go beyond the help needed, nor in the sense of choosing and commoning the space, neither in the sense of a broader participation in the design of the whole city.

In the Neapolitan laws citizens are intended as the ones who recognize a place as a common and act in consequence, so they have the responsibility of the action. The policy doesn't go beyond the singles practices, to a wider view.

In the contemporary debate about citizens self-organization it emerge the ambiguous role of the practices, and policies in response. They can create a new way to intending the city trough the creation of new institution, or they can commodifies and privatize social services, even if there are gift relationships among people involved in the practices. Some of these practices can be de facto an enclosure to a close community of people, while others can provide public services as or more effective than the public ones (Cellamare, 2012).

Spatial Justice and Right to the City may provide some tool, mainly as questions, as guidance in order to critically read practices and policies of self-organization.

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Territorial conflicts in metropolitan areas. A regeneration project for the resurgence of a community

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Abstract: These guidelines provide instructions to format your full paper. The process of political and administrative rescaling affecting Italian cities and regions under the Law 56/2014, with the consequent establishment of metropolitan cities, has triggered new forms of territorial conflicts. In this paper, conflicts have risen to a privileged observatory to investigate government problems at the regional scale and to identify possible ways for an inclusive governance of Metropolitan territory. The main purpose is to propose a reflection on the territorial conflicts about metropolitan identity and on the role of the small villages in the promotion of forms of aggregation with a bottom up approach, as resource for the strategic government of the territory and the management of territorial conflicts (Lingua, Putilli, 2017). Focus of this paper is a case study concerning a process of empowerment of a group of citizens engaged in the promotion of a local project that has become a pilot project of regeneration of community places in the frame of the Strategic Metropolitan Plan of Florence. A tiny group of citizen who shared the same common destiny for absence of a connection with the municipal water supply chain. Instead of carrying out a territorial protest and they become an identity movement and, through the recognition of the patrimonial value of places, engaged a multiactorial and multiscalar renewal project aimed to the rebirth of the local community. The joint effort for the self-construction of the lacing of the aqueduct has become the kick off for the realization of an integrated project for the requalification of the complex of Sant'Angelo Vico L'Abate as a place of religious aggregation, social and producer of wealth and new economies. The contribution deals with the reconsideration of territorial conflicts in regional cities as a strategic action for the interaction between local and metropolitan institutions and, above all, as a strong point for enhancing governance at the regional level (Mariano, 2012) for the construction of a shared vision for development of actual and future of the Metropolitan city.

Keywords: participation; conflict; bottom-up processes; inclusive capacity.

Contemporary geographies of vast area

The recent configuration of local authorities, which began in the 1990's, has opened up new institutional, socio-economic and urban considerations. The fragmented reality of the Italian territory and the plurality of urban plans no longer corresponding to the real processes of metropolization (Mariano, 2012), have made additional policies necessary to support the political-administrative rescaling of the territories. One among all the implementation of Law 56/2014, which redesigns the boundaries and competences of local administrations regulating unions and mergers of municipalities

and providing for the establishment of metropolitan cities¹ without calling into question the definition of their boundaries and imposing a new geography of the institutions. This imposition, characterized mainly by the disinterest of political and civil society, is concretizing a process of territorial reorganization «which could also jeopardize the very spatial configuration of the Regions» (De Luca, Moccia, 2017).

The process of structuring, still evolving and with obvious repercussions on the genesis of new forms of conflict, requires some reflection on the ability to promote a metropolitan culture and a shared vision of the vast area. The new metropolitan dimension, in fact, does not seem to belong to the inhabitants who, instead, through the rediscovery of a sense of belonging to the places claim sovereignty over their own territory.

The forms of conflict have assumed a role from which one cannot prescind in the territorial geography and in the planning of vast area, in particular, during the last few years a phenomenon of micro-has been observed growing conflict (Fregolent, 2014) calling for an active involvement in the choices regarding the transformations of the territory.

The increasing number of conflicts requires for a symmetrical reflection on the social dynamics triggered by the processes of political-administrative rescaling of the territories of vast area and on the resumption of civic activism to microscale.

The two reflections are closely linked by two key elements: the crisis of representative democracy on the one hand and the emergence of new territorial conflicts linked to the territory on the other.

A new narrative of territorial conflicts

The point of view taken in this paper focuses on how territorial defined conflicts, characterized by a transversality of issues, can represent a privileged observatory (Puttilli, Lingua, 2017) to understand its dynamics and identify the policy for an inclusive governance of the metropolitan territory.

The characteristic feature of territorial conflicts, which have grown considerably compared to social conflicts, consists of a community that defends the territory and the living spaces from external aggressions (Bobbio, 1999). The causes of such conflicts are many and can be summarised as follows: increased environmental awareness; lack of strategic planning; the growing fragmentation of society and the crisis of representative democracy.

Recent years have seen an increase in media debates on climate change, one of which was the recent Global Climate Strike For Future movement, have contributed to the greater diffusion of the environmental theme and the adoption of more respectful personal behaviors towards the environment, increasing the desire to live in areas with higher quality of life. The flight from urban centers to the inner areas, a trend that sees many young people with a medium-level of education - high, can be traced back to the explanation of the proliferation of local conflicts of identity.

It can be noted that these are no longer environmental protests, but new forms of protest that tend to deal with issues related to the defence of the territory, of the landscape and of the historical and cultural heritage with a view to safeguarding and putting into value the common and collective good.

Luigi Bobbio (2011) explores the multiplicity of territorial conflicts by identifying six types of interpretation and describing the possible actions to be taken.

The first narrative highlights the development of local particularism that goes to hinder the satisfaction of the general interest and takes the epithet of nimby; the second one called agitation, emphasises the real object of the protest and the interests behind it; the third article examines the conflict caused by a disproportion between costs and benefits and sets as its object the sacrifices that a community has to suffer unjustly; the fourth interpretation argues that the conflict results from unacceptable risks (risks to health, the environment, safety, quality of life); the fifth, called places against flows, maintains that protests are triggered when a community with a strong local identity feels attacked; The sixth, finally, moves completely away from nimby logic and interprets territorial conflicts as a reaction to the new model of dominant development.

¹ With the Law 56/2014 the Metropolitan City becomes a large-area institutional reality with a statute governing its functioning, strategic functions, planning and programming.

In order to understand the nature of such conflicts, it is appropriate to take into account the different dimensions through which they can be examined and to give them a separate interpretation. The research path stems from the analysis of one of these interpretations in particular that on the places against the flows, characterized by the ability to transform the protest into a local identity and which has as its real object the contention of the sovereignty of the places.

The democracy claimed by the opponents, as interpreted in the narrative, is characterized by a micro scale in which the protest has the capacity to strengthen or even generate local identities, contrasting in a clear way the “we” to the “their” (Della Porta and Piazza 2008, Fedi and Mannarini 2018).

In this context, it is necessary to highlight the conditions of malaise (Fregolent, 2014) of active citizenship that with voice capacity defends the right to common goods, identity and sovereignty of places, thus declining the narrative described by Bobbio in a form of territorial conflict with an identity character.

In Italy there is a belated attitude characterized by a negative approach to conflict situations, without grasping the advantageous aspects contained in the conflict. Situations that are usually associated with citizens' committees or nimby groups, identified as opponents or as «subjects of participation against» (Gelli, 2014), rather than as subjects of effective participation.

In contrast, current pathways undertaken by committees or active citizenship groups are increasingly resorting to activities that produce both knowledge and mobilisation of social capital resources and propose, through their local animations, ideas and alternatives. Their capacity to form networks and to work on a supra-local scale, to raise their level of political and cultural awareness and to involve experts capable of providing counter-measures projects, implements their effectiveness as well as their innovative potential and the ability to positively affect policy design (Paba, 2009).

In order not to reduce the debate to a simplified vision, and to understand its dynamics, it is necessary to analyse conflicts taking into account simultaneously the multiple dimensions through which they can be examined (Bobbio, 2011). According to the narrative supported in this contribution, it is difficult and reductive to demonstrate a specialization of conflicts because they belong only to the social, environmental sphere or to the mere territorial localization.

This narrative proposes the recognition of identity conflicts understood as complex conflicts with social, environmental and local dynamics that intersect. Characterized and represented by contrasts for the re-appropriation of spaces and places of life, for the claim of the right to civic uses and for the re-appropriation of territories and uncultivated lands.

Currently there are many identity bottom-up experiences active on the territory; all are in fact and separately cooperating to build a more advanced generation of forms of local development self-sustainable (Dematteis, Magnaghi, 2016).

Starting from this assumption it is useful to interpret the conflict as a tool of participation, kick off of an empowerment path put at work to enrich the panorama of available options (Giusti, 1998).

Taken this point of view, the paper puts the reflection on how the innovative forms of community - which spring from an active and conflictual citizenship, analyzing how essential traits the genesis and evolution - promote integrated territorial projects using asset values as policy tools.

These are groups of communities capable of mobilizing socio-territorial energies for the defence and valorization of the peculiarities of the places and able to indicate alternative projects and, through the collective use of the good, research forms of social management of the good itself and of the territory.

In this perspective it is useful to seek forms of community in which the citizens, initially animated by a common discomfort, direct the conflict towards the production of counter-projects actively mobilizing to give course to different proposals (Calvaresi, Pacchi, Zanoni, 2015), generating a dense network of collaborations and synergies.

The argument is that the micro stories born from conflictual situations, which have initiated a process of collective learning to defend the common good as a value of identity, are the precondition for the formulation of alternative development models and the promotion of territorial inclusive governance with visioning capacity.

The empowerment path as an essential trait

The evolution of the conflict of identity in this session of the contribution takes the main focus. The innovative character of the narrative resides, in fact, in the process of collective learning generated by conflicting situations. Process that triggers the awareness of the inhabitants of the patrimonial values of their territory by starting the reconstruction of collective knowledge for the care and enhancement

of the places of life (Magnaghi, 2012) and moving from a position of opposition to a proactive attitude.

The conflict is thus interpreted as a growth of consciousness of place which, acquired through a path of cultural transformation of the inhabitants, is able to reconstruct the elements of community in relational and solidarity forms and to induce alternative actions. In this way, the conflict takes on a new explicit character, in that it is recognized as a producer of community.

The empowerment path can be summarized in three essential phases: 1) the genesis of the conflict situation; 2) the aggregation of a small group of people who share the same discomfort situation; 3) the production of knowledge and opposition activity on the territory with voice capacity. Once reached the final phase of the path, through the formation of new networks and synergies, the group passes from the local to the supra-local scale, thus triggering the switch from subjects of the participation against, to subjects of proactive participation.

As the group expands and networks between associations and active citizenship groups are developed, the multidisciplinary dialogue also involves experts capable of providing counter – links projects and alternative ways of linking contextual knowledge with expert knowledge. Expertise is frequently found among research bodies and among universities that make scientific expertise and method available to the community. Researchers are increasingly playing a key role in starting collaborations between universities and communities to make their innovative contribution to the collective learning process (Saija, 2016).

In this context the argued process becomes collective production of community and social construction of projects of territory investing in the spatial dimension of vast area. These processes translate conflict into proposal, transform lament into constructive work, «find and exploit the margin of unused energy of the community, underline the prevalence of positive action collective» (Mumford, 1952 cit. in Paba, 1997 pp. 193-219).

In order to substantiate the reflection on the narration of conflicts, understood as builders of community and policy for the implementation of integrated projects of territory, we refer to the path of a small group of inhabitants who, distancing himself from a situation of conflict, he adopted a proactive attitude towards the common good and initiated a community project.

Focus of this paper is a case study concerning a process of empowerment of a group of citizens engaged in the promotion of a local project that has become a pilot project of regeneration of community places in the frame of the strategic Metropolitan Plan of Florence. A tiny group of citizen who shared the same common destiny for absence of a connection with the municipal water supply chain.

Until 2017, the inhabitants of the metropolitan countryside around the Sant'Angelo Vico l'Abate complex were not served by the public aqueduct and were supplied thanks to the beaten wells near each house. In 2013, despite the difficulties and lack of resources invested so far by the Municipality, the competent authorities and the property, the inhabitants joined in the water Consortium Sant'Angelo" to establish a connection to the public water system. A case of good community practices: an intervention of self-construction that in two years has realized three kilometers and two hundred meters of piping thus bringing the drinking water in thirteen families.

Instead of carrying out a territorial protest and they become an identity movement and, through the recognition of the patrimonial value of places, engaged a multiactorial and multiscale renewal project aimed to the rebirth of the local community. The joint effort for the self-construction of the lacing of the aqueduct has become the kick off for the realization of an integrated project for the requalification of the complex of Sant'Angelo Vico L'Abate as a place of religious aggregation, social and producer of wealth and new economies.

The project “Sant’Angelo returns to its origins”² is promoted totally from below and is born from four families of young local entrepreneurs, owners of farms who, working daily the land and taking care of the territory, have witnessed the progressive abandonment of the countryside and the places of agricultural, social and religious life that revolved around the complex of medieval origin and the Church of San Michele Arcangelo.

The widespread presence of Catholic places of worship in the open territory and in the inner areas, focuses on the issue of the use of the ecclesiastical building patrimony. The parish communities established in the territory have distinct ways of relating to such places; today, in fact, we are facing not only a type of religiosity different from the past, but also different links between the inhabitants and the places of worship, which are often under-used, if not abandoned, thus losing their settled role as a reference point for local communities and territorial landmark.

The contingent risk of selling the ecclesiastical patrimony and the consequent loss of the artistic and identity historical value, affect many places of the Italian territory.

The case under study has seen an alternative proposal materialize thanks to the vision of a small group of inhabitants who, after the experience of self-construction of the aqueduct, knew how to dialogue with the property and start a collective path to give new life to the complex.

The property, the Diocesan Institute for the subsistence of the Clergy, welcomed the project proposal made with strong passion of the inhabitants and immediately identified a religious partner as the neighboring Parish of Gesù Buon Pastore a Casellina.

The four families have presented a project - in advanced state - with the objective of the redevelopment of the complex respecting the use of the premises and the care of the areas of external relevance, proposing to create a business network in order to manage the whole complex by providing human resources, skills and means.

Through the multidisciplinary dialogue a collective path is thus activated in which all the actors involved share the common objective of putting into value the good and regeneration of communities. Thus taking on the responsibility of carrying out together a collective project of caring for the common good, a community of commoners was created. Through the growth of the consciousness of place and collective re-identification, the commitment to care for the place and the vocation to consume in relational, solidarity and community forms (Magnaghi, 2012) and to produce happiness were rediscovered.

Although the relations were always calm, a dichotomy was created between the two parties involved; while on the proposers side the project was considered of great interest and attractor of new networks, on the property side it was not very concrete and feasible because of the irrelevant presence of resources available and for the number of people involved directly and indirectly.

At this stage of the course there was a need to be able to manage the complexity of the process, to regulate and stabilize the orientations and expectations of key players (Jessop, 2003) without creating further conflicts between the Parties. It is in this frame that is involved, as expertise, the Department of Architecture of the University of Florence that, with a research project-action, has played an active role in the process of local development.

With a view to revitalising the complex in a collective key and with an innovative approach to meta-governance, a system of actions and processes of participatory, communicative, animation and events has been launched, able to re-activate Sant’Angelo Vico l’Abate not only as a place of aggregation, but also as a place of exchange and work, a showcase of good practices for the territory. It has thus become a laboratory of community ideas, of sharing of spaces and knowledge in which everyone, inhabitants, priests, administrators, students, researchers and professors have put their experiences to system producing innovative ideas.

² In the framework of the drafting of the Metropolitan Strategic Plan (PSM) of the Metropolitan City of Florence, cooperation relations have been established between the Promoting Committee of the PSM (formed by Metropolitan City, University of Florence, Ente Cassa di Risparmio di Firenze, Chamber of Commerce) and the Diocesan Institute for the subsistence of the Clergy of the Archdiocese of Florence (IDSC). At a later stage, the Sant’Angelo APS association presented the Sant’Angelo project, a return to the origin” to the group of the University of Florence.

From a fragmented community, but aware of the historical and identity value of the place, a community project of regeneration of a community space has been realized, able to activate networks and connections of vast area and to bring back the complex to assume the role of territorial reference point.

The researcher, also with emotional and communicative skills (Foster, 1987) took on the role of social facilitator; was a weaver of networks and relationships that accompanied the inhabitants during the journey of awareness and jointly identified alternative models of development capable of activating new economies on a territorial scale.

The activity from below and the enrichment of knowledge produce new policies of valorization and networking of common goods, generating wealth for the local community and the metropolitan area. It is limiting, in this case, to analyze the path in terms of ability to influence the design of policies, while it is more interesting the ability to construct policies starting from the re-identification in the patrimonial assets, materials and intangibles that connote the identity of a place.

To this end, the case of Sant'Angelo Vico l'Abate was taken at random pilot for the definition of a model of action aimed at building policy for the development of new economies and new lifestyles related to management and collective care of local heritage, activating innovative forms of social action and wealth production.

The effectiveness of the 'proactive approach held by the inhabitants in the empowerment path is demonstrated by the inclusion of the community project between the metropolitan strategic lines and, within the framework of the drafting of the metropolitan Strategic Plan (PSM) of the Metropolitan City of Florence, between the forecasts and the actions finalized to stimulate new forms of the inhabit for the inner areas.

Conclusions

According to the approach discussed above, this contribution provides additional elements to the discussion of territorial conflicts of an identity nature. The main purpose is to propose a reflection on the territorial conflicts about metropolitan identity and the role of small villages in the promotion of aggregation with a bottom up approach.

The contribution concludes with some reflections and, of course, without definitive answers highlighting considerations on the method of investigation of the conflict and the effect produced on planning policies on a territorial scale.

Draws attention to the need to adopt a new criterion for the narrative and conflict management through practices involving contextual knowledge and expert knowledge, thus conferring an open and positive conception of the conflict itself.

The method of investigation of the dynamics recognizes like point of force the conservation of its complexity (Dematteis, 1995) putting to the center the same conflict and its distance of collective learning.

Introduces a narrative that starts from the bottom up and from the small communities, animated by conflictual situations, able to activate new forms of social action and reproduction of wealth through the collective use of good and heritage, taking on in fact the patrimonial values as a generator of community and territorial awareness. It is thus possible to build new policy tools from the valuables and re-identification of assets.

The effect of the switch from «participation against» to proactive participation, taken as the argument of this survey, is a resource for the growth of communities and for the strategic planning of vast area.

The observation and investigation of the empowerment path generated by conflicting situations can create cartographies in which to graphic this new narrative of the conflict. Literature is rich in attempts to map the numerous expressions of participations against (Gelli, 2014).

This contribution, instead, proposes a graphicalization of the propositive expressions that create network and activate synergies to the territorial dimension, thus building a graphic narration of the geographies of the values. Adopting a trans-scale approach and taking into account the different territorial scales to which the conflict is expressed and on which its effects are reflected (Lingua, Puttilli, 2017).

This approach, which redefines propositional participation as policy tools, is of great interest for the identification of a shared vision. The bottom-up experiences, in which the re-identification of values becomes a tool for the production of integrated projects, they are put to system drawing possible

futures in a position to defining strategies and shared actions and to reconstruct a collective image of belonging to the metropolitan dimension.

After this re-identification and working in a synergic and integrated way, the micro-stories emerged in the path and the macro stories become part of a wider intervention strategy and converge in formal acts of government (Lingua, 2016).

The last reflection focuses on the topic of the involvement of the University, in the activity of third mission³, as knowing experienced in the empowerment path of a community for a mutual exchange of knowledge and resources.

Through action research on the ground, universities make an innovative contribution to the process of collective learning through the figure of the «researchers in the action» (Saija, 2016) and facilitate a shared vision with a territorial dimension.

In this context the University also has the important function of experimenting with meta-governance approaches as the subject can manage the complex process between of plurality of social actors with diverging interests to promote and achieve common objectives by means of mobilizing and deploying a range of ideas and resources (Torfing, 2012).

The researcher in action has a significant role in moving societies toward resilient governance systems (Innes, 2010) modelling collaborative practice and demonstrate its value in the field of research.

The work carried out during the pathway triggers local-scale activities and projects that are networked on a supra-local scale and generate trans-scalar policies or projects.

The territory can assume the concrete connotations of community laboratory, useful for the restoration of relationships of trust and the production of social capital in which the conflictual dynamics create new awareness of citizenship and put into value the peculiarities of the identities of the places generating new policies for a and inclusive governance.

It's an innovative approach that ask new skills, although there is needing 'a full blown cultural transformation' (Peters, 2010) which the university can promote.

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CITIES AND SELF-ORGANIZATION. A DISCUSSION STARTING FROM ROME

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The explosion of self-organization

In the contemporary city, we are today more and more witnessing different practices and processes of “re-appropriation of space”: regeneration of empty buildings, spaces of cultural production, urban gardens, green areas given renewed significance and re-shaped public spaces, and so on. Beside this, we could also mention experimentations that are activating new social services and welfare spaces, and finally squatting projects, which are defining different modes of co-existence, housing and service provision.

This is a vast field of activity and experience, with the widespread involvement and the leading role of the inhabitants, organized or not in committees or associations, and other local actors. Such experiences are both illegal and legal, and question the relationship and the very meaning of the institutions.

We should even consider in particular micro-practices that are able to broaden and transform the city from the bottom up, alongside more stable forms of social production. A specific kind of “city making” built upon a mix of practices, social relations and modes of local activation.

As a consequence, the way we are looking at the city is radically changing: questioning the relationship between the State and the citizens, these processes of re-appropriation are re-configuring both the mechanism of place making as well as the organization of social relations and local services, thus questioning the very concept of “public” and “publicness” in the city.

These practices of re-appropriation are representing different modes of city organization as well as different cultures of action/policy making in the contemporary city. They are also representing different modes of what “public” means in the city: some practices of re-appropriation are acting as collective actions that take into consideration the mechanism of social inclusion, while others are acting in a way which could be described more as private, or specific to some groups only, rather than designing public/collective actions.

In many cases, these are practices and processes of re-appropriation of the city that are also processes of resignification of spaces and production of places. Among these practices, many of them are re-opening spaces or re-activating some specific territories/neighbourhoods benefiting from very localized creativity and capitalizing on social relations that are fully embedded in local societies.

We should also critically consider that practices of re-appropriation are often substituting the role of local policies and in some case promoting actions that are illegal/informal in a context where institutions are losing financial capacity as well as accountability.

These experimentations are so focused on action that are simultaneously redefining the modes of social conflict as well as the routines and spaces of citizenship participation. These practices can be considered sites where to experiment and shape political capacity, thus questioning the very functioning of local democracy.

This context gives us the possibility to critically analyse the processes of re-appropriation that are changing the contemporary city, not only in big cities but also in small localities. We should be attentive to possible points of strength but also to ambiguities and challenges linked to these experimental processes.

First of all, considering the tension between the possibility to define different models of local activation and cultural/political production and, at the same time, the problematic erosion of the capacity of institutions in answering local needs. We should consider whether practices of re-appropriation are de facto substituting the role of institutions as well as weakening the transformative impact of traditional social conflict.

Some cities like Rome are strongly shaped by these practices and this condition is being mirrored all around Italy and Europe. If we consider the Global South, some of these practices have historically played a

relevant role in the production of local economies as well as in shaping parts of the city (Hou, 2010; Mehta, 2004). This pushes us to consider the role of more structural dimensions in the critical analysis of re-appropriation practices.

In the current climate of weakening welfare states, we should consider whether and how these practices of re-appropriation are substituting the important role of institutions, thus reinforcing neoliberalism, and, as a consequence, an unequal distribution of disadvantage.

Self-organization in the recent evolution of the city

Self-organization has always existed, it has been a fundamental component of the city. It was often the ordinary way of construction and evolution of the city, where the interventions of authority and political power were concentrated in some spaces and in some works of the city. Self-organization was placed within the evolutionary principles of pre-modern society.

Modern society, above all starting from the constitution of the modern States and the relative monarchies (but the democratic States have not been different in this), has instead tended to control or to absorb such processes (Bourdieu, 1994). In this sense, modern society has introduced all forms of control of space, which can be traced back to the logic of the panopticon (Bentham, 1791; Foucault, 1975; Scandurra, 2003; Decandia, 2008).

The same urban planning, although born with the needs of good management of the city, the solution of the health-sanitary problems of the cities in rapid growth, the rethinking according to mobility and efficiency, represented in many ways a form of control of space, as well as management of the soil regime. Haussmann's Paris is the best known and most striking example (Scandurra, 2001; Harvey, 2003).

Despite all, self-organization has survived, has continued to live in the ordinary life of the city although in conditions of subalternity, often considered illegal, putting back into question that separation between institutions and inhabitants.¹

On the opposite, as we said before, today we are facing with an explosion of experiences of self-organization, even beyond the dimension of protest and the great social and urban movements that have characterized all the continents, from the Arab Spring to protests in the squares of Greece and Turkey to the great movements that have gone through New York and the United States (Harvey, 2012a, Graeber, 2007). Above all in countries where people experience the inadequacy of local institutions and administrations and their inability to respond satisfactorily and according to the public interest to the social needs that emerge in urban contexts, the territories tend to develop widely self-organization forms and overcome the autonomy of the politician and, in particular, of the institutions. They even aim to manage without them.

These processes must also be read within a change in the political and institutional context. In fact, in conjunction with a strong and prevailing affirmation and action of a neoliberal-style society, it is emerging a progressive orientation of the State to support such models and trends. The State seems often to be more allied or dominated by economic forces and private interests (and therefore the political dimension is subordinate to the economic one) than committed to protecting the public interest of citizens. This orientation of the "public", which is part of a historical process of retreating of the welfare state since the 80s of the last century, is so strong that citizens often perceive the State apparatus, and in particular local administrations, such as the main enemy to face. Within this context, we can also better understand the growing attention that, in different ways and in different contexts, has been addressed to the theme of the "common good" and "common goods", and more extensively of the *commoning* processes. Therefore, if the modern State had expropriated the capacity for planning and collective management of their life contexts due to a "superior" public need, today it is seen as the less adequate interpreter and no longer people recognize its capacity for define a "public interest". Faced with this problematic loss, it is therefore clear and profound the need to reconstruct processes that define a public and collective dimension of coexistence. Similarly, the need to reconstruct "community" dimensions of coexistence within diversities emerges with force, where social relations gain centrality to qualify daily life.

¹ Even in cultural terms, in the context of urban planning as a discipline and scientific research, a different tradition has been kept alive, which found in Geddes (1915) and in many other scholars its main representatives (Paba, 2010).

Finally, the forms of self-organization also represent an overcoming of participation as it has been progressively interpreted. The participation of citizens in the collective and political life of the city has a noble and very important meaning. The difficulties and distortions of the concrete experiences have disqualified it, disappointing expectations, creating processes more characterized by the construction of consensus if not the development of forms of “social buffer” with respect to problems and conflicts, causing great frustration and increasing the distrust in administrations. Faced with dissatisfaction with participation, when transformed into a farce, forms of self-organization are a way of seeking solutions in autonomy.

Discussing self-organization

As a consequence of this evolution of the political and social processes that cross the cities, there are different dimensions, not always co-present, that we can grasp in the experiences of self-organization. Firstly, there is a dimension linked to the spontaneous process of the inhabitants of use and management of the living context, of the construction of the city and of the production of both physical and symbolic, both material and immaterial space, of self-organization in daily life, of care and management of the places of collective life. To interpret these processes, to grasp the “structural coupling” between space production and re-signification processes, we need to develop an approach able to read and interpret urban practices, and the world of signs and meanings that they carry with them. As Castoriadis (2001) said, “the symbolic leans on the material”.

A second dimension is linked to the contestation of the prevailing models and of the dynamics of political, social and economic transformation of which we spoke previously. It is often activated starting from resistance to forms of urban speculation, from the reclaiming of disregarded rights and better urban living conditions, from opposition to subaltern urban development models to prevailing economic and private interests, which are part of the extractive capitalist dimension (Mezzadra, Neilson, 2017), of the commodification of the city (Harvey, 2012b), of biopolitics (Foucault, 2001). Not remaining in the dimension of pure resistance, these experiences develop strong planning and tend to practice alternative perspectives. All this gives rise, in the first place, to a strong political intention, a clear stance towards the prevailing cultural and political models, which generates a re-appropriation of the city’s spaces and their re-signification. Secondly, as we said, it is an action not only of resistance, but also of construction of alternatives. Although supported by a deep critical reflection, the dimension of action prevails in these experiences. The realization of change is a fundamental objective. In this dynamic, it is to recognize that such experiences have the ability to construct a real and meaningful politics. Thirdly, they constitute the attempt, as far as possible, to build spaces of autonomy, which others define spaces of freedom, i.e. spaces where rules of coexistence defined by alternative models and values take place.

The third dimension is completely different and can easily generate distortions. However, it is often dictated by practical needs and is also found in very radical experiences, such as squatting experiences and housing movements. This is the need to make up for the shortcomings and / or absences of the public administration, to give concrete answers to urban and social problems in a context of progressive retreat of the welfare state. Some examples are the construction of autonomous responses to the housing problem (squatting experiences, but also the illegal housing or large slums all over the world), or to the lack of green areas and public spaces (from which the great proliferation of self-managed green areas and shared gardens), up to the theme of work. It is clear that this (implicitly) substitute action of the shortcomings of the public administration must be accompanied by recalling it to its commitments and tasks. However, this dynamic generates some distortions. Firstly, there is the risk of creating a social buffer, although this may be unavoidable. Given the lack of listening and response from the public administration, social need is urgent and calls for an answer. Unintentionally in this way, the public body is relieved of a problem and there is a risk of reducing social conflict. Secondly, in autonomously seeking answers to problems, “only those who make it go forward”. There is the risk of putting in difficulty the weaker subjects (except when the forms of self-organization expressly aim at mutual aid, as in the struggle for the home) and give space to the stronger ones, generally represented in the contexts of hardship and poverty by illegal economies and organized crime. Thirdly, there are open spaces for the re-examination of what the public interest is, which can be guided by a profound and serious political reflection, but can also emerge from unregulated

processes dictated by private interests (as often happens in the territories of unplanned built areas). In fact, there are several “public cultures” (Cancellieri, Ostanel, 2014). The differentiated character of political processes and positions can cause possible distortions, if not also anti-democratic dynamics. The same “popular economies”, born in South America as an alternative to extractive capitalism, give space to ambiguities that now put them under critical lens (Gago, 2015).

Because of this third dimension, the experiences of self-organization can today be characterized by profound ambiguity. Their interpretation does not arise in the wake of a romantic or apologetic vision, but leads to a critical approach, based on discernment, on the ability to critically read practices and processes of self-organization through the values and ideas of the city they bear.

Self-organization as a structural fact and the relationship with politics

The historical process of development of forms of self-organization calls for some considerations and some questions. A first consideration is the recognition, unlike what happened in modern society, of the multiplicity of subjects that build the city and “produce space”. To make the city are not only institutions or economic forces, but many other active subjects, who may also have the ability to be or become protagonists, in some cases with better outcomes and modalities of the institutions themselves.

The question is therefore “who is caring for the public interest if the institution does not do it any more?” and how it is then produced and defined. The city is a “field” *à la* Bourdieu, a place of conflict between these forces, where spaces of autonomy can be built.

The second consideration is that self-organization is a structural fact. It is not just an anomaly, a factor of protest, but a form by which society reorganizes itself.

Self-organization is (or has returned to be) a fundamental engine of “making city”, not only in terms of care, maintenance and responsibility of the local living space, but also in terms of “production of space” in all its dimensions, material and immaterial, of a structural factor that builds the city. The question is rather whether this structural character is linked to the recognition of existing ordinary practices and political intentions that construct spaces of autonomy or if it is rather the consequence of the change in the ways of acting of state structures and the retreat of the *welfare state*. In the latter case, the prospect is the disintegration of the city as a *polis* and as *civitas*, as an organic body that - despite its differences and conflicts - is self-governing and produces its own culture of coexistence. It follows a situation in which, on one side, the social subjects, especially the weaker ones, are abandoned to themselves and, on the other, we must develop a difficult path of reconstruction of the “common good” in a context of preponderance of economic forces and functionalization of social skills and abilities to the “extractive capitalism”.

A final consideration is to highlight how the experiences of self-organization are social laboratories and of cultural production. They are today the spaces where the production of politics and political culture takes place. In this sense, such spaces are today to be enhanced because those ones where the future can be thought (Appadurai, 2013).

Rome between self-organization, institutional policies and neoliberalism

Rome is a city crossed by many practices of re-appropriation and by many processes of self-organization, making it an emblematic urban context to discuss “self-produced” cities (Cellamare, 2014; S.M.U.R., 2014). These are very different realities: from local communities that self-organize and self-manage their territory to the multiple forms of occupation and squatting (for housing and non-housing purposes); from urban gardens to “restored factories”, from self-produced and managed public spaces to occupied cultural production sites (theatres, cinemas, ecc.), from self-managed local services (gyms, etc.) to illegal built zones and to many other different experiences. A very rich and varied world; nevertheless ambiguous and problematic.

It is a city in turmoil. There is a swarm of activity that goes through the daily life of Rome and that builds and rebuilds the city every day. They are practices and processes that often return some urban “wastes” to the city’s life cycle; practices and processes that are also processes of re-signifying places; a parallel world but also integrated with that of institutional policies and administration, and no less real than that and, in particular, no less capable of actually and concretely constructing the city.

These practices and processes do not transform the city only in its physicality, but also in its symbolic dimensions, in the forms of living and cohabitation: practices of transformation of the “urban”, and for this we speak of “self-made urbanism”.²

The Roman peculiarity is linked not only to the diffusion and coexistence of very different forms of self-production of the city, but also to the fact that Rome is the capital of a modern western state and a country in full capitalist and neoliberal economy. In the ordinary sense, informality and self-construction are often associated with “poor” or “developing” countries, with a weak government capacity and a strongly lacking welfare. In Rome we find informality and self-organization in a context characterized by a strong institutionalization and an advanced economy, very neo-liberal oriented. Rome emblematically demonstrates how these things are not incompatible, but rather represent a system of government, a specific “regime” of this city.

Although in a highly institutional context, a tradition and a strong public administration culture is lacking in Rome, differently from other European countries more consolidated in the organization of the modern State. Historically it has constituted an extremely weak bank against speculative pressures. In many ways the public administration has often played a role of connivance, in favor of speculative activities and of an economy strongly “bent” in the neoliberal sense, while maintaining some levels of services and welfare structures, even if lacking. The outcome is a city, as confirmed by studies and statistics, with a strong social divide, with very rich groups and an extensive social layer in great difficulty, in conditions of real or perceived poverty. We have even other related effects: a weak economy and exploitation of existing resources rather than development, a strong housing speculation that has always marked the history of Rome, an administrative culture of *laissez-faire*.

The same forms of self-organization can be considered functional to this system, as in many cases they play a role of “supply” with respect to the shortcomings of the public administration.

It is not just a matter of inadequacy of the administration, but of a real “style of government”, related to a specific “urban regime”. On the one hand, it keeps the struggling social strata under conditions of weakness and subordination, engaged in the constant effort to make up for the shortcomings, and containing their conflicts within a defined margin. On the other hand, it leaves “ample room for maneuvering” to the speculators and the stronger socio-economic subjects, in the search for their own margin of convenience. That of Rome becomes an emblematic “style of government” where there is a retreat of welfare and an affirmation of the neoliberal economy.

In Rome, one can certainly speak of a “policy of occupations”. For many years, it has been treading between accepting and weakly contrasting occupations for housing, while still keeping them in tension and pressure, at risk of eviction. They constitute a self-produced response to the problem of housing, but cannot be formally recognized and therefore totally accepted.

The whole history of illegal housing, moreover, so characteristic of the urban history of Rome, constitutes a system that determines reciprocal dependencies and conveniences and a patronage form outside a democratic system of government. It is placed at the crossroads of these two dynamics, the “self-making” and the “letting go”.

The “self-made” city, therefore, on the one hand, is at the crossroads of a system of political management, economies, cultures and social relations; it represents a real “socio-economic system”, within a context such as the Roman one characterized in recent years by a progressive political and institutional lacking. At the same time, the contexts of urban self-organization are, and have been, also social laboratories. In these contexts, experiences have been multiplied in which attempts have been made to experiment with innovative forms of cohabitation and living, ideas of cities that are alternative to the neoliberal urban development model.

In some cases, as in social centers and today in the occupied cultural production sites (Teatro Valle Occupato, Cinema Palazzo, Cinema America, etc.), but also in occupations for housing purposes, these experiments are thought out and continually discussed, so much so that they become the places in Rome for the elaboration and re-elaboration of a reflection on the “right to the city” (Lefebvre, 1968; Harvey,

² Considering urbanism as a way of life, taking up the well-known reflections of Wirth (1938).

2012; Isin, 2000)³ and on “commoning”. It is a reflection that emphasizes a rethinking of the city’s production processes, an idea of living that returns the complexity of living, social relationships, life in common, etc. Often just the problematic nature of these places, such as occupations for housing,⁴ leads to a profound reflection on the sense of coexistence and on ways of constructing it, underlining the relational dimension of living, the fact that the city is interwoven with relationships that are to be lived in (Pisano, 2013).

In many other cases, and perhaps they are the majority, there is not necessarily an intentionality. Experimentation arises from the ordinary practices of daily life, from the development that self-organization processes have spontaneously had, often due to the conditioning and pressures they have suffered and to which they have tried to give answers: the lack of a home, illegality or irregularities, the position in the labor market in conditions of subalternity, the stigma of the periphery or the “urban ghettos”, the resourcefulness from below, the status of immigrant (regular or irregular), etc. The experimentation was therefore often a need, a path to try to come out of the problems.

Paths of “regeneration from below” in Rome

The term “urban regeneration”, already an originally ambiguous concept, has become in many ways - in common and widespread use - a slogan. The expression “regenerate from below” which is used here has a provocative character. We intend to affirm that, in many cases, and especially in the Roman case, there is an inadequacy of public policies in the “regeneration” of the city, while some policies produced “from below” are often much more adequate. The reference is to some widespread self-organization experiences in Rome that, although they should be read and interpreted in a careful and critical manner, express an ability to define policies, develop projects and implement paths of social innovation and integrated management that in some aspects seems to be failure by the public administration. It is strongly absorbed and conditioned by the management of the ordinary, by the need to negotiate (on the downside) with the private sector to obtain financing that can be used in urban transformation, by the lacking of the welfare state, by the growing difficulty of answering questions social issues and to direct models of economic development. By “regeneration” (“from below”), we mean here an integrated approach that can deal with both the physical and structural aspects of the city’s set-up and the immaterial aspects, from the social ones to work and local economies, to those of production cultural, within complex processes that activate the latent or already existing and active social projects and energies.

The forms of self-organization certainly reveal great potential. Firstly, they express a social protagonism that involves the activation of important social organization skills. Secondly, they allow the construction of social fabric and symbolic values. They also perform a service “for” and “on” territories. They are then the expression of processes that aim to reconstruct democratic dynamics within a historical phase of crisis of democracy. In this, in fact they are the places where today really politics is produced. This is a politics that could be defined as “significant” because it is really able to express the emerging and relevant meanings to the social conditions of everyday life, that “magma of emerging social meanings” that Castoriadis (1975) associates with the “instituting society”.

We focus only on two examples that are, at the same time, extreme cases and very interesting occasions. These are extreme cases because they develop in difficult contexts, neighborhoods of public housing characterized by severe poverty, unemployment, concentration of social hardship, buildings and urban degradation, presence of criminal economy and drug dealing. These are very interesting experiences because, despite these great difficulties, they are realities in which the capacity for self-organization responds with energy and intelligence to problems, proposing interesting projects. In particular, it focuses on the problem of labor and local economies and connects the possibility of providing services to local contexts. It is the answer to the issue of poverty, unemployment and criminal economies, the first step to then proceed also to urban regeneration.

The interest of these and many other experiences in Rome pushes to support the development of “policies for self-organization”, i.e. policies characterized by certain criteria: enhancement of local projects and social

³ For example, numerous seminars, work groups and reflection activities on these issues have been held in contexts such as Cinema Palazzo and Teatro Valle Occupato (Occupied Valle Theatre).

⁴ Here the strong diversity, first of all social and cultural, is at the same time a wealth and a problem.

protagonism, involvement of local actors and their capacity of action also in the management of processes, role of coordination and planning of the public entity, role of guarantee of public interest by the local administration, ability to associate the development of local economies with urban regeneration, organization of long-lasting processes over time and rooted in the local social context.

Tor Bella Monaca

Tor Bella Monaca, a public housing district of the 80s with 30-35,000 inhabitants, in the collective imagination represents one of the symbolic places of degradation. Tor Bella Monaca is a totally “public” neighborhood, but also the less “public” one. The perception of the distance between institutions and public administration is not as strong elsewhere as here. The percentage of occupations, the lack of maintenance, self-managed cleaning (and not “public”), arrears and deregulation at times total, the lack of interlocutors to which to contact or respond, the failure to reassign the houses left free make this place the emblem of the absence of the “public”. The more they are places deserted by politics, which has left the field of the suburbs for many years.

To highlight the complexity of the situation and the problematic of everyday experiences, just think of the difficulty of living public spaces, even if they are present in the neighborhood. Public space is the place disputed by the inhabitants at the drug addiction and selling, it represents the place of daily struggle with drugs. This is why it is often an unpleasant place to avoid; and at the same time the place to be reconquered.

In these districts, and in particular in Tor Bella Monaca, some social local groups operate (both in the simple collaboration between inhabitants and in the organized forms of associations and committees) in such a good way that radically deny the negative and homologating image that often exists.

In Tor Bella Monaca, despite the majority of inhabitants (except for the defaulters, of course) pay with the rent a quota for the cleaning of the stairs and the maintenance of the common areas, the maintenance and cleaning of the stairs is not done. The inhabitants then organized themselves to provide for themselves. Generally, families are organized by stairs, self-assessed (for what they can), collect money and use them to pay a person (possibly of the same scale) that cleans the staircase. Even more complicated is self-organization to provide for the maintenance of common areas and in particular the green areas, but despite this (think, for example, a tower with 75 apartments and housing units such as difficulties in collaboration can meet) you can get excellent results and the green areas appear of great quality. The commitment of some associations and committees is particularly relevant and effective, for example the Tor Più Bella association in the area of via Santa Rita da Cascia or a group of particularly active inhabitants in the area of via S. Biagio Platani. In both cases (but they are not the only ones) the inhabitants make a daily battle to maintain the quality and take care of and make accessible to all some condominium spaces, adjacent lots spaces, unused spaces on the ground floor of buildings (used for services to the district), some green areas and small urban parks, abandoned by the Municipality. This is a daily battle because it means facing daily drug dealing that tends to colonize and degrade the common space (destroy the street lamps, eliminate the lights, ruin the doors to leave the accesses, etc.) in order to freely play their own illicit traffics.

Similarly, a great deal of work is done by the local ASIA union, which deals with the problem of housing and allocations. They discourage abusive occupations made only for interest and trafficking in favor of the black market, while supporting those who actually need it (also signaling when the houses are empty or unused, but are not reassigned). Among other things, ASIA and the associated Local Committee are interested in the use of the ground floor spaces of buildings, theoretically intended for commercial activities but currently abandoned, to carry out a neighborhood laboratory and services for neighboring residential complexes. We need to point out the work of the El Chè (ntro) social center and the connected Cubolibro, a self-managed library, but also the Ciclofficina and a ceramic workshop. In the whole district, there is no municipal library. A group of people, especially young people, set up a “public” library, even if made by “private”, collecting donations, even by the inhabitants themselves. It provides books and supports children in extracurricular activities. Obviously, it could be considered “irregular”, but it is the only “public” service of this type. All these activities (as well as the neighboring disability union, SIDI, which has its national headquarters here) reuse (irregularly) abandoned buildings, providing services to the neighborhood.

Close to Mengaroni square, too, a network of associations carries out its activities using the "ex-barn", a building renovated with *Urban Program* funds and (in this case) regularly assigned through a call.

More close to the R5 residential complex, a group of mothers occupied a small abandoned building (once used as a nursery), renovated it with the help and support of some families in the nearby residential complex, turning it into a well-organized playroom open to R5 children.

Some of these social groups have started a collaboration path and, with the support of Action Aid, through a collaboration with the local high school, they have developed a program of redevelopment of the neighborhood, which was then shared by the Municipality .

Therefore, we can define some criteria that are the ingredients of the "regeneration from below" programs that are being discussed, also with the collaboration of the University: reuse of abandoned public spaces (in particular, small buildings for services and rooms on the ground floor of buildings, originally intended for commercial purposes); destination to productive activities (craftsmanship) or service to the district; involvement of local actors (already active) in their management and enhancement of local projects; development in this way of services to the neighborhood; activation of work paths connected to the activities characterizing these areas (building maintenance, maintenance of the green areas, management of social services, management of common areas). Around these criteria, the retraining programs are being structured and some funding paths have been activated.

Piscine di Torre Spaccata

The district of *Piscine of Torre Spaccata*, not far from Cinecittà, between Tuscolana and Casilina streets, in the southern suburbs of Rome, is another very interesting context. It is also a district of public housing, certainly smaller than Tor Bella Monaca, but with problems quite similar. In this case, a factor of great interest emerges. A Committee (CSL - Local Development Committee) has been set up that brings together various local subjects, including - in addition to the Local Committee - especially active subjects, be they productive, socio-economic, cultural, such as TeatroCittà, artisans, gym, traders, etc. Here the focus is on re-launching the neighborhood through economic, productive and service activities, which on the one hand bring work and income and on the other perform a service for the neighborhood (just think of the gym and theater that are very popular with the inhabitants and that develop projects, also funded by public bodies). In this way some important "collateral" effects are obtained such as facing drug selling, to which concrete alternatives are constructed and thus trying to remove such problem. As well as the reuse of abandoned spaces, often easy prey of degradation, worsening the typical building degradation of a public housing district, where the "public" is no longer able to carry out its management and planning role. These are the spaces on the ground floor of buildings, usually intended for commercial activities, for which the current legislation provides for rent at market prices, making them inaccessible to local operators and in fact ordinarily unusable.

The CSL has obtained in "custody" these spaces, as well as those of the local neighborhood market, by a previous municipal administration, and its objective is full utilization, through alternative administrative procedures, developing the productive and service activities that are so qualifying for the neighborhood. In particular, attention is now focusing on the local market, undergoing a sharp reduction in commercial activities (as in most of Rome's local markets, in difficulty with large retailers and in particular shopping centers). The goal is to transform it into a multi-purpose civic center where some commercial activities are maintained, integrated with the craft activities, with restaurants and bars, with green areas equipped for children's play, with urban gardens and with service activities in the neighborhood. At the center of attention is local development, considered as the fundamental purpose of the redevelopment programs. Particularly interesting is the proposal of a managerial entity that integrates three different subjects: the economic operators, the representatives of the local realities (not only the CSL) to direct the activities at the service of the district, the representatives of the Town Hall (to guarantee the public interest).

Some final comments

From these experiences, we draw some final comments. These are experiences where policies are developed that should make the "public": recovery and reuse of existing buildings, reduction of land consumption, development of productive activities as a motor of redevelopment, provision of services on a

local basis, search for solutions to the housing problem, self-recovery, enhancement and use of environmental heritage, etc.

They are also realities that are often a garrison of civilization and solidarity, rich in planning and where forms of open and inclusive coexistence are realized, despite the evident difficulties in which they are placed. They highlight how a problematic node for the redevelopment of the suburbs, should be the ability to recover a role of planning and government by the public administration, the ability to develop forms of enhancement of these projects and these capacities for initiative, a new role that could be defined as “enabling” on the part of the institutions in the relationship with the territories. Those that can be defined as “policies for self-organization”.

In the awareness of the ambiguity and the problematic of situations and beyond possible romantic visions, one can discover a quantity of resources, commitment and planning that is the redemption potential of these places and the real ability to build the future.

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The Serious Game: a learning tool to enhance the communities in the context of sustainable cities

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Abstract: In smart communities, people need and user's awareness is key issues. Recent literature contains several social elements in the urban planning field and recognizes the fundamental role fulfilled by human factors. Users are the focus in delivering new urban services and in achieving sustainability in the longer terms, they are observed as key actors to attain real sustainability. Nowadays, this goal seems closer thanks to new interactive technologies that allow applying innovative learning methods as well as social research methods. Among the learning tools, the Serious Games (SGs) represent a very promising medium to be adopted in this context. They have multiple learning objectives and can be applied in many areas for all targets of people. One of the most important features of the SGs is to make interesting and entertaining issues improving the knowledge of users' actions and teaching SGs could represent a strategic hub to promote educational programs and involve the adoption of new lifestyles based on the idea of energy saving. The main challenge is to understand the several possibilities and application fields where this tool can be applied, discovering its countless potentiality.

In this contribution the characteristics of SGs are analyzed, their application fields, their benefits, and rescues descending by their use are synthetically presented and discussed.

Keywords: Serious Game, Smart Cities, Sustainable Communities, Citizen Design Science, User-centered design

Introduction

Nowadays many cities are tackling urban and social challenges in terms of sustainability. Those challenges are related to territorial conflicts, poverty, quality education and gender, climate action and responsible energy consumption and production. In this perspective, an emerging but pivotal concept is one of “smart cities and communities”. Although a shared definition is still missing, the smart cities involve several aspects and therefore they can be analyzed through different sustainable perspectives as social, technological, economic and environmental. This intersection among different and sometimes conflicting disciplinary areas makes the proper understanding and design of the smart cities and communities a very difficult task (Albino et al., 2015; Dewalska-Opitek, 2014).

For this reason, the 2030 Agenda for Sustainable Development provides strategic directions to support the future development of cities and communities, identifying 17 Sustainable Development Goals (SDGs), which are defined as an urgent call for actions by developed and underdevelopment countries, in a global partnership (sustainabledevelopment.un.org).

Notably, the SDG 11 -Make cities and human settlements inclusive, safe, resilient and sustainable-its about the issue related to urban growth and its safety development in several cities all around the world. Among the different aspects highlighted by the SDG11, the citizens' involvement has great importance. Every project, decision, and action are done in cities has an impact on the citizen's quality of life. Allowing citizen to participate in urban projects and initiatives, and making them active stakeholders in urban activities or analysis, it could improve the achievement of specific goals for cities development. Accordingly, the Citizen Design Science (CDS) is recognized as being an interesting approach to involve citizens in urban design from a sustainable perspective. It concerns the citizens' involvement towards the planning and the management process in a city, through an easily accessible design, (Mueller et al., 2018) based on three fundamental pillars: the Citizen Science, that refers to the participatory aspects and the kind of data collections, the Citizen Design that implicates the active design by citizens and finally, the Design Science essential for transforming the citizen's design proposal into tangible urban drawings and plans (Mueller, et al., 2018). In the CDS framework, it is possible to identify different methods used to support the citizens' involvement in smart cities. They usually refer to questionnaires, focus groups, and workshops. However, according to the literature (Leydesdorff and Deakin, 2011; Nalbandian et al., 2013; Joshi S. et al., 2016), the need for new participatory methods emerges.

With this respect, the aim of the paper is to analyze the different definitions and dimensions of smart cities and CDS concepts and methods, as the Serious Game tool with its application towards sustainable issues. The Serious Game (SG) methodology is one of the applications used in the Citizen Design Science context, and in this article has been done a first classification of the most innovative SGs realized, during last 10 years, towards sustainability context, starting from previous existing work.

This text is organized in 3 main sections: section 1 concerns a review of relevant literature on the smart cities, the communities and the concept of user-centered design discussed in CDS. In section 2 an overview about SGs is presented, through a literature review between 2007 and 2018, with a description of the main characteristics of this type of games with their relative benefits and rescues coming from their application. Section 3 is dedicated to a serious games catalogue realized in the last ten years, more about quantitative and qualitative application considerations.

Smart cities and communities

A shared definition of smart cities is still missing; therefore, some authors try to underline its core components and characteristics. A city can be defined “smart” when “investments in human and social capital and traditional (transport) and modern (Information and Communications Technology, ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory government” (Caragliu et al., 2011). In other words, cities are defined smart when the city government has the ability to optimize the exploitation of both tangible and intangible assets, enhance the citizens' quality of life, boost resources' productivity, and solve emerging issues (Komninos et al., 2013; Shaffers et al., 2011). Moreover, strategies to execute and manage smart cities projects vary among cities, as well as organizational and managerial researches in this field are scarce (Michelucci et al., 2016). Smart cities are interdisciplinary: they require

investigation and cooperation across several disciplines, spanning from economics to social sciences, from politics to infrastructure management and others (Celino and Kotoulas, 2013).

Trying to determine a definition and its domains of application, two main kinds of research can be subsumed from the literature review. The first stream of research is technology-centered and focused on application domains that are heavily based on modern ICT application in different fields, such as in energy consumption, public transport or waste and water management. The latter stream of research is more people-centered because, even if technology and infrastructures are still important as enabling factors to reach objectives, nowadays the research is more focused especially on soft domains such as welfare, social inclusion, culture and human capital (Caragliu et al., 2011; Toppeta, 2010).

The relevance of citizen's involvement in the urban context has definitely increased in the last years. "The ability for all people to communicate with one another and agencies and groups that represent them provides a new sense of possibility to the idea that smart cities are based on smart communities whose citizens can play an active part in their design" (Joshi S. et al., 2016). There are different ways to involve and take actions where citizens can give opinions and take part in urban initiatives. During last years, smart city plans are characterized by a more bottom-up approach, through new forms of collaboration and participatory governance, where the analysis of people's needs and the definition of social objectives drive the selection of specific enabling technologies (Leydesdorff and Deakin, 2011). It is exactly at this time that the role of technologies becomes interesting and relevant. Today we can immediately find out a lot of information about what is happening anywhere in the world just surfing the internet. Naturally, this is not the only way to get familiar with the smart cities' participatory initiatives. Known methods are questionnaires, focus, and discussion group, workshops, typically used for enhancing the participation and collaboration among people, sharing opinions and ideas. The debates and comparisons between citizens become more interesting if they can discuss with local governance or municipality. From literature (Nalbandian et al., 2013) emerges that better results can be obtained when, during these moments of confrontation, governance and public actors participate and collaborate together with all citizens.

Furthermore, the cities can be defined smart also when they include active political participation, citizen services and good use of e-Government instrument, for improving the decision-making process, the public policymaking and the public governance, everything at the same time. One of the substantial characteristics of smart governance is to enhance citizen participation both in private or public collaboration. The implementation of smart governance infrastructure can facilitate service integration, collaboration, communication and data exchange. The relationship between public managers and citizens become an important component to define the role of the management in leading smart cities initiatives. With this regard, Corrigan and Joyce (1997) discuss the right of the citizens, to be included in the decision-making process of their municipalities: public managers' interaction with the society is essential for the creation of effective services created for the community. The link between public managers and the community facilitates the partnership among sectors, groups, and individuals (Nalbandian et al., 2013). Three challenges for public managers can be identified in order to pinpoint what is administratively sustainable and political acceptable: "to create and enforce a chain of responsibility that needs to avoid political alignment; to synchronize jurisdiction and other forms of external authority with the problem to be solved; to integrate the real citizen's need in the local government and administrative structures" (Nalbandian et al., 2013).

Smart devices, Internet of Things (IoT) and ICT by far outnumber human beings in smart cities. Public administrations can use ICT as a tool to group people together and stimulate innovation, knowledge, problem-solving and, more in general, economic growth (Caragliu et al., 2011; Hollands, 2008). The rise of IoT application and the large-scale adoption of web technologies and tools in urban environments have proven that internet-based solutions can successfully address societal challenges (Celino and Kotoulas, 2013). IoT provides the connection between all these objects to facilitate and make people's lives more comfortable and efficient in all situations (Khajenasiri et al., 2017).

Citizen Design Science

The citizen science has been defined, by the UK Environmental Observation Framework (UK-EOF, 2011), as a "volunteer collection of biodiversity and environmental data which contributes to expanding

our knowledge of the natural environment, including biological monitoring and the collection or interpretation of environmental observations”.

Bonney et al. (2009) define three different levels of Citizen Science. There are contributory projects which mean mostly crowdsourced data collection, collaborative projects consisting in data collection and data analyses of citizens and last, co-creative projects where researchers and citizens work together in a project, for the most part of the time. Citizen Design Science is most related to the last line of the research approach. The CDS is based on 3 main pillars. The term Citizen Design is not yet commonly found in scientific literature. Generally, it is used to describe a specific kind of participatory design. The word ‘citizen’ is referred to people that live in cities and belong to urban communities; ‘design’ indicates the way of performing the participation in the creation and design phase. Thus, the Citizen Design is a dynamic designing of the urban habitat by citizens (Mueller, et al., 2018). One of the first application of the Citizen Design method was adopted and described by Kevin Lynch's strategy of mental mapping. This study was presented in "The Image of the City" (Lynch, 1960). The task was very easy, ask participants of the studies to draw through simple five elements, places and objects that are most remarkable in a city, from a personal point of view perception by landmarks, nodes, paths, districts, and edges.

Instead, the Design Science defined by R. Buckminster Fuller (Papanek and Fuller, 1972) as a systemic form of designing, is continuously understudying, especially in the fields of innovative technology and creativity. In the last century data science and big data are seen as possibilities to bring unnecessary breakthroughs. “The difficulty addition for Citizen Science in urban design is that it is not clear how the input of activities through citizens’ engagement can be translated to the language of designers and how the local knowledge from citizens can be used as contribution to experts’ works in urban planning” (Mueller et al., 2018). There are a series of different approaches which follow the philosophy of the citizen design such as: the work published by Edwing and Handly (2009) showing a way to measure a city area through walkability aspect; or the text of Bryson et al., (2013) that combined the idea of design science together with participatory design in urban planning giving guidelines for participatory processes; and Stimmel (2015) suggested a designed thinking method for urban planning in smart cities including a "human-centered process that comprehends the phases of empathy, creativity, and rationality". Inside the Citizen Design Science, every element is essential for others to make this strategic science a successful application. If there isn’t Citizen Science, the dynamic part where people can truly design expressing their ideas, they will stay just on a low and theoretical level. Citizen Design Science, especially with the citizen design pillar, aims to underline the importance of people involved in the planning process, saying that would be impossible without the creative design aspect. “The allure of citizen design is also the gaming aspect and the fascination of new technology for younger people. Not only is it a no right or no wrong process, but people can also express their ideas in an unanticipated way which could mean a higher motivation to participate” (Mueller et al., 2018).

The role of technologies is to provide tools in Citizen Science context, using them to employ people for evaluating the participatory design phase.

In this regard, participatory design is considered when people are directly involved in the design process. Citizens or people generally involved in urban projects, may serve as a simple idea input but they can also make decisions in a process. It is possible to recognize two different approaches: the bottom-up and top-down. In the first approach designers and stakeholders are together involved implementing rules in the design tool and they prepare a relevant design task that citizens are requested to solve. Thanks to the citizens’ feedback the designers can evaluate them and extract useful design criteria which influence the designers’ master planning.

In the latter, one citizen can only try to solve issues shown by governance or other professional profiles, without the collaboration, for example, with designers, architects, and engineers and with other citizens too. Sanders (2002) said that people express their experiences by saying, thinking, doing, using, knowing, feeling and dreaming. Of course, discussion, focus group interviews, questionnaires, and observation events, or the use of “tools” and “do tools” can help to access the experience of sharing ideas. The “make-tools” can be a possible solution to transform ideas and personal abstractions in realistic proposals. Especially, interactive tools allow people to express themselves in different ways, actively creating or managing objects and situations, they can also express themselves in a new and unusual way.

In summary, CDS is a crowd creative strategy for smart cities to integrate the citizens' experience and expectations of the urban environment through their own design proposal for newly planned or redeveloping existing urban and social areas. This science describes a new strategy of urban design with the purpose to overcome the technological perspective of current urban planning methods towards a participatory planning method, more user-centered. Interactive tools can create the opportunity for a large number of people to simultaneously provide direct feedbacks without high expenditure. Active design in workshops with citizens is the most common approach to overcome the limited creativity of participatory planning tools. Methods which combine these two solutions is what is possible to define as the Citizen Design Science.

The Serious Games, definitions and a classification

The first definition of SG was written by Clark C. Abt (1987), the pioneer of this expression, inside his first publication called "Serious Game". He defined a game as a "particular way of looking at something, anything". In addition, he also said that "reduced to its formal essence, a game is an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context. A more conventional definition world says that a game is a contest with rules among adversaries trying to win objectives".

The author describes the SGs as a "game that can be played seriously or casually by people. We are concerned with serious games in the sense that these games have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement. This does not mean that serious games are not, or should not be, entertaining".

According to Abt theory, Costikyan (2002) defines a game like "a form of art" in which participants, called directly players, can make decisions to manage resources through game actions and activities searching of the game goal.

Zyda (2005) provides another interesting description for identifying that SG could be defined as a mental contest, played also with electronic devices in accordance with specific rules, which "uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives."

SGs have multiple learning aims, they can be applied in many areas and targets all age groups (Mouaheb, et al., 2012), they can be considered also as teaching tools, a means of entertainment, and an information and communication technology system. The goal for an SG methodology consists of the reduction of problems complexity to such a level of abstraction, that the players can easily interact with it, discussing it and comparing with each other (Johan de Heer et al., 2010).

In other words, the SGs are defined as a methodology which proved to be effective methods applied to many research and practical fields (such as education, management, industries, and health care) but they are not so much used in social learning context of smart cities and generally urban planning. Indeed Abt (1987) reported that games may deal with important behavioral issues, and they can concern considerable problems in almost all academic and intellectual field. "Education, analysis, and evaluation are all rich fields for the use of the serious game. In education, games are used by teachers for classroom instruction in social studies, sciences, and humanities, and for guidance counseling." He also mentioned the possibility to apply this tool for testing alternative military strategy, for evaluating, for instance, regional transportation plans, public responses to the environment and other issues related to sustainable urban contexts. One of the main strengths of the SGs is that they can support effective decision processes being able to acquire data directly from people in general, through a very simple approach based on entertainment. Basically, this tool is not applied in urban planning or smart cities context, because it is generally used in the educational field and other sectors such as health care, engineering, defense or politics (Ouariachi et al., 2018).

According to Ouariachi et al., (2018) the education embraces SGs because teachers recognized their potential: "game is motivating, provide on real-time immediate feedback, they can adapt themselves to the level of the learner, they encourage distributed learning, and they can be used for other excellent teaching techniques" (Gee 2003; Gentile 2011). An interesting consideration can be made also about the use of games, understanding what are the numbers and the prevalence of games' trend. From Statista (2018) the market of serious games is one of the fastest growing areas in educational media and it is expected that can grow from 3.2 billion U.S. dollars in 2017 to 8.1 billion in 2022. "Creating awareness

and promoting attitudinal and behavioural changes on sustainable issues is crucial, and serious games can play an important role by allowing players to experience unfamiliar circumstances that are not possible in real life: for instance, being a mayor with the power to change a whole city towards a more sustainable place, balancing pollution, energetic productivity and citizens' happiness as players experienced" (Ouariachi et al., 2018). Among these different definitions, an interesting consideration concerns the importance and the role of the adjective "serious". In fact, all the expressions above do not mean that the addition of serious term indicates a limit for the game for being enjoyable. On the contrary, it suggests that its rule can be used to impart knowledge in a playful way. The term serious is used by Abt to indicating the sense of study, relating to matters of great interest and importance, raising questions not easily solved, and having important possible consequences. In fact, the serious game expression can be identified as an oxymoron where the seriousness of thought and problems are linked to the experimental and emotional freedom of active play.

A Serious Games' classification

Research about existing realized games in terms of sustainability themes has been done, focusing on the last decade. The work was made according to guidelines and researches described in two main scientific publications, Stanitsas et al. (2018) and Ouariachi et al. (2018), and according to the consultation of some serious games online sites or database such as Serious Game Classification, Games for Change and Games 4 Sustainability. In a Serious Game Classification online database, the games are classified according to their gameplay, their purposes, their markets and target of users, alongside with user-contributed keywords (serious.gameclassification.com). Games for Change is a community founded in 2004 with the aim to empower game creators and social innovators to drive real-world change using gamification method and technologies. The final target is to help people to learn new thing improving a sense of community and trying to contribute to make the world a better place to live. About their activities, they organize an annual festival for serious games and students' challenges, training students and educators to run game design (gamesforchange.org).

Game for sustainability is an online platform where users can learn and practice sustainability through serious games applications and find links with the themes of sustainable development goals. Starting from the different objectives involved in this online database and platforms, to conduct this research, some specific keywords have been selected and used such as serious games, educational games, applied games, environmental games, gamification, and game-based learning games. Through this keywords selection, the first step has been to trace the documents, searching in online databases such as Scopus, Web Science and Google Scholar, several articles and papers concerning serious games applications. Subsequently, it was made a documents' selection through abstracts and full-text reading, in accordance with relating appropriate information.

For this search were investigated some different subject areas such as computer science, engineering, social science, and environmental science. Among these, there were analyzed several document types including journal articles, whole books, and book chapters, conference papers, and dissertations. The scientific contents identified in these works include documents that represent models, techniques or a literature review made exploring and describing SGs, through their history, their application, their assessment, showcasing study practices for an educational contribution (Stanitsas et al., 2018). In practice the analysis was made considering the most famous serious games realized in the last decade, identifying their genre and type, of the underlying specific target users and their game theme/topic. Finally, it has been trying to find a link between the aim of serious games and simulations arranged by the Sustainable Development Goals. Sometimes the goals are expressively mentioned, especially in Games 4 Sustainability site, while other times the date are not found, definitely for the games created before 2015.

The criteria used for doing this first classification have been reported in table 1 while the results of the research are shown in table 2.

<i>Year</i>	<i>Serious Game Names</i>	<i>Genre and Type game</i>	<i>Target</i>	<i>Game Theme/ Topic</i>	<i>SDGs</i>
From 2007-2018	Title of every Serious Game realized in the last 10 years	Distinction based on the typologies classified as: <ul style="list-style-type: none"> ▪ App game ▪ Board game ▪ Card game ▪ Online game ▪ PC game ▪ Video game ▪ Web game and the genres classified such as: <ul style="list-style-type: none"> ▪ Adventure ▪ Education ▪ Policy exercises ▪ Puzzle ▪ Strategy ▪ Simulation/ and strategy ▪ Role-playing game (RPG) 	People directly involved in the games, simply called players, they can be: <ul style="list-style-type: none"> ▪ Children, Youth ▪ The general public (GP) ▪ Students 	Description of the main themes or topics takes on inside the games. For this classification, games were analyzed on the basis of sustainability concepts. For instance: <ul style="list-style-type: none"> ▪ (Sustainable) Urban planning, development, and management of smart cities ▪ Renewable energy source ▪ Waste management ▪ Water cleaning and management ▪ Sustainable immigration and cultural integration ▪ Sustainable actions for the environment 	List of Sustainable Development Goals identified in 2015 by the United Nations. They are 17 priority goals that cover important issues to solve in 2030 by developed and developing countries

Table 1, Criteria used for doing the SGs' classification

Some considerations can be made after this first classification. The first result is that 67 games have been found and analyzed. These are the most famous and important games realized in the last decade towards sustainable themes and issues. The most part of the information games was found starting from 2014 especially about the SDGs connections and the increase of online and video games.

Indeed, most parts of games are online, followed by hybrid simulation game and PC/video game. In this field, technology and the internet play an important role and, as expected, the board and card games are the minority. About the theme and topics tackled by the games, the majority of them have been designed to educate students and professors sometimes, with the general public too. This stakeholder is typically a motivation group of entities that need to be clearly aware of sustainability topics for personal own reasons. Generally, the issues of these analyzed games are to increase awareness of sustainability issues and stimulate interest and engagement. The general public, on the other hand, is a group of players who have no direct interest in engaging with these games, more reason to involve them to enhance their curiosity and improve their awareness about these themes (Stanitsas et al., 2018). The majority of the games wants to educate players towards sustainable themes resumed in macro areas such as water and waste management, renewable energy source, sustainable immigration, and cultural integration, (sustainable) urban planning, development, and management of smart cities. Therefore, the largest quantity of games found belongs to the environmental aspects. The other games belong to the economy, quality education in general terms, politics, and culture. Environmental management games tend to be highly popular nowadays, especially due to ecological destruction and the huge increase in the use of the Earth's natural resources (Damania et al., 2018). The Socio-Economic, Socio-Environmental and Eco-Efficiency dimensions are almost equally developed (Stanitsas et al., 2018). One of the most interesting consideration can be made towards the connection between sustainable education games themes and the 17 sustainable development goals. In a particular way, the SDG11 is really focused on the development and management of smart-sustainable cities and their communities. Nowadays many cities all around the world are tackling social, economic, urban challenges in order to support the growing population and the environmental impact of urban sprawl. Citizens are main characters inside these contests. One of the target indicators proposed by SDG11, the 11.3, is to enhance inclusive and sustainable urbanization, involving citizens in planning and management in all cities. About this is interesting that, especially in the last 5 years, As reported in table 2, most parts of the games are designed for the sensitive general public or specific stakeholders to raise their awareness. The SGs can be innovative, interactive and dynamic tools able to combine, at the same time, sustainable goals with the stakeholders' involvement. For instance, this game classification may be extended and better correlated to other SDGs such as clean water and sanitation, quality education, climate action, affordable and clean energy, and responsible consumption and production. Moreover, these games'

classification is just a small part inside the games' world, the research can be improved adding other information and consulting other scientific research done and online catalogs. The classifications' criteria could be increased for instance with a distinction between type and genre. Other features can concern the gameplay, the creators' name, the eventual price, languages, the duration and especially about the game availability.

<i>Year</i>	<i>Serious Game Names</i>	<i>Genre and Type game</i>	<i>Target</i>	<i>Game Theme/Topic</i>	<i>SDGs</i>
2007	Climate Challenge (BBC)	Strategy Online and PC game	General public	Climate challenge, carbon dioxide emission	13
	Electro city	Strategy Online game	Students	Energy and environmental management	7, 11
	Energyville	Strategy Online game	Students	Energy and environmental management	4, 11
	Encon city (NO INFO)	N/A Online game	General public	Sustainable energy supply	N/A
	Food Import Folly	Educational simulation Online game	General public	Quality food imports	2, 4
	PeaceMaker	Puzzle Video game	General public	Created to simulate the peace-making process in the Middle East.	16, 17
	Stop disasters	Simulation and strategy Online game	Children, Youth	Methods of prevention and mitigation.	12, 13
	World without oil	Simulation, RPG Online game	General public	Oil environment risk	-
2008	Catchment detox	Strategy Online game	Children, Youth	Managing a river catchment and creating a sustainable economy.	11, 12
	Global Conflicts: Latin America	Adventure Online game	Students	Environmental problems	1, 3, 10
	Heifer Village: Nepal	Simulation Online game	General public	Environmental management	1, 2, 3
	Wild web woods	Education Online game	Children, Youth	Sustainable development	4, 16
2009	City Rain: building sustainability	Adventure Online and PC game	General public	Green city simulation puzzle	11, 12
	MIT CleanStart	Simulation Online and PC game	General public	Green urban management	7, 8, 9, 12
	PowerUp	Education Online game	Students	Fossil fuels and renewable energy	4, 7
	SOS 21	Simulation Online game	General public	Broadcast ecologic messages.	7
2010	Cityone	Simulation Online and PC game	Students	Urban and sustainable planning	11, 13
	EnerCities	Education Online and PC game	Students	Energy saving and environmental awareness	4, 7, 11, 13
	The fate of the world	Strategy Online game	Students	Impacts of climate change, population growth, resource over-exploitation	8, 13
	Green my place	Education Online game	General public	Player's behaviour towards energy saving issue	7, 11, 12
	Sustainable Delta	Simulation and strategy Hybrid game	General public	Water system and management	6
	The UVA Bay Game	Educational simulation Video game	Students	Reclaimed water management	6
	Citizen Science	Adventure Online game	Students	Water and pollution issue	6
2011	River Basin Game	Simulation, RPG PC game	Students	Water management in agriculture	2, 6, 12
	Spent	Educational simulation Online game	General public	Poverty and homelessness	1, 2, 3, 4
	Aqua Republica	Simulation and strategy Online game	Students	Managing limited natural resources	6, 12, 13, 14
2012	Earthopoly	Educational environment board game	Students	To care for the earth and protect our precious resources	4, 12

2013	EconoU	Simulation and strategy PC game	General public	Sustain a fictional University to economic sustainability.	11, 12
	Irrigania	Simulation and strategy Online game	Students	Water conflicts among farmers in a simplified way	6
	Climate change Survivor	Simulation board game	General public	Climate change impacts	13
	Climate Defense	Education App game	General public	Preventing global warming	7, 12, 13
	Energy2020	Education Online game	General public	Climate-based disaster risk reduction	4, 13
	Pipe Trouble	Puzzle Online game	General public	Real-world issues surrounding the exploitation of natural gas.	11
	Plan It Green: the big switch	Educational simulation Online game	Children, Youth	Design and create your own energy-efficient city of the future.	7, 11
2014	World climate	Simulation PC game	General public	Decisions affect the global climate system	13, 17
	About that Forest	Simulation, RPG Video game	General public	Earth resources management	10, 11, 12, 15
	Ciclania	Educational environment Online game	General public	Environmental issues	6, 7, 13
	Les maîtres de l'eau	Educational environment Video game	General public	Water management and urban planning	6
2015	Never Alone	Puzzle Video game	General public	Resource management	12
	Cities: Skylines	Simulation and strategy Video game	General public	Government's role in social sustainability	11, 12, 13, 16
	Earth: A Primer	Simulation App game	General public	Food sustainability & geopolitics	15
	EcoChains: Arctic Crisis	Education Card game	General public	Food chains and protect Arctic animals	13, 14, 15
	Evacuation Challenge Game	Policy exercises RPG	General public	Disaster response and evacuation during the disaster.	5, 11
	Extreme Event: Coastal City	Simulation RPG	General public	Sustainable urbanism	11
	Polar Eclipse	Education board game	General public	Climate change and climate risk	13, 14, 15
2016	The Arcade Wire: Oil God	Strategy RPG	General public	Fluctuations in gasoline prices.	12
	2030 SDGs Game	Simulation Card game	General public	Taking the “real world” into the year 2030.	all 17
	Flood Resilience game	Simulation, RPG board game	General public	Flood, Flood Resilience	6, 9, 11, 12, 16
	Laudato Si	Simulation board game	General public	Religious education	1, 10, 12, 13, 15
	Lie, Cheat & Steal	Simulation board game	General public	Green project management	16
	Minecraft: Education edition	Educational simulation PC game	Students	Learning in traditional classroom environments.	4
	UrbanClimateArchitect	Simulation Online game	General public	Water management for SD	11, 12, 13
2017	Energy transition game	Policy exercises RPG	General public	Energy transition, renewable sources	7, 8, 9, 13, 15, 16
	Flood control game	Simulation Board game	General public	Flood disaster management	6, 16
	Gifts of culture	Simulation, RPG board game	General public	Flood resilience	3, 4, 6, 10, 11, 15
	Gogoals	Educational board game	Children, Youth	Sustainable development goals	all 17
	Lords of the valley	Simulation App game	Students	Practicing strategy, collaboration, and leadership in a complex environment	6, 8, 10, 11, 14, 16
	New shores: a game for democracy	Simulation PC game	General public	Climate change in the context of democracy.	8, 10, 11, 12, 13, 14, 16
	Nexus	Simulation and strategy Board game	General public	Sustainable civilization	2, 6, 7, 12, 17
	The Catan: oil sprigs scenario	Simulation board game	General public	Environment. Pollution.	6, 7, 9, 12, 14, 15
	The world's future	Simulation, RPG board game	General public	Heritage urbanism	all 17

2018	Co-construisez, qu'il disait	Educational simulation RPG	General public	City planning	11
	ECO	Strategy Video game	Students	Participation in town planning	6, 12, 15
	Il était ANRU'une fois	Educational simulation Card game	General public	Relationships in smart communities	11
	Interactive Board Game (SIG)	Board game	General public	Implementation of SDGs	All 17
	La fabrique des territoires durables	Educational simulation Board game	General public	Development and management of sustainable cities	8, 11, 12
	Paris 1800	Simulation, RPG board game	General public	Urban transformations with historical references	8, 11, 12
	Unda	Educational simulation Board game	General public	Management of sustainable cities	11

Table 2, Sources: Stanitsas et al., 2018; Ouariachi et al., 2018; Games4sustainability.org; SeriousGameClassification.com; ville-jeux.com

Conclusion and future development

This paper framed the smart cities concepts, reporting an overview of the current literature review, and the central role that they covered in the last years. Smart cities and communities are one of the 17 SDGs identified by the 2030 Agenda. As written in SDG 11, one of the targets decided for smart cities and communities is to "enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries". (sustainabledevelopment.un.org). These themes are key issues, the communities and the involvement of their citizen are in the middle of attention, covering a fundamental role for improving the smart cities future development. Architecture and urban design are excellent and interesting fields where is possible to apply Citizen Science methods because one yet unsolved task is to describe unambiguous criteria for liveability and sustainability in cities. At the same time, this issue is challenging because there is no a clear definition of liveability so it can have different meanings for people, especially if they are coming from different regions, places, and cultures. (Mueller, et al., 2018) Towards sustainability, the 2030 Agenda defined precise 17 goals with relatives' targets in order to save the planet, especially for the future generation. Nowadays, people' involvement becomes the main topics discussed. The citizen participation and involvement in urban activities have become active and relevant part during transformation periods. The growth of involving methods in an urban planning context has given to citizen the opportunity to share their ideas with other citizens and especially with governance too. Activities such as discussion groups and workshops are particular moments and occasions when citizens thought became reality. The methodology known as Serious Games can be used to better improve the interaction among the different stakeholders involved in an urban context. The work made on the use and application of SG methodology in an urban context, about sustainable themes, shown that this interaction is possible. The perspective to design a learning tool for involving citizens in an urban context and also teaching them sustainable behaviours is possible. The first classification of SGs realized towards sustainable goals has been done, and literature reviews towards themes such as urban planning, sustainable living, and energy saving, shown great interest in the scientific community.

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Research on Urban Community Micro-regeneration from Perspective of Multi-actor Participation: the Case of Yangpu District in Shanghai

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Abstract: In today's megacity community, changes of family composition and content of life, as well as the aging of the built environment urgently require urban managers to respond timely. Community micro-regeneration is one of innovative implementation paths to stimulate community vitality through spatial intervention based on multi-actor participation with limited time and resources. Since 2018, Shanghai Yangpu District has hired a 'community planner' to provide professional consultation about community micro-regeneration for each grassroots administrative unit. A multi-participated, low-cost and easy-to-promote micro-regeneration model has been explored to find space issues and solve problems. Based on multi-actor theory and collaborative planning theory, this paper discusses the composition of multiple actors and their impact on the planning process and results. Through methods of participatory observation and semi-structured interview, whole process of one pilot project was tracked. The study pointed out that government departments, community planners, community residents, community organizations and professional organizations work together to formulate plans through institutionalized channels, adopting open working methods and continuous interaction should contribute to the participatory, fairness and controllability of community planning. In the process participation awareness and execution capacity of all players need to be improved to avoid increasing negotiation costs and restricting micro-regeneration effect.

Keywords: community micro-regeneration, multi-actor, collaborative plan, Shanghai

1. Introduction

As a space for small and medium-sized human settlements, community is a guarantee for personal development and dignity, health and safety, happiness and good life, and the development of sustainable human settlements. The population and population heterogeneity of megacities are increasing, resulting in increasingly complex situations in urban and rural communities. For example Shanghai, with a permanent population of more than 24 million including a floating population of nearly 10 million, is facing with increasingly contradiction between the decline of environmental facilities and the growing demand for life content of residents, and growing gap between living space and public resources available to different income groups. As the complexity and variability of community affairs intensify, power gradually approaches citizens and communities. The idea that management needs to be done by cooperation rather than by any individual or organization is recognized, and the concept of 'governance' is applied to community public affairs.

Governance can be understood as a change in the relationship between public, private, community and voluntary sectors to cope with an increasingly complex, uncertain and vibrant world (Kooiman, 1993). Since the 1990s, government has ceased to be the center of power above society and people. The dialogue between public and private actors has become a new trend, and the concept of modern governance has gradually been established, disseminated and widely used (Gaudin, 2002). In 2014, the Shanghai Municipal Committee and Municipal Government issued the 'Opinions on Further Innovating Social Governance to Strengthen Grassroots Construction' (hereinafter referred to as 'Opinions'), taking urban and rural communities as the focus of social governance, 'putting resources, services and management as much as possible to the grassroots level to enable the grassroots administrative unit to have the right to provide better and more accurate services and management for the masses'. The 'Opinions' also gave the grassroots administrative unit called '*jiedao banshichu*' in Chinese 'planning participation rights' for the first time. The accumulation of community governance theory and the empowerment of Shanghai's '*jiedao banshichu*' provide new ideas for improving community built environment and promoting community development.

Community space is closely related to the characteristics and quality of residents (Parker *et al*, 1968). Community space is the place where residents' daily individual and collective activities occur, and its attributes and characteristics affect residents' daily life and even behavioral psychology. Small-scale public space is a kind of civilian public space at community and neighborhood level and the place-making has a positive effect on promoting neighborhood communication and enhancing community sense and fairness (Yang *et al*, 2017). With this regard, physical planning can be seen of practical significance for mitigating conflicts arising from urban social structural changes and social

spatial reconstruction (Yang, 2013). Recently more and more city managers regard community public space micro-regeneration as a path to achieve public space's perceivable quality improvement with limited time and resources, and realize the sharing of common wisdom and common creation. Yangpu District of Shanghai piloted a few community micro-regeneration projects in 2017 and expanded to the whole district in 2018. 'Community planners' who are professional in urban planning were introduced into community to help mobilize and coordinate the forces of different parties to participate in community planning and examine and control the quality of the plan. So who are the multiple actors? How do they affect micro-regeneration planning process and result? This paper would like to respond to the above questions based on observation and analysis of a micro-regeneration project in Yangpu District.

2. Literature review and research design

2.1 Literature review

Community micro-regeneration is one of the types of urban regeneration. It is a method of regenerating inventory space to prevent community decline and improve environmental quality under the guidance of connotative development and refined management concepts. Multi-actor refers to interrelated network of individuals or organizations directly or indirectly related to community development in a certain region and period. They participate in community public behaviors. The micro-regeneration of small-scale public spaces closely related to daily life is a way to realize regeneration of community functions and enhance residents' sense of community. It is also a feasible way for the masses to transfer from private sector to public domain. Meanwhile through participation of multiple actors, it is possible to accumulate more knowledge and resources for projects, so that planning results can effectively work and gain wide recognition. Therefore community micro-regeneration is of great significance to the current community construction and community governance, and must be achieved through the participation of multiple actors.

The research on micro-regeneration of urban communities involving multiple actors mainly involves knowledge fields such as public management, sociology and urban planning in China. The former two pay more attention to governance structure or interaction mechanism of multiple actors in community space creation events, focusing on analysis of institutional supply, actor relationship, governance model, etc. (Wu, 2015; Ge, Li, 2016; Zou, Yu, 2017). Space is mostly used as a platform or object of public behavior. Urban planning discipline values the combination of space and society, and explores methods and strategies for multiple actors to participate in community planning. Such research includes but is not limited to, the constantly expanding and developing participatory planning practice centered on the value of community citizens in Taiwan (Wang, 2018), collaborative planning practice

in Guangzhou in a low-income community (Yuan, Chen, 2015), Xiamen's community-based participatory planning practice with theme of Joint Creation (Li *et al*, 2018), Colorful Community Action Planning practice in Shanghai Pudong New Area (Zhao, 2018) etc. However there are relatively few studies on urban micro-regeneration mechanisms in urban planning. Wang Benzhuang (2005) studied the roles and actions of the three types of actors of government, NGOs and community groups in order to achieve a win-win situation in the process of Taiwan community building. Wang Chenghui (2018) summarized types and mechanisms of existing community micro-regeneration, analyzed effectiveness and hidden concerns of existing mechanisms, and proposed an improvement strategy based on the good governance model. These studies have contributed to the accumulation of theory and practice of community micro-regeneration in China. Based on relevant theories, this paper examines the details of community micro-regeneration in order to clarify the composition of the multiple actors and their relationship, as well as the process by which they interact and influence the planning decisions according to their power resources.

According to China's planning law, multiple actors involved in urban planning often include government, compilation unit, construction unit, experts, the public, and other stakeholders (Wang, 2008). Wu and Hua (2005) classify them into four categories: management departments, various interest groups, urban planners and public. According to the 'Opinions', grassroots social governance system of Shanghai is the combination of 'leadership of the communist party', 'government dominates', 'participation of all parties in society' and 'mass autonomy'. As a way to achieve governance through planning interventions, all of the above aspects are the main considerations for community micro-regeneration. Multi-actor participation is often related to community public affairs including who participates, when to participate and how to participate. The theoretical circle has reached a consensus on the increase of actor types and number of participation in community behavior, as well as the necessity of establishing a re-contact with the public (Atkinson, 1994; Stoker, 1996). The discussion on participation phase is also more consistent. Taking Canada as an example of developed western countries, public participation phase of community planning includes 'decide to prepare a plan', 'solicit concerns and suggestions of the community', 'present the draft plan', 'decide on the plan by-law', 'province approves the plan', 'implement the plan' and 'review the plan' (Hodge, Gordon, 2014, pp.342-344). In China taking Beijing Qinghe community plan as an example, public participation runs through the whole planning process of task formulation, goal formulation, plan making, implementation as well as management and maintenance (Liu *et al*, 2017). Discussion about the way of participation is controversial. Some scholars advocate indirect participation, but many believe that more direct participation is needed (Roberts, 1997). There are also scholars who fear that the more open the participation process is, the more divisive the problem will become; and that 'the

broad but shallow interests represented by citizen' will be overwhelmed by 'the narrow and deep interests represented by organized groups' (Olson, 1965, cited in Innes, Booher, 2004, p.421).

The inclusion of government departments, citizens, profit and non-profit organizations and planners in a common framework of collaborative planning approaches that address problems through cooperation, dialogue, learning and action, is a useful attempt to involve multiple actors in planning (Innes, Booher, 2004). Community space has its intrinsic public attributes, so government departments has always been part of the collective activities of participation in space management and development, but the role of government in space governance arrangements can be variable (Healey, 2010; Adams, Tiesdell, 2013). Although there are few formal rights to planning decisions, the professional and technical knowledge of planners is sufficient to influence planning decisions. In collaborative planning process, planners should not discuss community issues solely from the standpoint of experts, but rather into interactions as actors in planning implementation (Sun, Yin, 2004). With the awakening and improvement of residents' community consciousness, their sense of participation has gradually increased. However it is more difficult for the public to talk directly with government or other organizations or groups as individuals, so community organizations can participate in collaboration as a medium (*ibid.*). This approach to building collaborative networks through power-sharing and addressing challenges through different collaborative approaches can both provide better public services to communities and facilitate the realization of public values.

2.2 Research design

This study is a qualitative study. Methods of participatory observation and semi-structural interview are used to study a case of community micro-regeneration practice. Firstly, according to literature and Shanghai policy, this paper combs out the types of multiple actors involved in this case and the public participation process of community micro-regeneration, which are the observation objects of this study. Secondly, the author carries on the tracking research to the case's planning process and several exchange interviews to different participating actors. Based on this, the article delves into and records the community micro-regeneration process: how multiple actors deploy appropriate power, resources, and knowledge through cooperation to create better community public space.

This paper takes the micro-regeneration project of greenbelt in the east side of S Neighborhood of X Community of Yangpu District as the case. The community is located in the northeast of central Shanghai and is positioned as internationalized, intelligent and ecological community. The S Neighborhood, which was completed in 1999, is one of the few old residential areas. The green belt is a protective green space for urban trunk roads and confluence pipelines, with an area of about 1.68 hectares. When completed, the land is zoned within the boundary range of the neighborhood, and the

developer has not formally handed over its management functions to the homeowners. At present the property company manager hired by the owners committee maintains the greenbelt with meager funds from property management fee. Green Belt has long been occupied by garbage, dead wood and debris, and the fast-growing poplar has fallen every year, as shown in Figure 1. *Jiedao banshichu* and district greening bureau hoped to transform land tenure into a public nature for unified management, but homeowners opposed it. In 2017, the developer had designed the landscape renovation plan and shelved it for some reason. The project was selected as a community micro-regeneration project in Yangpu District in 2018, which is a new opportunity for improvement. This case was chosen because all community micro-regeneration projects in Yangpu District are under the same institutional background; hence this case has certain representativeness.



Figure 1. Project location and status before regeneration (sources: the author)

3. Community micro-regeneration practice with multi-actor participation in X Community

In January 2018, Yangpu District piloted the ‘Community Planner System Implementation Measures’, which matched 12 community planners with 12 communities to provide long-term guidance for community regeneration work within the jurisdiction. The micro-regeneration of community public space is one of the projects. Micro-regeneration is a community place-making plan led by district committee and district government, coordinated by the district planning bureau, and organized and implemented by grassroots administrative units under the professional consultation of community planners. The spatial objects of community micro-regeneration are the public spaces and slow-moving systems inside street corners or old residential areas.

3.1 Community micro-regeneration planning process

Planning process of the project of X Community continued from the beginning of 2018 to the end of the year. According to literature and local policy, this paper divides the participation phases of community micro-regeneration planning into phases of planning recruitment, goal articulation, project survey, plan formulation and planning decision-making, and planning approval. In this process, relevant departments and individuals communicated, negotiated, disputed and compromised for their own interests and purposes, and jointly sought solutions to problems. Figure 2 shows some working scenarios of the important participating nodes at each stage. The following is a discussion of the process and result of the participation of multiple participants in different phases.



Figure 2. Important participating scenarios (sources: the author)

Planning recruitment. In January 2018, Yangpu District held a signing ceremony for community planners with the district government. The task arrangement was determined at the meeting: the district planning bureau took the lead in work coordination, related training and publicity, and the grassroots administrative units fully carried out the community regeneration work with assistance of community planners. At the meeting, X Community and community planner Y successfully paired up.

Goal articulation. Officers of grassroots administrative unit in X Community worked together with community planner Y to analyze the requirements of upper policy, current status of community and development appeals comprehensively, and discuss the common value of micro-regeneration work to guide the practice. These values include: 1) problem orientation: starting from the housing problem and improving the living environment of residents; 2) extensive participation: respecting the wishes of residents and combining professional design with residents' participation; 3) people-oriented space: creating comfortable space for citizens' individual and collective activities; 4) combination of

long-term planning and short-term planning: leading the work with overall plan, and boosting confidence with recent work. As the first project of X Community, the project is expected to be of strong willingness for residents to transform, suitable for neighboring activities, and can show the cultural characteristics of the community after regeneration.

Project survey consists of two parts, project selection and project awareness. During the selection phase of the project, the administrative officer and community planner collated and analyze public spatial and public environmental issues complained about by the crowd through the 12345 hotline in recent years and examined all alternative projects. Combining the residents' needs of transformation and the potential of space enhancement, the greenbelt was finally determined as the annual project. Then community planner, design unit and implementing unit have focused on on-site and off-site research on the project. At the same time, the residents' committee and the owners' council of S Neighborhood organized a collection of concerns and suggestions from community members. After bringing together the multi-actors' information, officer of grassroots administrative unit organize the consensus meeting, so that the multiple actors get together to know and understand each other, and explore problems and resources. The community planner, and representatives from the residents' committee, the owners' council, the developer, the district greening bureau, design unit, implementation unit participated. At the meeting, the community planner briefed the participants on the Community Planner system and the positioning of micro-regeneration work, and explained to the residents the starting point for choosing the project and the expectations for the project, as well as the residents' right to veto the project. Representatives from the residents' committee and the owners' council expressed the willingness of residents to implement micro-regeneration. This determines that the work would be advanced in the S Neighborhood.

Plan formulation and planning decision-making. The phase includes a series of workshops. After the decision to initiate plan making, the community planner proposed a conceptual plan as shown in Figure 3 for discussion. The plan aimed to create a cozy space for residents' culture and leisure activities. The venue was divided into functional areas for children, adolescents and the elderly. Usually the greenbelt was closed to daily activities of residents of S Neighborhood, and would be open to surrounding areas when the grassroots administrative unit holds monthly or quarterly cultural events. The residents' committee was concerned about the safety of opening the door and the difficulty of subsequent management of the site and facilities. The owners' council hoped to speed up planning and implementation progress as soon as possible for residents to use, and raised questions about funding source and who will maintain the greenbelt in the future. The officer explained that construction is supported by the district finance special funds, and the post-management will still be dominated by the neighborhood as they wished. The district greening bureau hoped that the project

can be linked to the regional public greening project, and pointed out that the plan should consider residents' ability to manage, and the facilities should be safe and easy to maintain. The administrative officer hoped that the project can satisfy with residents' needs and serve the surrounding residents, and the plan should be more conducive to safety and management. At the meeting a number of opinions were collected, and the next step was to modify and deepen the plan by the design unit.



Figure 3. Conceptual micro-regeneration plan (sources: community planner Y)

At the workshop in early March, based on principles of cost control, ease of implementation and durability, the design unit revised the conceptual plan to form a draft plan. The design unit then reported it to the grassroots administrative officer, community planner, district planning bureau and implementation unit, and the draft plan is shown in Figure 4. Representative of the district planning bureau indicated that she had participated in the discussion of the project for the first time. In view of the large size of the project, she suggested that the plan should be refined as early as possible in order to carry out construction schedule and costing. The problem of site maintenance after completion needed to be considered clearly in the early stage. Residents in X Community usually paid high attention to living environment thus communications were important. More details needed to be cautious, as it was not recommended to carry out extreme activities in the greenbelt. The grassroots administrative officer suggested a holistic approach to subtraction, with a focus on the activities of the children in the south and the integrated functions of the central community, supplemented by the elderly and adolescents. The cultural main line of the program needed to be strengthened; in addition, it was necessary to carefully consider the existing trees in the site. The poplars that have reached the life cycle would be moved completely. It was not recommended to arrange large-scale lawns and extreme sports venues in the site. The community planner suggested that the plan should be able to be divided, protect the rights of residents and consider the possibility of opening up to the surrounding area. The overall style of the project was mainly wild and simple, and it was not suitable for luxury

and exquisiteness. Trees in good condition could be kept. The function of cultural education should be strengthened; the design of environmental language should be original and highlight the local characteristics; the process of participatory design should be strengthened, and the sense of ownership of residents should be enhanced.



Figure 4. Draft micro-regeneration plan in March (sources: the design unit)

Based on the opinions, the design unit made simple modifications to the draft plan, including removing the extreme sports venues and retaining the trees in the multi-purpose square, and communicated with residents in late March. The residents' committee chaired the meeting, and the owners' council, resident representatives, community planner, and the district planning bureaus attended. Residents included residents adjacent to the greenbelts and other residents of the neighborhood. The more concentrated opinions of the residents were that they did not agree with the greenbelts to set up separate doors. Some residents could accept large-scale activities in specific days, and outsider could enter and leave from the current gates. The differences were that residents on the east side wanted to focus on greening and fitness trails, reducing activity venues and facilities, and other residents tended to have adequate activity venues and facilities. Some residents thought that venue for children could be kept, for the elderly could be weakened, and for young people was not necessarily needed. There were also residents who had expressed a desire to reduce this kind of discussion and quickly implemented the construction. The administrative officers still advised the residents to consider sharing with the surrounding residents, and the new doors could be closed on a daily basis and only opened during the event. The functional activities of the site should be commensurate with the demographic structure and human activities, and adolescents and young people were not without the need for community space, and space design needed to promote greater interaction between different people. In addition, the deepening of the detailed plan in conjunction with the multiple actors' views needed to be implemented as soon as possible.

Another workshop was held in mid-April, with the participation of the grassroots administrative officer, the community planner, the residents' committee, the owners' council and the design unit. According to the mapping of present situation, the design unit analyzed the preserved and transplanted trees, adjusted the spatial layout, simplified the functions and facilities, reduced the hard square and increased the greening, as shown in Figure 5. The administrative officer hope to refine the plan as soon as possible to make a budget, and the replaced tree species should be dust, noise reduction and safety. The community planner insisted that the plan needed to strengthen the accuracy and depth of drawings to guide construction; the current environmental design, site cohesion, materials and so on were not refined. In addition, the design should show the characteristics of the neighborhood, can design the characteristics of the motif, and the motif will continue to deduce through the site. The Council and the Industry Committee did not express their views on the proposal.



Figure 5. Draft micro-regeneration plan in April (sources: the design unit)

At the workshop in late April, the design unit reported the draft plan and the refinement to the grassroots administrative officer, the community planner, the residents' committee, the owners' council and implementing units. The participating subjects adopted the draft plan in principle and proposed further amendments to the draft plan: community micro-regeneration is a very meaningful work than just a planning and design task, so the human element should be embodied in the planning process and planning plan; the cultural connotation still needed to be strengthened and the main line should be prominent; greening planting is primarily to ensure safety, and trees, shrubs and grass should be matched reasonably etc. Based on the comments the design unit formed a plan to submit to the district planning committee for approval in early May. The plan was as shown in Figure 6.



Figure 6. Micro-regeneration plan for approval in May (sources: the design unit)

Planning approval. The plan was not approved at the plan review meeting held by the district planning committee in August because the budget of the project being 7.7 million was too high. The committee's proposal for district special funding for a single project was between 2 million and 3 million.

Plan modification and planning re-approval. The grassroots administrative officer and the community planner responded quickly as they were first informed of the special funding requirements. The officer negotiated with the developer and received support for the transformation cost of 2.8 million. The community planner suggested that the design unit divide the plan into two phases: the short-term implementation plan and the long-term plan. Based on financial support available in the current year, the plan would be simplified, with public activity space as the mainstay, guaranteeing basic facilities and reducing manual intervention. The plan also needed to reserve the interface for regeneration if re-acquisition of funds would be available in the future. The relevant district departments and the grassroots administrative unit also believed that the plan is feasible, and the door to open to the outsider would not be established in the near future. The modification scheme was shown in Figure 7. The district planning committee in November approved the plan and issued the minutes of the meeting in December. Since then, the micro-regeneration plan had been finalized.



Figure 7. Approved micro-regeneration plan (sources: the design unit)

3.2 Multi-actor structure and relationship

It can be seen that there are four types of diversified entities in the X Community, namely administrative departments, community residents and community organizations, community planner, and professional institutions, as shown in Figure 8. Specifically, it includes the district committee and district government, the district planning bureau, the district financial bureau, the district greening bureau, the grassroots administrative unit (*jiedao banshichu*), the residents, the residents' committee, the owners' council, the community planner, the developer, the design unit and the implementing unit. As for the government departments, the grassroots administrative unit as the main body of implementation, participated in the whole process of micro-regeneration, the district committee and district government participated in the planning recruitment and planning approval process, and the relevant district bureau offices helped to guide in the planning and formulation process. As users of community space, community residents directly participated in the planning process in a small number of times, and their opinions were scattered. More often, they are voiced and represented by the residents' committee, the owners' council to conduct dialogues with other actors. The community planner participated in most of the planning process in addition to the planning approval, which not only played a role in the quality of professional design, but also acted as a coordinator of the planning action. Professional institutions participated in the planning process of the corresponding stage for their own interests. See Table 1 for details of each actor's participation in important planning nodes.



Figure 8. Types of actors in the planning process (sources: the author)

The relationship between multiple actors is shown in Figure 9. The district committee and district government hires community planners to support the work of the grassroots administrative unit, and guides the relevant bureaus of the district to provide technical and economic support. The grassroots administrative unit is the implementation body of micro-regeneration work. Under the guidance and support of the district committee and district government, it organizes and raises the necessary resource for micro-regeneration and manages the whole planning process. With the assistance of the community planner, the grassroots administrative unit guides and mobilizes residents to participate in planning and decision-making process, introduces design units and implementing units with certain project experience in the region through procurement services, and coordinate the developers to provide certain economic support. Residents actively feedback their needs and comments, and participate in interaction with other actors through the residents' committee and the owners' council.

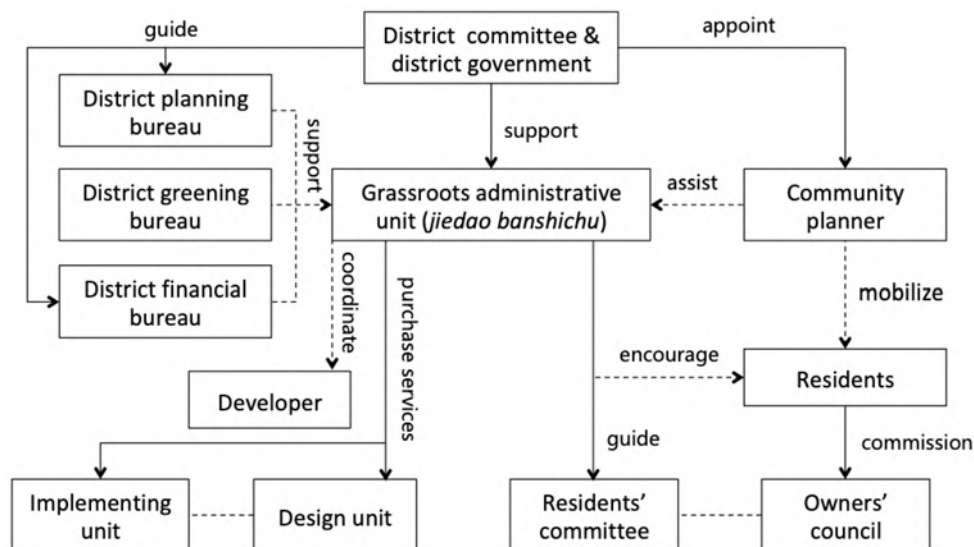


Figure 9. The relationship between multiple actors (sources: the author)

Table 1. Participation of actors in important planning nodes (sources: the author)

Actors		Administrative departments					Community planner	Community residents and organizations			Professional institutions		
		DC&DG	DP	DF	DG	GA	CP	R	RC	OC	D	DU	IU
Planning recruitment		✓	✓	✓	—	✓	✓	—	—	—	—	—	—
Goal articulation		—	—	—	—	✓	✓	—	—	—	—	—	—
Project survey	1	—	—	—	—	✓	✓	✓	✓	✓	—	—	—
	2	—	—	—	✓	✓	✓	—	✓	✓	✓	✓	✓
Plan formulation and planning decision making	1	—	—	—	✓	✓	✓	—	✓	✓	✓	✓	✓
	2	—	✓	—	—	✓	✓	—	—	—	—	✓	✓
	3	—	✓	—	—	✓	✓	✓	✓	✓	—	✓	—
	4	—	—	—	—	✓	✓	—	✓	✓	—	✓	—
	5	—	—	—	—	✓	✓	—	✓	✓	—	✓	✓
Planning approval		✓	✓	—	—	✓	✓	—	—	—	—	—	—
Planning modification		—	✓	—	✓	✓	✓	—	—	—	✓	✓	✓
Planning approval		✓	✓	—	—	✓	—	—	—	—	—	—	—

Note: 1. ✓ indicates that the actor is participating in the node and - indicates that the actor is not participating in the node;

2. DC&DG, DP, DF, DG, GA, CP, R, RC, OC, D, DU, IU respectively represent the district committee and district government, district planning bureau, district financial bureau, district greening bureau, grassroots administrative unit (*jiedao banshichu*), community planner, residents, residents' committee, owners' council, developer, design unit and implementing unit.

3.3 The performance of Community micro-regeneration

As Simon (1997) puts it, all decisions are compromises. The final choice is only the best course of action that can be chosen at the time and the decision-making environment will inevitably limit the content and quantity of alternatives, thus setting the maximum possible degree of achievement. So, to what degree does the practice process achieve the desired goals? What about the result of the micro-regeneration plan?

In terms of target feedback, this paper believes that the planning formulation process has a high degree of matching with the expected goals. Firstly, the project is the public environment issue that community residents reflect the most and the loudest to the administrative departments. Secondly, the planning process involves multiple actors in various stages, especially in the residential areas for publicity and consultation, and organizes designers, residents' committee staff and volunteers to listen to comments and answer questions at a fixed time and place. Thirdly, the functions and venue design are mainly based on communication and activity space, and the rich and multi-level greening is equipped with simple and convenient facilities, which is friendly for users. Moreover, the plan includes two versions of short-term plan and long-term plan. In the near future, through greening and transformation, the venues and facilities will be arranged to provide recreation space for the residents of the neighborhood. The long-term expectation is connected with the public space layout of the region, and cultural events are open to the surrounding areas in some time periods. At present, it seems that the long-term plan has achieved greater resistance. On the one hand, residents are still controversial about opening up. On the other hand, whether the project can obtain financial support in the future is still uncertain.

From the perspective of plan itself, the plan has experienced several changes from the February concept plan, to the initial plan in March, the revision plan in April, the review plan in May, and the final approved plan in November. To facilitate the discussion below, these five plans are referred to as V₁, V₂, V₃, V₄, and V₅, respectively. As can be seen from Figure 10, in the process of plan formulating, the grassroots administrative unit, the community planner and the design unit participated in the whole process; the district planning bureau and the district greening bureau provided guidance in some aspects; the residents personally participated in few consultations, and more of them were participated by the residents' committee and the owners' council; the implementation unit participated in many discussions, and the developer only participated in the discussion of the concept plan and the final plan. In general, the grassroots administrative unit, the community planner, the residents' committee and the owners' council, as well as the design unit and

the implementing unit play a major role in the formation of the plan; and the funds provided by the district government and the developer determine the extent to which the plan can be achieved.

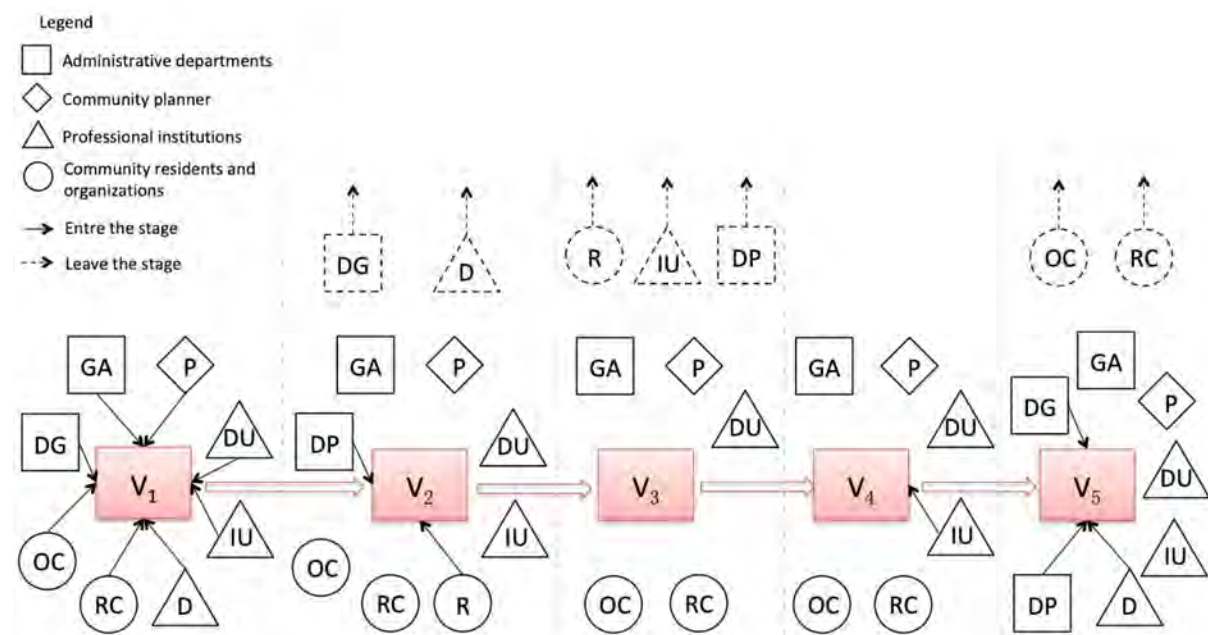


Figure 10. Multi-actor participation in the planning formulation process (sources: the author)

From the perspective of the program itself, the initial concept plan divides the functional area into children's activities, community cultural display, old-age activities and youth activities. It has experienced intermediate activities to retain children's activities and community cultural displays, weakened old-age activities, and eliminated youth activities. Activities will eventually form a functional area that is dominated by children's activities and community culture, supplemented by old-age activities and youth activities. In terms of site and facility design, due to factors such as budget, service scope and site safety, from the V_1 to V_5 , community squares, community stages and multi-purpose squares serving regional cultural events were cancelled, chess and stone tables and chairs, facilities such as the tree plaza and the children's park have also been cancelled or simplified. See Figure 11 for changes to the design elements of the site and facilities. The final short-term implementation provides leisure, fitness and social activities only to residents of the neighborhood. This is the result of multi-actor negotiation and compromise based on available resource conditions.

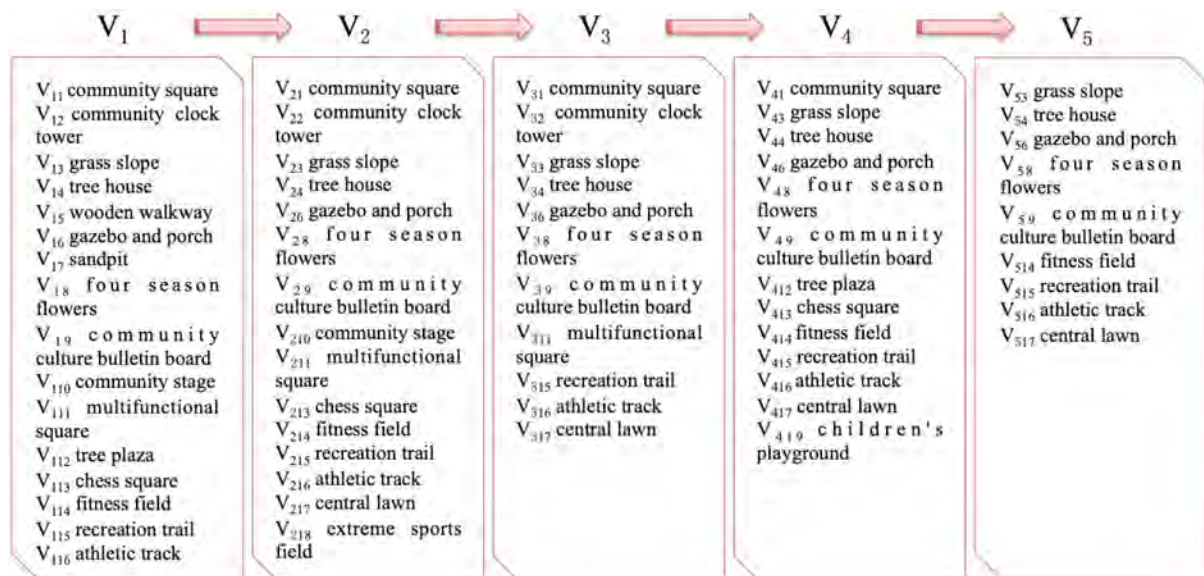


Figure 11. Changes in design elements of facilities and site at each plan (sources: the author)

4. Research conclusions and reflections

This case is a practice of urban community micro-regeneration under the policy of community governance of Shanghai and the community planner system in Yangpu District. The idea of innovating social governance to strengthen grassroots construction and the ‘community planner system’ ensure the legitimacy of multi-actor participation in community planning process. Under the leadership of the district committee and district government, the administrative departments at different levels have worked hard to break down barriers and accumulate more resource and personnel for micro-regeneration, with the grassroots administrative unit as the main body. As technical experts, community planners provide quality assurance for micro-regeneration, and as coordinators of the planning process, promote the more orderly participation of the multiple actors. Residents' daily public life needs have produced projects, and residents participate in planning formulation and decision-making through community organizations such as the residents’ committee and the owners’ council. Professional institutions participate in planning through their knowledge, resources and technology to support the work. Overall, the practice is participatory, fair and controllable, and can be an effective way to improve the quality of living, promote public interaction, and strengthen community governance.

However the relationship between multiple actors and the ability of them to execute limit the effect of micro-regeneration to a certain extent currently. Whether it is fund raising, or participation network organization, the administrative force always dominates; it is a challenge to the organization and management capabilities of the public sector, and it also limits the growth of the resident

self-governing capacity. At present, public sector reform is still in its infancy, and better sharing of information between departments will take time to grind together. In particular, the grassroots administrative unit is the main body of responsibility and has close ties with all sectors, which has a high demand for staffs' knowledge and ability to organize and manage the project. As a direct beneficiary of the results of the residents, the residents have tried to express their needs and opinions on public affairs, and to participate in planning decisions, but they still lack sufficient skills and abilities to participate. What's more, the residents refuse to provide more support for the creation of public spaces, including a small portion of financial support in the construction of the project, or an appropriate increase in property costs for future maintenance of custody, which is not conducive to operation and maintenance of the project. The emerging position of community planner, which provides professional advice and technical support for projects, as well as political thinking and engagement, is also a challenge to the energy, experience and competencies of urban planners. In addition to urban planners, it is possible to have more attempts by professionals from other fields as community planners. The micro-regeneration project involves more space participation activities, but the profit is lower according to the current design fee. More consideration is needed on how to improve communication skills of technical service units rather than talking about unintelligible jargon, as well as increase their motivation to participate without compromising their economic interests.

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Sense of ownership: Application of Participatory Action Research to a Cultural Ecosystem Valuation Process

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Abstract: Despite the importance of cultural ecosystem services in decision-making processes, the application of an appropriate methodology for valuation of cultural ecosystem services among communities with the same and common cultural values has been underestimated. This has become a challenge for urban planners, social and environmental groups and other stakeholders. Urban development projects have a great impact on ecosystem services that are of fundamental importance to communities. As a growing population demands more space for ambitious urban projects, these demands present substantial challenges to urban ecosystems particularly in areas with crucial environmental, and cultural values. The concept of ecosystem services contributes to a better understanding of the values people attach to nature, based on how they can benefit from the ecosystem services. This provides us with an applicable framework for the investigation into the importance of ecosystem services in human life well-being, enhancing dynamic social and cultural relations as a prominent basis for planning and management. Cultural Ecosystem Services (CES) are included in basic categories by presenting some important explanations for the necessity of an ecosystem framework. The values defined as cultural values have been elusive in part due to their complicated characteristics of intangibility and incommensurability in a valuation process. A lack of appropriate methodology and tool for valuation of CES has resulted in underestimating these values in the decision-making procedure. This paper firstly investigates CES and Participatory Action Research (PAR) as a possible valuation tool. Secondly, because of the importance of potential participation within the procedure, it investigates a sense of ownership that might result from PAR. Thus, the process aims to explore why this participatory-based approach can be defined as a reasonable tool for cultural ecosystem valuation by giving local people a greater knowledge of cultural values, and in-depth awareness of the consequences of socio-environmental actions in planning.

Keywords: Cultural Ecosystem Services; Participatory Action Research; Sense of Ownership

Introduction

“You tell us to take compensation. What is the state compensating us for? For our land, for our fields. But we don’t live only by this. Are you going to compensate us for our forest?”

What is the price of this? How are you compensating us for fields either—we didn’t buy this land; our forefathers cleared it and settled here. What price this land? Our gods, the support of those who are our kin –what price do you have for these? Our adivasi [tribal life] –what price do you put on it?” (Mahalia, 1994)

Global biodiversity is increasingly threatened by a range of drivers of change, including population and economic growth, land use change (development projects) and climate change. Therefore,

biodiversity continues to deteriorate at unprecedented rates (MA, 2005; Stern *et al.*, 2006; UN, 2009; Butchart *et al.*, 2010; TEEB, 2010; LPI, 2018). Among all these uncertainties, the concept of ecosystem services has gained worldwide attention as a worthwhile approach in terms of integration in decision-making related to ecosystem values, which already have been underestimated as peripheral issues (MA, 2005; TEEB, 2010). The ecosystem services (ES) concept has been advanced and widely adopted as a framework for identifying and weighting the social, cultural and ecological value in comprehensive management schemes (Daily, 1997; MA, 2005; Foundations, 2010; Tallis, 2011; TEEB, 2009; Blicharska *et al.*, 2017). The fundamental typology for ecosystem services in this research is based on the Millennium Ecosystem Assessment (MA, 2005) which distinguishes four types of services: provisioning, regulating, cultural and supporting services. Despite the integrative role of the ecosystem framework, the ecosystem service approach (TEEB, 2011) cannot take into account all dimensions of value and much value remains segregated in ecosystem research and practice, in fact, the doors have been closed to a lot of social and cultural aspects (Daniel *et al.*, 2012). In recent years, there has been a growing interest in the valuation of cultural ecosystem services and recognition of the importance of these values in decision-making procedures apart from monetary and dollar values. Cultural values have been included with ecosystem services in all eminent typologies (Costanza, d'Arge *et al.*, 1997; Blicharska *et al.*, 2017). Searching for those important cultural and moral values which are not dismissed as elusive externalities provides suitable space in order to facilitate appropriate treatment of different stakeholders and perspectives (Milcu *et al.*, 2013; Blicharska *et al.*, 2017). As mentioned above, apart from the importance of these cultural values, in a lot of cases cultural ecosystems have generally been valued in totally economic terms (Chiesura and De Groot, 2003) or there has been an unrealistic perception to these values. With the exception of recreation and ecotourism, the vast majority of the CESs have intangible nature and it is precisely the intangibility that is seen as the reason for their poor assessment (Milcu *et al.*, 2013; Burkhard *et al.*, 2014; Blicharska *et al.*, 2017). At present, it is, therefore, fair to argue that CESs are not yet adequately integrated within the ES framework, and, consequently, the development of parallel management strategies and policies is often unsatisfactory (Bieling and Plieninger, 2013; Blicharska *et al.*, 2017). The processes and mechanisms necessary for implementing this valuation in action especially at local levels have received relatively little attention. Thus, having an approach that is designed and used to work with local grassroots organizations has been avoidable (Milcu *et al.*, 2013; Burkhard *et al.*, 2014; Blicharska *et al.*, 2017; Hølleland *et al.*, 2017). A range of techniques has been used to measure the benefits extracted from biodiversity and associated ecosystem services. In this paper, the main concentration is on non-monetary approaches (TEEB, 2010). Non-monetary valuation (NMV) has a long tradition in some fields of environmental policy-making (e.g. in describing protected areas (Kukkala and Moilanen 2013), and different international initiatives have acknowledged its role in ecosystem services (ES) valuation (e.g., the MA, TEEB, IPBES). These techniques range from structured survey techniques such as questionnaires (Terer *et al.*, 2004) and interviews (Kaplowitz, 2001) to more participatory approaches such as participatory rural appraisal (PRA) (King and Faasili 1999) and participatory action research (PAR) (Mendoza and Prabhu, 2005; Tetui *et al.*, 2017). While these methods do not provide the monetary valuation of biodiversity, they can provide useful information on the importance of biodiversity to people in ways that monetary methods cannot (Málovics, 2009). But, the challenge in this area is a conventional disconnection between conducting research and putting results into practice through the mechanisms which focus on either research or capacity building but rarely both (Tetui *et al.*, 2017; Málovics, 2009). Indeed, the benefits of these valuation researches because of insufficient attention given to bringing together research and practice are always open to scepticism (Tetui *et al.*, 2017; Málovics, 2009). Many of participatory methods such as PRA and PAR were developed for use for marginalized groups, indigenous communities. The knowledge and insights derived from this experience may provide

useful awareness to provide opportunities for embedding valuation into local decision-making (Fazey *et al.*, 2011). Participatory Action Research (PAR) includes working collaboratively with the organization and training its members to conduct research with communities using participatory and deliberative methods (Christie, 2012). By using this approach, the aim is promoting inclusivity and participation in decision-making and building the capacity of the organization to include communities in the centre of social, cultural, and environmental uncertainties (Wakeford *et al.*, 2018). It aims to contribute to working with local communities to investigate whether cultural and environmental well-being and awareness grow through the successful establishment and management of cultural values in ecosystem framework and policy-making process. The objective of this paper is to justify the PAR as a possible mechanism for the valuation of the cultural ecosystem services, where it gives local people a greater sense of ownership, a more sophisticated view of ecological-cultural linkage, a greater definition of cultural values, and more awareness of the socio-ecological effects on environment.

Current popular terminology for ecosystem services framework

The ecosystem services approach is currently still evolving as a research field with a strong influence on international policy (Hølleland, 2017). The concept of ES was first coined in the early 1980s by Ehrlich and colleagues (Ehrlich and Ehrlich 1981; Ehrlich and Mooney 1983). By drawing attention to the many services ecosystems provide for human beings, their aim was to raise public interest and concern for ecosystem protection (Setten *et al.*, 2012). Following the United Nations' initiation of the Millennium Ecosystem Assessment (MA) in 2001, the concept of ES has gained new relevance and impact as a political and practical tool because the aim of the ES framework is ultimately to enable decision-makers to make appropriate management decisions (MA, 2005). The ES concept puts human needs and preferences in the centre of the ecological universe and measures the health of ecosystems based on their ability to provide humans with benefits – referred to as 'services' (Katz-Gerro and Orenstein, 2015). Following this purpose, the MA established a framework for identification, quantification, and valuation of the ecosystems' services. As illustrated in Table 1, the MA categorizes ES into four main classifications with a number of subcategories: supporting, provisioning, regulating and cultural services. As such, ES range from the provision of food, clean water and regulating services such as flood and disease control, to a variety of mainly intangible assets in the category of cultural services.

Ecosystem services	
Supporting services	Nutrient cycling; Soil formation; Primary production
Provisioning services	Food; Fresh water; Wood and fiber; Fuel
Regulating services	Climate regulation; Food regulation; Disease regulation; Water purification
Cultural services	Aesthetic; Spiritual; Educational; Recreational

Table 1. Ecosystem services. Adopted from MA(2005)

Cultural Ecosystem Services(CES)

Despite the great amount of research on the ecosystem services concept and approach in the past decades, the scientific literature clearly shows a lack of knowledge about the CES dimensions and lack of agreement about their role in the ecosystem approach (Schaich *et al.*, 2010; Setten *et al.*, 2012; Tengberg *et al.*, 2012; Blicharska *et al.*, 2017; Hølleland *et al.*, 2017; Díaz *et al.*, 2018). Consequently, there is a lack of integration of CES aspects into the ecosystem services approach, which can be explained by their intangible nature, evaluation difficulties, and methodological and conceptual issues (Milcu *et al.*, 2013; Burkhard *et al.*, 2014; Blicharska *et al.* 2017; Hølleland *et al.*, 2017; Díaz *et al.*, 2018). One problem for including cultural ecosystem services in environmental decision-making processes is not having an agreed-upon definition for cultural ecosystem services. Cultural ecosystem services were defined firstly as the non-material value benefits associated with ecosystem services. Costanza (Costanza *et al.*, 1997) defined cultural ecosystem services as the "aesthetic, artistic, educational, spiritual, and or scientific values of ecosystems". As seen in Figure 1, the Millennium Ecosystem (MA, 2005) expanded this definition to include the "the non-material benefits people obtain from ecosystem through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences," including cultural diversity, spiritual and religious values, knowledge systems, educational values, inspiration, aesthetic values, social relations, sense of place, cultural heritage values, and recreation and ecotourism. As illustrated in Table 2, similar definitions are found in succeeding ecosystem frameworks such as The Economics of Ecosystems and Biodiversity study



Figure 1. Subcategories of cultural services. Adopted from MA (2005).

developed by the G8 and hosted by the United Nations Environment Programme (TEEB, 2010) and the Common International Classification of Ecosystem Services (CICES) developed by the European Environment Agency (CICES, 2017). Such definitions seek to present the ways that ecosystems generate knowledge and support experiences (recreational, aesthetic, social, and spiritual), but they have tended to combine services/benefits and values (MA, 2005). A clearer characterization of services and values can be realized if cultural services are seen as producing a large number of intangible and non-market benefits (e.g., social cohesion) including different kinds of value (e.g., moral, religious, aesthetic)(Bieling, and Plieninger, 2010; Setten *et al.*, 2012; Tengberg *et al.*, 2012; Blicharska *et al.*, 2017; Hølleland *et al.*, 2017; Díaz *et al.*, 2018)

MA, 2005	TEEB, 2010	CICES V 4.3, 2017
Cultural diversity	Aesthetic information	Physical experiential interaction
Spiritual and religious values	Opportunities for recreation and tourism	Intellectual and representative interactions
Knowledge systems	Inspiration for culture, art, and design	Spiritual and/or emblematic (interactions)
Educational values	Spiritual experience	Other cultural outputs
Inspiration	Information for cognitive development	
Aesthetic values		
Social relations		
Sense of place		
Cultural heritage		
Recreation and ecotourism		

Incorporation of cultural ecosystem services in urban planning

Table 2. Overview of the different subcategories of cultural services used in the different ecosystem frameworks (MA 2005, Kumar, 2011, CICES 2017)

Incorporating cultural ecosystem values into urban planning and policy-making could help to increase awareness of nature as a critical component of human health and well-being (Gomez *et al.*, 2008). In order to acknowledge the importance of cultural ecosystem services for urban citizens, policy-makers and planners

must be aware of the link between biodiversity, ecosystem functions and people's experiences of nature. Urban planning and management must take into account how biodiversity loss not only has a negative impact on the provision of food and water and the regulation of climate, but also on citizens'

mental and physical health and well-being (Gomez *et al.*, 2008). Incorporating the diverse cultural values of ES within urban planning and policy will help to ensure that citizens' needs and concerns are included and more comprehensively addressed within planning processes, and that the basic principles of environmental justice have been strengthened. Cultural ecosystem services are an important element of the transition to more inclusive, just, environmentally aware and sustainable urban environments (Chan *et al.*, 2012). Existing knowledge and the practice of incorporating values of the ecosystem services in the planning process provides a potential opportunity for implementation of cultural ecosystem service dimensions and the ecosystem services approach at the local and regional planning levels. Tradition, shortage of resources (money and time), and a lack of methods for valuation of intangible aspects are some reasons for the discrepancies between theory and practice (Eliasson *et al.*, 2015). Accordingly, there is a great need to increase the availability of resources and improve the methods for evaluating intangible values in order to enhance the inclusion of intangible aspects in practice (Boswell, 2011). This also encompasses a shift in the direction of urban development planning in general, including a move away from strict protective measures and the utilization of CES for urban regeneration toward more creative, participatory interventions of using the past, particularly intangible CES, for the benefit of present needs (Eliasson *et al.*, 2019). Working with cultural values requires attention to how, when, and where values are articulated, as well as to what this articulation responds to. Consideration of both specific and broad processes can help environmental managers and policy-makers engage with seemingly intangible and contradictory social dimensions.

The valuation process for ecosystem services

The valuation of ecosystem services has a crucial role in supporting decision-making processes that directly or indirectly affect the natural environment. However, today's most popular monetary valuation methods based on the paradigm of neoclassical welfare economics face extensive criticism from various disciplines (Getzner, Spash *et al.*, 2004; Spash, 2006; Kumar and Kumar, 2008; Vatn, 2009; Greenhalgh *et al.*, 2017; Langmeyer *et al.*, 2016; Kenter *et al.*, 2016). Valuing an ecosystem service is thus equivalent with giving values to its different components where valuing the components is an important task even at the individual level. Moreover, measures and weights may vary from one beneficiary to another. This means that values given to different components of ecosystem services are incommensurable and cannot be easily aggregated (Martinez-Alier, 2014). Kumar and Kumar (2008) ask for more comprehensive ways of valuation because "when we focus on cultural, memory and linguistic variables we are valuing not only the intrinsic value of ecosystem services, but also their effects on human health or social structures, their aesthetic contributions, and their significance for future generations." For the scope of this paper, incorporating qualitative, participatory and deliberative methods into the cultural ecosystem valuation contributes to having a broad perspective regarding these incommensurable values (Martín-López *et al.*, 2012).

Cultural Ecosystem Valuation(CEV); Incorporating qualitative, participatory, and deliberative methods into the cultural ecosystem valuation

The term (non-monetary) cultural valuation emerged and has proliferated in a time when the ecosystem valuation literature has been dominated by monetary valuation and raised controversies around commodification (Martín-López *et al.*, 2012). Non-monetary methods include quantitative and qualitative research techniques (i.e. surveys, interviews), participatory and deliberative tools (focus groups, citizens juries, participatory or rapid rural appraisal (PRA/RRA) and Delphi panels), as well as methods expressing preferences in non-monetary but quantifiable terms (i.e. preference assessment,

time use studies, Q-methodology)(Christie and Fazey *et al.*, 2012). Those non-monetary techniques with focusing on the human expressions of preferences adjust to a more homogeneous subgroup within non-monetary valuation. Terms such as ‘qualitative’ or ‘subjective’ valuation (Aretano *et al.*, 2013) suggest that results reflect the subjective perceptions of stakeholders. Discourse centred (Wilson and Howarth, 2002) and ‘psycho-cultural valuation’(Kumar and Kumar, 2008) reflects broad umbrella concepts that consider preference formation as part of the valuation process and emphasise that personal and group values are important to understand. Sociocultural valuation has been applied as an umbrella term of non-economic methods analysing social preferences towards ecosystems (Martínez *et al.*, 2013). Due to the large heterogeneity of preference-based non-monetary valuation techniques, it is difficult to arrive at the same level of methodological consistency as seen in monetary valuation. Qualitative approaches (such as in-depth interviews and focus groups) provide opportunities for the researcher to probe more deeply into people's preferences than could be achieved using either quantitative or economic techniques (Baird and Flaherty, 2005). Such detailed insights may be extremely useful for uncovering local cultural and spiritual values that might not be directly transparent to external researchers. Participatory and deliberative approaches offer an alternative approach to the design and administration of valuation studies. Given that participatory approaches such as PRA and PAR were developed to meet the needs of social science research among marginalized groups, and indigenous people (Chambers, 1992), such approaches can help to ensure that valuation is applied through traditional, cultural or thinking practices, which will help to avoid the problem of imposing a western way of conceptualising environmental goods and services (Asia Forest Network, 2002; Jackson and Ingles, 1998). Participatory and deliberative approaches also provide respondents with ‘time to think’ about and reflect on their preferences, which has been demonstrated to improve the accuracy of valuation surveys (Whittington *et al.*, 1992; Kenter *et al.*, 2011). Such approaches may also help to: promote dialogue and deliberation with local people and decision-makers thus fostering ownership and responsibility of problems; promote learning and awareness; and build local capacity to analyse problems and make more effective collective decisions (Chambers and Cleaver, 1997; Reed, 2008; Wadsworth, 1993; Hughes and Seymour-Rolls, 2000).

Participatory Action Research (PAR)

Participatory Action Research (PAR) is a study design that treats the target communities as a part of knowledge generator and it is an approach from social science research as a shift away from the conventional approach. PAR works through diagnosis and addressing complicated human, environmental and social science issues. The specific characteristic of PAR is starting from social and educational research and expanding to research principles of participation and reflection, empowerment and enfranchisement of the group with social targets (Hughes and Seymour-Rolls, 2000). The PAR name reflects its three principles of participation, action, and development of knowledge with the potential to figure out wider issues of social justice, community inclusion and empowerment of marginalized groups (Wallerstein and Duran, 2010). It aims for a process to identify, prioritize and address social and environmental concerns and bridge the gap between communities and academics (Wallerstein and Duran, 2010). Community-based PAR has been defined by the National Institute of Environmental Health Science (NIEHS, 2001), and includes six principles:

- 1) Defining community as a unit of identity
- 2) Ensuring projects are community-driven
- 3) Promoting active collaboration and participation at every stage of research

- 4) Fostering co-learning
- 5) Disseminating results in useful terms
- 6) Ensuring research and intervention strategies are culturally appropriate. (O'Fallon and Dearry, 2002)

Groups that utilize PAR, attempt to redistribute power relations by working as a team to decide what is reached, how it is researched and its benefits across all stakeholders involved. In such collaborations, communities play a central role in decision-making, participants seek to collaboratively identify social-environmental problems, adapt potential solutions, and devise strategies to overcome challenges within highly respectful and analytical deliberations and discussions in order to collectively generate the final solution for problems (Susman, 1983; Baum *et al.*, 2006).

The different frameworks agree on PAR being an iterative process based on principles that promote local capacity building toward a collective social change (Susman, 1983; Stuttford *et al.*, 2012; Loewenson *et al.*, 2014).

According to Susman, the PAR cycle has five phases: problem diagnosis; action planning; taking action; evaluation; and specifying learning achieved. The cycle repeats with a refinement of the problem or a new one (Oscós-Sánchez *et al.*, 2008). At the centre of the PAR cycle the main principles are building and empowering communities and a system by which the important and inclusive characteristic of dialogues and actions can be made at different levels. Reflexive critique is about providing the opportunity for stakeholders to diagnose the problems and their perceptions about problems. This procedure happens in a very respectful and critical atmosphere. Collaborative resources are divergent participants, each with a valuable contribution to the process of research. On the other hand, the risk is about conflict created through the procedure of seeking challenge or change.

The plural structure principle demonstrates that there are several views and options in dealing with social problems (Tripathy *et al.*, 2010). Finally theory, practice, and transformation indicate the fact that peoples' actions are based on tactically-held assumptions that inform their actions based on built or enhanced theoretical outputs (Susman, 1983).

A sense of ownership: Demonstrating the potential for participation in local planning

The term ownership has been specifically used in community development contexts (Simpson *et al.*, 2003; Bessant, 2005; Bowen, 2005; Zimmerman & Meyer, 2005). The term is popular in environmental policy literature and in scholarship associated with sociology, education and curriculum development, and organizational behavior (Schneider, 1985; Barufaldi, 1987; Gusfield, 1989; Himmelman, 1996; Kearney and Kaplan, 1997; Wondelleck and Yaffee, 2000). The body of literature is loosely predicated on the assumption that if individuals are intimately and authentically engaged, dedication to the process and outcome will be created, leading to greater chances of political support and implementation (Lachapelle, 2008). Gaining a better understanding of the many characteristics of ownership in a planning process is critical toward furthering the study and application of community development since it can lead to better analysis of complex interactions, a greater chance of public involvement, and increased support toward the realization of community development goals (Lachapelle, 2008). Lachapelle (2008) demonstrates that a sense of ownership is proposed and applied to community development research and practice based on three essential characteristics and related questions:

1. A sense of ownership in process (who has a voice and whose voice is heard?);
2. A sense of ownership in outcome (who has influence over decisions and what results from the effort?);
3. A sense of ownership distribution (who is affected by the process and outcome?).

This first characteristic involves the processes by which voices are heard and considered legitimate or valid. Through a focus on ownership in the process, community development research and practice can construct methods that explicitly examine who has a voice in a development process and, more importantly, whose voice is heard (Bardwell, 1991; Gray, 2003; Fischer, 2000; Watts, 2000; Ferguson and Derman, 2005).

The second characteristic of a sense of ownership involves who has influence over the outcome through decision-making (Lachapelle, 2009). The sense of ownership provides a clear focus on the influence or direct authority over decision-making and the execution of actions. Consequently, a sense of ownership is predicated on power and empowerment, two terms that have received adequate discussion in theoretical and applied community development scholarship (Harley *et al.*, 2000; Pigg, 2002). The third characteristic of a sense of ownership demonstrates its distribution across various social, political and ecological scales. This last characteristic involves analysis of those who are affected by a decision as well as how the effects of a decision are distributed, accepted, both spatially and temporally (Pigg, 2002). Thus, a sense of ownership makes explicit connections and interactions, both spatial and temporal in community development research and practice (Harley, 2000).

Application of Participatory Action Research to Cultural Ecosystem Valuation, Why PAR?

PAR has been used to bring about social change in many different settings, particularly in the fields of community development, education, environment, and within organisations (Selener, 1997). One of the main features of PAR is the bringing together of theoretical and analytical processes for understanding a development problem, combined with action for social change (Kemmis, 2001). Because PAR researchers work closely with their study communities, an inter-subjectivity attitude between researcher and informed participants takes place (Reason and Bradbury, 2008). Stinger (1980) refers to a similar approach that he refers to as community-based action research and emphasises the social and cultural values that support it to make the research process democratic for all participants. PAR is used to facilitate a process that empowers a sense of ownership. This process is adapted to building common knowledge and innovative solutions for the benefits of local people. The approach is used to animate local stakeholders to create change in a manner that was previously not experienced with other non-participatory approaches. In terms of sequence, stakeholder involvement is experienced as being invigorated (Tetui *et al.*, 2017). It has to be pointed out that, a problem with many communities based on assessment is the reliability of these communities on traditional conventional mechanisms of data collection, report writing, distribution of results to the public with an overemphasis on external experts (Reed, 2008).

Indeed, they can include in-community methods by extracting data from local people but they cannot achieve methods with and by the community, therefore, empowering local people to make decisions and implementation of the outcome are superficial (Campbell and Vainio-Mattila, 2003). Such community research projects cause stakeholders to be in powerless positions (Fabricius *et al.*, 2007) by increasing dependency on external factors thus future efforts for empowering community becomes more difficult day by day (Cook and Kothari, 2001). Furthermore, they inhibit the progress of future

human adaptive abilities and configuration. Importantly in these kinds of community methods, local beneficiaries are separated from the critical stages of reflection, analysis, and interpretation because most of the learning takes place in distant research institutes which result in elimination of learning potential in the procedure of facilitating conceptual and behavioural changes (Blackstock, 2007). Achieving a pragmatic approach to cultural valuation of ecosystem services with in-depth learning for individuals from different contexts provides opportunities to enhance local adaptive capacity and learning.

Conclusion

A Participatory Action Research is a reimagined path to cultural ecosystem valuation and managing social-ecological systems that benefit people and support ecosystem integrity. For the scope of this paper, due to an urgent need to encourage learning and empowerment of local people in the valuation process, an ongoing emphasis on co-production and co-synthesis of knowledge between disciplines and stakeholders needs to be paid more attention. Assessments must take into account social-environmental heterogeneity and not ignore the places where people live, as that may be the exact location where they perceive and receive the most benefits. Documentation of the PAR approach mainly occurs to address social problems such as mental health, educational justice and community development. Similar documentation in cultural ecosystem services valuation is much less common, especially among marginalized groups and indigenous communities. This paper outlines one path of operationalizing this process by redefining the PAR as a possible mechanism, but do not deny there are many other ways to work toward valuation of cultural ecosystem services. Implementing the PAR, where the effects of decision-making on people and environment continue to be evaluated and revised over time, will ensure the community-based process for assessment of the cultural ecosystem services. However, understanding the potential for implementation of PAR for cultural ecosystem valuation in various contexts and at different scales needs further discussion and study of the PAR approach in a more pragmatic way.

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Topic: Community-based planning and social innovation

Living Space Research in Typical Residential Areas of Shanghai

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Abstract: Under the background of market transformation and rapid urbanization, the differentiation of social stratum and living space is becoming more and more obvious in China. The complex background and multiple patterns of residential areas have shaped a variety of living space, which can reflect different life styles and qualities. This article takes Shanghai as an example. It takes advantage of mobile phone signaling data on large sample of residential scale, compares and analyzes the spatial characteristics of living activities in various residential areas, and explores the scope, structure, rules and influencing factors of living activities from the overall level of the city. The study summarizes the living space of typical residential areas in Shanghai into four typical patterns: single center, strip, multi-center and tadpole-shaped. At the same time, from the perspective of the life circle, we will further evaluate the community construction in Shanghai and propose planning guidance. Combining small data such as questionnaires to make up the shortages of mobile phone signaling data and to further the study of living space from the micro level. Further, by combining mobile phone signaling data and questionnaires, the article tries to evaluate the quality of the living space, and applies the results to the evaluation of the community life circle and planning guidance.

Key words: living space, typical patterns, community construction, mobile phone signaling data

0.Introduction

China is in the period of comprehensive economic and social development. Urban development has shifted from scale growth to focus on the improvement of connotation quality. From the perspective of treating residents as homogeneous and diversified to paying attention to the diverse needs of different groups, we have begun to pay attention to urban life in addition to focusing on production. The construction of space and the improvement of the quality of life of residents.



The residents' weekend activity space has a high matching relationship with the urban living space, and the weekend activity behavior becomes an important perspective to see the urban spatial structure. As a relatively homogeneous internal entity, the residential area has a specific built environment, resident attributes and housing attributes, and has become an important unit in the analysis of weekend activity behavior. This paper analyzes the spatial pattern of weekend activities in different residential areas, and explores the boundary, characteristics and spatial distribution patterns of activities. To a certain extent, it can reflect the characteristics of urban living space, the level of construction, existing problems, and the development of urban tertiary industry and living space. The formulation of policies such as transportation facilities has practical significance.

1. Research review

In the traditional group behavior study, the data of residents' daily activity behaviors are mostly based on the questionnaire survey and activity log method (Zhang Ping, Yang Dongyuan, 2012). The questionnaire data obtained has rich individual attribute information and can be used for different attributes. The crowd conducts detailed and in-depth analysis and discussion; but because of the small sample size, the contingency due to sample selection is highly likely to influence the final research results.

With the advent of the information age, mobile positioning technology has been continuously developed and widely used, and the use of new technologies to study the daily activities of residents has become more and more common. At present, domestic research on residents' activity behavior is mainly based on GPS data, microblogging sign-in data and multi-data comprehensive application. GPS data is often combined with civic activity logs for analysis. Chai Yanwei (2012) studies urban life circle planning in Beijing based on time-space behavior. Shen Yue (2013) conducts daily activities for residents of giant communities in the suburbs of Beijing. In the study, Tana (2015) conducted a study on the behavioral measures of the daily life of residents in the suburbs of Beijing and the relationship between space and behavioral activities. Wang Bo (2014, 2015) used Sina Weibo to check the data to study the spatial characteristics of Nanjing urban activities. Liu Zhongjun (2017) used the multi-data of Gaode POI, Sina Weibo to sign the data, and the public comment merchant data to study the urban activity space in Zhangzhou.

Mobile phone data has the characteristics of high coverage and high holding rate. Its large sample size and rich individual spatiotemporal behavior information provide a new opportunity for residents' weekend activities and urban space research. The existing research in China focuses on the discussion of commuting behavior, occupational and residential relations, and little research on the activity space.

Cell phone data has achieved a breakthrough in sample size, but there are few studies on weekend activity and space in China. This paper uses the mobile phone signaling data to use the residential area as the analysis unit to generate the activity "small data" at the residential level through the individual weekend activity "Big Data" to identify the spatial distribution pattern of weekend activities of residents in different residential areas in Shanghai, and summarize the characteristics.

2. Research objects, data and technical routes

2.1 Selection of residential area samples

Shanghai residential areas are widely distributed from the central city to the surrounding areas. The housing types cover shanty towns, workers' new villages, general commercial houses, villas, and affordable housing. The traffic and living facilities in different residential areas vary greatly.

The sample is based on the representativeness of the residential area and the reliability of mobile phone data. The residential area with an area of more than 1km² and internal and surrounding is selected to ensure a certain scale and uniformity. The identification of the largest base station point is recorded by the internal data of the

residential area. As a resident of the community, the resident population must have a value greater than 300 to ensure the reliability of the data. On this basis, considering geographical differences, housing types, and rail transit convenience, 253 residential districts were selected within the Shanghai area, which is consistent with the type and quantity distribution of residential areas in Shanghai (Figure 1).



Figure 1 Distribution of sample points in 253 residential areas in Shanghai

2.2 Data Processing

2.2.1 Raw data

The research mainly uses the mobile phone signaling data of Shanghai 2G mobile users in the first half of 2014. The Shanghai area records an average of 16 million to 18 million different mobile phone identification numbers per day, and the average daily signaling record is about 600-800 million. There are tens of thousands of base stations distributed in the city. The distance between base stations ranges from several hundred meters to several kilometers. The base stations in the central city are dense. Each piece of signaling data includes information such as user ID, time, base station location number, and event type (such as answering a call, sending a text message, and updating a location).

2.2.2 Residential area identification

Each mobile phone signaling data records the number of the user contacting the base station, and when performing location identification, the base station location is used to estimate the actual location of the user. In the study, for each record point of each user from 20 days to 6 o'clock in the next day, remove the remote point, select the point with the smallest average distance from all points as the residence of the day, and repeat the operation to get 14 days of possible residence. A set of locations, using the above distance and minimum method to select a stable place of residence. The data identified a total of about 13.71 million users with stable residences. The sample size is about 57% of the resident population of Shanghai Liupu. The Pearson correlation coefficient between the street level and the Liupu permanent population data is 0.910, and is at 0.01 level. Significantly related, it is feasible to describe the method of mobile phone data to identify the resident population.

2.2.3 Activity stop identification

Clean the mobile phone signaling data, kick out the remote point, and calculate the time interval (the first point and the last point) of the user continuously in the same place. If it exceeds 20 minutes, it will be regarded as a stop; in practice In use, the active place to stay must be removed from the place of residence.

2.2.4 Data selection

This study is aimed at weekend activities, using a standard weekend consisting of four days of data from Saturday and Sunday in a two-week Shanghai mobile phone signaling data in 2014 to reduce the chance of a single weekend.

2.3 Technical route

Based on the selection of residential areas, the average activity direction, travel distance, and number of trips of 253 sample weekend activity spaces are described as a whole; through the weekend, the nuclear density distribution map of the residential area, the travel distance frequency distribution map, and the time-lapse travel time and other visualization methods. Comprehensively judge and identify the distribution pattern of weekend activity space, summarize the characteristics of various modes, and analyze the activity circle of each residential area to further supplement the model features.

3. Overall situation of the event space

3.1 Average travel directions

The average travel direction refers to the connection between the coordinates of the place of residence and the average coordinates of the active place of residence, and the degree of deviation is characterized. According to the analysis results (Fig. 2), the weekend activities have a consistent directionality, pointing to the direction of the city center; from the travel offset distance, the offset of the central city is the smallest, and as the distance from the central city increases, The offset distance also increases, and when it arrives in the suburb of New Town, there is a significant shift in the offset distance.

3.2 Average travel distance

The average travel distance is the average of the distance traveled by residents of the residential area during weekend trips (Figure 3). There is a case where the distance from the central city becomes larger and the average travel distance increases, until the new city has a more obvious fall.

3.3 Average number of trips

The average number of trips in the sample ranged from 3 to 8 and there was a large difference (Figure 4). The number of trips by Pudong residents is significantly lower than that of Puxi residents. As the distance from the central city increases, the average number of trips increases.

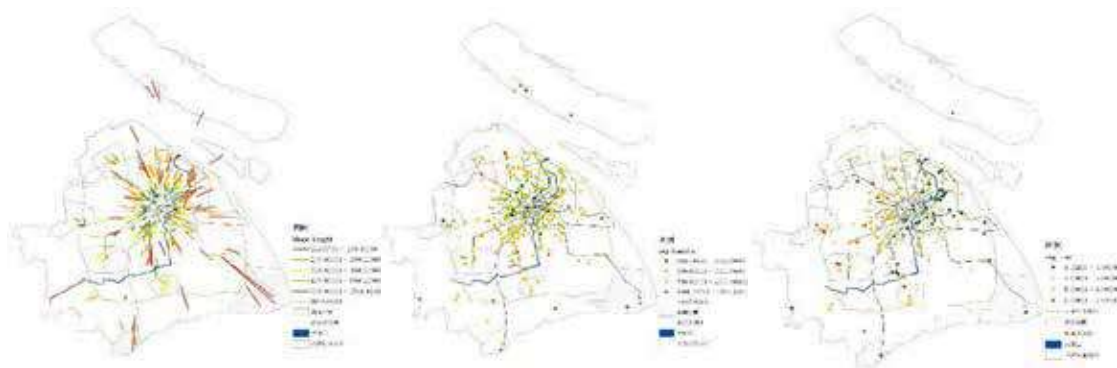


Figure 2.3.4 Average travel direction, average travel distance, and average travel time of residential samples

4. Spatial distribution pattern recognition

4.1 Pattern classification

Through data processing, based on the characteristics of the weekend activity nuclear density distribution map, the travel distance frequency distribution map, and the time-separated travel time of each of the 253 sample residential areas, the weekend activity space of residents in Shanghai residential areas can be divided into four modes. Class (Figure 5): single center, strip, tadpole, multi-center; according to the internal differences of each category, it can be further divided into 7 sub-categories (Figure 6).

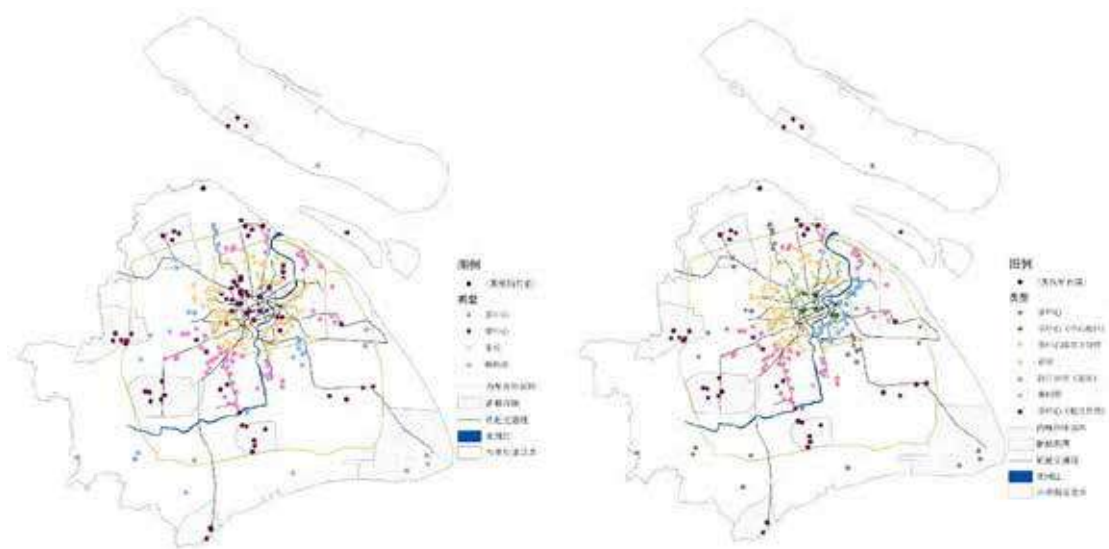


Figure 5.6 Residential area sample pattern classification

4.2 Characteristics of each mode

4.2.1 Single center

The common characteristics of the single-center mode samples are: single-point agglomeration of the active space distribution, the travel distance probability distribution decays very fast, the activity ratio is extremely high within 2km, and the average travel distance is relatively short. It can be divided into three sub-categories according to form and location (Fig. 7): single center (inside inner ring), single center slightly directional, single center (urban periphery), a total of 74, accounting for 29.2% of the total number of samples.

(1) Single center (inside the inner ring)

The samples are concentrated in the inner ring. The built environment of the inner ring is high in maturity, the living space is relatively well constructed, the service level of various public service facilities is high, and the accessibility is high, which can satisfy most living and leisure needs. Possible causes of distribution. The average travel distance is less than 5km, and the relative peak of travel is ushered in at 10:00-11:00 and 14:00-15:00 on weekends. The overall “m” type is relatively flat (Figure 8).

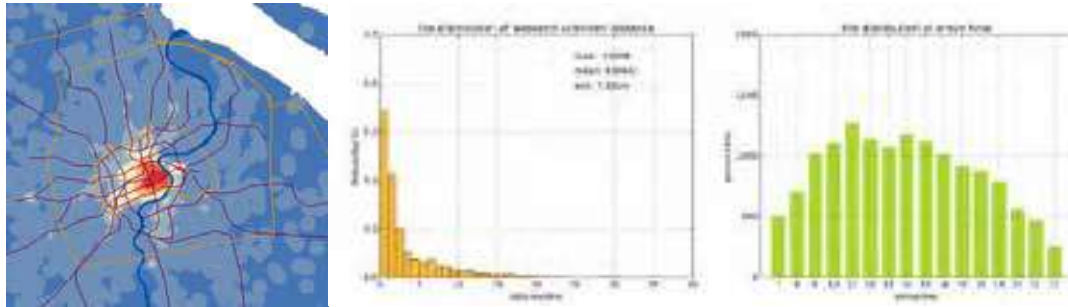


Figure 8 Single center (inside the inner ring) [Sanqingli] Nuclear density distribution, frequency distribution of travel distance, travel time distribution

(2) Single center is slightly directional

This mode is mainly distributed in the periphery of a single center (inside the inner ring), and can be further divided into two categories according to the degree of agglomeration (Fig. 9). The higher the degree of agglomeration, except for the directionality of the activity space, is very small compared with the single center (inside the inner ring) (Fig. 10); the lower the degree of agglomeration is concentrated in the northwest direction between the inner ring and the outer ring, presenting the group Blocky, located between the single center (inside the inner ring) and the degree of agglomeration (high), the surrounding environment is not mature enough to cause the difference, the travel distance attenuation is relatively slow, and the average travel distance is between 5-7km (Figure 11).

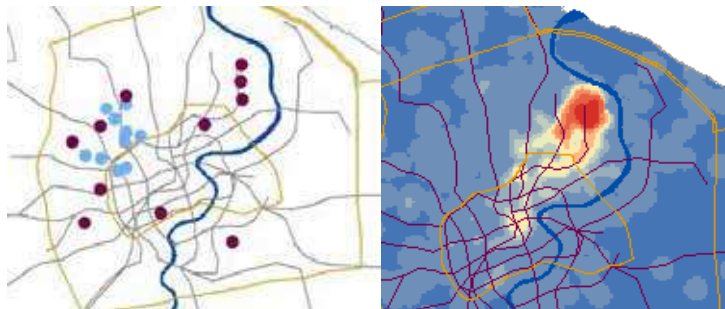


Figure 9.10 Single center slightly directional (sub-category), single center slightly directional (high) [Shiguang Xincun] nuclear density distribution

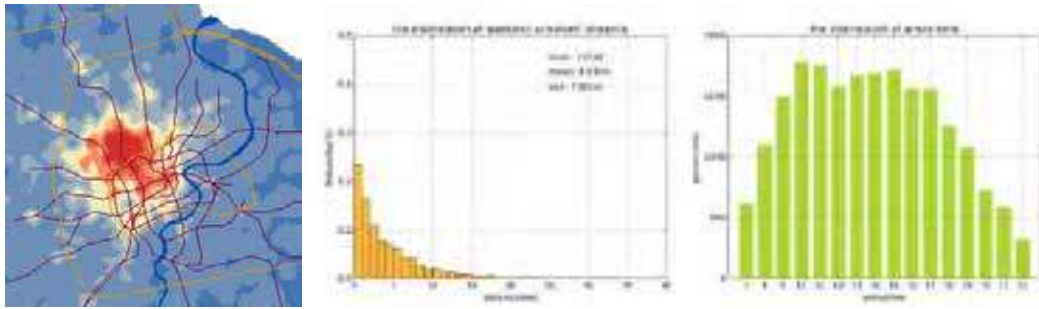


Figure 11 Single center slightly directional (low) [Ganquan community] nuclear density distribution, travel distance from home, frequency distribution, travel time distribution

(3) Single center (outside the city)

Most of the samples are distributed in the new suburbs of the suburbs. The built-up environment in the new city has a high maturity and can meet most of the living needs. The urban peripheral areas outside the new city have low maturity. If residents give up the service facilities in the new city, they will have to pay. Large distances and time costs go to the central city. Obviously, the necessity of doing so is low, so most of the new towns have a single-center model. The average travel distance is farther than the single-center mode of the central city. Within 10km, the relative peak of travel at 10:00 and 17:00 on weekends is more polarized than the travel time in the central city.

4.2.2 Ribbon

The common characteristics of the strip pattern samples are: the sample is concentrated between the inner ring and the outer ring, and the central area is surrounded by the single center mode. The activity space distribution extends to the center of the city. The travel distance probability distribution is relatively gentle, and the activity within 2 km is active. It is relatively high and the average travel distance is medium. It is divided into two sub-categories by the Huangpu River (Figure 12), a total of 90, accounting for 35.6% of the total number of samples.

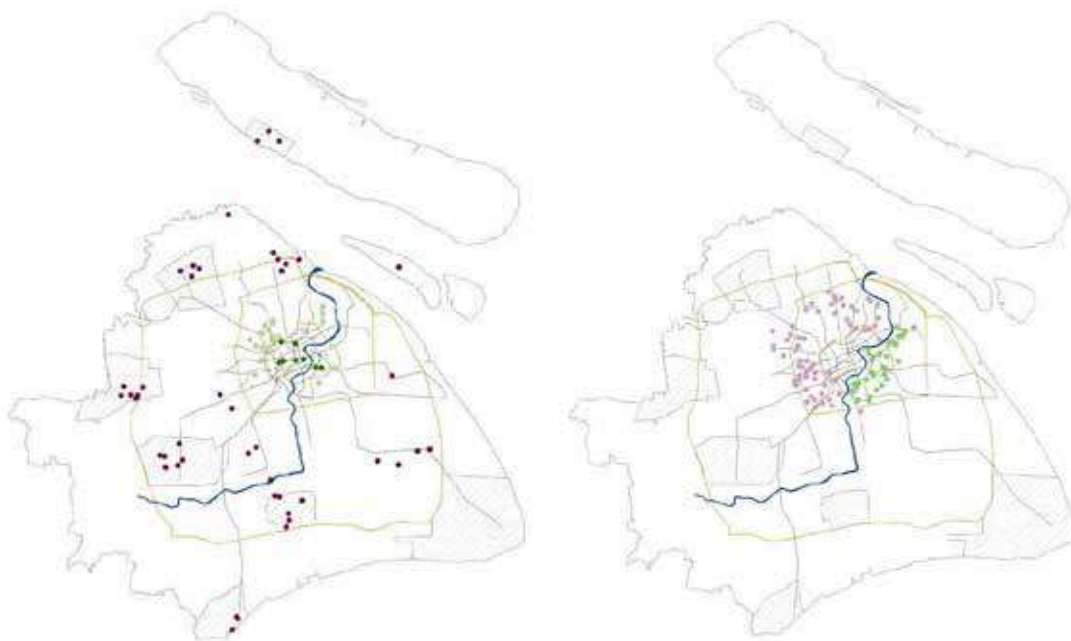


Figure 12 Single Center (Subclass), Band (Subclass) Mode Distribution

(1) Ribbon (Puxi)

This mode ushers in the relative peak of travel at 10:00 and 14:00-15:00 on weekends, and the overall “m” type with a flatter upper end. It can be further divided into two categories according to the degree of agglomeration (Fig. 13). The higher the degree of agglomeration is close to the single-center mode of the central city, the average travel distance is 5-7km (Fig. 14); the lower the degree of accumulation is close to the outer side of the band with a high degree of aggregation, the distance attenuation is more gradual, and the average travel distance is 5-10km (Figure 15).

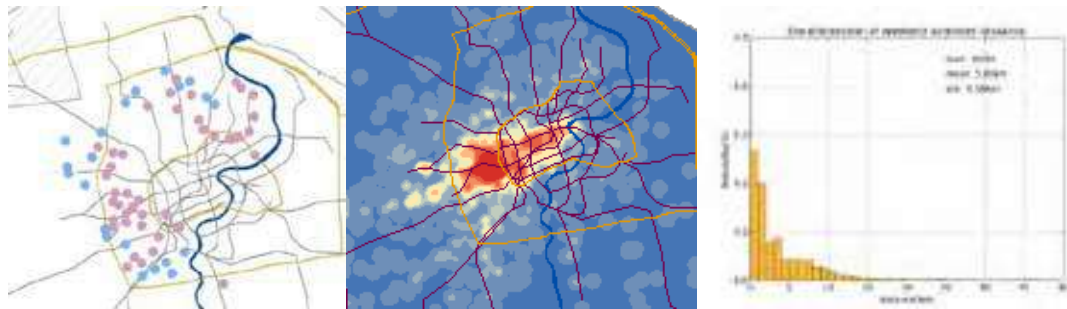


Figure 13.14 Band (Puxi) [subclass], banded Puxi (high) [Gubei District] nuclear density distribution, travel distance from home

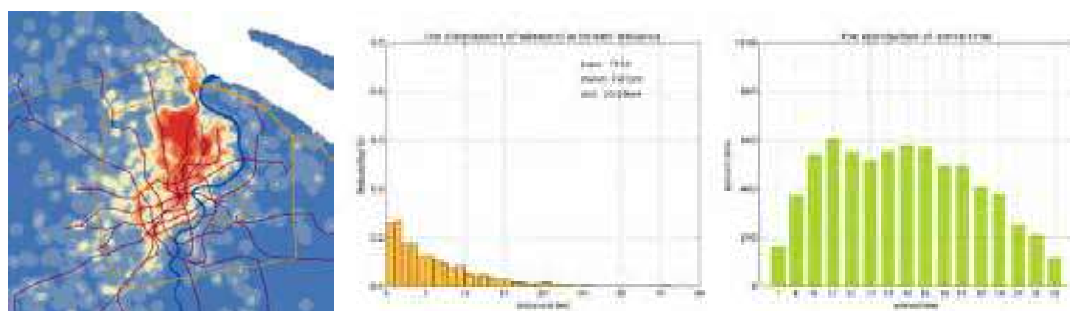


Figure 15 Band-shaped Puxi (low) [gaojing district] nuclear density distribution, frequency of travel distance, travel time distribution

(2) Ribbon (Pudong)

The scope of this model activities spans the Huangpu River. The attraction in the central area of Puxi is large enough. The Pudong construction is relatively immature compared to Puxi, which is the possible cause of its distribution. The average travel distance is 5-7km. The relative peak of travel at 10:00, 14:00-15:00 and 17:00 on weekends (Figure 16).

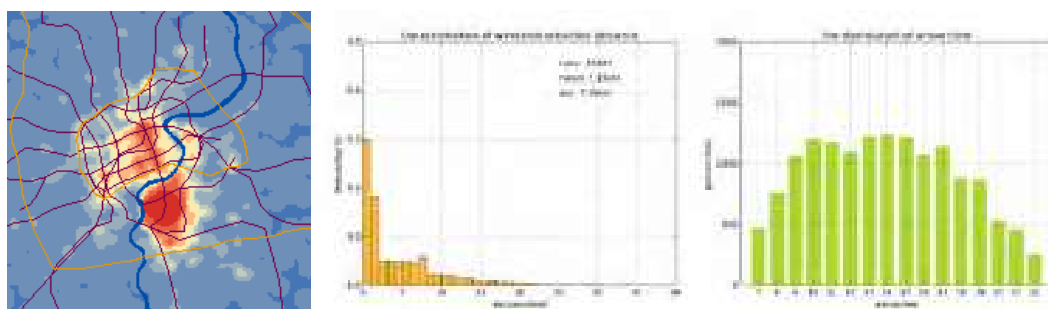


Figure 16 Band (Pudong) [Dezhou New Village] nuclear density distribution, travel distance from home, frequency distribution, travel time distribution

(3) Influence of Huangpu River on strip mode

A comparison of the belt patterns in Puxi and Pudong (Fig. 17) found that residents in residential areas in Puxi rarely travel to Pudong on weekends, and there is a clear dividing line along the Huangpu River. A large number of residents in Pudong's residential areas will travel to Puxi. .

This is directly related to the urban development process of Pudong Puxi. The old city of Shanghai is concentrated in the Puxi area. After years of development and internal self-coordination, the maturity is quite high and can meet the needs of life to a great extent. Pudong was in the 1990s. Great development, production space first, living space construction is relatively lagging, richness, grade, quality, quantity and Puxi gap.

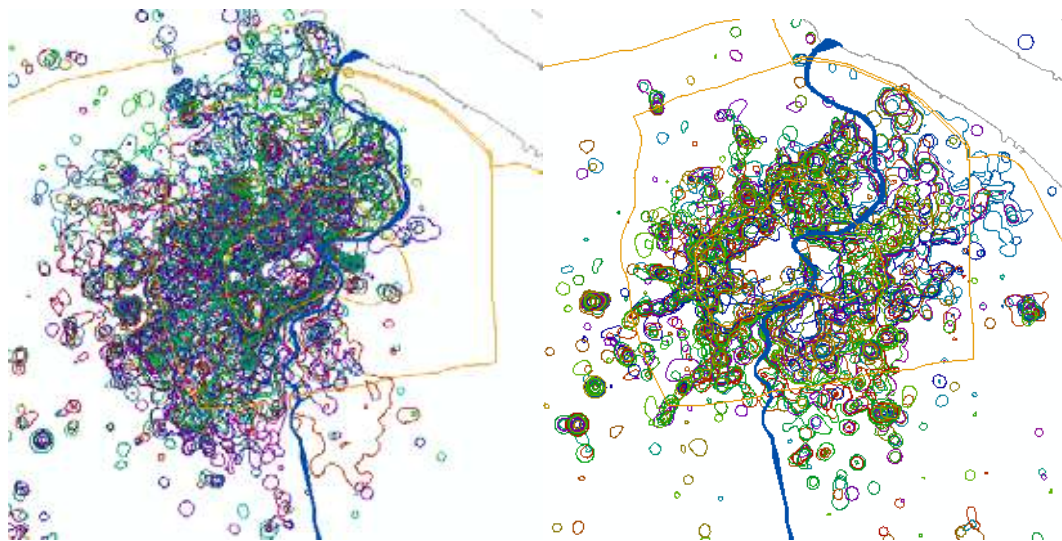


Figure 17 Band mode active boundary Puxi (left), Pudong (right)

4.2.3 tadpole shape

The sample of the tadpole shape is concentrated on the outer side of the outer ring and along the area of the rail transit, showing the morphological characteristics of the single core-long tail. The community built environment has a certain maturity, the service level of public service facilities is general, and the transportation along the rail transit is convenient, which leads to a sharp increase in the demand and possibility of activities in the areas along the line. This is a possible reason for the formation of this form.

The activity ratio is the highest in the range of 5km, and the distance attenuation is very gentle after 5km, and there is basically no ups and downs. The average travel distance is between 5km and 10km.

The relative peak of travel is ushered in at 10:00, 14:00-15:00 and 17:00 on weekends (Figure 18).

56 samples of the skull pattern, accounting for 22.1%

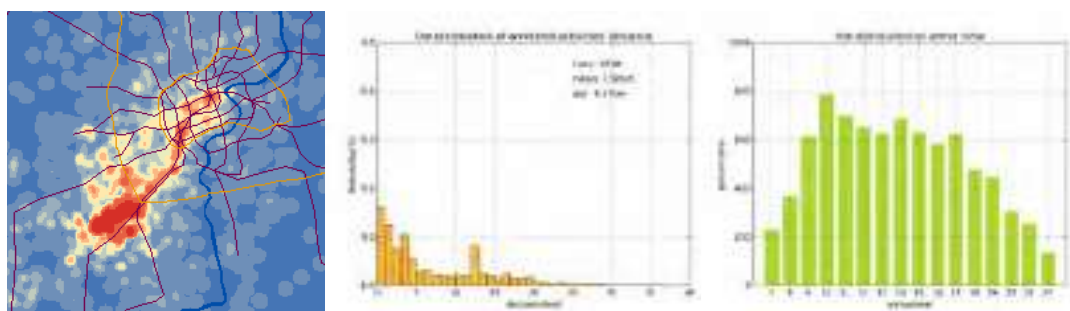


Figure 18 tadpole shape [Oasis Xiangdao Garden] nuclear density distribution, frequency of travel distance, travel time distribution

4.2.4 Multi-center

The sample is distributed outside the outer ring, between the main city and the new city (Figure 19). The residential area has a low maturity environment and a poor service level of public service facilities. The competition between the new city and the service area of the central city and the residential area is attractive, which makes the activity space of the residents appear multi-centered.

The activity ratio is the highest in the range of 5km, and the distance attenuation is relatively flat after 5km. There are several small peaks and the average travel distance is more than 7km. The relative peak of travel is ushered in at 10:00 and 16:00-18:00 on weekends.

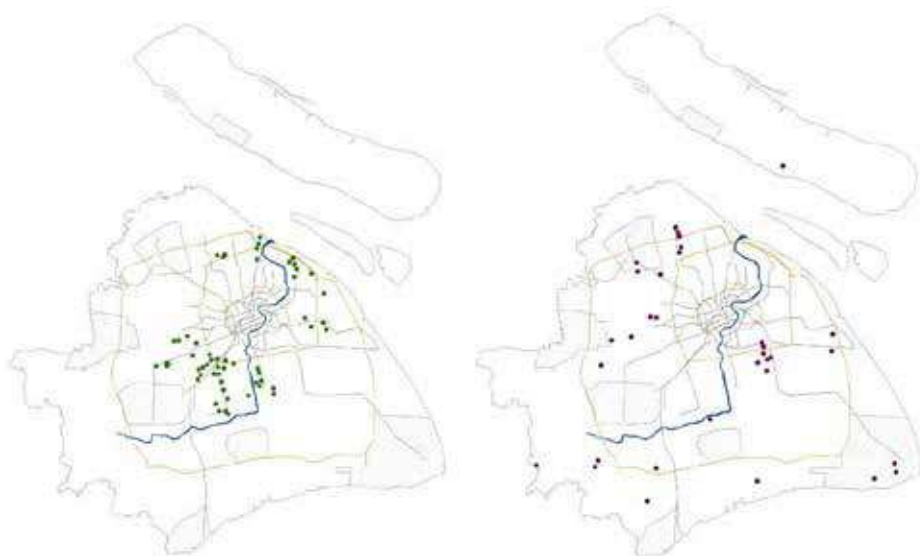


Figure 19 tadpole, multi-center mode distribution

There were 33 multi-center model samples, accounting for 13%. According to the traffic location conditions, it can be divided into two categories. If the traffic environment is poor, there is no rail transit within 3km. The performance of the weekend activity space is closely related to the new city. The samples with such characteristics are mainly distributed south of the northwest-south line of Shanghai (Figure 20).

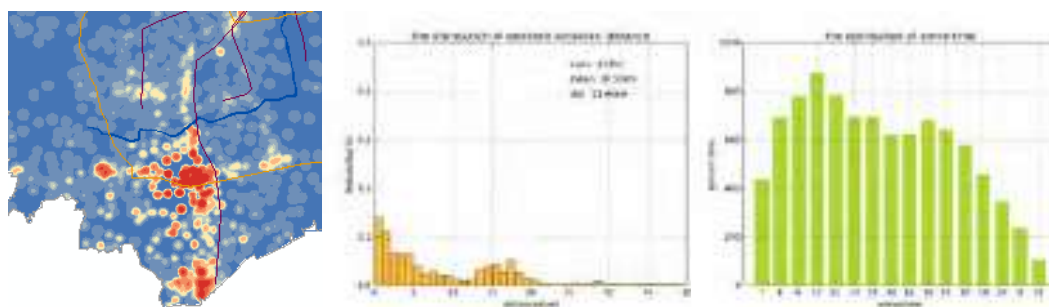


Figure 20 Multi-center (poor traffic) [Tinglin New Village] Nuclear density distribution, frequency of travel distance, travel time distribution

If the traffic conditions are good, there is rail transit within 1.5km, which is more closely related to the main city. This type is mainly distributed north of the northwest-south line of Shanghai. The influence factors of different regions are different, and the shape of multi-center is also different. When the density of rail transit is large and affected by multiple rail transits, it presents a “multi-center + multi-band” pattern; When the degree is not enough, it shows a pattern of scattered across the river; when it is not affected by the maturity of the new city's built environment, it presents a multi-center form of “new city + central city” (Figure 21).

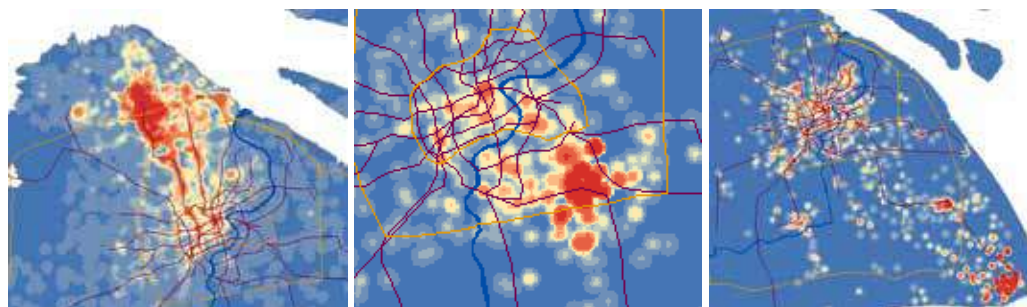


Figure 21 Multi-center (good traffic) [Ronan New Village], [Kangqiao Baoyu], [Yihao Jiayuan] nuclear density distribution

4.2.5 Summary of mode features

The models and their related characteristics and influencing factors are summarized and summarized . There is a certain circle relationship in the distribution of weekend activity space patterns. The number of travels in different time periods increases from 10:00-11:00 and 14:00-15:00 to 10:00, 14 as the distance between residential areas and urban centers increases. :00-15:00, 17:00, and finally to 10:00, 17:00, that is, the residents living on the edge of the city on weekends travel early in the morning, later in the evening. At the same time, the average travel distance also increases with the distance from the city center. The frequency of travel distance from home is roughly slowed down with the increase of distance from the city center. There are several small peaks in the sample outside the outer ring, between the central city and the new city.

For each mode, the main influencing factors are the location, the maturity of the surrounding communities, the facility convenience, and the rail transit conditions.

Summary

This paper uses mobile phone signaling data to identify, classify and characterize the weekend activity space patterns of residents in 253 typical residential areas in Shanghai. It describes the non-commuter travel characteristics of residents and explains Shanghai to some extent. The level of urban living space in the city.

However, there are still many deficiencies in this study. The internal spatial structure and model causes of each model have not been further explained. The relationship between housing type, location, service facilities, traffic conditions and weekend activities is not enough to explain the lack of quantitative support. The general pattern of the association between housing type and activity space.

At the same time, due to the lack of personal attributes and the judgment conditions of the nature of the mobile phone data used in this time, the research has limitations. If you want to deeply analyze the weekend activity behavior and spatial distribution of a certain group of people or an activity, you need to cooperate with the activity log. Questionnaire survey to analyze.

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Transition requires collaborative work. Discovering and defining actions that support supermixed cities.

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Abstract: This article starts from the hypothesis that design can contribute to a transition towards a more sustainable future for our cities if it supports work and living environments to 'collaborate' in making this future. The literature section discusses how work environments are increasingly disconnected from their surrounding living environments and the importance of bringing these worlds together again in a collaborative city-making process that takes form through – what we call – “supermix coaching”. In order to understand the existing relations between living and working, we explored how 9 Belgian companies developed over time and how important turning points changed their relations with their surrounding living environments. We discuss how companies, policy and people living and working in the city can make use of the insight in these turning points to give form to a supermix coaching process. This involves a more conscious collaborative design of actions on a microscale (architectural space, technology and human actors in the company and its immediate environment); that are then further developed on the mesoscale (the region and the city) and the macroscale (global context).

Keywords: work, life, mixed-use, design

The growing divide between work and life

Economic activities in the Flemish part of Belgium are located in several types of environments, such as in housing environments, city centers and suburbs, business parks, agricultural environments,... Whereas there are disperse economic activities in agricultural environments, business parks are almost exclusively meant for economic activities. Cities know as well a high concentration of economic activities (in combination with other activities on the same parcel or nearby). In the last decades, partly because of the increasing transport possibilities and proportionally low transport costs, many companies became part of specialised networks. The companies operate on a specific scale, and recruit workforce and customers on that scale. This evolution is reflected in their business-models: for certain companies, the link with the local (living) environment is less obvious than in the past. Although companies with no obvious link with their local environment can simply

coexist with their environment without problem, they are missing out on opportunities to give form to sustainable cities where working and living environments interact. Companies can relate to and interact with their living environments in many ways and on different scales. They can be the source employment or an identity of a city, because of the strengths of their local production, processing and distribution processes. When they become disconnected from their living environments, they can simply coexist with their environments and the strengths pass unnoticed. In certain cases, this coexistence may lead to difficult situations: the companies are seen as issues of concern, like unemployment, sound pollution or traffic and can force the companies eventually leaving the city space. Although there are processes particular to companies that cannot be mixed with housing, it is not uncommon for companies that do not conflict with environmental and safety rules to move outside the city (Vlaamse Overheid, 2014a, 2014b).

The strategy of mixing living environments and companies' production and service based activities within the city space is commonly addressed as "mixed-use" (e.g. Coupland, 1996). This concept has been a part of several Flemish policy documents (Ministerie van de Vlaamse Gemeenschap, 1997; Vlaamse Regering, 2018). However, in recent literature the concept of "supermix" was foregrounded to take the step of mixing functions in the city a step further (We Made That, 2017). The "supermix in the city" proposes to develop a sophisticated design strategy to create hybrid spaces beyond different isolated zones of work, living and nature; not by merely bringing functions together, but by radically aiming to strengthen and diversify workspaces in the city that benefit the community. To be able to reach this aim, this contribution explores the potential for cities to tap more consciously into the collaboration between work and living environments - two "worlds" that seem more and more detached from each other - in a more sustainable future. The focus on collaborative city-making (in this case between work and life) as a strategy to achieve a supermixed environment that supports more sustainable futures for our cities, builds on the work of authors, like Gehl on making cities for and with people in his 'Cities for People' (Gehl, 2010) and Manzini and Friedman 'Design When Everybody Designs' (2015). The latter have mapped what design experts can do to trigger and support meaningful social changes by focusing on emerging forms of collaboration.

We will start with a literature study that explores the concepts of mixed-use and supermix, to then discuss how a supermix in the city can be enabled through design. In a fieldwork section, we aim to further deepen this concept by understanding how companies, citizens, policy makers and work environments are already developing collaborative activities that support this supermix. In the discussion section we will further try to understand the nature of this collaboration in order for designers to give more consciously form to it on different scale levels. We will conclude with a short summary of the results.

From mixed-use to supermix

Mixed use has been a popular strategy by urban planners and designers in developing more sustainable cities. There is a rich body of literature on this topic, which can only superficially be touched upon here. We discuss the current discourse on 'mixed use' (levels of mixed use, the scale on which it operates and its difficulties) and the strategy of the 'supermix'.

Already in 1961 Jacobs proposed in 'The Death and Life of Great American Cities' to mix diverse uses to create vibrant neighbourhoods. She defined these on two levels: mixed primary uses of residential and economic, employment or service functions that are focused on attracting flows of large numbers of people. Mixed secondary uses refer to bringing into the mix the resulting demand for shops, restaurants, bars and other small-scale facilities. In the current discourse, Grant revealed three levels of a mixed-use strategy: the first level is focused on increasing the intensity of land use, the second involves increasing the diversity of uses by encouraging a compatible mix (e.g. mix of commercial with residential uses) and the third level aims for integrating segregated uses by overcoming regulatory barriers, related to environmental impacts, noise, or traffic (Grant, 2002, p. 73). Next to the level on which it operates, mixed-use has been also defined by many on

different scales: the building block (Coupland, 1996), the neighbourhood (Jacobs, 1961) and the local scale (Grant, 2002). Finally, many have discussed the difficulties of implementing mixed use in practice (Grant, 2002). As Hoppenbrouwer & Louw state in relation to an Amsterdam-based study that the centrally determined goals of mixed-use “require local solutions to deal with frictions between environmentally sensitive and environmentally intrusive functions (Hoppenbrouwer & Louw, 2005, p. 982).”

This has motivated many people to search for more locally sensitive approaches, without losing touch with the ideal of creating more sustainable cities where work and living can co-exist. After a study of 1000 businesses that operate from industrial sites, the design practice ‘We Made That’, introduced the concept of “supermix”. They define supermix as a strategy to rethink the city that considers forests, villages or water and as “facilities” and “resources” and develops working, living and nature in separate “zones”. They conceptualise the supermixed city, which is a city that actively searches interaction between diverse actors and activities that are developed in these zones in a common strategy and creates hybrid spaces. Very important is that the supermix concept does not start mainly from a housing-led strategy, as is often the case in the mixed use strategy. They also provide room for further development of industrial sites in the city and to create a more diverse range of work places and thus employment opportunities in the city, such as retail environments, manufacturing industry or schools that can accommodate housing, (health) care or nature. Last but not least, it considers a supermix strategy as a sophisticated and situated design process and not as a universal method (We made that, 2017) (Future Architecture Platform, 2017, p. 17 & 27).

Methodology: Towards a supermix approach

Our hypothesis is that if we want to develop this sophisticated and situated design strategy, we need to further explore how a supermix strategy can take form through collaboration between work and living environments. In order to do this, we need to take into account the different actors that play a role in this and how this design process unfolds in space and over time.

First, different authors have stressed different actors in collaborative city-making. Very important – and still often forgotten - actors to involve in city-making are the people who live and work in the city and who give form to the city and who “intelligently” and collectively can take the city into their own hands through the communal production of public meeting spaces, platforms and technology (e.g. Gehl, 2010, Foth and Brynskov 2016). Also non-human actors, such as information technology and platforms and nature play a role in improving the quality of life in the city (Mahizhnan, 1999 and Latour, 2017). The private and public institutions play a role too, because they govern the people and the spaces where they live and work, such as the companies in the city space, the municipalities, public organisations and urban planning agencies, the vendors of city services, and developers of platforms (Huybrechts, Benesch & Geib, 2017; Lodato & Disalvo, 2018).

Second, as became clear from the study of literature, acknowledging the three key actors in collaborative city-making, being people, technologies and institutions, also involves the articulation of the spatial scale on which they operate. It is important to note that collaborations between work and life do not develop solely in the neighbourhoods or in the small circles around the companies, but involve decision-making and relations with actors on various spatial scales (Ibid.). These include the micro-scale of the single spatial artefacts (buildings, playgrounds etc.), the meso scale of the city and the region (road networks etc.) and the macro scale of the country, Europe (e.g. the impact of EU policy) or beyond Europe.

Third, to be able to articulate how a supermix strategy develops over time, we need to pay particular attention to turning points in how a company develops relations with its environment. In Huybrechts, Hendriks & Martens (2017) we describe turning points as moments in a history of a particular place or organisation where it is plausible that the course of things could have taken a different direction. For instance, a company decides to grow and as a result also decides to create more parking space for its employees. This changes its relation with

the neighbourhood. Discussing these turning points during design processes makes it transparent to others how the decision-making in the design process is affected by the personal role of actors (who is acting); the overarching macrostructure or by coincidence. This gives designers concrete input and inspiration to start imagining minimal rewrites of these turning points in the form of (designed) actions that could support a supermix strategy better.

We thus can define the collaborative city that nurtures a supermix strategy as the city that (1) provides platforms for the development of collaborative design processes between three main actors: people, non-human actors (technologies, buildings or nature) and institutions (the local, regional and supralocal governments and companies) (2) in different moments in time and (3) on different spatial scales.

From mix to supermix: the project and its approach

To now deeply understand how, when and where collaboration takes place that (can) enhance the productive relation between work and daily life in the city, the Flemish government gave the assignment for an in-depth study of the field. The study built on previous studies in Flanders such as 'Kameleon' (Leiedal, 2016), 'Labo XX werk' (Verhaert, 2016), and 'Made in Brussels' (2017). They involved a consortium of academic researchers, intermunicipal organisations and spatial agencies into a design research into the past, present and future of 9 companies' interactions with their living environments, 3 in 3 Flemish regions/cities, being (the environment of) Kortrijk, Roeselare and Herentals. From big to small these involved a large-scale media company and brewery, a medium-scale to large-scale company providing services for the health field (cleaning/sterilising sheets, materials, logistics), a social employment company, a wood company, a glazier, and a small-scale lawyer firm, a wine shop and an electrician.

The first step in the research, carried out by the intermunicipal organizations, consisted of an analysis of regional history and regional planning context. In addition, they shared knowledge on their previous studies, such as project 'Kameleon' where an analysis was also carried out of the extent to which the companies are today intertwined with their environment. The focus was on spatial, economic, social, ecological and mobility characteristics. They also identified the specific permits context and officially registered complaints for each of the companies. Next to that, a mapping of economic activities was conducted in order to be able to capture the specific position of the companies in a work-living-environment (Giaretta, Zaman, Penninx, and De Mulder (2019). Given the fact that some of the field researchers have a background in participatory design research (Robertson & Simonsen, 2013), in the second phase, the strategy was developed of gaining a deep understanding of the existing collaborations between citizens, institutions (companies and policy) and the 'things' that mediate their collaborations (technology, buildings, green and public spaces) and how they exchange or conflict with each other on different spatial scale levels (Huybrechts, Benesch & Geib, 2017). This happened in close dialogue with a participatory design process that aimed for changing collaborations between these actors necessary to support a supermix strategy.

The process started with interviews, observations and field mappings on site with the 9 companies during the period from March to June 2018. The resulting bottom-up insights were processed in 9 visual historical timelines that represent the various turning points (e.g. a growth of a media company and its need for parking space) in the interactions between the companies and the surrounding living environments and the various actions that the companies had taken to deal with those turning points to keep a good relation with the living environment (e.g. share parking space with the neighbourhood). In September 2018, a series of co-design workshops took place between the companies, the intermunicipal companies, the local and Flemish government and the neighborhood. In those workshops, the (1) timelines with turning points and actions were discussed and (2) collective actions were designed that could direct the supermix between living and working in an even more qualitative way than before. These actions were then evaluated between the same groups of actors, extended

with a group of interested members of Flemish municipalities and governmental organisations in collaborative sessions

As a result, we were able to present an overview of important turning points in the relations between work and daily life. We also were able to formulate actions that were/can be taken by businesses, governments and citizens to deal with these turning points and that (potentially) support a supermix strategy. We studied enough cases to start discovering recurring patterns, to make the results of this study sufficiently responsive to future economic, social or ecological shifts and trends.

Fieldwork results: turning points and actions

The research process resulted in a deep understanding of what it means to design for closer collaborative interactions between work and daily life. First, through making the timelines of turning points with the companies, it became clear that there are frequently recurring events, where designers, policy, companies and neighbours can pay attention to when they want to prevent work and life to grow even more separate and enhance the collaborative interactions. These entail:

- changes in the family structure of the business (e.g. children taking over the business),
- growth of the business (e.g. more employees),
- spatial changes (e.g. a move to another location),
- technological changes (e.g. digitalisation of production),
- changes in the regulation (e.g. new environmental policy),
- sectoral changes (e.g. decline textile manufacturing),
- organisational changes (e.g. globalisation of the company),
- changes in the economic and political landscape (e.g. economic crisis),
- changes in the real estate market (e.g. companies selling and buying property for development of residential housing to gain income),
- changes in local entrepreneurship (e.g. competition between growing amount of lawyers)
- mobility transitions (e.g. increase of traffic slows down company transport)
- challenges with parking opportunities
- celebrations (e.g. anniversaries of the company)

Second, the actions that were developed by businesses to anticipate on, remediate or react on these turning points that disturbed the relation between work and daily life, were mapped. Very roughly clustered, these entailed:

- Anticipation on spatial change or changing regulation

- Re-organisation of space, mobility, employment, products, services and activities,
- Investment in sustainable and innovative infrastructure and in the human network
- Sharing of space, information, people
- Co-design of services and products, the border space between living and working, permanent or temporary shared space, (spatial, environmental,...) plans

From fieldwork to co-designing supermix coaching

From the fieldwork it became clear that in the field the shift to more mixed work and life environments, was made by gaining insight in turning points and taking more conscious design actions. During the co-design sessions it was therefore concluded that this activity wants to anticipate on possible conflicts in the relations between work and life and is thus not a process of designing solutions, but rather a design coaching process. We call this process “supermix coaching” which involves coaching of companies, policy makers and communities in anticipating on certain turning points of companies’ development through conscious design actions that restore or enhance their productive collaborative interactions with the city. It makes use of insights in turning points that require supermix actions on the one hand and “designed” supermix coaching actions on the other hand.

During the co-design sessions, this supermix coaching activity was made more concrete on how it could address the different spatial scale levels. This was done by designing actions that were based on the reality of these companies, but at the same time transcended this daily reality and aimed to give form to a supermixed city. During the co-design sessions with the involved policy makers, businesses and community representatives; we translated the observed daily actions into supermix actions that can be taken collaboratively by businesses, policy makers and citizens to restore, improve or enhance the supermix in the future in relation to important turning points in the development of companies in their environment. We will describe these actions here, starting from the micro-perspective – being the perspective we took first – to then build up to the macro.

Micro

We started with observing and co-designing on the micro-scale of the architectural space, people and technology and share some first conclusions there.

First, from the perspective of the architectural space, it was interesting to see how certain spaces facilitate interactions between the company and the environment more than others. It showed that spaces can be consciously designed as urban interfaces between living and working to encourage some type of material and digital sharing, such as (entrances to) car parks, workspaces or border areas. Currently, regulations pay little attention to these interfaces, and directing funds to them is cannot be taken for granted. So funds and regulations that facilitate sharing need to change or be created. Concretely, the co-design sessions articulated that in supermix coaching spatial design requires a movement from private design of business premises to hybrid ‘public/private design’ of...

- spaces or visualisations that make occupation, time or type of use tangible to encourage sharing.

An example: The law firm is situated in the middle of the city, with limited space as a result. They have meeting spaces, which are sometimes insufficient, but also sometimes empty. They already exchange people and knowledge with other small firms in the city. The firm could benefit from this network to exchange their meeting spaces in the city. This could be supported by digital applications and urban screens that visualise data on which moments in the day, the meeting spaces are occupied and available for use by others.



- (parts of) business premises as private spaces with public properties, semi- or public spaces. This can be space for networking, instead of conflict avoidance, to facilitate events, such as individual or collective company visits, neighborhood parties, etc.

An example: The wine company organised yearly neighborhood networking parties and wine tasting to improve the relations with the neighbourhood. The brewery even created a more permanent meeting space between neighbourhood and company by collaborating in the creation of a neighbourhood restaurant with beer tasting.

- border areas as shared spaces, such as parking garages and buffer zones.

An example: The media company turned a border area into a green and wild ecological space. This could be further developed – in collaboration with the neighbourhood and the city - to contribute to the whole city's green corridors (Image 1 Border area).

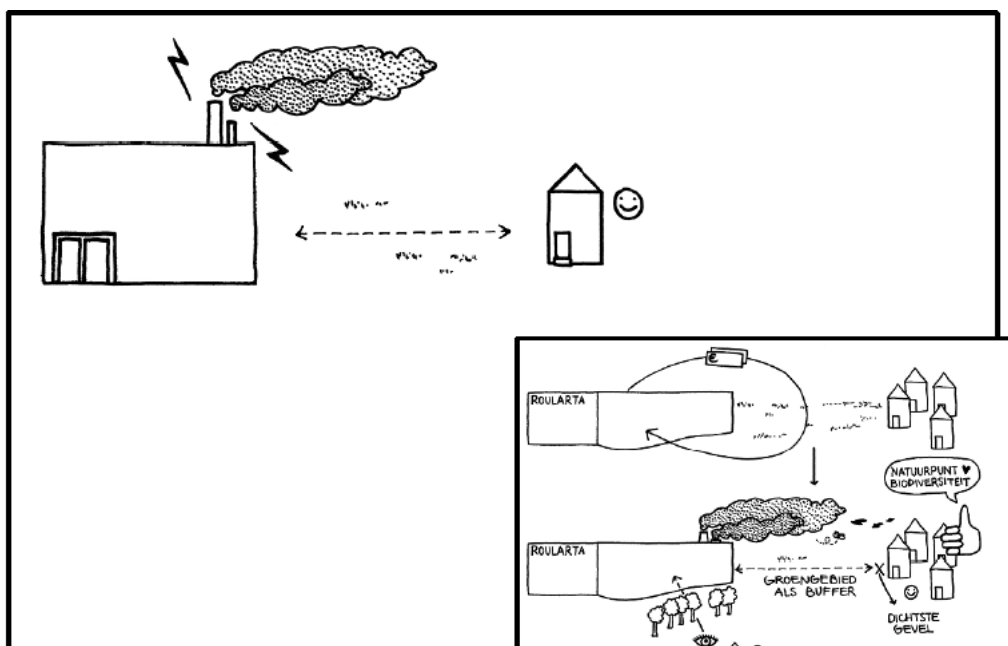


Image 1. Border area became a green ecological space @Jenny Stieglitz

- re-organisation of space so that the most private and sound-intensive spaces are on the inside and the more public on the outside.

An example: the beer brewery created the outside circle of its building for more public functions and the inside for more sound intensive and private functions. This could be a design strategy for many companies.

- hybrid spaces that interface in-between work and knowledge exchange with the outside world (which is more interactive than sharing information) at a local and supra-local level.

An example: The studied media company used technology to share their sustainability reports in a systematic way with their surrounding environment. Based on these reports they invite neighbours to come and inspect technical installation live in the company. This sharing of information could be more interactive, in the sense that the digital platform can become a platform for conversation – instead of only information - on sustainability issues in the neighborhood.

- space that makes the company's products and services a clear asset for the neighborhood.

An example: The wood company has a historical relation with the surrounding community. They sponsor and craft artefacts for the community, such as the Christmas nativity scene. Today new housing is developed next to the company. Instead of thinking about how the in-between zone functions as a buffer to reduce noise and enhance privacy, the wood company can become a partner by designing a wooden playground as a display of their product and a public space for the neighbourhood.

- space and mobility as interface between local and supra-local interests.

An example: Initiatives such as the Rodenbach Brewery's 'House of Food' are an example. This house was the result of a retrofitting of part of the business premises of the brewery in collaboration with the region, EU and the neighbourhood as a European center of excellence in food, which fulfills a touristic and potentially a neighborhood café function (Image 2: House of Food).

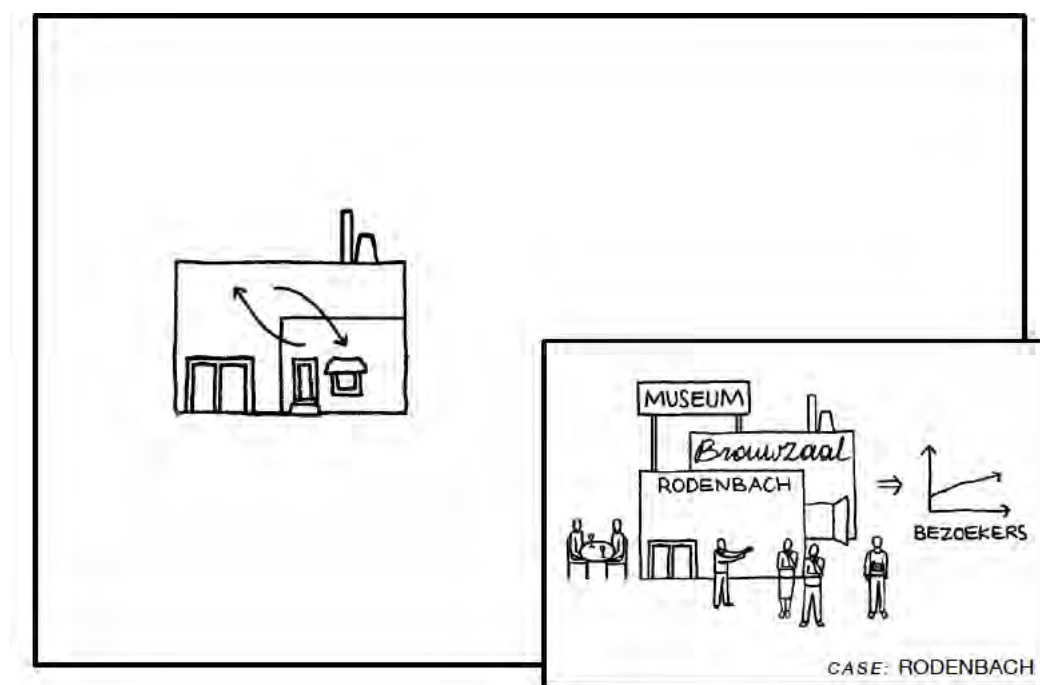


Image 2. House of Food @Jenny Stieglitz

Secondly, we found that the supermix coaching actions are only effective if the human actors, the company, the local residents and policy have the openness, the desire and the resources to strengthen the relationship between work and life.

We observed that company owners with a family relationship with the living environment or who lived close to or in their company took more actions that would benefit the collaborations between work and life. Also neighbourhood residents who had a long relationship with the company environment were more positive about collaboration with work environments. Examples are the brewery Rodenbach, where the houses around Rodenbach used to be occupied by employees. Also many craftsmen in our study, such as the wood company and the electrician lived on their business premises, with their atelier close to home. We saw that the scale of the company defines its interactions with the environment. Large companies such as the media company, the brewery and the healthcare service company maintain a good relationship with the environment through

investments in (expensive) sustainable machinery, good communication and participation platforms. Small businesses such as the law firm and the wine shop network more organically and are more likely to participate in collective initiatives, such as company or neighbourhood network associations or shared car parks.

In many situations, however, we observed that the real estate logic was that dominant that the relationship between work and living was irreparably disturbed, because companies are very easily tempted to sell their company grounds in the city. Companies indeed indicated they benefit from selling real estate in the city, but that they would also like to negotiate with the government about new residential developments in their environment, about the destination of zones and about support in finding creative solutions in the optimal use and management of several - too small - premises. At this moment governments were most involved in the purchasing of parts of the real estate when the business premises had a heritage value in order to give it a public-private interpretation, as was the case in the 'House of Food' at the brewery Rodenbach. However, the co-design sessions made clear that it is important that designers give form to platforms that facilitate the collaborations between businesses, governments, neighbourhoods and real estate also outside of heritage cases, because of the large impact of real estate development on qualitative city planning of work and living relations. This can give birth to new typologies that can encourage company owners to live close to their companies or allow (smaller) companies to explore new shared activities.

Finally, our fieldwork and more particularly the 9 timelines showed that technology has both encouraged as disturbed collaboration between actors in the city, in two major waves. The first automatisisation wave created the need for larger spaces to be able to install machines and the second digitalisation wave led to a reduction of the machine park and a surplus of space for the environments, which offers opportunities for a mix between work and life. Both had an impact on less local deployment of staff. However, technology can be designed to create collaborations between work and life, like it was used in the case of the media company who shared sustainability reports. Based on the co-design sessions, we can conclude that in order to support a supermix coaching strategy, designers can take the responsibility to design these kind of technological evolutions together with the company's employees, the neighborhood and policy in ways that benefit the environment. In this way, there is also a better coordination between technological installations at various locations in the city and possibilities for shared use of, for instance, energy. We observed that it are often the companies that share their environmental impact with the neighborhood, like the media company, but neighborhood and policy do the opposite too little. If all parties collaboratively register their consumption/emissions, they can make sustainable improvements together. As a result, companies can become hubs for local energy knowledge hubs or cooperatives. Also, technological development of more sustainable modes of transport and their organisation (eg on shared electric car parks between companies and neighborhoods) can be picked up jointly by cities, companies and neighbourhoods.

Meso

On the meso-scale of the city, we see that the way in which a city develops has a great impact on mixed use. This means this can also be designed more consciously. First of all, the history of a city defines how living and working interact. This is immediately clear if we look at the built heritage of the city, which is sometimes owned by companies. Less tangible, but just as important is the more intangible historical landscape. For example, the city of Roeselare has a historically good breeding ground for the growth of one-man businesses in the urban fabric, because it had the 'Nieuwmarkt' - a big market - from the start of the 20th century, where small businesses sold their goods. The textile industry - and more specific flax- put the region around the city of Kortrijk in the 19th century on the world map, in response to the agricultural crisis. Within the flax community - often former farmer's sons - a unique economic network was created. Today, the spaces that remain from this past are still very useful for companies, because they offer space for workshops and storage. The former entrepreneurs from the flax industry also still have entrepreneurial blood in their veins and have used it for other types of industry and trade: the electrician, the health services company and the wine shop all started in the flax

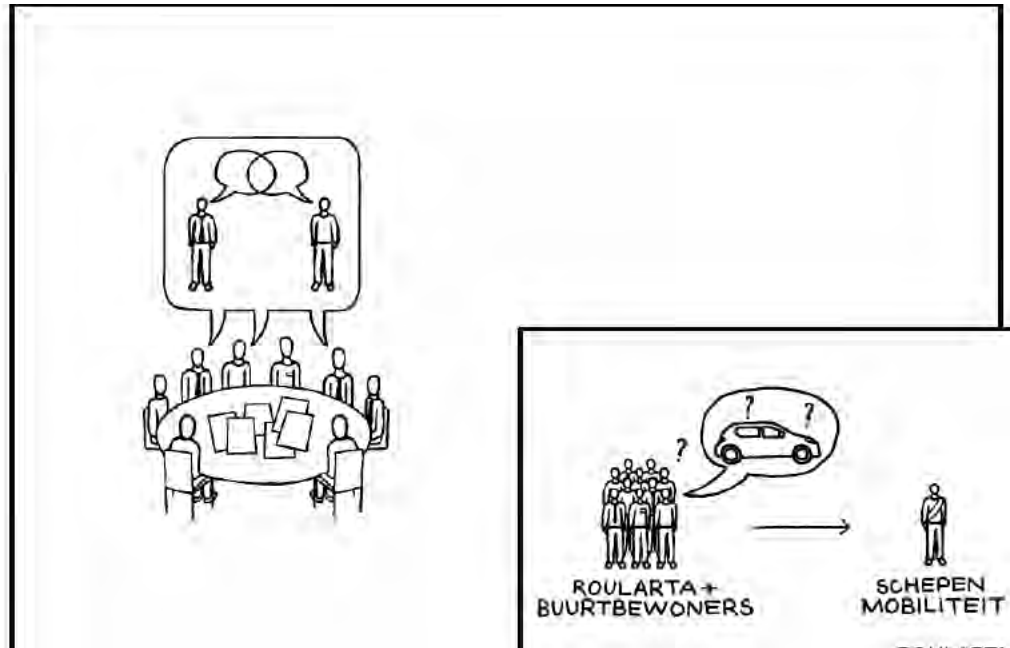
industry. Next to this, the available space on business parks in the area is rather limited: this makes the relocation of a company from the urban fabric to a location outside the city more difficult. Conversely, the culture of some cities sometimes disturbs a good relation between work and daily life. For example, in environments such as Herentals, there was a tendency for companies to move to business parks outside of the city centres due to a surplus of space. This stimulated a ‘business park’ culture for companies.

The co-design sessions led to the insight that in order to prevent the disappearance of the (potential) built heritage that could support a supermix strategy, designers should initiate collaborative retrofitting exercises of (parts) of buildings between companies, policy and neighborhood. This is an opportunity, for instance in case of the buildings of the brewery Rodenbach, the old flax workshops that are used by the electrician as industrial heritage and the characteristic home of the lawyer firm. Designers can also bring the intangible entrepreneurial culture that is very close to the history of the city to life again, in a contemporary way. It was suggested during the co-design workshops that new city residents should not only visit the town hall, but also the main companies in the city to nurture more understanding of inhabitants about the way companies work (Image 3. Law firm heritage)



Image 3. Law firm heritage @Jenny Stieglitz

Second, the road connections of business sites with and outside the city proved to be very decisive for the fact whether a company wants to develop its business in the city or not. They must therefore be closely studied and collectively redesigned where necessary. Some of the bigger businesses started up participation platforms (regular meetings on the business’ premises) to discuss city planning of road and mobility networks between a company, policy and the neighborhood. These platforms sometimes grew out as being the main participation platforms of other shared issues on the level of the city planning, as we saw in the case of the media company. The co-design sessions demonstrated that cities and the companies still under-explore the potential of setting up these platforms in a supermix coaching strategy, because they sometimes have negative experiences with "complaining" neighbors. Designers could supply companies with good practices, knowledge and methodologies to develop these types of platforms in a positive way and to enter into a productive dialogue with the environment (Image 4. Participation platform).



@Jenny Stieglitz

Macro

Viewed from a macro-perspective -the global context and contemporary trends - it became clear from the fieldwork that (large) companies in the manufacturing industry, such as the glazier or the social employment company, are finding it increasingly difficult to develop their production activities in Flanders. This is partly due to competition from low-wage countries. To remain competitive, they chose to make a shift in their business models and they started to involve aspects of real estate: in Flanders the ground value of housing is higher than that of (productive) economic activities. And so, space for economic activities tends to be converted into space for housing. The competition with low-wage countries has resulted in a predominance of small businesses in our entrepreneurial landscape. This research shows that we can learn a lot from companies that have always operated on a smaller scale, such as the law firm we studied. They show us that "collective organisation" and "sharing" benefit the somewhat smaller-scale and even the larger-scale company that wants to remain active in the European city. For instance, after an increase of law firms in the city, the law firm we studied built an intense network with other small (law and other) businesses in the city, shared administrative staff or co-organised multidisciplinary trainings in a shared training centre to turn competition into collaboration. The co-design sessions show that designers can facilitate this kind of shared practice even better by getting to know the right regulations; by studying good practices and by supporting these by interesting spatial strategies (e.g. designing shared educational centres for diverse businesses and neighbourhoods in the city) and technologies (e.g. shared training platforms). (Image 5 law firm, shared educational centre)

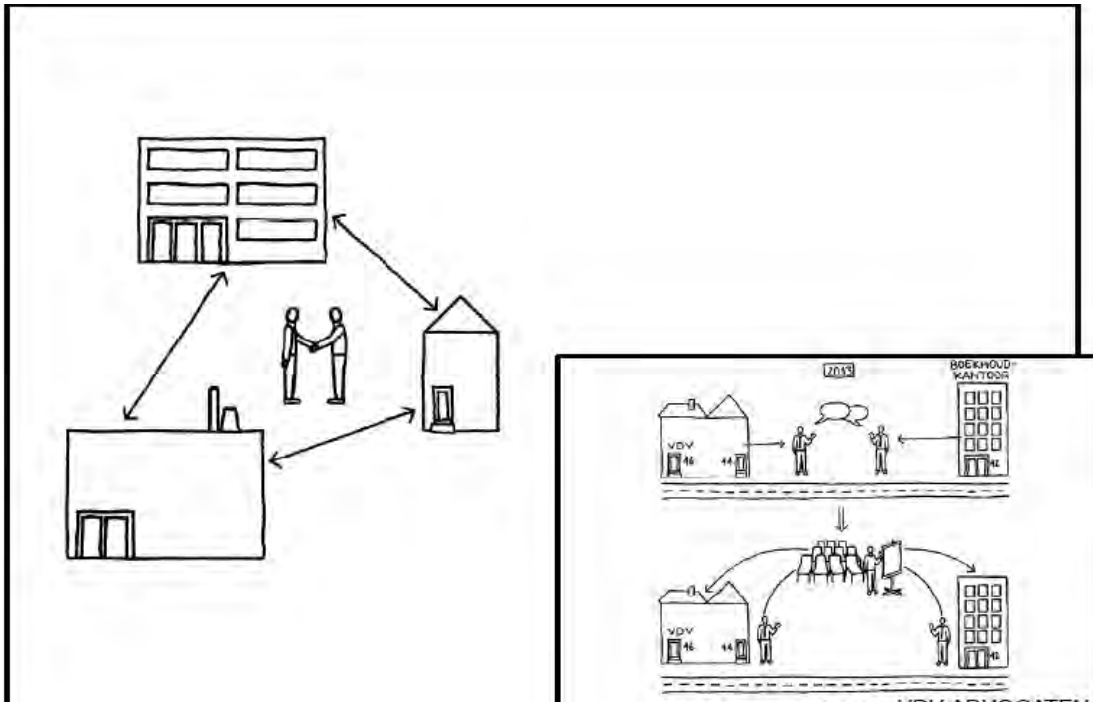


Image 5. Law firm, educational centre @Jenny Stieglitz.

Though small scale companies can be exemplary, we noticed that large companies or companies, who operate on a more regional or global scale, do not necessarily pay no attention to their living environments. Some good practices, such as a good collaboration between company, residents and policy, were found there too.

Conclusion: a toolbox for supermix coaching

This conclusion returns to the research question at the beginning and from there draws some conclusions on the future of collaborative and sustainable city making. The article questioned how designers can give form to, strengthen or innovate collaborative city making that enhances the supermixed relation between work and daily life in the city, through understanding how and when collaborations (can) take place between technology, the people living in the city, the local, regional and supralocal governments and companies.

Our answer is clear: there is a need to develop pro-active collaborative design work and policy that involves in "supermix coaching" via two activities. On the one hand, we can achieve this by gaining insight into the turning points in the interrelationship between living and working environments. On the other hand, we do this by taking more conscious collaborative design actions in relation to those turning points. These turning points and actions can now play a role in the "supermix toolbox" of members of the companies, policy or the people in the neighbourhood who want to draft closer relations between work and living environments. We also stressed the importance to consciously address them first from the situated micro level of the architectural space, the human actors and technologies to make them concrete and attractive for those who are immediately involved. Based on that, the perspective of the meso scale of the region and the city and the macro global context and contemporary trends can be developed. Given the fact that working from micro to the macro is a reversed perspective for most urban designers, planners and policy makers, many aspects of the supermix coaching practice still have to be poured into instruments to make them workable on these different scale levels in the field. The richness of the 9 cases, however, has provided a good basis to get started. As a first design output, we have gathered two elements in a manageable kit: the timeline that supports mapping turning points in the relation between companies and their environment and an action toolbox. This kit can be used in new cases during the practice of supermix coaching, in order to be able to anticipate on possible divisions and tensions

between living and working and to explore new interesting collaborative ways of giving form to transitions of our cities together.

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Topic

Community-based planning and social innovation

Keywords

Community planning, Chinese public participation, Arnstein's ladder theory, Community planners, Multilateral governance

Title

PUBLIC PARTICIPATION IN THE COMMUNITY PLANNING IN CHINA

Text

In the 1980s, Chinese scholars in the field of planning began to introduce the theory and experience of Western public participation to China, and meanwhile carried out the practices. After 30 years' development, public participation in Chinese planning is involved in macro --, meso --, and micro levels of planning, namely urban comprehensive planning, control detailed planning, and community planning. Furthermore, more and more attention is paid to the micro level community planning.

In 1969, Arnstein divided public participation into three levels, namely nonparticipation, tokenism and citizen power in the article "A ladder of citizen participation". And the eight types are arranged in a ladder pattern with each rung corresponding to the extent of citizens' power in determining the plan, it includes manipulation, therapy, informing, consultation, placation, partnership, delegated power, citizen control. According to Sherry R Arnstein's ladder theory, we observe thirty Chinese public participation cases in the field of community planning. These cases imply that, first, 77% cases are on the rungs at the degree of tokenism, whereas about the other 20% cases reach the rungs at the degree of citizen power. Besides, most of the cases of tokenism are on the rung of consultation. Only two out of the thirty reach the rung of delegated power. We make further analysis for this result.

Firstly, most of the public participation in community planning in China is on the rungs at the degree of tokenism, especially the consultation gradient. And there is a trend toward a higher gradient——placation. Most of the public participation's action occurs only in the two stages of opinions survey and results publicity. The government will selectively delegate power to the public without affecting the final goals and consequences of the planning implementation, so that the public can only cooperate with the decision-making department to achieve the prescribed goals and tasks, but which ignore the procedural and dynamic characteristics of the planning. In the meanwhile, due to the lack of protection mechanism of legal system, the public participation in the evaluation and supervision mechanism is insufficient, which makes public participation is only become a mere formality. On the rungs at the degree of tokenism, in order to appease the public, the government will adopt the "reward system" and "substitute subsidies with rewards" policies to stimulate the enthusiasm of public participation and reduce the risk of aggravating conflicts. To some extent, residents have more rights to know and say, but limited options and voting rights, which does not have a substantial impact on the goals and results of the planning. In the meantime, the public participation relies heavily on the community planners' and village planners' work. These planners build a platform on

which stakeholders of different interests and perspectives can have their voices. Besides, recently the digital media technology has also promoted the diversification on the public expression of opinions with its characteristics of high-speed transmission and significant influence. Although the government will make concessions under the pressure of public opinions, online communication lacks pertinence and effectiveness, and has not made a substantial apparent advance on the level of public participation.

Secondly, on the rungs at the degree of citizen power, the size of the urban area where public participation process is taken place, the degree of marketization, education level, etc. can effectively influence the depth of public participation. The planning form is mainly based on the old city renewal, and the development mode is market-oriented. In particular, it usually adopts a higher level of public participation when it comes to clear and concrete interest issues such as demolition compensation. Above all, the cases of the delegated power are all through the masses' spontaneous construction of cooperative organizations to encourage the residents to participate in the community planning actively.

Analysis of the above problems, at first, based on education and training to the public, the knowledge of urban planning shall be popularized throughout the society. And the ability and enthusiasm of the public to participate in public affairs shall be fully cultivated and enhanced. In the preliminary stage, this requires the assistance of the government and planners. At the same time, we must focus on training local people with planning potential to become community planners, which drives the masses to participate in urban planning and construction. Meanwhile, the community should create more public communication space, which not only can strengthen the interpersonal communication, also can make public participation as a part of the residents' daily life by organizing various forms of community activities, such as community planning knowledge competition, public comment activity and so on.

In the last, the study shows that public participation in China is still in its infancy, legal guarantee and public awareness need to be improved in the future urban transition.

Entrepreneurial Neighborhood Planning Based on Multi-Stakeholders Co-Creation

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Abstract: Recently, promoting the transformation of old residential neighborhoods from living areas into vibrant communities becomes a new topic in the urban planning field. Researchers and practitioners explored top-down and bottom-up social innovation approaches like community-based planning to converge creative talents, activate entrepreneurial opportunities and renew such areas. However, there are still some confusion about mechanisms or methods to facilitate various roles of participators forming creative neighborhood for collaboration. In response to the problem, this study proposes the research question is how to plan and design entrepreneurial neighborhood based on locality and the contributions from multi-stakeholder collaborations. Action Research(AR) is the main research method in this study, research findings could be put forward through the framework which combines the typical AR cycle and localized context: 1) Problem formulation based on related works; 2) Investigation including expert interview, participatory observation, and environmental quality data; 3) Implementation and actions based on the case of NICE 2035 Living Line. 4) Reflection and iteration for theoretical outputs through feedbacks analysis like participators satisfaction, built space assessment or environmental experience; 5) Conclusion which responds research questions mentioned above.

Keywords: Entrepreneurial Neighborhood; Urban Renewal and Planning; Action Research; Social Innovation

Introduction

With the acceleration of urbanization, community planning has been extended into many new meanings in the current context. For example, social innovation-oriented neighborhood renewal and relationship building, circular economy-oriented sustainable neighborhood environment design, or neighborhood integrated business distribution planning and iteration to activate the resource stocks. Many scholars and designers have conducted exploratory experiments, including how to increase creativity and vitality in the limited space of the neighborhood, and leading more opportunities for innovation and entrepreneurship, which has become a frontier topic of contemporary neighborhood planning. However, due to the numerous stakeholders who are involved in this network, how to balance the contributions and requirements of each role, coordinate the co-creations to contribute better planning advice, has been a common problem faced by academics and practitioners. Especially in the contemporary Chinese context, the neighborhood problems are more complicated: the outdated facilities in old neighborhoods, the aging residents with reduced vitalities, the brain drain and the rigid neighborhood relationships. Therefore it is necessary to reconsider the relationship between multiple roles in the renewal and planning design and adapt to the original neighborhood planning structure and commercial format.

The research in this paper responds to the above problems by taking action research rooted in the Shanghai project and combining the collaboration of multi-stakeholders. The proposed planning and design recommendations applicable to this scenario could provide a reference value for similar neighborhood contexts and issues.

Related Works

In traditional neighborhood planning, designers often consider some fundamental issues, such as physical environment and infrastructure, natural resources, road and traffic, residential buildings, community organizations, public services, etc., but the groups they involved are often only neighborhood residents instead of considering all stakeholders. With the development of science and technology, new business formats are emerging. More and more entrepreneurs are originated from the community. This type of business is known as community-based entrepreneurship, and policymakers and scholars are increasingly concerned about the impact of this type of activity on people, local, and place. (Peredo and Chrisman, 2006; Somerville and McElwee, 2011). Current research in the field of entrepreneurship and neighbourhood research is often separated (eg Peredo and Chrisman, 2006; Lyons et al., 2012; Daskalaki et al., 2015; Fortunato and Alter, 2015; Reuschke and Houston, 2016), mainly because the current enterprises and entrepreneurs are generally located in commercial areas in terms of spatial distribution. But what people may ignore that the neighborhood, as a locational resource, has a positive impact on entrepreneurs both in terms of infrastructure and interpersonal relationships. Firstly, the neighborhood and community can provide opportunities and show requirements for entrepreneurial projects. Research shows that community-based agencies are better positioned to meet consumer needs and geographically closer to their clients (Gilbert, 2004, 114). Secondly, for many self-employed businesses, the neighborhood and home are regarded as the geographical starting point to start a new enterprise. (Mason and Reuschke, 2015; Mason et al., 2011, 2015) Finally, the neighborhood context has a potential impact on entrepreneurial spirit and enthusiasm, from building social resources (Schutjens and Völker, 2010), creating new business opportunities, and delivering proven business experience (Williams and Williams, 2012, 676, citing Feldman, 2001 and Minniti, 2005), etc., all show significant.

At the same time, however, entrepreneurs are also potentially promoting and changing the planning and development of a neighborhood in a new era. Since the demands of new entrepreneurial opportunities are originated from the neighborhood, it can make up the gaps in the services of neighborhood institutions and provide better products and services for them. For example, cooperatives, develop standard housing, sustainable energy (solar panels, wind turbines), agriculture, handicrafts and aged care (Mori, 2014; Wagenaar and Van der Heijden, 2015; Bauwens, 2016). Therefore, bottom-up and community-based entrepreneurial activities are increasingly seen as solutions to public service deficiencies and community rebuilding efforts (Reinout Kleinhans, et al., 2017). Ordinary people's wisdom based on daily life is the source of social innovation, as well as essential design inspiration and wealth (Lou, 2018). Furthermore, neighborhood entrepreneurs have a very positive impact on promoting the development of the national economy and enriching the new neighborhood business formats. Entrepreneurship not only increases the economic strength and innovation of countries, regions, and cities but also enhances the economic development of neighborhoods and communities (OECD, 2003; Baumol et al., 2007). Finally, community-based entrepreneurship can promote residents to collaborate, unite, and work together to create a better living environment (Peredo and Chrisman, 2006; Somerville and McElwee, 2011; Bailey, 2012). About practice cases, the following figure shows some renewal and planning approaches and features of such neighborhood planning.

Case	Role of Stakeholders Involved	Pillar Industry and Core Driving Force of Innovation	Resources Outside the Neighbourhood	Space Constituents of the Neighbourhood	Planning Mode
DuodaCE	College Students, College Professors, Students in the surrounding areas of the university Entrepreneur, Mentor Companies, incubators	University knowledge and technology are transferred into start-ups. Student entrepreneurial ideas are supported by DuodaCE.	Start-ups can receive the experience and resources of mature companies, as well as support from incubators and investors.	College Network & College Cluster	Place-based entrepreneurship learning and practice
Lian Li Hui	Neighbourhood residents, Neighbourhood service organisations, entrepreneurs, External business institutions	Residents' demands in practice are transferred into business opportunities, and neighbourhood service efficiency and service quality are improved by introducing external business service companies and encouraging entrepreneurial opportunities within the neighbourhood.	The community is open to the outside, and some neighbourhood services are supported by internally initiated start-ups or externally introduced commercial services.	Residential Buildings + Neighbourhood Public Activity Spaces + Neighbourhood Business Service Spaces	Neighbourhood as incubators, give birth to entrepreneurial opportunities from rental lifestyle
Open Construction Activities of Niping Community OYS	University students, University professors, Neighbourhood residents, Community service organisations	The university's knowledge, talents, and technology are introduced into the community. University students, teachers, and neighbourhood residents participate together in the renewal and building of the community to help the neighbourhood improve the public environment, public services, and improve the life quality as well as the cultural and artistic environment.	The neighbourhood's public environment and new neighbourhood interaction modes are designed and supported by university students and professors.	Residential buildings + neighbourhood public event spaces + interactive art devices	As an experimental base, the neighbourhood in itself designs and creates to proceed co-creation and innovation, construct an atmosphere to help creative place-making. The residents' creativity and autonomy are increased.

Fig.1 Case Study about community building and renewal

Action Research Based on Project NICE 2035

The concept of AR was first created by American sociologist Kurt Lewin (1946), who believes that social researchers should not only analyze the actual situation of immediate stakeholders but also should help them change their conditions through actions. Another well-known contributor of AR, Brazilian educator Paulo Freire (1973) believes that this kind of work should be carried out through problem-formulation and the creation of self-consciousness. AR is a scientific way of thinking rather than a traditional method of periodic research. In the AR research process, stakeholders' involvement can help them deepen their attention and understanding of the problem (Boothroyd, Fawcett, & Foster-Fishmann, 2004). In practice, stakeholders should not only participate in the investigation and discovery of questions but also need to think about how to take action to solve the problem. This process will be carried out by stakeholders with the participation of researchers. (McIntyre, 2008) Due to the uniqueness of different research environments, we must consider the social values of various participants. Therefore, to involve the research objects into the research process as collaborators is a specific AR method. (Baskerville 1999) Ideal action research needs to be provided with some principles: Firstly, both the researchers and the residents should be fully involved. Secondly, all the knowledge obtained should be able to apply immediately with an explicit exceptional framework. Thirdly, the research should be a process that linkings theories with practices (Baskerville and Wood-Harper 1996).

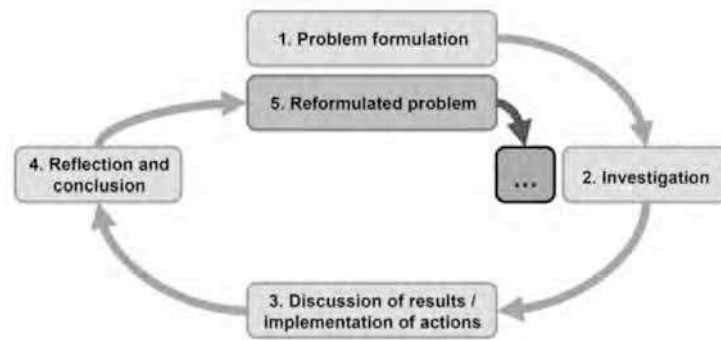


Fig.2 The general process of action research (McIntyre,2008)

As the constructive research method and tentative exploration, action research (AR) as the primary research method is selected in this paper. NICE 2035 Living Line neighborhood renewal project in Shanghai Siping community is the research subject. This project is a social innovation practice initiated by Professor Lou Yongqi and Siping committee. “NICE 2035” is the Neighborhood of Innovation, Creativity and Entrepreneur towards 2035, and NICE means “good life.” On the basis of the renewal and renovation of the traditional Shanghai old community, a series of innovative laboratories including mature brands and start-up projects have been introduced, forming a composite entrepreneurial neighborhood and ecosystem including product development laboratory, creative education space, physical prototype store, co-work space and incubator (Lou & Ma, 2018). Moreover, due to the knowledge resources from Tongji University nearby, this project has introduced a variety of stakeholders, including community residents, start-up teams, innovation laboratories from universities and enterprises, capitalist and experienced third-party operations teams. In this practical case, we collected user data for co-creation points insight, implement effectiveness analysis, and reflection towards such neighborhood planning strategies according to AR cycle. The research framework of this paper is divided into five stages: first, problem formulation; second, investigation, including stakeholder motivation, co-creation demands, and ability contribution based on user interview; third, discussion results, which is summarizing insight points based on investigation and formulating collaboration matrix; fourth, implementation and action, including neighborhood planning exploration and attempts in this case combined with localized community characteristics and unique problems; fifth, reflection, including summing up user feedbacks towards the planning strategies which could guide other similar cases.

Phase1 : Problem formulation

In the above discussion, several cases of the entrepreneurial community generally reflect a common feature, which is community stock resource transformation and formulating an innovative and entrepreneurial network with commercial opportunities and locality. China's old communities have their unique problems, take Shanghai as an example, like old and backward infrastructure, dense population, the demographic structure of elderly and school-age children, traditional single lifestyle, and low-cost catering and retail business model. But such issues are full of challenges and opportunities. As can be seen from the OYS community micro-renewal case mentioned above, the wisdom of ordinary people based on daily life is the source of social innovation, and also valuable design inspiration and wealth. Sophisticated lifestyles and local issues also contain entrepreneurial opportunities. For example, various of behavioral data and interactions can provide a large number of test opportunities and analysis samples for new-born business models, which could allow the entrepreneurial teams to get user feedback in a real context and real-time mode, and they could also

adjust and iterate business models with real customer preference and satisfaction. With this concern, multi-stakeholder and diverse living behavior have become the essential driving factor in the activation of such communities, especially how to reconstruct neighborhoods relationships, extract behavioral characteristics and residents' needs from the daily lifestyle of residents, and turn them into available data and resources. This wide range of stakeholders includes community residents, innovative talents, community managers, nearby school teachers and students, some mature businesses from diverse fields. Therefore, in this study, how to match the multi-stakeholders ability contribution and demands, plan community physical facilities and cultural activities to make them work well, turn problems and consumption generated by the traditional community into opportunities for innovation and entrepreneurship, have become the core research question.

Phase2 : Investigation

Take the NICE project as a research object; investigation includes the roles and capabilities of various participators in this network. We analyzed the motivations and needs, and then identified the opportunities for innovation and entrepreneurship brought by them. The interviewees are divided into two parts. The first category is innovative entrepreneurial content providers, like start-up teams, innovation labs from universities and enterprises, and experienced third-party operations teams. The second category is community residents, including the following roles: residents living here (such as retired people), young people living outside here (renting in the community), living here working outside young people (locals), people who work and live here (student or local). The interview data is shown in the table below.

	Open Time and Participation Motivation	Current Activities and Frequency	Interactions with Community Residents	Role and Contribution in this Collaborative Group	Resource Requests for Project	Future Interactions with Other Labs	Future Interactions with Local Community	Demands for Operation Team and Supporting Services
Fablab	<ul style="list-style-type: none"> - Officially opened in May 18 - University resources could radiate knowledge to a wider range - This community has better primary and secondary schools (student sources) - Community residents have big demand for Maker Education, and less competitive brands 	<ul style="list-style-type: none"> - Primary to junior high school Maker Education course (for teenagers, weekly & holidays) - Open night with small sharing shows, would attract more potential users and interact (for community residents, weekend) 	<ul style="list-style-type: none"> - Workshops for community residents (one in three activities for the Siping community and two thirds for other communities) - The neighborhood committee helps promotion and notification 	<ul style="list-style-type: none"> - Support other labs with design solutions and prototypes (product design and development, 3D printing, model making, product realization) 	<ul style="list-style-type: none"> - The neighborhood committee promotes publicity and sets up special start to communicate with local residents and keep abreast of user feedback 	<ul style="list-style-type: none"> - Support other labs to better co-work to reduce time and management costs - Implement prototype products for display - Design innovative course modules according to different labs' content and topics (future kitchen, future mobility lab, future material lab) - Peripheral product development 	<ul style="list-style-type: none"> - Engage with several elementary schools in the community and embed the course package into the school curriculums 	<ul style="list-style-type: none"> - Integrate different laboratory resources and proactively promote
Sound Lab	<ul style="list-style-type: none"> - Cross-border innovation with sound and technology 	<ul style="list-style-type: none"> - Interactive performances such as the opening of other labs 	<ul style="list-style-type: none"> - Recording lessons based on users' own sound demo 	<ul style="list-style-type: none"> - Provide recording venues and equipment for potential users brought by students, community residents and other labs, and accumulate sound material for future commercialization - Experimental music (Audio to 3D product) opened by Aston Martin Lab 	<ul style="list-style-type: none"> - Team building and open experience activities for understanding of content between labs - Mobilize more labs for collaborative development courses 	<ul style="list-style-type: none"> - Cooperate with the School of Communication or the School of Sound to develop products based on education resources in Tongji University - Develop courses in collaboration with Fablab to experiment with small projects related to sound and communication 	<ul style="list-style-type: none"> - Sound production 	<ul style="list-style-type: none"> - There are many elderly groups in this community, how to match the needs - Promotion channels for young people (WeChat) - How to avoid some interference to local residents in this project - Rational use of co-working space
CREATER (Operations team)	<ul style="list-style-type: none"> - Closely related to its own development business (renovation and operation of Cultural and Creative Park) - Providing future lifestyles, including living and artistic leisure life. 	<ul style="list-style-type: none"> - Asset property - Environmental optimization - Manage lab daily activities - New project opening 	<ul style="list-style-type: none"> - Promote the bread baking experience (collaborative with food lab) as the first phase for resident interaction 	<ul style="list-style-type: none"> - Integrate distributed resources and offer supported services 	<ul style="list-style-type: none"> - As a pilot to collect feedback from stakeholders, test the business model and copy other sections in the future 	<ul style="list-style-type: none"> - Match community needs and labs advantages - Promote collaboration between labs to attract investment 	<ul style="list-style-type: none"> - Relationship reconstruction between architecture art and business (community renewal) - Integration cultural content like creative fairs - Old alley art museum - Folk artist performance 	

Tab.1 Interview for innovative labs, start-ups and operations team

User Information	Awareness of the Project	Understanding Channels	Attraction Point for Participation	Space and Environment Satisfaction	Suggestions for Future Lab Activities	Suggestions for this Project
<p>Resident 1</p> <p>Age: 35 years old</p> <p>Gender: Female</p> <p>Education: Bachelor</p> <p>Occupation: Finance</p> <p>Living time in this community: living in 2009</p>	<p>I paid attention when I sent my child to the neighborhood center for class, but didn't know much about it.</p>	<p>I noticed the weekend activities (Fablio) and the Aston Martin Studio opening event. Firstly know the</p> <p>I first knew this project was attracted by the Sujatan Road renovation activity a year ago.</p>	<p>Because it's very close, if there is an open event I will participate. I have not received many notifications from the neighborhood committee so far.</p>	<p>I feel the space is clean and tidy because the previous chess room and housing agency have been transformed into these labs. Need more interactive facilities on Sujatan Road, so that children could come over the weekend.</p>	<p>-Design more interactive activities for children, many with children to play</p> <p>-Courses similar to the Neighborhood Center (Yoga, Calligraphy, Children's Activities)</p> <p>-Also create an online community to push information</p> <p>-Experience activities related to traditional festivals</p> <p>-Making peripheral products</p> <p>-Popular science activities</p>	<p>User survey is important</p> <p>-Establish a public number push event</p> <p>-Use the existing channels of the neighborhood committee to push</p> <p>-Integrate with the Neighborhood Center activities</p>
<p>Resident 2</p> <p>Age: 57 years old</p> <p>Gender: Female</p> <p>Education: Secondary school</p> <p>Occupation: retirement</p> <p>Living time in this community: living from birth to this day</p>	<p>I often go through this street after work, but I don't know very well.</p>	<p>I have seen it outside the co-work space, but not sure whether it will be open to the outside.</p> <p>I have seen the opening event of Aston Martin Lab, which is very attractive.</p> <p>I have not received any notice or promotion information from the community committees for activities of such labs.</p>	<p>Bakery and Cafe</p>	<p>Feel modern</p> <p>Increase the open time</p>	<p>Quiet activities</p>	<p>-The quality of senior citizens in the community is not good</p> <p>-Innovative things can be considered if the changes are not high</p>
<p>Resident 3</p> <p>Age: 22 years old</p> <p>Gender: Female</p> <p>Education: Undergraduate</p> <p>Occupation: Student</p> <p>Living time in this community: living from birth to this day</p>	<p>I go through this street four or five times a week, but I did not have fully understanding for this project.</p>	<p>I saw this space when I went to work through the lab. I was particularly interested in the creative space and Sound Lab, but I didn't have the chance to go in because of the space long term.</p>	<p>Open day</p> <p>Experience activities of the Hair future kitchen</p>	<p>The office space is cool, hope it could provide more space for residents to use (insomnia in the middle of the night)</p>	<p>No special preference</p>	<p>WhChat or Weibo promotion channels would be better for residents discussion and feedback collection</p>
<p>Resident 4</p> <p>Age: 22 years old</p> <p>Sex: Male</p> <p>Education: Bachelor</p> <p>Occupation: Clothing Management</p> <p>Living time in this community: 2 years, renting a house</p>	<p>I often go through this street after work, but I don't know very well.</p>	<p>I learned about this project when I noticed the opening event of Aston Martin Studio. I was attracted by some special event like some cold meal, but I have not entered because my work time is so late.</p>	<p>Experience activities of the Hair future kitchen</p> <p>Co-work space, want to know the rental details because it is related to my career</p>	<p>Need more space for residents interaction</p>	<p>Add some fitness facilities or experience activities, such as a small gym in container (there are few gyms near the community)</p>	<p>-Home promotion is better for elderly.</p> <p>-Young people can use posters or online promotion</p>

Tab.2 Interview feedbacks from local residents

Phase3 : Discussion result

As the above interview analysis showed, each stakeholder in such entrepreneurial neighborhood networks has its demands and skill contribution. Therefore, the collaboration matrix could clarify this relationship and also guide the next step for such a neighborhood planning strategy. The horizontal and vertical axes represent different stakeholders, respectively, and the intersection is a resource demand and collaboration opportunity for one type of stakeholder to another (As Tab.3).

	Elderly residents	Young residents	University students	Innovative labs (E.g. Education, art and other products)	Start-ups	Operations team	Neighborhood committee
Elderly residents		Neighborhood relationship building	User survey and research	User survey and research	User survey and research	Increasing neighborhood creativity and innovation	
Young residents	Neighborhood relationship building		User survey and research	User survey and research; Attracting potential customers	User survey and research; Attracting potential customers	Increasing neighborhood creativity and innovation	
University students	Knowledge support for living environment improvement	Knowledge sharing, better work opportunities		Knowledge and professional skills sharing	Knowledge and professional skills sharing	Skills support	Increasing neighborhood creativity and innovation
Innovative labs (Education, art and other products)	Leisure time with local residents; Searching education resources for children	New knowledge and skills; Better fitness facilities or third place for leisure or work	Project-based learning and practice; New concept and business model test		Experience activities development; Workshops and courses content design; Space and materials sharing and co-work	Practice cases to support self-development	Increasing neighborhood creativity and innovation
Start-ups	Service products; Free and effective exhibitions	Better work opportunities		User research learning and feedback analysis; Develop events and experience activities; Business model co-design		Practice cases to support self-development	Increasing neighborhood creativity and innovation
Operation teams	Open space for communication; more parking space			Promotion methods improvement; Physical and virtual infrastructure support	Promotive methods improvement; Physical and virtual infrastructure support		Daily activities management
Neighborhood committee	Diverse promotion methods (WeChat and WeChat)			Policy and promotion support	Policy and promotion support	Collaborative promotion	

Tab.3 Collaborative Creation Matrix from Multi-stakeholders in NICE2035 Networks

Phase4 : Implementation and actions

Based on the collaborative matrix, the NICE project conducted community planning and update design exploration based on localization characteristics. The first step was to broaden the entrance and upgrade the surrounding business. Cleaned up the dirty and scattered retail stores, planned the first batch of laboratory office space, redesigned the guide system, entered at the entrance of Fuxin Road. After renewal and upgraded business, the stores along the lane 1028 was future mobility laboratory, neighborhood center, future kitchen lab, and a local open-air market, and such local lifestyle oriented cultural labs formed clean and futuristic block impression and creative cluster (As Fig. 3).

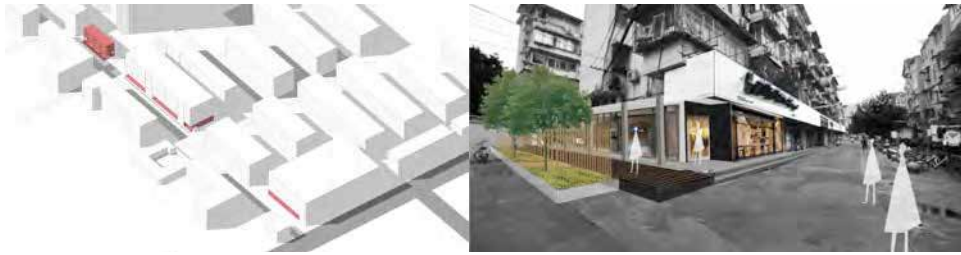


Fig.3 Lane 1028 in Siping Community Renewal Planning (Source: NICE2035 project team)

The second step was building more open spaces, such as co-work which break the boundaries of traditional work space and living space. Such approaches made the labs daily office and events more flexible and accessible for all participators, while the open interior design also integrates the roles between the laboratory and the exhibition space, allowing staffs and residents have various ways of interaction. Meanwhile, under this context, the research, service test, and development from laboratories and start-ups could also be carried out in the space (As Fig.4).



Fig.4 Co-work space in NICE 2035 (Source: NICE2035 project team)

The third step was putting the innovative and entrepreneurial content engine into the neighborhood based on the lifestyle of ordinary residents. For example, introducing food, education, art, sounds, mobility labs, and related start-ups, and co-created new operations and marketing forms. Like pop up, stores, workshops, and open nights to attract residents to participate in activities and test new services or products, finally formed an aggregation effect (As Fig.5).



Fig.5 Open events from innovative labs in NICE2035 (Source: NICE2035 project team)

Phase5 : Reflection and Findings

After the survey for spatial utilization and user satisfaction of this entrepreneurial neighborhood practice through the six-month observation and record during the growth and development period after the project was released, the research findings in this paper is drawn. It could be summarized in three aspects of planning and design strategy, including business model and content, physical space, and relationship construction.

Micro-community and multi-content. For facilitating such entrepreneurial neighborhood, planning strategy should introduce innovative laboratories of different business formats in the entrepreneurial community, such as food, education, housing and mobility, and finding opportunities for entrepreneurial opportunities in daily activities. Use the residents' daily behaviors and lifestyles as a test field for iteration and improvement of start-up projects, services, and business model in real-world scenarios, both for incubation or mature project iterations. This diverse content could enable each participator in this network and allow them to support each other and co-create more innovative cultural or technology concepts, and also form multiple cross-parallel collaborative ecosystems and finally construct multiple micro-communities under a local context.

Versatile modular space and smart neighborhood. The original format is a necessary stakeholder in neighborhood planning; designers should consider the balance between community needs and such original business format like open-air market, fruit and vegetable retail, bicycle repair, or hardware store. The flexible solution is designed modular and multi-functional space, which means residential and shop integrated model space (front store and back housing). This modular space could be built with container material with high flexibility to disassemble and change space functions according to a different using purpose. About the space content, lightweight but lifestyle-based format like micro fitness center, cafe, mini art gallery or playground could be the interactive and attractive ways to be introduced. For using feedbacks and changeable space decisions, planners should consider creating smart communities with multiple sensors and wireless network probes to analyze crowd dynamics and social media data to support more in-depth research and space iteration.

The narrative neighborhood, neighborhood relationship reconstruction. Due to the traditional and old neighborhood with dense population in this paper's context, elderly residents are essential stakeholder in this network. Therefore, how to reconstruct resident relationship become the critical point for neighborhood creativity and entrepreneurial culture. Designers should explore more interactive approaches to connect people emotion link and built the identity, like various art installations, outdoor exhibition, redesign the traffic walking route to make the entire neighborhood has more communication space and narrative clues. And another point is inviting community residents to engage in participatory design and planning for micro renewal and infrastructure improvement. This approach will restructure neighborhoods and self-identity, and also dispel and avoid negative sense caused by the new laboratory and staffs in their living area.

Conclusion

This study starts with a research problem of how to build an entrepreneurial neighborhood based on multi-stakeholder co-creation. Through five steps of the action research cycle, the research questions are gradually defined, and then, the collaborative contributions and potential opportunities of the stakeholders are derived through different roles of stakeholders' interview. NICE2035, as the practice case is introduced in this paper as the main action research subject, with participatory observation and

reflection on the planning and design implementation of this neighborhood, the research result of planning strategy is drawn. The traditional Chinese community as a kind of research object is relatively complex and challenging to activate its vitality. Thus, this research finding as a context paradigm could guide and influence more similar cases, and provide design and planning reference for related problems.

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Explorations on the Activation Route of Gated Community Boundary Space based on Community Micro-Renovation——A case study of Shanghai

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Abstract: Gated communities, as a typical residential morphology, are common in Chinese cities nowadays. Their features mainly include the planning and development of large plots and blocks and the use of gated fences to define the boundary of property rights. As a consequence, it is convenient for communities to achieve daily access control. However, the gated communities objectively produce an important number of negative community boundary spaces, which go against the vitality of urban streets. Since the causes of gated communities originate from deep social, economic, and cultural factors, the "open community" requirements proposed at the Chinese national level are difficult to implement effectively. The concept of "urban micro-invasive surgery" aims to create gradual, organic and small-scale interventions of renovation at the level of the community. On the premise of ensuring the rights and interests of the community residents, the community micro-renovation process activates the community boundary space and integrates potential social capital. Moreover, it enhances the daily vitality of the community. Based on a community micro-renovation project conducted in Pudong New Area (Shanghai, China) and a sample survey of residents' satisfaction and willingness, this paper explores the possibility of transforming negative community boundary spaces into public spaces for residents' daily social interaction activities.

Keywords: community micro-renovation, gated community, boundary space activation, social capital

Introduction

As the process of urbanization accelerates in China, gated communities, as the most significant form of housing developing, are gaining momentum in the city. In gated communities, walls or fences are frequently used as the community boundaries for daily management based on entrance guarding. Despite the fact that it has meets people's requirement for privacy and security protection of the community, it ignores the interaction between community and public space. Most of the gated community is characterized with the layout of dead-end road and puts emphasis on clear land division, causing the separation with the surrounding land and "producing" a lot of negative boundary space of the community. All these problem are detrimental to the cultivation of the vitality of urban public space and constrain the daily social activities, as a result of which the social network and social

capital are "wiped out". All that is harmful to the cultivation of residents' sense of community belonging and awareness of settlement (Yang Guiqing, 2017).

The improvement of spatial environment quality and the connotation-oriented development are gradually emphasized by the urban construction. In urban planning theory and practice, the promotion of small scale block and the opening of gated communities have become a new heated topic. In 2016, the advice of "promoting block-based system, and gradually opening the large scale gated community" of the party central committee and the state council has sparked heated debate across the country. The doubt of whether the demolition of the fence will violate the rights of the residents of the community results in the difficulty of implementing the proposal of "open community" nationwide.

Community micro-renovation, as the urban "micro-invasive surgery", provides a new path for the activation of the boundary space of the gated community. Different subjects could be guided to participate in community construction and governance through community micro-renovation. On the premise of guaranteeing the interests of residents' property rights, the boundary space of gated community can be enlarged through gradual and micro organic renovation, so as to enhance the daily vitality of communities and integrate potential social capitals.

Then the question is how to have a deep understanding of the gated community boundary space? How to "activate" it through community micro-renovation? What is the relationship between the activation of boundary space and social capital? What is the will of the residents? How to implement the activation of boundary space? How to solve the possible problems that may be caused by this? This paper, combined with the investigation and observation of Weifang Community Renovation Project included in "Colorful Community Plan" in Pudong New Area of Shanghai, will further explain the above problems.

Concept Definition

The definition of the following key words is given in order to make our discussion go smoothly.

The first one is the "gated community boundary space". In this paper, "gated community" is defined as "the residential functional area whose most of the boundaries are surrounded by walls, railings or green belts, etc., and where the entrance guarding measures are adopted at the entrance of the community to limit the access of residents or vehicles outside the community". "The boundary space of the community" is defined as the physical form of the boundary line of the community land, the interface between the public and private field of the property rights, specifically referring to "the wall, fences, shrubs, door or other separated objects surrounding the gated community, including part of the buildings and semi-public spaces within the boundary, as well as the urban public space like part of streets and green belt outside the boundary".

The second one is "community micro-renovation". Compared with the renovation of the extensive cities featured by demolition and construction on a large scale, "community micro-renovation" is characterized with micro renovation object, micro implementation of practice and micro guiding entry point" (Shan Ruiqi, 2017). It is designed for recreational use and social interaction, which has adopted the opinions and interests of different stakeholders (Yang Guiqing etc., 2017). Through the micro planning and construction, the community will be renovated and transformed gradually.

The third one is "social capital". In this paper, the "social capital" refers to a kind of social resources that exist in the social structure of residents and are mainly represented by trust, mutual benefit and harmony. Residents can utilize or activate such social resources through activities with strong purpose. In that case, social capital has important significance for enhancing cohesion of the community and encouraging the joint participation of community construction (Zhai Binqing etc., 2016).

Literature Review

Gated Community Boundary Space and Its Influence

The early studies on the boundary space and its influence of gated communities could be found in many classical literatures. For example, Jane Jacobs proposed the concept of "Street Eyes" (Jane Jacobs, 1961) in *the Death and Life of Great American Cities*. She argues that when the street was frequently used, its surrounding residents in the buildings could clearly see the activities happening on the street, in which case the street would be considered safer. Oscar Newman's (1973) also mentioned in *Defensible Space* that residents' constant observation of the community public space is one of the most effective measures to ensure security. The Congress for the New Urbanism (1996) also strongly opposed the large-scale community in single function, advocated the mixed use of functions, and focus on the design of the boundary space of the community. For example, the street should not be too wide, so that it will be convenient for the pedestrians to cross.

Many scholars have studied the classification of the gated community boundaries from the perspective of its elements, permeability and function as seen in Table 1. We can see that whether the boundary is clearly visible, whether the entrance guarding is strict, whether the vegetation is attached, whether the public function is achieved will affect the the gated degree of the boundary space.

Table 1 the classification of gated community boundaries

Scholar	Classification	
Jill Grant etc., (2004)	Fence	Visually opaque fences, visually transparent fences, electrified or barbed fences, low fences or bollards, etc
	Door	Revolving door, fence barrier gate, sliding gate, etc
	Sign	Signs of pavement and deceleration of speed, pavement texture or color changes, security guards platform, glass gatehouse, "private domain" or "no parking"
	Security	Fixed time security, all-day security, patrol guard, card or password access system, automatic access system, surveillance camera, armed security personnel, residential burglar alarm, etc
	Landscape	Green hedgerows, land form changes, water landscape, sand and stone landscape, etc
Liu Xiaomin (2007)	Wall	Common wall, hollow-out wall, decorated wall, greening outside the wall
	Fence	Common fence, greening inside fence, greening on fence, greening outside fence, comprehensive greening of fence
Zhang Shaosen (2009)	Soft	The boundary space formed by a combination of fences, walls, or hedges
	Hard	The boundary space directly separated by the building
Xu Miao etc., (2015)	Architecture	Residential buildings with ground floor business, commercial or public buildings without residential functions
	Fence	Fences without being decorated by vegetation; the fence decorated with some vegetation
	Landscape	Natural landscape, fort

Source: summarized and arranged by the author according to the literature.

The gated community boundary space has both positive and negative influences as seen in Table 2. On the one hand, it has a positive impact on the residents inside the community, in terms of security, privacy, identity symbol, sense of belonging, and ensuring the quality of service facilities of the community. On the other hand, for the public space outside the community, the boundary of the gated community turned the public space into the private space, which is unidirectional and irreversible. The negative influences caused by it mainly include the reduction of the number of urban public space and the diversity of urban landscape resources, privatization of the urban landscape, decreased efficiency of urban road system, unsystematic network of walking, difficult maintenance of street life and intensified social isolation and so on.

Table 2 Positive and negative influences of the gated community boundary space

Type of effects	Scholar	Detailed description
Positive Effect	Jill Grant etc., (2004)	Protect the residents and its property security in the aspects of material, keep privacy in the visual and spatial aspects Improve the value of land and protect the internal public service facilities Restrict the access of others outside the community Displays the rights and creates the identity symbol of the community
	Xu Miao (2015)	Provide a necessary comfortable and safe environment to form a common sense of belonging Promote social exchanges and form the social relations among the community Residential separation between the rich and poor will be good to the social harmony limitation of the number of users to ensure the existing environmental quality
Negative Effects	Moughtin etc., (1999)	Reduces the activity on the street, which makes people acquiesce to the illegal behavior outside the boundary space of the community
	Qin Ruiying (2008)	Increases the social distance between different social groups Impose psychological burden on residents inside and outside the walls Reduce contact and communication between residents of different social groups, which aggravates the social isolation
	Li Pei (2008)	The privatization of urban landscape resources reduces the public recreational space
	Li Yin etc., (2009)	The separation of private roads inside the community from the urban public road system decreases the accessibility and efficiency of residents to the open spaces and public places.
	Australia”Design Quality Manual” (2012)	The fact that motor vehicle drivers are more likely to accelerate as they cross the gated boundary increases the risk of safety problems
	Karim (2015)	The planning of such gated communities can only be considered as "large-scale housing production", instead of "the community for life"

Source: summarized and arranged by the author according to the literature.

Community Micro-renovation and Cultivation of Social Capitals



Cities are the outcome of gradual progress rather than the result of a sudden change. Henri Lefebvre (1974) proposed in *The Production of Space* that space is not only a product, but also a process of recombination of social relations and practical construction of social order. Edward Soja (1983) argues that life is to join the social production of space, to shape the constantly evolving space and be reshaped by it.

Then the question is, how can the "community micro-renovation" of the gated community boundary space achieve the goal of increasing the everyday vitality of communities and integrating the potential social capitals? Louis Wirth (1938) proposed in *Urbanism as a way of life* that population density, land value, rent, distance, health, reputation, aesthetic taste, noise, smoke and other public harms, make different parts of the city suitable for people of different social groups to live. However, the numerous population in cities leads to the individual variability, relative shortage of intimate relationships, and fragmentary relationships characterized by anonymity, superficiality, transience and correlation. In that case, although people of the same social status and the same needs are living in the same area, but the lack of emotional exchanges between individuals still makes them tend to be insulated from each other. Therefore, "community micro-renovation" can serve as a catalyst to provide opportunities and space for residents to communicate, raise their sense of identity and belonging, which will finally contribute to the increase of social capital.

Generally speaking, large-scale urban renovation projects seldom listen to the opinions and suggestions of local residents. On the one hand, it is partly because that the larger number of participants will delay the time and increase the cost of the project. On the other hand, it is due to that the interests of residents sometimes violate the vested interests of developers and local governments (Zhai Binqing, 2010). On the contrast, "community micro-renovation" often starts from the practical problems, which focus much on the quality improvement of the abandoned public space and the renovation of the functions in community, such as the community entrance, small square, small park, etc., to realize the perfection of the micro function with a small amount of basic investment, which will ensure a lower entry threshold for the practice itself, and realize a variety of cooperation forms at the same time (Shan Ruiqi, 2017). Therefore, community micro-renovation can be used as a constant attempt of residents' habits of cooperation, which will contribute to the cultivation of social capital.

The gated community boundary space, on the other hand, is considered as one of the focuses of community micro-renovation. With regard to the activation mode of boundary space, Xu Miao etc., (2015) holds that it can start from the enclosure scale of area, boundary effect, shared service and the control of facility and other aspects. Qin Ruiying (2008) believes that the the limitation of the height and materials of walls, fences or plant for coverage in gated communities will do a favor for the road lighting to get rid of the bad effect on residents' sight and for the formation of visible walls. The limitation of the developing scale will ensure the street connectivity. What's more, through the practice of "Breaking Down Walls", community cohesion can be enhanced.

Summary of the Progress of Study

In conclusion, the negative impact of gated community boundary space on urban public space has received wider attention in academic fields. The study on the activation path of boundary space in gated communities is constantly deepened from the perspective of material level. However, it can also be found from the relevant study progress that few scholars have ever associated the activation of

gated community boundary space with community micro-renovation, and the study on the relationship between community micro-renovation and social capital is still inadequate. Therefore, the exploration on the basis of micro-renovation of community of activation path of gated community boundary space will help to guide and promote the practice of "Breaking the Wall" of the gated community, to promote the good effect of the network society and to well implement the "renovation work" of the city. At the same time, it will also contribute to the enrichment of the theories of the existing community planning and construction of our country.

Theoretical Cognition

Historical Causes of the Gated Community Boundary

It can be found from the evolution of living style that the traditional gated living form of China has experienced a long history, and the tradition of the consciousness of urban space boundary has been continued and inherited as a living habit with a profound social, economic and cultural factors.

In the feudal era, the rulers, in order to consolidate the monarchy and facilitate management, adopted the management and regulation modes of "Lifang" and "Fangxiang" System to organize and manage the residents in city (Wang Zhuoyuan etc., 2013). This gated residential boundary is more obvious in the traditional Chinese big family-based social group, which helps to prevent theft through higher walls and strengthen the family rule and ideological confinement (Yuan Ye 2010). In modern times, the emergence of "Lilong" enriches the types of community boundaries. Taking Shanghai as an example, in order to save land, most of the "Lilong" residential buildings are located close to the street, and a relatively open boundary is formed through the buildings arranged along the street.

After the founding of the People's Republic of China, the socialist planned economy system was implemented by China. In the field of housing construction, the mode uniformly invested, constructed and distributed as a kind of welfare by the country was basically adopted, and the government took on all the responsibilities of investment, planning, construction, distribution and maintenance. The community planning at this era was mainly affected by the planning theories of "Neighborhood Unit" and "Residential Community", and emphasized the internal function, organization and living environment of the community, as a result of which a large number of communities with gated boundaries were produced.

As the policy of reform and opening up, China has entered the period of commercial residence. The rental model of large blocks of land gave rise to the emergence of large number of gated community buildings. What's more, the community property management system also led to the emergence of large scale gated community boundary to some extent. As the gated property management mode was featured with scale-based effect, the larger the community area was, the lower the average cost per person or per square meter would be. In that case, property companies tended to apply gated fences and walls as boundaries for community management. The introduction of the *Property Law* made it clear that owners had legal rights to public service facilities and roads inside the community (Xu Miao, 2010), as a result of which the private property rights were strengthened, but the contributions of community boundaries to public space were failed to be defined, thus failing to guarantee the property rights of public space. And, the guidance on the design of public boundaries in the relevant

regulations of building distance for setting the boundary and the road traffic design is also inadequate, causing the low spatial quality of gated communities.

The Sociality of the Gated Community Boundary

The gated community boundary is not only the fence on the material basis, but also characterized with its corresponding social attributes. The sociality of the gated community boundary is related to the social groups inside and outside the boundary space, including the subjects inside the boundary, such as residents, property companies, developers, and other residents outside the boundary as seen in Table 3. While the gated community boundary are the result of social interactions inside and outside the boundary. At present, the physical form of the gated community boundary mainly reflects the requirements of the consumption and the construction management inside the boundary, but fails to show the consideration of the urban image and traffic environment outside the boundary, which means it fails to make a positive contribution to the urban public space. This lack of urban public space will transform people's behavior to a certain extent. The exclusivity of space makes people more indifferent to each other, which will finally aggravate social isolation.

Table 3 The sociality of the gated community boundary space

Sociality	Relevant Social groups		Requirements for the gated community boundary
Inside the boundary	Consumption	Residents	Protecting the security and privacy, ensuring the normal use of the public service facilities inside the community, limiting the entry of people outside the community, reflecting the symbol of identity and status
		Developer	The maximum developing interest and cultivating a sound environment inside the community
	Construction and management	Property right management	Intensive and convenient property right management inside the community
Outside the boundary	City image cognition	City images of roads and street	Forming the unique and recognizable city image
	Traffic environment cognition	Walking environment	Safe, comfortable and convenient walking environment
		Driving environment	Convenient traffic environment

Source: Drawn by the author

Theoretical Cognition of Boundary Space Activation

The gated community boundary space should not be treated as a simple problem, but as an opportunity to improve the exchanges among people in metropolises. The vitality of urban public space of the boundary space is mainly influenced through the aspects of perimeter and interface, with perimeter influencing the connectivity of public space, and interface influencing the quality of space as seen in Table 4. The activation of boundary space can also start from the two aspects of narrowing the perimeter and opening the interface.

Activation of the boundary space should be targeted at enhancing the quality of public space, and promoting social interaction, providing convenience for residents. First of all, it should decide which boundary space of which gated community needs to activate, which should be combined with the surrounding public service facilities of the community, such as schools, shopping malls, the layout of the traffic station, and determine which gated community caused a larger block of travelling residents, what boundary space has the largest flow of people and other situations that worth transforming and upgrading according to the traffic situation of boundary space. Secondly, the activation mode of narrowing the perimeter means opening a new entrance, so it is necessary to determine whether it is open only to pedestrians or to both pedestrians and the vehicles, and determine the opening times of the day. At the same time, it is necessary to solve the problems caused by opening new entrances and exits, including how to guarantee the safety and property rights of community residents, whether public services and commercial service facilities such as kindergartens, vegetable farms, sports centers and parking lots are open for business, and whether security systems of the building need to be enhanced. Thirdly, the activation mode of opening interface means to increase the function of the interface and promote the openness of the interface. It is necessary to decide whether to add small commercial or outdoor activity facilities, whether to open the line of sight, and whether to enrich the details of buildings and walls by means of wall reconstruction and graffiti. When the sidewalk outside the boundary is too narrow, it is also needed to consider the community land area inside the boundaries; if the community land area is abundant, it should consider whether the fences or walls could be withdrawn a little back from the land border to extend the width of the sidewalk outside the boundary. It means that the land inside the community will be used as a public space. In that case, it is also necessary to consider how to encourage the main body of the community, such as the residents and property company. For example, when the width of open public space should be more than 6 meters and the area should be more than 150 square meters, and the main body inside the community can obtain additional commercial building area, etc.

Table 4 Ways of affecting urban public space by gated community boundaries

Elements of the gated boundary	Ways of influencing the public space	The affecting measures
Perimeter	The perimeter of the community boundary is related to the size and scale of the community. High connectivity means more short connections of the transportation network, more intersections and fewer end roads, which allows people to have more choices of route and avoids community isolation.	<p>(1) the average boundary circumference ≤ 1500 feet (457.2 meters);</p> <p>(2) 500 (152.4 m) \leq interval of recommended road intersections ≤ 600 feet (182.9 m), maximum intersections intervals ≤ 800 feet (243.8 m);</p> <p>Internal connectivity (the number of open road intersections per square mile (259 hectares)) is at least 140 per square mile</p>
Interface	When the gated community boundary adopts different interface forms, the comfort, image and space quality of the boundary space will change greatly, which will also affect the frequency of people to use the space and the occurrence of activities. Apart from the basic commuting activities, the active interface will also encourage residents to generate extended activities and some occasional activities.	<p>(1) function of the interface: whether there are commercial or outdoor activities</p> <p>(2) the openness of the interface: completely open: (the line of sight is transparent and can pass freely, or can imply the pedestrians no entering for private space only through the green fence or other barriers that can be crossed; Semi-open (can't pass freely, but the line of sight is transparent, or the details of buildings and walls are clear with the focus of the line of sight); Completely closed (not visible with no free access)</p> <p>(3) Entrance and exit of the interface: completely open (no restrictions or only time-sharing restrictions on vehicles and pedestrians outside the community); Semi-open (no restrictions on pedestrians, strict restrictions on vehicles outside the community); Completely closed (strict restrictions on pedestrians and vehicles outside the community; could only be permitted with the access card, inspection permit, or security verification by the security guard)</p>

Source: Drawn by the author

Case Study

Overview of the renovation of Weifang Community of Shanghai "Colorful Community Plan"

In 2016, the "Colorful Community (Inner City) Renovation Plan and Pilot Action Plan of Pudong New Area " (hereinafter referred to as "Colorful Community Plan") was carried out in Shanghai, which was led by the multiple main body involved in the whole process such as the government of Pudong New Area, the relevant functional departments, design alliance, experts and representatives of local residents and the media. It aims at the daily 15-minute life circle of the residents to improve the function of renovation and quality of the community.

This paper mainly analyzes Weifang Community involved in the "Colorful Community Plan". Weifang Community is used mainly for residence with mixed old and new residential areas and diverse types as seen in Figure 1. Among them, the gated communities of multi-storey public housing prevail, mainly located along the two side of North Nanquan Road. Commercial housing gated communities were mainly built after 2000, mainly along the side of Bin River on the West Pucheng Road.



Figure 1 Distribution and area of different gated communities in Weifang

Source: Drawn by the author

The average land area of the gated communities in Weifang Community is 11.7 hectares. Through the calculation of community connectivity as seen in Table 5 and Figure 2, it is found that the average perimeter of gated community boundary of Weifang Community is 1385m, which is much higher than the value of 457m recommended by LEED-ND. The average interval of community intersections is 362m, which is also higher than the recommended value of planning. The community connectivity is 32 intersections per square mile, which is far less than the 140 per square mile recommended by the plan. Therefore, it can be seen that the overall size of the community is large and the connectivity is general.

Table 5 Connectivity analysis of gated communities of Weifang

Average perimeter of community boundaries	Average intervals of community intersections	Community connectivity
1385m (The total perimeter of the 18 land is 24930m)	362m (The maximum length is 626 m)	32 intersections per square mile (the total area of the land is 243.5ha, or 0.96 square miles, which is the total area of the 18 mainly residential land.)
Compared to the planning requirements of LEED-ND (2009)		
≤457m	152m to 183m is appropriate, and the longest intersections are not more than 800m apart	At least 140 per square mile

Source: Drawn by the author



Figure 2 Intersection distance and connectivity of gated communities in Weifang

Source: Drawn by the author

Six types are involved with regard to the boundary of gated community of Weifang Community , including underground floor business, gated building facade and walls, vertical greening of the fence, greening on both sides of the fence and the fence itself as seen in Table 6. Only 34% of the boundaries are commercial, mainly formed by "Breaking Down Walls to Open Stores" in gated communities of public housing. And 65% of the boundary is block, including 22% fence, 17% wall, and 25% greening on both sides of the fence, which provides some greening space for the sidewalk. Besides, only a few borders are gated building facades and vertical greening fences. It can be seen that the boundary

function of gated communities in Weifang Community is relatively single, which is not conducive to the shaping of boundary space vitality.

Table 6 interface function and proportion of the boundary of Weifang

Interface function of the boundary		Length (m)	Proportion (%)	
Taking the building as the boundary	ground floor business	5668	34	35
	gated building facade	117	1	
Taking the block as the boundary	walls	2811	17	65
	vertical greening of the fence	193	1	
	greening on both sides of the fence	4277	25	
	fence	3744	22	
Total		16810	100	

*There are a total of 18 residential blocks with a total perimeter of 24930m, of which 67.4% are residential

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Source: Drawn by the author

The evaluation of the vitality of the gated community boundary is divided into three grades: active, medium and poor as seen in Figure 3, 4 and Table 7. Generally speaking, the gated community boundary of public housing with commercial function is more active, while the gated community boundary of commercial housing is less active.



Level A: Active

Level B: Medium

Level C: Poor

Figure 3 Different levels of vitality of gated boundaries of Weifang Community

Source: Drawn by the author



Figure 4 The vitality analysis of gated community boundary in the Weifang

Source: Drawn by the author

Table 7 Boundary vitality evaluation of gated community of Weifang

Vitality of the boundary	Mixed function situation	Spacial form of the boundary	Numbers of the entrance and exit	Activities of the pedestrian
A Active	Commercial activities and outdoor activities caused by breaking down wall to open shop or commercial group house	The boundary space form is semi-open or completely open, the pedestrian line of sight is transparent, or the details of buildings and walls are clear and rich, with the focus of the line of sight and the diversified boundary space	Many: 10-20 Entrance and exit/100m	Apart from the commuting activities, there are other extended activities such as shopping, eating, having outdoor coffee, chatting, dancing, playing, exercising and others.
B Medium	Part of the commercial or outdoor activities	Only a small amount of boundary space is of the open form, and the boundary space is monotonous and lack of details	Medium 10-20 Entrance:/ 100m	Apart from the commuting activities, there are other occasional activities such as stopping to rest, obtaining information, observing, communicating, running and taking photos
C Poor	No commercial or outdoor activities	The boundary space form is closed, mainly taking the form of gated wall or fence with no ornamental details	Few 0-5 Entrance / 100 m	Pedestrian activities are mainly based on necessary actions concerning passing by.

Source: Drawn by the author

Questionnaire survey and analysis

In order to understand residents' attitudes and opinions on the gated community boundary space, a questionnaire survey was conducted on residents of Weifang Community. A total of 150 questionnaires were issued and 146 valid questionnaires were recollected.

According to the questionnaire survey, most residents hope that the action of "Breaking the Wall" will start from the water front space Community and the school playground as seen in Figure 5. Only 17 percent of residents think the walls of enterprises need to be opened, and 11 percent think the walls of residential communities need to be opened. What's more, as seen in Figure 6, 29 percent of residents said they did not think any of the walls needed to be opened. For the question that "are you willing to open the community by removing the wall?", 74% of residents say they are not willing to remove the walls to achieve an open community, only 14% are willing to, and another 12% say they don't care.

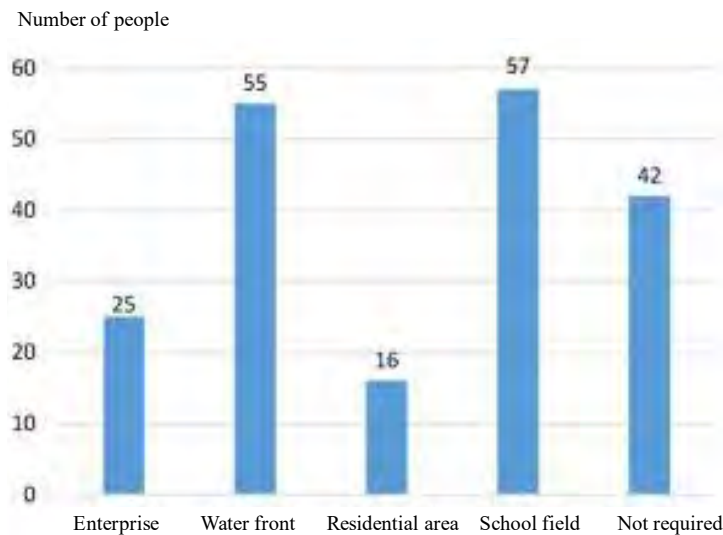


Figure 5 The number of residents that agree to open the wall

Source: Drawn by the author

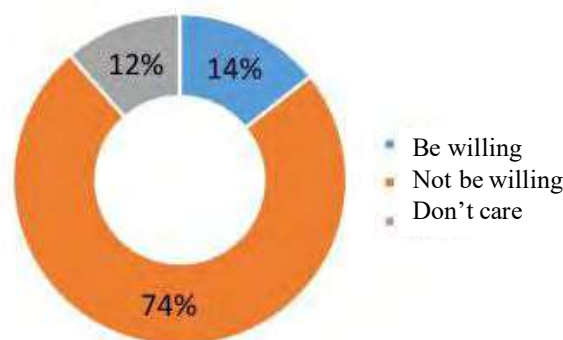


Figure 6 Residents' attitude towards the demolition of the wall to achieve an open community

Source: Drawn by the author

For the question that "what is your biggest concern if the walls are removed as seen in Figure 7? (multiple choices, up to 3 choices)" 76% of the residents think that removing the walls of the residential area will increase the risks of security as people with no household responsibilities could enter or leave the residential area at will. The second problem is the problem parking. 49% of residents are worried that vehicles outside the community will occupy the parking spaces in the community, causing parking difficulties for residents. Besides, 42 percent of residents think that the demolition of the wall will cause noise problems to the community. 40% of the residents think that the sanitary and the environment of the residential area would become worse after the demolition of the wall, and the difficulty of governance would increase. However, 26% of the residents think that after the demolition of the wall, the public service facilities inside the community will be shared with residents outside the community, which will affect the normal use for residents inside the community. Finally, only 4 percent of residents hold that "the community is private territory and cannot be violated".

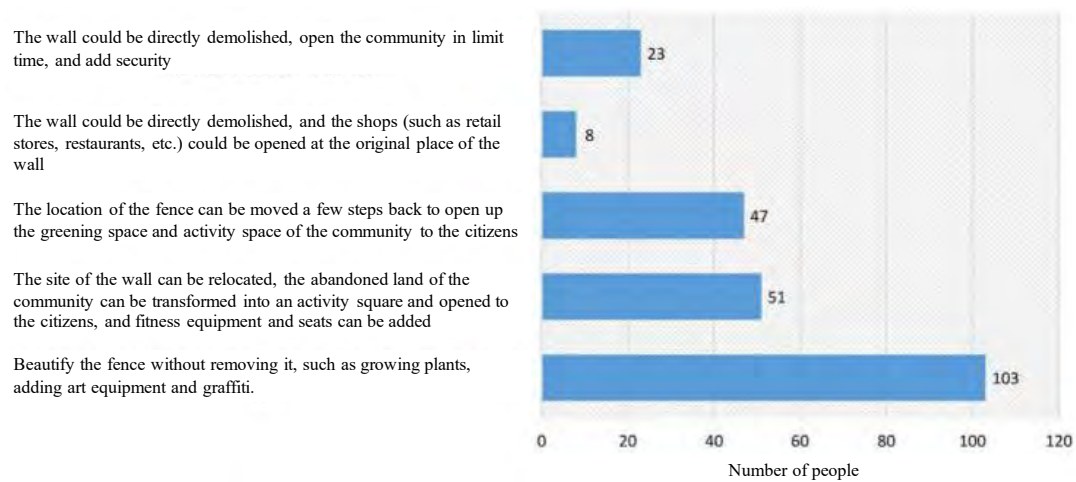


Figure 7 Questionnaire result : What is your biggest concern if the walls are removed
Source: Drawn by the author

According to the attitude of residents, it can be found that the main reason why residents are not willing to demolish the wall of the community wall is that they are worried about a series of problems of safety, environment, parking problem, noise and others caused by the opening of the community. If we want to open the community by removing the walls, we must get rid of the concerns of the residents from the above aspects, especially the aspect of safety.

For the question that "if the wall of the community needs to be renovated, which way do you prefer?" as seen in Figure 8, 72% of the residents want to beautify the fence without removing it, such as growing plants, adding art equipment and graffiti. 35% of the residents think that the site of the wall can be relocated, the abandoned vacant land of the community can be transformed into an activity square and opened to the citizens, and fitness equipment and seats can be added. 33% of the residents think that the location of the fence can be moved a few steps back to open up the greening space and activity space of the community to the citizens. 16% of residents say that the wall could be directly demolished, and the shops (such as retail stores, restaurants, etc.) could be opened at the original place of the wall.

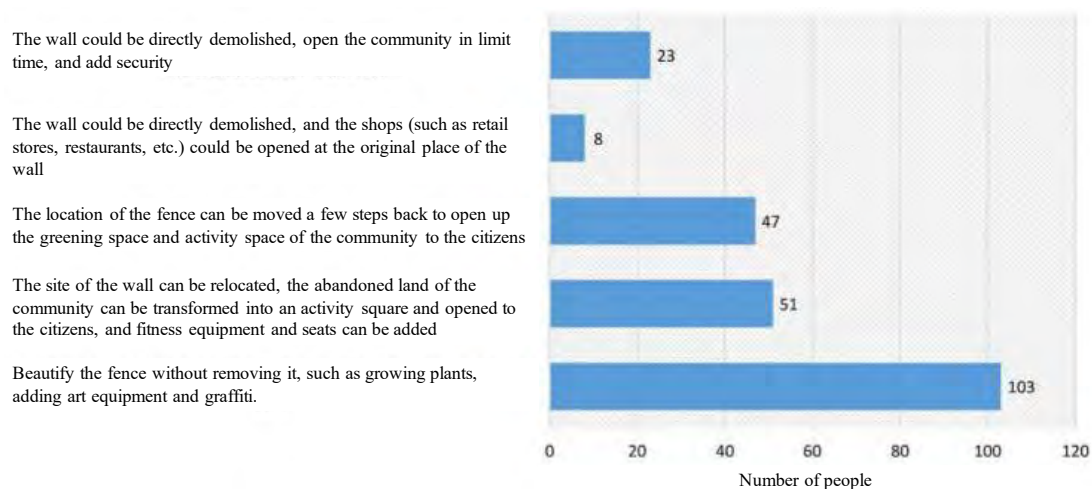


Figure 8 Questionnaire result: if the wall of the community needs to be renovated, which way do you prefer Source: Drawn by the author

Generally speaking, most residents prefer to carry out appropriate transformation on the basis of preserving the fence, while only a few residents choose to demolish the fence. It can be seen that residents have formed a traditional consciousness and living habit for the gated community boundary space. Therefore, the renovation of the wall should be gradually implemented, starting with the beautification of the gated wall, and then opening the space inside the community, which will gradually help to weaken the sense of separation of the wall, and finally form an open and shared community space.

Introduction of Specific Implementation of the Projects

The micro-renovation of Weifang Community activates the gated community boundary space mainly from two aspects: reducing the perimeter and opening interface of gated communities as seen in Table 8.

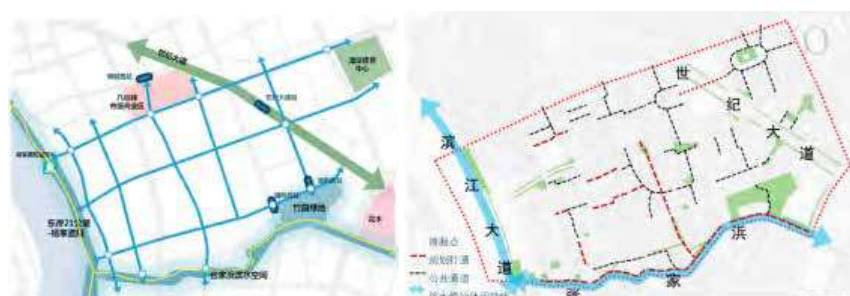
Table 8 List of projects of colorful community of Weifang in Pudong New Area

Activation mode of the gated communities boundary space	Specific project	Project progress
Decreasing the perimeter	Action of breaking down the wall	Planning period
Opening the interface	Transformation of the surrounding area of Zhuyuan Ring Road	Completed
	Wall painting of the surrounding area of Weifang No.1 Village/Zhuyuan Kindergarten	Completed
	North Zhangjiapang Road Pocket Park	Under construction
	Improvement of the public space of Weifang No. 10 Village	Publicity of the collected plans
	Improvement of public space of Weifang Head Lane of NO. 6 and No.7 Village	Publicity of the collected plans
	Micro renovation of Weifang No. 4 Village	Planning period
	Micro renovation of Weifang Jiejiao Street	Planning period
	Micro renovation of Jiejiao street of Pudian Road	Planning period

Source: Drawn by the author

From the aspect of reducing the perimeter of gated communities and improve the overall connectivity of public spaces, in order to enhance the overall connectivity of the public space, land conditions and the under-construction projects are considered as seen in Figure 9. Binjiang Green Road of the Huangpu River, the Zhangjiapang River and the Zhuyuan Green Space are determined as the main point of interest for public activities of the area surrounding the city streets, and YuanShen Sports Center, deputy center of the flowers and trees and the city-level Babaiban Business Zone are considered as the important public service facilities surrounding the community. These three public service facilities are taken as the connectivity point o to guide the network optimization. In combination with the current situation of each gated community, the author tries to improve the spatial

accessibility, reduce the long and continuous gated boundary and connect the whole road network of the community by partially breaking the boundary wall of the gated community boundary space, excavating the potential ways, and transforming and widening some existing ways to improve spatial accessibility, reduce long and continuous gated boundaries, and connect the whole road network of the community. As most residents prefer to preserve the community wall, the action of breaking down the wall is still in the planning stage and has not been included in the library of key projects.



(1) Analysis of important public service facilities around (2) Public channels formed by planning proposals



(3) Gated community boundaries broken by planning proposals (4) Public space networks after breaking gated community boundaries

Figure 9 The design strategy for narrowing the perimeter of gated community boundaries and improving the overall connectivity of public spaces.

Source: Shanghai Urban Planning and Design Institute ,2017, Pudong New Area Colorful Community Action Plan in Weifang Community Planning.

From the aspect of improving the gated community boundary space interface and enhance the vitality of public space. Since most residents are in favor of preserving the fence while improving the interface, the micro-renovation project with the open interface as the planning strategy progresses is put into quick implementation. Two implementation projects are selected for brief introduction.

The first implementation project is the reconstruction of the area around the Zhuyuan Ring Road as seen in Figure 10. The surrounding area of Zhuyuan Ring Road is commercial houses built after 2000, most of which are occupied by parking, and residents have limited space for walking. The existing walls are old and badly damaged, and the greening landscape is monotonous. Therefore, it is necessary to plan and transform the road section, increase the pedestrian exclusive road and repair the current situation of temporary parking disorder. Besides, it is needed to improve and update the dilapidated

walls, enhance the overall openness of the space, and enhance the integration of activity facilities and environment.



Figure 10 Community micro-renovation of the surrounding area of Zhuyuan Ring Road

Source: Pudong New Area Planning and Land Administration, 2018, Collections of Achievement of colorful community construction in Pudong New Area.

The second implementation project is wall painting surrounding Weifang No.1 Village/Zhuyuan Kindergarten as seen in Figure11 and 12. In Weifang No.1 Village, the original shops along the street were demolished due to illegal construction, and a concrete wall was erected after the demolition, becoming a "scar" in the community. The community micro renovation calls for the over 20 children from the kindergarten and primary school to paint and graffiti the walls together with their parents under the guidance of professional painters. There are two water tanks near Zhuyuan Kindergarten. The wall of the water tank falls off and a lot of construction waste is piled up around the tank, which affects the overall aesthetics of the community. On the basis of the community micro-renovation platform, teachers and students of Shanghai Visual Arts College were invited to Weifang Community to transform it, and to select the graffiti painting scheme according to the votes of community residents. These community micro-renovation implementation projects all stimulate community vitality and cultivate social capital while improving community boundaries.



Figure 11 Weifang Yicun wall painting micro update

Source: Photo by the author



Figure 12: Water tank micro-update near Zhuyuan Kindergarten in Pudong New Area

Source: Photo by the author

Conclusion

Currently, the fact that the design of gated community boundary only focus on the division of land-use and property rights in management has led to problems such as the decline of people's communication and social isolation. This is detrimental to the face-to-face communication between people in internet period, which means the good neighbor spirit is restricted. This paper hopes to take the gated community boundary as an opportunity to promote the daily vitality of communities and integrate potential social capital through community micro-renovation. Two ways are proposed to activate the gated community boundary space: breaking part of the boundary space and improving the boundary space interface. At present, Shanghai, Beijing and other cities are carrying out the campaign of "demolishing illegal street shops". Although this has a positive effect on the regulation of illegal constructions, it is not conducive to the good neighbor spirit, social network, social capital and diverse communities. From this point of view, the current urban renovation and development of community boundaries should be investigated and analyzed carefully.

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“Stop the Child Murder”: How a grassroots movement for children’s safety formed a new paradigm in urban design

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Abstract: Dutch cities are nowadays considered among the most pedestrian- and bicycle-friendly in the world. However, back in 1971, pedestrian deaths by motor vehicles had reached record levels, with 3,300 people dead, 500 of whom were children. Following the tragic death of his young daughter in such an accident, a journalist wrote a polemical article, entitled “Stop the Child Murder”, which became a national sensation. With the same motto, in the densely populated district of De Pijp in Amsterdam, a group of children organized themselves to demand safer streets and to claim open space for play instead for car parking. In a documentary filmed locally, we watch children actively claiming their rights, putting up barricades to exclude motor traffic, standing up to adults expressing opposite opinions. Soon after, many local streets in De Pijp were transformed into “woonerven” (living streets), where children can move around safely and play in the proximity of their houses, thus setting the norm in the Netherlands. In the paper this historical case of a grassroots movement successfully instigating institutional change is critically presented in order to understand its local specificities and to extract useful lessons about the tools, agents and methodology of community-based urban transformation.

Keywords: children’s right to the city; children’s activism; *woonerf*; livable street paradigm

Introduction

Active participation of citizens in the shaping of urban space, in the sense of political grassroots movements (Castells, 1983), of collaborative planning (Healey, 1997) and in the various forms of more recent participatory approaches, such as place making (Palermo and Ponzini, 2014) or tactical urbanism or handmade urbanism (Rosa and Weiland, 2013), is at the core of human-centered urban design and planning. The history of people-centered urbanism is abundant in examples of bottom-up processes that have contributed to a paradigm shift in the physical design of cities. From the story of Aldo van Eyck’s playgrounds in postwar Amsterdam which constitutes an extraordinary case of participatory democratic process (Lefaivre and de Roode, 2002) to the opposition movement against the dissolution of historic neighborhoods in downtown Manhattan led by Jane Jacobs, which she eloquently describes in her seminal work (Jacobs, 1960) to the preservation of the Highline in downtown Manhattan (Lopate, 2011) and its transformation into a vibrant public space, the catalyst of change has been the people: citizens, residents or users who organized themselves and succeeded in disrupting top-down practices, claiming their right to the city (Lefebvre, 1968) in the most concrete and physical sense. It is an important lesson to be learnt for urban planners and designers: against a deterministic urban model, often based on aged regulations and ways of thinking, citizens provide an innovative perspective, unveiling real, everyday needs and pointing to flaws in dominant models of production of urban space (Rosa and Weiland, 2013). This is

the framework for the discussion of the story of the mainstreaming of the *woonerf* concept in the Netherlands as it took place in the early 1970's, as a result of a nation-wide campaign for the safety of children from traffic and their right to use the streets as public space. The *woonerf* concept soon became a street model in urban design (Ben-Joseph, 1995) and was replicated in many other parts of the world; it is known in English-speaking countries as home zone (Biddulph, 2001). In the paper, the importance of the bottom-up movement that led to the widespread adopting of the *woonerf* in the Netherlands and to the subsequent state regulation, is presented both as a positive and optimistic case of a successful cooperation among the various stakeholders (residents, professional planners and designers, municipal and state authorities) when a direct and urgent demand was made by the users of urban space themselves, and as a specific instance that showcases the transformative power of a movement that "put children first" as well as the inherent dynamism of children-city relationship (Katsavounidou, 2012).

The story of the *woonerf*; daring to challenge the car

In most European countries, we nowadays live in a historical period in which, thankfully, policy makers and citizens alike have come to the realization that car traffic is not compatible with a vibrant city for people. But this has been a very slow and time-consuming change of mentality: in the 1960's the challengers of the widely-accepted domination of the car in urban space were few and marginalized. The French Situationists were among the pioneers; in the article entitled "Situationist theses on traffic", from 1959, Guy Debord prophetically points out:

It is not a matter of opposing the automobile as an evil in itself. It is its extreme concentration in the cities that has led to the negation of its function. Urbanism should certainly not ignore the automobile, but even less should it accept it as a central theme. It should reckon on gradually phasing it out. In any case, we can envision the banning of auto traffic from the central areas of certain new complexes, as well as from a few old cities. (Debord, 1959)

A few other voices opposing the car-oriented urban development model that was prevalent at the time included Jane Jacobs (1958; 1960) and the great thinker Lewis Mumford, who, in his essay "The American way of dying", wrote about the car, the "sacred cow" of America as he called it:

Some of the critics have dared to say that the Sacred Cow of the American Way of Life is overfed and bloated; that the daily milk she supplies is poisonous; that the pasturage this species requires wastes acres of land that could be used for more significant human purposes; and that the vast herds of sacred cows, allowed to roam everywhere, like their Hindu counterparts, are trampling down the vegetation, depleting wild life, and turning both urban and rural areas into a single smudgy wasteland, whose fancy sociological name is Megalopolis. (Mumford, 1966)

Despite, however, critiques such as Mumford's, the overarching climate of the era was that of an almost unanimous acceptance of the car as a permanent feature in city centers. Therefore, the case of Delft in late 1960's arose as a true beacon for change, challenging as it did the design of the typical street and subverting the overall-accepted premise that, since cars were introduced to cities, streets "belonged" to them. It is the first time indeed that what Donald Appleyard (1980) calls "street dwellers' rights" were put forth:

- The street as a sanctuary: streets should be safe for all pedestrians and bicyclists, especially children;
- The street as a livable, healthy environment, free of excess noise and polluted air caused by motor vehicles;

- The street as a community, serving as the common space where neighbors can engage in common actions;
- The street as a neighborly territory, enhancing the sense of belonging, pride and responsibility;
- The street as a place for play and learning: children should be able to use street space for spending time outdoors, and should have the freedom to roam safely in their neighborhood;
- The street as a green and pleasant land, where elements of nature can be incorporated in the physical design, providing relief from the grayness of the city; and finally
- The street as a unique historic place, with its own history and embedded with people's memories.

The Delft case is telling in the respect that these parameters were initially put forth in the form of demands made by residents to the city, but soon became an academic issue in the planning field. The local call for action was supported theoretically by Nick de Boer, Professor of Urban Planning at Delft University of Technology. De Boer especially emphasized the importance of street space for the well-being of children. Especially in lower-income neighborhoods, play areas were very scarce, and therefore the street space was extremely valuable in that respect. He presented solid arguments that streets should be redesigned in a way that would allow the co-existence of cars and people, thus allowing for people's activities to take place while the car could go through, nonetheless as a mere "guest" in the street (Ben-Joseph, 1995). Thus the idea of the *woonerf* ("residential yard") was formed, materialized in terms of physical design to give the impression of a "yard", thus psychologically influencing car drivers to slow down and be careful; the street became the in-between living space for the people (see Image 1). The three most important design features of the Delft *woonerf* were the following:

1. Sidewalks and roadways were integrated into a continuous, shared surface
2. The linearity of the street was replaced with a winding layout for the car path
3. With the active participation of the residents, front gardens, trees, planters and benches were introduced.



Image 1. A typical *woonerf* in Delft, as it is today. Source: <https://www.humankind.city/2015/12/woonerf-inclusive-and-livable-dutch-street/>

In retrospect, one can argue that the *woonerf* idea re-attributed to the street the attributes that characterized it for centuries of human habitation, before the advent of the car: the street had always been a communal space, a neighborly territory, a place for play (Gehl, 1987). Its historic function is still evident in many pre-modern examples, such as medieval Italian or Greek towns and villages, continuously inhabited to this day. While, however, in Italy and Greece in the 1960's and 1970's, historic urban centers were ruined and marred by congestion and pollution, the little town of Delft was showing that a return to the primordial function of the street as a livable environment was indeed possible.

***Stop de Kindermoord*”; a grassroots movement for children’s safety from traffic**

By late 1960's the idea of the *woonerf* had already started to take shape, as described above, albeit in a small and scale – it was only implemented for the redesign of a few streets in residential districts of Delft. It was not tested in more dense and compact parts of cities or in streets with heavier traffic. In the Netherlands at that time, most cities were not at all pedestrian- or bicycle-friendly. In fact, in the year 1972 casualties by motor vehicles in Dutch cities had reached a tragic record: 3,264 deaths and about 70.000 injuries. Among the dead, 457 were children under the age of fifteen (Feddes and de Lange, 2019). A year before, the six-year-old daughter of Vic Langenhoff, a journalist, had died in such an accident. After this tragic death, Langenhoff ran a series of articles on national newspaper *De Tijd*, entitled “*Stop de Kindermoord*” – or “Stop the Child Murder”. “One of the 3000 people who died in traffic accidents in 1971 was my youngest child, who was 6 years old. She was on her way to school when she was hit by a car coming around a blind bend at full speed”, he wrote, and emphasized that “our society will never be just until a child can spontaneously run to meet his or her father without risking being run over by a car” (Feddes and de Lange, 2019).

Langenhoff's articles caused a sensation throughout the country and were the source for the “*Stop de Kindermoord*” initiative across the Netherlands, which resonated strongly in the capital, Amsterdam. The Dutch society more and more agreed that something had to be done to stop the main cause of needless deaths: the automobile. Maartjie van Putten, a then 23-year old mother, and one of the leaders of the movement, said in an interview about that era: “Automobile traffic in Amsterdam had increased dramatically. On our street there was a primary school and children were run over frequently. When I saw Langenhoff's article I thought: my God, what kind of society are we creating?” (London Cycling Campaign). People's reaction took the form of active protest, picket marches, and activist demonstrations (like the powerful message evoked through the site installation of 150 white crosses that symbolized the deaths by motor vehicles – see Image 2). Families took the streets to claim a safer and more children-friendly environment for the city dwellers (Image 3). One of the most remarkable protests took place outside Amsterdam's Rijksmuseum where the participants laid down with their bicycles pretending to be dead.



Image 2. “150 deaths per month” - Installation for raising awareness over the fatal role of cars in urban districts.
Source: <https://lcc.org.uk/pages/holland-in-the-1970s>



Image 3. “Stop the Child Murder” protests in the Netherlands in 1972. Source: <https://lcc.org.uk/pages/holland-in-the-1970s>

These intense campaigns throughout the country, under the “Stop the Child Murder” motto, created an impetus for institutional change, as well. Quite soon, people’s demands were heard very seriously by government and municipal authorities. A national official committee was formed and state transport advisors in fact visited Delft to see how the *woonerf* principle worked in situ and how it could be implemented as a rule in street design. A few year/s later, in 1976, Dutch street design legislation integrated these principles and defined the specific design requirements of the *woonerf* (Ben-Joseph, 1995):

- Pedestrians may use the full width of the roads within a *woonerf*; playing is also permitted on the roadway
- The impression that the highway is divided into a separate roadway for motor vehicles and a footpath should be avoided
- Features should be introduced which will restrict the speed of all types of vehicles

- Drivers within a *woonerf* may not drive faster than at walking pace

Thus the idea of the “living street”, the street as a space first and foremost for people and then for the movement of vehicles, became an institutional reality. The *woonerf* principles have since then been introduced, in variations, in the design codes of the UK, the US, Israel, and Japan (Ben-Joseph, 1995; Biddulph, 2001). “Putting people first” is the common denominator of the various forms of “calmed traffic” streets, as the sign of the *woonerf* explicitly shows – see Image 4.



Image 4. The *woonerf* sign. Source: <https://www.humankind.city/2015/12/woonerf-inclusive-and-livable-dutch-street/>

“Aren’t we entitled to a play street?”: what happens when children are really being heard

From the advent of the modern era, one could say that children in city centers are a paradox merely by being present. The child, as conceptualized in the modern society, is the epitome of the vulnerable, and the dense city center is the incarnation of all ills: the stressful rhythms, the anonymity of the crowd, the lack of community, the scarcity of nature and open spaces, the increased criminality – all attributes of the stereotypical image of the downtown seem to be on the antipode of the ideal conditions for a child to be raised. This stereotype is indeed the basis for the predominant choice of suburban living – and suburban expansion of cities – that has characterized western urban civilization for most of the second half of the twentieth century. There have been different voices, however, putting forth a different, much more inclusive conceptualization of childhood: children need the city psychologically and socially as much as the city needs them (Ward, 1978; Dolto 1990).

In the case of postwar Amsterdam, which is quite typical of western European cities, urban planning experts and administrators alike assumed that families wanted to escape the historic center – who would want to raise children in the mixed-use, densely built, bustling center, when spacious new housing estates were built in the suburbs? The reality is that many people preferred to stay in the city, and even new families settled there in the baby boom generation.

A penetrating film of the era is Roeland Kerbosch’s *Namens de kinderen van de Pijp* (“On behalf of the children of the Pijp”), which aired on Dutch television on March 16, 1972 and created a strong wave towards a reassessment of how city space should be used and by whom. In the film we watch a group of children living in De Pijp, a district of 40,000 inhabitants at the time, in central Amsterdam. The everyday environment where the children live, as we see it in the background, is a dense, mixed-use typical 19th century urban fabric, with multi-storey apartment lining fairly narrow streets, with shops on the ground level. Streets are used for parking and vehicular circulation, while narrow sidewalks are where people are confined to.



Image 5. Scene from the film *Namens de kinderen van de Pijp* (“On behalf of the children of the Pijp”) (1972).

Source: <https://bicycledutch.wordpress.com/2013/12/12/amsterdam-children-fighting-cars-in-1972/>

The child protagonist, however, is seen walking in the middle of the street, claiming his right to use street space (see Image 5): he complains about the fact that his neighborhood has no open spaces, trees or greenery, like the suburbs, but it has “a great school” and he has many good friends. In an essay assignment for school, the children discuss the conditions of their neighborhood and put down the problem quite plainly: “All these cars are unbearable; there is no space left”; they emphasize that cars cause accidents and air pollution. So we watch the children forming an advocacy group, asking passersby to sign their petition to the city officials to close two streets from traffic and create “play streets” instead. The adults’ reactions are telling of the conflict: while many people stand by the children, there are some who are resistant to change: “You cannot ever close a street; streets are for traffic”, they proclaim. Others diminish the agency of minors: “Ten, twenty children can’t do anything!”. Indeed, when children meet with city officials (see Image 6), they get many promises but nothing happens: “You keep asking but if the city doesn’t act, you have to do things yourself”, the hero of the film says on camera. And this is what they do: they put up barricades to close the streets to traffic, they bring their toys and play in the middle of the road, they ride their bicycles and roller skates, they sing and chant “Get these cars out of the way, we want to play!”



Image 6. The children of the Pijp meet the Aldermen. Source: <https://lcc.org.uk/pages/holland-in-the-1970s>

We also watch a community meeting, during which adults stand by children's demands, stressing out that "this is much more important [than playgrounds], more important than political talk". The children and the parents are not curbed by violent reactions (one driver knocks down the barricade and they put it up again and again). "That's how you campaign! Show what's wrong and how it can be better. And then the city will follow", the child says.

The impact of the film on raising awareness of children's rights to safe and healthy streets cannot be overstated. In a newspaper comment the next day of its airing, a critic wrote: "This film moved me deeply. The situation for the children living in this slowly decaying neighbourhood was portrayed in a beautiful way through their own eyes. Amsterdam alderman Han Lammers had a tough time with them although they just want to play like their parents could. It won't be easy to close down streets to traffic as was revealed by the scene with the enraged driver who turned violent at the adults who helped the children with closing the street." (from the *Leeuwarder Courant* 17th March 1972 as quoted in *Bicycle Dutch*). As a matter of fact, however, many streets were actually turned into *woonerven* that same year (1972), including Hemonystraat, the very street where the children had protested in – and it still remains so today, as shown in Image 7.



Image 7. Hemonystraat, one of the streets that the children of the Pijp fought for, as it is today. Source: <https://bicycledutch.wordpress.com/2013/12/12/amsterdam-children-fighting-cars-in-1972/>

Conclusions

The story of the "Stop the child murder" movement in the 1970's Netherlands is at the same time paradigmatic and exceptional. The uniqueness of it lies in the cultural specificities of the Dutch society, its long tradition of civil society, and the high value it attributes to the concept of play. This is shown diachronically, from the famous painting "Children's Games" by Peter Bruegel the Elder (1560) – which shows a Dutch townscape where adults and children alike play all kinds of games – to the co-creation of the constellation of playgrounds (more than eight hundred) in Amsterdam after World War II, designed by Aldo Van Eyck, instigated by hundreds of letters of citizens to the municipality (Lefaivre and De Roode, 2002). In the Dutch mentality, play is considered the quintessential entitlement of children, while at the same time children are respected as citizens and their participation in decision making is considered a given. These fundamental cultural aspects undoubtedly played a major role in the success of this grassroots movement, but probably are not easily reproduced, given the fact that not many societies share them.

Apart from this exceptionality, however, the “Stop the child murder” movement is typical in the sense that is yet one more case of children’s empowering role in urban transformation. Two other such cases of a dynamic involvement of children in city matters come from quite diverse cultures – Brasil and Albania. In the first case, the former mayor of Curitiba, Jaime Lerner, a pioneer in implementing people-friendly practices in his city, literally “used” children to make the case that streets do not belong to the cars: back in 1971, when Rua Quinze, a central street in Curitiba, was turned into a pedestrian mall, a group of motorists had organized a demonstration that was supposed to go through the street. Lerner enlisted hundreds of children who on the same morning of the scheduled demonstration swarmed the mall, armed with paper and crayons and “occupied” it, thus turning the motorists away: it was quite an “unbreachable defense” (Freeman and Tranter, 2011: 194). In the case of Tirana, Albania, the mayor Erion Veliaj, since he was elected in 2015, has been implementing many children-friendly measures, including creating a significant number of new playgrounds and parks, but has also been cooperating with children to show that the city has to change towards a more sustainable development: children’s bicycle marches are organized to claim the need to restrict car traffic and children are trained in recycling practices at school, and subsequently train their parents at home (Veliaj, 2017).

One should point out, however, that these two instances of children’s involvement are more top-down than bottom-up. In that respect, the Dutch case, especially the case of the children’s advocacy group in De Pijp, is truly revolutionary: it showcases the power of children as active agents, their unique way of seeing urban issues in a pragmatic and practical way, their determination and inventiveness. For bottom-up process around the world, it is therefore important to take into serious consideration the innovative character that children’s perspectives can dynamically bring about: children’s ideas and energetic participation can be instrumental for change, both in the collective mentality and in institutions. Interestingly enough, when involved actively in such practices, children prove to us that the conceptualization of the child as a stereotypical symbol of vulnerability and innocence is in fact turned on its head. And finally, it shows how much the city has to gain if children are educated and treated as active citizens, as in the case of the Netherlands. These are valuable lessons for all communities worldwide.

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URBAN MICRO-RENOVATION BASED ON ACTION RESEARCH METHODOLOGY: A CASE STUDY OF YIFENGLI, HONGKOU DISTRICT, SHANGHAI

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Abstract: After near four decades of the rapid development, a number of cities in China have made great achievement. While plenty of the brand-new places are created, many "old cities" are left behind in a shabby condition. Lilong, a typical cultural heritage of residential townhouse with the combination of Chinese and Western architecture styles, belongs to such one. In order to change the situation, Shanghai government has launched the movement to ameliorate inhabitants' living condition in Lilong since 2012. However, the satisfaction of residents is not very high though a considerable expenditure had been spent, partly because of lack of knowledge and experience on how to reach a successful participation. To deal with the issue, the authors engaged in a case study, the micro-renovation project of Yifengli of Hongkou District, Shanghai, with the action research methodology. The project could be divided into three stages of initiation, implementation and perfection. Stakeholders are engaged in the whole process, including the different groups of local residents with different attitudes, local government and university consultant team which takes the leading role. Through the interesting and inclusive involvement at every stage, stakeholders gathered together in identifying the problems, discussing the choice, evaluating the planning and design, taking action and reflecting and continuing to modify actions. The project has gone relatively smoothly although the different stakeholders presented divergent interests. The outcome is desirable beyond the expectation of inhabitants. The study argues that the action research methodology is a meaningful tool not only for bringing out the positive change in the urban built area renovation, but also for spurring the social cohesion.

Keywords: Community micro-renovation; Participatory action research; Residents autonomy

Introduction

Europe and the United States had experienced a large-scale urban renewal of the old city after the Second World War, which had led to some serious problems such as social isolation, community decline and cultural disintegration. In order to change the situation, urban renewal model has been shifted into people-oriented model to help community residents achieve self-dependence. In this context, many community planners got engaged in community participation to help residents find a path to develop. (Zhang, 2014).

After near four decades of the rapid development, a number of cities in China have made great achievement. While plenty of the brand-new places are created, many "old cities" are left behind in a shabby condition. In order to change the situation, cities also launched a large-scale reconstruction in the inner-city, which had caused a series of social problems. Although some good and viable methods in urban renovation have been created in Western countries, it is not clear if they are applicable to the context in China. One of the reasons is that the government focused more on the growth of economy and its efficiency rather than the social sustainability in the past. China's "urban renewal" has its own unique political, economic, cultural and regional characteristics (Zhai and Ng, 2009). In addition, the long-standing "top-down" renewal model has not been balanced with the "down-top" approach.

How to make the inhabitants' voices heard? Where to make the inhabitants' voices heard? Is it useful to let the inhabitants dominate in the renovation? They are the questions for the government and also for the inhabitants and the academic. The urban space is often shaped by elites while most of the residents who live there could only passively accept them and adapt to the changing. As a result, even though expenses were high for the projects of urban renewal, the satisfaction of residents is not very high. In the mean time, the concept of "public participation" has been introduced into the urban renovation in China, but it seems so difficult to implement. As for many inhabitants, they were used to the government's unilateral decision-making. Also, for the market, this method costs a lot of time and force, which means some projects were stuck in the quarrel and discussion among stakeholders. And with respect to the government, this is an inefficient method to some extent in transforming the urban development model from sprawling planning to quality planning. Even so, governments pay more and more attentions in advocating governance, stimulating social self-regulation and active interaction to support social vitality. From May 2016 on, the "Walking in Shanghai 2016: Micro-renovation Program for Community" was officially launched in Shanghai and the exploration of innovative methods for urban micro-renovation has become a hot topic.

This paper takes an example of the Lilong community micro-renovation, Yifengli of Hongkou District, in Shanghai in 2018. The Lilong is typical cultural heritage of residential townhouse with the combination of Chinese and Western architecture styles. With participatory action research methodology, the authors were engaged in the project, working as members of the design team on the one hand and as observers on the other hand to explore the link between knowledge and action through critical reflection (Carr and Kemmis, 1986). The project could be divided into three stages of initiation, implementation and perfection. Stakeholders were engaged in the whole process, including the local residents, the local government and the university consultant team which takes the leading role. Through the interesting and inclusive involvement at every stage, stakeholders had gathered together in identifying the problems, discussing the choices, evaluating the planning and design, taking action and reflecting for constant modification.

From urban renewal to urban micro-renovation

The term "urban renovation" was presented in the first urban renewal seminar held in the Netherlands in August 1858. Since then, it has been discussed for more than a century. Scholars categorize it into the four stages since the second world war (Carmon, 1997; Ng, 1998; Ng & Tang, 2002a): Stage one, erased reconstruction from the Second World War to early 1960s; stage two,

neighborhood restoration from 1960s to late 1970s; stage three, economic recovery and public-private partnerships from 1980s to early 1990s; and stage four, Multi-partnership since the 1990s. Since the second stage, the idea of citizen participation in the urban renovation was gradually adopted. When it reached the third stage, the government began to encourage private developers to increase investment in urban reconstruction. However, just relying on market mechanisms could not achieve the desired effect of urban renovation because profit-seeking developers often considered less demands of local residents. Therefore, the new trend of urban renovation had gradually formed since 1990, encouraging the cooperation among “public, private, and community” (Zhai and Ng, 2009). The residents played a role from the passive to the active in public participation (Hughes & Carmichael, 1998).

Compared with the West countries, China starts urban renovation relatively late. China's urban 's renovation can be divided into four stages since 1978. In the first stage, the mode of large-scale demolition and reconstruction aimed at pursuing the largest return; In the second stage, the environmental aspect had been stressed but it still took the approach of the government-led and profit maximization; In the third stage, the “bottom-up” model had been emerging since 2000 while China had entered a period of the rapid urbanization and diversification of urban transformation. In the fourth phase, from 2010 to the present, urban renovation has been shifted to the “people centered” approach, improving the sustainability of urban development, upgrading the livability as a strategic direction, and creating a governance pattern of sharing and co-governing. (Liu and Xu, 2018). The "urban micro-renovation" is one of the key features in the fourth stage. A departure from past urban renewal, the word “micro” presents a rejection of the large-scale and massive production of the built space. Instead, it encourages the designer to engage with the community more deeply. As a “tiny” intervention, community micro-renovation can have a certain catalytic effect on urban development, and optimize urban space spontaneously and slowly (MA and YING, 2016). The urban micro-renovation advocates that residents should be the main driving force, and cultivates residents' sense of self-governing as the ultimate goal. As a result, residents should still have the capacity to maintain the community vibrancy even without the assistance of the government and the design team, in order to ensure the sustainable development of the community.

Community participatory praxis

Community participation is often asserted in theory as an important quality criterion for the intervention, but in practice it appears to be less well understood in China (Chiu, 2008). One of the reasons is that participating is a time-consuming and labor-intensive process. In many practical projects, both time and labor are costly for the “participatory transformation”, which makes it look like an illusory concept. Fortunately, the "community micro-renovation" proposal would change the situation. Planners and architects in China start to explore the new renovative model catering the transformation of the “run-down” community.

The community micro-renovation of the Lilong, “Yifengli”, is an attempt. From the beginning, both the government department and the design team have the aim of multi-party collaboration and deep participation. In order to put this aim into reality, we used participatory action research (PAR) as the research method. This methodology aims at making researchers as agents of transformation in the community. It has to be of immediate interest to the people in the studied community, involving them

in formulating the study problems and in finding solutions. It gives the local people opportunities for learning from the researchers. At the same time researchers learned a lot from the local people because people talk freely with people acquainted (Swantz, 2008).

The participants

- *Community residents.* There are 32 households, among which 13 are indigenous ones and 18 tenant ones. 73% indigenous residents are about 50 to 80 years old. They grew up in "Yifengli" from their birth and have deep feelings for this narrow alley. However, due to the aging of structures and facilities, some richer households who lived here in the past have moved out of the alley and rent the house to rural migrant workers. Some tenants have been living here for more than ten years.
- *The subdistrict office.* They are the dispatched officials with its jurisdiction in the area administrated by the street level government. In the "Yifengli" project, the role of the subdistrict officials is to provide supports as representatives of the government.
- *Neighborhood committee.* It is a grassroot mass "autonomous" organization in urban areas of mainland China, but it is still under the leadership of a higher-level government (The subdistrict government) and does not have the power to handle community affairs independently. In the "Yifengli" project, the neighborhood committee mainly takes the lead in project, organizing and coordinating, and applying for the renovation fund.
- *Design team,* it consists of professors and students from the College of Architecture and Urban Planning of Tongji University, as well as other universities. The members include an urban planning professor (China), a sociological professor (Canada) and an assistant professor of geography and architecture (Germany), and Chinese and foreign master students and undergraduates. In the "Yifengli" project, the main task of the design team is to stimulate the participation enthusiasm of residents, coordinate multi-party conflicts of interests, cultivate residents' sense of self-governance, organize workshops, and work with residents in transformation of the Lilong.

The process of participation

The project can be divided into three stages. Stakeholders are engaged in the whole process.

3.2.1 The stage of initiation

With the help of the local neighborhood committee had negotiated, the design team decided to use this project as a pilot for residents' participation, and then the model could be extended to the neighboring Lilong if it was successful. The subdistrict government could cooperate with other stakeholders, but play with no dominant role. In order to stimulate the enthusiasm of residents for the project, the design team organized three workshops. After each workshop, the team evaluated and reflected on the methods implemented and the gains in the process, and strived to improve them in the next workshop.

Workshop 1. Before the first workshop, the research team carried out the meeting including the representatives of the all stakeholders, and got the basic information of the requirement of deferent stakeholders. Based on the collections of the requirements, the team launched the workshop, and asked residents a series of questions, such as “Where do you feel the most needed to upgrade?”, “What kind of space do you want to live in?”, “Where are you inclined to retain?” and so on. Most of the residents’ answers are “No matter what transformation will be, they will accept it” or “No idea.” or “Reconstruction is useless. We are waiting for demolition (in order to get high compensation).” Residents' responses reflected that local residents did not have the awareness to protect their rights and were used to following government decisions.

In order to change the negative attitude of the residents, the design team initiated two small discussions. The first one was to let the residents choose the pictures they liked most for the vision of the renovation in their narrow lane. The team took out some of the pictures we had prepared, which depicted the future visions of the small neighborhood. The pictures were displayed in front of the residents, and our German professor, Ms. Iris, explained the intention to the residents in Chinese. Driven by curiosity and freshness, many residents came to watch. After the inspiration of the pictures, residents began to express their opinions, such as "I like the scene of this picture. It makes people feel happy.", "The scene of this picture is not suitable for our Lilong."(figure 1, 2) When their opinions were not the same or when a certain opinion conflicted with the others, they would debate and discuss till reached a consensus. After the discussion, we put pictures of the façade of Yifengli on the wall and encouraged residents to pin up their favorite pictures to the corresponding place of the façade on the wall. In this process, the designer simply recorded the opinions and ideas of the residents and did not interfere with their choices and preferences of the residents.

The second discussion was called ‘PARK’, which means P-preserve, A-add, R-remove, K-keep. The discussion was organized by the sociology professor of our team. The rule was for residents to write down their own opinions on the sticky notes and paste them to the corresponding positions of “P, A, R, K”. Unexpectedly, the activity did not go well because the residents did not will to pick up the pen and write their own ideas and paste them on the wall.



Figure 1, 2 Inspiration of the pictures in the first workshop Source: Made by the author

After the end of workshop 1, we evaluated both discussions. The first discussion was successful to inspire residents' interest and gained a high level of participation. Using pictures to convey intent is more easily. Through the discussions of residents, the demands and conflicts among stakeholder were more stressed, and in fact, residents themselves actively sought solutions. Its shortcoming was that it could not be systematically responded, and key issues might be overlooked in free discussions. Due to

the influence of the pictures, the imaginative space was limited and the residents' suggestions were limited to what they saw. The second discussion failed. The reason should be that this method is more suitable for experts, elites, or groups with higher education levels and professional knowledge. Most of the participants in this workshop are elderly people aged 50 or 60, and they were not sure to make decision by themselves.

To summarize this experience, in the next workshop, the design team should consider the followings. (1) Activities with mutual discussion will be easier to attract residents to participate; (2) The professional team should create some guides for residents to discuss; (3) the acceptant degree of knowledge by the residents will be considered in advance.

Workshop 2. In order to encourage more residents to participate in the inter-activity, the second workshop was held on the site of Yifengli three weeks later. The team brought the paperboard and plastic model of “Yifengli”, the drawings of the design based on the opinions collected in the first workshop and the projector equipment on site. The drawings were posted on the wall which depicted the blueprint of the lilong for the future. Attracted by these interesting stuffs, the residents brought small chairs from home to join in the “strange” workshop. When the residents saw their ideas appearing on the plan, they were so excited. And they had a strong sense that their community would change better because of them. At the moment, the residents had more new ideas. As the priority of the actions were discussed (figure 3, 4), the residents raised more new suggestions and problems related to their daily life, such as the drainage, the night lighting, and the public space occupation by the scooters. Residents ranked the priority in terms of the intensity of their willingness to solve the specific issues. This method could inspire the local residents who know the space most personally to tell the design team what they really needed.

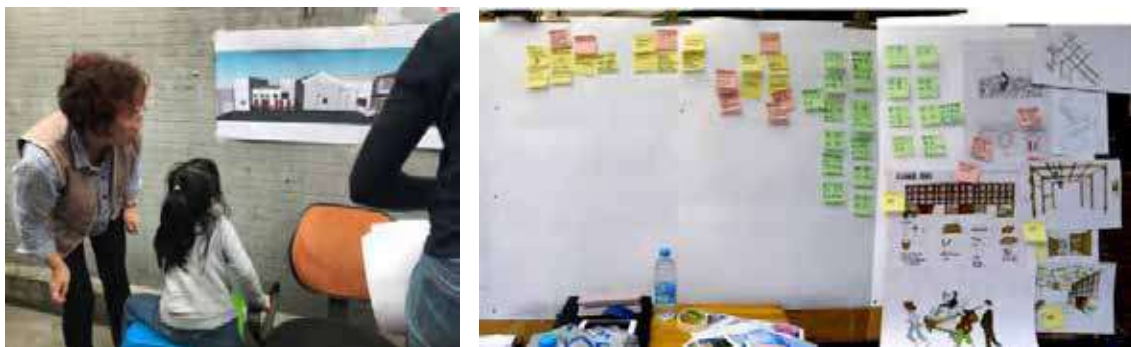


Figure 3, 4 Checking the design and ranking the priority by the local residents

Source: Made by the author

For the evaluation of the second workshop, the authors believe that it is an effective improvement of workshop 1. The reasons are as follows: (1) Holding workshops in the Lilong has greatly promoted the enthusiasm of residents to participate and interact. It is an inclusive way, regardless of gender, age, affiliation and local or migrant tenant, that all can participate in it; (2) The method of sorting problems is effective, especially the key issues are obviously picked out. It helps designers having a clear direction and focus as they prepare the subsequent design decisions; (3) The sense of autonomy has increased. It can be proved by the enthusiasm and participation extent of the residents. Residents' sense of self-governance is not absent. Instead, it can be gradually cultivated; (4) But in this workshop, the authors also found a problem that the tenants did not participate. There are distinct attitudes between the local residents and the tenants. The indigenous residents believe that tenants will never

care the environment as they do. Tenants think that they are not part of the local (due to the difference of the household registrations). Therefore, they do not have the right of decision. So, they voluntarily withdraw from the participating groups.

Workshop 3. It held a month later. This workshop was divided into a meeting with the government and a joint meeting with residents in Lilong. It was interesting that the feedbacks for the transformation plan from the two groups were quite different. The government stressed to beautify the decoration of the space of Yifengli and not support the renovation of the water sinks located in the small lane. Because the sinks “misappropriated” the public space, it should not be encouraged. In the joint meeting with the residents, they preferred to renovate the water sinks because they needed to use it every day and the “kitchen” was too small to put the sink inside. Also, the beautification part is not the most important. To coordinate the issue, the design team took a mid-way after discussing with the two groups again, which means not to replace the water sinks with brand-new ones, but refurbish them based on the current situation (figure 5, 6). And many issues had been solved by the coordination.

It is luck for the design team that most of the various contradictions among stakeholders had been exposed before implementation. Although the interests of the two parties are different, their visions is unified. The participatory renovation method provides a platform for communicating between different parties and a suitable way to find solutions to problems.



Figure 5, 6 The image of the sink before and after Source: Made by the author

The stage of implementation

Another one month later, the construction phase was initiated with a symbolic ceremony, in which the honors were given to the active participants to thank their work, especially to the students from Tongji university. The job of the implementation consisted of two parts. One part was the repair work by construction workers, encompassing repairing underground drainage ditches, replacing the dilapidated canopies, renovating water sinks, reorganizing the crisscross electric wire and so on. The other was mainly the facade beautification, done by residents and designers.

In order to achieve the effect of the universal participation among residents, the design team usually held small events on weekends to attract residents to participate. The most important was the graffiti. No matter the children or the elderly, all aged people participated in making the graffiti on the wall. That was a really enjoyable moment. Some of the elderly ladies were scared to brush the wall because they were afraid to ruined the graffiti. After the design team encouraged and taught them repeatedly, they finally made it and were thrilled. One of the residents who was good at drawing took the leading

role in the color preparation, the outlines of the figures drawn on the wall and the filling inside of the outlines with colors for the graffiti. During the period, the residents served the students dinners if they stayed there later for the refurbishing work. Since the figures of the graffiti were chosen by the residents and reflected their past life and a common memory (figure 8), the residents liked them very much. These graffiti are portrayals of the scenes of residents playing in Yifengli in 1960~1990, embedded the stories of Yifengli for near half a century.



Figure 7, 8 The image of the graffiti during the painting and after source:7.made by Yifengli resident CHEN Debao; 8. made by the author

Through the public participation, the talents of the residents were stimulated on the one hand and the cost of renovation were reduced on the other hand. What is more, it makes the results more meaningful for the psychological aspect and the future maintenance aspect. Residents will be more careful of taking their new “living room”. Besides, the communication and trust among residents, the design team and government were promoted, and naturally community cohesion is stronger than before.

The stage of perfection

After the completion of the construction, the renovation project came to an end. In order to empower the residents to be more self-dependent, including maintaining the Lilong, making minor new improvements, after the design team and the government withdrew, the design team taught the skills to the residents in fixing the graffiti and repairing the newly renovated sink and so on. The “Longtang Convention” was also formulated with each household signing on it, and was written and pasted on the walls to encourage the residents to protect their neighborhood.

After four months of the frequent interaction, designers and residents have established good emotional relationship. The young students and the elderly residents become good friends.

Conclusion

Though the thesis just briefed the process of the renovation of Yifengli, the dilemmas and contradictions encountered in the renovation reflect that participation in practice is far more complicated than that discussed in the theoretical world. However, in the process of construction,

through continuous evaluation of the participative effect and self-reflection of the designers themselves, the experience gained is conducive to the next step. The project has gone relatively smoothly although the different stakeholders presented divergent interests. The outcome is desirable beyond the expectation of inhabitants. A higher level of work efficiency can be achieved through a deeper understanding of residents' neighborhood relationships, their knowledge background, and the living conditions and demands. Finding a capable person in the community is an important gene for maintaining the sustainable development of the community and promoting residents' autonomy. It is necessary for designers to reach out to the community and take some roots in the community, thereby building trust between designers and residents. During the cooperation, designers and residents could be able to learn from each other. The study argues that the participatory action research methodology is a meaningful tool, not only for bringing out the positive change in urban built area renovation, but also for spurring the social cohesion. Participatory action research also has political connotations. It makes invisible people visible so that there is a chance to solve their problems. It increases awareness and makes authority conscious of the people's right (Swantz, 2008). Due to the co-existing between success and conflict, happiness and dilemmas, more research is needed for exploring the potential and limitations of community micro-renovation practice.

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The role of activist researchers in urban and regional planning.

Analysing and comparing international case studies of social change.

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Abstract: Activist researchers in urban planning place an emphasis on facilitating social change through innovation and empowerment. The research explores the definitions of action research, how these different dimensions of activism in urban planning can be identified and redesigned as new situations and challenges arise. In defining action research, the paper also introduces the roles that activist researchers play in contributing to practice and theory through their research. Considering the research carried out by the authors, the paper compares the different approaches adopted by the researchers analysing international cases of social change. The authors argue that the research activist positions in urban and regional planning can affect the long-term change of a place by contributing in theory and practice, defining new models and procedures. Through these examples, the research affirms that the methods applied in action research, can be constructive or critical of existing urban planning processes and can contribute to the production of knowledge for both theory and practice. However, the main concern for activist researchers will always remain the long-term impact of their research and its benefit to society.

Keywords: action research; activist researchers; social change; urban and regional development.

1. Introduction

The paper is focused on the analysis of the use of action research in urban and regional planning, and the roles and positions of the researchers. The paper contributes case studies to contemporary literature by providing an analyse on the different positions taken on by the authors in their own research investigations. The concept of action research is connected to other theories and themes (Figure 1) regarding social change, community involvement, social benefits assessment etc. For example, the concept of bottom-up processes as inclusive methods necessary to create an open spatial planning; or collaborative economy as innovative life-style based on sharing and cooperation (Botsam & Rogers, 2010; Gruszka, 2016). A related topic, social impact assessment (SIA), is used to verify the consequences of the processes in the social dimension or the social innovation theory that aims to create new solutions in order to affect the socio-economic fields and create a social change fixed over time (Moulaert et al., 2005; Phills et al., 2008; Caulier-Grice et. al., 2012). The aim of this paper is to analyse the meaning and the definitions discussed about action research, and to compare methods adopted and the different positions and roles undertook by the activist researchers in urban and regional development¹. It will form an epistemological basis for using action research in infrastructure, institutions, housing, grassroots movements and re-cycling processes.

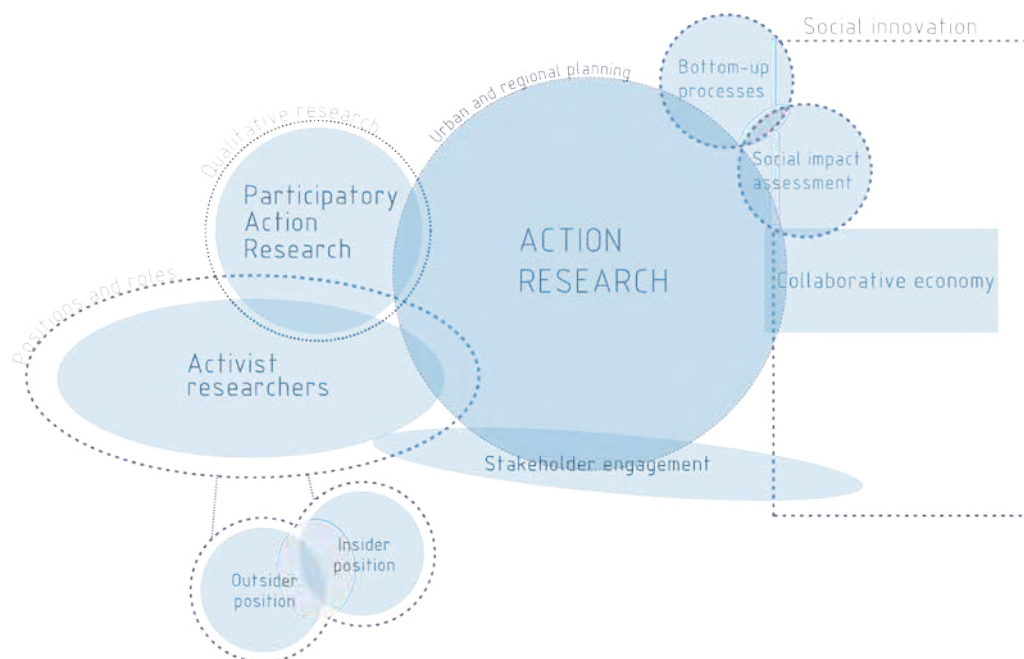


Figure 1. Themes scheme. Graphic elaboration by Federica Scaffidi.

¹ The paper analyses the authors positions and roles in their research.

2. Methodology

The paper is developed using a critical, qualitative, and structured approach. The main objective is to analyse in a critical way the researcher positioning in scientific investigations and understand the resulting consequences for theory and practice. Therefore, the methodology allows for analysing the theoretical and empirical scenario with reference to action research and researchers' positions.

In summary, the methodology was developed in the following steps (Figure 2):

1. **Literature review** – with the main intention to study and classify the different lines of thought about action research, the literature review is dedicated to the analysis of the state-of-the-art focusing on the analysis of action research, the roles and positions of researchers, and their relation to the spatial and social transformation. This part, therefore, is focused on the identification of specific models of action research.
2. **Empirical analysis** – description of the empirical activities developed in international case studies of social initiatives in urban and regional development. The researches mainly adopt a qualitative approach. This analysis shows the different roles of activist researchers and their implementation of specific models/procedures for the empirical scenario.
3. **Data analysis and comparison** – considering the different data and examples analysed, a comparison among the lines of thoughts and international cases is developed through tables and matrix.
4. **Identification of researchers' positions** – considering the identified activist researchers' positions described by the theoretical framework, an identification process was adopted to verify and select the activist researchers' positions used by the researchers in the empirical framework.
5. **Identification of researchers' roles** – description of the roles of activist researchers and how they affect and influence urban and regional development processes in theory and practice.

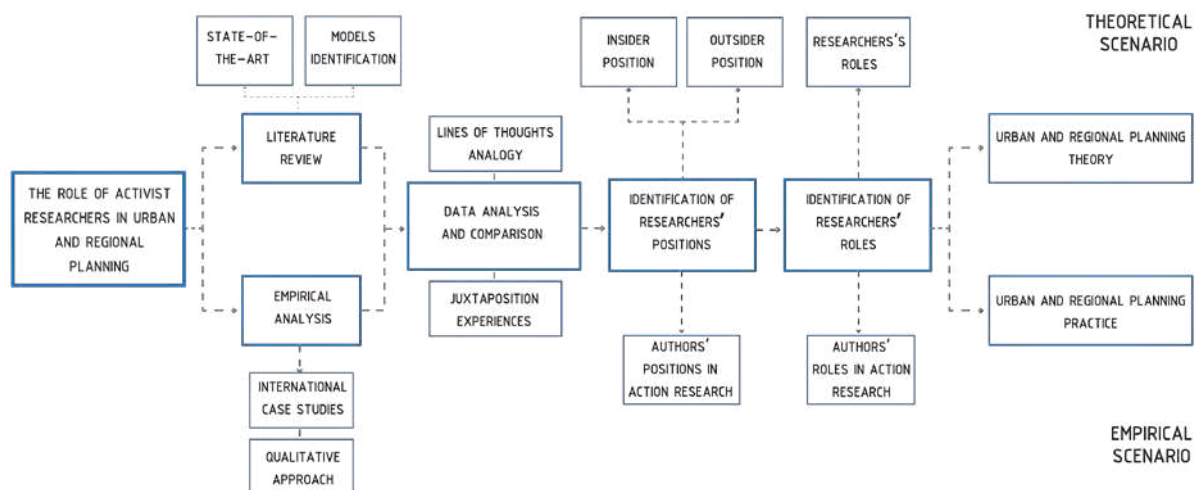


Figure 2. Methodological structure. Graphic elaboration by Federica Scaffidi.

The action research is analysed from two main points of view in order to understand its meaning and the role of activist researchers in urban and regional planning processes. The paper is developed in a structured way based on the two main following parts:

- the theoretical scenario;
- the empirical scenario.

The first scenario is focused on the analysis of contemporary literature and the definition of main researcher's positionality in action research. The method used to study the concept of activist research was oriented to discover the meaning and definitions presented in the state-of-the-art and classify the different theories and scientific positions developed. This part is necessary to understand the main theoretical lines of thought regarding action research and analyse more in depth the elaborated models. The theoretical analysis is also oriented to the examination of the different positions and roles that activist researchers can undertake during their scientific investigation. This step is focused on the evaluation of the typology of relations and connections that the researchers use to interface with the place. Therefore, according to Herr and Anderson (2005), the analysis is oriented around two main positions (insider and outsider) in relation to the entity of collaboration developed. The second scenario is focused on the analysis of the research activities developed by the authors in order to understand the real connection with the action research. This analysis, furthermore, is oriented to the assessment of the typology of action research and the analysis of the methodology adopted. Starting from the researches developed, the paper is concentrated into the evaluation of the characteristic of researches' positions and their role in action research.

2.1 Action research and participatory action research: meaning and definitions

Action research has a varied history within its academic applications tracing back to the 1940's researching the effects social democracy and organization change. However participatory forms of enquiry have existed throughout human history (Reason and Bradbury, 2003). Therefore, action research can be seen less as a methodology and more as an approach to research that utilizes multiple methodologies to achieve its participatory nature, being called 'promiscuous in its sources of theoretical inspiration' (Reason and Bradbury, 2003; Herr and Anderson, 2005). Education and health research fields have been the primary users of action research to understand how practices can be improved, and to a lesser extent how theory could be enhanced by action research's approach. Activist researchers are morally committed and are considered participants (Dick, 2015; McNiff, 2013; McNiff & Whitehead, 2011). Action research proponents note the need to be free from theory, be apolitical, and allow participants to guide research (Adelman, 1993; K. Lewin, 1946; Foote Whyte et al., 1991). However action research is inherently political (Jordan & Kapoor, 2016). Action research's political orientation stems from its understanding of power and hierarchies within society inherent in capitalism and urban planning (Jordan & Kapoor, 2016). Burawoy constructive critique highlights the need for a theory to allow interpretation of the world outside of your AR site (Burawoy, 2013). Action research methodology aims to be disciplined, systematic process that includes a reflexive process that occurs in cycles, see figure 3 (McNiff, 2013; McNiff & Whitehead, 2010, 2011; Foote Whyte et al., 1991). Action research process steps:

1. Observe, take stock of what is going on
2. Identify a concern, issue
3. Think of a possible way forward, develop actions around this way forward
4. Try it out, perform the action steps developed
5. Monitor the action by gathering data to show what is happening
6. Evaluate progress by establishing procedures for making judgements about what is happening
7. Reflect on those learnings personally, in relation to theory, and with the group
8. Test the validity of these reflections
9. Modify practice in the light of the evaluation
10. Repeat steps 1 - 9



Figure 3. Action Research Cycles (Bradbury & Reason, 2003; McNiff & Whitehead, 2010, 2011).

Participatory action research (PAR) varies slightly. PAR provides greater control between practitioners and researchers and makes no claims that thoughts about an action must be felt prior to that action (Foote Whyte, 1991). A critique is that participatory action research is too ‘common-sense’ which can cause dismissal by mainstream social sciences (Jordan & Kapoor, 2016), and relying too much on the case studies with too specific findings that ‘do not lead to defensible generalisation’ (Miller & Brewer, 2003). Critiques of participatory action research note that the co-option by neoliberalism (and governance institutions) masks true unbiased participation; or only provides a value-add to that institution rather than effecting real social change (Jordan & Kapoor, 2016; Foote Whyte et al., 1991). Issues can also arise in the reporting of research about power relationships between the researchers and participants (McNiff, 2013; McNiff & Whitehead, 2010, 2011; Foote Whyte et al., 1991). Power relations can be addressed through a few ways. In particular the idea of “I” and “we”. In much action research the objective of enquiry is the “I” (Bradbury & Reason, 2003; McNiff & Whitehead, 2010; Reason & Bradbury, 2001). This can be problematic in the relationship with the ‘we’ (the participants or partners), but the ‘we’ and ‘I’ can reduce this by being bonded in values or goals (McNiff & Whitehead, 2010). Being bonded in values and goals, whereby it is not a co-opting of a process, but an equal alignment between researcher and participant.

There are two ultimate goals as they relate to practice and theory of action research, urban cities, and systemic change. In practice, the goal of activist research is transformation of practice towards sustainable and resilient urban planning. For example, focus on the outcomes of social impact in housing, infrastructures, grassroots movement and brownfields re-cycling. In theory, it links the learnings of the activist research with relevant field theories, thus taking Burawoy’s criticism of need to maintain an understanding of the outside influences on your action research site. Action research’s ability to drive real change could break free of theory and critical analysis if it deals with the underpinning epistemological issues discussed. What is real? It is in the use of methods to drive action research or activist research where it has the potential to grow and combine theory and practice (Gustavsen, 2003). Under the action research paradigm, activist research engages with the immediate struggles of grassroots movements challenging institutions power and organization (Choudry & Kuyek, 2012; Jordan & Kapoor, 2016).

2.2 Activist researchers: roles and positions

Two main types of action researcher exists, the insider (or practitioner) action researcher and the external action researcher. The insider works within the company, as a member of that specific field (for example, a nurse working with patients or teacher working with students) or organisation they are performing the action research on (Herr & Anderson, 2005; McNiff, 2013; McNiff & Whitehead, 2010, 2011). The outsider collaborates with the organization studying its insiders or supporting them as equal partners. There is a continuum and implications of the insider to outsider researcher whether the insider is studying its own self or the outsider studying the insider without collaboration (Herr & Anderson, 2005; McNiff & Whitehead, 2011). Drawing on practices of participatory action research, the outsider collaboration with insider can contribute to knowledge base, organization transformation and radical change within communities (Day, 2016; Herr & Anderson, 2005). The research participation mode will not be co-opted where by the relationship of research and action to the local people is on them, compliance whereby the relation of the research and action to the local people is for them, or collective action whereby the local people set agenda and carry out research without the researcher, e.g. it is by them and I am only an observer (Herr & Anderson, 2005). Other modes of participation include consultation whereby it is a for/with relationship, cooperation where it is a with relationship, or co-learning where it is a with/by relationship (Herr & Anderson, 2005). In contrast to participatory action research, the activist researcher is interested in co-creation. Co-creation is key for driving transformations and real time learning about transitions in the moment. In non-academia, communicative planning theory and smart technology of both practitioners and institutions is changing the way they engage communities on a wider scale (Head, 2007). Though the effects of this type engagement are still seen in many cases as superficial and ticking of the box, the main issue may be the expectations of engagement (Legacy et al., 2017; McAndrews & Marcus, 2015; Silverman et al., 2008). The grassroots movement and the institutions may have different expectations regarding the outcomes of engagement. Combining citizen participation with action research principles can enhance community involvement with the planning process and develop new approaches to community driven planning by being reflexive throughout the process (Silverman et al., 2008). Barriers to citizenship participation even with the use of action research remained primarily because of expectations. This included not setting up the contract with the client (local government) to ensure that more action researcher principles were able to be achieved, for example the attendance of meetings by the community (Silverman et al., 2008). The researcher becomes an activist researcher engages with the groups studied in order to improve the area and achieve a social change.

3. Discussion

This section of the paper is focused on the analysis, description and comparison of the researches developed by the authors (Table 1). The different thematic fields analysed are related to the urban and regional development through social initiatives.

The main topics analysed are the following:

1. Railway infrastructures and urban development;
2. Urban sustainability and grassroots movements;
3. Socially innovative re-cycling and spatial development;

4. Housing regeneration in historic centres.

The authors' researches are oriented on the analysis of social benefits, the evaluation of stakeholder involvement processes and social impact assessment. The international cases here exposed are different in typology and geographic location. The international framework of the case studies is very huge. It is related to Australian and Dutch examples of public participation in infrastructure development, the bottom-up-community-led grassroots movement in London, the social reactivation of brownfields in Italy, Spain and Germany, and the housing strategies in Mexican historical centres regeneration. The wide empirical scenarios analysed have in common a qualitative research approach with exploratory and dialogic surveys and qualitative interviews (structured, semi-structured and unstructured). All these researchers had the ambition to be active, to involve different kind of stakeholders and local actors, and to promote a social and spatial development of the place. The purpose of the paper is the analysis of these many developed experiences as action research and the positions and roles of researchers.

Cases	1	2	3	4
Research topics	Public participation in high impact projects	Bottom-up-community-led movement	Social innovation in re-cycling processes	Housing regeneration
Research objects	Railway infrastructures	Grassroots	Neglected resources (brownfields)	Historic centers
Location	Australia The Netherlands	United Kingdom (London)	Italy Spain Germany	Mexico
Research approach	Qualitative research	Qualitative and quantitative research	Qualitative and quantitative research	Qualitative research
Methods	Exploratory surveys, semi-structured interviews and focus groups	Dialogic surveys, semi-structured interviews, strategy development workshops.	Demographic analysis, exploratory and dialogic surveys, structured, semi-structured and unstructured interviews	Exploratory surveys, semi-structured interviews
Stakeholders	Local institutions and community	Local institutions, volunteers, associations	Public administrations, social enterprises, local community, experts	Local institutions and community
Objectives	Social impact assessment and management processes for regional development	Bottom-up processes for sustainable urban development	Socially innovative re-cycling procedures for urban and regional development	Assess method to assist urban development of historic centers

Table 1. Action researches matrix. Graphic elaboration by Federica Scaffidi.

3.1. Railway infrastructure in Australia and the Netherlands

This research focuses on the implementation of social impact assessment and management processes in railway infrastructure projects. The research aims to contribute theory in the discipline of Social Impact Assessment (SIA) and strengthen its role in urban transport planning (Vanclay, 2003; Esteves & Vanclay, 2012; Vanclay et al. 2015). A key aim is to contribute towards improved positive social change outcomes from rail infrastructure projects.

The empirical part of the research focuses on some specific international case studies of infrastructure projects. In particular, the three case studies selected are:

1. Parramatta Rail Link in Sydney (Australia);
2. South-West Rail Link in Sydney (Australia);
3. North-South Metro Line in Amsterdam (the Netherlands).

The research adopts a multi-method qualitative approach to share lessons learned in practice from three case studies, as well as, Impact Assessment (IA) practitioners and academic experts internationally. The methods adopted included: grey and academic literature review, field investigations, semi-structured interviews and focus groups with varied stakeholders involved in decision-making processes for transport planning. The primary methods of semi-structured interviews and focus groups were used to obtain in-depth knowledge about the inclusion of social considerations in project implementation processes, including. This knowledge includes experiences by participants (project managers, construction personnel, IA practitioners, government staff, politicians, alderman) as key elements to understand fundamental lessons from each case.

The research highlights the need for greater accountability in urban governance and raises awareness of the value of SIA practice in decision-making result in significant positive consequences for the project's delivery (Mottee & Howitt, 2018). It contributes to existing SIA theory through an improved understanding of the assessment and management of social impacts in the making of urban transport projects in both Amsterdam and Sydney. This also demonstrates a practical contribution value of SIA by including social impacts in decision making in practice. Through implementing improved processes in SIA, including good practice public participation, the potential for long-term positive social change is facilitated.

The researcher is an outsider with access to inside understandings and processes to produce an assessment which will in turn inform future understandings and processes. Thus, the researcher here participates in two ways. First, as an observant and critic of the development of processes which in this case entail the implementation of practitioner knowledge into existing urban structures. Second, as a passive insider with sufficient knowledge to assess and potentially change future practice decision-making processes. The activist role of the researcher in this study is constructive as it aims to contribute both with theoretical and practical knowledge to existing practice but also critical as it proves current practice decision making processes fail to deliver consistent positive results.

3.2. Urban Sustainability Transitions and Grassroots movements

The research focuses on the bottom-up community-led grassroots movement's role in urban sustainable transition processes. The research objective is to understand barriers to grassroots movements promoting urban infrastructure changes to attain more resilient and sustainable cities.

In order to examine these connections, an action research framework has been used that fully embeds the author within cycling movements within London (three local grassroots' volunteer cycling groups and a regional charity, London Cycling Campaign). The partnership is over a 12 to 18 month period (beginning in August 2018 and April 2018 respectively). The community groups goals are the initial focal point of the transitions analysis and influence the qualitative and quantitative research methods used.

The researcher provided a template to groups which linked systems thinking and socio-technical analysis approaches (Turnheim 2015). It used a variety of methods for observation and engagement. These methods included local council meetings with the groups, discussions, qualitative interviews, strategy development workshops, etc, seeing interactions of groups, meetings with the local institutions, policy documents and other materials that are related to these processes. Working alongside the grassroots movements can provide resources and additional information with which to make decisions. This is most similar to initiative based learning such as co-design (Turnheim 2015). They are building knowledge capacity whilst the researcher is learning. It is a reflexive process whereby they can utilise the research information in the action research process and understand if those projections will positively create tipping points. It links quantitative and qualitative analysis through a socio-technical analysis examining the regime and landscape with qualitative data. Quantitative data is used to analyse the costs, time, and distance factors to examine rates of change.

The researcher functions as an insider that is also producing outsider-oriented knowledge. Following this methodology, which entails doing action research with a grassroots group (Reason & Bradbury, 2001), the researcher becomes an active member of the change. The changes are also analysed and assessed through the research, a process and product that happens outside grassroots developments. It may be considered that both roles at once are adopted through this bridging method, which are iterative and add to the outlook of the research results. It is because of this, that the researcher here acquires the position of activist in practice, with input placed as a constructive method that draws from critical thinking processes.

3.3. Socially innovative re-cycling of brownfields in Italy, Germany and Spain

The research focuses on the analysis of contemporary literature about social innovation and re-cycling processes with the main intention to understand the impact on urban and regional development. It critically analyses and interprets the re-cycle theory developed by the Italian Research "Re-cycle Italy" (PRIN) focusing on its social innovative aspects. Starting from the definition of re-cycling as the operation of reactivation of new life cycles that generate new economies and self-feed its own development (Marini and Bocchi 2014; Carta 2014). The research illustrates its relations to the social innovation concept. This is considered as a novel solution to a social problem that brings measurable improvements for the local community (Phills et al., 2008; Caulier-Grice et. al., 2012) and includes many stakeholders (associations, public and private institutions, and local community) in order to create new social values (Maiolini, 2015; Moulaert et. al., 2005). The connection of these two dimensions fosters the local development processes affecting socio-economic and spatial development. The research, therefore, aims to understand in which ways socially innovative re-cycling initiatives can interfere in the planning policies (Scaffidi, 2018). To answer to this question eleven

empirical references² have been selected from the European scenario (Italy, Germany and Spain) in which the research activity has been carried out.

These international experiences have been analysed and compared in a matrix. A quantitative and a qualitative approach has been adopted with demographic analysis, explorative and dialogic inspections, semi-structured, and structured and unstructured interviews to some social actors and privileged observers (Corbetta, 1999). All these examples are socially innovative experiences that have defined positive effects to the local site, promoting cultural initiatives, social involvement, urban regeneration processes and new economic, demographic and touristic flows. During the action research, the author developed quantitative analysis to understand the demographic trend and interviewed many local actors, inhabitants, social enterprises and local institutions in order to analyse the context in depth and to assess the effects of the social change.

The research focus is the investigation of social and spatial change in empirical references of brownfield re-cycling. In the ones analysed, the theoretical characteristics of the concept of activism were highlighted, combining the community involvement with the principles of action research (Silverman et al., 2008). All the examples analysed are activating socially inclusive processes that define positive effects to the local area. A relevant role in the social change is taken on by the social enterprise, that encourages the creation of cultural initiatives, creating the conditions for urban regeneration processes and new territorial flows. This is the case of the social enterprise of the former silk factory of Perosa Argentina, which has generated new cultural and tourist itineraries on the municipality, encouraging the enhancement of the industrial heritage of the area, the participation of the local community and the creation of new socio-cultural activities. This is the case of the association of the Arnao coalmine or Periferica in Mazara del Vallo, which periodically contribute to the redevelopment of some urban areas and the development of initiatives based on cooperation. Another example is the Fundación Valle Salado in Salinas de Añana in Spain, where thanks to the social enterprise and the recognized value of the resource, it has given rise to an economic and tourist development of the town. The reactivation process lead the local institutions to draw up the Plan de Embellecimiento and the Plan de Ordenación Urbana to guarantee a parallel development between the productive landscape and the urban landscape. In other cases, social enterprises took place within brownfield reactivation initiatives and urban planning processes promoted by local governments, thanks to which the resource revives over time (e.g. Matadero of Madrid, Cantieri Culturali della Zisa of Palermo, ExFadda of San Vito dei Normanni or ZecheZollverein).

The research focuses on the promotion of locally developed processes of knowledge and practice through evidence of social benefits effects that enable positive urban development. The aim of this

² The selected cases are the following: Spinnerei cotton mill of Leipzig (Germany); Cantieri Culturali della Zisa of Palermo (Italy); Perosa Argentina silk factory (Italy); ExFadda of San Vito dei Normanni (Italy); Manifatture Knos of Lecce (Italy); Matadero of Madrid (Spain); the coalmine of Arnao (Spain); Periferica of Mazara del Vallo (Italy); the asbestos mine of Balangero (Italia); the saltworks of Salinas de Añana (Spain); ZecheZollverein of Essen (Germany).

research is to affirm the influence of social innovative practices in urban and regional development processes. It argues that active interaction between local institutions, residents and social enterprises of an area can define and create new local development strategies for social and territorial development. The research contributes to contemporary discussion about reactivation of neglected and disused resources analysing the social benefits and the local development. The theoretical and empirical contributions of this research are the socially innovative re-cycling theoretical model and new empirical guidelines for local community, social enterprises and local administrations. In this research, the researcher functions as an outsider with wide access to observe, understand, assess and disseminate a wide array of spatial development process experiences through the analysis of socially re-cycling initiatives. Ultimately participating in two ways as well. In the first, as an insider with access to insider information to develop well-informed understanding of contextual-based experiences. In the second, as an outsider who observes and assesses socio-economic change within and throughout the urban processes to produce information that will bring light to practices which should or should not be replicated in similar initiatives. The activist role of the researcher is constructive as it seeks to build on existing academic knowledge and practice-based processes. It is also critical as it provides in-depth portrayal of elements which can hinder or enhance projects of this nature.

3.4. Housing in regeneration of historic centres in Mexico

This research focuses on developing an assessment of housing regulations and strategies in regeneration approaches for Mexican historic centres of Guadalajara and Mexico City. Acknowledging international influence (UNESCO, UN-Habitat) in the conception and implementation of national and local planning for conservation and housing.

The aim of this research is to assess current housing planning regulations and strategies within historic centres' conservation and urban development strategies. It is being done to develop an assessment and produce knowledge to assist change in the different aspects relating to social justice in the conservation and housing development in the regeneration of historic centres. It is based on an explorative qualitative methodology through semi-structured interviews with official bodies, academic sector and community representatives to assess local processes of urban development. One of the preliminary findings of this research relates to the processes of appropriation of the urban environment by local groups, effectively putting pressure on projects' strategies and development. This research contributes to existing literature on urban regeneration as well as to conservation and housing literature and policy. This research, ongoing until 2020, hopes to provide an assessment method to assist urban development processes in historic centres and other inner areas under regeneration schemes. Looking to position this research beyond its case studies to contribute to wider ongoing discussions on the role of housing in heritage conservation and urban regeneration processes.

The researcher here functions as an outsider with access to inside conceptual and practical construction processes to both observe and understand development and implementation processes. Additionally, the researcher here participates in two ways that relate to her inherent position as an outsider. In the first, the researcher will be an outsider with temporary and partial insider access, as she connects with actors who will direct to other actors through a snow-balling process. In the second, she is as an outsider who will understand and assess processes of which she is not an active part in creating or receiving. The activist's role of this researcher is constructive as it aims to provide relevant assessment of use in the future to local communities and policy makers. Yet, it is also inherently

critical as she objectively gains knowledge of and evaluates processes from which to identify gaps that help or hinder key aspects which are partially or not contemplated by these processes.

4. Results

This section is focused on the analysis of the research results and the identification of researches' roles and positions according to the theoretical framework analysed. It aims to assess which kind of position is adopted by the researchers in their own investigations' (between insider and outsider positions) and their roles for the theoretical and empirical improvement in the urban and regional development field. According to Dick (2015) and McNiff (2013) who affirm that action research is primarily value-laden and researchers are participants in the investigations, thus cases here are examples of action research. From the action researches analysis is possible to observe two main positions undertook by the researchers. It has been chosen to evaluate the degree of involvement into the research considering a range that consists in low, average and high level. The image below (Figure 4) shows the researchers' positions as insider and outsider in the three ranges selected. The "case 1_railway infrastructure in Australia and the Netherlands" mainly adopts a high outsider position with a low insider approach. The "case 2_urban sustainability transitions and grassroots movements in UK", on the contrary, adopts primarily a high insider approach, forming research from an active insider point of view. The "case 3_socially innovative re-cycling of brownfields in Italy, Germany and Spain" adopts a mixed position, with a mainly outsider approach based on the analysis of theory and empiric examples, and an insider position undertaken in qualitative analysis. The "case 4_Housing in regeneration of historic centres in Mexico" primarily adopts a high outsider position in collaboration with insider activists of Mexican context and a medium insider position during the field survey and qualitative researches.

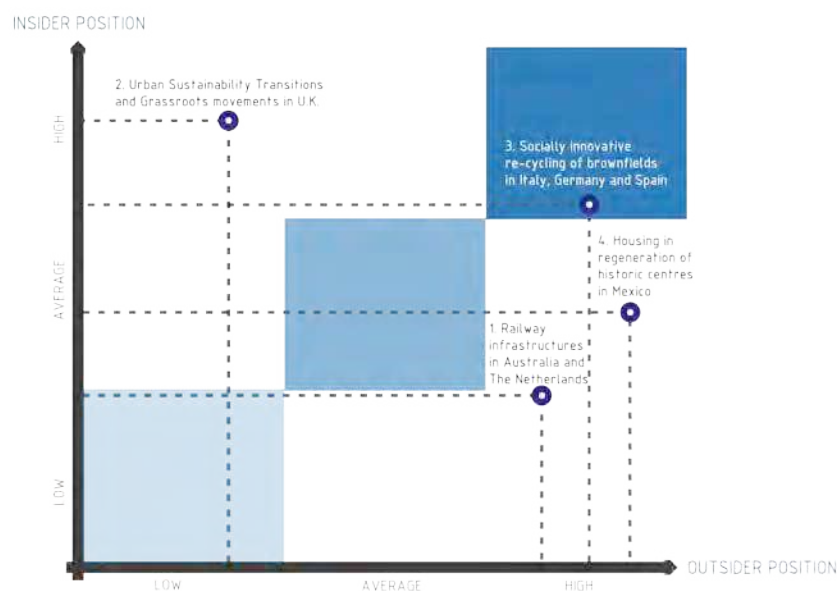


Figure 4. Activist researches positions. Graphic elaboration by Federica Scaffidi.

The graph above illustrates a research approach in the field of urban and regional planning more active and highly connected to the area of investigation - whether as insider or outsider - with the objective to interact with the place and study it in-depth. The findings show a changing role of the urban planner,

strictly related to the local site, its social transformations, economic and cultural effects of the urban interventions. This led to the need to define a novel theoretical and empirical approach aimed at assessing the action research implications on urban and regional development. This paper represents the starting phase of this approach. These contributions aim to produce specific models and procedures in urban and regional development, based on the themes, problems and thesis argued in the specific research fields. The following graph (Figure 5) illustrates the activist research outcomes. Case 1 aims to develop improved social impact assessment and management practices, which includes good practice of public participation. Therefore, its contribution is highly related to the elaboration of a model of social participation for the regional development by local infrastructures. Case 2 focuses on grassroots movements, a bottom-up approach for socio-technical transitions. Case 3 contributes in theory processing a specific socially innovative model and in practice by defining new guidelines for local administrations, social enterprises and local community. Case 4 contributes in theory and practice by elaborating an operative tool to reduce social inequality in housing policies.

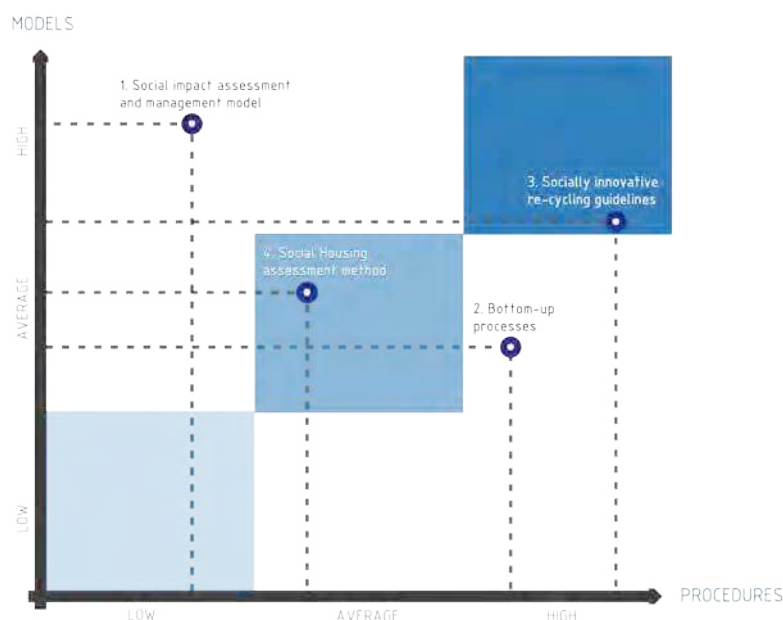


Figure 5. Activist researches outcomes. Graphic elaboration by Federica Scaffidi.

Considering the personal active research contributions, the paper focuses on the comparison of these approaches aiming to collect several experiences and define future proposals and new perspectives of active research in urban and regional planning.

4.1. Comparing action research approaches in urban planning theory and practice

This section is focused on the analysis of the action research approaches used within the framework of urban and regional planning in theory and practice. Figure 6 shows the four dimensions and the roles adopted by the authors in their own researches. This can be seen more easily in the graph which showcases the four dimensions and the positions of each researcher. In the 'x' axis the theoretical and practical roles are placed, while in the 'y' axis the contribution levels are added. Here the constructive or critical contribution to theory and practice are separated, positioning the different levels and scopes of each research's assessed contribution.

The image shows different approaches for what concern the practice dimension, it is possible to observe that case 4 is located in a low position and in the quarter of “constructive approach”. This case is represented by the creation of a specific model of social housing assessment for distance centres regeneration. On the contrary, in the same position but in the quarter of critical approach it is possible to observe case 1, where the author’s role is more critical in practice than in theory promoting methodologies for equitable social participation in urban projects. With regard to cases 2 and 3, the graph illustrates a high-level position in practice with high constructive approaches represented by the objective to be constructive in the empirical context by creating models and procedures (Image 4) for urban development. Case 3, furthermore, adopts a medium-high critical approach in theoretical analysis by observing in a critical way the social innovation and re-cycling theories. On the contrary, case 4 adopts a low approach as critical theory analysing the concept of social housing and contributing with operative tools to reduce social inequality. Case 2 is the only case that adopts a constructive approach promoting new methodologies in socio-technical transition. The literature discussed may imply that there is only one type of activist researcher role and that this role can be compartmentalised. Such as, the researcher is only truly critical if a participatory action research approach is adopted and for the researcher to be constructive, then they can no longer function as an activist researcher. However, the authors argue that the collective experience shows there is no single understanding of an activist researcher. Contending that many roles can be adopted from within (as an insider) or external to practice and process, to effectively gather information and enable participation towards generating positive social change. However, in making a contribution to theory and practice, there lies a challenge in moving from research findings, from our examples, to recommendations for positive and practical changes for implementation. The investigations here exposed to understand existing environments, plans, programs and contexts, and in drawing lessons from cases, empowers researchers with knowledge and experience to make informed recommendations. However, how does this influence extend beyond authors’ researches? How can researches turn into real social change? The researchers adopted a critical approach to analysing theory and processes, then provide constructive and practical feedback in order to facilitate change. To answer these questions the researchers’ aimed to produce specific models and procedures (Figure 6) to make a positive impact into the urban and regional development processes. These are questions and challenges that the urban planning discipline must consider for the activist researcher’s recommendations to have a positive long-lasting influence on society.

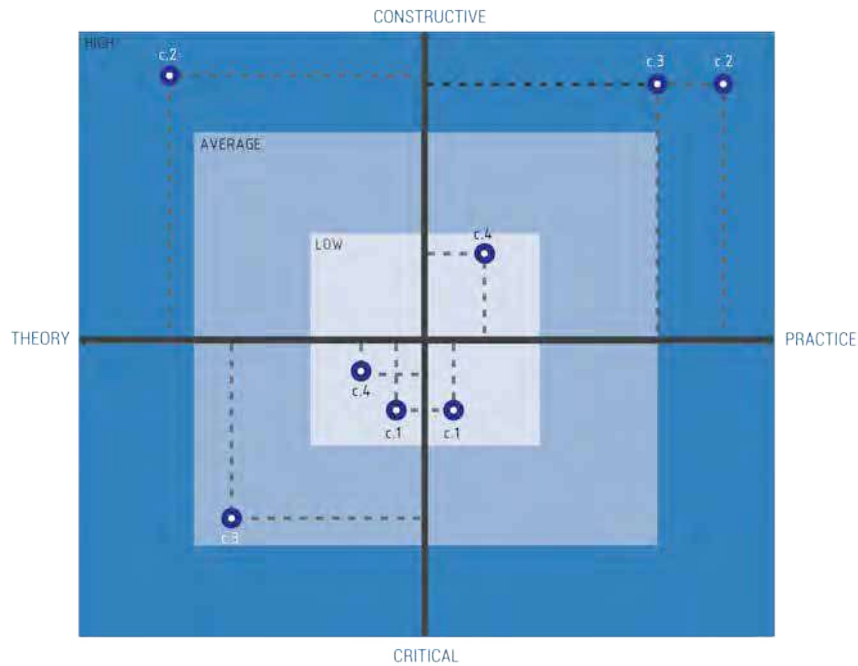


Figure 6. Activist researches approaches. Graphic elaboration by Megan Sharkey.

5. Conclusions

In conclusion, starting from the contemporary literature analysis, this paper illustrates the meaning and definitions of action research and activist researchers by doing an in-depth analysis on the current research. Description and comparison of the international cases of social change focused on the analysis of the researchers' positions to show different opportunities for engagement with other people (insider and outsider). The examples analysed activist researcher roles contributing in theory and practice in urban and regional planning.

This paper aimed to present positive and practical changes in social, economic and cultural development in contemporary territories (Figure 7). This analysis is made by an activist point of view, with an insider or outsider position, through qualitative methods from interviews, collaborations with local actors to workshops. We argue against the criticism that action research lacks the methodological rigour and technical validity that is the gold standard of much academic research (Greenwood and Levin, 1998). The authors argue that the researcher activist positions are necessary, relevant and required. For this reason, the researcher's role is to elaborate new models and procedures in order to facilitate that change and improve the urban and regional development creating social benefits and a positive social impact to the area.

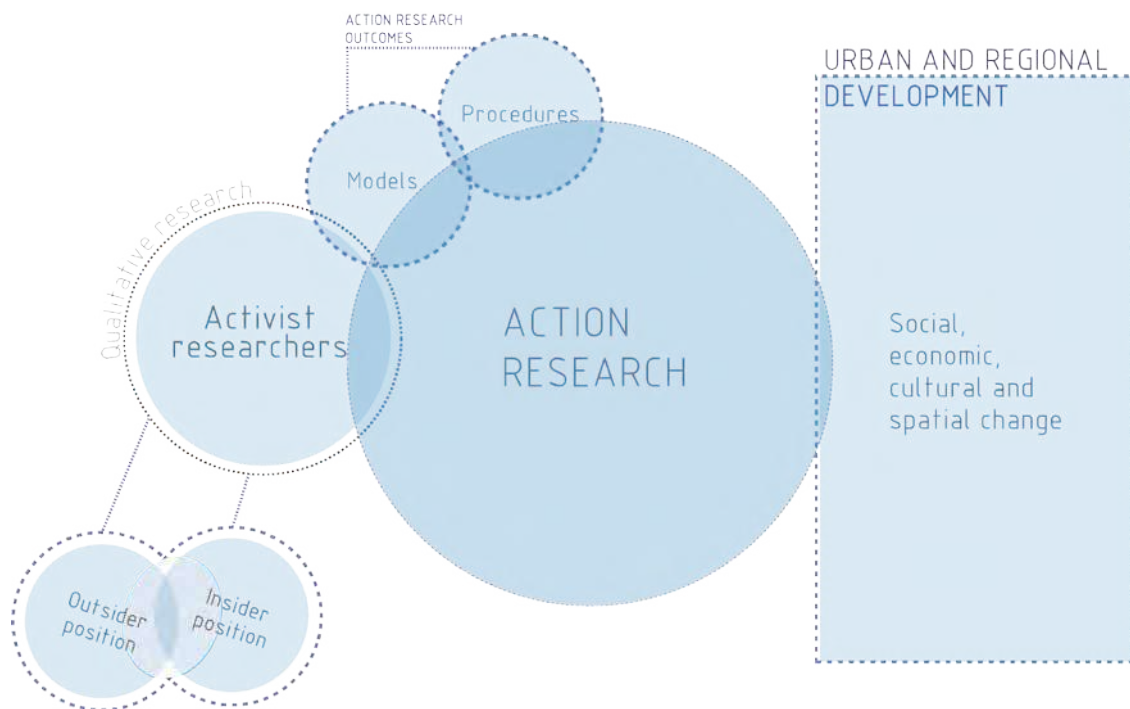


Figure 7. Action research role in urban and regional development. Graphic elaboration by Federica Scaffidi.

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Networking collective knowledge to foster change. The case of Sansheroes network (San Siro, Milan)

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Abstract: The aim of the following paper is to offer a reflection on the role that the co-production of knowledge assumed in the development of a local network of rooted social actors in the context of San Siro neighbourhood, one of the biggest Milanese public housing complexes. The paper will analyse the different phases of the development of the network, underlining the main strengths and the critical aspects related to the role that it assumed in promoting a new vision for the transformation of the neighbourhood. It will especially focus on the role that Mapping San Siro - Politecnico of Milan action-research group - played in the creation and progression of the network, particularly in relation to the involvement of the institutional actors and in the governance of the network. The contribution will set up some reflections regarding the role that governance, time, spatiality and planning play in this kind of processes.

Keywords: local knowledge, knowledge co-production, local network, community of practice

Setting the scene: Mapping San Siro finds its place in the neighbourhood

In November 2016 Mapping San Siro (Department of Architecture and Urban Studies - Politecnico of Milan) – the interdisciplinary action-research group which I take part in as a researcher – gathered around the same table a number of social actors (both formal and informal, yet organized, ones) active in San Siro neighbourhood (Milan), one of the largest and most problematic public housing districts in the city¹, to discuss about its future.

The convocation was the result of a long process of engagement, started by the research group in 2013, the year of the realization of Mapping San Siro workshop. Promoted by Francesca Cognetti and Beatrice De Carli, Mapping San Siro was first conceived as a residential workshop aiming at studying

¹ Located in the North-West part of the city, not far from the city center, San Siro is composed of about 6.000 housing units and with a population of about 10.000 inhabitants, the neighbourhood is characterized by the presence of fragile populations and by strong socio-spatial inequalities and intercultural/intergenerational conflicts (around 50% of the population are immigrants, with about 85 nationalities represented). Despite being also characterized by the presence of diverse and strongly committed local actors (associations, cooperatives, groups of inhabitants), San Siro has always been heavily stigmatized in public discourses with the effect of worsening its exclusion from urban dynamics. More information on the website: www.sansirostories.it, developed by Master in Journalism of Università Cattolica of Milan together with Mapping San Siro; www.mappingsansiro.polimi.it

and representing the complex dynamics that characterize the neighbourhood, challenging its stereotyped and negative image (usually promoted by the media discourse). One of the main objectives - but also one of the assumptions of the workshop - was the involvement of local actors in the co-construction of shared and *usable* knowledge that could effectively tackle local change. Considering the conditions of the workshop (which was organized as an intensive, yet short, work in the field), local actors were assumed as the main sources of knowledge, able to ease the relationship with dwellers but also to introduce themselves local perspectives and understanding to the group.

At the end of the period of intensive work, a mixed group of students, teachers and researchers decided to *stay* in the neighbourhood; first of all, precisely because challenged by the responsibility of multiple issues and demands that emerged from the local dimension. After a year being hosted by several associations, in 2014, Mapping San Siro obtained from Aler – the Regional Agency for Public Housing of the Lombardy Region, which owns and manages the public housing stock – the possibility to re-open a vacant shop, located on the street level in via Abbiati, which became the headquarter of the group and was named Trentametriquadri – 30 square meters – in virtue of its size².

In the absence of a definite commissioning for the research (at the very beginning the majority of the group was composed by people who were volunteers and there wasn't any stable fund available), Mapping San Siro identified the local actors as the main clients of the research, with whom to try to develop a co-designed research path, on the basis of continuous exchanges and interactions, and to whom to return the outcomes of the fieldwork. When the group established itself in the neighbourhood, there was no real network of local entities. On the contrary, the situation was highly polarized because of the existence of two local committees of residents: one composed by the elderly, mainly Italian, dwellers, disoriented by the changes occurred in their environment, and the other one referring to a right-to-housing activist movement, *legitimizing* squatting practices in the neighbourhood for people in need. For its very nature, the research group decided not to take anyone's side, but to place itself in a *third* position, building a solid relationship with the different actors. A central element was the intention of the group of becoming a local actor, interested in building a rooted knowledge, capable to produce some kind of change. We as a group had the understanding that – facing the distrust in changes or either in participation policies (the neighbourhood was part of a Neighborhood Contract which wasn't considered successful) shown by dwellers and local groups – there was a pressing need, on one hand, to show that transformation was possible, on the other hand, to get the institutions closer to the neighbourhood, since there was a widespread sense of abandonment (Grassi, 2018) which nourished distrust and social tension that tended to pour out in everyday relationships. In this sense, we were aware that we could play a role as planners and as researchers, not in projecting and proposing new *solutions* for urban regeneration – even in a participatory way – but first of all in activating ourselves locally, building open and accessible

² It was the beginning of a new phase: inhabiting a space and *becoming* a locally rooted actor, on one hand developing embedded research and teaching activities on three main topics – home and dwelling conditions; courtyards and public spaces, non-residential vacant spaces – and, on the other hand, trying to tackle the urgent issue of promoting participated local change, in a neighbourhood characterized by abandonment, exclusion, dis-trust and inertia. See Cognetti and Padovani, 2017.

knowledge frameworks, promoting planning platforms capable to involve both local and institutional levels. Our perspective was engaged and rooted (I refer here to the concept of *situating*, elaborated to describe Mapping San Siro methodology, see Castelnuevo and Cognetti, 2019), but at the same time as part ourselves of an institution (University) we were playing a key role. On one hand, because we were somehow *neutral* in relation to local conflicts and – being there – capable of building meaningful local relationships: dwellers and associations were positively struck by the fact that *the University was going to the city and staying*; on the other hand, because we were in the condition of interacting with other institutions: we were conscious in this sense that we would have needed time but we could have been able to become a local reference for them to interact with, in an easier way.

Sansheroes: the origin and the development of a local network based on the collective knowledge

Made possible by the relational capital built and nurtured in the previous years, the convocation which took place in November 2016 was the result of a shared frustration in seeing how the neighbourhood was once more excluded by public policies addressing urban peripheries in the city (Piano Periferie, promoted by the Municipality). As Mapping San Siro, we interpreted this shared feeling among local actors as a favourable condition to try to overcome, not denying their existence, local conflicts and giving a significant impulse to the possible co-design of a shared vision of the neighbourhood and of its possible transformations (physically, socially, culturally speaking). We considered the field ready for experimentation of collective design of possible regeneration strategies, able to enhance local competencies and resources and to recall for a significant investment from the institutional level. The efforts made by projects promoted by the third sector organizations and NGOs were not enough, indeed, to tackle structural problems of the neighbourhood, especially the ones regarding the quality and uses of different spaces (vacant spaces, public spaces, dwellings, etc.). Moreover, there was also a matter of involving different – and sometimes conflictive among themselves – public institutions: Municipality of Milan (with different departments), local administration (Municipio), Aler, Lombardy Region).

The first step of this possible path had to be, to our opinion, the one of building a collective understanding of the context which, from different fields of actions and perspectives, we were all working in. Together with the participants – at first representatives of around ten entities active in the neighbourhood³ – to the roundtable, held in Trentametriquadri, we decided to structure a sequence of meeting to discuss different topics: social and demographic situation, housing and spatial issues, existing bottom-up policies and practices, previous policies promoted and their macro-effects etc. The aim was to build a common framework in which everyone could be able to identify himself and the same time going deeper in the understanding of emerging or either structural phenomena, of which different entities were *experts* in virtue of their different roles in the neighbourhood. The entities involved were very heterogeneous: a local school (represented by the parents' association), social cooperatives, little associations, a church, micro-local social services (managed by social

³ In January 2017 this was the list of the twelve entities participating to the meetings: Mapping San Siro - Dastu Politecnico di Milano; Associazione Alfabeti Onlus; Associazione La Banda dei Pirati Onlus; Centro di Ascolto Parrocchia Beata Vergine Addolorata; Comitato Abitanti San Siro; Commissione Intercultura Istituto Cadorna; Cooperativa Sociale Tuttinsieme; Emergency Onlus – Programma Italia – Politruck; Servizio di Custodia Sociale del Comune di Milano (Cooperativa Sociale Genera Onlus together with Cooperativa Tuttinsieme, Azione Solidale e Comunità Progetto), Sindacato As.i.a. Milano - Associazione Inquilini e Abitanti; Progetto “Velo’ce mente”; Comitato di quartiere San Siro.

cooperatives), tenants' committees, etc., and it was exactly the added value of the process of delving into local knowledge.

After a few months, in January 2017, the group, which was meeting once a month, decided to informally structure itself into a local network, giving itself the name of Sansheroes.

Looking back to the development of the local network from then on, we have identified four different phases, characterized by the milestones achieved:

1. Collective understanding of the neighbourhood (November 2016 - December 2017)

Through five meetings and a following elaboration of the contents emerged, the local network elaborates a first *sketch* of the neighbourhood in the form of a document. The objective of this phase is to bring out a collective latent capital of knowledge, emerging from everyone's daily activities in the context. The document also includes a first set of statements on possible actions that could foster a positive change. The result of this step is the publication online, in December 2017, of *Fotografia del quartiere* (Picture of San Siro neighbourhood)⁴.

2. Sharing the path (January 2018 - June 2018)

The local network organizes a series of focus groups and dialogues aimed at sharing the document with some target-groups, representative of relevant populations in the neighbourhood (women with a foreign origin, elderly, youngers, etc.). Several observations, suggestions and critics enrich the *picture*. Aim of this phase is to verify whether the understanding of the neighbourhood could be validated by inhabitants or not. The decision is to structure this phase in a qualitative way to be able to gather deeper perspectives. The result of this step is an extended version of the previous document. During this period, the network expands itself⁵.

3. Planning together (June 2018 - December 2018)

The network works together to co-design a vision for the future of San Siro, outlining possible policy-areas to foster. It identifies five areas: Intercultural development, Education, Local skills, Housing and support for social vulnerabilities, Quality of the lived environment. The development of these fields declined in possible strategic actions integrates a new version of the document, which also takes a new name: *Istantanee di San Siro. Presente e futuro del quartiere* (Snapshots from San Siro. Present and future of the neighbourhood)⁶ and is published online in December 2018. The document is furnished by maps, elaborated by Mapping San Siro, showing the existing situation and the possible future one.

4. Involving the city (January 2019 - March 2019)

⁴ https://issuu.com/52340/docs/fotografia_del_quartiere_san_siro_2

⁵ Six more enties join Sansheroes network: Associazione Itama Onlus; Associazione Punto.it Onlus; Associazione La Fenice; Associazione Mamme a Scuola Onlus; Associazione Il Telaio delle Arti, Cooperativa Sociale Comunità Progetto.

⁶ https://issuu.com/52340/docs/istantanee_2019

The network decides to share the process and its results with the city and with the institutional level, in order to recall responsible entities to their role of taking care of emerging and pressing issues concerning the neighbourhood, but also letting them aware of the existing resources and the capabilities of local actors working in the field. Meanwhile, indeed, Sansheroes becomes also a network able to project together and to attract resources locally. Three relevant projects (financed by private institutions but also by public calls) are developed or started between the end of 2018 and the beginning of 2019 (one on education, one on intercultural development and the third one on social services are developed within the network, directly involving different actors and supported by Sansheroes as a whole). In order to share the result of its work, Sansheroes organizes a public presentation at Triennale di Milano (an important cultural institution in the city), inviting public institutions (Municipality, Region, Aler, local administration, etc.) but also private ones (Fondazione Cariplo, Casa della carità) to intervene. The presentation is a success in terms of inhabitants (of San Siro neighbourhood) and citizens involved, but, at least at first, it doesn't seem to raise the awaited awareness of public institutions. After the presentation, the local network decides to continue to work together in order to reinforce the strategic actions to foster local change and to find possible partnerships to promote additional projects. The network furtherly expands itself⁷.

Nevertheless, in the following months, due also to the involvement of the Municipality in a pilot project on public space⁸, taking place in San Siro and promoted by Mapping San Siro with the collaboration of other local actors, Mayor Giuseppe Sala publicly declares his will to open up a working table on the neighbourhood together with Lombardy Region (also as responsible for Aler) with the participation of Politecnico di Milano, as an actor able to guarantee a sort of scientific and technical but also local perspective.

The statement⁹ is positively received by Sansheroes, even though the local network will not be formally included in the announced working table. However, Mapping San Siro group involves the local network in the writing of a brief document, identifying priorities and possible roles for responsible institutions, which is sent both to the Region and the Municipality. The document also identifies possible spaces to develop pilot actions within the neighbourhood.

Collective knowledge as an elaboration of relational and active capital

As could be noticed, the process is still ongoing and, actually, undergoing a crucial point. Even though, as part of Mapping San Siro group, I would like to propose some reflections here, moving from this experience which on one hand could be useful to discuss this very experience with the local

⁷ Two more entities join: Fondazione Soleterre and Associazione Zucche Ribelli. Laboratorio di quartiere, the neighbourhood lab which is actually a public service provided by the Municipality, starts to join the meetings, even though it doesn't become part of the network.

⁸ GreenLivingLab San Siro and its related Collaborative Pact. <http://www.mappingsansiro.polimi.it/3-progetti/3-1-spazio-pubblico-e-rigenerazione-urbana>

⁹ While the author is writing this paper, the Municipality and the Lombardy Region have publicly stated their commitment on a shared project on San Siro, to develop in the following months. https://www.comune.milano.it/-/quartiere-san-siro-milano-incontro-tra-presidente-regione-e-sindaco-lavoriamo-per-migliorare-la-qualita-della-vita-dei-cittadini?fbclid=IwAR2USNJGpg1knXFBQWVzYl0P1IXIH8V_-GzcyrvhkevNLXnxLRZe3wEUZp8

network itself, and on the other hand could inspire a broader discussion on the role of actionable knowledge, collective learning (among so-called experts and non-experts) and the role of planning research and practice rooted in local communities.

To do so, I will briefly introduce some reflections regarding the learning process that involved both our group and the network itself and the role assumed by Mapping San Siro *in* the local network.

First of all, it could be stated that Sansheroes network could be somehow identified as a community of practice (Wenger, 1998; 2010). A community of practice is, first of all, a learning context, characterized by the belonging to a certain community identified by a given field of practice. In this case *the practice* could be recognized as the field of local welfare production, in which the different entities of the network are involved. Like other similar cases (Ranzini, 2018), Sansheroes network is a particularly rich one in this sense since it is composed by very heterogeneous entities which are active in diverse fields of the welfare sector, with different competencies, but also with diverse roles: volunteers, professionals, researchers, activists. The element that profoundly links them is a common aim: to collaborate for the local development of a marginalized neighbourhood. The fact that welfare policies and practices are more and more rooted in a territorial perspective (Vitale, 2007) made it possible for some professionals to tie to certain specific territories, while at the same time the withdraw of public policies opened up the field to local activation (which has overcome participation), both in volunteering activities and political activist practices (Pellizzoni, 2008).

The beginning of an empowering process in the case of Sansheroes network was generated by the misrepresentation of the neighbourhood (as already mentioned, more and more stigmatized in media and public discourse) and, at the same time, the inertia of responsible institutions in activating structural policies. These aspects directly struck local actors, which were not seeing an adequate acknowledgement of their work and their daily struggles in the field; on the contrary, their voice, claiming urgent and substantial interventions, seemed not to be heard. So, at a certain point, they were ready to react.

I will deal in a while with the role of Mapping San Siro group in facilitating a common and organized *reaction*, but before I would like to point out an aspect that made the difference in terms of empowering, cohesion and duration in time of the network. Social networks are investments of time and resources: to be successful and to last, they must be sustainable and useful (Conte and Laffi, 2019) for the ones who participate. The element that has kept the network together is precisely the process of co-construction of knowledge and the ability of the community of practice, as a learning context, to convert itself in a community of planning. The co-construction of an actionable knowledge and the process of mutual and collective learning has played a key role since on one hand, it was a factor of mutual acknowledgement of local actors – even the ones that have different or opposite positions regarding certain issues such as squatting – which recognized one to the other the fact that they all belonged to a local community of practitioners with complementary competencies; on the other hand actionable knowledge is the basis to promote projects with a higher quality, more aware of the complexity of local need and of the potentiality of integrating competencies and perspectives. So, more *competitive* and effective. As stated by Barbier when referring to action-research, changes start only when action and discourse are complementary and when the actors involved in a common path carry out a concrete action together (Barbier, 1998). In the case of Sansheroes, these actions were, on one hand, the projects that the network was able to start and promote and on the other hand the public

presentation of the work produced (at Triennale di Milano). These were fundamental steps that allowed the network to recognize itself collective identity and a set of expertise. In other words, to recognize itself as a *competent community* (Iscoe, 1974).

Showing a strong internal cohesion and the ability to plan and develop projects collectively was a key aspect also in relation to institutions and their involvement. As partially underlined above, it was precisely the development of pilot projects that contributed in creating a sort of trust of public institutions towards the local network and that brought them into the neighbourhood.

This aspect leads to talk about our role as Mapping San Siro in the whole process. Even if, from the very beginning, we assumed an inclusive, open, collective position, the propulsive role of Mapping San Siro has been fundamental – and still is – for the endurance and progress of the network and for its governance. And it poses an issue in terms of possibility to emancipate from a leadership.

More specifically, Mapping San Siro, in virtue of its research role, played a crucial role on the one hand in proposing the construction of knowledge as a *common ground* from which each actor was able to recognize as part of a collective subject, despite or rather in virtue of the existing differences. Secondly, it played a decisive role in the governance of the process through a lead role based on: giving a constant rhythm to the meetings, calling the shots of the different phases (also through the constant production of reports and updates through mailing lists), promote an active role for the participants, enhancing their skills and promoting a vision of knowledge oriented to give value to a mix between expert and non-expert (yet rooted) knowledge. It also carried out the production of materials (collective documents and maps), coordinating the different phases of the process, without forgetting to include the other actors in the decision-making phases.

It was a quite hard and awkward task that, nevertheless, resulted in the establishment of a social climate based on trust in the group, which, for instance, has allowed, even the most *extreme* actors to accept a dialogue with institutions that in the past had never recognized their value or existence.

Mapping San Siro also had the role of promoting a strategic and complex vision of the transformation of the neighbourhood, starting from the transfer of *spatial (analytical) skills* (beyond technical skills related to the ability to structure projects, which were mostly relevant in the case of little associations) and a planning vision to local actors. This proved to be another key aspect, not only because it showed the ability of local actors to converge beyond their individual interests and fields of action, but also because it was the crucial point for the engagement of institutions, through their more local branches. Mapping San Siro in fact, contextually to the work with the local network, developed a series of micro pilot projects in the framework of SoHoLab project. These projects (especially one related to the regeneration of public spaces and the other one to the reactivation of vacant shops) were the chance to start little collaborations with the main public institutions (on the one hand, the Municipality of Milan and the local municipality, on the other hand, Aler and Lombardy Region). These experiences were able to progressively *lead* institutions into the neighbourhood since Mapping San Siro acted as a sort of guarantor and mediator of a certain kind of relationship with the context. In the next months, we will see if and how this relationship will develop and where it will lead the neighbourhood and the local network itself.

Open issues: three main open questions to investigate

To conclude, I would like to outline three critical points that I intend as open issues I would like to further explore and discuss.

1. The development of a local network based on collective knowledge requires time. But how much?

As can be noticed, this experience has required a serious investment of resources made by several actors, first of all in terms of time. On the one hand, Mapping San Siro has spent years in developing its role of locally rooted actor, able to gather together heterogeneous entities. On the other hand, the development of the local network has required years to obtain a partial and not yet clear commitment from public institutions and to start to develop projects together. More generally speaking, an approach that has the aim of tackling structural transformations through a local and bottom-up empowerment process requires the possibility to invest time and social resources. As Mapping San Siro, we didn't link our stay in the neighbourhood to specific project duration, nor our role of governance of the local network and mediation with institution to a specific time. However, we question ourselves on the investment of time a process like this requires, first of all, because we were not able until now, to promote shared governance which goes beyond shared decision-making and includes a sharing of organizational tasks and duties. Secondly, because we more broadly question the possibility to transfer this process elsewhere, with certain restrictions in terms of time and investment. Moreover, this case is peculiar in terms of leadership because it involves a University, which is rarely conceived as a local actor. This characteristic has potentiality in terms of acknowledgement of the leadership role of an actor which is not seen as a *competitor* by other organizations or by institutions. Is this condition however sustainable in a long perspective?

2. We act as a third-party mediator. But is our mediation-role always a good choice?

At the beginning of our work with and in the local network, we were able to act as mediators in order to gather together different actors. More recently, in the process of engagement of public institutions, we were able to benefit of our position of researchers belonging to an institution as a sort of warranty for their involvement. But is mediation always a good choice? We question ourselves if in some cases a more conflictive and disruptive position could lead to more effective changes. In this sense, we would like to investigate how different roles in the network could be more effectively employed to interact more strategically with certain actors. We also wonder how we should position ourselves, as well as part of an institution, towards the broad area of social conflicts: to what extent does our institution allow us to assume a conflictive position?

3. We criticize participation and promote activation. But how could we guarantee inclusion?

At the very beginning of our work, we implicitly avoid to mention the concept of participation or participatory planning: there were too much frustration in the local community and, in many cases, not enough resources to effectively take part of certain processes. We decided to access the field by inhabiting a space in the neighbourhood (ours headquarter and the portion of the street just in front of it), interacting on an everyday level and to work with practitioners and more or less structured local actors: it was our first tool to gather knowledge of the context and doing research. Later, as a local network, we founded our discourse on the fact that we were not representing inhabitants, but we were speaking as people who inhabited the neighbourhood in a different way and who have stable and deep

relationships with certain groups or populations. Even if specifying these issue, we are aware of the risk of being identified (even on purpose) with the voice of the so-called *inhabitants*. And at the same time, we are conscious of the necessity (and the complexity) to guarantee their inclusion in future development projects (if they will take place). So, the issue of *real* participation is still open. I will conclude this reflection with a provocation: is the production of responsible knowledge on a specific context enough to ensure the recognition of certain populations?

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Let's meet at the urban courtyard! The role of the community participation in micro-scale urban regeneration in Krakow.

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Abstract: According to the recent urban regeneration policy shift, interventions are required at local-scale development. That approach aims at integrated micro-projects promoting spontaneous regeneration and social integration with the local community involvement. In particular, within Urban Regeneration policies public participation is introduced as a tool to reflect public concerns and to guide the urban space transformation. In recent years, studies regarding regeneration were spatially focused on city centers, main public spaces, historical sites, and post-industrial land uses. However, not much attention was paid to the renewal of semi-public spaces reserved particularly for local residents. At the same time, urban courtyard areas become one of the significant sites within the latest Regeneration Programmes. Therefore, the aim of this study was to determine the behaviors and social attitudes towards participatory planning in semi-public spaces regeneration. The research was conducted based on the “Centrum D” urban courtyard case study in the Nowa Huta, the city of Krakow. The study was carried out using in-depth interviews with three groups of stakeholders: 1) local community leaders, 2) municipal officials, and 3) participatory practitioners. The findings are expected to add insights into the discussion on the community participation within micro-scale regeneration inside cities urban setting.

Keywords: public participation, urban regeneration, semi-public spaces, urban courtyards

Introduction

Currently, more and more attention is paid to the community participation within urban regeneration policy (Lawless and Pearson 2012). The communication and participation processes are viewed as a key factors responsible for creating better urban spaces. The participation term is understood as a ‘voluntary process by which people, including the disadvantaged (in income, gender, caste, or education), influence or control the decisions that affect them’ (Saxena, 1998, p. 111). The community engagement in planning may facilitate understanding of the local needs and interests, support the interventions efficiency and provide the empowerment of those who are affected by urban policy (Innes and Boher, 2004, Taylor, 2007). Thus, it is

required to acknowledge the multidimensional complexity of problems affecting local areas to enhance community members quality of life. It corresponds with urban regeneration term defined as a ‘comprehensive and integrated vision and action that leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been, or is, subject to change’ (Roberts, Sykes, 2000, p.17). The new public management approach regards to public governance promoting more local micro-projects in terms of spontaneous regeneration and neighborhood integration (Elwood and Leitner, 1998, Dargan, 2009). It is due to previous experience with urban regeneration interventions concerns mainly public spaces, cultural heritage sites and postindustrial areas (Domański and Gwosdz 2010, Lorens 2010, Kazimierczak 2014). Although, these regeneration’ interventions contribute to positive benefits, there were focused on more spatial outcomes and broaden group of stakeholders. As a result, there is a gap in studies related to regeneration renewal targeted the improvement of local scale housing conditions. Particularly, it seems significant since the regeneration policies aim problems and concerns of the local community members as a neglected stakeholder. Therefore, the semi-public spaces promoting greenery activities are worth considering as the research areas. There are several studies proved the multi beneficial outcomes of the urban green spaces, such as foster air quality, urban temperatures and climate change (Nowak *et al.* 2013, Baró *et al.* 2014). In spite of greenery environmental benefits, there is a great potential in creating green spaces in order to promote spontaneous social life, socializing, rest and restitution (Baur and Tynon, 2010). Particularly, community green spaces facilitate bringing neighbors together in ways that increase social integration and interactions (Gehl, 2011). In this research, urban courtyards redevelopment is recently identified as a significant part of the latest Regeneration Programmes and City programme aiming the greenery and community engagement. Urban courtyards are defined as the spaces between residential buildings and require renewal interventions (Gidlöf-Gunnarsson, Öhrström, 2010). These areas are often used to pass by, park a car or collect garbage. In regard to urban planning assumptions, urban courtyard as a local urban green space should provide environment for outdoor recreation and social integration. However, the question is how to redevelop and create the local environment that collects neighbors together and enhances the development of a strong, resilient and healthy community that also improves safety, builds life-long relationships and is resilient in social changes?

It has been proven that place-related thoughts, beliefs and attitudes about our local environment impact the behaviors towards places. Studies have shown that spaces strengthen social bonds and promote the feeling of being attached to the place and community affect residents’ overall well-being (Theodori, 2001). There is a particularly, great potential in fostering place attachment and sense of community in regard to neighborhood regeneration process (Brown *et al.* 2003). Therefore, the understanding of people’s perceptions and attitudes toward their environment may enrich the planning process. Moreover, the community relationships to place influence whether and how they may participate in local planning efforts (Manzo and Perkins, 2006). However, the stakeholders are not a homogenized subject and have various concerns and interests within participatory planning process. According to studies, communities from disadvantaged areas struggled with poverty, unemployment, crime and social exclusion are less willing to engage (Atkinson, 2003). It is due to experienced low level of self-efficacy and isolation among residents and therefore it is more difficult to promote participatory planning. However, there are studies proven that the positive effects were achieved by regeneration projects where the engagement and partnership between local community and local officials occurred (Bassett *et al.* 2002, Coaffee and Healey, 2003). Providing participatory mechanisms in disadvantaged areas is viewed as a way to reinforce residents’ confidence and understanding of their contribution (Jones, 2003, Gullino, 2009). Not many studies provided empirical research in order to investigate multidimensional relationships between semi-public spaces and its local communities. In this context, the main aim of this study was to verify the social attitudes towards participatory planning within urban regeneration. Using the case study of the Centrum D urban courtyard, allow to investigate the relationships between different stakeholder’s attitudes towards the following aspects:

1. problematics of the case study area

2. the local community role within participatory process
3. challenges within participatory process

The context of Nowa Huta district

Nowa Huta was formed in 1949 as a satellite city. In its function, it referred to the reality of socialist realism and the period of industrialisation. The main idea was to create a city where the Lenin Steelworks would be opened. Initially, the city was supposed to have 100,000 inhabitants, but in the subsequent years the assumed value increased more than twice (Komorowski, 2005). It was a place offering a high standard of living and accessibility due to the fact that Lenin Steelworks provided a large amount of social and cultural services for employees and their families. Thus, its inhabitants had free access to medical care, schools, community centres, sports clubs, theatres and cinemas (Domański, 1997). The uniqueness of Nowa Huta results from its preserved historical, urban and architectural heritage. In terms of architectural values and spatial planning, Nowa Huta is one of the most interesting examples of socialist realist urban layout on a European scale. Housing estates blocks were equipped with access to internal semi-public spaces in the form of courtyards. The idea was to provide easy access to green areas for the local communities. Additionally, access to Nowa Huta Meadows surrounding the area makes Nowa Huta one of the districts of Kraków that is often referred to as the Green City (Halicka, 2014).

Since the transformation and collapse of the Steelworks, the district has experienced economic and social changes in its functioning. Currently, the district of Nowa Huta is inhabited by 52,332 inhabitants registered as permanent residents, which constitutes approximately 13% of the residents of the city of Kraków (Report on the status of the city from 2017). The problem of losing a permanent job led to an accumulation of problems of unemployment and poverty in the district. What is more, in the consciousness of the inhabitants of Kraków, Nowa Huta received a label of a dangerous district to which no one goes unless necessary. According to research in this regard, the media and the local press had a great influence on the creation of a negative image of the district (Guzik, 2000). However, the statistics contained in the periodical surveys clearly indicate that the number of crimes committed in Nowa Huta is lower in relation to those committed in the centre of Kraków's district I (Update of the Municipal Regeneration Programme for the city of Kraków, 2017). The regeneration process is seen as a means of changing the image of Nowa Huta. The area of the "old" part of Nowa Huta together with Nowa Huta Meadows with a total area of 399 ha has been designated as one of the regeneration areas in the current Municipal Regeneration Programme for the city of Kraków. The concentration of negative social phenomena, such as unemployment, poverty, population decline and the process of community ageing, was indicated as one of the reasons (Update of the Municipal Regeneration Programme for the city of Krakow, 2017).

In order to counteract negative social phenomena, works have been launched on the project called "Spotkajmy się na podwórku" [in English: "Let's meet in the courtyard"] aimed at revitalising the central spaces of housing estate blocks in the old part of Nowa Huta. The total area covered by the project is inhabited by 16,702 people. The project responds to one of the problems identified by the inhabitants during the public consultation, namely, bad condition of the courtyards. In the opinion of the inhabitants, courtyards are now a no-man's-land that is neglected and dirty. At the same time, they highlighted the fact of disappearance of relations between neighbours and the lack of spaces where people could interact with each other (Report from public consultations to AMPRK, 2016). Therefore, one of the key directions of the current regeneration programme are activities related to the development of the Nowa Huta courtyards and ensuring social interventions. During the public consultations, residents may identify problems occurring in the space and discuss solutions. Workshops, field walks and open meetings were used as part of the participatory mechanisms. The research took into account the results of a case study of a courtyard located in Centrum D housing estate (Figure.1).

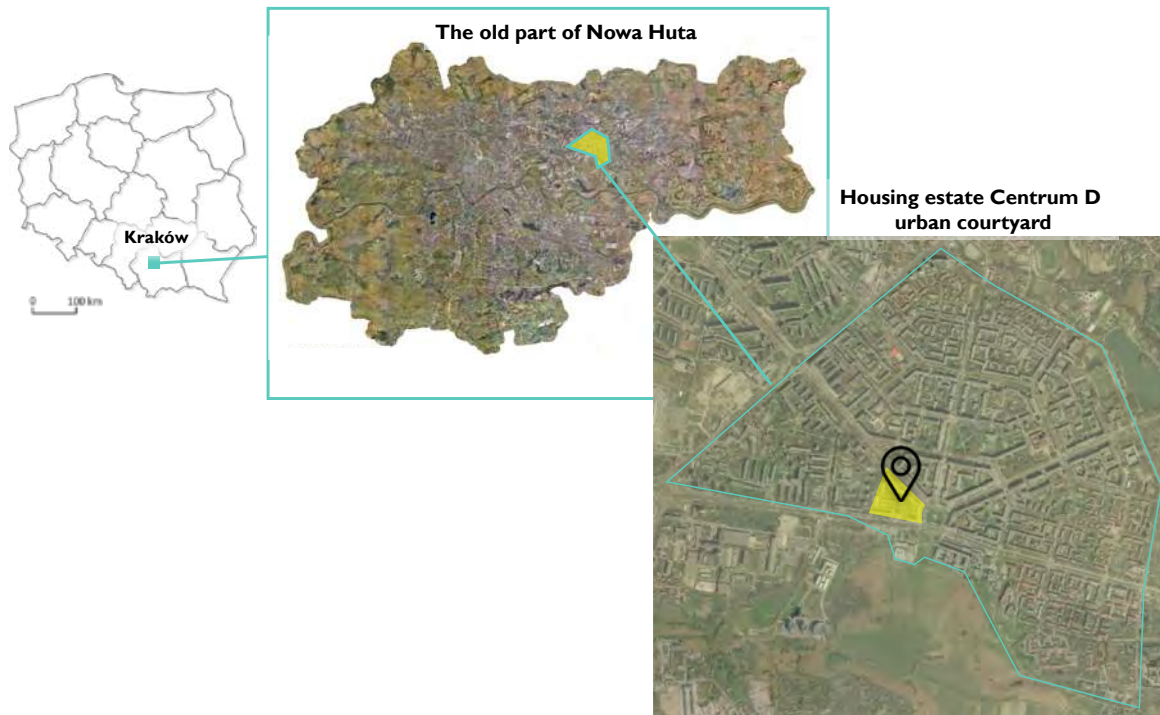


Figure 1 The location of the Centrum D housing estate within the Nowa Huta district inside the city of Kraków
Source: <http://mpzp24.pl/geoportal/krakow> elaborated by the author

Methods

The general methodology approach of this research is embedded in between the social sciences and human geography. Therefore, the qualitative approach was utilized to capture deeper insight into the behaviors in space and with reference to space from the perspective of the stakeholders' individual perception (Yang, 2014). Hence, in regard to socio-ethnographic point of view, we carried out selected in-depth interviews (IDI) to identify stakeholders' attitudes towards participatory planning within urban courtyards regeneration. The findings due to the practitioners and participants perceptions give a multidimensional understanding of the participatory processes. The interviews were performed with three different groups of stakeholders representing local, social and political environment; 1) local community leaders from the urban courtyard area, 2) municipal officials, 3) participatory practitioners. In winter 2019 we conducted 8 interviews in total. We carried out individual interviews with each stakeholder. Local leaders (communities' members, activists, NGOs, informal groups, local officials) were those who are active and recognizable in the life of local community. Selection of respondents from the municipal officials (Municipal Greenspace Authority in Krakow; Zarząd Zieleni Miejskiej w Krakowie) and participatory practitioners was carried out through judgment sampling. For interviewees' identification, the mailing lists and snow-balling technique was used, starting with municipal officials. The interviews concerned the following issues: 1. the urban courtyards' problematics, 2. the participants' role within public participation, and 3. the challenges and difficulties in public participation. The interviews data was then analyzed to identify common themes among responses and to verify the relationships between groups statements. The qualitative analysis' outcomes were combined with the survey of sources and field research. We carried out several visit observations during different day time, with lasting approximately 20 min each time.

Results

Description of the research area

For the purposes of this research, the case study of the urban courtyard located within the housing estate block in Centrum D in Nowa Huta district has been chosen. The courtyard located in Centrum D is situated on the western side of the Reagan Central Square in the central part of the Old Nowa Huta area. It was founded in the years 1950-1956. The surface of the courtyard is 0,03 km² and the real estate has a communal status (the City of Krakow is its owner). The field studies within Centrum D courtyard make it possible to explore the complexity of local problems and relationships related to this example of a semi-public space. The western part of the courtyard area within 5-6 blocks is called “ogródek jordanowski”. The founder of these gardens’ idea was a polish doctor Henryk Jordan who believed in physical, mental and social benefits for kids and youth (Smoleński 1961). Since the end of 19th century, these gardens have been providing space particularly for recreation and outdoor activities, being equipped with a playground, basketball court and open-air gym. Throughout the day, open-air playground constitutes a crucial space for kids and older youth to play and spent time with peers.



Figure 2. The Centrum D urban courtyard before redevelopment Source: own compilation

Problematics of the Centrum D courtyard

The insight formulated due to in-depth interviews and field research revealed crucial spatial and social problems that the Centrum D courtyard area struggles with in terms of the following aspects:

- 1) Greenery
- 2) Shared space

In the interviews, the respondents from Centrum D highlighted not only their current views on the urban courtyard but also how they would ideally see its development in the future. While the answers were diverse, most respondents perceived the area redevelopment as a catalyst for change. The case of greenery was one of

the significant themes regarding the obtained IDI results. Nevertheless, all stakeholders were altogether mentioning the concern regarding the greenery redevelopment. Each group has a different approach to management. As mentioned by the practitioner, there were two opposing points of view during the consultation process. Some residents claimed that cutting trees and mowing lawns is necessary. The reasons for that include allergic reactions and the sense of disorder in the area. The second group of participants wanted more greenery for outside activities and local recreation. On the other hand, the problem of greenery is linked with the existing parking system. The individual interviews emphasised the unresolved territorial dispute over the relations between green areas and parking spots. It was particularly related to the green field area in the eastern part of the Centrum D courtyard. That area is often used by dog owners and elderly people. It is a quiet and well-shaded part of the courtyard with trees and benches where one may rest during a walk.

We will certainly put this space in order because now the cars that stand there cause an extraordinary chaos. So we're working on hardening the surface for those cars. The locals wanted it too. Of course, we are not hardening it as much as they would like, which means we do not want to pave it over thus creating something more like 'let's meet in the parking lot'. [municipal official]

During the interviews, most of the local leaders mentioned the problem with safety and noise around the courtyard due to overwhelming role of cars and chaotic system of parking.

Cars should be removed from the urban courtyards in Nowa Huta. Thanks to that, those spaces would regain new life. If we start to replace green spaces with parking spots, the number of such spots will never be enough. [local leader]

In the area, there are too many cars in comparison with available parking spots. From the interviewed pedestrians' point of view, it causes the unsafe environment and concerns among parents who let their kids play outside. Apart from that, it contributes to making it difficult for the elder or disabled people to pass due to the fact that the pavements are often occupied by cars. Currently, there is an on-going battle for urban space between the two opposite groups of actors: pedestrians and cyclists versus car owners. The problem is much more complex because the areas of urban courtyards in Nowa Huta have never been redeveloped since their foundation. Their function has remained the same for the last 70 years, regardless of a rapid growth in the number of cars in the urban centres.

The aim of the redevelopment was also to create a shared space, in particular for the local community in order to enable interaction and strengthen neighbourhood ties. In addition to the visual and physical benefits, it is expected that there will occur social changes in terms of social capital, attachment to the place and civic involvement.

This project was called "Spotkajmy się na podwórku" ["Let's meet in the courtyard"]. That is why we tried to take these functionalities into account so that the inhabitants could meet each other. When I proposed it and asked: 'listen, the project is about meeting each other in the courtyard, but we didn't design any bench'. In response, I heard that those benches would only serve bums who would drink alcohol there and that there is no point in taking it into consideration. The same person who raised the subject did not know that there were also elderly people in that courtyard who had no place to sit. [participatory practitioner]

Collectively, those opinions refer to a concern related to the greater number of shared spaces within the area, which may lead to an increase in the number of acts of hooliganism. There were a few interviewees among the local leaders who mentioned the sense of unsafe environment and acts disturbing silence. According to the respondents, it is due to the local group of youth and men drinking alcohol while sitting on the benches in the evenings. As it was suggested, one side of the problem results from the presence of liquor stores that are located nearby and open for 24 hours. On the other hand, there is a lack of street lighting system within the area, which could provide a sense of surveillance.

The role of the local community in the participatory planning process

The second part of the interview scenario aimed at verifying the stakeholders' understanding of the local community role in the participatory planning process. The social consultations involved three meetings with the local community. The first participatory mechanism was the field walk aimed at analysing the issue of courtyards and becoming familiarised with functioning of such spaces as a whole.

It was cool that those residents, who had never participated in such a field walk, could walk around the courtyard with such a focus, through those parking spaces, and see that place and discuss it with specialists. We were also keeping in mind the conservation officer all the time. [local leader]

During the second meeting, the residents participated in workshops aimed at identifying and highlighting key problems, as well as discussing tangible solutions. The meeting was also attended by a person representing the municipal conservation officer's office whose task was to take a position on the proposed changes concerning development in accordance with the regulations on restoration. At the third meeting, preliminary concepts for the development of the courtyard were presented. The residents were acquainted with them and could express their comments.

From the perspective of a practitioner running the consultation process, the resident acted as an expert in moving around in space.

We raised the role of residents to the role of experts. We started with a white sheet of paper with nothing on it. And we said it openly: Ladies and Gentlemen, we are not present in this area, you are its users and experts. Experts who transmit knowledge about what works well in a given courtyard and what does not, and users because they use this courtyard every day. [participatory practitioner]

Local leaders themselves saw the role of the resident as a conscious user who, through participation, rediscovers the space of the courtyard and receives new information and knowledge about the existing relationships in that space.

For me, this role of the residents was crucial [...]. I have learned a lot. Apart from the fact that there are front yards, the conservation officer's concern is to preserve as many of these original elements as possible because we have a temptation to change everything. But we are in such a historical context that we must remember that such were the original assumptions. [local leader]

This awareness also applies to the rules governing the joint decision-making process. In the opinion of leaders, there are usually two dominant groups of participants in consultations. One is represented by active residents who are aware of the conditions resulting from participation in urban projects. The second group is composed of residents participating somewhat by accident who are not experienced in having public dialogue yet.

This meeting was attended by people who have already somehow dealt with social participation in various projects and know a little bit about what can be changed, what can be achieved and what cannot really be changed already at the concept stage, as there are things that are impossible to change. There were also people who probably thought that when one comes and asks what they want, it will be done, but it is also so impossible to achieve. In fact, if anyone has had contact with a social dialogue, they know that this is really a clash and search for a compromise. [local leader]

Challenges for the participatory planning process

Information and representativeness

The last part of the questions in the interviews concerned the most important thoughts on participatory planning. One of the observed difficulties is related to the organisational conditions, i.e. how the participation process was communicated and, as a result, what level of attendance was achieved. The place and time of the meetings were announced by means of posters hung on the doors of staircases, leaflets, websites and on the Kraków local radio station. The problem emerged at the stage of discussion whether the information about the meetings actually reached the residents.

In my opinion, ordering roll-ups for the community centres informing about the time and place of consultations did not work at all. I do not want to even analyse the content of this information and whether it encouraged to come or not. There was not a single article in Głos (local newspaper - Tygodnik Nowohucki) while this part of the residents reads the traditional press. [local leader]

Both consultation meetings were attended by about 10 individuals from among the residents of the housing estate. There was a voice on the part of the leaders that the achieved attendance results from individual motivation to participate rather than proper notification.

The fact that the attendance at the meetings is like this does not depend only on the Management Board. Information about the meetings was communicated in various forms. The easiest way to get it was via the Internet, but there were also information sheets hanged on the staircases. The fact that someone hasn't read it or does not care about it is a problem of society and not the good or bad will of the organiser. [local leader]

The experience gained in participating in the social dialogue results in the fact that active inhabitants are usually those who are representatives at the meetings.

I think that people were also a bit unprepared for such a form of invitation that someone asked them to express their opinions and participate in the meetings. Someone may have come there out of pure curiosity. Those neighbours were encouraged by me so that's why they appeared. The neighbour who drinks was caught just like that, Iwona came deliberately because it is 9, Zbychu also came deliberately because it is 5 and he was also very interested. These are the people who are rather active and their willingness to act was already noticed before in our activities. Ladies who take care of the front yards were also very interested in what will it look like from the point of view of care for greenery. However, they were rather listening than actively participating. [local leader]

Based on the comments given by the interviewees living in that area for more than 20 years, the Centrum D courtyard used to function differently in the past. Neighbours were spending more time outside. There were frequent bottom-up initiatives taking place around that area, such as barbecues, ice rink, art exhibition showing the works created by the local artist Marian Kruczek. One could hear groups of kids playing outside from the early morning till late evening each day. Neighbours knew each other very well and often shared food or equipment they had without any hesitation. It was also connected with the previous communist system that had impact on the lack of goods and resources on the market. Therefore, neighbours had to rely on each other. Nowadays, after 30 years of democracy, our market provides goods that are needed and thus introduces more self-reliance. Getting used to the previous political system partially means that older people in particular are not involved in participatory activities. On the one hand, the interviews show that they still have this habit that decisions were made on the top.

Besides, there is a group of 'quickly to the store, quickly to the church, quickly home' people. They do not talk to anyone. Sometimes they just stand there and complain about diseases. But when they are asked to come because we want to organise something, they say that they are too busy. There are also those shy people, who hide themselves behind their curtain and do not have enough courage to go out. In the old days, if a manager gave an order, everything was done. Nowadays, there is no one to give an order. [local leader]

On the other hand, there is a group of residents that has already taken too many hopeless actions in terms of involvement. The negative experience of unsolved issues in terms of a dialogue between residents and municipal officials results in people feeling discouragement and lack of self-efficacy. Therefore, this group of residents gives up on any actions requiring involvement right at the beginning.

Bottom-up initiatives vs top-down regulations

Regardless of organisational challenges, another key difficulty was observed within the decision making-process. It is related to the top-down manner of public management and the need for spontaneous and bottom-up initiatives at the same time. The area of the “old part” of Nowa Huta is inscribed on the List of Kraków monuments. As a result, it is subject to the main historic buildings conservation officer’s management. Therefore, the flexibility of urban design is very limited, as it must always be considered by the historic buildings’ conservation officer. In consequence, the residents’ motions during consultations, such as underground garbage collection, fences and garden for the community, were rejected.

At the meetings, there was a person representing the municipal historic buildings conservation officer. It went very well, but that person was attacked quite clearly. Unfortunately, this is an area that is entered in the register of monuments and we cannot accept here parking lots made of openwork panels even if we would like to because despite the fact that it is some kind of permeable surface, it does not fit the place and is not accepted by the conservation officer. So that person said immediately what cannot be introduced for sure and the confrontations were quite serious in this respect. [municipal official]

However, there is a noticeable need for more creativity and uniqueness with regard to the redevelopment of the courtyard area based on the local leader’s perspective.

For me, the reason for participation was a desire to discuss the possibility of having something unique inside this space and to emphasise our local identity. When I look at my people who participate in our various actions, I think they deserve some cool space. [local leader]

From the official’s point of view, the problem with more spontaneous initiatives is related also to the ownership status. The real estate is communal, therefore, the city of Kraków is responsible for spatial management, so any ideas coming from the locals require a top-down permission. According to the urban development policy, all initiatives need to be consistent with the Master Plan and the opinion of the historic buildings conservation officer.

However, there are still active residents among the Centrum D community who are willing to carry out collaborative initiatives. In order to create neighbourhood ties and interactions, they organised bottom-up picnic meetings together with Jędrus housing estate club (Klub Osiedlowy Jędrus). Another initiative aimed at removing the graffiti was organised by the residents in the form of a collaborative painting action together with a bottom-up organisation called Scrawl Busters (Pogromcy Bazgrołów). They collected painting equipment and together created a mural with aquarium theme. This mural shows a cat called Włodek (Kotek Włodek), a well-known character from a book for kids. The aim was to create a positive and local identity in order to bring Nowa Huta legacy closer to kids and other residents.

Ultimately, the concept plan provides a shared space in the central part of the green area between blocks number 1 and 9. It is meant to function as a part of the space for meetings and social interaction with neighbours. The plan envisages a decorative greenery area and a green belt protecting from the road traffic and reducing the noise level. Taking into account residents’ responses concerning the lack of safety, the concept plan envisages a street lighting system. During the social consultations, participants mentioned the idea of a unique and artistic concept for the Centrum D area to strengthen the local identity. The concept plan involves an artistic installation corresponding to the style of the local artist Marian Kruczek.

should participate in it as partners who understand the need for their own involvement and the need to delegate power (Taylor, 2012). Based on studies, Poles have little experience in active engagement in public participation initiatives. *'They do not know how to act because they do not take action and they do not take action because they do not know how to do it'* (Czapiński, 2015, p.348).

– in the opinion of practitioners, residents during the consultation acted as experts and conscious users of space. However, the difficulty consists in the fact that the creativity of the residents clashed with top-down regulations and authoritarian decisions of the representatives of the authorities, e.g. historic buildings conservation officer. It is a mechanism consistent with the theory of post-socialist cities, where the authorities make decisions without consulting the inhabitants or beyond negotiation. From the perspective of the residents, the officials themselves are seen as an inaccessible elite and not as discussion partners. As a result, such a relationship creates a distance between the two parties and its long-term existence makes it difficult to change the approach to cooperation (Kotus 2006). In such a situation, it is very difficult to maintain the involvement of the residents, i.e. active initiators of activities. On the other hand, covering the old part of Nowa Huta with protection of the conservation office allowed to maintain the unchanged shape of the urban assumptions that make this district unique.

– reaching the residents with information on public consultations and the representativeness aspect still remain a challenge. In the opinion of the local leaders, failure to publish information in places usually chosen by the local community, e.g. store or local newspaper, automatically makes it impossible to reach a significant part of the population. Elements related to the date, place and form of information have a significant impact on the number of people participating in the consultations. On the other hand, there is a noticeable lack of interest and a sense of lack of responsibility for the process of social participation.

– statements of the local leaders contained a motivation to implement bottom-up initiatives aimed at integration of neighbours. According to Gądecki's research (2012), in Nowa Huta we first encounter a basic bond between residents of the same block of flats, and then at the level of the community of the entire housing estate functioning within the space of the courtyard. There are four basic elements that influence the sense of community, such as affiliation, interaction, satisfaction of needs and sharing of emotional connection (McMillan, Chavis, 1986). According to the interpretation of other authors, building a sense of community requires attachment to the place, local identity and social interactions (Kim, Kaplan 2004). Designing green spaces together and then contributing to their creation is intended to act as a means to build or strengthen these factors. The result of a collaborative organisation of green spaces, e.g. planting plants, may also be an increase in the sense of ownership and responsibility for the space. In this manner, in the face of acts of vandalism and uninvited users, residents will react and notify the relevant bodies.

- in the case of the courtyard located in Centrum D, local leaders go one step further and feel the need to restore the uniqueness of this place by making a reference to the local history (e.g. artist Marian Kruczek, book character Kotek Włodek). Such motivation may result from the desire to emphasise the local identity in relation to the significant character of the Nowa Huta district itself. Artistic and social initiatives based on local history and identity can increase the number of courtyard users. The growing popularity of the place may lead to the phenomenon of touristification, and consequently gradual gentrification (Gotham, 2005). This creates a threat of the green gentrification phenomenon, which occurs when the new green space becomes so popular that it attracts new users and thus new investments and commercial services (Gould, Lewis 2012). Such a phenomenon may lead to an increase in property prices and, consequently, to the expulsion of current residents. At the same time, top-down regeneration activities may accelerate the process leading to the above situation, which may result in a risk of losing the status of "our space" dedicated primarily to the current residents of the Centrum D housing estate.

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Lost or found in translation? Translating innovative forms of participation into formal decision making

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Abstract

The theme of this paper is the impact of new and expressive forms of participation on policy decisions. Over the last 5-10 years, we note that some of the new initiatives in planning participation are characterised by the use of expressive and art based forms, like exhibitions, theatre, music, gatherings and various forms of installations. Sometimes these are initiated by the citizens, in order to gain attention to a place or a planning issue. Other times, the local planning authorities orchestrate them, for much the same reasons. Social innovation and urban transformation are often the core motivations behind these, in many cases, rather informal forms of participation.

At the same time, the planning system – the legal and procedural arrangements for decision making – remains unchanged, meaning that the input that is gathered from the various arenas needs to be translated into a language that works in the more bureaucratic settings that otherwise characterise the planning process. We have little knowledge of this translation process in terms of what elements that are being channelled into the decision making and what is left out. In this paper, I ask the question of how this process of translation take place.

1 Introduction: translating innovative participation

Participation has been a core element in planning theory and practice for decades. Over the years, a multitude of forms of participation has developed, and a well-stocked menu of techniques is at hand. It varies from hearing procedures and traditional public meetings, to workshops, digitally based participation and the use of different creative techniques. New issues, along with the recognition of new groups of citizens as important in different planning contexts, calls for expanding the scope of perspectives and knowledge that are channelled into the planning process (Fung, 2015; Nyseth, Ringholm & Agger, 2019). With widening the perspectives and the notion of what knowledge that should be considered relevant, comes increased diversity in the forms of participation. We want to hear the voices of children, of the elderly, of those not familiar with formal meetings, of the passers-by, of the not-the-usual-suspects, and therefore innovative practices are employed in order to record those voices.

The Innovative practices come in many shapes and it seems like neither the formal processes nor the research has actually kept track with much of the new and sometimes “untidy” participation practices, in Norway as well as in other countries (Ringholm, Nyseth and Hanssen, 2018). They can have the form of gatherings and events, and also appear as creative and expressive uses of an area (Sim, 2016). Both planning and development authorities and citizens initiate such events. They are for example known from the type of processes that are often labelled “City-lab” (Evans et al., 2017; . Smas et al., 2016) In a recent survey to all municipalities concerning the evaluation of the Norwegian Planning and Building Act from 2008, the response to the following statement: “Local politicians

participate in open arrangements that includes creative inputs” was more than 55% who confirmed that this had been the case in the spatial plan, and 38% in the masterplan (Ringholm & Nyseth, 2018). The survey, alas, tell nothing of how the politicians, or other participants conceive of their experiences from these settings, or how they use them in the decision making. Such questions are interesting and important, firstly, because they can produce insight into what impact these forms of participation have on the decisions. Secondly, because they can shed light on the compatibility between the innovative participation and the formal framework of the decision making process. On the one hand, the innovative participation practices have the potential to be acknowledged as conveyors of really new and useful insights, that are activated in the decision making. On the other, they may be regarded as the “icing on the cake” of an otherwise traditional and not-so-innovative planning process. Or, to use Arnsteins terms, as “therapy” (Arnstein, 1969). Research indicate that the more open and informal participation initiatives may have more of an advisory function, and that it can be difficult to trace whether they have an impact (Nyseth, Ringholm and Agger, 2019)

It should be noted, though, that a situation close to the latter need not be the result of deliberate strategies from the authorities. The motivation for the less formal forms of participation could be a genuine wish from the planners, the politicians, or both, to bring in new voices and gather new knowledge and viewpoints. However, the tools that are at hand for the bureaucracy, may be less sufficient for conveying the voices and insights into the process of decision making, or that the connections between the specific forms of participation and the decision making is vague or lacking (Nyseth, 2011). To a great degree, this can be connected to the question of *how the knowledge, experiences and ideas that are generated at the innovative participation arenas is framed and translated in a way that is recognized by the decision makers in the planning process*. What capacity is available for doing this, and what considerations are being made in the process? Who are the “translators”? Does the translation vary with regard to the type of actors that are involved? Are there elements that are in fact impossible to translate? Innovative participation, like more traditional participation, has a democratic anchorage. In a broader view, the questions regarding the translation mechanisms and capacity are important also in order to position an assess democracy aspects of the innovative forms of participation.

These questions will be discussed in the paper, through the development of a theoretical approach, and by the analysis of a case study of a city-lab process in a small Norwegian city. Section 2 contains a short introduction to relevant aspects of the Norwegian Planning and building Act, and section 3 presents the analytical approach, which is anchored in an institutional logic perspective and a translation perspective. In section 4, the method is presented, and section 5 and 6 contains the analysis and tentative conclusions of the case of innovative methods of participation.

2 Requirements and performance of participation in Norwegian, municipal planning

Participation is mandatory in public planning in Norway, and is enshrined in the Planning and Building Act (PBA). The requirement is stated as follows (my translation):

§5.1

Anyone who puts forward a planning proposition shall facilitate participation. The municipality shall make sure that this requirement is fulfilled in planning processes carried out by other public or private actors.

The municipality has a particular responsibility to ensure active participation from groups that require special facilitation, including children and youth. Groups and interests that are not able to participate directly shall be offered good possibilities for participation in other ways.

The PBA, thus, gives the citizens rights as legitimate actors in planning. The local authorities have to a large degree been delegated the task of defining and deciding who should be included in the participation, and in what way. However, after a revision of the PBA, carried out in 2008, *groups in need of particular facilitation*, such as children, people with foreign or indigenous backgrounds and disabled people, are especially mentioned.

The mandatory requirements of the PBA are *information and consultation*. Information is stated by the requirements for *advertising the establishment of the planning process*. It is required that the municipal planning strategy is made public 30 days prior to political consideration. To make the plan available for public inspection in a way that gives everyone access and a possibility to provide feedback, the use of electronic media is an option. The time frame for hearings is six weeks, extended from 30 days in the 2008 revision.

The PBA also require consultation. A plan proposal should be sent to those regarded as affected by the plan, and from whom feedback is required. The PBA also contain new rules for presenting comments on plan proposals. For both municipal plans (§11–14) and detailed zoning plans (§12–12), the legal preparation is required to make explicit how the comments received in the hearings have been considered, and whether they have been assigned any impact on the output.

Those are the minimum requirements of participation, stated by the law, and in general they follow the rules (Ringholm & Nyseth, 2018). This gives the municipalities a great deal of freedom to decide what form of participation they should employ, as the law does not pose any limitations, only the minimum requirements. Also, the local authorities are encouraged by the ministry to employ an extended menu of participation. A survey carried out in 2017 show that the municipalities in general do more than they are required to. Around 72% answers that they arrange public meetings, more than 50% carry out workshops or similar methods of participation, and there are also the small percentage of 7 who make use of creative techniques and expressions (Ringholm and Nyseth, 2018).

The percentages mentioned above present an overview, but have their limitations when it comes to presenting a picture of how different forms of participation is combined, over time or with regard to the type of planning process. We do not have aggregated research data on the scope and form of this, thus the research based knowledge basically stems from case studies (ref...). However, an impression that arises from those, from search on the Internet and from conversations with planners in different professional settings, is that there is at least an ambition, and possibly also a trend, among the municipalities to widen the scope of participation, and of combining the more traditional and the expressive forms. One reason is that many of the planning actors?

3 A three-dimensional theoretical approach

The theoretical approach of the analysis is based on three strands of theory. Firstly, that of democratic innovation, which has become an increasingly hot topic in the trail of the more overarching debate on public innovation. A particular dimension of this discussion is related to aspects of participation, which has, of course been a topic in planning and democracy theory since long before the public innovation debate gained momentum. The analysis is, thus, inspired by old as well as more recent contributions to the participation discussion. Lastly, since the core question of the paper is about how experiences from innovative participation is translated into the decision

making, what is generally known as translation theory will be an important part of the theoretical background.

3.1 Democratic innovation

As one main ambition with the innovative forms of participation is to contribute to democratic renewal and policy making, there is a need to clarify what the innovative aspects are in terms of democracy. The debate on democratic innovation has to a large extent been connected with the logics and dynamics of participative and communicative democracy. Significant contributions have been made in order to evaluate participative innovations, based on criteria that go beyond the democratic institutions and identify democratic values (Agger & Löfgren 2008; Smith 2009; Michels, 2012; Geissel, 2013). The evaluations contribute with concepts of democratic goods such as inclusiveness, popular control, considered judgement, transparency, efficiency, transferability, meaningfulness, improvement of legitimacy, quality of deliberation, improvement of effectiveness and enlightenment of citizens.

The approach that this paper take in order to analysing the democratic potential of the innovative approaches, is to dig into the process of translating the inputs that in particular the less formalised participative actions provide, into the more formal decision making. On a general level, one can expect *democratic tensions* to emerge when new practices meet existing practices. This is well known from earlier and ongoing discussions on democratic goods, such as the question of representativeness and accountability in contexts of governance and collaboration (Behn 2001, Sørensen 2012). Experimentation and improvising will sometimes take place as a process with a very limited and handpicked selection of participants. These features may cause shortcomings in terms of democratic legitimacy. On the other side we have open gatherings, social media and events, where it is difficult for the initiating authorities to know who the participants are, and to assess and interpret the type of knowledge and opinions that are distributed among them, and the expressions that are displayed. Recent studies show that such tensions are certainly present in local politicians' considerations regarding innovative participation (Røiseland, 2019; Sønderskov, 2019). On the one hand, they are sympathetic to the idea of a closer and possibly less formal interaction between the citizens and the politicians, while on the other, they are reluctant to it because of the risk of jeopardising institutionalised values of representation.

'Creative experimentation' is one label that planning theory offer to some of the innovative participative practices. Experiments are speculative methods of knowing, working with doubts and uncertainty (Hillier, 2007:76). The label has been put on performative practices characterised by a situational openness and fluidity (Hillier, 2008). The task is to move from "what is" to "what if", and make planning practice a process of "becoming" rather than of fixing. Hillier emphasises the organising of "good encounters, or of constructing assemblages (social, political, artistic) in which powers of acting and the active affects that follow from them, are increased." (Hillier, 2008: 230). She argues for a planning that is a more inclusive, open and creative imagination of the past-present-future, and collaborative, critical discussion of potential consequences.

As with all forms of participation, the well known as well as the new and innovative, it is important to ask questions of what their impact is in the process, and possibly on the planning decisions. How can they be described with regard to important dimensions, and how are the innovative activities perceived by the decision makers of the planning authorities?

3.2 Dimensions of participation

Archon Fung (2006) introduces three dimensions that create the variation in participation: who participates, how communication and decision making take place and the degree of authority and power..



Fig. 1: The Democratic cube (Source: Fung, 2006)

The dimensions also have a relationship with the distinction between invited and invented spaces of citizenship (Miraftab, 2009). *Invited* spaces refer to the formal processes of participation initiated, organized and orchestrated by local governments, like formal hearings in a planning process. *Invented* spaces refer to collective actions that confront the authorities and challenge the status quo. As the ByLab-process is initiated and organised by the planning authorities, all the activities place themselves in the category of invited space. The process did, however, take place over a time-span of approximately a year and a half, and consisted of several occasions of participation (see presentation below). The participants entered the process in different ways. Some of the gatherings were workshops with individually invited citizens and correspond with Fung's categories of 'professional stakeholders' or 'lay stakeholders' (Fig.1). Other workshops were arranged by an open invitation, and the participants were 'randomly selected'. Other occasions again were of a nature that put them barely within the frame of the cube, in the 'open, self selected' and also possibly just on the outside – in the 'diffuse public sphere/everyone'. Invited spaces are often, but not always orchestrated events. Many of the new and innovative developments in participation seem to be characterised by a low degree of directing and formalising from the planning authorities' side (Nyseth, Ringholm & Agger, 2019). As planning is generally a policy process that is framed by rather formal arrangements, one can sometimes wonder what position the participation that happen in the outskirts of the formalities actually take in the planning process. What degree of power and authority is connected with it, and how does it place itself in terms of communication and decision mode? One way of finding out more about this, is to investigate how the input from the participation is brought into the further process of decision making. Since the innovative forms of participation we are dealing with here, are of a rather different nature than that of public bureaucracy, one way of shedding light on the issue is to ask questions of whether the experiences from participation in the outskirts of the cube are being translated into a form that corresponds with the general framing of the planning process.

3.3 A translation perspective

Innovations do by nature represent a challenge to established ways of thinking and acting. Sometimes, the innovation is meant as a full replacement of an existing service or practice, other times the intention is to “fill in the gap” between existing, institutionalised practices. In the latter case, however, the existing practices are not likely to proceed unchanged, as long as there are activities that connects the old and the new practices. On the other hand, the new ideas, when put into practice, could also undergo a certain degree of change in the meeting with the institutionalised practices (Thornton, Ocasio & Lounsbury, 2012; Holmen & Ringholm, 2019). There is, in other words, reason to expect a certain degree of reflexivity between the established system and the new ideas and practices.

3.3.1 Translation in theory

One way to understand the journey of a new idea or practice into an established, institutionalised system, is in terms of translation. The translation perspective has developed within public management theory, mainly in order to understand how new ideas travel and are transformed from one context to another (Czarniawska & Jorges, 1996; Røvik, 2016; Wæraas & Nielsen, 2016). The perspective is less, if at all, applied in planning studies. I believe, however, that it can be a fruitful approach to understanding how new participative developments are received by planning institutions. By applying a translation perspective, one recognises that even if practices origin from the same idea, and are applied in organisations that apparently have much in common, they can display a considerable degree of diversity when put into practice. Such differences can be explained by several factors that contribute to embed the new practice, such as differences in institutionalised values, different power relations, varying degrees of enthusiasm for the idea and differences in the competence that is put into realising the idea. Implementing innovative ideas into existing institutions and practices is, thus, a process that several researchers label “the translation process” (Czarniawska & Jorges, 1996; Røvik, 2016; Wæraas & Nielsen, 2016). In this perspective, the introduction of an idea, and the process of transforming the idea into practices is; *“... a complex process of negotiation during which meanings, claims and interests change and gain ground.”* (Wæraas & Nielsen, 2016:237). In other words, it is a process where factors such as competence, power and negotiating skills could be activated, factors that are likely to vary between organisations, localities and the actual problem context). Hence, we should not be surprised if innovative forms of participation that origin from a common body of ideas and ambitions, are received in different ways by different municipalities.

There are different perspectives on translation, and O’Maloney presents us with what he calls four ‘archetypes’: Diffusion, Actor-network theory (ANT), Scandinavian institutionalism and Organisational boundaries (O’Maloney, 2016). I will not elaborate on the relation between the perspectives here, other than argue that they may all have something to offer in terms of understanding how innovative participation as an idea and as practice is introduced in public planning.

The translation perspective underlines the unpredictability connected with the output – and outcome – of the process of introducing a new policy of participation. There are different forms of changes, and Thornton, Ocasio and Lounsbury (2012) suggest two main categories: Transformational change and developmental change. In transformational change one institutional logic replaces another, though possibly with some modifications (blending, segregation). Developmental change is a concept used in order to describe a situation where the existing institutional logic is not replaced, but where it to some degree could be influenced by the new idea. The question that researchers on

participative planning and planning authorities alike need to ask is to what degree the innovative, experimental forms of participation are able to shift institutionalised understandings of what participation should be.

3.3.2 Translation in practice

Like with other social phenomena, there are several ways of studying translation. In a review article, O'Mahoney shows how different perspectives, 'archetypes', tend to attract different methodological preferences. While the diffusion perspective most often seems to be operationalised by quantitative methods, the more intensive, qualitative methods characterise the other three perspectives.

The aim of this study is to gain insight into how actors that are important for bringing the insights from the innovative practices into the decision making, perceive of the participative arenas. Innovative participation has the potential to turn the course of action through powerful narratives. It may also just be an easily forgotten occasion – the icing on an otherwise entirely tidy planning process. How should one explore the mediators' way into the policy-making process and is it possible to identify their impact on policy-making?

The decision making system, the bureaucracy, is strongly characterised by text based presentations – preparatory works, reports, minutes and so on. However, the decision makers who took part in the new arenas, or those who have heard from others who have participated, the practical experiences and the impressions that are conveyed from other participants, will bring these with them into the considerations that are made. In other words, the translation will happen both 'by text' and 'by memories' or 'by stories'. As innovative practices do by nature challenge existing practices, one needs to ask if the existing practices for conveying impressions from participative arenas are sufficient for the new forms of participation. Or is it possible that the innovative forms demand other tools for translation than the traditional, formal forms?

3.4 Innovation in participative planning in a translation perspective

4 Data

The data is gathered by a mixed methods approach, consisting of a document analysis and interviews.

The documents that are included in the analysis are five reports from the whole strategy process: Report from youth workshop, report from the business workshop, report from the citizens workshop, report from ByLab, Report from the ByLab workshops, summing up of the ByLab

The interviews with 7 municipal actors were carried out in the spring of 2019 – one year and nine months after the strategy was decided upon by the local council. The actors had different roles in the strategy process, and also in the ByLab arenas. Four of the interviewees are politicians, one is a planner, one is head of department with responsibility for societal development and planning and one is the leader of the board for the local organisation for business and town development. The interview guide is enclosed (App. 1)

5 The Case: CityLab in a medium sized town

The CityLab in was carried out in a town of approximately 15.000 inhabitants. The process was spurred by a need for transport planning in the area of the city and its surroundings, which was linked to a city development process. The aim was a development strategy for the city area. Such

strategies are not mandatory by the Planning and building Act, but are often used in order to make the strategic choices visible and to. The problem situation can be summarised into three factors: firstly, the general idea of compact city, urging new ways of thinking, both with regard to the built environment and with regard to transport. Secondly, an ageing population, which made the municipality take measures to inspire young people to participate. Thirdly, the desire of the municipality to bring new life into the city centre, in particular in order to attract young people. A broad set of participatory efforts was therefore decided on.

5.1 The process summarised

The whole planning process was carried out in the period from autumn 2015 to winter 2017. The activities and meetings during the process were initiated in a collaboration between the municipality, the county authorities, the national road authorities, and a network organisation open to business actors, organisations, and individuals, that advocates for activity in the city.

The methods for citizen involvement included: 1) In-house preparatory work and a start-up conference focusing on everyday experiences from different parts of the city. 2) Three workshops were carried out in 2015/2016, namely the Youth Workshop with the youth council, the Business Workshop with business actors and the City Seminar which included a broader spectre of citizens. The workshops took place as group discussions. Each group then summed up their inputs in a document that they submitted to the planning committee. Later, a 'Future Workshop' and a public meeting was instigated, which both included a diverse set of citizens. The most innovative form in this context, was the CityLab, ByLab in Norwegian. This lasted one week and was the final part of the participatory process. A CityLab had not been carried out in this municipality before, and the purpose of it was to gather insight in less formal ways, for shaping future images and concept development. ByLab combined meetings that were held in new arenas, politicians' lunch in the pedestrian street, politicians' sofa, visits to different workplaces, collecting of written suggestions from the citizens in the form of short statements by the thumbs up or down, citizens' photos of important places. Children and young people were deliberately involved, along with citizens of all ages. As one can see, the arenas were set up not only in order to engage the citizens, but also with the purpose of facilitating direct contact between the politicians and the citizens. People from the administration were also present in all the arenas.

The participants of the varying invited spaces fall into different categories, and below I have listed them according to the categorisation of participants developed by Fung (2006).

Table 1: types of participation and arenas in the process

Participation arena	Participants	Type of invited space
Start-up conference		Indoor meeting/formal
Youth workshop	Professional stakeholders, invited	Indoor meeting/formal
Business workshop	Professional stakeholders, invited	Indoor meeting/formal
City Seminar	Open, self-selected	Indoor meeting/formal
Public meeting	Open, self-selected	Indoor meeting/formal
<i>ByLab: Politicians' lunch in the pedestrian area</i>	Open, self-selected/diffuse public sphere	Outdoor moving/informal

<i>ByLab: Meeting people in the shopping centre</i>	Open, self-selected	Indoor, informal
<i>ByLab: Politicians' sofa at the city hall</i>	Open, self-selected	Indoor, informal
<i>ByLab: Walking with young parents out rolling with the babies in prams</i>	Semi-open, self-selected	Outdoor, moving/informal
<i>ByLab: Visit to workplaces</i>	Semi-open, self-selected	Indoor meeting/semi-formal
<i>ByLab: Visits to schools</i>		
<i>ByLab: Thumbs up/thumbs down at various places in the town</i>	Open, self-selected	Outdoor, informal, expressive
<i>ByLab: Citizens' photos of important places at the town hall and the schools</i>	Open, self-selected	Outdoor/indoor, informal, expressive

Among all these invited spaces, it is in particular the informal and semi-formal forms that were organised as part of the ByLab process, that are of interest to this paper, since these are the innovative ones. In defining what innovation is, I will lean heavily on Schumpeters contextualised definition, later adopted by a multitude of scholars (Schumpeter,). The municipality had previous experiences with using workshops as a participative arena, but the informal ways described above were new in this context.

5.2 Translation by text: gathering inputs into documents

How is the input, the knowledge and viewpoints that are generated by innovative, informal participation framed when they are conveyed into the formal decision making process? One way of looking into this question, is to ask what capacity, in the form of knowledge/skill and time resources, that are available for doing this. Another question is in what form the input is presented.

A team was set up for processing the input from the different participation arenas. The team consisted of one person from the municipality, one from the regional authorities, one from the road authorities, one from the town network organisation and one from the consultant agency. The practical job with was mainly carried out by the hired consultants.

The inputs from all the arenas, the workshops and the ByLab arenas, were summed up in altogether five reports. All the documents were made accessible on a designated homepage for the project. This homepage also enabled responses. The responses, however, have not been saved after the policy document was presented.

One of the reports contained the summing up of the ByLab part of the process. The report also contain an overview of how many participated in the different arenas that the citizens were invited to. The overview (table 2) is rather semi-detailed, as it does not separate between the different occasions at the city hall.

Table 2: Number of people that the politicians/planners have had a dialogue with during the ByLab

Visits to the city hall	Workplace visits (6)	School visits (4)	Workshop and public meeting	City talk at shopping mall/young parents	Sum
163	88	252	70	80	653

Source: Report on the ByLab, retrieved from the municipality's webpage

The inputs that were put forward by the citizens on these occasions were carefully noted by the representatives from the municipal administration who were present at the different arenas. These are also listed in the report. They are presented in a rather short form, and listed according to the respective arenas where they were put forward. Below is an example of the form, gathered from the city talk in the shopping mall (my translation):

- Positive to development and densifying
- [name of town] can take tall houses
- Yes to more residential houses in the town centre
- We are ready for densifying
- Important to take care of the old things
- Thumbs up for development of the station area
- Wants small houses in the town centre, not tall houses

From this particular event, 34 bullet points are listed, filling one whole page. Altogether, the bullet points from the different arenas fill nine pages of the report.

The report also contains some photos, five from the school visits and four thumbs up/thumbs down. The photos from the school visits show where the students have put red and green pins on a map of the town centre, in order to express an opinion of this particular spot. These photos are, however, not accompanied by much explain text. The reader is not oriented of what the exact purpose of the pins is, or if the color has a particular meaning – though it is close at hand to assume that red means something bad and green something good. Under each of these photos some statements are referred, and one gets the impression that they must be uttered by some of those that the visitors from the municipality met at the schools. One example: one of the photos display a section of the town map that show the railway and bus station area, including a pedestrian area. On this photo, 75 pins can be counted. Under the photo, we find the following three statements (my translation):

- The station should be renovated
- It is not nice to stay here
- The pedestrian street is dilapidated and has little to offer the youth

The three text points are probably the essence of the opinions that were made on this particular area of the town in school meetings. However, the reader is not informed of whether these are the opinions from one school in particular or of whether there are variations of any significance.

The photos of the thumbs up/thumbs down show these placed in different places of the town, and an opinion of the particular location written on each of them. Altogether ten thumbs (6 with an up and 4 with a down) are displayed on the photos. Of the ten, the text is readable in three or four. On the other photos the text is blurred due to lack of sharpness of the photo.

'Future pictures' (my translation) is a document that were developed by the project team and presented in the policy documents that were prepared for the business and city development committee. 'Future pictures' to a certain degree sums up the input from the different arenas. However, the composition of the text is such that it is difficult to trace the particular viewpoints to one or more arena and stage of the process. The process as a whole is referred to in general terms, and the document is short (....pages). The formal arenas, the workshops and the meetings that have

a formalised character, are to a greater degree possible to identify in the documents than the informal ones. Arenas like the politicians' lunch and the thumbs up/thumbs down, are more or less invisible. They are not referred to explicitly in the way that the input from some of the formal arenas are.

As we can see, the summing up of the input has not undergone an editorial work apart from the listing that is partly referred above. If exchanges of viewpoints or heated discussions occurred, they do not protrude from the documentation. In that respect, the documentation appear as somewhat "clinical", even if different viewpoints can be read from at least some of the listings.

New arenas were established by the ByLab, and some of the people who are generally absent from municipal planning were engaged. In particular that goes for children, youth and people who are members of organised interests that are tend to engage in planning issues. It is, however, fairly easy to map the arenas, while getting a comprehensive picture of who the participants on the arenas were, is more of a challenge. Also, it is not easy to detect what kind of person that is behind the viewpoints. Of course, to a certain extent, some are possible to guess. The school visits gathered pupils and teachers, the workplace visits gathered employees at the respective workplaces. Nevertheless, the reports give the readers little to go by in terms of putting faces to the inputs.

When asked about the challenges with presenting the experiences from the ByLab arenas in a written form, the people I interviewed had varying opinions. Some, and in particular the administration, are of the opinion that the form that they are presented in is good and meticulous – that they wrote down everything that was being said, and that is can be found in in the documents that are referred to above. Others, and especially one of the politicians who was present at all types of arenas, emphasise that a lot of what was being said and discussed in the arenas is not necessarily written down, (my translation): *"But then there is all these small discussion that have occurred. They are not documented.... They are something that the politicians perhaps have brought into the political processes."*

5.3 Translation by memories: the municipal actors' impressions

All the interviewees agree that the ByLab process as a whole was interesting and worthwhile, and that it is vivid in the memory of the participants. They do, however, have different opinions on what was the most rewarding or interesting arenas, and what purposes that were fulfilled by the process.

The process as a whole

When asked about the process as a whole, the general impression is that the interviewees think it was useful and interesting. Two of the interviewees did only participate in one of the workshops, the City seminar, which was an open workshop for anyone to attend. The enthusiasm seems to rise with the number of arenas they attended, as those who were present at all or at least several types of arenas, express their opinion on the usefulness and relevance more strongly than those who only participated once. Only two of the informants had only participated in one single arena, and one from the administration had been present in all of them. The others had taken part in all the different types of arenas, however not inn each and every one of them – not all the workplace and school visits, for instance, but at least one of each.

A part of the enthusiasm is connected to the multitude of forms and arenas that were set up, and the fact that they could meet people in different ways, both in informal and more formal settings. Those who participated in different forms of arenas, express that it is precisely the combination of arenas that contribute to give a more comprehensive picture of the citizens' opinions. In addition, the fact that they process was quite "compact", as it was carried out during a time span of three weeks. It

made them keep up the energy and concentration on the theme, and one describes it as an aspect that made them more receptive to the inputs they gathered from the citizens.

The intensity of the process and the many arenas that they attended is likely to be an important reason why the process and the strategy that was developed on the bases of it, was still vivid in the informants' memory more than two years after the ByLab was conducted, and a year and a half after the strategy was decided on by the local council. In addition, this was the most extensive participation process that the municipality had carried out, and with several elements that were innovative to the context, which probably contribute to the general enthusiasm. They describe it as a new and very energising experience. The positive attitude to the innovative participation was also confirmed by their opinions on whether arenas such as those in the ByLab process should be employed in other planning context. On this question, the agreement was unison among the interviewees. This also goes for those who only attended one of the workshops, and not the ByLab arenas. Their positivity stems largely from what they have heard from others who participated, both politicians and citizens, and from observing that the process and the strategy is actually being referred to in discussions both in the local council, the committees and in the social media.

It should be noted, though, that when asked if these forms of participation should be used more frequently, they people I interviewed are aware of the fact that the process as a whole was time consuming and resource demanding, and the whole apparatus cannot be activated for any small detail zoning plan. However, they agree that the experiences have opened new paths into participation, and that elements from the process should be applied more often. Especially, they point to the work place- and school-visits, and the informal meetings they had with the citizens in for instance the shopping centre and in town. One also mentions that in such arenas the politicians are to a certain extent "freed" from party politics, and speak more openly and with another attitude with the citizens. From the informant, this is meant as a positive feature.

What was the most important experiences of the process?

While there is a general agreement that the process as a whole was good and useful, the people I interviewed display more variety with regard to what the most important, interesting and useful aspects and arenas of the process were.

From the preparatory document, and from the town centre strategy, the process is described as a participative process: *"... a process with active and broad participation from politicians, business actors, citizens and public sector actors."* (Town centre strategy: 9, (my translation)). The importance of the input they got from the citizens in new and innovative ways, was emphasised by all the informants. It is no doubt that one main aim of the process was to gain insight into people's images of their town in the future. The workplace and school visits and the city talks (shopping centre, politicians' lunch, parents with prams) were often mentioned as good arenas for getting new knowledge of people's viewpoints and their reasons for acting as they do. The all connected this to the informality of the arenas, and that they got to talk with other people than those that usually turn up at meetings and other, more formal occasions. As one of the politicians put it (my translation): *"As politicians we often meet people with strong interests. More seldom do we meet 'the silent majority'. In the shopping centre we met some of them."*

The other experience that all the interviewees emphasise, was that the process was important for anchoring the town-centre strategy. This is in particular expressed with regard to anchoring among the politicians, but also with regard to the citizens and the business actors. When asked about what they mean with "anchoring", they give elaborations that fall into two main categories. Firstly, it is about anchoring the new ideas of city development that is connected to the challenges of reducing

the use of fossil energy and enhancing public health, which among other lead into the path of densification and motivating people to use collective transport, cycle and walk, rather than private, fossil driven transport. Though many embrace these thoughts, there is certainly also a significant degree of resistance to them. Much of the residential areas in the town centre, consist of detached houses with gardens around them, and people in general tend to use their car a lot, and to a great degree on short trips, such as going to a shop or visiting a service just a few hundred metres away. It was reported in the interviews that much of the discussions and inputs were related to these topics. From the interviews one can see that anchoring these overarching ideas of city planning and development is directed both towards the citizens and the politicians. The politicians that attended the different participative arenas felt obliged to be well prepared for the possible discussions with the citizens, and had made more effort than they usually would do in connection with a planning process, to obtain knowledge of the ideas and what the implementation of them would lead to for their town and citizens. Participating was voluntary for the politicians, but altogether many more than was usual in for example a public meeting, took part in the ByLab. The engagement from the politicians' side brings us to the other important perception of anchoring that is emphasised in almost all the interviews.

The process was deliberately designed in order to anchor the strategy among the politicians. Generally, many municipalities experience that their politicians do not engage much, neither in planning nor in strategy processes (Ringholm & Nyseth, 2018; Kvalvik, 2018). In the committee that prepared the process, the importance of engaging the politicians was agreed upon, both by the administrators and the politicians. This idea got few, if any, objections when the process plan was presented to the politicians. Since participation was voluntary, those who could not or did not want to attend, were free to do so.

In other words, anchoring was, firstly, a question of making both citizens and politicians, familiar with the overarching ideas and thoughts that framed the strategy, and which the strategy document would need to recognise and give a local direction. Secondly, the ambition of anchoring also meant that the politicians should gain ownership to the strategy document, because this was meant as a platform for the further planning exercises of the municipality, among other the spatial plan that was going to be developed shortly after the strategy document was decided on.

In the interviews, the anchoring of the framing ideas and the strategy document among the politicians were pointed to as an important achievement of the process. That such a large proportion of the politicians actually turned up at the arenas, the debates they engaged in and the new knowledge they gained from this, was regarded as very valuable by both politicians and administrators. The following quote from one of the administrators is illustrative for the general opinion that I registered (my translation): *"The fact that all the important politicians have participated, has given them such an ownership to it [the strategy document] and that they speak positively about it."* Another administrator put it like this (my translation): *"Now they [the politicians] have got it "drip-wise" in several rounds. Then it is easier to get a large plan."*

The anchoring and ownership of the framing ideas and the strategy document was, however, not the only output, in terms of experiences, that the interviewees thought of as important. The meetings and conversations with the citizens had also given new knowledge and a certain shift regarding how the ideas of a vivid and dense town centre could be developed. Both administrators and politicians say that they would have to think again about the cars and parking facilities, about the height of new buildings, and about how to deal with the existing green areas in and around the town centre. They connect this directly to inputs that they got from the citizens in the ByLab process. Since the process was connected to a strategy, and not a legally binding plan, some of the interviewees emphasise that

the knowledge that was gained will present itself on different future occasions when particular plans are being decided upon. Nevertheless, they all say that some of opinions of the citizens that were mapped in the ByLab arenas, have been embedded in the strategy document. It is, however, impossible, they say, to follow the trace from the particular arena and into the strategy. One has to look at the process as a whole and consider the inputs in light of the editorial work done by the administration.

Lost or found?

The issue that this paper discuss is the question of *how the knowledge, experiences and ideas that are generated at the innovative arenas of participation is framed and translated in a way that is recognized by the decision makers in the planning process*. The question is important in order to assess the democratic value of the new participative initiatives that are made by both planning authorities and the citizens. They seem to become more and more popular, and there can be several reasons for that. On the one side, they could be really useful for gaining insight in the citizens' opinions and experiences. On the other, they could be "the icing on the cake" – a happening with no real impact on the decision or other feature that makes them meaningful.

The presentation in the previous chapter show that the ByLab- process served more than one purpose. It also show that the input from the arenas was translated in more than one way. These experiences can in short be summarized into the following points:

- A main purpose of the process was both to get a broad picture of the citizens' ideas and viewpoints on the development of the town center, and to anchor the overall framing – the new ideas of city development, with the citizens and the politicians.
- Another main purpose was to enhance the politicians' ownership to the strategy and its framing ideas.
- The translation of the inputs from the innovative arenas are presented as unedited lists of utterances in the reports, sorted by arena, whereas in the strategy document viewpoints are not referred to different arenas.
- Small talk and discussions that politicians and administrators engaged in at the arenas are not referred in the reports.

There are, of course, good reasons why not all of the inputs were being referred. It is very time consuming and would demand more manpower than was made available for carrying out the process. Capacity limits is surely one explanation. The findings also indicate others explanations. One is that that the administrators found this way of referring a good and thorough one, and in line with what one could expect – well within the standards that is applied by the planning organization. Another explanation could be that the mixed purposes of the process – of embedding the framework of ideas for city development among the citizens and the politicians – has had an impact on the efforts that are put into the presentation of the input. It could also be that the framing has had an impact on how the inputs are sorted, in the way that it has colored the lenses of the translators. In this case, the translators from the administration that was responsible for summing up and preparing the written output from the process. One of them have been thinking a bit in terms of the administrators' impact on the final document, and formulates this as a question: *"Is it so that because the process has been so large and wide spanning, then it has become an even more professional product?"* In a way, this administrator questions the whole rationale of the innovative participation arenas. The quote also show that even if you have been at the core of the process, you do not know the answer.

Even more untraceable are the stories that the process form in the heads of the participants, and which are shaped by the meetings with people and the conversations that take place in the arenas. These are probably important vehicles, the “good encounters” in moving from “what is” to “what if”, and make planning practice a process of “becoming” rather than of fixing (Hillier, 2008). Would it be a good idea to write them down or record them and put them on the municipality’s homepage for the public to see and learn? This is a lengthy discussion, that involves the consideration of factors such as a possible loss of spontaneity and the informality that the participants obviously value up against the transparency dimension of the representative democratic system.

More traceable is the underlying story of the informal arenas as a way to go forward in future planning processes. Both the politicians and the administrators express a great enthusiasm about them, and are positive to institutionalizing them. If this is a development that gains weight, not only in this municipality, the questions regarding mechanisms for translation are likely to be more outspoken. The participants of the open and informal arenas place themselves in the outskirts of Fung’s democratic cube (Fung, 2006), and it is a question of translation capacity and skills whether we are able to detect where they are to be placed in terms of communication mode and possibly of authority.

It is also possible that a process like this contains elements that are in fact impossible to translate into the known practices of the planning system. The enthusiasm or heatedness of a certain situation, the mutual understandings that can suddenly occur, the experience of being part of a meaningful conversation, or the complete opposite. Such experiences protrude from the interviews, but are not made explicit in any of the documents. The strategy documents’ sober description is (my translation): *“The strategy is the result of a process with active and broad participation from politicians, business sector, citizens and public sector actors. This has been important in order to ensure a good product with a solid ownership to the project.”*

All in all, the ByLab seems to have played a role in creating a new story, or new stories, about the town. It has become a point of reference for subsequent political discussions and planning projects, first and foremost among the political actors, but to some extent also among other actors. Some of the story, one version, is in the documents, other parts are in the heads of the participants, and can only be revealed by following the issues that are brought up in connection to town development.

Appendix 1: Interview guide

- 1 What are your experiences with the ByLab process?
- 2 What experiences are conveyed to you from others who participated in other parts of the process than yourself?
- 3 Is this way of designing participation useful for the planning and development work in the municipality?
- 4 Do you think the presentation of the process and the experiences from it, as it appears in the documents, is in accordance with your impressions from participating in the process?
- 5 Was the discussion in the local council different from discussions that you have experience from, regarding other planning contexts. If so, in what way?
- 6 Do you see any limitations or disadvantages with these forms of participation?
- 7 Do you have thoughts or ideas of other, new forms of participation?
- 8 Concluding remarks

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Transformation of Grown City Centers

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Abstract: Urban district centers are key in supporting community life in European cities. The vitality of these centers is essential for the functionality not only of the districts but indeed the entire city. Many established city centers suffer a high adjustment pressure; formerly vital centers experience a loss of importance. In order to explore the hypothesis that the required transformation of those centers can only be positively affected by strategies of different actors, especially local actors, researchers conducted four case studies in German cities. The city centers examined throughout the study offer various challenges and opportunities, specific constellations of actors and different development options. The article analyses the role of transformation research, real-world laboratories and social innovations in the transformation of urban district centers.

Keywords: Transformation, Social Innovation, Transformation Research, Real-World Laboratories

Introduction

Established district centers bear an important meaning for community life in European cities. The vitality of these centers is of essential relevance concerning the functioning of the entire city. Grown city centers suffer a high adjustment pressure, former dynamic centers experience a loss of importance. There are various reasons for these developments: structural changes in retail, digitalization and e-commerce, changed mobility behavior of consumers, demographic change and so on. The consequences of these developments are for example underused commercial properties, high vacancy rates, and underused and neglected public spaces.

Principle thesis of the research project TransZ, Transformation of Urban District Centers (2017-2020), is that the required transformation of those centers can only be positively affected by strategies of different actors, especially local actors. In order to explore the hypothesis, the research is based on different case studies in German cities. The city centers examined throughout the study offer various challenges and opportunities, specific constellations of actors and therefore different development options. The article will discuss the different interests and opportunities of action the actors in urban district centers have and in how far urban real-world laboratories can help to initiate social

innovations. These are in this case, broadly speaking, understood as new solutions, which meet social needs, improve capabilities, relationships, and optimize the use of resources.

Research Project TransZ

In the research project TransZ (cf. www.transz.de), different real-world laboratories were set up to test alternative methods of center development and to possibly initiate social innovations. The project is funded by the Federal Ministry of Education and Research (BMBF) as part of the flagship initiative “Zukunftsstadt” under the funding stream “Sustainable Transformation of Urban Spaces”. As part of the project 4 institutions (HafenCity University Hamburg and University of Applied Science Hamburg, University of Applied Science Hildesheim / Holzminden/ Göttingen and University of Applied Science Stuttgart) collaborated over a 3-year period of time (2017-2020) to identify and strengthen transformative forces in the city centers. Specific approaches to accompany transformation processes positively and to improve the situation in the centers sustainably have been developed with local actors. The universities have been deepening their work in the project areas themselves as well as in thematic research areas such as public space and planning processes or self- organization and governance in center development.

Importance of Grown City Centers

Not all cities and districts profit from the spatial processes of urban development such as growing population or rising real estate prices. Grown city centers for example suffer a high adjustment pressure, former dynamic centers experience a loss of importance. Especially local supply centers, urban district centers and outskirts of central positions suffer a high loss of function. There are various reasons for these developments: structural changes in retail, digitalization and e-commerce, changed mobility behavior, demographic change and so on. However, urban district centers bear an important meaning for community life in cities. The vitality of these centers is of essential relevance concerning the functioning of the entire city.

As place for identification in the daily life of residents and community, district centers fulfil multiple functions. They are places of social cohesion, economic viability and cultural innovations (Bundesministerium des Innern, für Bau und Heimat (BMI), n.d.). Structural change adversely affects centers resulting in multidimensional challenges. City centers are a focus of scientific, technical, economic and social development, but they are also the place of social and ecological problems and structural changes (Frauns and Scheuven, 2010, p. 10). Challenges resulting from changes in economic structure reach far. Many commercial spaces no longer appear interesting for investors under the current requirements of building structure and location. Extensive concentration processes, the growth of retail floor area and a simultaneous thinning of the shop network makes small units unattractive for investors. As a result, they remain vacant and may be converted into flats. Another reason for structural change is the expansion of discounters and large chains with which smaller, locally owned shops are often unable to compete. Large-scale retailers are located at the outskirts of cities, are easy to reach by car and offer free parking. E-Commerce is putting owner-managed commerce under pressure as well, while e-commerce turnover in 2008 was 12.6 billion euros, it rose

4fold to 53.4 billion euros in 2018 (Frauns and Scheuvens, 2010, p.10, Bundesministerium für Wirtschaft und Energie (BMWi), 2017, p. 2, Handelsverband Deutschland (HDE), 2019). Many centers are in danger of becoming deserted (BMWi, 2017, p. 2). Shop vacancies lead to a loss of attractiveness, a reduction in turnover and frequency and soon to a loss of image. This results in a loss of customers and a loss of value of the property. Vacancies are therefore a major problem for centers (Greipl, 2007, p. 16f).

Another challenge is the urban space. Pedestrian precincts are for example an important part of urban space, they are economically very important but the aesthetics are not meeting today's expectations anymore. Public space is central in European cities, new concepts are required to meet the needs of all generations. Contemporary solutions are important; the diversity of the European city is endangered if urban planning solely keeps to traditional top-down planning processes. It is an important space for example for social needs and integration; therefore, it is for example important that public space allows encounters (Frauns and Scheuvens, 2010, p. 13f). Some of these challenges can end up in trading-down effects if nothing happens. Trading-down effects result in a reduction of company costs in order to be able to survive in the local market. Consulting services are reduced, the staff is reduced, and pound stores set up. This can also happen due to a mismatch between supply and demand. Productivity per unit area has fallen; an oversupply of sales areas that are no longer marketable emerges. This often leads to a downward spiral outside the prime locations (Achten, 2017, p. 66f). Secondary centers are the big losers of these developments. Centers with an extensive business area and a lack of space for larger units are particularly at risk. Customers are switching to other options. This also weakens the secondary center as a residential location. Occasional purchases are not enough to let retail trade survive. A loss of significance and function, "erosion processes" in smaller cities, decentralized secondary locations, or even in suburban areas are the result (Fischer *et al.* 2011, p. 26, Oswalt *et al.* 2014, p. 10). Urban development policies can strengthen the diversity of land use in these centers using investment and non-investment measures, but the success is not always permanent. In Germany, urban development funding is very important for urban development in general, but especially for urban district development. There are various support programs, which aim to address a variety of difficulties - structural, functional and social. The federal government grants financial assistance in accordance with article 104b of the constitutional law, which is supplemented by funds from the federal provinces and the municipalities (Städtebauförderung, 2019).

Transformation Research

Sustainable development is a challenge for the entire society. Research has been trying to find new options and solutions for sustainability problems in fields of, for example, economy, consumption, mobility or energy. The awareness of transformation processes in sustainability research has grown. New concepts are being developed to get scientific findings as well as socially robust information to initiate concrete solutions. Exemplary research fields dealing with the transformational processes are sustainability science (e.g. Kates et al 2001), transition studies (e.g. Markard et al 2012), resilience research (e.g. Olsson et al. 2014), social innovation sociology (e.g. Westlex et al. 2013), political science, future studies, and psychology (e.g. Haum and Pilardeaux 2014, Heyen and Brohmann 2017, Patterson *et al.* 2015). Scientists work together with practical actors to integrate their concerns, knowledge, and competencies in research processes (Schneidewind, 2014, p. 1, Wittmayer and Hölscher, 2017, p. 13, Rose *et al.* 2018, p. 2). In international context "sustainable transition

management” (e.g. Grin *et al.* 2010) has become more popular, in national context, talking about Germany, transformation processes and corresponding research was promoted through the main research report by the scientific advisory board of government global environmental changes (WBGU) about “great transformation” (Schneidewind, 2014, p. 1, Wittmayer and Hölscher, 2017, p. 13). Transformation research can be understood as a research perspective that studies complex and pervasive societal problems. Fundamental societal change processes and dynamics are supported towards sustainability. Wittmayer and Hölscher (2017, p. 15) define transformation research as follows: “Transformation research studies and supports fundamental change processes of societal systems towards sustainability from a scientific perspective. These research goals require both, descriptive-analytical as well as transformative research approaches, which yield conceptual and actionable knowledge through trustworthy, transparent and reflexive research processes. The complementary research foci of transformation research include the objects of transformation (what changes over the course of a transformation), the change dynamics of transformation processes and emerging transformation pathways (how do transformation processes occur), and the drivers of transformation processes (by whom/how are transformation processes supported). “(Wittmayer and Hölscher, 2017, p.15)

Apparently, appropriate research is a challenge. It has to be organized transdisciplinary, as the design of transformation processes asks for a combination of system knowledge, target knowledge and contextual- and actor specific knowledge. There is an active debate about the right usage of research methods for studying and supporting sustainability transformations (Schneidewind, 2014, p. 1f, Wittmayer and Hölscher, 2017, p. 13f). At this point, classical methods of observation and modulation reach their limits, as the examined processes ask for knowledge about specific transformations (Schneidewind, 2014, p. 2). For this reason, social- and economic sciences experience an experimental turn. New ways of research help to improve classical observation and model-based approaches (Schneidewind, 2014, p. 2, Schöpke *et al.* 2017, p. 1.). In transformation research, different methods like research diaries, system analysis, hackathons, knowledge hubs, real-world laboratories or participatory action research are used, to just name a few of them. Each method has the potential to contribute to transformational research, yet a combination of methods enables the integration of different research topics (Wittmayer and Hölscher, 2017, p. 21ff). Moreover, the knowledge about social transformation is simultaneously affecting the community, as scientific knowledge influences the processes. A classical observation-system-division is not possible anymore. Transformation researchers are part of the explored transformation processes (Schneidewind, 2014, p. 2).

Transformation research wants to trigger a change; it is about developing creative and reflexive skills in dealing with transformation processes both in science and in society as a whole. The so-called “transformative literacy”, describing the enabling of civil, political and economic actors to promote circumstances for sustainable oriented changes, is still at the beginning. These circumstances arise, for example, when people learn from each other within the framework of the research process or also from the input / intervention of the researchers (Schneidewind, 2013, p. 82, Schneidewind, 2014, p. 1, Parodi *et al.* 2016, p.17). Regardless of scientific research, transformation processes are not giving satisfactory evidence about mechanisms of successful transformation processes. One possibility to improve the understanding of causal links in these systems are scientific guided interventions in a real political, social and societal context (Schneidewind, 2013, p. 82 ff, Schneidewind, 2014, p. 2).

Real-World Laboratories

To improve the understanding of transformation processes, real-world laboratories are part of the research project TransZ.

In general, the usage of real-world laboratories in transformation research is in vogue. Still, real-world laboratories and the connected research “are new concepts, and therefore not yet clearly defined” (Parodi et al. 2016, p. 9). According to the frequently used and very popular definition of real-world laboratories in Germany by Schneidewind (2014, p. 3). They are based on the idea of real-world experiments and are a hybrid kind of experiment, lodged in between knowledge production and knowledge application as well as controlled and situation-specific conditions (Schneidewind, 2014, pp. 2 f, 6, Beecroft and Parodi, 2016, p.4, Schöpke et al. 2017, p. 1). Real-world laboratories form the context for real-world experiments; their aim is an improvement of knowledge about sustainable oriented transformation processes and the initiation of sustainable oriented transformation processes. Participatory methods like real-world laboratories generate conceptual and actionable knowledge (Schneidewind, 2014, p. 2f, Schöpke et al. 2017, p. 1f, Wittmayer and Hölscher, 2017, p. 25). Urban real-world laboratories are very important to study social change processes. It is easier to study social processes of change on the city level, as all technical structures can be found and the area is still not as big as entire countries. Besides that, cities are an easier reference object than entire countries. The complexity of cities is still manageable, socio-technical dynamics can be observed easier. Furthermore, cities are the origin of cultural changes, changing lifestyles and therefore an appropriate place for experiments. Macrosocial developments can be observed and be scaled to higher layers (Schneidewind, 2014, p. 3, Schöpke et al. 2017, p. 4). Urban real-world laboratories on district level study process happening in the districts more closely. Thereby effects of cultural identities and social diffusion processes can be observed. By a worldwide comparable substructure of cities in districts of comparable size, results from district related real-world laboratories enjoy a high degree of comparability (Schneidewind, 2014, p. 4).

Real-world laboratories have to fulfill some criteria: First, they have to be oriented towards civil society. The co-design and co-production of the research process have to happen with the civil society and societal actors, whereby all actors have to understand the (in real-world laboratories indispensable) transdisciplinarity of the process. Furthermore, the real-world laboratory research design has to have long-term support and orientation, must be continuously methodically reflected, and the research support has to be coordinated by institutions with experience in transdisciplinary processes. The process has to have laboratory character, which means that the required physical and personal research infrastructure of the transdisciplinary experiments is guaranteed. If these characteristics are fulfilled, real-world laboratories are more likely to generate value and innovation for the society (Schneidewind, 2014, p. 3, Parodi *et al.* 2016, p. 7 f, Schöpke *et al.* 2017, p.3).

The characteristics of real laboratories already described make clear how time-consuming the process is and how high the flexibility requirements are (Parodi *et al.* 2016, p.6). Real-world laboratory research is just at the beginning and there are many questions and challenges (Beecroft and Parodi, 2016, p. 5). One of them is context dependency and the limit of controllability of boundary conditions. The fundamental difference between a real-world laboratory and a classical laboratory is the partial controllability of boundary conditions. The higher the context- and situation dependency of real-world experiments are, the lower is the transferability of findings. A rebalancing of research

interest and situation dependent transformation profits of practical actors is necessary (Schneidewind, 2014, p. 4). Another challenge is the transferability of outcomes; they differ from classical quantitative empirical social research (Schneidewind, 2014, p. 4). Furthermore, the appropriate integration of actors is difficult. Research in real-world laboratories needs cooperation with practical actors in the transdisciplinary processes, meaning discussions between practical actors and researchers on an equal footing. It is important that practical actors do not feel like the object of research (Schneidewind, 2014, p. 4). Lastly, the terminology is quite important. The usage of the word real-world laboratory is subject of a controversial debate. Classical laboratory research rejects the term, as real-world laboratories do not fulfill the constitutional conditions of a laboratory – that is controllability. Despite the status of development and the justified concerns about the approach, real-world laboratories are an interesting methodical extension to improve the understanding of complex transformational processes in society. More experiments with real-world laboratories are needed (Schneidewind, 2014, p. 5, Parodi *et al.* 2016, pp. 6-9).

Social Innovations

To understand, in how far real-world laboratories can help to initiate social innovations, a short glance at social innovations is indispensable.

Social innovations can be very diverse; and there is no universally agreed definition (Rückert-John *et al.* 2014, p. 9). The social innovation academy (www.socialinnovationacademy.eu) hosts a blog which provides eight different definitions; the approaches differ by their ways of consideration. That is how it happens that for example the meeting of social needs, a change in daily routines, the generation of value primarily for society or empowerment /political mobilization are the focus of the definitions. The Young Foundation (2012) used a general approach for their definition of social innovation: “New solutions [...] that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources.” They also emphasize that “social innovations are both good for society and also enhance the society’s capacity to act.” Wigboldus (2016) made a very clear definition, it includes innovations, which emerge in the social realm of experienced reality, innovations which are “about new ways in which people interact and about new ways in which people interact with their environment” (Wigboldus, 2016, Balamatsias, 2018).

So the variety of different initiatives, projects or new production and consumption practices calling themselves social innovations or being called social innovations are emerging out of recent trends as sharing economy, collaborative consumption, DIY and Upcycling. These attempts have in common that they take action against the rising number of European societal challenges like throwaway mentality, anonymity, alienation, energy- and resource waste, refugee crisis or unemployment, which are all problems of our society (Rückert-John *et al.* 2014, p.6f, Max Weber Institut für Soziologie, 2015, Balamatsias, 2018). However, as a big social transformation is just possible if everyone in society is involved and willing to change habits and mindsets, everyone has to get involved. As social innovations develop out of the community as reactions to existing problems, they are likely to spread fast and get a high acceptance throughout the community. For this reason, politics is very interested in social innovations as well; social innovations became for example central points in the political program of the EU. The research program “TEPSIE – The Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe” for example has been focusing on strategies to

promote innovative solutions for social challenges in the EU since 2012 (Max Weber Institut für Soziologie, 2015, Rückert-John *et al.* 2015, p. 25).

Categorizations of social innovations are as diverse as the individual definitions. Socio-juridical, socio-political, socio-economic, etc. are categories describing the thematic background of social innovation (Wigboldus, 2016). A typology is also imaginable based on the “internal characteristics” of the single innovations – for example., the level of self-initiative, sense of community, level of innovation, formality or prevalence. Depending on these “internal characteristics”, the procedures to initiate, develop and promote social innovations are different (Rückert-John *et al.* 2014, p. 9ff). And, of course, different social innovations can bring about different degrees of change. A social innovation could be about a slight change, for example a new management process, but others might be about new ways of for example doing research and therefore involve a radical change (Wigboldus, 2016).

To further develop, some innovations need seed capital, others need strategical support, for example contact to companies or assistance with the removal of impediments, for example obtain permits from the administration. Support in public relations helps all of the innovations; in this case, it is just important to figure out which target group wants to be reached. Nevertheless, as all innovations are very different, they all need different foci and combinations of foci; this also depends on actor constellations in the project (Rückert-John *et al.* 2014, p. 11, Rückert-John *et al.* 2015, p. 80).

In the real-world laboratories in TransZ, different kinds of social innovations developed out of the needs of the inhabitants. To actually activate existing potentials and to focus on existing problems in the urban district centers, the process was designed very openly.

Real-World Laboratories and Social Innovation in the Project TransZ

The University of Applied Science Stuttgart (HFT) initiated real-world laboratories in two different centers in the greater Stuttgart area. After introductory talks with representatives of the city administration, interviews with key personalities in the urban districts were conducted by which further motivated multipliers were identified. People with different backgrounds and perspectives could be won for the process: Residents, retailers, restaurant owners, representatives of social institutions, artists, etc. got involved in the process. They were invited to so-called "steering groups" to exchange ideas about the future of their district center, to develop actual ideas they could realize on their own and to initiate projects. Invitations to official meetings were sent by mail and e-mail, were published on the project website, in the local newspaper and communicated by the already existing participants.

The role of the city administration is very important. In the real-world laboratory, Stuttgart Wangen (S-Wangen) the University of Applied Science Stuttgart invited interested people to the first meeting, but from the very beginning, the city administration assured support in the process. They offered a room for the meetings, attended the meetings without making demands and even organized an information session about the planned real-world laboratory process. Still, the real-world laboratory process was clearly connected with the University of Applied Science Stuttgart, the city administration was in the background. The University of Applied Science Stuttgart set up the communication structure, invited to interviews, designed the real-world laboratory process, etc. This

trust of the city administration in the University of Applied Science Stuttgart led to the fact that new committed people in the urban district were reached due to the changed communication structure.

In Fellbach, the location of the second real-world laboratory of the University of Applied Science Stuttgart, the city administration did not support the real-world laboratory process as strongly as for Stuttgart-Wangen. There were no rooms offered, no attendance on meetings without clear communication about the importance of the attendance, no extra information about the real-world laboratory process. Nevertheless, the people in Fellbach were still interested in the real-world laboratory and attended the first meetings.

During the meetings, it became obvious, that the majority of those involved were willing to play an active role in the real-world laboratory process. In both real-world laboratories, the first self-organized processes already developed during an initial “idea development phase”. The ideas in the real-world laboratories are very different; they have been developing in the course of the process.

In S-Wangen for example, a homepage was created to improve the presentation of the district's potential, a city game for networking and education was initiated, a building workshop for the redesign and revitalization of a central square was carried out and a non-commercial flea market was organized. In addition, various temporary interventions were carried out in one of the real-world laboratories under the title "Talking Streets". An international and interdisciplinary team of students made "city stories" visible, pointed at deficiencies and articulated wishes of the residents. The interventions were an important part of the debate about the future of the center, which is developing from a former village center to a place of intercultural coexistence. For example, lunch was taken together on temporary furniture, several creatively designed "communication boards" in the district were used to ask about the district's potential in different languages, an oversized local newspaper was used to stimulate conversation or a temporary "blasting device" was used to draw attention to a disturbing fence. It was noticeable that the acceptance of the interventions decreased over age. There was little understanding on the part of many elderly in the district, whereas children participated in the different actions, were not too shy to write their thoughts on communication boards, etc.

The focus in Fellbach was different; participants there designed a new logo and developed a shopping guide for the area. Furthermore, the group discussed some ideas about a better connection between different actors in the area but did not develop them further.

If one compares the two districts, the different spectrum of the ideas becomes visible. The social innovations developed in the real-world laboratory S-Wangen did not need much support from the University of Applied Science Stuttgart, the mixed group focused on many different aspects including history, education, urban design, etc. In Fellbach the group was mixed as well in the beginning but changed to a single retail-oriented group throughout the process. As a result, the actually developed projects focus solely on retail issues. In contrast, the district S-Wangen is not just about retail, it is a mixed district next to an industrial area where people live, work, go to school. The examined part of Fellbach is a mixed district as well, but the persons working in retail relate most to the street itself. Surrounding inhabitants, cultural or educational institutions rather relate to the entire city and not to the examined district center. Therefore the sense of responsibility for the street of the retailers is much bigger than from other, for example, institutions or inhabitants.

Conclusion

During the process, a number of findings could be ascertained.

It was important to trust in the ideas of the participants and to transparently communicate with all participants. The municipality (city administration and local city policy) has a central role to play. Without the trusting atmosphere created by the city administration in Wangen throughout the years, the various interested people would certainly not have been so motivated to participate in their center in the long term. In Fellbach the sustainability of the developed ideas is in jeopardy, there is not such a trusting atmosphere as in S-Wangen; it is rather an atmosphere of mistrust. Especially if the sense of responsibility for the area is rather limited, as it is in Fellbach, the role of the municipality is even more important. The neutral role of the University of Applied Science enabled a positive real-world laboratory to start in both areas. However it is not possible for a University of Applied Science to reorganize retail in a shopping street, social innovations would have to happen on a different level in this case. This is also not possible for retailers on their own; in this case, the municipality plays the most important role. Therefore, besides seed capital, strategic support, removal of impediments or support in public relations, sustainable social innovations need support and trust on the part of the city administration.

Of course, it must also be discussed how the individual people were addressed and which type of activation seems to be the best to motivate people to become part of the transformation process. The direct contact to first multipliers and the further contacts developing out of the interviews were very good to get an overview and the trust of the participants. This personal atmosphere motivated both sides, the University of Applied Science Stuttgart and the participants. On the other hand, the anonymous communication boards also activated many people to write down their opinion. The mix of methods – in this case, classical interviews and different kinds of urban interventions – could reach a wide mass. A mix of methods is recommendable for every project, only in this way numerous opinions can be captured and thus a greater acceptance in the population be generated.

The small administrative structures in the Stuttgart area further facilitate social innovations in urban district centers. Every urban district has its own district governor, thus it is easier for the citizens to talk to a responsible person. Moreover, it is easier for the district governors to “care” for their district and stay on top of things as the size of the area is manageable. These district governors have in turn better contact with the town hall than citizens have and therefore can achieve support for the social innovations in the district more easily. Nevertheless, this does not mean, that real-world laboratories are suitable and effective only on district/quarter level. It depends on the topic the real-world laboratory aims at, some topics (e.g. socio-technical dynamics) need the real-world laboratories on city level and for other topics (e.g. cultural identities), district level is enough (Schneidewind, 2014, p. 4).

Social innovations are highly dependent on diverse interests in the group. The different actor constellations, of course, led to different social innovations in the districts. Different professions, different ages, etc. result in different interests, lead to, for example, different abilities, and different amounts of time for the project. In the end, the thematically mixed oriented group in S-Wangen was very productive, as different interests met each other and therefore ideas could grow. Of course, there are also inconsistencies in this process, but they have to be accepted as part of the process

(Wigboldus, 2016). The participants developed social innovations that have value for a large part in society, not just for one group. In Fellbach the thematically one-sided discussion led to a potentially possible solution of one problem, but not to social innovations. Different opinions have to be discussed, different people have to find a problem or potential in common – this is what social innovation is about - not the generation of profit for retailers by designing a new logo or shopping guide.

The research project will continue to focus on these issues; there is more need for research.

Social innovations have the potential to support a sustainable transformation in urban district centers. Within the framework of a real-world laboratory process, the advantage of external support is added. An institution like the University of Applied Science Stuttgart can bring different people together, make them discuss their needs and the potentials of the urban district and thereby function as a catalyst for social innovations. Especially in urban district centers, it is important to support social innovations, they are places of daily routine, places where people live and not just go to work to, and therefore places for social innovations to happen. Many challenges can be solved best on the urban district level, but they have to be discussed with many different persons and need support and trust from the city administration. Top-down and bottom-up urban development are no opposites anymore but should be used to complement each other.

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Co-creating collective imagination. How to produce thought-images for urban reframing?

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Abstract: This paper situates epistemological challenges of community-based practices and social innovation research within the perspective of urban transitions. It explores characteristics of innovative, contextualized and generative planning stories. Insights about transformative imaginaries are distilled from an explorative case of reframing urban challenges by thought-images. Planning – as a critical discipline co-creating and supporting explorative paths towards a sustainable future – cares about approaches that can deal with community building for change. This implies an expanded language of planning. Decisive dimensions and characteristics of such a language, and how to build it, can be learned from ‘concept grants’ serving urban policy in Flanders. These grants serve multidisciplinary teams to reframe inchoate situations conceptually, to root those concepts into ongoing and new local processes, and to prepare for implementation. Collective re-framing makes stakeholders ‘see’ the potentials of a unique situation. They can feel how new collaborative coalitions can lead to effective change. They can imagine a different future and the capacities needed to bring it into reach. They incorporate imaging a thought-image while collectively creating, testing, refining and actualizing it.

Keywords: Co-creation, urban policy, reframing, thought-image

Introduction

This paper situates epistemological challenges of community-based practices and social innovation research within the perspective of urban transitions. It explores characteristics of innovative, contextualized and generative planning stories. Insights about transformative imaginaries can be taken from an explorative case of reframing by thought-images.

On transforming the language of planning

Community development versus challenges

Actual challenges demand substantial transitions. All over the world climate change, migration, uneven development and many related issues are put on the agenda tenaciously. Pressure from scientific and grassroots communities are increasing. Although political will to change is expressed discursively, it is hardly found in action mode. Finding effective answers to all those challenges is a complicated endeavor. The interplay amongst physical, social and mental dimensions is of a complex nature. Climate, eco-systemic, and socio-economic challenges need to be tackled in a systematic and integrated way. Ambitions and programs ought to be global; actions and interventions need to be local in order to effectively change, show and ‘sell’ the ideas behind. To realize this, many social and economic sectors, policy domains and disciplines have to be involved and interrelated. In Flanders, a recently created, expert-based Panel for Climate Change and Sustainability (*Panel*

voor klimaat en duurzaamheid) listed ingredients for the urgently needed systemic transition in order to tackle climate change and ecosystem crisis. These ingredients cover multi-level governance, nature and open space, industry, housing and spatial planning, mobility, energy, food, production and consumption, science and innovation, integrative and transversely, community building (Klimaatpanel, 2019). Worldwide it is only one out of many reports, declarations, programs and agreements for a drastic transition. But it serves the purpose to stress a crucial aspect in terms of activation and success: active community development. In the report this is framed as a combination of citizenship, coproduction, and deliberation. It implies mental shifts, empowering communication, deliberative and co-productive democracy. Although listed in the report as the last ingredient in a cocktail of actions and interventions, it should be considered to be the keystone: the one stone of an arch, which finishes the construction, consolidates its strength and symbolizes its meaning.

Re-conceptualizing planning language

Today, active community development is an opportunity and a task for planners. We know that spatial planners are able to identify and articulate multi-faced challenges within a complex socio-spatial context. We expect that they are prepared to articulate socio-spatial transformations dealing with such challenges, to the benefit of concrete people and places. This implies involving stakeholders within processes of collective learning, defining together combinations of goals and means for the implementation of priority transformations. This means working for and with people and places as components of an integrated socio-ecological system (Segers, 2016). As a critical discipline, co-creating and supporting explorative paths towards a sustainable future, planning cares about community development/engagement for change. To that end, planning is building up an expanding body of approaches (ideas, practices, attitudes), taking into account physical, social and temporal contexts. These approaches are evidently change-oriented.

Leonie Sandercock stresses that stories are of essential nature in planning, and qualifies crucial factors: organizing hope, negotiating fear and mediating memories (Sandercock, 2003). Indeed, the challenges ahead of us demand drastic changes. No-one knows their precise nature and impact. Such changes of existing socio-spatial regimes inevitably will meet resistance, inspired by fear for (drastic) change. Overcoming this resistance implies an expanded language of planning (Sandercock, 2003: 221). Evidently this language should acknowledge not only knowledge, but also emotions such as desire, anxiety, relief, etcetera. Stakeholders need to be convinced that improvement is possible. Moreover, they have to believe that their engagement matters and will contribute to change. Thus stories need to be able to express rational as well as imaginative dimensions.

A language for collective imagination

Like a language, stories need to be shared in order to be productive. Effecting complicated changes, such as building cities and developing regions, asks for an adherence to shared myths (Harari, 2018). Such shared stories enable large groups to plan and implement complex tasks, by collaborating in a flexible way, adapting to circumstances (Harari, 2018: 46). Collective imagination, as a concept, encompasses all this. “In every community or group of people exists a *collective imagination*, i.e. a set of symbols, customs or memories that have specific meaning to it and common to all the people who are part of it.” (Wiki Didactic, 2015). Examples are dominant religions, their holy stories, values, symbols and history to the extent they are well known.

Imagination is essential. In order to initiate change, planning stories need to allow actors to create a world that looks different from the world that exists. *Imagination* is often linked to creativity. It is the capacity to represent (an image of) something which is not present (Arendt, 2016: 242). Scholarly articulations of Arendt’s conception of imagination include: “the capacity to represent the perspectives of other people in our mind, the capacity to represent in our mind an object that is not present, and the capacity to imagine a new reality in place of the one that exists” (Tyner, 2017: 523). ‘*To imagine*’ thus stands for the process of (re)calling impressions and experiences of objects, persons or situations, and of creating new ones in the mind’s eye. We use the term ‘*imagining*’ for the act of creating mental ‘*images*’. The term ‘*imaging*’ stands for ‘idea formation’, the “actual

durational experience of mapping, drawing, modeling, and making as a generative sequence in creative thinking” (Corner, 1999: 246). The resulting constructed concrete objects or representations can be called ‘pictures’. Creating and representing new futures, as essential processes of innovative urban renewal projects, thus are very much depending on imagination.

While imagination is essential, a collective dimension is crucial. Transition thrives on effective changes of behavior by many actors. Urban transformation is city-making, which always implies interventions of many actors in public spaces. To push for a mental and behavioral shift of local actors is one thing; to redirect their different perspectives along a similar line of flight is much more difficult a commission. Whenever their imagination is a collective imagination, it will perform better in the service of urban transformation. Co-oriented imaginations and imaging will contribute to the coherence of interventions. The way we imagine our environment is decisive for the way we see it, conceptualize it and make it (Corner, 1999). Therefore this collective dimension of imagination is crucial, and needs to be taken care of. According to Arendt (political) judgment and action rely on a collective dimension. Imagination is instrumental in mobilizing the capacity of *sensus communis*. This sense – the effect of reflection on the mind – links an actor’s judgment to opinions of others (Arendt, 2016), by subjecting his ideas to the possible judgment of others (Tyner, 2017: 523). Reflecting on the imagination of other actors’ opinions is called ‘enlarged thinking’. Arendt’s *sensus communis* enables such ‘enlarged thinking’ which is the condition for a just judgment, constructed relatively unbiased via imagination and reflection (Schreurs, 2019).

In any real process of urban transformation, three questions are on the collective agenda: What do we want? What can we want? What will we do? These questions imply the need for a three-fold capacity: cultural imagination, designerly research and political decision-making (Brugmans, 2016). Those capacities energize innovative, reframing ideas, produced by imaginations of many and diverse actors. ‘*Imaginaries*’ – imagined representations of the future (Hajer, 2016: 78) – play a decisive role in reframing as a prerequisite for potential transformations. Maarten Hajer coins such a transformative vision as ‘*thought-image*’: a shared perspective on the world, which enables common practices, together with a commonly supported feeling of justice and goal-orientation (Hajer, 2016: 78). Similar to ‘eidetic operations’ (Corner, 1999), thought-images share the aim to create a connecting dimension by means of a collective imagination covering thinking, feeling and making.

Explorative research into thought-images

Summarizing: making community development the corner stone of a transformative planning approach, implies the need for constructing an expanded language, mobilizing stories that serve and (re-)produce a collective imagination of thought-images as imaginaries of an alternative world. We now understand what collective imagination is and why it is of crucial importance. The next question is: how can it be produced or stimulated? This raises new questions: Which kinds of thought-images are able to express clearly the meaning and ambitions of transformations aimed-at? Which actors can imagine such alternatives? Which imagining and imaging can help to translate thought-images of change into effective implementation?

We consider these as guiding questions in our explorative research for the characteristics of transformative thought-images, as well as for their meaning and importance. This research will be approached by analyzing a case. An illustrative demonstration can be found in cases of ‘concept grant’, used as an instrument of Flanders’ Urban Policy. Why? As will become clear in the next section, there are three important arguments. Processes initiated by Urban Policy administration are oriented to urban change (Loeckx, 2009). More specifically, concept grants have urban reframing as a main goal. Finally such reframing is combining triple characteristic: innovative concepts, action and implementation-oriented, anchorage in local processes (Schreurs, 2018). A transformative ambition, a conceptual focus and implementation at the horizon seem to be excellent starting points for an exploration into transformative thought-images. We first explain the approach of concept grants and its context. Next we focus on one specific good practice in order to learn how collective imagination is

coproduced in practice. The final section concludes on characteristics of structure and sharing of thought-images.

Learning from Urban Policy concept grants

Urban renewal as capacity building

Announced as ‘White Paper’, as a visionary document preceding concrete goals and actions, the book *The Century of the City; City republics and grid cities* (Boudry *et al.*, 2005) marked a decisive turn in Flanders’ urban renewal. The new approach can be marked as project-based co-production. Renewal of the city hardware was thought of as an alternative for direct support for soft interventions within deprived neighborhoods. As such it was controversial. Years after the start of this new urban policy, critical voices were still being raised, but concrete results and shifts in focus made discussions gradually more nuanced and productive. Amongst the most important shifts we consider: more attention being paid to social aspects of sustainability and development, and a more explicit focus on citizen participation. The responsible administration in Flanders, the then newly founded Team Urban Policy (part of the Agency of Home Affairs of the Flemish Government), was inspired by multidisciplinary reflection. This led to amending a pure project-based approach (Loeckx, 2009). A multidisciplinary jury judged, using clear and coherent criteria for ambitious qualities. Co-production had to involve not only local government and private developers, but also a broad scope of stakeholders and designers. An important goal of the new approach was to use co-production of urban renewal projects for local capacity-building in favor of directing complex projects. One can argue that this succeeded quite well, as can be judged from a growing number of speech-making projects and processes (Loeckx, 2009; Cherroud) (one of which will be discussed at length).

Urban Policy instruments

An appealing instrument, created by the Urban Policy Team is the *project subsidy*. It can be awarded to 35 Flemish cities if the following conditions are met: socio-spatial qualities, co-creation and direction by the local government. This subsidy is meant to contribute decisively to investments in innovative urban renewal projects, which have to function as a lever for a neighborhood’s potential and to increase its living qualities in a meaningful way (VLAAMS STEDENBELEID). Key-aspects that need attention are: a sharp project-definition, capacities needed to translate this into effective realization, relevant development-coalitions and processes (Loeckx, 2009).

Apart from this project-subsidy, a concept grant is made available by the Team Urban Policy. The subsidy is meant for hiring expert assistance from a multidisciplinary professional team. The award includes support from a Direction Team of experienced professionals and academics. The main goals are similar to those of the project-subsidy: to contribute to community-shared innovative and sustainable answers to crucial challenges, seen from an urban perspective. A specific goal is to stimulate capacity building on how local governments can play a directing role when the situation (conditions and opportunities) for renewal are still unclear or even inchoate. Such conditions need innovative (re-)framing. Therefor the instrument is geared to develop concepts which help to simultaneously diagnose, test and discuss alternative futures and means for implementation. Concepts result in new perspectives on possible and feasible change-trajectories. Depending on case and context, the contours of these concepts can be an inspiring project-definition, a visionary brief, a program for a civic debate, a set of urban manuals... The history of the tool concept grant displays an evolution from designerly exploring possible spatial interventions, towards primarily socio-spatial inquiring into possible answers to social challenges, starting from concrete places and crucial coalitions. Concept grants thus play a double role: locus for conceptualizing local urban transformations, and breeding-ground for continuous re-conceptualizing urban renewal. These are favorable prerequisites for analyzing a case of transformative thought-images produced co-creatively.

Learning from a case: from coal track to multi-productive trajectory

With Peter Murphy's endeavor to explore the social foundations of imagination and its collective expressions (Murphy, 2012) in mind, this section analyzes a case, illuminating problem and context, conceptual re-framing by innovative metaphors, and the co-creative process.

Need, demand, desire

Two years ago a concept grant labelled 'Multi-productive coal track' ('*Multiproductief Kolenspoor*') reported on its hope-giving results (plusofficearchitects *et al.*, 2016). The study starts from an *objet trouvé*: an old railway track formerly interconnecting three mining sites and a harbor. The railway track is used-up and still functioning only very partly. Thus futures-to-be-found for that infrastructure, should be useful and concrete. Most important however, the re-conceptualized track should serve as a catalyst for the future of the whole city of Genk. This former coalmining city is in need of new development perspectives urgently. Indeed, after the closing down of its coalmines in 1987, its next major economic motor, a huge FORD-automobile company plant, also left the local scene in 2014. A multi-disciplinary team of urban designers (Plusoffice), landscape architects (DELVA), and socio-spatial experts (Social Spaces - University of Hasselt) was invited to figure out how this mono-functional infrastructure could function as a multi-productive network. This resulted in an inquiry of the potentialities of diverse productive scenarios, as well as their transduction into concrete coalitions, prepared for realizations. Its explicit ambition was to build upon existing initiatives and actors, and to scale those up towards an innovative multi-productive socio-economic model.

At the moment the process of the concept grant started, it was impossible to clearly articulate the question 'which future suits Genk-in-crisis best?' The majority of the population still fell rather at ease due to an active branding by the city government, as a creative hub with a shared spirit, driven by an imaginative verb: 'to Genk'. The important underlying question – How can we think, develop and secure Genk's future? – was rather formulated as hope by the local council: 'The coal track together with the adjacent old mining sites seems to have capacities to function as a structural basis for future urban developments' (CITY OF GENK, 2014). Hope expresses desires; desire is the result of a 'lack', originated from the imploded mining industry and the empty FORD-factories. As we know, it is quite hard to articulate desires clearly. Expecting that an imaging_concept study would meaningfully contribute to such an articulation – content-wise and in terms of process – was not farfetched.

Moving, connecting, collecting

In line with these expectations, the multidisciplinary task-force tried to reframe the 'space' of the old coal track. The physical space is a linear trace through the landscape, sometimes a cut-through, sometimes elevated, filled with remnants of the former use, limited by expanding adjacent occupations, heavily fragmenting the landscape. Although out of sight and out of heart for most inhabitants, this space is also a mental trace connecting the industrial past, the present-in-crisis and the hopeful future. Research, reflections and discussions with stakeholders (city councilors, administrations, civil society, economic actors, experts) were synthesized in three scenarios for 'thematic trajectories': Experiential Green Belt (*Landschapsbelevingspark*), Production Loop (*Productielus*) and Recycle-machine (*Kringloopmachine*) (as represented in Figure 1). Partly inspired by historical and contextual opportunities, but soaked with a 'next economy' philosophy (Ruimte Vlaanderen *et al.*, 2016), these verbal images for a multi-faceted re-use of the track-space, express how the decrepit track could strengthen local resilience. It could enable recreational access to a beautiful undulating landscape of small creek valleys. Inner- and intercity connectivity for innovative modes of transport could be improved, thus helping to reduce the now excessive regional car-mobility. Alternative energy-concepts, based on circularity instead of (the former) extraction, could strengthen the weakened economic tissue. The capacity of these verbal images to tell a

[illegible]

Figure 1: a typical page from the final report, representing the three trajectories (right hand side) and how those might evolve over time (left hand side)

Van monofunctioneel tot multiproductief

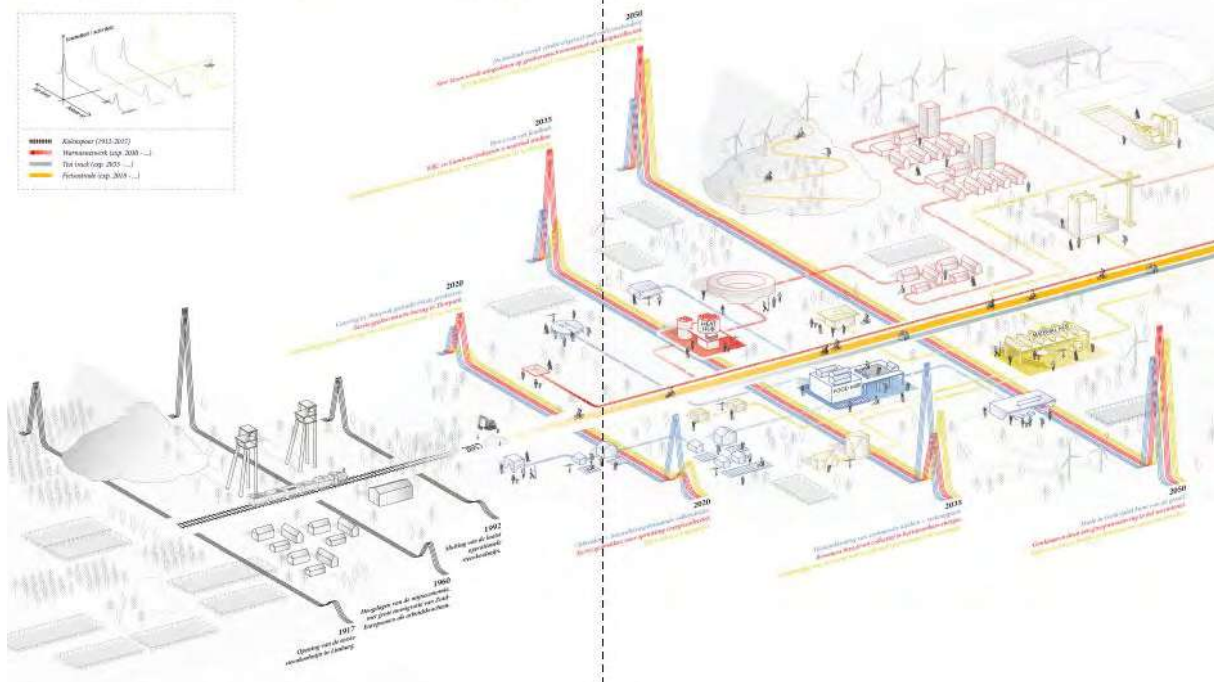
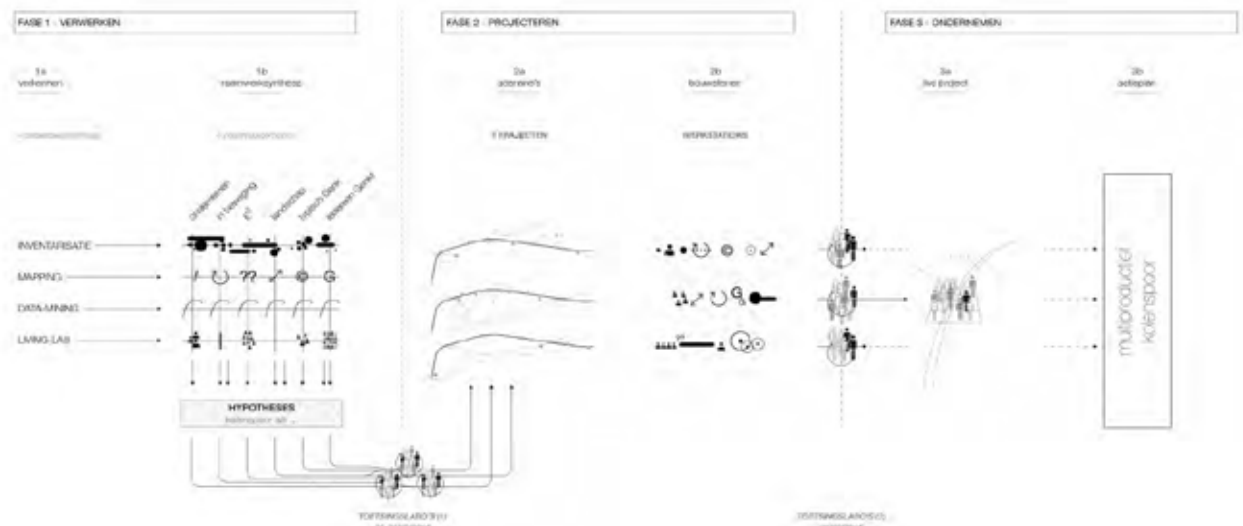


Figure 2: Idealized possible evolution of three coinciding trajectories and workstations, projected on the space of the former coal track, being instrumental to an evolving metabolism which is fed by formal and informal activities, becoming more intensive over time.

Imagine, develop, test

The process of the inquiry is structured into three phases (as schematized in Figure 3). ‘Processing’ (*Verwerken*) of multi-various data collected by fieldwork and desk-top research, means analyzing inventories (of study reports, plans, projects, actors), data-mining focusing on productive structures, mapping of physical and social phenomena, and experiences from an existing living lab exploring local capacities. ‘Projecting’ (*Projecteren*) synthesized six preliminary hypotheses concerning the future of the coal track into three trajectories (as thematic scenarios for the future) and three workstations (as building blocks for those scenarios). Finally an ‘entrepreneurial’ phase (*Ondernemen*) brought these concepts to the level of live tests and action plans, performed by preliminary coalitions.



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Figure 3: Three phases of the concept grant process (processing, projecting, undertaking) interrelated by two sets of test-labs.

These three stages are interrelated by two sets of test-labs (*Toetsingslabo's*). These serve to bring the hypotheses together – conceptually in trajectories and workstations, literally by stitching patches into a quilt (as can be seen in Figure 4) – discuss and reformulate these, in order to be tested with and by already engaged and interested stakeholders. The first test-labs resulted in the thematic trajectories already mentioned. As ‘what if’-scenario’s they were appreciated for their capacity to link and to integrate. Imagining the future coal track as workstations on a multi-productive trajectory worked as an invitation to project diverse initiatives onto and nearby the track space. As such many actors could be identified and stimulated to participate and meet, to think collectively and to design collaboratively. The second set of test-labs developed the workstations as concrete emanations of alternative socio-spatial futures of the coal track. Stakeholders from the urban productive community collectively re-conceptualized, developed and tested the hypotheses about the workstations against possible and feasible coalitions (mixture of small and large players), territorial distribution (concentrated or dispersed connectivity), intensity of connectedness to the track (adjacent or as window of a distant company seat). Combinations of diversities were always an important and explicit goal, because aiming at a robust platform for concrete initiatives. Actions were considered as a route towards governance of the coal track, but even more to excite and to inspire local entrepreneurs.



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Figure 4: A test-lab taking place in the living lab ‘The Other Market’, co-producing a carpet visualizing trajectories and workstations.

Co-creation for co-orientation

The imaging structure of a thought-image

The collective imaging of three trajectories and their workstations results in a complicated but productive thought-image. The catchy titles (the themes) attract attention. They imagine a possible future, dealing with present issues, building on assets from the past. The given labels (Experiential Green Belt, Production Loop, Recycle-machine) sound strangely familiar: common language uncommonly used. As such, these offer holds for specific ideas and reactions, but also invite (re-)interpretation. Thus they open an arena for suggestions, reflections, discussions, considerations... and organize group discussions.

Graphically the content of the themes is suggested by means of multiple small schemes and diagrams. Those schemes are imaging different sectors and related aspects. The Experiential Green Belt is for instance elaborated into six drawings (Figure 5). Each can be read as a story which adds meaning to the theme, c.q. the larger story. This helps to imagine one trajectory as multiple possible trajectories. Thus the drawings actualize the multi-productive aspect of the trajectory once more. Additionally, the drawings play with similarity and dissimilarity. Within the six stories of the Experiential Green Belt, functionally and affectively a cluster can be discerned composed of ‘small-scale’, ‘recreation’, ‘bicycle culture’, ‘green belt’, ‘landscape’, ‘ecology’, while ‘attraction pole’, ‘food-project’, ‘cycle infrastructure’ rather seem to belong to different sectoral domains. At the same time these more technical terms prepare the soft green belt to couple with the two other trajectories/themes, thus reinforcing the multi-productive mission.

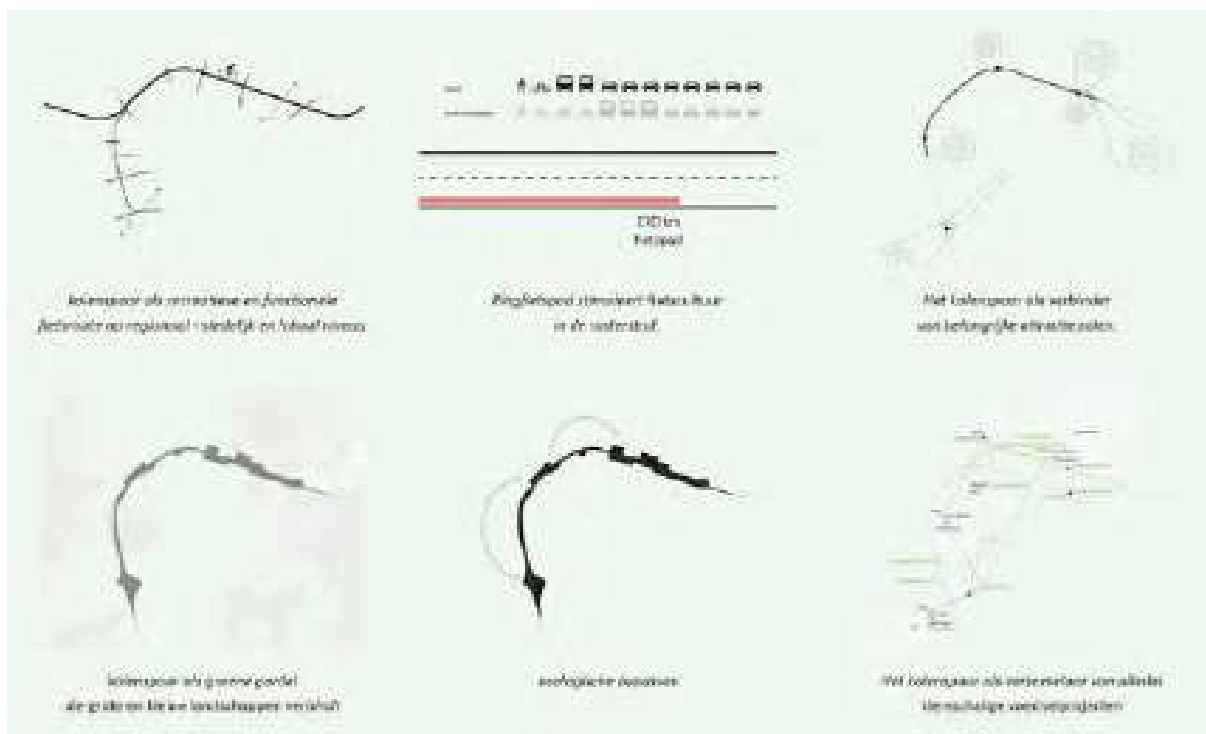
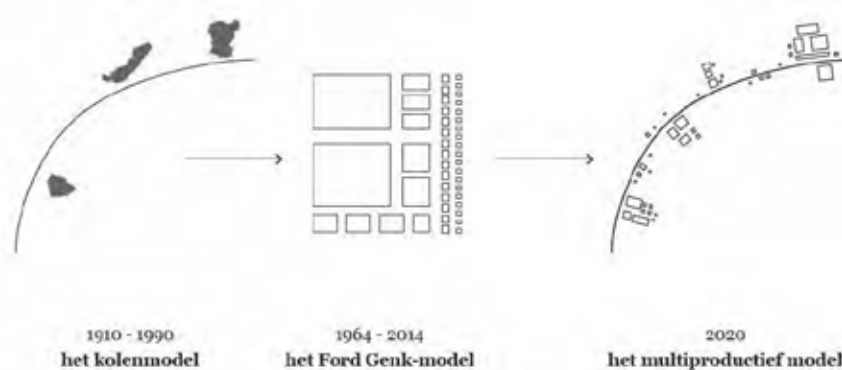


Figure 5: Six schemes imaging the rich content of the trajectory Experiential Green Belt.

Together, the three trajectories and their work stations produce a multiplicity of imaginative ideas. The combination of catchy but intriguing titles, rather simple schemes and diagrams, as well as concise phrases offers a thought-image which is accessible and recallable, and thus easy to share and to distribute. This format of ‘thought-image’, combining *inscriptio* (titles), *pictura* (pictures) and *subscriptio* (captions), is well suited for

conveying critical, transformative content (Richter, 2007), in this case an alternative socio-economic model for the city (cfr. Figure 6). This format also helps to grasp essential meanings, without the need to name those explicitly (and thus reducing the meaning more often than not). The ideas produced and the way of representing those is similar to what James Corner calls “an aesthetics of invisibility, a perception of essences. Speech, verbal description, gestures, and other rhetorical figures conjure up such otherwise invisible images, allowing one to see an idea.” (Corner, 1999: 247). Paraphrasing Corner, we state that “imaging, understood as idea formation” is integral to the conception and practice of the thought-image produced. The ‘multi-productive coal track’ is a crucial imagination for a transformational turn. This ‘multi-productive coal track’ is also a collective imagination. The focus on the coal track as connecting and collecting public domain, is appealing to many and diverse stakeholders. The overlap of several trajectories on one track adds arguments such as efficiency, feasibility, cooperation, intensity... which are valuable for different city-makers. Moreover, thematic associations with the bucolic regional landscape, the heroic historical production-capacity, and the promising new recycling machine touch affective registers and thus the readiness to act.



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Figure 6: Three schemes representing the search for alternative socio-economic model, underlying the collective story of imaging a transformative thought-image for the coal track.

Sharing thought-images

While thought-images are crucial instruments to change a regime (Hajer, 2016), they need to be shared in order to be productive in a context of spatial planning. The concepts developed to frame the coal track as a multi-productive network, possess characteristics that will help: articulated representation, appealing to ratio and affect, and a critical attitude inspire many stakeholders. This seems to be confirmed by the number of stakeholders and more importantly by their participatory intensity. The fact that the mayor asked the multidisciplinary team to produce a note which could explain the thought-image during a talk in an elevator, is a strong indication that the local government is strongly supporting the idea of sharing. The idea of a multi-productive network also helps imagining the concept of ‘grid city’ (*Rasterstad*) which is the shared dominant socio-spatial concept for the future development of the whole city. This confrontation of a general, city-wide concept and a pre-proposal for projects invites citizen to debate these views of the future.

Institutional links between the concept grant and broader planning initiatives result in even more occasions to help share this thought-image. The timing was for instance perfectly attuned to a sub-process of the Spatial Policy Plan Flanders (*Beleidsplan Ruimte Vlaanderen – BRV*), which started in 2014, and to which the concept study contributes concreteness, tangible scale and assessments of stakeholders. Next, as a follow-up, of this *relance* of the BRV, a regional strategic project was mounted and approved for funding, while the city of Genk and the province of Limburg activate and co-coordinate its work. The results of the concept study were also

displayed at the International Architecture Biennale Rotterdam (IABR 2016), primarily reaching peers. On top of this, most of these initiatives connect in one way or another to a so-called territorial development project (T.OP) for the province of Limburg, which researches the assets of space in terms of regional socio-economic development.

The most concrete occasions to share opinions are structurally linked to the co-creation process of the concept grant. The imaging-process and the twofold intermittent design and deliberation in ‘test-labs’ happened in collaboration with the living lab ‘The Other Market’ (*De Andere Markt*). Already functioning before the concept-study, this organization is networked well locally. Thus it could, and still can, identify, activate and connect diverse groups, over a longer period of time. During the concept study, the living lab opened up this network, amongst other things by the collective making of a tapestry, imaging the three thematic trajectories and workstations, and using this as a medium of collective participatory design (as seen in Figure 4).

Coda

It would be arrogant to state that choices for new futures of the coal track are secured and that necessary changes of behavior are guaranteed. They are not. Nevertheless one can observe many signs of sympathy and interest of inhabitants and stakeholders: the mayor asking for a promotion-note which can help sharing the thought-image; the aldermen engaging in inter-sectoral deliberations during the process; stakeholders already exploring potential coalitions during the test-labs and the making of an action program; new contacts being established and routes for cooperation being explored; coalitions becoming already active, e.g. in launching a food-cooperative; effective coproduction of collective mock-ups that pre-figure future workstations. It is clear that this imaginative process of concept grant is hitting the imagination of many. The collective re-framing makes stakeholders ‘see’ the potentials of a unique new public space. They can feel how new collaborative coalitions can lead to effective change. They can imagine a different future and the capacities needed to bring it into reach. They incorporate imaging a thought-image while collectively creating, testing, refining and actualizing it.

Whether this thought-image will be able to generate more and more enthusiasm, whether more stakeholders will be prepared to share their engagement, whether all will be or stay motivated to evolve into the same direction, whether inspiration will stay ahead of transpiration... is not certain at all. But without doubt, the contours of the desire to act became imaginable. Behavioral change obtained a lively line of flight.

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Street-Level Democracy?

Urban professionals as participatory innovators in neighbourhood planning processes

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Abstract: In 2017 the municipality of Amsterdam launched a programme to combat a housing shortage and realise ambitious societal goals for 32 of its most deprived neighbourhoods. After decades of urban renewal projects, these areas still scored poorly on most socio-economic indicators. The programme aims to develop more affordable housing for low- and middle-income households, to revitalise the existing public spaces of these neighbourhoods and to improve the residents' socio-economic position. In addition, the progressive municipal council installed in 2018 intends to democratise urban renewal processes with the aim of increasing community involvement.

The first phases of the urban renewal programme have now been completed and the 'street-level bureaucrats' involved adopted the democratization agenda. The focus has shifted to the challenges these bureaucrats face. To identify the key challenges confronting them during the participation process, 30 qualitative interviews were conducted. In partnership with the municipality, the AUAS also developed a community of learning with street-level bureaucrats who work in the designated neighbourhoods by organising monthly learning sessions. These

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street-level bureaucrats work at the nexus of new participatory ambitions and ossified municipal bureaucracies. They are constantly searching for shortcuts within planning procedures to ensure that citizens' needs and ideas are incorporated in the plans they develop. Their disruptive interventions potentially reveal effective pathways for democratic community-based development.

Keywords: street-level bureaucrats, deprived neighbourhood, disruptive interventions, urban renewal

Introduction

In 2008, a national urban renewal programme was launched in the Netherlands, aimed at revitalising the most deprived neighbourhoods across the country. The programme included seventeen neighbourhoods located in Amsterdam. In line with the planning paradigm of that time, project-based planning was used to combat socio-economic and spatial problems. These redevelopment projects were systematically monitored between 2008 and 2012, and this showed that the expected improvements had not played out as intended (Permentier, Kullberg and Van Noije, 2013; Koster and Van Ommeren, 2018).

In line with a decentralizing trend, a new national coalition government stopped national funding for local regeneration programmes in 2012. However, as most deprived neighbourhoods in Amsterdam were still suffering from socio-economic problems, the capital city presented its own local programme of urban renewal in 2017. This time, 32 deprived neighbourhoods in the city were designated as Developing Neighbourhoods ('Ontwikkelbuurten'). They are located in the districts of New-West, South-East and North ('Nieuw-West', 'Zuid-Oost' and 'Noord'), and also include the 17 neighbourhoods selected for

the national round of urban renewal in 2008. Four interbellum neighbourhoods within the city's ringways that were included in 2008 were excluded from the current programme. Consequently, the new programme mainly focuses on post-war neighbourhoods in the city's periphery (see figure 1).

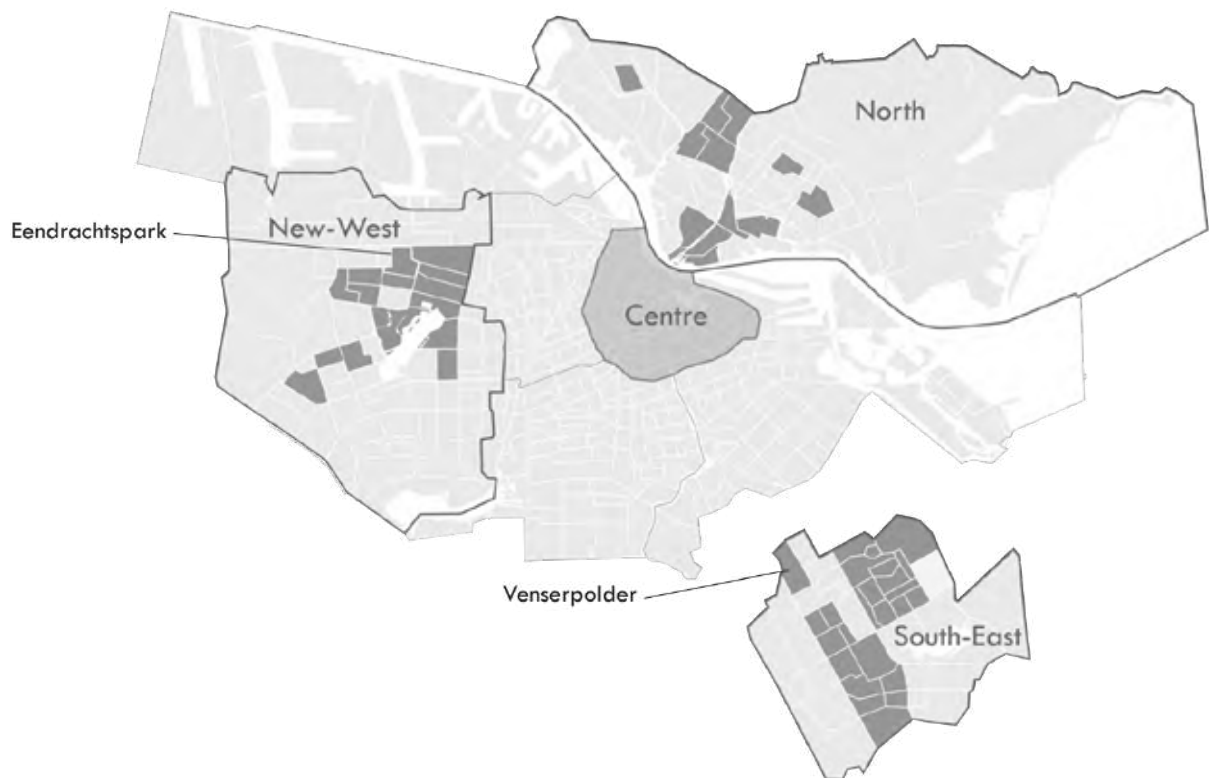


Figure 1 The 32 'Developing neighbourhoods' in Amsterdam.

In 2018, with the arrival of a new progressive municipal council, the Developing Neighbourhood policy was coupled with the city's new Democratization Agenda. It became an official policy goal to 'develop a new way of working in which Amsterdam's residents are involved in making and implementing policies (Gemeente Amsterdam, 2019). This new focus on 'democratization' is not unique to Amsterdam. Cities in the Netherlands and abroad increasingly aim to develop new forms of citizen participation via more direct forms of democracy. This can be seen both as a response to perceived public hostility and existing

representative policy-making as well as an attempt to mobilize citizens' perspectives and local knowledge, ideas and initiatives in creating more responsive policies (Tonkens et al. 2015).

This paper analyzes the intersection between the policy ambitions for more democratic planning and the practice of urban renewal processes. The shift towards more democratic planning is challenging for two main reasons. First, involving citizens with a weak socio-economic position is traditionally complex (Tonkens and Verhoeven, 2018; Oude Vrielink 2017, Bovens and Wille, 2017). Second, the democratization of existing (and strongly criticized) 'consultation' practices poses new challenges to local government officials (van Stokkom, 2006). It is unclear to what extent the intricate bureaucratic machinery can, and is willing to, open up to and implement politicians' ambitions in these complex neighbourhoods.

In this paper, we focus on the challenges facing local government officials involved in implementing the ambitions for democratic urban renewal. They are street-level bureaucrats, operating at the nexus between ambitious policy goals and practical day-to-day reality. Based on their experiences, we investigate the current (im-)possibilities for democratic innovation in the practices of neighbourhood renewal.

Street-level Bureaucrats

Coined by Michael Lipsky in 1980, street-level bureaucrats (SLB) refers to (local) government officials who are in direct contact with citizens, working at the crossroads between government and the public (Lipsky, 1980; Brodtkin, 2012). Lipsky's work highlights government officials as actors making tough choices, instead of portraying them as involuntary cogs in a bureaucratic machine. Viewing government officials as dynamic actors sheds new light on policy implementation. Lipsky and others have shown that SLBs often have a significant amount of

discretionary power when implementing policy, especially when that policy is both ambitious and vague (Brodkin, 2012, 2). Therefore, ‘the decisions of street-level bureaucrats, the routines they establish, and the devices they invent to cope with uncertainties and work pressures, effectively become the public policies they carry out (Lipsky, 1980, xiii). The effect that policy has on the street, is in effect, a compromise between policy-as-planned and the complexities of society. Using their discretionary power, SLBs constantly negotiate and re-negotiate that compromise.

When the ambitions for democratic urban renewal are viewed through the lens of street-level bureaucracy, it seems likely that the operationalization of these ambitions falls to the ‘street-level planners’ – the local government officials who engage with citizens to inform them of and improve plan-making. What does this mean for the intended transition towards democratic planning? We offer two hypotheses: one pessimistic, the other optimistic.

Lipsky demonstrates that SLBs often lack the time and resources to systematically implement policies as they were intended. Instead, they tend to develop so-called *coping strategies*, reducing policy ambitions to box-checking exercises. This effect is familiar to scholars of interactive and democratic planning (van Stokkom, 2006). However, transition theory suggests that discretion can also work differently. A more optimistic hypothesis is that the discretionary space resulting from the vagueness of democratization ambitions offers street-level planners new *niches* to experiment in: together with citizens, they can find *new ways of planning* that better fit with the changing landscape. These experiments with street-level planning might, in turn, disrupt and change the existing planning regime (Geels and Schot, 2007).

We will investigate both hypotheses in the context of planning practices in Amsterdam. The experiences of two ‘street-level planners’ are used to demonstrate the challenges SLBs face when they attempt to implement democratic planning policies in their urban renewal projects. What kind of strategies do they use to navigate the complexities of citizen-centred planning, and to translate citizens’ ideas and interests into professional, sequential and hierarchical municipal planning processes? Are they only *coping* mechanisms that turn democratic planning into box-checking exercises, or do they carve out *niches* of innovative planning practice?

Method

Building on our empirical action research we reflect on the current urban renewal planning processes. Since 2017 the AUAS has collaborated closely with the municipality of Amsterdam to evaluate and innovate the participation processes of the ‘Developing Neighbourhoods’ programme. Initially, 30 qualitative interviews were conducted with practitioners who were active in 10 of the 32 Development Neighbourhoods. Using these interviews, we identified key challenges facing the practitioners from the three district of South-East, North and New-West Amsterdam (van Aanholt et al. 2019 and Spanjar 2019 et al.).

In the middle of 2018, the AUAS developed a community of learning to address these challenges. At least 15 civil servants participate in monthly thematic sessions. Most of them are street-level bureaucrats in the sense that they work directly with citizens. Based on these thematic sessions, the case studies for researching democratic planning are identified for further investigation. Using ethnographic methods, an in-depth analysis has been conducted in four projects. In these cases, AUAS researchers participated in the street-level planners’ daily routine, for example, by attending participation meetings with residents, joining SLBs in the

daily round through their neighbourhood, and attending internal team meetings. Two of these case studies are presented here: the renewal of a public space in the Venserpolder neighbourhood in Amsterdam South-East, and the redesign of a park in the Eendrachtshuurt neighbourhood in Amsterdam New-West (see figure 1 for their locations).

In both cases, the study's limitation in terms of scope and time makes it impossible to reach a definitive conclusion in relation to the hypotheses posited above. Yet the case studies can serve as a first exploration of these hypotheses. They can be considered as extreme cases for the democratization of planning: the redevelopment of existing neighbourhoods is complicated and is always accompanied by competing interests and positions, both between residents and other groups and between the municipality and citizens. Moreover, democratic redevelopment plans for deprived neighbourhoods are even more complex because they have to deal with a population that is notoriously difficult to reach and involve. Below, practitioners' names have been changed to protect their privacy.

Learning by doing: two practitioners' stories

Case: Venserpolder

James is an assistant project manager for the Venserpolder neighbourhood in Amsterdam's South-East district (see figure 1). This district is dominated by Bijlmermeer, which was first conceived in the 1930s as a new, fully planned district that complied with the CIAM's Modernist principles. Bijlmermeer was constructed between 1963 and 1975 and consisted at the time of high-rise flats organized in a characteristic hexagonal grid (Van Beveren, 2014). However, the high-rise dwellings proved to be less popular than expected. Even before the construction of all the planned flats had been completed, residents complained about the monotonous architecture, the eerie emptiness of the public space, and the lack of amenities.

Many of the new dwellings were left vacant. The promised metro line connecting Bijlmermeer to Amsterdam was not completed until 1977. By then, crime, drug use and poverty had risen dramatically. In response to the disappointment of Bijlmermeer, later parts of the South-East district were constructed according to a different planning philosophy. Venserpolder, constructed in the 1980s, is situated to the north of Bijlmermeer and is characterized by 5,000 low-rise apartments surrounding green courtyards and a mix of residential, traffic and work functions. In 2018, when the case study was carried out, it had 9,656 residents, one-third of whom were unemployed and live on benefits (compared to 18 per cent in Amsterdam, OIS, 2019). Venserpolder is one of the 32 neighbourhoods designated for urban renewal in the 'Developing neighbourhoods' programme.

In 2018, prior to making major investments in public housing renewal, Amsterdam invested in improving public spaces in the Developing Neighbourhoods. James is employed by an external project management agency and he was contracted by the municipality to manage the urban renewal programme in this area. His task was to design easily implemented interventions in public spaces together with the residents of Venserpolder and the H-neighbourhood. The municipality emphasised that residents' involvement was essential, and that the interventions should be completed by the end of 2018. Faced with time constraints, James was unable to carry out all the essential participative processes with residents himself. Furthermore, he was unsure of the best approach for involving residents in quick-fire neighbourhood renewal. James decided to work together with two different partner organizations within his two designated neighbourhoods.

In Venserpolder, James decided to work with social design startup Plygrnd.city. Plygrnd.city takes an unorthodox, informal approach to participation, with roots in advertising, social work and street art. Instead of inviting residents to participation evenings, they placed a shipping container in a central location in the neighbourhood. Plygrnd.city offered passers-by a lounge

chair and a drink, and engaged them in conversation. In addition, design games and neighbourhood walks were organised from the container. In total, after one month, an estimated 400 residents were involved. The process resulted in a booklet containing 12 sketch designs based on residents' ideas for 'quick win' interventions in public spaces in Venserpolder. Because of the container's central location, the project reached residents whose challenging socio-economic status meant they probably would not have attended scheduled consultation meetings about urban renewal.

The project leader was satisfied with the pace and reach of participation. However, the unorthodox nature of the process also meant that the local government officials who are normally tasked with designing and maintaining public spaces were only marginally involved in the participation process. They were confronted with the fixed outcomes and not open to supporting the ideas developed by residents. Yet it was they who had to approve and develop the residents' ideas. James found that several of the ideas conflicted with sector-specific standardized regulations. For example, one of the ideas involved using street art to make a bicycle path safer. However, the municipal transport authority does not allow street art on bicycle paths and their expert pointed to reports that showed the negative effects of street art on traffic safety.

Another example is the placement of wooden picnic tables in a public space to facilitate spontaneous meetings between residents. This did not sit well with officials in the city's maintenance department, who objected that wood is a high-maintenance material and that the tables could be burned or stolen: 'they only wanted stainless steel'. James spent the next month in a series of meetings with local government officials to discuss the feasibility of the plans: he in effect became an advocate for the residents' ideas within the municipal organization. At this stage, residents themselves were no longer involved. Partly due to James's effective internal lobbying, most of the ideas were eventually approved, albeit in trimmed-down versions.

Reflecting on the process, the project leader remarks that it felt like a ‘battle against the system’: ‘We have organized an alternative form of working with citizens – that was our mission. But for this way of working to become the new standard, the internal systems of the municipality also have to change. We need a way of working that isn’t based on reluctance.’ However, this example also points to the essential efforts of planners to align citizens’ ideas at an early stage of the process with standardized rules and legislation.

Case: Eendrachtspark

Eendrachtspark is situated in Geuzenveld-Slotermeer, a neighbourhood that is part of Amsterdam’s New-West district (see figure 1). Like Bijlmermeer, Geuzenveld-Slotermeer was first planned in the 1930s and constructed in the 1950s. Unlike Bijlmermeer, Geuzenveld is based on a ‘garden city’ plan: self-contained units of low-rise portico flats surrounding green courtyards, separated by green belts. The urban plan was a response to the chaotic, polluted and dense working-class residential areas in the city centre and it was the dominant planning paradigm at the time. Workers needed dwellings with daylight, (fresh) air, and space. As part of this philosophy, every neighbourhood in the new district needed its own park.

Similar to Bijlmermeer, the popularity of Geuzenveld-Slotermeer steadily declined in the decades after its construction. In 2018, it contained many of Amsterdam’s poorest neighbourhoods - 14 of the 32 neighbourhoods designated as ‘Developing Neighbourhoods’ are situated in Geuzenveld-Slotermeer. Eendrachtspark borders on the Van Deyssel neighbourhood, which in 2018 had the lowest quality-of-life ranking in Amsterdam (OIS, 2018).

Peter is an Area Support worker for Geuzenveld’s Area Support Team. The Area Support Team is the municipality’s first point of contact for neighbourhood residents. Peter’s tasks include

supporting citizen initiatives. Before he became an Area Support worker, he worked for the municipality's project management agency for two years. In early 2018, he was contacted by a resident who had a plan to renovate Eendrachtspark. The resident launched a campaign on a website intended for the aggregation of citizen initiatives: 'de Stem van Nieuw-West' (the voice of New-West). On this website, residents can propose ideas for their neighbourhood and vote on ideas submitted by others. The Nieuw-West district council is committed to discussing the most popular plan every month. The plan for the renewal of Eendrachtspark received 1,032, and the resident pitched his ideas to the district council in March 2018.

The council responded positively to the resident's plan and tasked Peter with investigating its feasibility. The 'Stem van Nieuw-West' website does not have its own budget. Peter therefore linked the plan to the Developing Neighbourhood's budget for improving public spaces: the same budget that paid for the interventions in Venserpolder mentioned above. This meant that funding was now available for the renovation of the park. However, the funding came with conditions: the park had to be redesigned in cooperation with local residents, and it had to be finished in 2018. Peter quickly discovered that no one at the city's planning department had time to work on the park at short notice. Their response, in Peter's own words, was: 'No request for capacity has been made in advance, so we cannot help you. We could help you in 2019'.

Instead, Peter decided to hire a local landscape designer, who was also a resident of the Eendrachtspark neighbourhood. Officially, this was not permitted: external design work must be assigned in open tenders. However, the park had to be finished in 2018, which left no time to put out a tender. Peter framed the assignment as 'participation advice' instead of as 'design'. This meant he could circumvent procedures and pay the designer from the Developing Neighbourhoods participation budget. The park re-design started in June 2018.

Peter and the local landscape designer quickly assembled a group of 18 'park ambassadors': residents who would take part in the park's renovation. The designer invited the park

ambassadors to his parkside apartment for three rounds of iterative feedback on his designs. Between rounds, Peter sent the plan to the municipality to check if it complied with regulations, and was advised that it did. Within two months, the designer submitted his definitive design to the municipal government. Peter noted that ‘partly because he could do both participation and the design [the landscape designer] was able to work much faster than our own designers would have’. However, the scope of participation was limited by time constraints: only a small group of residents was involved and, although they provided feedback, their creative involvement in the design was limited.

In compliance with the municipality’s planning procedures, the plan’s final design, maintenance plan and total costs had to undergo a final check by several experts from the municipality. None of these experts was available at the time, which delayed the project by several weeks. When the results of the checks became available, they showed that several elements of the plan would be difficult to construct. Without informing and involving residents or the local designer, the plans were adjusted to comply with the regulations. The redesign of the park was completed in early 2019.

Discussion and Conclusion

Amsterdam initiated an ambitious urban renewal programme for 32 of its deprived neighbourhoods. The municipality also has high ambitions for more democratic forms of planning. However, these ambitions are mostly undefined, leading to different implementations at street level. This in turn forces the civil servants 'on the ground' to deviate from their usual roles and procedures and act like ‘street-level planners’. We hypothesised that local government officials in the front line might respond in two different ways. On the one hand, they might use *coping mechanisms* to formally meet the new participatory demands while

clinging to their usual role and, thus, to the existing institutional norms and procedures. On the other hand, we see early indications that they used the discretionary space resulting from the ambition for increased participation as a niche, where they could experiment with new roles and pathways.

James, assistant project manager for Venserpolder, successfully worked with a company to invent new ways for residents to participate. Due to his lobbying skills, he managed to make other professionals from the municipality participate or at least cooperate. James reinvented and extended his role from only *facilitating* the participation process with residents to that of an all-round participatory process facilitator, mediating between the interests of citizens and those of other civil servants.

Peter, the Area Support worker for the Eendrachtspark renewal, also worked around the current planning regime. First, he enterprisingly linked the park plan to the Developing Neighbourhood's budget and funding, and he had to work within a narrow timeframe as spending had to be approved by the end of 2018. He combined acceleration and participatory planning by involving a local landscape designer, thus bypassing the tender procedures. Peter coped with institutional boundaries by inventing short cuts and bypassing some elements of normal procedure altogether.

The two cases discussed here, Venserpolder and Eendrachtspark, show that these street-level bureaucrats for the most part acted in line with the second hypothesis, aiming to use the discretionary space to invent new solutions. Yet their actions tend to work *around* existing institutional regimes, rather than trying to innovate them from within. For them, bypassing procedures proved to be an effective way to deal with the combination of time constraints and

pressure for democratic planning. The question arises as to whether this type of disruptive behaviour by street-level bureaucrats typifies a larger number of cases and, if so, whether it exerts enough pressure on the current planning regime to have a transitional impact. In other words, how can the SLBs' innovative short-cuts contribute towards democratic planning? Answering this question will require further research. The literature on transition could prove useful. According to Geels and Schot (2007), transitions may be understood as the outcome of interaction between the three levels:

- the landscape - exogenous macro-trends
- the regimes - dominant institutions and practices
- the niches - places of innovative practice

Viewed within this framework, street-level bureaucrats' niche innovations put pressure on the current regime; they may cause destabilization and in turn, create a window of opportunity for niches to grow and disruptive practices to emerge (Geels and Schot, 2007). The decentralization of the urban planning programmes described, as well as the national policy trend towards 'do-democracy' (Nota 'Doe-democratie', Ministry of General Affairs, 2013) and the increased focus on bottom-up initiatives and civic society can be perceived as important landscape trends. The upcoming 'Omgevingswet' further increases the pressure ('Environment and Planning Act', Ministry of Infrastructure and Water Management, 2017): it entails the combination and integration of 23 environmental and planning laws and emphasizes participation as a mandatory element in planning processes. However, one of the major challenges, as the cases demonstrated, is the disconnect between 'SMART-defined' municipal planning processes and local planning practices with their unpredictable timeframes and requirements, which is characteristic of democratic deliberations with the community.

In the second half of 2019, we will continue to analyze the activities of street-level bureaucrats in different cases in the Developing Neighbourhoods and conduct more interviews to analyze whether their pressure on the current planning regime will amount to a substantial transition towards more democratic planning.

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Planning for transition and the multiple perspectives on democratic legitimacy

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Abstract: Connecting transition processes to participation and community planning implies the search for possibilities to reconcile the knowledge driven transition goals with democratic legitimacy. If we understand planning processes as multilateral communication processes we discover multiple interactions of diverse actors, which do not necessarily belong to a definable local community. The actors create a complex network of interdependencies with symmetric and asymmetric power relations.

This paper shows in reference to a case study the different approaches and expectations involved actors have towards planning outcomes and decision-making in a planning process. Within complex actors constellations the legitimacy of representing public interest is claimed by various actors in a field of conflict. These claims are related to diverging conceptions of democracy that co-exist in daily political practice. Besides of turning legitimacy into a negotiable aspect the claim on legitimacy interferes also into conflict about the contents of planning. Referring on case study results this paper shows how several actors promote divergent goals claiming to defend public interests and the needed interventions for a future transition.

Complexity of transition needs lead to the integration of phases for collective learning and qualification into planning processes in order to facilitate an adequate debate on desired planning outcomes. Nevertheless expert knowledge remains a controversial field when it comes to define the type or place of an intervention. This paper reflects on the role of different actors' perspectives for rationalizations about planning outcomes within the discourse of transition.

Keywords: legitimacy; actors' perspectives; planning conflicts; planning for transition

Introduction

Transition and the implementation of related planning goals becomes a disputed issue in planning processes. The increasing role of public participation and communication in planning turns the legitimacy of planning interventions and the actors promoting them into an essential base to facilitate the implementation of planning.

Planning projects that aim on envisioning transition goals are mostly driven by expert knowledge. But this knowledge does not generate a democratic legitimacy for planning outcomes or the processes to define them. Opposing actors dispute on planning goals and claim to defend the public well. They refer on divergent aspects of legitimacy to claim their own or to put into the others legitimacy. This entwining of goals and legitimacy happens on base of divergent actors' perspectives on democratic legitimacy.

This paper will revise these issues on base of a case study in Bremen (Germany) studied in parallel to the planning process. Rationalisations of the involved actors' within a conflict about mobility issues is analysed.

The arguments of actors generate an own narrative about relevance and interdependence of specific planning goals. Actors refer on divergent guiding principles for planning.

The article illustrates on base of the case study how the narratives of actors relate the conflict on planning goals to legitimacy of the actors' themselves. Legitimacy is negotiated along the conflicts about planning. In the course of debate actors refer on divergent sources of legitimacy and balance them to paths of decision-making and planning goals. Throughout the paper it becomes visible which are the sources of legitimacy that are applied to foster transition oriented planning goals and how they relate to other sources of legitimacy.

The conclusions reflect on the relation of these negotiations of legitimacy towards transition oriented planning. Planning for transition in many cases suggests an urgency to prioritize certain planning goals. Depending on who defends these goals - citizen, politicians or planners - the paths to generate legitimacy in the discourse about planning decisions vary.

Neues Hulsbergviertel and its planning conflicts

The case study is about a new neighbourhood, Neues Hulsbergviertel; in Bremen (Germany) created by conversion of a former hospital into a mixed neighbourhood.

The project is considered a model case in terms of planning goals and process design. The Bremen Parliament defined that the project had to aim on sustainability (in terms of construction, transport, energy and environment), a mix of uses, the promotion of varied types of property and dwelling (such as cooperative housing), and an intense citizens' participation within the planning process (Bremische Bürgerschaft, 2010, p.2).

These planning goals can be considered key issues of currently formulated goals of urban transition to face climate change, challenges of social inclusion and citizens' engagement.

As the planning goals were determined by the Bremen Parliament they are backed by representative democracy. At the same time the aim to create an extended process of citizens' participation longs to acquire additional legitimacy by consulting citizens and fostering deliberative processes.

As the 14 ha sized plot is now in use for a hospital and has no current inhabitants there is no 'natural' community to be consulted. The citizens who engaged in the process were dwellers from adjacent neighbourhoods, persons and groups interested in a future living on the area, groups willing to promote certain urban developments, and some other individuals interested in planning process and outcomes.

The current owner of the plot is the public hospital company (Gesundheit Nord, hereinafter: GeNo) who expects to refund part of their deficit by the sales revenues of the plot.

Main stakeholders in the political arena are the senator for finances (A senator in Bremen is equivalent to a minister.); the senator for environment, building and transport; Bremen Parliament (Bremer Bürgerschaft) and its planning commission (Baudeputation); and as well the borough council (Beirat).

The planning process is handled by the local planning department (SUBV). In charge for the development of the area is the state owned property development company (hereinafter: GEG). These both actors jointly coordinate the public participation events.

From the beginning there was a high proximity between the actors concerning the general planning goals formulated in the prior political decision. This fact distinguished the Neues Hulsbergviertel from several other planning projects. For example in projects for new neighbourhoods on inner-urban voids or in projects concerning the implantation of highways, high-voltage lines, etc. the conflict often begins from scratch in questioning the plausibility of a need for the proposed planning project.

Nevertheless balancing conflictive goals and detailing plans led to evident conflicts within the planning process for the Neues Hulsbergviertel. These conflicts show elements that can be seen as characteristic for planning for transition. When transition becomes a motor of planning it is justified by expert knowledge perspectives, such as knowledge about causes and effects of climate change. Expert knowledge gives legitimacy to planning. On the other hand transition towards a more inclusive society requires legitimacy by democracy. This involves a scope of divergent concepts of democracy, fostering participative elements or highlighting the values of representative democracy.

The case study in Bremen was analysed on base of Interviews with several actors, participant observation and document analysis. Within this material it becomes obvious that actors' discourses about planning contents are set into rationalizations that refer on different guiding principles.

Based on the results of political decisions, several public assemblies and previous expert evaluations the award documents for an urban planning competition were defined. According to the award- winning plan the new neighbourhood would be built around a central green area, the buildings would be organized in city blocks, and the most emblematic of the existing buildings would be preserved.

The planning department elaborated consequently a binding land-use-plan. It was developed on base of the previous decisions and due to further political debate, citizens' claims in public assemblies and internal processes of balancing and negotiation between planning department and other actors. Key issues were:

A portion of 25% of housing is planned to be social housing and an additional 20% is foreseen for joint building ventures and cooperatives.

A mobility concept was developed in order to reduce drastically the motorised private transport and accordingly the space reserved for parking. Walking, cycling and car sharing should be fostered in change. The number of required parking spaces was reduced to 0.4 spots per housing unit, instead of 0.8 as it is the common local legacy. These parking spaces should be located in the perimeter of the neighbourhood in order to reduce internal car circulation.

While the planning department was elaborating the legal-land-use plan and an additional urban development contract the debates between the several actors on detailing regulations continued.

Constructing argumentations

This article illustrates an entwined discourse between content related rationalizations and legitimacy. As mobility was a largely discussed topic during the planning process I will pick the debate on parking garages to show how several actors promote divergent goals claiming to defend public interests and the needed interventions for a future transition.

In the original urban plan there were no underground parking spaces beneath the building blocks instead there were only collective parking spaces in multi-storey car parks. During the revision process the planning department decided to insert three underground parking car parks. The debate about the underground parking spaces and the impacts for the neighbourhood and its mobility concept took place in public assemblies, direct actors negotiations and in meetings of political boards. The narratives of the different actors about the issues could be found in interviews, on the projects websites, in press releases and other published statements of citizens' groups, and of proceeding and documents of political boards.

The arguments on the issue are conducted very differently by the different actors, and each actor treats the issue associated to other thematic contexts.

The arguments about mobility can be assigned to five different contexts:

1. Planning approach
2. Expectation on sales revenues upon the plots
3. Creating a socially mixed neighbourhood (social inclusion and justice)
4. Quality of urban design
5. Ecological sustainability

Based on this, on these topics two basic argumentative groups can be identified (see also Table 1). The decisive key issue is the planning approach that defines the guiding principle of each argument:

Balanced Approach (Argument A): The balanced approach sets as a guiding principle the argument of a balanced sound planning that accomplishes to carry out all aspects of the original political decision. The goal of reducing the motorized private transport must be balanced against another with complementary considerations and goals to develop a more down-to-earth option referring to the mobility concept. The key argument is **BALANCING DIVERGENT PLANNING GOALS (1A)**. This argumentation is applied to the question of underground car parks. Above all, the maximization of sales revenue (2A) and the quality of urban design (4A) determine the patterns of this argumentation. A common reference to support these arguments are the planning goals defined by the Bremen Parliament in 2010, especially referring on the needed sales revenues.

Committed Approach (Argument B): The guiding principle in the committed approach is to assure that planning is envisioning the future, especially focusing on ecological sustainability and social justice. The commitment is to foster the transition oriented aspects of the original political decision and to preserve the outcomes of the first phase of public participation. The key argument is the **COMMITMENT TO ECOLOGICAL SUSTAINABILITY AND SOCIAL PLANNING GOALS (1B)**. This argument is also applied to the question of underground car parks. While the parking space key itself represents a tolerable compromise, the aims of mobility concept are frustrated by the construction of underground car parks. Assuring a socially mixed neighbourhood (3B) and preventing negative effects on ecological sustainability (5B) determine the patterns of argumentation. In addition, it is argued that reducing car traffic significantly increases the attractiveness of public spaces (5B). A common reference to support these arguments is the Bremen Parliament resolution of 2010, assigning the status of a model case to the planning for the Neues Hulsbergviertel and highlighting in particular the aspects of ecological sustainability and social mix. In addition, the argument refers on political resolutions of a Bremen Alliance for Housing and subsequent policy guideline on social housing.

In the synopsis, the arguments are not only thematically linked to different contexts but also the references that support and justify the argument vary. These references are used as an argumentative background to underpin one's own position.

Four such types of references can be identified:

- Compliance with the political decisions (documents)
- Compliance with the results of public participation
- Commitment to political goals / transition (social justice, ecological sustainability)
- Professional criteria (based on professional experience): sales revenues for certain types of housing, quality of urban design, sound transport planning

Table 1: ARGUMENTATIONS

A. BALANCED APPROACH (accomplishing equally all political demands)

	STATEMENT	SUPPOSED EFFECTS	REFERENCES
1 A	Planning for Neues Hulsbergviertel has to be sound and all criteria of the prior political decisions on planning goals have to be balanced and accomplished equally.	Balancing all planning goals allows to accomplish all criteria equally.	Resolutions of Senate and Bremen Parliament (2010)
2A	Housing with assigned underground parking spaces is a standardised product on real-estate market and fosters successful sales of apartments.	Generates increased sales revenues on assigned plots.	Resolutions of Senate (2010) claims maximisation of sales revenues. Supported by expert statements of real-estates professionals
2/4A	Multi storey car parks in the perimeter reduce the attractiveness of the neighbourhood. The underground car parks could substitute some of them.	Generates increased sales revenues for the entire neighbourhood.	Resolutions of Senate (2010) claims maximisation of sales revenues. Supported by expert statements of real-estates professionals
3A	To offer apartments with assigned underground parking spaces attracts clients with an affinity to car use.	Creates a neighbourhood for everybody according to the existence of diverse demands within society.	Fits in with resolution of Bremen Parliament (2010) that claim diversity of types of dwelling. Covered by the documented results of participation.
4A	The underground car parks could substitute some of the multi storey car parks in the perimeter.	Improves quality of urban design and attractiveness.	Supported by expert statements of planning professionals.

Lower ranking aspect: ecological sustainability (5)

The referenced political resolutions are: Senate in June 2010, Bremen Parliament (Bürgerschaft) in December 2010; Bremen Alliance for Housing (Bündnis für Wohnen) and subsequently the housing programme (Wohnraumförderprogramm) in 2012/13, and the policy guideline on 25% social housing for areas with new land-use plans in 2013.

B. COMMITTED APPROACH (ecological sustainability, social justice)

	STATEMENT	SUPPOSED EFFECTS	REFERENCES
1 B	Planning for Neues Hulsbergviertel has to be a model case.	Ecological sustainability, social justice and public participation are fostered.	Bremen Parliament resolution (2010) ; Bremen Alliance for Housing, housing programme (2012/13) and the policy guideline on 25% social housing for areas with new land-use (2013) Needed to accomplish the results of public participation.
3B	To offer apartments with assigned underground parking spaces attracts wealthy citizens who “expect to have their SUV next to their apartment”.	The social mix of the neighbourhood shifts. Because of the currently high prices on real estate market even a slight shift could cause the exclusion of citizen with lower or middle incomes.	Endangers goals of resolution of Bremen Parliament (2010) which claims diversity of types of property and dwelling, including cooperative dwelling projects and innovative housing types. Conflicts goals of Bremen Alliance for Housing that aims to foster affordable housing. Endangers the results of public participation. Contradicts committed approach (social justice)
5B	To offer apartments with assigned underground parking spaces attracts wealthy citizens who “expect to have their SUV next to their apartment”.	Accessibility of a car so close to the apartment will increase the use of cars. Property on cars contradicts intentions of ecological sustainability. Entrances of underground car parks will boost car traffic within the neighbourhood and affect the attractiveness of public spaces.	Endangers goals of resolution of Bremen Parliament (2010) which claims ecological sustainability also in terms of transport. Contradicts expert statements of planning professionals. Endangers the results of public participation. Contradicts committed approach (ecological sustainability)
5B	Underground car parks can't be eliminated easily when not needed anymore due to future reduction of individual car use. Multi storey car parks can be demolished more easily to open up space for other uses in a future.	Construction of underground car parks does not open up possibilities for an adaption to future developments.	Endangers goals of resolution of Bremen Parliament (2010) which claims ecological sustainability also in terms of transport. Endangers the results of public participation. Contradicts committed approach (ecological sustainability)

Lower ranking aspects: Maximising sales revenues (2) and Quality of Urban Design (4)

During debates on planning goals on the Neues Hulsbergviertel actors have formed varied issue related alliances. These alliances vary even within this limited field of conflict about the underground car parks. But in general terms, the two Arguments (A and B) can be assigned to the different actors.

The balanced approach can be assigned to the property development company (GEG) and the Planning administration (SUBV) claiming that balancing planning goals is part of taking care of the common well. This approach is (in the background of public debates) also supported by the hospital company (GeNo) and the senator of finance, showing a clear inclination of giving the balance an inclination towards the maximisation of sales revenues. As well in conflict between GEG and SUBV the GEG tends to incline argument toward sales revenues.

The committed approach can be assigned to the citizens' action group (BIA) whose members defend ecological sustainability and social justice as commitments that derive from common well and the compromise for transition. In these concerns they get support of NGOs that are engaging for environmental issues or affordable housing. Furthermore, the BIA claims on defending the results of the first phase of public participation. This aspect is used by planners in public administration (SUBV) in conflicts with GEG to support their professional convictions about transition oriented planning.

Political boards as Senate, Bremen Parliament and its commissions took decisions according to a balanced approach referring on the compromise to public well. Nevertheless, clear inclinations to one or the other side of the balance could be observed according to political affiliation or political charge. The borough council, despite of some internal political differences, inclined their decisions more towards the committed approach. But they began to balance when these goals seemed to conflict other issues they felt compromised to. Like as considering the possibility that an extreme reduction of parking spaces in the new neighbourhood could possibly affect the surrounding neighbourhoods, or the aspect that financial difficulties of the hospital company (GeNo) could endanger employment. Thus, being the elected political representatives of the neighbourhood and its particular interests took a clear influence on the political decisions taken.

Simplifying the arguments it can be stated that the expectation on sales revenues upon the plots is opposing the commitment to foster the ecological sustainability of cities and to create a socially mixed neighbourhood that facilitates social inclusion and justice.

Bremen's permanent budget deficit is known by all actors. So in a certain way the need for sales revenues is accepted by everybody involved. Nevertheless, defenders of argument A accept it as a dictum while the defenders of argument B see the commitment for transition the prominent aspect to envision the future.

Legitimacy

All involved actors claim legitimacy by relating their argument to public well. But during the debate they question each other's legitimacy and alter reasons for their own legitimacy.

The legitimacy refers to divergent dimensions which depending on context support or contradict each other. The legitimacy of government in representative democracy is based on input legitimacy assured by constitutionally guaranteed free elections that define political boards. Scharpf (Scharpf, 1998, p. 3) calls this input-oriented legitimacy the "government by the people" referring on Abraham Lincoln's Gettysburg Address. He concludes that "Government, in other words, is meant to be self-government, and compliance can be expected because the laws are self-determined, rather than imposed by an exogenous will" (Scharpf, 1998, p. 3).

The output-oriented legitimacy he describes in change as "government for the people" referring to consequences of decisions to assure issues of common interest. In this case legitimacy is given "because collective fate control is increased when the powers of government can be employed to deal with those problems that the members of

the collectivity cannot solve either individually, or through market interactions, or through voluntary cooperation” (Scharpf, 1998, p. 3).

Within this output-oriented concept of legitimacy knowledge has an important role. Accessibility of expert analysis generates a knowledge base that allows a projection about the effects of planning.

These two forms to acquire legitimacy focus on the persons that are legitimized and on the type of decision that can be considered legitimized. But as well the process of decision-making itself generates democratic legitimacy: Through-put oriented legitimacy refers on the quality of governance processes and can be understood as “government with the people” (Schmidt, 2013, p. 3).

[In an] ideational and discursive construction (...) throughput legitimacy involves the ideas and deliberative interactions of the agents involved in the wide range of governance processes [...], and how these promote efficacy, accountability, transparency, inclusiveness and access to civil society (Schmidt, 2013, p. 7).

The concept of throughput-oriented legitimacy shows that legitimacy does not only result from institutional attributes of government. Being based on democratic decision making processes and fostering public well does not lead automatically to citizens’ approval or obedience. Decision making processes are object of discourses that influence on citizens’ confidence on legitimacy and lead to corresponding attitudes. (Schneider, 2012, p. 188)

These discourses can be found in the debates on planning processes where claims and doubts about legitimacy become a relevant aspect of actors’ rationalizations. “Legitimacy claims and assessments establish a link between regimes and their institutions on the one hand, and normative benchmarks on the other” (Haunss and Schneider, 2013, p. 1).

Analysing the case study of the planning process for the Neues Hulsbergviertel we can observe how the rationalizations about planning contents in debates about the planning issues become entwined with legitimacy. Actors claim legitimacy for themselves or put into doubt the legitimacy of others. This does not mean that any of the actors would not accept the input legitimacy of political bodies in general but it shows how legitimacy is reassured and negotiated as strategic part of discourse.

The local planning department (SUBV) earns its task from the decisions of political boards. So the planners acquire the input legitimacy. At the same time the involved planners at SUBV claim output legitimacy justified by their professional knowledge. They interact and negotiate directly with all other actors and balance the input of these actors’ claims. The rationalizations about possible planning decisions given in the debates with other actors acquire relevance by the professional expertise of the planners. Nevertheless, in case of conflict they refer additionally on the citizens’ demands that are registered as results of public participation to claim a throughput legitimacy for planning decisions that fit to their professional approach. This applies in special to the conflict with GEG about maximising the sales revenues by inserting underground parking spaces and additional densification. But as soon as agreements are found and presented to the political boards GEG and SUBV suggest a lack of legitimacy to certain demands of the citizens’ action group (BIA). This argument is sustained by the assumption that BIA would establish their legitimacy only on base of representativeness for the citizen of Bremen. This is supposed of not to apply to the group as is not a huge movement or represents an average citizens opinion.

The property development company (GEG) claims legitimacy by the political mission of the company to develop and sell the plot ensuring appropriate sales revenues. So GEG supposes that the input legitimacy of representative democracy is transferred to the company in order to implement the political decisions. The GEG also interacts and negotiates to all other actors. GEG aims on the development of a positive urban development balancing the diverse goals but showing a strong compromise to real-estate issues. This fact leads other actors -

like planners and citizens - to questions the extent of legitimacy given to the property development company. As GEG contracted a project developer as sub-agent they also claim a professional expertise to support their legitimacy.

The citizens' action group (BIA) claims the throughput legitimacy for defending the results of public participation. And they claim on an output legitimacy for defending efficient policies for social justice and ecological sustainability as aims of public well that are needed to face transition and to envision the future. The demand of political boards to take these guiding principles as a base of political decisions. They suppose that those politicians in charge who give value to these principles would need the support of citizen groups to defend their legitimacy.

The borough council claims the input legitimacy for being the elected representatives. On this base they defend the interest of citizen' on affordable housing and a vivid mixed neighbourhood against the interests of profit. Thus, on the same base they object on supporting BIA with their claim for a further reduction of parking spaces. They refer on defending the interests of the adjacent neighbourhoods which would possibly invaded by visitors of the new neighbourhood and hospital. Towards the citywide political boards the borough council claims a throughput legitimacy as a favourable vote of the council gives legitimacy to the further decision on Bremen Parliament.

This variance of legitimacy claims show the complexity within the negotiation of legitimacy for planning. The different sources of legitimacy complement each other or compete on priority. Planning processes are multilateral communication processes within a complex network of interdependencies with symmetric and asymmetric power relations. These actors' relations interfere with the perceived legitimacy of planning. Neither can we identify a definable local community that becomes a legitimate subject of planning decisions nor can we argue that planners' knowledge or political decisions guarantee legitimate planning outcomes.

Conclusions

The claims and doubts about legitimacy become a relevant part of planning processes since planning is seen as a communicative process. When it comes to planning for transition the balance of transition goals with other divergent planning goals are an inevitable part of debate. So if planning goals have to be balanced one could reconsider the need for a deliberative discourse based on principles of free speech and rational argument (Healey, 1997; Fischer and Forester, 1996; Forester, 1999). But of course the weight of rationalizations within the debate is connected to power (Flyvbjerg, 2012; Forester, 2010).

On one hand rationalizations about planning for transition are connected to the experts' knowledge. So if this knowledge is allied to the planning institutions and political boards the rationalizations might lead to the intended planning outcomes. Depending on the course of debates this can be understood as a legitimate planning intervention or be questioned for a lack of throughput legitimacy.

Richardson in his article about environmental assessment concludes that revealing authorship of the evaluations relevant for statements about planning and making explicit the paths of decision-making would contribute to solve conflicts on planning. He states that in times of extended public debates a story-telling is needed, right as making visible the ethical nature of the judgements may help to build legitimacy (2005, pp. 362–363).

But what if the argument prioritizing transition goals is maintained by citizens' groups? This is the case in the Neues Hulsbergviertel but can also be observed in other contexts. Lately the students' movement 'Fridays for Future' has been claiming to prioritize the ecological transition goals. So despite they can be considered a type of citizens' movement they claim on the output legitimacy for future policies that prevent climate-change. They base their demands on scientific research results but apparently their position against established political forces

is weak. This relationship can be described referring on Flyvberg (1998) by saying that the less power an actor has the more rationality has to be applied in arguments.

What can be learnt is that legitimacy of planning is built in discourse and connects to the intended goals of planning. In the best case the complexity of transition needs lead to the integration of phases for collective learning and qualification into planning processes in order to facilitate an adequate debate on desired planning outcomes.

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Cultural Staking: Transition of the Core Public Space of Rural Settlements

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Abstract: Abundant culture have been accumulated in the historical evolution of rural settlements in China, with organic corresponding relationships among cultural, social and spatial attributes. In these certain relationships, the most significant cultural spirit and social relationships are usually presented as the core public space. However, accompanied with the transition of the rural traditional social structure and cultural life, the core public space of rural settlements has been gradually forgotten and its physical environment has been abandoned by degrees because of the change of productivity and production relations. This research points out that with the approach called cultural staking, starting from the core public space of rural settlements as an acupoint can be an effective way to the village revitalization planning. Combined with the author's practice experience in Shatan Village, Yutou Township, Huangyan District, Zhejiang Province, this research shows the effect of a creative spatial restoration and regeneration of the core public space with the cultural staking approach as a key.

Keywords: cultural staking; rural communities; core public space; transition

1. Introduction

There are a large number of rural settlements in China that carry the excellent Chinese traditional culture accumulated over thousands of years. Because rural settlements are formed in different historical and geographical conditions, the rural culture contained in them is therefore diverse and with regional characteristic.

With rapid economic development of China in recent years, rural society has undergone tremendous changes. With the change of productivity and production relations, the collapse of traditional social structure and the decline of space is common in rural settlements. The core public space once was committed to the core function and has important social connotations and cultural value in the traditional rural settlements. Nowadays, most is gradually ruined and dismantled because it is difficult to adapt to the new needs of the rural society in the new era. Besides, rural planning and construction lacking local cultural characteristics is also a universal phenomenon, and there is even “constructive destruction” caused by limited theoretical understanding and improper planning strategies. The local cultural diversity contained in Chinese rural settlements is rapidly disappearing in the rapidly changing socio-economic process.

The Chinese government proposed to implement the rural revitalization strategy in 2018, in which cultural revitalization is the soul. Then, national strategic planning documents also propose to flourish rural culture. Hoping to pass on the great traditional culture of rural settlements through protection and reutilization, theoretical research and practical explorations on rural revitalization has been

carried out in China recently. On the whole, theoretical research needs to be further explored, and the practical paradigm needs to be summarized. So, how to know the relationship within the cultural, social and spatial aspects of rural settlements? How to understand the cultural and social evolution characteristics of the core public space in rural settlements? How to adapt to the new rural social changes through the planning and transformation of the core public space with the soul of cultural revitalization, in order to achieve rural revitalization? This paper will study the above problems theoretically, and discuss the practical results of the method of cultural staking in combination with the rural revitalization practice in Huangyan District, Zhejiang Province. It is hoped that this study will provide theoretical guidance for similar planning practices.

2. The organic relationships among cultural, social and spatial attributes in rural settlements

2.1 The cultural characteristics and contemporary significance of rural settlements

The formation and evolution of rural settlements were influenced by many factors such as politics, economy, culture and military defense in different periods. With low level of productivity, “depending on the sky” reflects the dependence on nature and the fear of natural disasters. This creates awe and worship of nature, so worships and blesses become the spiritual pillar of the original people (SUN Dazhang, 2004). Nature worship has gradually become an important component of the cultural content of rural settlements. In order to resist the threat of natural disasters, aggression and war, people need to be closely united and support each other in a settlement. With the advocacy of the clan system in feudal society, villages are usually inhabited by consanguinity. Collective identity in these rural settlements is stronger. On the one hand, it is due to the resource allocation within consanguineal network, on the other hand, it comes from the inner respect for the ancestors and the goodwill of the ethnic groups (LIU Senlin, 2011).

Nowadays, productivity and production relations has undergone tremendous changes. The traditional rural social structure has been replaced by urban-rural dual social structure. A large amount of labors and other resources in rural area have flowed out to cities. The population in villages, especially the young and middle-aged population, has rapidly decreased. Many “hollow villages” are springing up. The agrarian society and the rural social structure formed under the agricultural economy are gradually disintegrated under the influence of the modern market economic system. As a result, the traditional cultural characteristics of rural settlements are losing.

The rural settlements with the goal of survival and reproduction have formed rich culture in the process of evolution, such as family culture, local belief culture, folk culture and physical culture. Traditional culture still plays an important role in promoting rural civilization and maintaining social harmony and stability. The cultural characteristics formed during the evolution of rural settlements are diverse and special. They are valuable to the reconstruction of rural social relations that are in transition. Therefore, the contemporary creative transformation and innovative development of the cultural characteristics of rural settlements has become an important mission of rural revitalization.

2.2 The relationship among cultural, social and spatial attributes of rural settlements

The culture of rural settlements does not exist in isolation. According to study of cultural connotations, social structures and spatial forms in rural settlements, it is found that cultural, social and spatial attributes of rural settlements have an organic correspondence (Figure 1). Rural settlements develop

from the background of survival and reproduction to the goal of the clan developing. This process is accompanied by continuous construction of the organic relationship among the three parts. Changes in rural social structure affect villagers' way of producing and living. Production and lifestyle also play a role in the formation of culture, which in turn will change the structure of society. The relationship between culture and society is presented through space, which in turn consolidates the culture and social structure of rural settlements.

The spatial form of villages and the interior layout of buildings are generally determined by social structure. The correspondence between social structure and spatial structure is also the basis for social culture and architectural culture. According to the family culture, the space presenting the concept of clan is the ancestral temple in the settlement or the ancestral hall in the residence. It is a place for ancestor worship, family council and family activities. The scale of the residences is determined by the way in which the family live. The distribution of the ancestral hall as well as residences in the settlement and the symmetrical interior layout of the residence reflect the family hierarchical concept. The Ho Family residence in Nanhai Village is a typical reflection of the feudal society living together (Figure 2), fully demonstrating the hierarchical order of the Ho Family. The ritual promoted in the family culture can be reflected through the memorial arches to commemorate the people who made outstanding contributions. For example, according to “Loyalty, Filial Piety, Propriety and Justice”, seven memorial arches stand in line at the entrance to Tangyue Village in Yi County, Anhui Province. The Wenchang Pavilion, Wenfeng Tower or other religious buildings, as well as the traditional academy and the Cultural Temple, are the products of the idea of “the one who excels in study can follow an official career” (SUN Dazhang, 2004). It demonstrates the advocacy of culture education. These spaces reflecting social relationships and public values are usually core public spaces in villages or residential buildings.

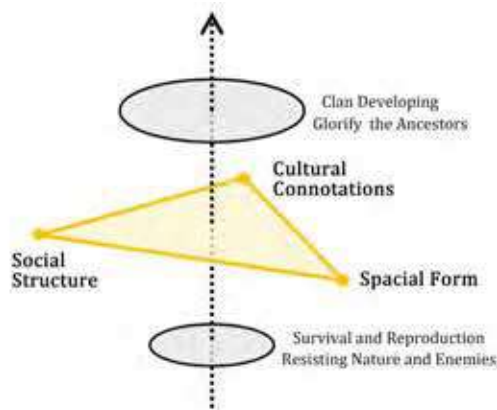


Figure 1. The Relationship within Cultural, Social and Spatial Aspects of Rural Settlements

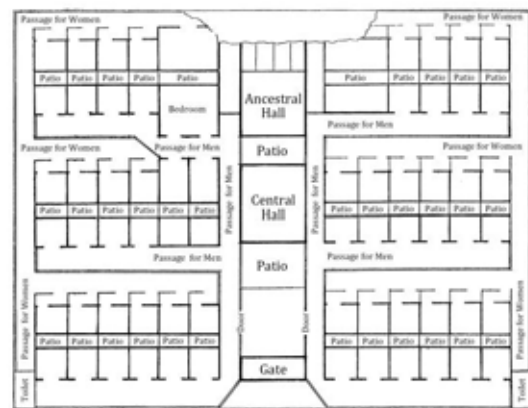


Figure 2. Floor Plan of the Ho Family Residence in Nanhai Village, Guangdong Province, China (SUN Dazhang, 2004)

The local belief culture of rural settlements can be represented by some buildings such as temples, bell towers and Buddhist temples. The bell tower, the altar, the land temple and so on are the symbols of reverence for nature. The Guangong Temple and the Guanyin Temple are the places to pray for blessing from the mythical figures. There are also some miscellaneous temples, dedicated to the local sages. The local belief place reflects the local belief culture by carrying belief activities, mainly providing space for worship during daily life and festivals. The spatial type and distribution of local

belief buildings are related to their functions and service scope. For example, large-scale yard-typed or single-temple belief buildings is usually dedicated to gods who pray people in wide range, and these buildings are mostly located in the center of the protection range; The small-scale free-style belief place is for the gods with a small range of protection. It may be a small house or an altar embedded in building wall, which is closer to living place of the residents (HE Shaoying *et al.* 2016). These local belief places are also important public spaces in the rural settlements.

Folk culture is usually derived from family culture and local belief culture. Spatial presentation is mainly public space carrying folk activities. Architectural culture is manifested on the one hand by ordinary dwellings, and on the other hand by public buildings or structures that reflect core values and social structures in rural settlements. It can be seen from the above that the social structure and cultural spirit in rural settlements are interdependent and are stored in the physical space together, with public space as the main carrier (Figure 3, Figure 4).

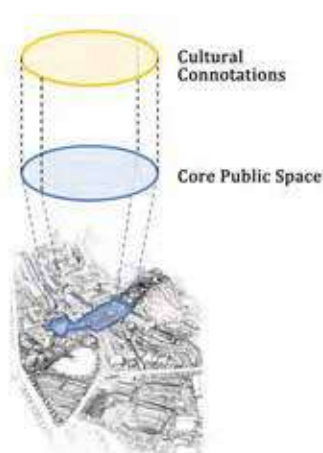


Figure 3. Cultural Manifestation of the Core Public Space in Rural Settlements



Figure 4. The Core Public Space in Shatan Village, Zhejiang Province, China (Provided by Li Shuaijun)

3. The evolution of cultural and social attributes of the core public space in rural settlements

The public space reflects social and political relations in rural settlements, and also contains cultural meanings (MEI Ceying, 2008). The core public space reflects the main characteristics of social relations, represents the core public spirit of the society, carries important cultural connotations. It is the main spatial expression of the social and cultural attributes of rural settlements.

3.1 Physical presentation of core public space

As an important part of the overall spatial structure, the core public space is usually in an important position, such as the geometric center of the rural settlement, or the edge of the settlement with higher altitude. The buildings there are usually larger or higher than others, usually with a large square. Therefore, the core public space is highly recognizable. At the same time, as the layout center of settlement, the core public space has high accessibility which is important to public activity.

Following are the typical cases. In most instances, the core public space of the Dai village in Yunnan is the Buddhist temple with surroundings located in the center of village. However, there are some exceptions. One is that the Buddhist temple is built on the edge of the village (Figure 5) or on the hill

to be the commanding height of the whole village (Figure 6) when the village is located in the mountainous areas. Or some is built at the entrance to the village for easy identification in the distance. Similarly, the Drum Tower with its surroundings in the Dai village is the core public space of the village. The other residences are built around it. The Drum Tower is also located in the center of the village (Figure 7), and the height is definitely higher than the surrounding houses. The core public space with particularities in terms of location, spatial volume and layout has obvious centrality and leading position in space.

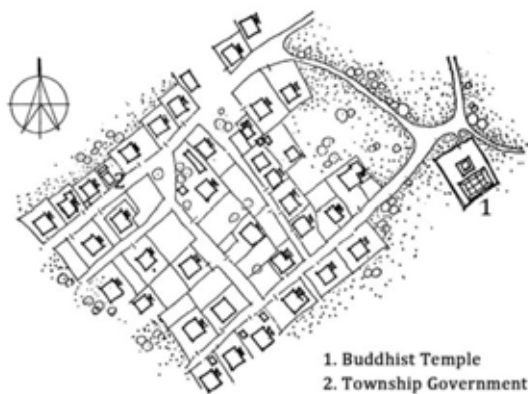


Figure 5. Plan of Manting Village in Ganlan Dam, Yunnan Province, China (SUN Dazhang, 2004)



Figure 6. Aerial View of Jinghong Dai Village in Yunnan Province, China (SUN Dazhang, 2004)

3.2 Cultural and social attributes of the core public space

The particularity of the spatial layout of the core public space corresponds to its dominant and controlling role in the society and culture of the field. The identification of the core public space in the rural settlement embodies the core value of social control (YANG Guiqing, 2014), and is the concentrated expression of the social structure, public value and spirit of the settlement. The core public space is usually based on buildings that have profound significations, such as ancestral hall, temple and drum tower. There may be square, opera stage or other affiliated facilities around. It is a psychological cognitive place in the daily life of the villagers.

The core public space with ancestral temple as the main body reflects the family community with kinship as the link, focusing on the strength and honor of the collective. Tulous or Weiwus are defense-oriented residential buildings built after the settlement of some war immigrants in history. Usually there is just one family group in Tulou or Weiwu. From the overall layout of the village, there is no obvious central space, but the central public places enclosed is the core public spaces for the information exchange and public activities. The location reflects the importance of uniting the family and jointly resisting external violations to ensure that the family can survive and develop. (Figure 8)



Figure 7. Aerial View of Congjiang Dong Village in Guizhou Province, China (SUN Dazhang, 2004)



Figure 8. Plan of Tianluokeng Village in Nanjing County, Fujian Province, China (SUN Dazhang, 2004)

Belief place as the core public space in rural settlements, is an important "acupoint" of traditional culture and spiritual life in areas where local beliefs and culture flourish. For example, the Dai people believe in Southern Buddhism, so Buddhist temples are the center of the spiritual and cultural life for villagers. Its remarkable spatial layout also confirms the prominent position of Buddhism in the spirit of the Dai villagers. The Drum Towers in the Dong villages are mostly public buildings for collective use funded by the same region or family name. It is an important place for villagers to step on the temple, worship the ancestors, gather, discuss, and entertain, combined with the surrounding ground for drying grain (SUN Dazhang, 2004). The Drum Tower also has the function of preaching ethical codes to build a harmonious society with moral principles. It can be seen that the Drum Tower has a leading position in the social and cultural aspects of rural settlements, and is also organically corresponding to its central location in physical space.

In some areas where the family concept or the local belief culture is relatively weak, the core public space of the settlement is mostly adapted to the actual needs of the villagers. For example, the core public space of ancient commercial town Luocheng Town in Sichuan Province is the main street with shape similar to the boat. The boat-shaped main street symbolizes "crossing a river in the same boat", which means pulling together in times of trouble. Although the residents are mostly Cantonese immigrants, and the family culture or religious culture is not strong, the boat-shaped street reflects the homesickness culture indirectly (SUN Dazhang, 2004). Except cultural connotations, the main street also meet usage need. It is a commercial street with a stage, a memorial hall and a step-like theater space in the center. It can be seen that the function of the core public space of the settlement is mainly commercial and leisure, with a focus on practicality. The Lingguan Temple at the end of the main street is relatively high but with weaker centrality, reflecting that religious culture does not occupy the dominant place in the settlement (Figure 9).

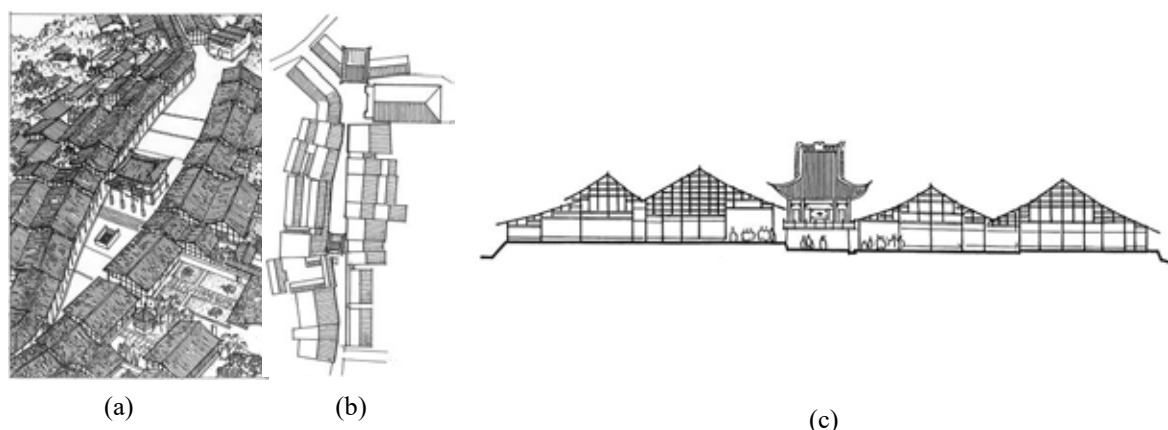


Figure 9. Aerial View (a), Plan (b), Profile (c) of Core Public Space in Luocheng Town, Sichuan Province, China (SUN Dazhang, 2004)

Therefore, the cultural, social and spatial attributes of rural settlements correspond organically. The inheritance and development of cultural traits cannot be separated from the social structure and spatial form. In the spatial form, the core public space is the physical space carrier of the main social structure and the core spiritual culture. The rural cultural revitalization should use the core public space as the catalyst to carry out the creative transformation and innovative development of culture.

3.3 Dialectical views on the transition of the core public space in rural settlements

The cultural and social attributes of the core public space is not static, but is constantly changing with the development. For example, in the long-term agricultural civilization era, the core public space is mostly a place that symbolizes the family spirit or the local belief culture. In the period of China's planned economy in the last century, it was the collective production space such as the supply-marketing cooperatives and the drying field. After the reform and opening up, the centrality of the traditional core public space in rural settlements was weakened and replaced by administrative cultural place. Nowadays, the commercial and entertainment activity squares are the main form. The core public space in different periods adapted to the economic system, social structure, production methods and life style at that time, reflecting the cultural and social attributes of a particular period.

The development requires that we should treat the cultural value of the core public space during different periods in a dialectical way. Take the essence, throw its dregs. Protect, pass on and update the culture that adapts to contemporary development. Nowadays, the production methods and social relations have changed. The reshaping of the core public space should adapt to the new production relations, social background and development prospects, rather than the simple restoration and reconstruction of the traditional core public space. On the one hand, we respect the diversity of the rural culture developing types, and at the same time adopt the advancing and suitable methods to inherit and develop. For instance, the design for regeneration of Lai clan settlement fully considered three different civilizations of Changhe Ancient Town during three development periods. This design advocated that the primary goal of regenerative design is to integrate the old and new spatial elements of the settlement under the premise of maintaining the recognizability of different civilizations. Thereby, maintain the continuity of the local civilization and integrate it into the process of modern urban life evolution (CHANG Qing, 2016). Therefore, the cultural characteristics of rural settlements are changing with the historical evolution. The inheritance of culture should adapt to the contemporary rural life and derive the rural culture with the contemporary characteristics.

4. Cultural staking with the core public space as the "acupoint" in rural revitalization

In the context of implementing the rural revitalization strategy, many parties are exploring the revitalization of the countryside. The practice of rural revitalization in Huangyan District, Taizhou City, Zhejiang Province has obtained some achievements. Recently, the experience of the practice is summarized in the "Working Methods for Rural Revitalization" (WU Liang *et al.* 2018), in which cultural staking takes the first place. Cultural staking means take culture as the priority to stake the village revitalization. The reconstruction and reuse of the core public space is the implementation of the method cultural staking in rural settlements.

4.1 Cultural staking

The Shatan village is located in Yutou Township, Huangyan District. It is a provincial historical and cultural village with profound cultural heritage, such as, Taoist culture represented by Taiwei Temple, the Confucian culture represented by Rouchuan Academy, the farming culture, the traditional Chinese medicine culture and the modern architectural culture. However, it is remarkable that cultural revitalization is not a simple excavation and protection, but a protective use of cultural elements in the context of productivity and production relations transitioning. In this way, the new needs of villagers and tourists can be meet. Because the cultural, social and spatial attributes of rural settlements is inseparable, cultural staking should be organically combined with industry, society and space to implement a function of "hematopoiesis".

Cultural revitalization should be carried out regionally, taking full account of the difference in diverse regional ranges. Which village should be revitalized and how to revitalize should be determined on the base of the systematical plan. In this case, new villages and towns are built on the east side of the old Shatan village. The new township government and commercial facilities are added in the new village, while buildings and street in the old village gradually declined due to their inadaptability to new needs (Figure 10). Therefore, the old village of the Shatan should be considered with the township, that is, regarding it as the cultural block in the township master planning based on its rich cultural elements.

After the direction is clear, a series of methods can be used to revitalize culture, including: First, finding the cultural identification of the villagers, such as the ancestral temples, ancestral halls, customs, traditional crafts, etc. Second, repairing, reconstructing or building the cultural identification recognized by local villagers. Third, planning and constructing different cultural facilities combined with local customs. Fourth, building a public cultural architecture, publicizing culture and morality in the new era. In the Shatan village, there are two major cultural buildings, named Taiwei Temple and Rouchuan Academy, as well as public buildings built during the period of the People's Commune, such as township office, veterinary station, health center and grain stations (Figure 10). These are cultural identifications of villagers in different periods. However, most of them has been abandoned because it cannot meet the new needs of villagers. To releasing the contradiction between supply and demand of public service facilities, the historical cultural identifications were repaired and transformed. Finally, the protection and reconstruction of the buildings with cultural connotations in the old village is realized, and the adaptive function transformation is carried out in combination with the needs of living and travelling (Figure 11). Thus, the cultural context of the old village is continuing and the cultural atmosphere of the Shatan village is restoring. For instance, the Rouchuan

Academy has been returned to an excellent traditional cultural education base, and at the same time the Rural Revitalization Institute. Some other buildings of the People's Commune period are adaptively transformed into information center, cultural activity center, and homestays according to their location and interior space.



Figure 10. Present Land Use and Distribution of Public Facilities in Shatan Village (YANG Guiqing *et al.* 2015)



Figure 11. Land Use Planning and Distribution of Public Facilities in Shatan Village (YANG Guiqing *et al.* 2015)

4.2 Practice of core public space

Cultural staking is first aimed at the declining buildings and space environment in rural settlements, especially the core public spaces with cultural connotations. The core public space generally has a good physical space foundation carrying the traditional culture of the settlement, and also is the cultural identification of the villagers. Therefore, it is an important and primary “acupoint” for cultural revitalization, also rural revitalization. Focusing on the core public space to implement cultural staking, it is easy to put the village planning into effect under limited capital conditions, in other words, it has strong operability. The overall village planning can be promoted from the most important “acupoint”, that is, core public space. The combination of cultural staking and starting from acupoint is suitable for rural areas with limited financial and labor conditions to promote cultural revitalization.

The planning and construction of the Shatan village originated from the excavation of the unique cultural connotations of the village, and finally positioned on the Taiwei Temple with the southern opera square. The Taiwei Temple has a history of more than 800 years. The origin of its construction is to commemorate the local villager Huang Xidan who died of saving the people from fire. He was honored by emperor and esteemed by villagers and generations. So far, the temple has a strong incense. The villagers still express their respect for the ancestor by organizing social activities. “Respecting heroes” and “cultivating virtue” are the roots of the culture of the Shatan village and the cornerstone of the cultural revitalization. The Taiwei Temple is the cultural identification of the villagers.

After the excavation of the culture of the Shatan village, the core public space is planned and designed. The original Taiwei Temple was damaged, and the space in front of it was messy. In order to improve the condition of ancestor worship and promote the culture of the Shatan village, a series of planning and construction have been adopted, such as removing latrines and garbage in front of the temple, instead setting up a clean public toilet, building the opera stage and the corridors and so on. All of these make up a core public space with the Taiwei Temple as the center, composed of the opera stage,

the opera square and supporting facilities. So, the core public space, as the cultural identification of the villagers, is reshaped (Figure 12 to 15).

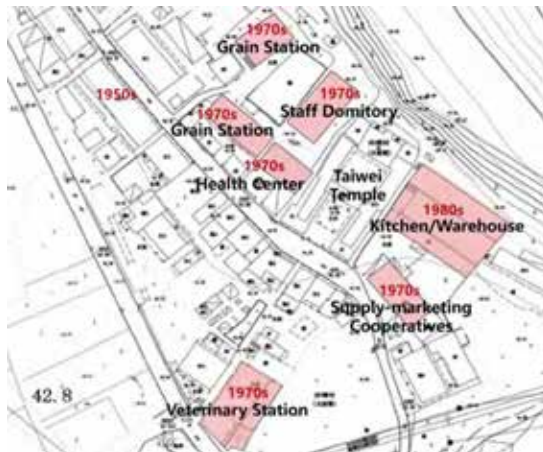


Figure 12. Present Layout of Core District in Shatan Village (YANG Guiqing *et al.* 2015)

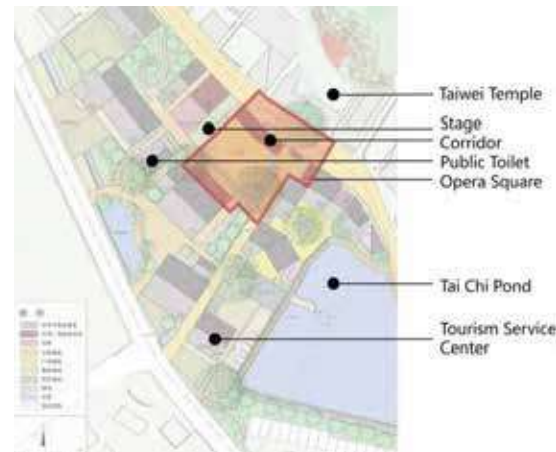


Figure 13. Planning of Core District in Shatan Village (YANG Guiqing *et al.* 2015)



Figure 14. Planning of Core Public Space in Shatan Village (YANG Guiqing *et al.* 2015)



Figure 15. Model of Core Public Space in Shatan Village (YANG Guiqing *et al.* 2015)

The space is meaningful owing to its being used. As the old physical space of the village, the core public space needs to adapt to new social structure and redefine new functions, so that the physical environment can gain new development connotations and motivation (YANG Guiqing *et al.* 2016). The core public space of the Shatan village is not only the local belief space all the time, but also the venue for the family activities. At the same time, it can meet the new spatial needs of villagers for rest, communication, entertainment and exercise (Figure 16 to 19). The construction of the core public space has promoted the creative transformation and innovative development of other public space nearby. The repair and reconstruction of the old Shatan village centered on the core public space will be gradually promoted on the basis of respecting traditional culture.



Figure 16. Square Dance in Shatan Village



Figure 17. Tai Chi Performance in Shatan Village
(Provided by Ningxi Township Government)



Figure 18. Village Opera Performance in Shatan Village
(Provided by Ningxi Township Government)



Figure 19. Huang Clan Celebration in Shatan Village
(Provided by Ningxi Township Government)

The construction of the core public space in Shatan village provides a place for the Huang clan worshipping activities and local belief activities, which not only contributes to the inheritance of the traditional family culture and local belief culture, but also enhances the villagers' sense of identity and pride on local culture. Moreover, it also satisfies the needs of locals. Further, helps to build a new type of rural social structure, and enhances social harmony and stability. In addition, in the context of urban-rural factors flowing, the core public space is also a place for tourists and villagers to interact, so that it promotes the integration of urban and rural areas.

5 Conclusion

With the constant changes in productivity and production relations, the social structure of rural settlements in China is also changing. In the process, the cultural characteristics of rural settlements have gradually formed, especially family culture and local belief culture. Nowadays, these traditional cultures are losing due to the inability to adapt to current society, but they still have social significance in contemporary rural settlements and should be passed down.

Culture has an organic correspondence with social structure and space. The organic correspondence among social structure, cultural connotations and spatial forms of different settlements is similar. Therefore, the cultural revitalization in rural revitalization should fully consider the changes in social relations and spiritual culture, and plan to create suitable spaces to carry. The core public space is the

main carrier of the core of the social and cultural connotations of the rural settlement, so it is chosen as a catalyst for cultural staking. Based on the organic correspondence among the three attributes, integrate all the actors and make the transition of the core public space. It is not only the inheritance of traditional culture, but also the spatial embodiment of rural culture and local civilization in the new era.

In the context of new era, with cultural revitalization as the soul, creative transformation and innovative development of the core public space will eventually realize rural revitalization. The theory and working methods of cultural staking have universal guiding significance for protecting and reutilizing historical and cultural traditional villages. However, localities should carry out cultural revitalization according to their own conditions, that is, respecting and protecting rural cultural diversity and local characteristics.

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PA08

Theorizing urban change:
complexity and ethics

Rebuilding the planning system: The transition towards professional antagonism in the uphill battle of Madrid Nuevo Norte

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Abstract: This paper takes as a case study Madrid Nuevo Norte (MNN), a redevelopment scheme launched in 1993 by the national railways in association with a private developer, and that remained inactive for many years, until an agreement with the local government was publicly disclosed in 2017. The agreement got wide political support from most of the city councillors, but faced sharp criticism from residents and some influential local planners. These planners pointed out that the agreement would do little to address the residents' concerns about the massive construction of office space and its associated risks for gentrification and displacement, and would further accelerate the spatial and social segregation between the north and the south of the city. They called for strengthening the much weakened legal planning framework in Madrid, and for making better use of technical expertise in the decision-making process. The approach of these planners is to empower the public to participate at the public debate through the provision of factual evidence and legal advice. These planners do not seek centrality or hegemony in public deliberation. In this sense, they would exemplify a particular neo-pragmatic turn in planning.

Keywords: Planning ethics; planning theory; complexity; antagonism

Introduction

Planning theory debates can be of interest beyond the academic community. They can provide useful tools to analyse complex processes and decisions in cities. This is illustrated by the case of Madrid Nuevo Norte (MNN), the main development scheme currently under discussion in Madrid. MNN illustrates how stakeholders navigate the under-regulated, antagonistic environment of urban development in Madrid; it shows the limits and traps of the agonistic approach privileged by the progressive local government in office between 2015 and 2019, and provides some evidence on the revival of activism among planners critical with the planning process and its outcomes.

The central hypothesis in this paper is that, under certain conditions, understanding planning as an agonistic process can lead to further weakening the prospects for a better, long-term future. And that the answer of some critical planners is to reaffirm the need of a normative framework in planning that can refocus public deliberation on the public interest. In the absence of this, the agonistic deliberation in planning risks to substitute the maximisation of the financial value created for the common good, and to exclude from public deliberations those critical voices that do not accept such replacement. As a reaction to the deliberative principle requesting participants to abide to the “best argument”, the

agonistic understanding of deliberation does not put particular conditions to the contents of the arguments to be exchanged, and in this way, tends to put feelings, beliefs and reasons on the same level. While this may provide a more realistic picture of public deliberation in our cities, it also tends to downplay the value of technical knowledge, and to open the door to the legitimisation of purely traded or bargained planning, in which stakeholders merely impose their power above others. On the other hand, the focus of agonistic planning on the *present* may diminish the relevance for planners of a strategic, long-term vision, and underestimate the capacity of the normative framework to produce long-term changes. If norms are merely seen as flexible rules of the game that can be changed by the participants in order to facilitate the achievement of tactical agreements among adversaries, it is difficult to see how non-hegemonic agents and visions incompatible with the interests of hegemonic stakeholders can be preserved.

This potential bias of agonistic planning can be illustrated by recent developments in the MNN scheme, which help to understand why a local government deeply committed with radical democracy principles could ratify a planning option based on the maximisation of financial value creation and the dubious vision of a business centre for a globalised metropolis. There seems to be a lack of alternative, strategic vision on behalf of a municipal action dominated by short-sighted tactics, and an inability to define the public interest beyond the utilitarian realm of financial costs and benefits.

This potential contradiction can be explored by analysing the similarities and differences between the competing influences of agonism (Laclau & Mouffe, 1985) and deliberation (Habermas, 2000; Rawls, 1973) in planning. There are key similarities between both: respect for some common rules, the centrality of citizenship; there are also key differences: the consideration of rationalism, the value of consensus, interaction among stakeholders understood as deliberation or bargaining, and the consideration of the public interest. These dimensions were already developed by John Dewey (1927) in the first third of the XX century, and were recently revisited at the end of the century by so-called neo-pragmatists such as Richard Rorty (2000).

The position of some of the critical voices to the NMM scheme in Madrid can be qualified as neo-pragmatist, in the sense that, following the Deweyan tradition, they (1) focus public deliberation on the concept of the common good, (2) they consider education and information provision as a key instrument to empower the public (and particularly the residents and those with poor access to the public space), and (3) they ask for rebuilding the system of checks and regulations in the planning system as a way to level the playing field in the city.

This paper is structured in three sections, besides this introduction. The next section reviews some deliberative, agonistic and pragmatic considerations that have influenced current planning practice. The third section provides a description of the MNN scheme in Madrid, and analyses the limited relevance of technical considerations, the role left to the residents in the process and the weakening of the legal planning system on behalf of a particular vision of the city aligned with the needs of global financial investors. The final section provides some conclusions of how to avoid the “agonistic trap” the local government of Madrid fell into by reclaiming some virtues of the planning tradition like the robustness of the legal framework, minimum quality standards for technical studies, and the right scale and size of

the development area under discussion, avoiding too large, rigid schemes that neglect both the urgent social needs in the city and the concerns of residents.

Agonism, deliberation and pragmatism in planning

The philosophical framework: the task of democracy

It is well known that planning theory has been strongly influenced since the 1980 by the broader political discussion on democracy. Two elements of this political discussion can be useful for the purpose of this paper: on the one hand, the discussion on the foundations of democracy; on the other hand, the discussion on the role of conflict in democratic societies.

In the liberal tradition, the recognition of value pluralism does not impede to look for a link between democracy and rationalism. Liberalism is regarded as resting on a belief in certain universal values and fundamental human rights. It is the case of those liberal thinkers, like Isaiah Berlin, more interested in negative liberty, i.e., in preserving the freedom of the individual from undue restrictions; this pluralism does not take Berlin to outright relativism: there are actions that are to be considered as unacceptable, and Berlin (1988) could not accept to sacrifice individual freedom for the sake of abstract, uncertain political goals, as a certain sense of *human decency* should remain as a common ground at the basis of pluralism. In the liberal tradition of John Rawls (1973) or Jürgen Habermas (2000), positive liberty, i.e. freedom to act politically to achieve certain goals, is central, and political deliberation becomes crucial to agree on the goals to be achieved. As political deliberation is grounded on reason, the ideal conditions for reason-based deliberation are explored by both thinkers. For Rawls, these conditions are met under the veil of ignorance, when the participants in the deliberation cannot anticipate the personal consequences of the options at hand; for Habermas, these conditions are met under a discourse ethics to which rational participants adhere, abiding to the best argument, as the core nature of democracy is deliberative.

The necessary link between rationalism and deliberative democracy has been challenged on different grounds. Building upon Derrida's concept of the radical singularity of the other, and upon Carl Schmitt's focus on antagonism, Laclau and Mouffe developed their concept of agonistic pluralism: Political deliberation takes place between antagonistic participants, who do not aim at reaching consensus, but at gaining hegemony (Mouffe, 2000). Passions are as relevant as rational arguments in this interaction. Instead of Schmitt's authoritarian solution, it is possible to redirect antagonism among enemies towards agonism among adversaries through a democratic process respecting some rules; the agonistic process does not moves towards consensus, but towards the provisional hegemony of a certain group of participants, at the expense of the others; however, this hegemony is provisional and contingent, so that other participants can provisionally accept the results, in the hope of gaining hegemony in the future to impose their preferences.

The grounds, contents and purposes of political deliberation become central in this discussion. It cannot be a surprise that this discussion spills beyond the realm of political philosophy to reach the more practical areas of public policies, and in particular, planning.

The anti-foundational trend that rejects the necessary link between rationalism and democracy looks for alternative, softer commonalities to avoid to fall into plain relativism and to try to keep together the individuals within a democratic community: Isaiah Berlin referred loosely to some sense of "human decency"; Richard Rorty (1989) refers to the avoidance of all forms of cruelty; John Dewey referred occasionally to some empathy as a basis for the political community; for Derrida, the field of politics offers an alternative to the risk of structural lack of determination or chaos that results from the

singularity of the individual that is irreducible to politics (Mouffe 1996). Pragmatists such as Dewey or Rorty would avoid these metaphysical waters in their navigation, even at the price of getting into trouble to explain how the political debate should take place: whereas accepting rationality as the basis for democracy facilitates the trip towards the acceptance of rational arguments as the contents of deliberation, losing the rational foundations implies the additional burden of rethinking what deliberation consists of.

One inspiring path to follow is Laclau's and Mouffe's discourse theory, building upon their idea of politics as "decision taken on an ungrounded terrain". Under these premises, the role of conflict in democratic societies becomes paramount. Conflict is mostly avoided by those considering liberty from a negative perspective (as in Berlin): when liberty is understood with a focus on the individual, the opportunities for conflict are reduced, and individual freedom is protected by the state. For those understanding liberty from a positive perspective (liberty to undertake action in society), conflict is managed through rational-based discussion (as in Habermas).

Another inspiring contribution in Mouffe's and Laclau's (1985) understanding of political deliberation is their consideration of the relevance of passions/feelings in social relations. They pay more attention to the differences at the base of conflicts (stressing their inevitability and constitutional character, following Derrida's deconstructionism), thinking of politics as a way to negotiate differences, rather than to overcome conflicts (and reach consensus). From what they claim to be a real-life, non-foundational perspective (following Gramsci), conflict is negotiated through hegemonic relations, in which certain positions prevail.

It is worth to remind that this philosophical construction is developed around the concept of national states, and could be referred to as the "constitutional level". Planners have had a stubborn tendency to transfer these constitutional discussions to their particular realm of public policy, i.e. spatial planning. Obviously, planning discussions do not take place at the constitutional level, but in the context of concrete public policies; they do not have a foundational character, but rather aim at identifying useful tools to deal with normative, analytical and practical questions. For example, Mouffe (2014) makes it clear that her agonistic project is thinking at the national state level. However, she admits that it could provide some clues if applied in an analogic manner to the local level. Moroni (2019) considers that planning problems should be analysed sequentially "from the basic structure of society to the development and subsequent implementation of increasingly focused principles, laws and policies", moving from the constitutional to the post-constitutional levels and identifying the appropriate principles and criteria suited at each step.

Seen from this post-constitutional level, Laclau's and Mouffe's agonism has been useful in planning to balance the deliberative focus on consensus-building with recognition of the pervasive conflicts among social groups in planning practice, and to consider how conflicts can be negotiated in the absence (or beyond the limits) of rational deliberation. It enriches, rather than replaces, the paradigm of collaborative planning with a conflictual dimension and an expansion of deliberation to complement reason with passion.

Three questions can be relevant to planners from the agonistic revision of the deliberative paradigm: (1) the relevance of the normative framework defining the participants and the limits of deliberation; (2) the identification of the public interest; (3) the contents of the deliberation, and the comparative relevance of rationality and emotional positions from the participants. The relevance of these questions grow as we move down to the post-constitutional level of public policies, and in particular to planning discussions. At a time in which agonistic deliberation seems to dominate planning processes, to the benefit of the most powerful stakeholders and to the weakening of local governments and the dilution

of the public interest, it can be useful to look for a fresh way to revisit these three questions. Neo-pragmatism provides some valuable elements for this: On the one hand, neo-pragmatism avoids the foundational character associated to the critical tradition; on the other hand, neo-pragmatism replaces deliberation by the more flexible concept of persuasion: whereas keeping the exchange of reasons and arguments at the heart of the public debate, it leaves room for non-rational exchanges, putting empathy in the middle of the scene (see e.g. Rorty, 1998). Furthermore, the neo-pragmatic consideration of democracy as an on-going project in which regular citizens must be engaged offers a strong argument to pay careful consideration to the normative framework in which planning operates. Finally, it is also useful to recall Rorty's insistence in the relevance of the vocabulary that is chosen for the framing of questions: This can be a major contribution of planners (Wicks, 1993), beyond the discussion on the public-private split: the need to create the appropriate language to deal with the problems at stake. The conflictual nature of public deliberation in a democracy can be accepted without renouncing to the search for a definition of the public interest. Furthermore, utilitarian rationality can be rejected as the sole basis of deliberation and even a non-foundational concept of democracy can be embraced, without being compelled to enter a deliberation based mostly on emotions and fantasy: fact-based knowledge can save deliberation from the Scylla of utilitarian value-creation and the Charybdis of the global metropolis phantasies.

MNN: The facts and why this development is relevant for our discussion

In some cases, participation and decision-making in planning have significantly deviated from democratic practice. Beyond the constitutional, ontological discussion on what democratic practice is about, certain minimum conditions are generally accepted. In this section, the key facts and figures are presented together with the critical views of some planners, highlighting whether some minimum conditions concerning normativity, the concept of public interest and the deliberation process are respected in MNN. These critical views can be characterised as a particular case of professional activism, making use of technical knowledge that, contrary to any technocratic position, tries to build up a more democratic view of urban development policies in Madrid.

Chamartin railway station is based on railway plans developed in the 1930s, although the station was not opened until 1967. It was expanded in 1970-1975 to include commercial and leisure space, reserving the surroundings of the station for future expansions, that the subsequent decline in long-distance rail traffic made unnecessary, resulting in the blight of the area, owned by RENFE, the public rail company (to be split into two organisations, RENFE and ADIF, in 2004).

In the 1990s, new plans to expand the high speed rail network and the suburban rail services called for the expansion of the railway station. This expansion would need only a fraction of the land owned by RENFE, and RENFE saw an opportunity to intervene as an urban developer with the remaining land, dedicating the expected benefits to its plans to expand the suburban rail network in Madrid. RENFE considers that it needs a financial partner to secure the development plan, and launches the process leading to the MNN scheme in 1993, as summarised in Table 1.

Table 1: Key dates in the development of Chamartin Railway Station in Madrid

1993-1994	A public call is made and DUCH (Desarrollo Urbanístico de Chamartin) is selected as financial partner. DUCH is owned by a public-owned bank, with a minority share owned by a medium-size real estate developer. The contract is signed in 1994.
1997	The Local Plan of Madrid is approved, including the general guidelines for the area (300 ha).
1994-2004	DUCH lobbies to increase the built-up density of the area, and the municipality approves to raise it from 0.6 to 1.05 m ² /m ² . A development plan is subsequently prepared by it fails to get the support of the national government, which changes hands in 2004, on the basis of not taking sufficiently into account the needs of the railway system.
2009-2015	A new agreement is reached among ADIF, DUCH and the municipality in 2009, but the subsequent development plan is partially cancelled by the Court in 2013. A revised development plan is prepared, but cannot be approved before the local elections gives way to a different party.
2016	Based on public consultations, the local government publishes a draft document with the guidelines for the development of the area. It substantially modifies the scheme that failed to be approved in 2015. DUCH and ADIF are initially opposed to the document, but they agree to enter a negotiation process with the local government, outside the public participatory process.
2017-2019	A new agreement is reached in July 2017, raising the built density of the area. Grassroots organisations are critical to the concept; a low-profile public consultation procedure is completed in December 2018. The development plan is challenged at the Court by grassroots organisations, and the local government cannot get it approved before new local elections take place in May 2019.

The main stakeholder in MNN is ADIF, the public rail infrastructure manager, under the control of the national government through the Ministry of Transport. ADIF's objectives are to enlarge and modernise the rail station, and to obtain a net profit of some € 1 billion, to be dedicated to rail investments in Madrid. For this, it joined a partnership with DUCH, a private developer, since 1994. DUCH's strategy is to increase the area dedicated to high-quality office space as much as possible, and to keep the control of all development stages.

The objectives of the local government have fluctuated following the changes at the local elections. Relevant objectives have included (1) developing a modern downtown to compete internationally; (2) to improve the urban motorway network in the area; (3) to obtain a fair share of the benefits, through the mechanisms established in the law. Although these mechanisms were envisaged to facilitate an affordable housing policy, they have been used by municipalities to finance many other actions.

The profile of residents and businesses in the area is far from uniform, but they share some common concerns regarding the reduction of the barriers created by railway and motorway infrastructures, and the expansion of green open space and public facilities. They are backed by a variety of NGOs and local associations, sharing a "smart growth/ low growth" attitude. Their requests include (1) the preservation of most of the open space; (2) a substantial increase in social housing; (3) rejection of what they consider unnecessary infrastructures, such as the cover-up of the railway tracks and motorway capacity expansion; (4) substantial reduction in the provision of new office space.

Some professional planners have engaged in this debate, either individually or supporting grassroots associations, particularly since the 2015 local elections took a progressive coalition to the local government. They question the legitimacy of the positions taken by the key stakeholders: (1) ADIF's role as a developer and its naked search for profit, (2) the involvement of DUCH in the scheme as a purely financing partner, (3) the mild commitment of the municipality with affordable housing. They also question the distribution of charges and benefits, noting that the financial partner has not undertaken any investments in the area yet, and that those investments more relevant for the residents

will be subordinated to the progress of the development process, materialising only in the long term. Another key criticism refers to the office market studies provided by DUCH and backed by the municipality. Finally, they point out to several technical shortcomings in the development scheme: the operational restraints the slab covering the railways will impose on rail operations, the scarce appeal of the green zone that can be established on the slab, and the unsustainable transport options retained to provide access to the area. Therefore, the core of the criticism of these planning activists refer to the speculative strategy of ADIF and the municipality, their subordination to the financial partner, and the dubious quality of the documents provided. This activism is of a particular nature: rather than following an agonistic character, it aims at improving the quality of the public debate, and to preserve and reinforce the legal framework that should protect the public interest.

To understand the approach of these activists, it is useful to recall the particular evolution of the legal planning framework in Spain in the last decades. Although urbanisation schemes can be implemented by the public sector, the system has increasingly relied on the figure of the private developer, who is expected to produce the planning scheme (*plan parcial*), to self-organise implementation through urbanisation boards (*Juntas de Compensación*) with the participation of land owners and the developer, and to transfer to the municipality a percentage of the urbanised land or a monetary compensation.

The potential wrongdoings of this urbanisation procedure were well illustrated in the report discussed at the European Parliament in 2009 (Auken, 2009). The core concept at the basis of the urbanisation scheme is the central figure of the developer in the capture of the value created through the urbanisation process, and the distribution of this value among the developer, the land owners and the municipality, in an excellent example of a process of “self-organisation of the powerful” (Eizenberg, 2019).

Several points are made by planning activists: first, that the existing legal framework, though weakened, does not prevent local governments from leading the urbanisation process, and this is what should be expected, whenever a large impact on the city is likely. Second, that the legal planning framework, is not built around the idea of maximising the financial benefits of urbanisation, but about attaining a “sustainable, competitive and efficient urban development”. Third, that the law also encourages the participation of the public at the preparation and approval of planning schemes, and at its environmental assessment. All these principles are at odds with the opaque negotiated process undertaken among ADIF, DUCH, and the local government: A negotiated planning process that cannot be justified on the grounds of encouraging private participation in urban development or attaining a more competitive scheme yielding higher financial benefits. By doing so, urban planning ceases to be an activity grounded on the definition and materialisation of the public-interest, to become an instrumental, profit-generating activity focusing on the capital gain created through urban development and to its distribution among the agents controlling it.

The bargaining process opens the door to twist the rules: this is illustrated in this case by the all-too-original inclusion of the land occupied by the rail tracks in the computation of building rights, and in the consideration of the slab covering them as a green zone in order to meet the minimum legal standards.

Activists point out that the bargaining approach has implied the abandonment of some of the key local government’s legal obligations: (1) accepting the framing of the problem established by the financial sector, i.e. capital gain maximisation; (2) artificially restraining the number of alternatives at hand for the development of the area (as other alternatives would merit consideration if housing, environmental quality or neighbourhood regeneration would have been included as objectives, and (3) lack of interest

on a knowledge-based, fact-founded rational deliberation, to the benefit of purely utilitarian considerations.

The understanding of the public interest in the MNN scheme by ADIF and the local government is dismayingly shallow. In the case of ADIF, the public interest is identified with the enlargement of the railway station, in order to accommodate the growing long-distance high speed rail traffic. The costs of this reform is estimated at more than € 800 million. Additionally, new headquarters for the public railway companies (ADIF and RENFE) are envisaged, as well as new suburban railway stations serving the new developments and further improvements in the suburban rail network.

ADIF takes it for granted that any railway investments are made in the public interest. Little justification, and even less scrutiny can be found on the need for the additional platforms, the soundness of the substantial new commercial space to be developed in the new terminal or the rationale for the future headquarters. The same can be said about some of the suburban rail improvement projects anticipated, like a high speed connection with the airport, on top of the already existing one. In ADIF's logic, it seems that the public interest consists of maximising the capital-gains from the urban development scheme, in order to dedicate it in the railway system. This position raises two questions: first, whether the public interest can be better served with an alternative urban development scheme, in which capital returns for ADIF diminishes while other outcomes- be it social housing, open spaces or social cohesion- increase; second, whether all the railway investments envisaged are duly justified or, on the contrary, rail operations could be provided in the future with lower investments.

The local government has repeatedly declared that the development scheme is good "for the future of the city". This claim is supported, mainly, by market studies that consider that (1) there is a global demand for premium office space that Madrid has not addressed so far, (2) investors in the new office space will bring with them additional economic activity and jobs. The economic analysis makes the basic assumption that there is a potential demand of office-based activities that cannot materialise in Madrid due to the lack of adequate office space. This assumption is not consistent, however, with the facts of the significant rates in Madrid of both, unemployment and vacant office space. In other words: the local government is gratuitously assuming that the creation of additional office space magically generates the activities to occupy it. In doing so, the local government also fails to explore economic development alternatives that could better fit the characteristics of the economic system and the job market in Madrid.

Another argument advanced by the local government refers to the creation of new social housing. However, compared with the size of the area, the number of social housing units is strikingly low: 2,100 or just 20% of the 10,474 units envisaged. Furthermore, the surface dedicated to housing is merely one third of the total envisaged by the scheme. It can be concluded that, as ADIF, the local government has made a narrow and biased interpretation of the scope of the public interest.

In the absence of a consistent identification of the public interest, the choice of the public stakeholders is to mimic the financial logic of private developers. Interestingly, financial prospects can hardly be sustained by factual evidence. They are merely expectations, more related to passions and feelings than to rational arguments. Furthermore, the significant risks associated are transferred from private to public agents: Financial investors deal with this uncertainty by securing their position and delaying actual investments; public agents, on the contrary, have to advance their assets and investments to push the scheme forward.

Public deliberation is formally requested by planning legislation in Madrid for both, the development scheme concept and its environmental impacts. Obviously, negotiation process among the key agents that is taking place in MNN is not envisaged within the legislation, and is not subject to any conditions

regarding participation. As it is usual in these cases, the process has included long negotiations behind closed doors, followed by a well-publicised public relations campaign once the key agents reached an agreement. It is at this final stage, once the key decisions had been taken, that the developer approached residents and invited them to discuss minor suggestions regarding the design of the public space and facilities included in the scheme.

Two issues are relevant in the deliberation process: which are the participants included or excluded from it (the “adversaries” and the “enemies” in the agonistic jargon), and which is the “knowledge” (i.e. the facts and arguments) considered and dismissed in the conversation.

In the absence of more stringent rules, the map of participants has varied along the process, with three key players controlling it: ADIF, DUCH and the local government. ADIF and DUCH signed its first agreement in 1994, followed by subsequent amendments never made public until a recent (2019) Court decision requested to release them. Similarly, negotiations between DUCH and the local government were made public at the time of its formal approval, when the legal requirements for public information had to be met.

Interestingly, the new local government opened for the first time the deliberation to those critical with the previous scheme (the one that failed to be approved in 2015) when they took office in mid-2015. At that time, its strategy was to de-legitimise the agreement reached by its predecessor. Once ADIF and DUCH abode to the new situation, the local government changed its strategy, excluding the critical voices and coming back to the traditional practice of entering opaque negotiations with them.

This experience indicates the insufficiency of the current legal framework, as it provides powerful stakeholders with the ability to redefine the boundaries of participation and to identify enemies to be excluded, in accordance with their changing particular interests.

The local government and other powerful stakeholders enjoy a similar discretionary capacity for deciding the considerations to be included in public deliberation. Instead of abiding to facts and knowledge-based arguments, the local municipality sets up a deliberation scene based on a fancy future of global investments and glamorous jobs. Those unwilling to share this imposed vision are excluded from the deliberation as guilty of ideological bias, incapacity to cooperate with the private sector and unrealistic visions. What is interesting in this particular framing of public deliberation is that passion and feelings dominate: the ambition of the hegemonic stakeholders to “put Madrid on the global map” is undeterred by the facts and knowledge provided by the critics regarding the public and social costs involved, the functional unbalance, the extremely long delays to those hypothetical benefits for residents to materialise, or the dubious need of some of the costly transport infrastructure investment foreseen.

Conclusions: Avoiding the agonistic trap?

Agonism is about recognising the differences among groups in a democracy and assuming that these can be negotiated through the respect of agreed-upon rules. The case of MNN illustrates how, in urban planning, agonism can easily degrade into plain legitimisation of negotiated planning *to get things done*, even for progressive local governments. This can have been the agonistic trap the local government fell into in Madrid: starting by a poor identification of the public interest, and considering planning as an agonistic process in which hegemony has to be built up, it labelled as *enemies* to be excluded from the debate those that could not share the developers’ vision of fancy office towers and that were asking for a prior re-definition of the public interest. By wrongly accepting to frame the discussion on the basis of capital-gain and value-creation, the local government got trapped in a process in which facts and

knowledge became irrelevant, a process that it could no longer control: The strategic discussion was dominated by capital-gain expectations and global competitiveness promises, not by social and spatial unbalances or poor living conditions.

This case study illustrates that an agonistic approach to planning by a local government risks to be blind to the calls of rationality (including knowledge- and fact- based considerations on infrastructure functionalities, the reasonability of future expectations or the relevance of competing city challenges) to the benefit of a purely “bargaining” process dominated by capital gains and distribution. More fundamentally, such an agonistic approach is likely to be biased while identifying the stakeholders that deserve to join the process. It risks, finally, to privilege decision and action over fairness and rationality. The reluctance of agonism towards transcendental concepts such as the public interests also facilitates for the local government to fall into a deliberation focused on capital gains and their distribution. One of the sources of these shortcomings in agonistic planning can be the result of a hurried application of concepts from the constitutional level of political philosophy to the post-constitutional level of practical public policies.

The reaction of some professional planners in Madrid, becoming enlightened activists, is not too distant from the positions of some post-Marxist planners. They (1) try to re-focus the public deliberation on structural issues (the metropolitan unbalance, lack of affordable housing, easy to implement opportunities to improve the residents’ environment, accessibility and sustainable transport concerns...); (2) they aim at changing the criteria set to establish the boundaries for the participation of agents in the debate, basing their legitimation on the public interest at stake rather than on their capacity to set up a hegemonic position; (3) they adopt a pragmatic approach in urban development, one coping with urgent needs rather than overcomplicating the scheme to maximise cash flows. A novel profile of planning activism emerges from this experience, partly taking us back to the radical democracy discussions privileged in pragmatic and neo-pragmatic thinking: based on the rule of law, good reasons, and focus on transitional processes. From this perspective, more careful attention in planning is due to laws, codes, regulations and technical savviness. Not to claim a technocratic turn, but to state that technical reasoning can be a worth alternative to pseudo-technical thinking, loosely based on utilitarian reason.

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Sex (Roles) and the City

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Abstract: In the last years a new wave of feminism arise, showing how the violence against women is still present in contemporary society. Violence against can be intended both as direct (domestic violence, harassment, ...) or structural (pay gap, less opportunity, less listening in the public arenas). The paper aim to show different aspects of structural violence affecting women, coming from urban environment. They can be recognized in more difficult in access to houses, to public spaces, to spaces of self-organization; in the preference given to private transports than to public ones in the mobility management of the cities; in the difficult to conciliate productive and reproductive activities; the lack of representativeness of women in the design and planning disciplines. The last issue is object of different international research in recent years, and can be one of the causes of the little attention payed by planners to gender issue.

Keywords: gender issues, violence on women, city of difference, wellbeing

Introduction

In recent years the debate about the violence against women arise internationally, spreading at institutional and grassroots level. Researchers in various disciplines (both social science - humanities and STEM) started to rethink about their way to do scientific investigations and the role of women in the professions.

In 2011 it was held by the Council of Europe an international conference in Istanbul about violence against women. The charter emerging from the debate was ratified in most country of Europe. The *Convention on preventing and combating violence against women and domestic violence*, known as *Istanbul Convention* is a point of reference in the debate. In the Preamble some definitions of different forms of Violence against women are provided. Beside the blame of any form of direct and domestic violence against women, it is written: *Violence against women is a manifestation of historically unequal power relations between women and men, which have led to domination over, and discrimination against, women by men and to the prevention of the full advancement of women; it has to be recognised the structural nature of violence against women as gender-based violence, and that violence against women is one of the crucial social mechanisms by which women are forced into a subordinate position compared with men* (Council of Europe, 2011).

In 2015 starting from Argentina a new feminist wave arise. *Ni una menos* is a *collective scream against the violence against women*. Starting from Latin America the scream spread all over the world. In Italy in the same year many women unite themselves in NonUnaDiMeno, a feminist movement. The first acts of the movement were the organization of a big march and the collective writing of a *Feminist plan against male violence against women and gender-based violence* (Piano femminista contro la violenza maschile sulle donne). Also this document deal with the concept of *Structural violence*, meaning all the direct and indirect forms of violence: *When we affirm that violence is systemic, we mean that its forms of expression are multiple and transversal: in fact, they touch all the areas of our lives, constantly weaving between them*. (NonUnadiMeno, 2017).

This paper deals with some of the forms of structural violence against women emerging by the urban environment. Since many years it has been underlined that urban environment is not neutral, but it is instead designed under the exigences of a certain type of user: male, white, adult (Sandercock, 1998). This has been claimed in several scripts, as *Making space: women and the man-made environment*, wrote by the collective Matrix in 1984 (Matrix, 1984), or the seminal text *What Would a Non-Sexist City Be Like? Speculations on Housing, Urban Design, and Human Work* wrote by Dolores Hayden (1980), and in some international documents, as the *European Charter for Women in the City* (1994). These documents denounce the invisibility of women in urban environment both as user and producer.

The paper will deal with both forms of invisibility (violence) and is structured as follow: the first part is about the professional gap among men and women in the design professions (architects, planners); the second part is about the demand of women as city users; the conclusions will provide some suggestion on how planners and policymakers could act against violence against women.

Room (of one's own) at the top

The title of this chapter is the mesh of two title of texts: one is the renown *A room of one's own* (Woolf, 1929), the other is *Room at the top? Sexism and the Star System in Architecture* (Scott-Brown, 1989). The text of Virginia Wolf deal with feminine creativity: the author wrote that the creativity need room (in physical and metaphorical meaning) in which the creator can be alone for all the time needed for the creative activity. This kind of space is traditionally denied to women, as they could be constantly distracted by demands and exigences of husbands and children. Actually the problem of the conciliation of time to be dedicated to family and professional work is at the centre of feminist debate since the first women started to work out of home. The lack of room and time is one of obstacles for women professionals, but not the only one.

The roots of the problem are to be looked first in the denial for women to access the professional education and to the profession. It was not possible to women going to university, especially the technical ones. The first schools opened to women were in the United States (1873 Illinois School of Architecture; 1888 American Institute of Architects). In Europe the first graduate was Signe Hornborg in 1890 a Helsinki (Mattogno, 2013). In Italy the first graduate in Engineering was Emma Strada in 1908 at Turin Polytechnic (Galbani, 2001). In Rome, it was possible to access the faculty of Engineering in 1910. The first was Elena Sadowska, who after her degree went back in Russia. The second one, Bice Crova, had a long professional and scientific life, but notwithstanding the long enrolment as “free lecturer” in the Faculty, she never achieved a permanent position, neither was appointed as professor.

After the graduation the second obstacle were (are) the prejudices conscious or unconscious women face. To many people once they get their graduation, still don't have the capacity to going larger than interior design (Mattogno, 2013; Rodano, 2010). Mostly they design with their husbands, fathers, brothers or colleagues, and they don't sign the projects. For this reason a lot of the projects women did in the last century is forgotten, unknown, overshadowed or credited to the male partner. Also this is one of the reason the Architectural world is a male world: because women architects are mostly unknown. In 1989 Denise Scott-Brown, partner and spouse of Bruno Venturi, wrote *Room at the Top? Sexism and the Star System in Architecture* (Scott-Brown, 1989). It took 15 years to decide to publish it. A sentence is exemplary: *I watched as he was manufactured into an architectural guru before my eyes, and, to some extent, on the basis of our work* (Ivi: 237). The work architect Scott-Brown did was so little recognized that only he, of the design couple, received the prestigious Pritzker price in 1991.

In 2013 Ines Sanchez De Madariaga and Marion Roberts edited a book about gender and city planning (Sanchez de Madariaga, Roberts, 2013). In her introduction Marion Robert indicated the lack of women in design and planning professions as one of the main problem in the conquer of a *fair shared city* (Roberts, 2013). The topic was reprised by Ines Sanchez de Madariaga (2013), who in her contribution to the book presented the problem

more in deepen: *Contemporary research tends to see the processes of professionalisation as a form of control of occupations through which carefully designed jurisdictions and privileges guarantee the autonomy of a few, masked under a rhetorical discourse of objectivity and political disinterest* (Layne, 2009). *In this way overwhelmingly male elites have ensured their place in the hierarchy through patterns of homo-social reproduction* (ivi, 156).

However gender inequality in the design disciplines means not only the number of successful women architects, engineers or planners. It means the predominance of a “male” way of designing and planning, which is less sensitive to daily problems and challenges of being women (as it will demonstrated in the next paragraph). Male problems are considered as universal, while feminine once are considered as partial. So women designers should adapt themselves to male professional and design practice, with only few space for thinking on their own feminine practice and problems. Encourage and empowering women design means to encourage a different way of thinking urban spaces and citizens wellbeing.

Basing on the scripts left by women architects on their own way of designing (see Belingardi, forthcoming), it is possible to affirm that the way of being a women architects comprehend: adopting a situated looking and questioning traditional rules; starting from oneself, recognizing one's problems as collectives and designing the solution; designing in a not hierarchical way, enhancing different knowledges (see Dwyer J., Thorne A., 2007); focusing on listening, the relationship, the human (see Lonzi, 1982 and 2006). There could be more aspects, but starting to using and teaching these tools could start a revolution in the design professions.

Women's place is at home

Thus women are not intended as city users.

Thinking about violence against women in city, generally means to deal with physical violence perpetrated by unknown men in public space. This is why public policies generally address the prevention of this risk through policies of public order (increasing police, exclusion of populations considered as indecorous, order). These policies have the effect of limiting women's freedom of movement and increasing the perception of risk. For this reason, in the face of a non-increase in the number of crimes, the autonomy of movement in urban environment of the categories at risk or of weak street users: children, elderly and even women in part have decreased. Policies and projects made to act against this kind of violence comprehend: maps of risk (even made through app), manuals to go on the streets, “rape-prevention tips”, and so on. These kind of devices have the main effect of giving to women the responsibility of the violence act and enforcing victim blaming.

Focusing on the statistics, it appears that the less safe place for women is their home, and that women have more possibility to be harassed or beaten by their husbands or man they know. Just to delivery an example, in Italy in 2016 149 women have been killed, 109 of them have been killed by their partner, ex-partner or relative (Alleva, 2018). It is safer for a women stay in public or collective space then at home, even thinking about the possibility of being helped by anyone (friends, strangers, police). So one of the challenges for planners to acting against violence against women should focusing on domestic violence.

Moreover, thinking about violence against women in cities it is important to shifting the focus also on structural violence. That means that cities are designed and planned for white, adult men (Sandercock 1998). That means that are planned to ease the problem of productive work, instead of reproductive one. Most of women in the contemporary ages still face the problem of conciliate the productive work with the reproductive one (Macchi, 2006): they have the charge of their job and also of cleaning home, providing meals, caring of children or elderly. Planners cannot deal with family agreements, but they can do something about public services and facilities and their locations in the city, about paths people have to cover (in terms of difficult and length/duration), about collective spaces.

Lack of safety and wellbeing in public spaces and in the streets can also affect women's daily life, not for their being weak users, but for their task of accompanying truly weak users (children, elderly, ...). About the mobility in the city, Silvia Macchi defined women's mobility way like "costal navigation": not long travel as commuters, but many little transfers (Macchi, 2006). This kind of mobility is considered as irregular, unexpected by current mobility design and technics, but for most women correspond to their daily path, due to the different duties to be completed during the day.

Also public space are designed with men as parameters, as it has been demonstrated by the case of Einsiedlerpark in Vienna (see Irschick, Kail, 2013). The park had facilities geared to interests of boys and male adolescents, with the results that girls and female adolescents didn't use it. Or: girls and female adolescents had less possibilities in using the park even if it was a public space in a neighbourhood densely built up, due to the male made design of the park. As a result of two workshops involving specifically girls it emerged that girls, for example, had problems in using an enclosed cage playground to play with the ball due to the predominance of boys and overall to the presence of only a door to in-going and out-going. Also sports facilities were made for male-preferred sports. So the city organized a competition to re-design Einsiedlerpark and another park, named Saint Johann by taking in account what emerged in the participatory workshops. Moreover the city offices wrote the *Guidelines for Gender-sensitive Park Design*. Since 2007 these recommendations, together with the general Park Design Guidelines, constitute the planning basis for all new project (ivi).

Conclusion: a planners' plan against violence against women

In the first two parts of the paper, gender - inequality was shown in the planning and design of cities. it has been said that this is primarily due to the minoritization of women in the project disciplines, to the greater difficulty they face in the construction of their careers and to the lack of recognition of their work. So one of the first actions to do to build a fair shared city, or to take action against violence against women in urban environment, is to reduce this gap, not only in terms of the number of women architects and planners, but above all in terms of how to design. It means to let female designers formulate projects starting by their own experience and point of view.

With regard to urban environment it has been said that women suffer direct violence (especially in the domestic environment) and indirect violence, due to the fact that cities are built only for others (male).

About the domestic violence, it appears urgent to design some policies to facilitate the access to social housing, or housing at low price for women (and children) at risk to suffer violence. In this way women, who generally are the economically poorest part of a couple, could be facilitated to move in safer space and to conquer their independence. It appears also useful to increase places in which women can meet and stay together, intertwining relationships of sisterhood among themselves (this is useful also for fighting against structural violence).

About public spaces, it should be important to stop using the image of women as potential victim in public spaces, also to justify security interventions. It is instead important to create safe and pleasant places in which women (and men) feel good. In this way people could use public spaces and create the sense of wellness and neighbourhood safeness of which spoke Jane Jacobs (1961). To create comfortable public spaces also for girls and women (public space, parks and playground), it is important to incorporate their point of view in the design, basing of their real participation and not in stereotype. As it was shown by the example of Einsiedlerpark in Vienna, this point of view is rarely taken in account, as it is assumed the male one as universal.

About urban mobility is seems important to care for and encourage short travel path made by foot, bike and public transport or mixing the way of moving. In this way they would be ease the routes made in the neighbourhood, and children and youngsters autonomous mobility. Positive consequences of these decisions would concern environment and people wellness.

Finally is important to create collective spaces: a women's home in every neighbourhood. Born as separate spaces of feminist movement, at present women's home opened their activities also to queer persons, children and men. These these places are not spaces of service, in which to go in the moment of need, or to solve some problems, but places "of desire", in which it is possible for every woman to realize the desire she has for herself and for her environment (social and physical) of life.

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Managing religious mega-event in a mundane urban community: the case of Muslim Eid al-fitr in Huxi Mosque, Shanghai

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Abstract: Accompanying Shanghai's opening-up and rising-up as a global city, both internal and international Muslim immigrants are rapidly increasing. With a large proportion of the irreligious population, the Chinese government's attitude to religion is neutral. As religious mega-events would require extended open space, the Muslim immigrants have to occupy some public spaces around the mosque to hold religious events, confronting the everyday life of the local residents in the surrounding community. Taking the Eid al-Fitr 2017 in Shanghai Huxi Mosque as an example, we investigated the religious mega-event when it took up the whole streets for a whole day, and interviewed 56 Muslims, 89 locals, and 9 administrators. The results show that the rigid top-down government-enforced management model cannot resolve contradictions between the two groups because different social groups (the Muslims and the local residents) have completely different spatial demands. Based on the interview with key informants and survey, preliminary findings suggest that a bottom-up model, for example, a street-based community comprised by residents, Muslims and neighborhood committees, may work better to manage this religious mega-event in a self-organized fashion. First, more channels should be created to express the Muslims' opinions regarding the planning and formulation of both mega-events and daily life. Second, a harmonious cultural atmosphere could be created for the Muslims group by organizing some unique local activities and cultural festivals or temporary markets to enhance mutual understanding between local residents and Muslims. Finally, establishing Muslim cultural community may play an important role in strengthening the understanding of religious culture to the surrounding communities and mitigate the misunderstanding and alienation between locals and Muslims. These findings will generate implications for policy-makers to manage religious mega-events more effectively in a mundane urban community in Shanghai, and other global cities with diverse ethnic groups.

Keywords: religious mega-event, community, social group, self-organization

Introduction

With the rapid development of urbanization, more and more minority groups are flooding into cities, which brings many problems worth thinking about for the development of urban society. Among them, how to properly deal with large religious gathering places in high-density cities has always been a main topic in urban studies. Through reading relevant literatures, it is found that in the traditional settlements, Muslims mainly live in "adjacent temples", "due to temples" or "homologous temples", with characteristics of taking their own religious beliefs as the platform of social relations. However, in metropolis of Shanghai, most Muslims come to Shanghai by ways of immigration, the activity space is still very limited. At the same time, Muslims are

restricted by work restrictions, residence isolation, language barriers, communication limitations and communication methods, which further deepen their appeal for religious life.

In recent years, during the eid al-fitr and eid al-adha, many news media reported that thousands of muslims would occupy the whole road in Changde Road, Putuo district, Shanghai. The swats, public security and traffic policemen in Shanghai would "open the road" for believers to make pilgrimage. The international media was taken aback, lamenting as "Muslim occupation of the streets of Shanghai". The "pilgrimage on the road" of the eid al-fitr in the west mosque of Shanghai has aroused great controversy, which directly conflicts with the interest demands of other groups. Shanghai has always held an inclusive attitude towards ethnic groups and religions, and has adopted a series of management measures, but contradictions still exist and even become more and more controversial. So why do muslims "make pilgrimage"? What is the social impact? Why the controversy was happening?

Methods

This paper covers the area of Huxi Mosque, No. 3, 1328 Lane, Changde Road, Putuo District, Shanghai. It is adjacent to Line 7/13, and has convenient public transportation. Muslims worship in Shanghai for many years. Shanghai West Mosque, also known as Yaoshuilong Mosque, is the first rebuilt mosque in Shanghai after liberation. The whole building is exquisite, magnificent and full of modern Arab Islamic architectural features. The mosque is located between the residential area of Changshou New Village, a kindergarten and a further education institute. It also has a main entrance and exit on Changde Road, the city's sub-main road, and a secondary entrance and exit in the adjacent Changshou New Village.

We hope that by understanding and understanding the religious spatial organization in high-density cities, we will pay more attention to the contradiction between religion and urban mainstream groups and ethnic minority religious groups behind urban life. This paper focuses on the "Occupied Road worship" incident of the Shanghai West Mosque, investigates and analyses its process and social impact, understands the real ideas of interest groups and the causes of "Occupied Road worship", analyses the causes of disputes from a relatively fair point of view, and puts forward some suggestions for mitigating the impact and optimizing related management in the future.

This social survey adopts the methods of field observation, interview, questionnaire survey, literature review, software analysis and so on. The subjects were mainly Muslim worshippers, residents and managers. Fifty-six questionnaires were interviewed with Muslims and 89 questionnaires were interviewed with Muslims of different types, including 23 Muslims, 32 residents and 9 managers.

Analysis of the results

Limited religious space for muslims

According to the data of the Fifth and Sixth Census, there were 60,000 registered Muslims and 78,000 Muslims in Shanghai in 2000 and 2010 respectively, while there were 30,000 and 120,000 foreign Muslims in the same period. Although they accounted for a small proportion of the total number, they grew rapidly. The average annual growth rate of registered Muslims was 2.6%, which was 4.7 times the growth rate of registered population, while the average annual growth rate of foreign Muslims was 14.8%. On the one hand, local Muslims continue to grow, on the other hand, a large number of foreign Muslims continue to pour in, resulting in increasing demand for Muslim religion in Shanghai.

In addition, it was found that Muslims who attended the Eid al-Fitr came from various districts and counties in Shanghai, exceeding the service radius of the Mosque itself. On the one hand, the number of mosques in Shanghai has not changed for a long time. In 2004, there were 8 mosques in Shanghai. Each mosque

corresponds to 8,479 Muslims with household registration. It ranks second among provinces, autonomous regions and municipalities directly under the Central Government, far exceeding the number of believers that a normal mosque can do. By 2010, this figure has risen to an average of 9,700. The monasteries are unevenly distributed, overlapping service areas, and generally occupy a small area with limited accommodation. The number of Muslims is increasing and the demand is increasing, while the number and space of mosques are not increasing. It is the imbalance between supply and demand in this space that leads to the occurrence of the incidents of the occupation of public space by the pilgrimage of Eid al-Fitr.

Lack of jurisdiction and feedback among relevant groups and departments

The administrative administrators of the Eid al-Fitr worship in Shanghai West Mosque are mainly divided into three departments: Street residents committee - Changshou Road Street residents committee, traffic control Brigade - traffic police detachment of Putuo Public Security Bureau, Public Security Department - Putuo Branch of Shanghai Public Security Bureau and its subordinate police stations. In the organization and management, the district government takes the lead, jointly with the above departments, as well as urban management departments and religious offices, to coordinate various work and feedback from interest groups.

The mosque lacks the consciousness of communicating with the residents actively, and the opinions and consideration of the surrounding residents are insufficient. It does not assume the responsibility of informing and explaining actively. Their lack of initiative also increases the difficulty of other management departments. Relevant departments failed to establish effective communication channels. Due to the sensitivity of religion, it is difficult to establish effective communication channels due to the passivity and delay in dealing with problems and the complexity of relevant departments. Due to the lack of communication and feedback between the departments and residents, residents do not attach importance to the universality of religious assemblies, and only publicize the results of administrative management. The public lacks the basis for understanding religious assemblies, thus increasing misunderstanding and dissatisfaction.

Comments and feedback between residents and Muslim because involves the religious and ethnic problems, management style is more complicated, making comprehensive management department is difficult to deal with both sides, both sides communication channels, combined with the traffic police are required for large religious gatherings, urban management, public security, such to maintain order, to strengthen the residents of the Muslim sense of distance, make growing estrangement together.

Discussion

Through the semantic difference, it is found that residents and muslims have different attitudes towards eid al-fitr, residents generally do not understand and feel monotonous, while muslims think it has a happy festive atmosphere. The difference in values and culture behind this event is the reason for the controversy caused by the road using. Objectively, muslims are different from ordinary people in dress, language communication, eating habits and even lifestyle. This cultural difference will inevitably lead to the exclusion of the two sides in the contact, which is further reflected in the values. Residents generally feel the influence of road worship, while muslims are accustomed to it.

The communication between muslims shows a ranking characteristics of religious identity, local identity, identity, community identity and professional identity. After arriving in Shanghai, due to the differences in cultural customs, community relations gradually weakened along with their identity, occupation and community identity, and continuously strengthened their religious and local identity. This kind of self-identity of muslims habitually constructs the social circle according to the traditional way. They lack a sense of belonging to the local people and have a strong "pass-by mentality". As a result, their identity is blurred and "inner circle". The original dogma of not supporting intermarriage limits the communication of muslims. 70% of muslims show a negative attitude towards non-muslim communication and have no strong subjective will for communication.

This has led to "inner circle" social networks, in which muslims are mostly of the same ethnicity and religion and rarely interact with non-muslims. Due to the residents' lack of willingness to take the initiative to learn about muslims, the frequent occurrence of international violence and the excessive exaggeration by the media, the residents generally form stereotypes about the Muslim community, such as "extreme" and "restless". Even their religion, culture and some negative events are associated to form a label. The formation of such a cultural label is also the cause of the growing estrangement between the two sides. The cultural differences between the minority groups and the urban mainstream groups make the two sides in the process of cultural contact, integration and adaptation, have alienated and discordant towards other cultures, and even subjectively have negative attitudes, such as cultural separation, cultural isolation, and cultural disidentity. Islam belongs to the minority group culture, so the residents will feel superior to the mainstream culture when they come into contact with it, resulting in different cultural acceptance attitudes of the two sides. Through the questionnaire, it is found that the residents generally believe that muslims should follow the local customs and learn and understand the local culture, but they do not think that they should also take the initiative to understand the Muslim culture. Such an imbalance in attitude makes muslims have been alienated from the mainstream culture rather than integrated.

To sum up, the objective cultural difference makes the Muslim community more inclined to ethnic identity, and intensifies its social "inner circle". The labeling of religious culture and the difference in cultural acceptance attitude make the relationship between muslims and residents more alienated. This kind of space, the cultural difference behind the behavior and even the social identity, is the main cause of the controversy of this pilgrimage.

5 Conclusion

This paper covers the area of Huxi Mosque, No. 3, 1328 Lane, Changde Road, Putuo District, Shanghai. It is adjacent to Line To sum up, the objective cultural difference makes the Muslim community more inclined to ethnic identity, and intensifies its social "inner circle". The labeling of religious culture and the difference in cultural acceptance attitude make the relationship between muslims and residents more alienated. This kind of space, the cultural difference behind the behavior and even the social identity, is the main cause of the controversy of this pilgrimage.

In the process of in-depth analysis, the author found that "occupying the road to worship" is not a horrible problem. The essence of the dispute is mainly caused by spatial imbalance and cultural differences. According to the statistical analysis of the number of Muslims coming from various districts, mainly living in the northern suburbs, considering the radius of the mosque service, it is recommended to build a new mosque or relocate the Huxi mosque to the northern suburbs, and appropriately expand the scale to meet the religious activities of Muslims.

In the case where the current space is limited, the following measures can be taken. First, focusing more on national cultural exchanges. Relevant departments or the media should strengthen the science of national culture. Residents can have a way to understand Muslim religious beliefs and customs, thus narrowing the sense of distance and strangeness between different cultures, changing the stereotypes of the people and removing cultural labels. Fully mobilize the enthusiasm of the Muslim community mechanism, promote mutual understanding, thereby enhancing the sense of identity and creating a harmonious and good cultural atmosphere for different groups. Second, enhancing the effectiveness of communication channels. In view of the shortcomings of timeliness, communication effectiveness and information transparency in the management mechanism, the proposal to establish a permanent body of the Standing Committee is proposed. It consists of representatives of residents, management departments, and mosques, allowing residents to participate in and understand the development of the activity process to compensate for the feedback from residents to the communication channels between departments. Through self-governing institutions, we will establish long-term

exchange channels between residents and mosques to resolve misunderstandings and alienation caused by lack of communication throughout the year. Third, promoting creations of religious activities. In order to shorten the social distance between religious culture and secular society, some “innovative” religious festival patterns can also bring us some inspiration: turning religious festivals into local festivals and secular festivals, including unique localities. Activities, non-religious recreational breaks and market events can be naturally integrated into it. If Eid al-Fitr is not only a religious activity, but also a secularized local national cultural festival, it will be conducive to the harmony of national culture.

Life is still going on with times changing. Shanghai's pressure on population growth, environmental resources constraints, cultural complexity and diversity is increasingly prominent. Shanghai must break through the development bottleneck and realize the transformation of urban development model. As mentioned as Shanghai 2035, “in a future society with a more diverse demographic structure, Shanghai will strive to become a humanistic city with successful cultural governance, outstanding global influence, and high public recognition through its unremitting pursuit of urban quality”. As a remarkable global city, religious groups and religious activities will be treated in a more inclusive manner. Even if it is not the same faith, everyone can still find a space in the city, can be recognized and looking forward to know each other.

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The right to housing: from occupation to transitory collective housing in Turin. The case of via La Salette

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Abstract: The case of "La Salette" transitory collective housing (Turin, Italy) problematises the relationship between conformative planning systems and urban practices. Since the occupation of an abandoned space for housing purpose in 2014 by around 90 migrants, the housing use "legalization" of an abandoned private building, was reached in 2018. Urban stakeholders have been involved and activated, the space has been regenerated with a multidisciplinary approach and housing co-management and small informal economic activities have been set. It was possible by the simultaneous presence of inhabitants and works and by people's self-maintenance. Specific pieces of rules were identified and articulated in a sort of technical and legal tool consistent with the current legal framework. The Italian planning system is defined as urbanism (EC, 1997) and conformative (Janin Rivolin, 2008, 2017): in response to a local community social need, not foreseen by the existing plan, the proponent of an eventual response to that need could not propose a solution, not included in the existing plan, although responding to a territorial development objective. The concept of interventions' predetermination within conformative systems does not include the promotion of voluntary territorial development proposals, approved because of their contribution to development objectives. Predetermined interventions prevail on development objectives, so if territorial needs are not foreseen by the plan, responding by parts is necessary. In this case, the intervention was divided into parts attributable to preordained determinations, assembling a technical and juridical construct, resulting in an overlap of normative fragments belonging to the existing legislative apparatus. Nevertheless, this ad-hoc juxtaposition cannot ensure the automatic realization of further interventions on the same site. In conclusion, although the inflexibility of conformative urbanism, the production of a sort of new rule, has permitted the realization of an "unexpected" project.

Keywords: temporary collective housing, legalization, self-production, co-management

Introduction

This work is based on project reports, elaborated for the commissioning and for the Compagnia di San Paolo, one of the donors, and on technical reports for professionals. In particular, reference was made to Guiglia e Sordo (2018). This work was presented in June 2019 in: XXII Conferenza Nazionale SIU. L'urbanistica italiana di fronte all'agenda 2030 per lo sviluppo sostenibile. Portare territori e comunità sulla strada della sostenibilità e della resilienza Bari - Matera, 5-7 Giugno 2019

The initiative called “Collective Transitory Housing of La Salette” in Turin was carried out by members of the civil society and the Church organizations to provide a response to housing emergency and social segregation. In particular, the project regarded a building constructed in 1958, initially used as boarding-school, then as a home for elderly, finally decommissioned in 2008¹. In 2014, it was illegally occupied by a group of 90 refugees arrived by the immigration wave in 2011. In 2014 the Turin Diocese, Pastoral Office for Migrants and the Diocesan Caritas activated a complex work programme, in accordance with the owner and occupants of the building and with the “Solidary Committee Refugees and Migrants”², aimed at:

- sharing the progressive housing regularization process,
- supporting people in becoming independent in housing, labour and social terms,
- improving housing conditions throughout the physical refurbishment of the building,
- defining and realizing, even in a med-and-long-term perspective, a new transitory and self-managed housing solution, specifically addressed to vulnerable people (Guiglia & Sordo, 2018).



Figure 1 View of the building from via Madonna de la Salette, before the intervention.

Source: Architettura senza Frontiere Piemonte.

¹ The building is in *via Madonna de la Salette* and belongs to “Missionari di Nostra Signora de La Salette” complex of buildings. It is composed of 5 floors above ground and one floor underground, each one being 250m² floor surface.

² Groups of volunteers who have accompanied the construction of the self-management model and promoted a sense of belonging to the structure.



Figure 2 View of the building from via Madonna de la Salette, after the intervention.

Source: Architettura senza Frontiere Piemonte.

In May 2015 the no-profit association “Insieme per accogliere”³ was tailor-made, with the participation of the Pastoral Office for Migrants, the Diocesan Caritas and the Missionaries of Nostra Signora de la Salette. This association - since the agreement for the loan-for-use of the building, granted by the Order of La Salette - instructed Cecilia Guiglia e Paola Sacco, professionals belonging to “Luoghi Possibili”⁴ to coordinate the technical and participatory architectural interventions, and instructed the Cooperativa Orso⁵ to carry out the social support. The first level of participation consisted in building a sort of “collective commissioning”⁶, composed of owners, inhabitants, representatives of the Diocese, Solidary Committee Refugees and Migrants and social workers.

After that, other technicians were involved to solve specific problems, selected by the specific competencies, experience and attitudes, firstly Architettura Senza Frontiere Piemonte⁷. They composed the project team⁸.

³ The association was created in May 2015 in order to regularize the residency of the occupants.

⁴ It is a group of interdisciplinary projects, born in 2004, expert on housing and urban regeneration. It coordinates the technical and social aspects of architectural intervention.

⁵ The Cooperative was born in 1987 and usually works in Torino, Cuneo, Asti on the labour, migration, integration and youth policies. From 2009 it works also with refugees.

⁶ “Collective commissioning”: aspiration to share with other actors project key elements, according to a feedback-loop approach.

⁷ Architettura senza Frontiere Piemonte ONLUS is a no-profit association, located in Turin, funded in 2006, belonging to the international network Architecture sans Frontière International, inspired by the principle of the Chart of Hasselt, on the basis of which intervenes with cooperation and local development project in the South and in Italy, in presence of social, urban and territorial emergency. It proposes the architecture as an inclusive and interdisciplinary practise addressed to participatory architecture with the local communities.

Since the mid-2015, the team started the works in parallel to the social support of inhabitants and supported to the labour and social integration. The total value of the intervention was approximately euro 880.000, reached thanks to private financings by donations and calls.

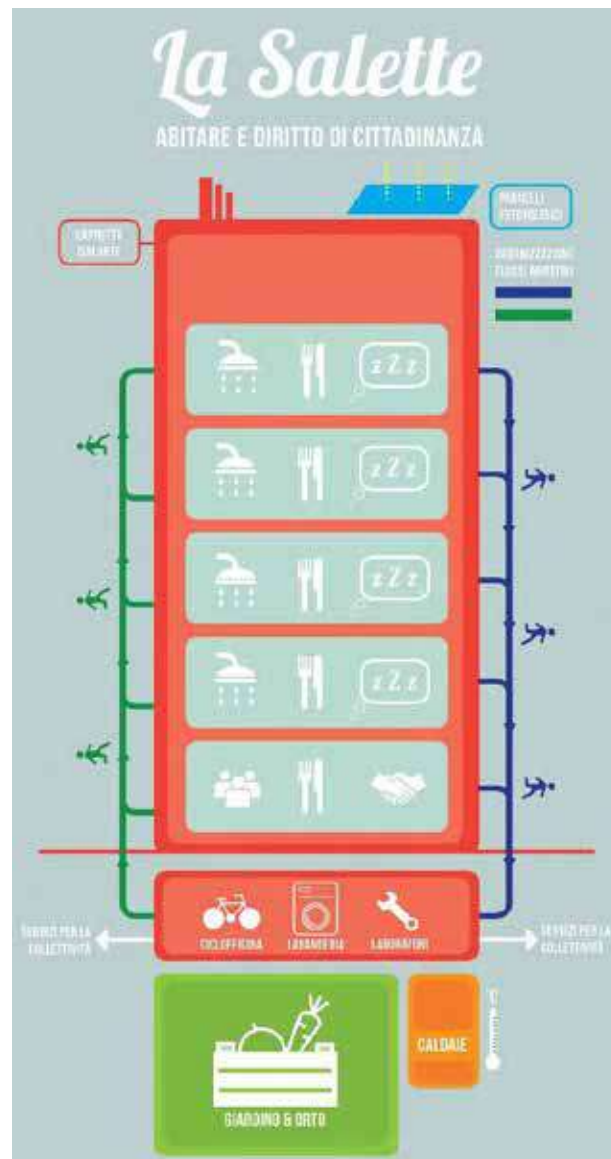


Figure 3 Graphics of the final uses Fonte: elaboration by Paola Sacco and Andrea Sassano.

⁸ The project team is composed of Cecilia Guiglia, Paola Sacco (Luoghi Possibili) Valeria Cottino, Veronica Gai, Annalisa Mosetto (ASFP), and the free-lances Mario Alessio, Ivan Castagno, Daniele Filippa, Daniela Re.

The part of the building for residential use was functionally divided by floors into rooms and common services, on the basis of the observation of occupants' behaviour in this structure and in other experience: limited size of the common spaces, number of inhabitants per area and natural tendency to gather by nationality. The team of the project expressed the need to build good neighbours' relationship – even throughout the use of the garden – and identifying spaces able to economically contribute to the management of the building. In the observation of the spontaneous practices of use of these spaces by the occupants, one of the most relevant and complex issues – particularly in case of self-management, regards the right to accommodate friends in their own rooms. Because of that, a part of the basement could be used as guest-rooms.



Figure 4 View of the garden, before the intervention. Source: Architettura senza Frontiere Piemonte.



Figure 5 View of the garden, after the intervention. Source: Architettura senza Frontiere Piemonte.

The realization of this collective housing was not obvious at all, because the national and local regulations do not foresee this type of final use, nor the realization of building works in an already inhabited space, although with the objective of social inclusion, in a logic of self-construction. Therefore, it was necessary to identify every single legal reference, and unifying all of them in a technical-legal device, acceptable by the current urban planning system. Indeed, in Italy, the planning system is conformational and urbanism (EC, 1997; Janin Rivolin, 2008, 2017). Because of that, it is necessary to identify the existing planning rules which are valid to justify the proposed intervention, in order to conform it to the regulatory system in force.

This implies various operational difficulties: with respect to the real social need expressed by a part of the local community, but not previously defined by the plan, the promoter of a project is not allowed to propose solutions that, even responding to territorial development objectives, are not foreseen by the previously established rules.

Because of the rigidity of the rules in force, the first problem was the temporariness of the migrants' reception and integration process determined by the features of social housing⁹. The reception would be considered as equivalent to the touristic activity, not permitting to certify the legal residency, that is necessary to obtain the resident permit for migrants. Because of that, the residential final use was selected and connoted as "collective", thanks to "Insieme per Accogliere" who nominated a head of the building among its members. To do so, the municipal offices made use of an existing agreement on these issues between Turin Diocese and Municipality of Torino, that permitted to go ahead, maintaining the same designated use. In fact, the change of designated use would have taken two years and would have been too expensive.

According to the Turin Municipal General Master Plan, the area is designated to be used for private services of public interest (art. 3 comma 15 & art. 8 comma 68) and the building was used as a care home for elderly. Keeping the use classified in the same macro-category, it was possible to convert the final use into "reception" (art. 3 comma 15), avoiding the payment of the land occupation fee and limiting the necessary adaptation. In order to respect the legal parameters as private service of public interest, it was necessary to add some sleeping places available for the public authority.

Further, the guidelines for projects of university residences were consulted (All. A al D.M. n. 27/2011)¹⁰, so that the dimensional standards were coherent with the existing practice of use, designing space to respond to the inhabitants who were more interested into the number of sleeping places than into available private rooms. Even regarding functions and standards, the university residence was taken as a reference. So, the compresence of the residential functions and related services must be ensured, in order that the need for both privacy and social life is satisfied.

Regarding the sizing of rooms and technical rooms, the traditional residence regulation was taken as a reference, adapting spaces to the hygienic requirements, demanded by the regulation for the living quarters (D.M. Sanità 5 luglio 1975)¹¹. Also, the fire regulation does not imply the option of "collective housing": after considering the hygienic residence regulation, the hotels' regulation was used and a fire-escape was installed, not required for the traditional block of flats, but compulsory for the touristic ones (D.P.R. n. 151/2011)¹².

⁹ The permitted permanence is maximum 18 months, according to "Linee Guida per il Social Housing in Piemonte", Delibera Giunta Regionale 5 novembre 2007 n. 27-7346.

¹⁰ Allegato A. Decreto Ministeriale 7 febbraio 2011 n. 27. Pubblicato nella Gazzetta Ufficiale del 28 aprile 2011 n. 97

"Standard minimi dimensionali e qualitativi e linee guida relative ai parametri tecnici ed economici concernenti la realizzazione di alloggi e residenze per studenti universitari, di cui alla legge 14 novembre 2000, n. 338".

¹¹ Decreto Ministeriale Sanità 5 luglio 1975. Pubblicato nella Gazzetta Ufficiale del 18 luglio 1975 n. 190 "Modificazioni alle istruzioni ministeriali 20 giugno 1896, relativamente all'altezza minima ed ai requisiti igienico-sanitari principali dei locali di abitazione".

¹² D.P.R. 1 agosto 2011 n. 151. Pubblicato nella Gazzetta Ufficiale del 22 settembre 2011 n. 221. "Regolamento recante semplificazione della disciplina dei procedimenti relativi alla prevenzione degli incendi, a norma dell'articolo 49, comma 4-quater, del decreto-legge 31 maggio 2010, n. 78, convertito, con modificazioni, dalla legge 30 luglio 2010, n. 122".

Although the complex regulatory framework, the self-construction was taken into consideration, with the purpose of actively involving the occupants, making them responsible in the maintenance and management of the good, and offering them an opportunity of professional training. Nevertheless, there is no national, nor local regulation for the self-construction and it emerged that in Italy there is a regulatory gap for the self-construction that is actually experimental. Even if this practice is mentioned in different normative and project proposals, this practice, implying the active participation of not qualified people in a building site, has not a defined application field. The only authorized person, even if with limitations, to access the building site without being a technician or a worker, is the owner or the tenant. Further, the voluntary work and the no-profit associationism are not foreseen and regulated in a building site and the self-construction is not promoted at the political level. Thus, it was necessary to convert the concept of self-construction in self-refurbishment and self-maintenance.

Since the dialogue with the Ministry of Work, it has been understood that it was necessary to identify labour contracts in the self-refurbishment, throughout an association, the internship, apprenticeship, in a cooperative or in a company, with all the related obligation, but they were complicated options, that would have demanded the involved companies a professional training oriented to the recruitment.

Therefore, a tenure title was provided to the occupants who had to become members of a voluntary association as to ensure insurance cover, even when the building-site is open. Because of the critical points illustrated so far, it was not possible a global involvement of inhabitants, and just some works were self-realized, with the support of traineeship. The project options, driven by money saving criterion, foresaw that 50% of the works for completion were realized by inhabitants as volunteers and the 30% as workers. In particular, some occupants attended a carpentry course at Scuole Tecniche San Carlo in Turin, and some of them were assisted by voluntary craftsmen. All the occupants got involved in the works of his related floor, throughout precise planning of works. Since it was not possible to transfer the inhabitants during the whole period of intervention, the work was divided by floors. The work in each floor lasted 5 weeks and was then suspended for ten days each time, to make possible the works of completion and the moving with the help of volunteers. Given the presence of the inhabitants in the structure, the security plan was studied in detail to ensure a net division between working areas and living areas.¹³



Figure 6 View of the roof, before the intervention. Source: Architettura senza Frontiere Piemonte.

¹³ The spaces of the building site were as more as possible independent on the living spaces, to avoid interferences. The underground floor was refurbished and temporarily used to lodge inhabitants during the works in their respective floor.



Figure 7 View of the roof, after the intervention. Source: Architettura senza Frontiere Piemonte.

In architectural and plant engineering terms, the project foresaw some distributive modifications to improve the functionality of the building and respect the current regulation (among the others: Legge 13 del 1989 e s.m.i.¹⁴ for the elimination of architectural barriers), with the remake of the bathrooms and the access-ramp to the ground floor for disabled people and the reactivation and testing of the elevator.

Besides, after an analysis of consumptions and dispersions, taking into account the relationship costs/benefits of the fire regulation, but also the typology of building and of users, interventions to improve the building energy performance were identified. The proposed solutions are divided into two typologies: the ones on the building envelop and the ones on thermal and electric plants.

From the experience in La Salette, it emerged that housing practices and policies in Italy framed the social precarious conditions within temporariness, but these conditions cannot be solved in periods of time predetermined by a general legal provision and, because of that, the concept of temporariness was replaced by transitoriness. Indeed, in the Piemonte Region, the social housing model foresaw a residential time limited to only 18 months, even if it can be renovated in some cases by leaving and entering again the house. It is also true that it was expressed by the inhabitants the need not to respect a predefined period of time, as usually imposed by the traditional reception institutional projects because the social and economic inhabitants' problems did not allow at all how long it takes them to become independent. Further, the building management expenditure should have been compatible with the solutions, mostly informal, of the self-sufficiency economy. It meant to operate outside of the tradition current legal and practical framework, already set for the formalization of social housing.

The participation to the process permitted to observe from inside some dynamics: not predefined periods of time and informal economies are not compatible with the current categories regarding residence, workplaces and use of economic resources. In fact, migrants tend to send almost all the gained resources to countries of origin and many of them are not able, if not supported, to save money to invest in their future in Italy.

The cooperation among the above-mentioned private actors permitted the housing self-management. For example, activities inside the structure able to ensure small income to support the house expenditures, especially for whom was not continuously autonomous. Further, it was possible to observe the regional, national and European trajectories followed by migrants, strictly connected to their work activities.

¹⁴ Legge 9 gennaio 1989, n. 13 “Disposizioni per favorire il superamento e l'eliminazione delle barriere architettoniche negli edifici privati”.

It was clear that the answer to the housing need must consider the feature of the seasonal work, the opportunities that are activated by their networks, that are available even in an uncertain and sudden way. For example, a compatriot from another country calls for a short period another “brother” or “cousin” and he expects not to lose their right to live in the house that partially built as well while going the visit his compatriot. Therefore, the answer has to be extremely flexible, without giving up having a shelter, as ensured by the collective residence.

Initially, a self-managed approach was assumed, regarding the house management, but when works ended, it was clear that the inhabitants would have not been able to continue the “collective housing” experience all by themselves. There were no relevant conflicts, but certainly defining a shared decision on the economic criteria for the sustainability of the house was taking more and more time. Consumption, maintenance and caring of the “housing space” were the object of the daily debate. Since that point, it was changed the way to organize the floor assemblies. With the efforts of the social workers and the *Comitato Migranti*, it was possible to convince all the inhabitants to subscribe to a “Housing Pact” on the shared rules for living the house. After that, self-management and accompanying were replaced by co-management and coaching.

The process, especially regarding the economic aspects, which will be gradually modulated towards a higher management capacity of the housing expenditure, is still on-going and needs further time to reach the independence of individuals.

It is evident that for some of them, it will not be possible in a short time, but the long-term objective remains the independence on the external economic support, for the conviction that the dignity of people is firstly based on having the autonomous right to choose.

In conclusion, this experience represents a bottom-up policy for the social and urban inclusion in response to the large movement of people, based on a new kind of social and spatial organization – the “collective housing” – as a result of an urban community.

It does not consist only of refugees’ reception, but migration trajectories overlapping existing physical and social structure, with new lifestyles, new needs, generating innovative spaces and new urban functions, negotiating with the urban government a new social legitimation and housing legalization. This intervention emerged for the listening skills of the actors’ mutual needs – representing the basis to elaborate proposals – for a social and political approach, by the composition of the sensitiveness and competencies, always with a multi-disciplinary perspective.

In conclusion, given the results in social and organizational terms, and the limited conflicts during the realization process, this experience questions the rigidity of the conformational urbanism and show that, throughout a strategic mix of the current rules, it is possible to create a new rule that allows the realization of unforeseen interventions.

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Urban agriculture and the social role of urbanism: Planning and ethics for communities and territories

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Abstract: UN Habitat III and the 2030 Agenda for Sustainable Development have challenged scholars to reappraise the urban environment from the sustainability perspective. The study of urban form (urban morphology), as well as of resources and materials needed for cities to function (urban metabolism) are two specific areas which have potential to assess the urban environment and their projected development. Departing from such contributions this presentation, focus on the contributions of an ongoing research Project (SPLACH – Spatial Planning for Change), which aims to promote a sustainable urban transition of Lisbon Metropolitan Area (LMA), informed on a desirable food-based urbanism, with impact on the improvement of environmental conditions and people's lives. LMA concentrates about 3 million inhabitants, whom mostly occupy its peripheral residential areas, mostly developed throughout 20th century. Many of these areas gave rise to relevant problems including social isolation and car dependency, while others have witnessed a number of municipal and private initiatives to counteract such issues, including the promotion of urban agriculture. SPLACH Project has surveyed a number of case studies which aim to theorize planning and housing dynamics occurred in LMA while identifying their impacts on territorializing ethical principles grounded on urban agriculture initiatives. Specifically, we will question what specific issues have been identified in SPLACH case studies which deem to provide opportunities to rethink urban planning and urban form towards a more sustainable environment and promote the social role of urban planning.

Keywords: urban agriculture; urban planning; ethics; Lisbon Metropolitan Area

Introduction

Urban planning has always questioned what constitutes a 'good city' and a 'good life' which it will promote. Yet, how to define 'good'? Aristotle, for example, believed theory and action tended towards 'a certain good', but conceded that 'good' meant different things for different people in different contexts. That modern democracies have barely managed to tackle these differences proves the everlasting importance of ethics.

Ideas and structures shaping our notions of how to live, good and bad, acceptable and unacceptable, our relations to others and behaviour standards is the terrain of ethics (Blackburn, 2001). Even when ethical dimensions are

not directly referenced, creative and critical acts are imbued in them, since we exist in what Blackburn (2001) calls an ‘ethical environment’ even when unaware of it.

Although ethics usually comprises a consideration of relations between human beings, sustainability, as it has been conceived since the publication of the ‘Brundtland Report’ (UN, 1987) challenges this traditional understanding of ethics. The official title of the report itself, ‘Our common future’, points this rather clearly – sustainability must envision the relation of our current practices and behaviors with life conditions which future generations will inherit from us (UN, 1987). As such, our unsustainable behaviors towards nature will inevitably compromise not only nature itself, but the survival of generations to come. These concerns led a great number of scholars to accept and research the emergence of the Anthropocene or Capitalocene, a proposed new geological age marked by deep alterations on the Earth by human action, particularly under the guise of capitalist development (Sagan, 2019). That alone makes sustainability an important ethical question.

As urban populations are expected to double until 2050 (UN, 2017), the impact of cities in social and ecological sustainability is a crucial area of study, to which many scholars in vastly different areas have already contributed. That is the case of urban morphology which studies the physical form of cities and the processes that form it in time (Oliveira, 2018), and also of urban metabolism, which identifies stocks and flows of materials and energy necessary for human activities (Fischer-Kowalski and Weisz, 2016).

Resarchers in urban morphology and metabolism have contributed greatly to the understanding of the formal, morphological, political and environmental aspects of the city. However, we believe that alongside these more or less ‘tangible’ aspects of cities, the processes and consequences of their change over time and their variance across space must also be interpreted in the context of relationships between present and future generations, but also between human entities and ecosystems they explore. These can be included in the field of ethics, and it is an ethical reading that we aim to sketch here.

To do so, we first seek to establish an operative concept of ethics, which we will then confront with specific examples of planned neighbourhoods and the way they have been transformed, either through new planning or through their use by communities. Our ethical reading will include both top-down and bottom-up initiatives, and will mostly focus on processes of change as they represent important contributions for sustainability (Scoffham and Marat-Mendes, 2000) and ethics. We draw from preliminary results of ‘SPLACH – Spatial Planning for Change’, an ongoing research aiming to promote a sustainable transition of the Lisbon Metropolitan Area (LMA), by understanding links between urban form and socio-metabolism, particularly through the food system.

Urban agriculture emerges as one of the most outstanding themes in this context, in the LMA as in other world cities. As Purdy (2015) points out, food, treatment of animals and climate change, the paradigmatic Anthropocene problems, leave people uncertain of what to make of their key encounters with the natural world. As will be demonstrated, urban agriculture is not always born out of this conscious need to reconnect with nature, and in some respects, it may have adverse political results

Theoretical framework and literature review

A unique perspective on ethics is that of Austrian philosopher Ludwig Wittgenstein (1889-1951), who. defined ethics as *the inquiry into the meaning of life, or into what makes life worth living, or into the right way of living* (Wittgenstein, 1965, 4).

In his first book the ‘Tractatus Logico-Philosophicus’ (1921), Wittgenstein conceived ethics as the discourse category that allows the possibility of thinking of good and evil, and states it is individually established through specific acts. However, Christensen’s (2004) reading of Wittgenstein’s posthumous ‘Philosophical

Investigations' (written from the 1940s to 1951) and 'On Certainty' (written 1950-1951) suggests a change in this understanding. In these later works, Wittgenstein's epistemological concepts had changed: he no longer believed the world could be described by pre-established categories, but rather by endless patterns in which these categories intertwined in use, which for Wittgenstein is always public. In this context, for something to constitute an ethical norm, it must be publicly assessable as such (Christensen, 2004).

When discussing an ethical dimension to sustainability and urbanism, this is extremely helpful, since it would be impossible to think of them as individually defined. They are not acts, but result from specific acts involving individuals. Acts including choices by an architect or urban designer on a plan, citizen use of public space, decisions by municipalities on construction or demolition, preferences of urban developers – acts with a public impact.

Surveying 20th century urbanism, Nielsen (2004) identifies ethical paradigms in urban models attempting to materialize specific relations between socio-political values and built environments. However, Nielsen (2004, 42) rightly observes even revolutionary ideas have been cannibalized by the market and devoid of meaning, concluding that *an ethical urbanism can only be created retroactively by theory*, that is, through ulterior interpretation. Although Nielsen's arguments are convincing and there may be some truth to his conclusion, we maintain that certain approaches to ethics remain useful not just in historiographical criticism, but in informing current and future planning practices, as is the ambition of the SPLACH Project.

Sustainability – unaccounted in Nielsen's survey – demands rethinking our ethical environment. Such is the approach of Kopnina (2018), who extends ethics to nature, namely plants, aiming at a sustainability-based ethics. Purdy (2015) also identifies a shift in notions of sustainable land-use, from wilderness preservation to food-production, from 'unaltered' landscapes to landscapes transformed by labour which connects people with land and with nature in general.

Indeed, changes in urbanization changed social attitudes between society and nature (Gandy, 2014). Tibbs (2011) suggests that culture is shifting towards greater concerns for ecology, while we have elsewhere discussed how sustainability is a structuring socio-cultural force in the present (Marat-Mendes and Borges, 2019). What is generically known as the food movement, which suggests a new picture of people and nature, where food production and preparation is a source of satisfaction and knowledge, which preserves, rather than exhausts, natural processes (Purdy, 2015).

Kopnina's review of environmental ethics around two different lines shows that if the inclusion of nature in our ethical ideas is a logical response to resource overexploitation and climatic change, it is a complex matter – while land ethics acknowledges intrinsic value to ecological collectives (like ecosystems), deep ecology attributes it to individual living organisms. This ecocentrism vs. biocentrism debate – echoing early 20th century sociology debates between methodological holism (Marx, Durkheim, Radcliffe-Brown) and individualism (Weber, Malinowski) – has its implications, but we accept Kopnina's suggestion that the fundamental goal is a re-orientation of our world-view, in which limitless exploration of nature becomes unacceptable.

In Kopnina's proposition, different forms of describing the world – ecology, urbanism, economics and ethics – interplay in specific patterns, like Wittgenstein suggested in his later writings (Christensen, 2004).

Nielsen's (2004) ethical reading of Keynesian 1960s politics of redistribution identifies the construction of a modern industrial society as a driving force, controlling urbanization and forming a large middle-class to consume produced goods. We would add massive land-use conversions that eliminated rural soils to allow urban growth and the increasing segregation of urban and rural activities and territories. The latter, marking inequalities between city and countryside (Weaver, 1983), may have contributed to the collapse of the 'Keynesian consensus' in the 1970s, when its ethical principles of equality and justice were perceived as

limiting individual freedom (Nielsen, 2004), while the former exposes that only human entities were included in this ethical paradigm. With the later publication of the ‘Brundtland Report’ (UN, 1987) it became clear that, if not in ethics, in economics and planning, sustainability would have to become a touchstone.

One sign of change can be found in the growth of urban agriculture. It has been discussed for its historical role (Barthel and Isendahl, 2012), but also its advantages in creating social bonds (Parham, 2015), improving territorial metabolism (Ibañez and Katsikis, 2014; Faraut, 2017), changing patterns of human occupation (Viljoen et al, 2005; Napawan, 2016) and increased political participation (Lyons *et al*, 2013; Purcell and Tyman, 2015; Reynolds, 2016).

In the case of the LMA, urban agriculture has been noticed for its potential for economic development (Delgado, 2018), its role in establishing social relations and political participation (Cabannes and Raposo, 2013) as well as the changes in its planning (Oliveira and Morgado, 2016; Marat-Mendes *et al*, 2018). Dias (2018) has furthermore studied municipal urban agriculture case-studies in Lisbon and Cascais from a morphological perspective.

Here, we start by confronting this literature review with two examples of neighbourhoods from two LMA municipalities, namely the Lisbon neighbourhood of Chelas and the Amadora neighbourhood of Alto do Zambujal. After a description of each, a comparative reading will be presented and discussed against the background of ethics. The conclusion will draw suggestions for improving urban gardens and optimizing urban agriculture in Greater Lisbon.

Case studies from the Lisbon Metropolitan Area

In this section, we present two case-studies of the role of urban agriculture in planned urban areas. Thus, we selected two neighbourhoods planned between the 1960s and the 1970s, when several legal programs led to the planning of several council housing neighbourhoods, allowing an observation of residential space as planned by municipalities themselves. We present a brief overview of their current state and what forms of urban agriculture have emerged since their construction, as none of the original urbanization Plans proposed any space for agricultural activities.



Figure 1 – Case-studies location: 1 – Chelas Valley; 2 – Alto do Zambujal

The Chelas Valley

Until the 1960s, Chelas was a large extension of agricultural land. It remained practically untouched by urbanization, aside from small extensions of slums and some industrial facilities in the fringe closer to the Tagus river. The GTH – Gabinete Técnico de Habitação (Technical Office for Housing), a municipal planning office, was created to draw plans for Lisbon's Eastern end, starting with Olivais Norte and Olivais Sul, also former agrarian properties expropriated by the municipality for the development of high-density council housing, inspired by the principles of modern urbanism (Gonçalves *et al*, 2016).

Architects José Rafael Botelho (b.1923) and Francisco Silva Dias (b.1930) were charged with the Chelas Urbanization Plan in 1960. In 1962, Silva Dias started its final version (GTH, 1966). Zones or estates were developed afterwards, all with specific compositions of high-density housing and public areas that included green parks and equipment. New elements of urban form were added to the urban landscape, including several high-rise slabs (in the Amendoeiras and Olival Estates), a city-building (the Condado Estate) and continuous sequences of buildings (the Lóios Estate). Many of the estates in Chelas can be considered megastructures as they came to be defined later by architectural critic Reyner Banham (1976), showing great creativity in the articulation of different urban elements into massive structures countered by large extensions of green space. The original plan was dismissed in the later developments, particularly after Silva Dias left the GTH in 1973, and corresponding zones have more conventional urban form solutions, namely tower-blocks.



Figure 2 – Lóios Estate, seen from the Municipal Horticultural Park



Figure 3 – Guerrilla Garden and Salgadas Estate on the background



Figure 4 – Guerrilla Garden and Flamenga Estate on the right



Figure 5 – Guerrilla Garden and Flamenga Estate on the background

The morose development of Chelas was hardened by the fact that planned equipment and infrastructures were only partially or never implemented. Particularly with mobility infrastructure, this translated into a relative segregation of Chelas from the remainder of the city. Furthermore, the whole neighbourhood has become isolated from the rest of the city, suffering from social exclusion, poverty, unemployment and criminality (Heitor, 2001). In 1998, a film by Leonel Vieira, 'Zona J' displayed the general negative perception Lisbon society had of Chelas. This led extensive demolitions in the Condado Estate in 2009, a solution whose positive impact remains unconfirmed. Another initiative of the municipality to tackle the problems of Chelas was the creation, in 2010, of an horticultural park between four estates – Zone O, Amendoeiras, Lóios and Flamengo. Significantly, these include some of the most impoverished areas of the Valley (Cabannes and Raposo, 2013).

However, despite its success, the horticultural park occupies only a parcel of overall land available for it. It has grown since its original layout, and all of its plots are currently occupied and profusely cultivated. Moreover, they add a luscious element to the urban landscape, contrasting with the That popular interest is greater than the park currently allows is testified by the nearby guerrilla garden, larger than the municipal park. These informal gardens – in which planted species are not significantly different from the ones in the municipal park – occupy an area never developed for urbanization. It is the leftover space between the Flamengo Estate, a council estate planned by the GTH, and the Olaias Slope, a facing urbanization for the middle-class privately developed in the 1980s. Standing between these two planned areas, the guerrilla garden is only one of several elements that are somewhat unarticulated – some housing rows, storage spaces, a motorway and a railway, as well as ruins of premodern houses. As we have defended elsewhere (Marat-Mendes and Borges, 2019), this neighbourhood seems to be returning to Lisbon's agrarian roots, which, in the undeveloped areas, proves to have never disappeared.

Alto do Zambujal

Alto do Zambujal is located on the borderline between the Lisbon and the Amadora municipalities. The latter is the smallest municipality of LMA, but also the most densely populated. With a large population and a relatively small territory, Amadora is still revising its Municipal Masterplan, which still dates from 1994 (Marat-Mendes *et al.*, 2018).

The Alto do Zambujal Integrated Plan was started in 1973 and its implementation in 1974. Rising over a slope, the planned neighbourhood includes two significant estates, the Alto do Moínho, designed by Francisco Silva Dias, António Pinto Gomes and Ana Salta; and Zambujal, designed by Vítor Figueiredo and Duarte Cabral de Mello. Alto do Moínho is a low-density housing estate located on the lower end of the slope, with two- and three-storey semidetached houses, separated by small patios and flowerbeds. The green space surrounding the ruins of a windmill was left unoccupied and remains so today, with the exception of some small agricultural plots.

Zambujal is a high-density complex on the hilltop. It presents several rows of multi-storey slabs, although its lowest slab is a row of two-storey single-family houses. There is a generous amount of public space with large urban gardens, several underpasses, cafés and public benches. After the 1980s, the Zambujal estate was redeveloped to increase its density, and many other slabs, of a considerably poor design by architects other than Figueiredo and Cabral de Mello were added, sacrificing some of the originally planned green public area.

However, between the lower slab of the Zambujal Estate and the CRIL highway – which divides the Amadora and Lisbon municipalities – an extensive guerrilla garden has been created by locals. Additionally, some individual plots can also be found in the nearby urban park, at the centre of Alto do Moínho and even in the fringe of the Industrial Zone in the southwest of the neighbourhood. Urban farmers themselves designed plots, selected species and agricultural techniques and often recycle objects and materials to suit needs such as rainwater harvest, irrigation and storage.



Figure 6 – Alto do Moínho Estate



Figure 7 – Zambujal Estate



Figure 8 – Guerrilla Garden with the CRIL highway on the background



Figure 9 – Guerrilla Garden

Discussion

Both Chelas and the Alto do Zambujal belong to the ethical paradigm of Welfare States, as described by Nielsen (2004). However, in Portugal, a social-democratic welfare system did not start until 1974, when a military coup ended nearly 40 years of a conservative ruralist dictatorship. However, previous urbanization processes had shown Portuguese architects and planners were indeed aware of international urban debates, and managed to incorporate this knowledge in their practices.

The principles behind the 1964 Chelas Plan, designed to provide quality housing for poor populations are not unlike principles guiding other 1960s council housing in democratic countries (Borges and Marat-Mendes, 2019), showing a great capacity of GTH planners to overcome adverse political conditions. The vast green areas, supposed to provide leisure spaces between estates, as well as the extensive use of deck-access are both associated with the Doorn Manifesto and with the debates kickstarted by Team 10 (Heitor, 2001), a collective of architects whose most relevant projects were dependent on the construction of the city for the Welfare State (Risselada and Van Den Heuvel, 2005). In social housing, this *pas-de-deux* has proved sour, as several neighbourhoods planned under these principles have been systematically demolished (Hatherley, 2010). Chelas shares the same difficult outcome. Refurbishing and demolition work in some of the areas have tackled the social problems of some of the areas through changes in design. However, an observation of the urban agricultural practices in Chelas are a positive sign which has not been fully acknowledged. The appropriation of vacant space for food-production was not planned by the GTH, but the plan still had both conditions and space for it to happen, confirming the suggestion of Scoffham and Marat-Mendes (2000) that space is the asset allowing urban change to succeed. Indeed, if our age is one of uncertainty on how to reconnect with nature, experiments like in these neighbourhoods undoubtedly have an ethical dimension, insofar as they propose a necessary change in relations between humans and their environment (Purdy, 2015, 230).

In the Alto do Zambujal Plan, the commitment to ethical principles of justice, equality and dignity are clearer, as both Alto do Moinho and Zambujal were built after 1974. The former was even integrated in SAAL (Serviço de Apoio Ambulatório Local), a social housing program started by the First Interine Government. SAAL functioned in three key areas, Greater Lisbon, Greater Porto and Algarve and was only finished in Algarve when it was suspended in 1976 (Bandeirinha, 2007).

Despite their intended emphasis on public space, neighbourhood life and decent accommodation for all, these plans faced implementation difficulties and were for a long time left to neglect and social exclusion. Nowadays, they stand close to later mass-housing developments for the middle-class – namely the Olaias and the Alfragide developments, in Lisbon and Amadora respectively – but most estates in Chelas and Alto do Zambujal have had trouble being integrated in their specific areas. In many places within these neighbourhoods, public spaces are poorly kept, littered and underused, and sometimes were not even implemented as designed in the plans. In Alto do Moinho and the Amendoeiras Estate, this is not so, as residents' associations have been involved in maintenance and refurbishing processes.

These examples show that the ethical critiques to the Welfare State pointed out by Nielsen (2004) arrived to Portugal, only later. From the 1980s to the 2000s, Portugal saw tremendous increases in construction, mostly led by the private-sector, and the territory was urbanized at an unprecedented rate (Mourão and Marat-Mendes, 2016). Meanwhile, the key public policy for housing for most governments was easier access to bank loans (Drago, 2018). The State no longer ensures or programs housing conditions, but rather manages urban development and encourages people to individually borrow money and get housing for themselves. Thus, the 'welfare or freedom' critique of 1960s ethics identified by Nielsen (2004) can be confirmed in Portugal.

But what would Kopnina's (2018) suggestion of a nature-inclusive ethics tell us? Both Plans reserve generous amounts of green soil to counter urbanization, although also confirm 'urban parks' as non-productive. On the

other hand, these urbanizations displaced large agricultural explorations: activities changed in these areas, but so did land-cover patterns and ecosystems. Arguably, this was necessary, given the severe housing crisis at the time of design. Very different is the case of the largely unregulated urban growth in the 1980s and 1990s which advanced through massive land-use changes and resulting in a housing surplus (Mourão and Marat-Mendes, 2016). Besides ecosystem destruction, this process implies further damages to the environment since it runs parallel changes in Portuguese agriculture motivated by the EU Common Agricultural Policy (DGAGRI, 2003) and large public investment in car infrastructures.

Despite the eradication of productive green areas, in both Chelas and Alto do Zambujal, there is a strong emphasis on community spaces. These too have ethical importance – they echo the 1960s obsession with high-density neighbourhoods that maintained strong convivial bonds (Borges and Marat-Mendes, 2019). More recent developments, even in areas surrounding these two neighbourhoods, were arguably less focused in creating such public spaces and opted for more conventional solutions, with tower-blocks separated by leisure gardens and parking space. In a sense, it is the ambiguity of the urban forms employed in Chelas and in Alto do Zambujal that left enough space for unplanned initiatives to emerge.

Once we observe the same neighbourhoods as they stand today, we see further opportunities for ethical consideration. The return or resistance of urban agriculture is particularly telling. Although it is widely understood that allotment garden agriculture peaked in Western cities in crisis associated with the World Wars (Whitehand, 2019), the phenomenon is renewing, not least in Lisbon (Cabannes and Raposo, 2013; Delgado, 2017; Delgado, 2018; Dias, 2018; Marat-Mendes and Borges, 2019). Since cultivated species are mostly edibles, one wonders if informal agriculture spawns from the impact of the 2007 Financial Crisis on the food security of the urban poor (Delgado, 2017).

All these changes question the growing schism between urban and rural activities and territories. The rise in industrialization and urbanization seemed like a logical option for a country where the agrarian socio-metabolic regime (Krausmann *et al.*, 2016) lingered until the 1960s. However, sustainability forces us to reequat these developments. The food system allows us to link the food security of urban population and corresponding patterns of land-use. Cabannes and Raposo (2013) and Delgado (2018) observed that urban agriculture both formal and informal is important for self-consumption, particularly for impoverished communities within the LMA. However, Dias (2018) and Marat-Mendes *et al.* (2018) noticed that most municipal agriculture allotments are clearly meant for leisure purposes, with a particular emphasis on activities for the elderly with secondary productive value. Although recent Municipal Masterplans envision environmental strategies and emphasize the role of green areas, ethical and sustainable appreciation of plants within ecosystems as defended by Kopnina (2018) are generally lacking.

In the Chelas Valley, where the planned municipal horticultural park has failed to grow to its full potential, the lack of a clear strategy aimed at food security, productive land or ecosystem management is visible, especially when compared to the much larger guerrilla garden nearby. The latter seems more directly linked to the needs of local communities, not least because every aspect – from plot design to cultivated species – is ensured by farmers themselves away from top-down regulations. In Alto do Zambujal, where no municipal initiative exists, the guerrilla garden also shows tremendous initiative from local communities to vacant space in the neighbourhood. No less than expressing the will of farmers to improve their own food-security, this shows that local communities understand neighbourhood space as their own, a principle that was common to many social housing developments in the 1960s and 1970s (Borges, 2017; Borges and Marat-Mendes, 2019).

If guerrilla gardens constitute conscious use of public space, what ethical dimensions can be highlighted? As examples of ‘do-it-yourself’ attitudes, they represent a grassroots appropriation of vacant areas with tremendous sustainability potential – for soil and ecosystem maintenance, but also for recycling practices and increased food security.

However, it is important to stress that many of these urban farmers come from neglected communities, whose particularities seem to have fallen outside the reach of Portuguese public policies on housing. As confirmed by Nielsen (2004), the neoliberal paradigm that followed the collapse of Keynesian redistribution politics barely managed to ensure equity or opportunities for all – perhaps not even food for all.

Furthermore, what can we see in municipal attitudes? In Lisbon, whose Masterplan dates back to 2012, land is wholly classified as urban, and its system of green corridors does not have non-aedificandi status. In Chelas, the horticultural park has not grown, despite the existence of long waiting-lists in most municipal allotments surveyed by Dias (2018). As for the guerrilla garden, one may imagine that municipal intervention would eventually be unhelpful, since nothing indicates a commitment of the municipality to strengthen or protect its urban farms (Marat-Mendes *et al*, 2018). The case of Amadora is harder to assess, considering its conditions, but also its outdated Masterplan. There are no particular signs of interest for the green areas of Alto do Zambujal, although the municipality has recently created some horticultural parks in impoverished neighbourhoods like Falagueira. Yet, the lack of an updated Masterplan makes it difficult to understand whether this is included in a larger territorial or social strategy.

Conclusion

In 1943, Portuguese architect Francisco Keil do Amaral published a booklet with his notes from a trip to the Netherlands, where he went to survey local modern architecture. Among his descriptions of Dutch buildings and historical episodes, Amaral reflects upon the importance of architecture being assimilated by society and culture, inspired by an occasional conversation with two Dutch non-architects who advised him on buildings he should visit (Amaral, 1943, 32-34). This encounter with common citizens with informed opinions on architecture leads Amaral (1943, 35) to a very interesting definition of urbanism: *the science charged with the collective discipline of the interests and needs of urban settlements*. In treating the interests and needs of cities as a collective discipline, Amaral is definitely posing an ethical program for urbanism. The conversation with two informed citizens reveals to the architect that the city is not his concern alone, it is also the concern of inhabitants, who perceive space, and relate to it and may even transform it by themselves.

Such an ethical program for urbanism is not necessarily the same thing as identifying specific ethical inclinations within specific urban projects. Quite the contrary, it is a statement on the very nature of urbanism as a practice. If we accept Amaral's proposal, urbanism is always ethical, insofar as it designs and implements elements which will deeply impact people's lives. This can be interpreted as a challenge to rethink the actions and decisions of planning authorities and professionals.

In this context, municipalities could have an important role in shaping the future of the case-studies analysed here, particularly in the guerrilla gardens. This role could include improving informal gardens, contributing to education of farmers in sustainable agriculture and even creating strategies for professionalizing farmers, improving their financial and food security. However, Dias' (2018) research suggests there may be incompatibilities. Municipal allotments stick to limited morphological solutions – mostly rectangular grids – which does not happen in these guerrilla gardens, where plots are irregular in shape and size, prioritizing production needs instead of leisure opportunities. Thus, different designs show different understandings of the same phenomenon. Moreover, negotiations between needs of farmers for food and the municipal emphasis on leisure is not balanced, since farmers have no property rights over occupied land.

Indeed, Purdy (2015, 232-233) presents the ethical problems associated with the food movement – which must include urban agriculture – rather well: for him, it can either suggest an environmental ethic that melds its values to practices already in place, or it can suggest a new practice and identity, in which the relations of oneself with nature are redefined. In the surveyed case-studies, it would seem as though the latter has already come to pass. Sometimes without the encouragement or help of any municipal or public authority, communities have managed

to establish a new practice in the way they use public space, thus reshaping that space. However, if we assume these are practices already in existence, the question remains: will municipalities acknowledge them and seek to optimize them?

The ‘laissez-faire-laissez-passer’ attitude of municipalities (Cabannes and Raposo, 2013) poses more ethical challenges yet. Other than the lack of consideration for urban ecosystems in their real complexity, it may resemble a Victorian attitude in which the problems of the poor are of the poor themselves (Malpass, 2005). One must also remember that the surveyed neighbourhoods were planned as council housing, showing a State – first dictatorial and then democratic – which contributed directly to ensure quality urban space, including in residential schemes. In face of sustainability challenges, we must re-learn how to assess and conceive ‘quality’ urban space, which must necessarily encapsulate sustainability, but also validate forms of community appropriation of space if these represent an environmental improvement.

The food system and urban agriculture offer unique opportunities for observing urban planning decisions and attitudes ethically. In Chelas and Alto do Zambujal, large guerrilla gardens reveal a schism between priorities established by municipalities and by communities. This schism must also be understood by architects and urban designers, who must find creative ways to respond to societal demands. If Contal and Revedin (2011, 12) state that, being one of the oldest professions in the world, architecture is also one which regularly sells out to market forces, in the context of sustainable transitions, this must be understood as a challenge for architects and urbanists to redefine their priorities, also in ethical terms.

The interest clearly expressed by populations has not found echo in spatial planning and no legal framework concedes protection for informal gardens. Further study of the goals and needs of guerrilla gardeners in these areas is fundamental for any reassessment of the importance of their gardens, but this must also include a serious consideration on the positive impacts of agriculture on soils and its importance in counterbalancing urbanization and even the recycling of waste and materials.

These two case-studies are particularly suggestive when imagining a requalification, particularly considering their integration in urban plans of the 1960s and 1970s which deserve themselves further study. Interest in the work of architects like Silva Dias and Vítor Figueiredo has also increased recently (Ribeiro and Canelas, 2006; Maldonado and Borges, 2015). These two aspects suggest that both the green productive spaces and the built estates in these neighbourhoods can provide an integrated strategy for intervention in Chelas and in Alto do Zambujal. Such a change would have great potential, from an ethical and a sustainability point of view.

Finally, although ethical principles behind an urban or architectural design do not keep it from being used differently, specific uses do point out ethical rules. Even if these council housing neighbourhoods failed in some of their goals, their collectivist structures and their strong emphasis on public space may have played a role in creating communities capable of appropriating such spaces. Perhaps some ethical rules are indeed possible to express in urban or architectural forms, and if these can extend to the territory, including its ecosystems, they must certainly be studied and protected. Such an approach to urban planning, necessarily more inclusive, would help bring back more ethically-committed notions of urbanism, towards the ‘collective discipline’ identified by Amaral (1943), to which it is evermore pressing to return.

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Towards Post-Human Urbanism

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Abstract

“Post-human” is, of course, a provocative concept in the context of architecture and urbanism, which have essentially based their ethos on designing and planning a “human-centred” environment. However, the concept is actually not as radical as it might seem: although it does question some of the taken-for-granted assumption of classical humanism, particularly the universality and a-historicity of human nature and the legitimacy of needs justified by this universalism, it is not a doctrine against human beings. Against the ideology of “cities for people” (Gehl 2010), post-human critique highlights the fluidity, the diversity and the contested nature of human identities.

What makes this theoretical perspective relevant in today’s urbanism is the fact that the universalist human being is rapidly dissolving. The growth of multiculturalism is an unavoidable phenomenon in European cities as the result of immigration and increasing mobility of work. However, its perception in urban planning is by no means self-evident. Contemporary planning discourse is rather characterized by an almost systematic avoidance in this respect. It is this silence that will be studied in this paper, by using the method of archaeology of knowledge introduced by Foucault in his books *Words and Things* and *Archaeology of Knowledge*.

An attempt is made to explain this observation with reference to the strong functionalistic tradition in the Nordic planning agenda and the tacitly adopted biopolitical definition of legitimate needs of the urban citizens. The Utopian ideology of a class-less planning for the ‘human being’, with its biopolitical undertones of biologically determined features of the population, will necessarily clash with new demands for culturally oriented, specialized services and spatial practices that multiculturalism necessarily entails. This is confronted with the seemingly ‘transparent’ and generalizable planning ethos that has remained unquestioned, hidden by the emphasis of physical planning along with social and cultural ‘soft’ policies.

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1. Introduction

The presence of citizens from various cultural backgrounds, with the corresponding needs and values, is a growing and unavoidable feature of European urbanizations. The European population is getting older, and the average fertility rate of 1.58 will not allow sustainable growth or even reproduction. The lowest total fertility rates are in Southern European countries, but also in Northern Europe they are well below the reproduction minimum of 2.1. Finland has seen a rapid decline in the yearly number of births for seven years in a row, reaching an all-time low number of 50 321 and a total fertility rate of 1.49 in 2017 (Statistics Finland). The logical result is that population growth is already totally based on immigration: while the net migration was 3 273, the natural growth was negative with 2 695 less births than deaths. Paradoxically – though understandably – this development has aroused political opposition among the populist parties, in Finland as well as in other European countries.

In this paper, however, I am not addressing this phenomenon as such, but rather its consequences and challenges for urban planning. One would assume that the rising phenomenon of cultural diversity would be addressed in one way or another by planners, even in countries where the proportion of residents with different ethnic and cultural backgrounds is still rather small, like in Finland. But, as we shall see, this is not actually the case: contemporary planning discourse is rather characterized by an almost systematic silence in this respect. It is this silence that I want to study in this paper, by using the method of archaeology of knowledge introduced by Foucault in his books *Words and Things* and *Archaeology of Knowledge*. Since this method was famously criticised by Dreyfus and Rabinow, we need to dwell for a while in the theoretical underpinnings of the methodology. I agree with Tiisala (2015) that archaeology can be given an interpretation (following Foucault's own 'pragmatic turn') that avoids the problems discussed by Dreyfus and Rabinow. I am particularly interested in the possibility of an 'archaeology of silence', the concept originally coined by Foucault in his *Madness and Civilization*.

The paper is structured in an unorthodox way. After discussing the methodological framework (in Chapter 2) the contemporary planning discourse in Helsinki and the surrounding Uusimaa region is

analysed (in Chapter 3). The result, as we shall see, is almost a total lack of discursive statements addressing the emergent cultural diversity. Finally, directions for theoretical ways for explaining this phenomenon are discussed (Chapter 4).

2. *The Archaeology of Silence*

Foucault's archaeology of knowledge is a methodology developed in his books *Madness and Civilization* (1973, orig. 1961), *The Birth of The Clinic* (1973, orig. 1963), *The Order of Things* (1985, orig. 1966), and *The Archaeology of Knowledge* (1985, orig. 1969). It is based on an analysis of historical discursive formations, where statements are taken as events, and the relationships of these statements is studied inside the discourses. This does not mean that they would be unrelated to non-discursive elements, but the way they are formed is not based on a reference to transcendental objects (AK p. 49) or the experience or meaning-giving of the subject (AK p. 54). Thus, Foucault is using double-bracketing: without denying the existence (or even the relevance) of non-discursive events, he is searching for the rules that determine the formation of statements within the group of serious speakers. Unlike language (*langue*) that allows an infinite set of possible sentences, the discursive formations are characterized by rarity (AK p. 118): not anybody has the authority to speak seriously (about medicine, about economics, about science, etc.), and there is a rarity of what they can say.

"This authority also involves *the rules and processes of appropriation* of discourse: for in our societies (and no doubt in many others) the property of discourse – in the sense of right to speak, ability to understand, licit and immediate access to the corpus of already formulated statements, and the capacity to invest this discourse in decisions, institutions, or practices – is in fact confined (sometimes with the addition of legal sanctions) to a particular group of individuals; in the bourgeois societies that we have known since the sixteenth century, economic discourse has never been a common discourse (no more than medical or literary discourse, though in a different way)." (AK p. 68, italics in the original).

In their famous critique of the archaeology of knowledge, however, Hubert Dreyfus and Paul Rabinow argued that this double-bracketing is a problem for Foucault, since there will not be any

consistent way of grounding the rules of formation that are so essential to archaeology (Dreyfus & Rabinow 1983). “The discursive practices analyzed by the archaeologist are motivated by the speakers’ conviction that they are uttering serious truths about man and society, or that they are helping to make explicit the implicit thoughts of those who were in possession of such truths. The analysis, however, substitutes for this “naive” conviction as its condition of occurrence a set of meaningless strict rules.” (Dreyfus & Rabinow 1983, p. 93-94). This critique has been taken for granted by many scholars, which is a pity, according to Tuomo Tiisala (2015), since it has prevented research in the humanities and social sciences – including planning – to develop archaeology as a fruitful methodology. For instance, as Maarten Hajer was developing his discourse analysis, he was led to the later Foucault of discipline and governmentality instead of the ‘discredited’ earlier works (Hajer 1997, p. 47).

Tiisala argues that Dreyfus and Rabinow have not understood the pragmatic turn in Foucault’s thinking, which makes it possible to assume strict rules of discourse formation that are not accessible to the speaker’s consciousness, nor are based on the validity of these statements, but which they learn through practice. He refers to the unpublished manuscript of the *Archaeology of Knowledge*, where Foucault still defined the rules of discourse formation as statements, which would indeed have undermined his idea of unconscious rules that are followed (but not known) by the speakers (Tiisala 2015, p. 659). In the published version of the *Archaeology of Knowledge*, however, Foucault clearly states that the rules are part of the discursive practices:

“By system of formation, then, I mean a complex group of relations that function as a rule: it lays down what must be related, in a particular discursive practice, for such and such an enunciation to be made, for such and such a concept to be used, for such and such a strategy to be organized. To define a system of formation in its specific individuality is therefore to characterize a discourse or a group of statements by the regularity of a practice.” (AK, p. 74).

Archaeology of knowledge is also suitable for analysing planning discourse, even though the early Foucault did not discuss it while he was interested in the archaeology of the human sciences. But how can one analyse – by using the archaeological method – that which is not said? In *Madness and Civilization*, Foucault clearly had this ambition: “The language of psychiatry, which is a monologue of reason *about* madness, has been established only on the basis of such a silence. I

have not tried to write the history of that language, but rather the archaeology of that silence.” (MC, p. xi, emphasis original) In the *Archaeology of Knowledge*, however, he seems to be saying almost the exact opposite:

“We are studying statements at the limit that separates them from what is not said, in the occurrence that allows them to emerge to the exclusion of all others. Our task is not to give voice to the silence that surrounds them, nor to discover all that, in them and beside them, had remained silent or had been reduced to silence. Nor is it to study the obstacles that have prevented a particular discovery, held back a particular formulation, repressed a particular form of enunciation, a particular unconscious meaning, or a particular rationality in the course of development; but to define a limited system of presences. The discursive formation is not therefore a developing totality, with its own dynamism of inertia, carrying with it, in an unformulated discourse, what it does not say, what it has not yet said, or what contradicts it at that moment; it is not a rich, difficult germination, it is a distribution of gaps, voids, absences, limits, divisions.” (AK p. 119).

But how can you define the limits of discursive formation without going to the ‘other side’ and describe it? Does this in the end mean giving a voice to the silence? This difficulty reminds us of the famous observation by Wittgenstein that seeing the limits of your world and language (which are the same limits) is not possible, since you would in a way need to ‘measure’ them from the outside (Wittgenstein 1961, 5.61). But the limits that Foucault means are less all-encompassing; they are the limits of the group of experts that have the authority (at a certain historical time and place) to speak seriously about madness, the economy, science, planning, etc.

Foucault himself had the benefit of following the longer span of history to find the gaps and absences. In the *Madness and Civilization*, he pointed out the lost dialogue between the men of reason and the men of unreason (folie) that still existed during the time of Cervantes’ *Don Quixote* and Shakespeare’s *Macbeth*; this ‘silence’ we can still read from their texts. In *The Order of Things*, on the other hand, he used Aldrovandi’s *History of Serpents and Dragons* as an example of the time (in the sixteenth century), when the observed facts and fiction were not yet separated, and compared it to Jonston’s *Natural History of Quadrupeds*, in which the semantic dimension was simply left out (OT p. 128). This did not mean that Jonston would have known more (actually he

knew less), but he became the landmark of the transition from unity to separation (or from similarity to representation) that is still with us. A biologist of today – or any serious speaker for that matter – could never write a book on serpents *and* dragons. Also in this case the absence could be seen in the historical change in the scientific discourses.

But if we want to use the archaeological method to study contemporary formation of statements, we need to construct the ‘dragons’ to see where the limits of the professional discourse are. In this paper, the ‘dragon’ is multiculturalism (or the diversity of people with different ethnic and cultural backgrounds and the diversity of their needs, values, habits, religions, etc.). I will not simply say that Finnish planners don’t talk much about multiculturalism (they don’t), or that they *should* do that; rather I want to understand why the contemporary planning discourse in Finland is like it is, why the limits of discourse are drawn in this particular way, creating this particular rarity. Thus, the analysis must concentrate on the rules inside the discourse, revealing its hidden logic. The presence of something is, however, the absence of something else; even if the discourses themselves would not hide or repress alternative discourses, planning research can try to measure the limits of the discourses of practice also by looking at them from the outside.

It is interesting to compare the ‘silence’ of multiculturalism to the human-centered discourse in planning. For instance, Gehl’s ideas of planning for the ‘human being’ of *homo sapiens* (the erect mammal walking 5 km/h, frontally oriented and fond of other people) has no difficulty in embedding itself in the professional discourse of architects and planners, although the idea would not stand closer scrutiny. There is no way that we could distinguish a *homo sapiens* without technology (actually the making of tools started already with the *homo erectus*). Foucault’s critique of the existence of such a creature (that would give justification to planning solutions) is thus a very promising perspective to understand the formation of the planning discourses.

3. The Regularity of a Practice

The Finnish planning practice is regulated by the Land-use and Building Act (132/1999) that has been in force since 2000, with several amendments. The planning system is hierarchical: the statutory plans and regulations include national land-use objectives prepared and approved by the

council of state, the regional plans approved by 19 regional councils, and local master plans and detailed plans approved by municipal councils. In addition, there are several non-statutory national and local policy documents on architecture, nature conservation, environmental health etc.

The general objectives of the Act are to “create preconditions for a favourable living environment and promote ecologically, economically, socially and culturally sustainable development.” (Chapter 1, section 1). The word “cultural sustainability” is thus mentioned, but it is not given any formulation later in the Act. Citizen participation and transparency are also included in the general objectives: “The Act also aims to ensure that everyone has the right to participate in the preparation process, and that planning is of high quality and interactive, that expertise is comprehensive and that there is open provision of information on matters being processed.” (Chapter 1, section 1). The Act thus uses the abstract term “everyone” that logically implies also ethnic and cultural minorities. Language is not mentioned, however, which implies that “everyone” is supposed to have proficiency in the national languages (Finnish or Swedish). In the more detailed objectives, the “everyone” is, however, categorized: Land-use planning should promote “a safe, healthy, pleasant, socially functional living and working environment which provides for the needs of various population groups, such as *children, the elderly* and the *handicapped*” (Section 5, item 1, my italics). The categories are clearly biological; age and physical performance are recognized, but not cultural or social features, such as customs and different cultural values, religion, ethnicity, sexual orientation or wealth. Biology rules: diversity is understood only as biological diversity (section 5, item 5).

In Finland, architects are the dominant professional group in land-use planning. Recently, the profession has been active in preparing architectural policy programs at national, regional and local levels. According to the Uusimaa architectural policy program from 2009 titled “Our Common Metropolis”, the text reads that “with the help of architectural policy, common objectives for the culture of building will be created, to express what residents, decision makers and planners and designers want from the built environment of high quality.” (p. 5). It also highlights that “It is important for the whole that different neighbourhoods recognize their local identity and respect it.” (p. 7). The program thus constructed the idea of community and also *commonness*: there are

common objectives among residents, decision makers and planners, and even the different neighbourhoods can recognize their *common identity* (in singular).

In the ongoing preparation of the Uusimaa regional plan for 2050, one of the strategic focuses is “a *healthy and skilled human being*”. Immigration is recognized, but only in quantitative terms: it is assumed that 2/3 of the growth of the population will come from immigration. But how is this reflected in the plan? Not in any way; the biological and educational features of the population (health and skills) seem to be the only ‘human’ categories at the regional level. The same is true at the municipal and local levels. The recent comprehensive City Plan 2050 of Helsinki is based on an assumption of rapid growth of population by 250 000. As mentioned above, the population growth of the whole country is already totally based on immigration. The situation in Helsinki is somewhat different, around three quarters of the population growth is coming from immigration, reaching 94 888 or 14,9% of the city’s population in 2017. In the planning documents, however, immigration is not mentioned; the city aims to densify its urban structure, expand the city centre, change motorway-like thoroughfares into boulevards, and also build more housing on greenfields. As the basic ideology behind the plan is New Urbanism, one would expect to find something about cultural diversity. Urban culture, however, means cultural events: “Helsinki is already a fascinating stage of urban culture. A wide variety of events take place in Helsinki’s districts.” Or it is typical New Urbanist aesthetics: “A more urban Helsinki means more street-level shops in blocks of flats, bicycle lanes, the clatter of trams, coffee at the market place, international flavour, urban productivity, seaside saunas and district festivals.” Not a word on multiculturalism, if the word is not “international flavour”.

The same can be seen in detailed plans also. One of the new centrally located neighbourhoods on a former harbour area, Jätkäsaari (at the moment under construction), was planned to be “an urban and cosy seaside neighbourhood”. The objective was to create “an identity of an urban neighbourhood, with unique quarters. All of them are united by a dense urban structure, where the streets are enclosed by buildings.” The dominant role of physical planning is clearly visible in the documents of the detailed plans.

4. From Functionalism to Biopolitics

This short review of the Finnish planning discourses clearly reveals that, if the planning discourse is approached from the outside, the limits of the discourse formation are clearly visible, as far as multiculturalism is concerned. If one wants to find out how multiculturalism, ethnicity, or culture in a wider sense (i.e. not just cultural events) are dealt with in planning legislation, policy programs, or regional and local plans, one will find mainly silence. This is despite the fact that all statistics tell that the city of Helsinki and the region of Uusimaa – as well as the whole nation – are in front of a major change in their history: the end of the homogenous Finnish culture. This cannot be a coincidence, but it clearly reflects the rules of the discourse formation that planners are unaware but need to follow. This is obviously a very complex system, as Foucault warned us: “...complex group of relations that function as a rule: it lays down what must be related, in a particular discursive practice, for such and such an enunciation to be made, for such and such a concept to be used, for such and such a strategy to be organized...” (AK, p. 74).

What, then, can the archaeologist uncover? My intention in this paper is not to provide any comprehensive analysis of this system, only to point out some directions where answers could be found. Two structural features seem to be repeating themselves in the planning and policy documents: functionalism and biopolitics. The former is obviously an important tradition and ideology well known by architects and planners, but its structural closure in the planning discourse is not so easy to see. The latter is less well known in planning, being a theoretical concept coined by Foucault, but it has an interesting connection to functionalism.

Functionalism still forms the main structural grid behind land-use planning; the mere division of land into housing, industries, recreational areas, public and private services and transportation seems to be unavoidable, even if mixed functions and multifunctionality are gaining ground (Di Marino & Lapintie 2018). The main ethos of functionalism is that since areas, buildings and things are supposed to satisfy human needs, they need to be functional: glasses need to be suitable for drinking, houses for living, roads for driving, schools for learning, etc. But if we go further in our reflection to more complex things, the ethic is not so evident. Suppose that I live in the city but travel weekly to my villa in the archipelago for teleworking and recreation, which is made possible

by the highway and the local road between the two locations, the car and the internet connection. Can we say that this complex 'thing' (my apartment in the city, the motorway and road between the two locations, my car, the villa in the archipelago, and the internet) is functional – for what? Or should we rather say that these things have made it possible for me to adopt a multi-local lifestyle that has its cultural history from bourgeois summer villas and later summer cottages to third-agers' multi-local living? Function (multi-local lifestyle) thus follows the form (the apartment, the motorway, the local road, the car, the villa, the internet), not the other way around as functionalism would make us believe. But if we study contemporary planning discourses, it seems evident that this last question (and its cultural underpinnings) is never asked. The environment is supposed to follow functions, period. We have clearly found the limit that planners are not supposed to cross. "Whereof one cannot speak, thereof one must be silent", as Wittgenstein so aptly put it in his *Tractatus* (No 7).

The second theme that arises out of our analysis is the role of biology. For Foucault, biopolitics meant the modern use of power by managing the health and productivity of the population, in addition to direct disciplining of the individual bodies (Foucault 2004). It is actually stunning to see these exact features as a strategic focus of the new Uusimaa regional plan: "a healthy and skilled human being". But the biopolitical emphasis goes through the whole spectrum: from the age and disabilities of the legislation to design-for-all (but not for the cultural minorities) of mainstream planning.

Finland is of course different from many other countries where immigration and multiculturalism already have a longer history. But – partly because of this – it is also an interesting case to experiment with the methodology of Foucauldian archaeology of knowledge, to better understand the systems of discourse formation in planning practice where the homogeneous culture is challenged.

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COMMUNICATION THROUGH VISUALIZATION: THE PURPOSE, ROLE AND STYLE OF VISUALIZATIONS IN URBAN PLANNING

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Abstract: Visualization is used to convey information to communicate a message and in its all different forms they help us to understand our cities and make it available for analysis. They increase our capacity of comprehension by making useful conceptual shortcuts in our understanding to have a glimpse of “what’s happening” in our cities. The article analyses the use of visualization in planning discipline, how it was used and perceived throughout the planning tradition. The objective is to analyse the role of visualizations, how they are used to establish dialog, at what stage it is useful and effective to introduce them into the dialog. It further investigates the style of visualizations by analysing the basic design principles and as well as visual perception and cognition fundamentals to clarify what effects the efficacy of the visualization in traditional and digital visualization.

Keywords: visualization, planning, digital visualization

Planning with Images

We all experience cities differently. When we think of Paris, New York, Istanbul, Tokyo, distinctive images or narratives comes to mind. One of the most natural characteristics of the cities is being very diverse. They are capable of accommodating so many possibilities of both creative and destructive forces all together. This diverse nature makes our understanding of a city or a region almost impossible, a utopia. We need to make useful conceptual shortcuts in our thinking in order to have a glimpse on “what is really happening” in the city.

Cities must be understood as processes of constant change. While accommodating multi-layered character and increasing diversity makes it an ever more complex subject of active transformation in material terms. Finding meaning in complexity which is in constant change is not yet an easy task. However, planning needs to engage in cooperative action to maintain the power to act in a context of uncertainty and complex challenges.

Throughout the planning history, planning discipline has looked at visual representations in various different ways, sometimes paying no particular attention at all (Jarvis 1994; Neuman 1996, 2000; Faludi 1996; Dühr 2007) Since the notion of “planning through debate” (Healey, 1992) they are accepted as powerful communication tools. They help us to shape our attention, hence shaping the dialog (Forester 1988; Kunzmann 1996; Healey 1997, 2006; Forester 1999).

Collaborative planning made planning communicative and negotiable. While governments still hold the decision-making power, it requires cross disciplinary collaboration to support the process of meaning-making.

Discourse can produce meaning and challenge previously unquestioned knowledge. Therefore, any medium that supports the discourse must be interpreted as powerful tools to steer urban development.

There is no doubt that visualization in planning are powerful instruments, because often it conveys more clearly than a text would do. However, this may also result in manipulating the truth by focusing on certain parts while inevitably neglecting others. According to some theorists (Pickels 1992; Harvey 1996; Neuman 1996; Shields, 1996), this considered as treacherous, because the process of meaning-making via visuals are results of partial perspectives, reflecting one of several possibilities.

To investigate the role of the visualization in planning theories, rational planning theory would be an appropriate starting point. According to rational model in planning theory, planning is rather a technical process and there is a clear distinction between the planner, who has the objective expert statues and the politician who sets values and defines overall strategy (Dühr, 2007). The model also assumed that the planner has the sufficient autonomy and the authority to develop and design plans with rational decision-making skills and in the end, he holds the power to implement these as well.

This planning theory is mainly criticized that it is essentially focused on science and technology and being ignorant to societal values and norms, most importantly politics. Many theorists (Lindblom, 1959; Mandelbaum et al. 1996; Simon, 2013) have tried to point out the obvious delusions of the rational planning model, and some tried to enhance its capabilities by introducing modifications to make it more fitting for the real-life conditions.

However, this general belief on objectivity has changed when we realized that the planning is highly political and therefore open to manipulations (Forester, 1999). Recognizing planning as political has had important implications for the perception of the role of visualization in planning process. If planning viewed as a fundamentally political activity, ‘values’ become essentially important.

Over recent decades, planning theories strongly influenced by contemporary social and political theories, particularly Habermas’s theory of communicative action (1984). According to Habermas, the “truth” cannot be produced through science. Rather, science is an instrument which can be easily manipulated by the power relations in society. The science or the scientifically informed expert may produce the truth, however it might fail by being ignorant to societal values and norms. Therefore, the superiority of the expert knowledge become no longer valid, the local knowledge is recognized as important as the expert knowledge. Habermas’s theoretical approach has been highly influential in shaping contemporary planning theory which supports planning through debate. Healey (1997) describes it as collaborative planning which is basically about reaching consensus through dialog. And till consensus is reached all communication is the exercise of power.

The collaborative planning model accepts the limits to power and the ‘subjective’ selective process of decision-making of policies. It acknowledges that any planning institution has values, opinions, views on certain issues and therefore leads to particular planning objectives.

We created images and used them to convey meaning thousands of years before the first languages were recorded. The reason why we are focusing on visuals is obvious. Drawn images are used to support verbal statements of policy, enriches the discussions and the result is debated informed decision. While planning theorists are still sceptical of its deceits and difficulties, one does not have to wonder about the role of visuals in the creation of modern era city plans and the development of the planning profession.

After having a deeper look in the use of visuals and its role in urban planning, it became clear that not only the reason why we are using them (or why we are not using them), but how we are using them needed an investigation.

The role of visual representation was not only limited due to previously mentioned obstacles but also the perception according to different countries, cultures and planning traditions. Many countries look at urban representations in different ways, and that different view had a significant influence on the debates that took place. When in some countries a map is a plan, a blueprint of how things should be, in other countries they are more indicative, and abstract in nature.

Otto Neurath, a member of Vienna circle, already in the 1930s had realized the importance of the use of visualization (Neurath *et al.*, 2013). Although during his time, the dominant view on visualization was more on the traditional side, he already knew that the co-operation between different disciplines is essential to achieve the best for public good. An essential task for him was to inform the Viennese about their city. The aim was to “represent social facts pictorially” and to bring “dead statistics” to life by making them visually attractive and memorable.

In urban planning, images can be considered as expert’s viewpoint, a subjective one, which is one of several possibilities. As a consequence, visualization can support the transfer of the key themes of urban planning, which can be understood not only by the experts in planning, but also by the audience of non-experts. As a matter of fact, this is one of the main objectives of the contemporary planning theories, name it as collaborative planning, communicative planning or participatory planning. The local knowledge and the collaboration of the very audience itself, the ones who are directly affected by the actions taken by the planners, has become essential.

Furthermore, in order to be able to bring the lay people into the dialogue, the planning needs to be more attractive and appealing to the audience. Therefore, representing urban data visually to an ever-wider audience of experts and non-experts, in an attractive way becomes very important. On the other hand, how can we make planning interesting to a wider audience without using visuals (Zech, 2013)?

Communication through Visualization

The very notion of representing the city or rural areas has led to questions which requires interdisciplinary cooperation. Especially the ones on “how” we are creating those visuals. Due to the fact that urban planning has transformed into an open and cross-disciplinary process, dialog has become a vital part of the decision-making process, therefore the use of visualization as well. Through the process of decision-making in which a solution is negotiated amongst various interest groups, creation of the visuals becomes an important task, which is potentially challenged by power relations and ethical dilemmas. However, they may be used to manipulate or lead the discussion in a particular desired direction, but they may also give voice to disadvantaged parts of society.

A good visualization is the one that communicates effectively and efficiently. In other words, it should do, what it supposed to do and in most cases with minimum amount of resources. As Kosslyn (2006) puts it, a good visualization forces the reader to see the information the designer wanted to convey. It can be solely used to analyse certain group of information or to communicate a certain message with the help of the relevant dataset. Making a visual display attractive and visually appealing is the task of the creator mostly, whose talent and visual sense give a certain visual appeal.

Visual displays of information can be considered as cognitive artefacts (Bertin, 1983; Card et al., 1999; Tversky, 2001; Ware, 2012; Meirelles, 2013; Norman, 2014), in that they can strengthen our mental abilities to facilitate understanding and meaning-making. Ware (2012) argues that effective design should support quick and accurate processing of visual queries; thus, better understanding of the basic principles can lead to better design. However, in the information visualization literature there has been some concerns (Arnheim, 1969; Kosslyn, 1994, 2006; MacEachren, 2004; Ware, 2012) on how do we create them so that they can communicate effectively.

The efficacy of the visualization is pretty much dependent on two factors: (1) internal factors which are affected by the creation process of the visualization; and the (2) external factors which are relevant to the audience and their environment on how they receive this information. Effective design should facilitate both factors; thus, better understanding of the basic principles can lead to better design and effective delivery of the message that it carries. In regards to external factors, there is not much we can do other than trying to boost the cognitive capabilities of the human mind to facilitate effective communication.

The creation phase is mainly considering the basic design principles, which are focusing on different attributes ranging from contrast, colour, shape, size, figure-ground to recognizing patterns in two-dimensional space and three-dimensional patterns. The organization of seeing objects, so called Gestalt principles, are one of the main attributes that we have to keep in mind while designing. Gestalt principles refer to theories of visual perception that investigate how people tend to organize visuals, for instance according to their proximity, similarity, closure and symmetry. The Gestalt principles are effective not only in drawing attention and enhancing perceptual reading but also in facilitating problem solving and thinking processes.

When a visual is constructed, the relevant information is encoded (creation phase), basically through position, shape, size, colour, etc. When a person looks at a graph, the information is visually decoded (perception phase) by the person's visual system. A visualization is only successful if the decoding is effective. No matter how the informed decisions are made cleverly and how technologically impressive the encoding was, it would eventually fail if the decoding process fails (Cleveland, 1984). Therefore, understanding the constraints and capabilities of visual perception and cognition is essential for the creation of the effective visualizations. From information visualization to cartography to statistics, skills and the know-how on design principles are closely related with the visual perception and cognition principles.

Kahneman (2011) suggest that it is entirely legitimate to enlist cognitive basics (or outline cognitive biases) to work in our favour, and based on the studies of truth illusions this provides specific suggestions that may help us achieve this goal. The general principle is that anything you can do to reduce cognitive strain will help for our advantage.

“Know your audience” is an important step for the efficacy of the visualization. To communicate effectively, the intended audience need to be familiar with the content, background knowledge and the concept as much as possible. If the visualization is done with the presence of heavy jargon and technical or scientific terms, then the chances are quite high that the lay people who are non-experts in the area are going to lose interest or have difficulties to understand the image with minimal effort.

How decisions are made, what should and should not be visualized is solely dependent on subjective however informed decisions made by the creators and their experience on how the message is intended to be received in general. Clearly, we cannot eliminate the fact that the subjectivity of the creator due to his/her skills and ability to visualize or the cultural surrounding that he/she has experienced, this will inherent in any human artefact. Nonetheless, this does not give us the license to ignore the practical consequences of our decisions in designing that artefact. The realization that any profession contains similar limitations of skills and cultural baggage, does not reduce the significance of works such as Lynch's (1960) work on the image of the city.

Digital Visualization

Before the personal computer became as a commonly used tool, we were faced with a labour-intensive process to present data graphically, involving the use of a T-square, draftsmen's triangles, and a collection of special pencils and pens (Few, 2009). The process itself took a lot of time and effort, and the graphical communication skills of the people who are responsible for this work usually took longer to develop.

Today, we can create visualizations much easier and faster. Thanks to the ubiquity of programs to create visualizations easily and the availability of massive, dynamic data sets which are easily accessible (Dunne *et al.*, 2016). Data visualization, born from the marriage of classical charts and powerful computer graphics, is a way to discover meaning out of all these available data sets. But given that our modern chart forms such as the pie, line, and bar chart, which were originally invented to show dozens of data points only, today they need to adapt to showing thousands of those data points. Probably, William Playfair did not have this in mind when he first created the line chart in 1785.

The design guidelines for web-based contemporary visualizations are different. They can be in nature dynamic and interactive. Interactive visualizations can pack in much more information by separating the amount of information in different segments and making them available to the user which can be accessible on demand. This kind of segmentation helps to avoid frustration and allows the user to interactively get engaged in case he needs more details into certain specifics. Meirelles (2005) explains that in a dynamic environment, as in the web, the attributes such as shape, position, color, etc. are no longer enough, now they have properties in spatial and temporal dimensions that cannot be isolated anymore.

Over the years we have developed an intuition about what makes data visualization interfaces work well, there are valuable resources which provides resourceful guidelines (Kirk, 2012; Meirelles, 2013; Cleveland, 1984, 1993; Few, 2009, 2013; Ware, 2012) although we don't have a strict formula for a successful interface, we know that some basic principles do help.

The computer graphics revolution, which began in the 1960's and has intensified during the past years, stimulated the invention of graphical methods types of visualizations and types of quantitative information to be digitally visualized. It has grown so fast; the number of visualization techniques and styles makes it hard to follow and only time will show if they can stand longer or if new methods are going to replace them.

It is crucial that the web-visualization give users immediate and informative feedback at every step along the way. This means that the web-interface must not be too complex or confusing as to discourage users, nor so simplistic as to make them bored.

Open Data and its Impact on Visualization

Apart from the creation factors which are essential in affecting our cognitive capabilities and enabling us to perceive the desired message, there is the data factor. We are producing an enormous diversity of data, from governments to city councils to institutions they all try to make meaning out of this data. From real time GPS data to national development statistics, digital data visualization enables us to use hundreds and thousands of points instantly and to let readers "see through" points which has potentially meaningful outcomes.

The growing volume of open data makes cities more inclusive, enabling its citizen and different organizations to actively take part in it. Open data initiatives and institutions are actively encouraging their 'smart' citizens to use the data and make meaning out of it. This led us to think on more fundamental issues on how information is collected, structured, represented and communicated.

It is important to point that the open data, in and of itself, is not the same thing as open information. An open information policy would imply the further duty to provide data in citizen-accessible and citizen-intelligible form, and to provide for public access to the information used by experts, decision-makers, and service providers acting on urban systems. Despite the great accomplishment that the open data initiatives, in general, achieved, using this data with the help of visualizations tools that are available and turning it into public information works is quite labour intensive. However, this doesn't reduce its significance and achievements.

The planning discipline have been slow to adapt to the new advancements of data visualization. Connecting the available data sets is greatly valuable, but it is only part of the solution. For planning and design purposes, “hard” data is much more useful when properly fragmented and correlated with qualitative information and associated with geo-spatial attributes.

Creation of Urban Change in Time (UCIT)



UCIT (<http://www.ucit.or.at>) is created as an open source web-application consisting of open source solutions. The application brings together and shows the extent of development in Vienna from 1600s till today. It allows navigation through historical maps of Vienna from different times and different scales. Additionally, it lets you to explore the existing built fabric, by grouping the age of the buildings according to their built year and/or built period.

The making of UCIT showed that even though the willingness to have such visualization exist, the availability of the public information infrastructure was the main obstacle for the realization. The goal of integrating qualitative with quantitative dimensions of urban data to communicate a growth story, was already ambitious (although nothing new). In the beginning it seemed quite easy, to create such an application, the data should somehow exist. Find the data, use a fitting open source visualization technique and there you have it. However, the most cumbersome and exhausting part was to “find” the appropriate data (if even exists) and then “clean” it and structure it properly so that it can be used with the selected open source solutions that are available for use.

The central objective to the empirical research was whether it is possible to create such a visualization and by doing that to interact public and media attention by solely displaying the urban information interesting and easily available for public access. I believe UCIT has achieved a satisfactory response from public and the media (60k unique visitors, 8 publications), by creating a ‘simple’ web-application which led people talk, make critical analysis about the transformation and the age of the urban fabric of Vienna. The debate was not only focusing on what application has provided itself, but also the availability of the open data was one of the focal points of the critical discussion. Despite the fact that most of the data was provided as open source, some were still needed to be funded.

Conclusions

This article investigated the different aspects of visualization, first with an emphasis on its use and role in planning discipline, how it is used and the great potential that it contains in bringing the stakeholders into dialog. Secondly, the design aspects of visualization to clarify and enhance how we organize and encode information visually to establish an effective communication. It is my hope that this article (and eventually the thesis that it originates from) will help broaden the dialogue on creating visualizations both on static or dynamic terms, which can help foster skills in designing for information communication. This study is created with the planning discipline, its students and scholars in mind however the scope was not only limited to them.

The study of the visualization showed that having the attributes that are listed below results in successful communication:

- Communication-centred: Created with both experts and non-expert stakeholders in mind. Here it is important to break down the conventional distinction between user-friendliness (pretty) and expert-friendliness (functional).
- Collaboration-minded: Designed to support stakeholders interacting on the analysis or the investigation before, during or after the visualization.
- Know your audience: To communicate effectively, the intended audience need to be familiar with the content, background knowledge and the concept as much as possible.
- Convey a 'clear' message: Having a clear message or slogan in general is important for establishing effective communication. Provide a clear overview of the model, as well as the possibility to drill down into details, if necessary.
- Design basics in-mind: Better understanding of the basic design principles can lead to better design, eventually better communication.
- Perception and cognition basics in-mind: Enlisting perceptual or cognitional basics to work in our favour will help. The general principle is that anything you can do to reduce cognitive strain is helpful.
- Adaptability in-time: Available data will change over time and the new visualization techniques may replace existing ones; the adaptability is the key here.

We need to re-examine the city and its attributes within, keep it open to further critical analysis. Especially with the new possibilities that the web allows us, effective visualizations have the potential to lead to interesting discoveries and collaborative creations.

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Design in the Anthropocene: an opening to the *other*

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Abstract: Nowadays, more than ever, the acquired awareness of man's responsibility towards the compound planetary crisis we face is stressing the need of a change in perspective. Against the modernist anthropocentrism, some emerging theories are suggesting that coexistence is not only a human issue, but it rather concerns all the entities (animate or inanimate, material or immaterial) that compose the world. This is not seen anymore as a passive background, but rather as a system of relationships, made of different actors - human and non-human - all provided with a political voice and agency. The idea behind this assumption is that reclaiming ground that has been previously purified of too many missing voices and actors might spur the cultivation of a more responsible, ecologically sound politics. Such change of perspective is, clearly, shaking the foundations of all disciplinary fields and also affecting the very idea and practice of design.

What kind of approach to design are these perspectives contributing to shape?

Keywords: anti-anthropocentrism, ontological pluralism, (cosmo)politics, prototyping

Introduction

This contribution seeks to address the complex relationship between design and the increasing concern over planetary conditions. A growing number of scholars think we have entered a new geological era, the Anthropocene, ever since the atmospheric chemist and Nobel Prize winner Paul Crutzen popularized the term in 2000. The main argument behind this assumption is that humans - the major force in the current geological epoch - have irreversibly altered the planet, which is reacting with global climate upheavals. The acquired awareness of man's responsibility for similar phenomena is shaking the foundations and boundaries of all disciplinary fields and stressing the need of a change in perspective. Peter Sloterdijk's Spherology, Science Technology Studies, Latour's Actor Network Theory, together with New Materialism in philosophy - pioneered by political theorists such as Jane Bennett - are emerging trends in 21st century thought. By abolishing the traditional dualities of Modernity, such as the nature and culture divide, they are suggesting new ways to understand the world we live in and to address the compound crisis we face. Against the modernist anthropocentric perspective, the surrounding world is not seen anymore as a passive background, but rather as a system of relationships, made of actors or *actants* - «something that acts, or to which activity is granted by another» (Latour, 1996) - human and non-human, both provided with an agency which is also political.

This perspective implies going beyond the traditional, restrictive notion of politics as "the give and take in an exclusive human club", towards what Stengers and Latour defined *cosmopolitics*, i.e., politics seen from the viewpoint of an "ontological pluralism" as a continuous negotiation, a practice of coexistence

to which all the living and non-living entities participate (Stengers, 2005). The boundaries between nature and culture, *inside* and *outside*, entities and agencies traditionally seen as oppositional (human/animal, life/matter, organic/inorganic) are called into question, as well as those defining traditionally autonomous fields of knowledge, that begin to cross-fertilize each other.

Such change of perspective has, clearly, a profound impact also on the very idea and practice of design. Indeed, design practices can unveil and re-shape the co-existence of different entities, agencies and interweavings that constitute the political sphere.

1. Design and Politics

Martín Tironi, Chilean sociologist interested in interdisciplinary research on design, argues that «while politics must deal with the governing of human interests for the sake of common good, design, instead, would be focused on form, the aesthetic and functional arrangement of the things that populate the world. (...) on transforming, creatively and sensitively, the materialities into useful, usable or decorative products.» He suggests moving beyond these restrictive boundaries which see design as a tool or equipment *outside* the political (Tironi, 2017).

The sociologist Domínguez Rubio and the architect Foguè argue that until now the usual way to explore the relation between design and politics has been focused around what we can call design's capacity to *enfold* the political. That is its *prescriptive attitude*, its ability to inscribe political programs into materials, spaces or bodies, and to create silent forms of power and influence: design, thus conceived, turns out to be a form of doing politics through things. The rendering of power would work at a sub-political level by controlling the physical and technological elements that silently shape our actions and thoughts (Domínguez Rubio and Foguè, 2017). This means - using sociologist Akrich's words - that politics works through inscribing a certain «*vision* (prediction or scenario) of the world in the technical content of the new object» (Akrich, 1992). These *scripts* or scenarios constitute attempts to predetermine certain settings, defining a framework of action.

However, even if design's capability to create silent forms of power is and remain undisputed, it is equally important not to overestimate it. Predetermined inscriptions «tend to create a sort of performative illusion» (Domínguez Rubio and Foguè, 2017), according to which the effects of intentions and programs are some sort of inevitable result of the original design. Design objects, instead, are continually changing as people creatively transform them according to their need. Unpredictable and unexpected events come to disturb the *script*, letting the *otherness* in. To support this argument, Domínguez Rubio and Foguè mention the fate of those project that aimed to use architecture to enfold different visions of a new society, such as Le Corbusier's project to modernize Chandigarh, which has «turned into a flea-market and a place to hang clothes» (Domínguez Rubio and Foguè, 2017).

The unexpected and miserable fate of examples like this could be seen as an ironical commentary on the *enfolding* capacities of architectural design and leads us to realize the limits of the traditional way of considering its political capacities. It is therefore important to introduce a different way of thinking about how design can become a political matter.

2. The disappearance of the outside

In order to do so, we need to gain an insight into the complexity of the contemporary world. The process of *disappearance of the outside*, as Latour explains, «is certainly the defining trait of our epoch» (Latour, 2009), a phenomenon with great architectural and urban impacts whose relevance cannot be ignored. The compound crisis we face and the emerging of resilience issues are spurring a change in perspective.

Latour's Actor-Network Theory argues that rather than conceiving any subject or object as isolated, we should consider it as an entity enmeshed in a complex web of relationships, in which other human and non-human actors interact. A web that is always contingent, as it changes according to each specific condition. He radically questions traditional approaches to scientific issues, by referring to what he calls *collective experiments* (Latour, 2006). Science was once practiced *inside* laboratories, confined workplaces for experts only, leaving *outside* the pure *empirical experience*. Nowadays the laboratory has in most cases dramatically broadened its boundaries, and we are now all involved in the same

collective experiments mixing humans and non-humans together. Stressing the fact that the distinction between the inside and the outside of the laboratory has disappeared, Latour refers to what have been called *hybrid forums*. So far only two types of forums have existed: one that was in charge of representing *things of nature* and another one which was in charge of representing society. One simple way to characterise our times is to say that the two meanings of representation have now merged into one: to define the new politics, Latour introduces the expression *Parliament of Things*.

«The global warming controversy is just one of those many new hybrid forums: around the table, some of those spokespersons represents the high atmosphere, others the lobbies of oil and gas, still others non-governmental organisations, still others represents, in the classical sense, their electors (with President Bush able to represent simultaneously his electors and the energy lobbies who have bought him up!). The sharp difference that seemed so important between those who represented things and those who represented people has simply vanished. What counts is that all those spokesperson are in the same room, engaged in the same collective experiment, talking at once about imbroglios of people and things.» (Latour, 2001)

This shift implies a different attitude towards the traditional relationship between the *outside* and the *inside* and a philosophy of space aimed at making the *outside* disappear.

In order to better understand the meaning of this theoretical model and how it could be linked to design, it's necessary to draw attention to Peter Sloterdijk, one of Latour's main references, who first grasped the depth and extension of the concept of *design*.

«When we say that “Dasein is in the world” we usually pass very quickly on the little preposition “in”. Not Sloterdijk. In what? he asks, and in where? Are you in a room? In an air conditioned amphitheatre? And if so what sort of air pumps and energy sources keep it up? Are you outside? There is no outside: outside is another inside with another climate control, another thermostat, another air conditioning system.» (Latour, 2008)

Historically the personal sphere has always been formed at the expense of the *foreign*, the *not-belonging*. Nowadays, according to Sloterdijk, this short-sighted attitude has reached its constitutive limit.

«Because “global society” has reached its limit, however, and shown once for all that the earth, with its fragile atmospheric and biospheric systems is the limited shared site of human operations, the praxis of externalization comes up against an absolute boundary. From there on, a protectionism of the whole becomes the directive of immunitary reason. (...) Thus, the classical distinctions of friend and foe collapse. Whoever continues along the line of previous separations between the own and the foreign produces immune losses not only for others, but also for themselves.» (Sloterdijk, 2013)

In developing his theory, Sloterdijk signals the need to break down the partition wall between the *personal sphere* and the *foreign sphere*. He calls on us to think about the human subject, and the supra-individual subjects that we call *society* and *civilization*, together with objects, things, nature, animals, plants and the environment. These *things*, this *foreign sphere* so far has always been objectified, looted, taken for granted, exploited. (Sloterdijk 1998, 1999, 2004). By using the term *co-immunity*, Sloterdijk thinks of an unprecedented coupling between the personal and the foreign sphere: between human and non-human, as well as between human beings, to preserve themselves and the biosphere as an entity capable of guaranteeing their survival.

3. A political ecology of things

Within these reflections, Remo Bodei, in his analysis of the term *object* points out that the term object

«seems to derive theoretically from the Greek term *problema*, where “problem” is understood as an obstacle put forward as a form of defense, an impediment that blocks the way and causes something to stop. In Latin, more precisely, *obicere* means to throw against or place before. The idea of *objectum* (or, in German, *Gegenstand*, what is before or against me) implies a challenge, a contraposition that prevents the subject’s immediate affirmation precisely because it “objects” to the subject’s pretensions to dominance. It presupposes a confrontation that concludes with a definitive overpowering of the object, which, after the struggle between subject and object, is made available to be possessed and manipulated by the subject. A thing, in contrast, is not an object, an indeterminate obstacle that I find before me and that I have to conquer or circumvent – rather, it is a cluster of relationships in which I feel and know that I am implicated and of which I do not want to have exclusive control.» (Bodei, 2009)

For his part, Latour, opposing to the modernist attitude towards the material world, argues that:

«To think of artifacts in terms of design means conceiving of them less and less as modernist objects, and (...) more and more as “things”. To use my language artifacts are becoming conceivable as complex assemblies of contradictory issues (...). When things are taken as having been well or badly designed then they no longer appear as matters of fact. So as their appearance as matters of fact weakens, their place among the many matters of concern that are at issue is strengthened.» (Latour, 2009)

By reimagining ostensibly settled *matters of fact* as contested and constructed *matters of concern*, he argues that we could reveal the configurations of interest and agency that connect human and non-human actors and which give particular social realities their weight. Thinking of the social in terms of complex assemblies, in fact, leads us to consider the political field from a completely different perspective. Jane Bennett, referring to Dewey’s idea of the *public*, claims that «there is no action that is *not* conjoint, that does not, in other words, immediately become enmeshed in a web of connections.» (Bennett, 2010)

Focusing on this assumption Bennett questions the positivist and antropocentric perspective - according to which the human understanding is the source of the general laws of nature - and argues that political theory needs to do a better job of recognizing the active participation of nonhuman forces in events. Nowadays, more than ever, climate change and its effects show that coexistence is not only a *human* issue, but it rather concerns all the entities (animate or inanimate, material or immaterial) that compose the world. Bennett suggests to abolish the traditional dualities of Modernity, such as human/animal, life/matter, organic/inorganic: oppositional pairs that establish separating lines and excluding boundaries. The surrounding world is not seen anymore as a passive background, but rather as a system of relationships, made of agents that condition each other, revealing their political role, their *agency*. Bennett - who refers to Deleuze’s assemblage as a term of choice for describing reality as a multiple object - aims to demonstrate that non-humans have an effective political *agency*. She suggests that recognizing that *agency* is distributed this way, and is not solely the province of humans, might spur the cultivation of a more responsible, ecologically sound politics and a new awareness of the new climatic, political and social urgencies. (Bennett 2010)

4. The (cosmo)political capacities of design

Laura Lieto and Robert Beauregard argue that «thinking of the social as a matter of associations and not as an entity pre-existing the process of assembling is a path-breaking ontological position that questions enduring social theories deeply embedded in design theory and practice. With similar subversive force, the idea of extending agency to entities other than humans – objects, material things, technologies, natural elements – poses new questions to all scholars and practitioners engaged with urban and architectural issues, not just to social scientists». (Lieto, Beauregard, 2015). The restrictive notion of politics therefore extends beyond its traditional boundaries, making design practices a particularly useful space to reflect on the multiplicity of entities, agencies and interweavings that constitute the political sphere.

Domínguez Rubio and Uriel Fogué, besides their analysis of design's prescriptive attitude, introduce a different way of thinking about how the project can become a political matter. Moving away from a technocratic approach, aimed at setting the rules, the *script*, and its boundaries, they use the verb *unfold*, to rather signal an *opening* (Domínguez Rubio and Fogué, 2017). This means the possibility of events occurring without having been previously predetermined by the designer, but as a result of the free interplay of multiple actors (not only human) involved in a contingent situation.

This *unfolding* ability, this letting the *otherness* in, can be defined as a *cosmopolitical* activity, i.e. a continuous negotiation, a practice of coexistence in which all the other living beings and non-living entities - to which we usually refer as *resources* - participate¹ (Stengers, 2005). It means to leave open the possibility of agency of the non-expected, surprising and unlikely *other*.

As Latour points out, speaking for Isabelle Stengers:

«For her, the strength of one element checks any dulling in the strength of the other. The presence of *cosmos* in *cosmopolitics* resists the tendency of politics to mean the give-and-take in an exclusive human club. The presence of *politics* in *cosmopolitics* resists the tendency of *cosmos* to mean a finite list of entities that must be taken into account. *Cosmos* protects against the premature closure of *politics*, and *politics* against the premature closure of *cosmos*.» (Latour, 2004)

Nature is no longer seen as unified, is not just *out there*, a simple backdrop for human activities: it has to be done, created, instigated, and *composed* (Yaneva, Zaera-Polo, 2015). The ethical role that design can take in the composition and perception of these heterogeneous assemblies is fundamental.

«cosmopolitics as a matter of design is an invitation to recognise the boundaries and extents of the design methods centred around humans, and to explore forms of de-centralisation through operations of co-designing that allow the inclusion of other, invisibilised entities.» (Tironi, 2017)

From the perspective of the Anthropocene «architecture has lost its fixity, along with its presumed modern purity». In fact it cannot be seen anymore as a self-contained, autonomous object set against the background of cities or landscapes. It is bound «to humans and non-humans, to material and immaterial entities, (...) to discursive and representational practices, to socio-economic and symbolic systems.» The shared awareness of its ontological instability and heterogeneity is «subverting concepts, unsettling binaries, questioning received notions of agency and authorship, as well as troubling the discipline's authority» (da Costa Meyer, 2016).

How can design be an effective tool in dealing with this acquired awareness?

Cosmopolitics, rather than working by means of a *totalizing prefiguration* - which adheres to the modernist determinism - proposes actions capable of producing results in terms of an *opening* of the present, by embracing the logics of openness and *prototyping*. As Martín Tironi argues, «prototyping does not impose or reconfigure, but its reason to be is to allow realities based on its successive failures and malfunctions to emerge, forcing to reconsider other paths and questions.» (Tironi, 2017) It doesn't refer to neither utopian nor heterotopic spaces, but requires an action to be performed in a contingent situation, installing «a notion of politics open to the potential, a relation with the present based on the speculative: it can make present, performatively, political worlds and possibilities that are still absent. (...) the political issues, problems and interests start to co-emerge in the process of testing.»

¹ However, a clear distinction needs to be made between *cosmopolitics* and *cosmopolitanism*. *Cosmopolitan* is a very old term which comes to us from Kant, referring to anyone who is a citizen of the cosmos. In this sense, it refers to the possible unification of all people - only humans, who have different perspectives on the world - through universal laws, while nature, the *cosmos*, is simply there, a fixed background. *Cosmopolitics* instead, refers to the politics of a *cosmos*, which includes all the many natural and material entities that make humans act. Whereas for cosmopolitans there is one unified nature, in cosmopolitics nature is multiplied, is a Multiverse. It is no longer seen as a simple backdrop for human activities: it has to be done, created, instigated, and composed. While cosmopolitanism stands for politics *in the cosmos*, cosmopolitics instead refers to the *politics of the cosmos*.

A cosmopolitical approach therefore opposes an idea of assemblage and *bricolage* to any totalizing vision.

«The ‘bricoleur’ is adept at performing a large number of diverse tasks; but, unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with “whatever is at hand,” that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of previous constructions or destructions.» (Lévi-Strauss 1962)

In contrast to a *problem solving* logic-based approach, a political understanding of design, adopting *prototyping*, also turns into a sort of *problem-making* practice, intended as way to introduce innovative ways of exploring and becoming sensitive to the contingency. By also questioning traditional disciplinary fields, it suggests a new way of looking at the social life, considering the multiple agents involved in it and unveiling *other* realities.

These perspectives clearly abandon the idea of prefiguring an *elsewhere* to *converge*, to rather promote open and situated activities of questioning and altering. According to them, future is not so much what has to be imagined or planned, but rather the *openness* emerging from an experimental and continuous alteration.

In this frame, it is worth mentioning a number of recent and not-so-recent attempts that try to activate and unfold different possibilities for political action and imagination.

Díaz Moreno and García Grinda, founders of AMID.cero9, in Madrid, let the interaction between different agents emerge in their work. In the 2002 project named *Magic Mountain* (Figure 1), in Ames (Iowa, U.S.) they transformed a massive urban power station into a piece of landscape inside the city. Challenging established instruments they proposed to deploy a local gardener’s ancestral techniques of genetic selection and covered its volumes with a membrane of roses, lights, and honeysuckle. Like a real mountain, the membrane provides a resting place for the largest species of North American butterflies on their migratory route. At the same time, an enormous variety of bird species can nest, since in recent years many of the area’s forests and wetlands have disappeared. The power station provides an alternative habitat and a living laboratory where the university can test new varieties of species adapted to this climate.



Figure 1

Lacaton & Vassal, in France, make intelligent reuse of the existing, and avoid recurring to demolition, regardless of how green the replacement building may be. Their desire is to find *what is essential in each situation* and to create a language of architecture based on an economy of means. Moving against

the anthropocentric tendency to reduce and define, they choose the option of altering and remodelling the dysfunctional buildings from the inside out, letting the needs of the users dictate the final form and look. They see their role as extending far beyond just building, creatively engaging with and also challenging traditional urban planning policy, which is too often destructive in its approach. In the social housing project in Mulhouse (Figure 2, Figure 3), in 2005, they provided any user with twice the normal area by reducing costs through a clever handling of the construction program and by using unusual and low-cost construction methods.



Figure 2



Figure 3

La Borda Cooperative, in Barcelona, together with LaCol Arquitectura, promotes more accessible and fairer homes, with a non-speculative regime. The project (Figure 4, Figure 5), which began in 2012 and foresees the construction of 32 apartments (the “co-habiting units”) in the district of Sants is based on the following guidelines: tenant participation in the entire process, the creation of a flexible structure re-adaptable in future, the introduction of neighbourhood initiatives in order to favour community life.



Figure 4



Figure 5

In their work, the Rotterdam-based group 2012 Architecten (now Superuse studios), starting from questioning the notion of re-cycle - whose decomposition and recombination processes require enormous amounts of energy to be applied - propose the concept of *superuse*, which uses materials, components and objects in the form that they are found. In their project named *Wikado* (Figure 6), in 2007, they managed to renovate an existing playground by using discarded wind turbine parts.



Figure 6

In his *OS (OpenStructures)* project (Figure 7), the Belgian designer Thomas Lommée explores the possibility of a modular construction model where everyone designs for everyone on the basis of one shared geometrical grid. The intention is to initiate a kind of collaborative Meccano to which everybody can contribute, in order to stimulate re-use cycles of various parts and components and enable collaborative (and thus exponential) innovation within an hardware construction.

«When that product is discarded, enormous amounts of energy have to be applied to make the waste product break-down into smaller quantities. Often toxic by-products, energy and material-resource are used in the deconstruction process. The production of most products in our western, consumption-based society still run off this linear cradle to grave process.» (Lommée, 2009)

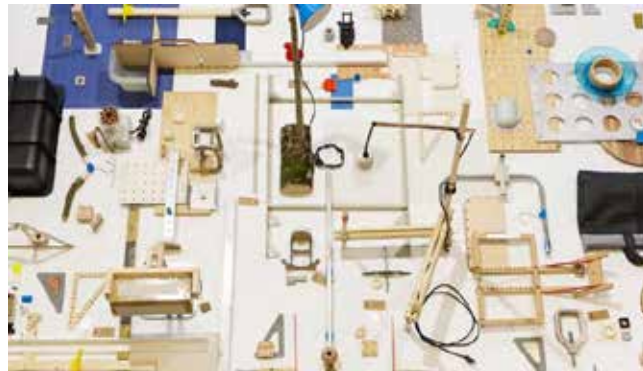


Figure 7

In 2013, Eindhoven-based designer Weilun Tseng has produced a system of open and modular electronic components, *Open E-Components* (Figure 8), that allows users to build their own electronic devices, lowering unnecessary consumption and blind buying action (i.e. planned obsolescence main effects). Each module can function independently, enabling the users to expand and adapt the electronic appliances to their personal needs.



Figure 8

5. A space for hesitation and care

The attempts listed - although differing in scale and context - share the same approach: they aim to question, interrupt, modify or subvert processes, practices and logics. They analyze certain realities in depth and highlight the agency of different material and immaterial entities. Against an unquestionable technocratic approach, they deploy and allow *slow reasoning*, *negotiation* and *re-interpretation*. Broadening the range of possibilities, they openly embrace change, and let the *otherness* in.

More than ever, the complexity and uncertainty we are dealing with at the present time compells us to slow down, deeply reflect, dig into the consensual way a situation is presented and create a *space for hesitation* (Stengers, 2005) where one can express concerns and disagreement. «We need to slow down, not to consider ourselves experts, authorized to believe we possess the meaning of what we know»

(Stengers, 2005). This requires adopting what Latour defines the *precautionary principle*, «a call for experimentation, invention, exploration, and of course risk taking» (Latour, 2006) and an attitude to *thinking with care*, (Puig de la Bellacasa, 2017), as a radically transformative political project that encourages intervention in what things *could be*.

«Words seen through care accentuate a sense of interdependency and involvement. What challenges are posed to critical thinking by increased acute awareness of its material consequences? What happens when thinking about and with others is understood as *living with them*? When the effects of caring, or not, are brought closer? Here, knowledge that fosters caring for neglected things enters in tension between a critical stance against neglect and the fostering of speculative commitment to think how things could be different.» (Puig de la Bellacasa, 2017)

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PA09

Transition paths
and urban futures

Landing

The need for a renewed urban vocabulary for hospitality (and the city)

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Abstract: Within the framework of recent socio-demographic changes, migratory flows have gained a crucial role in the European context, challenging territories and cities, opening up renewed questions for urban governance. Along the migrant trajectory, the paper focuses on migrants' *first arrival* in the city and on first reception dynamics, addressing a phase preceding settlement and rather regarding populations with a temporary perspective in the relation to the territory. The work considers the case of Milan, which in Italy has particularly experienced the temporary dimension of first arrival, being until 2015 a transit area and then quickly turning into an arrival city. Assuming the background of existing policies, the work draws on a qualitative observation of Milanese first reception, with specific attention to hospitality "practices", broadly defined. The observed scenarios show an oversimplified answer to the conditions of temporary populations, often translated in "exceptional" reception spaces and emergency-based policies. The work argues the urgency of a renewed and more complex definition of arriving migrants' condition and the relevance of existing practices as a powerful mean to challenge ordinary urban governance tools. Questioning the common understanding of arrival may be the first move to imagine the transition towards alternative urban futures and structurally receptive cities.

Keywords: migrants' first arrival; first reception; temporary vs permanent; Milan

Introduction

The relation among migratory flows and urban environments has deep roots, often strongly bonded to the birth and growth of contemporary cities or parts of them. Recent fluxes around the Mediterranean Sea have once again strengthen the link between migrant trajectories and cities, often redefining the role of certain centers in an international network, but also transforming diverse urban areas and introducing "new populations". Recent migrations make us reflect on the capacity of the city to offer plural ways of inhabiting its spaces and in general to support the presence of these populations, instead of simply opposing and resisting to them. Such considerations and the structural nature of the migratory phenomenon force to consider migration within a contemporary urban question and to conceive migrants' arrival and reception as more and more ordinary and structural functions of our cities.

The work aims at investigating the conditions of intersection between migratory flows and the city, particularly reflecting on the short temporality of the firsts and the longer temporality of the second. At this aim, the contribution chooses as point of observation the dimension of first arrival, or landing¹, and first reception of migrant populations within the city, conceiving it as the moment preceding settlement. Such choice is based on two considerations: on the one hand, the nature of recent migration policies has stretched the dimension of first arrival, enhancing the figure of the “asylum seeker”, as almost the only way to access Europe; on the other hand, the dimension of first arrival seems to be representative of further urban phenomena, opposing their short temporality to the longer one of the city. Thus, looking at first arrival is intended as a chance to challenge the urban vocabulary of hospitality, but also, more broadly, that of certain urban spaces, services and policies.

The paper draws on the work of a Master Thesis in Architecture, at Politecnico di Milano, which explores the case of institutional first reception centers in Milan between 2015 and 2016 and starting from a closer observation of the spaces tries to investigate the relation between first arriving migrants and practices of first reception². The contribution is organized as follows: the first two sections outline the main reasons why it seems relevant to look at the moment of first arrival and the key points of the used methodology, it follows an introduction to the Milanese context of incoming flows and a summary of the main observations and results of the work, finally some conclusions are drawn.

The territorial dimension of first arrival

Background

Addressing the migration question within the urban realm leads to deal with an extremely complex and necessarily interdisciplinary topic; among the possible study fields, the contribution chooses to look at the territorial dimension and to investigate the intersection between migratory flows and the city starting from spatial practices and spaces of arrival and reception.

Literature dealing with the relation between migration and the territory identifies two parallel paths: on the one hand, global networks, flows and national policies, and on the other, a rather *local* scale, where municipalities, inhabitants and local policies (re)act, developing everyday experiences of hospitality. The crucial scale to understand tools and processes of territorialization appears to be the local one, which looks both at the dynamics occurring in city districts and in smaller towns (Balbo, ed., 2015; Caponio, 2006). Urban studies have further built a rich framework around the territorial dimension of migration, focusing on immigrants and populations who are settling (or already settled) in urban areas. Within this long-term perspective, literature describes the processes of territorialization of immigrants (Tosi, 1998; Lanzani and Vitali, 2003; Blockland and Savage, 2008)

¹ The term *landing* is used to refer to the first phase of arrival on a territory ("primo arrivo e prima accoglienza" in Italian), and to differentiate it from the following settlement processes. In the following pages will be regarded simply as “first arrival”.

² The term practice here is broadly defined, as unexpected uses of space, non-institutional actions, and unplanned answers by the Municipality.

and discusses the tools of urban policies towards the multiethnic city (Crosta, 2010; Lo Piccolo, 2013; Briata, 2014).

In a different way, the will to focus on the temporary dimension of first arrival implies to assume the mentioned studies as a background, and to shift the gaze from the notion of *im*-migrants to that of migrants, who interact with the territory in a clear perspective of mobility (Tarrius, 1993). The theme of first arrival, regarded as a temporary condition that migrants undergo before settling down, raises diverse questions: the French anthropologist Agier started the ‘Babels Research Program’, revolving around the concept of the city as a border and investigating “what migrants do to the city and what cities do to migrants” (Agier, 2016); more recently, the issue of first arrival has been addressed within studies of social policies related to first reception systems. But, while different research fields (anthropology, sociology, law) on migration start addressing this temporary dimension, urban studies still struggle in considering it as a subject by itself, so that the territorialization processes and tools of first landing still remain a rather unexplored field. A consideration may make more evident the reason of this gap: urban studies and policy are asked to deal with populations who are not (yet) territorialized and settled, but already using intensively urban spaces (Pasqui, 2008).

In this sense, the dimension of first arrival triggers a wider issue: the contradiction between the short temporality of some contemporary urban phenomena and the strength, of resistance and inertia, of urban territories, both in terms of planning and regulation and in terms of physical transformations. Among other temporary populations, migrants express an extreme condition of mobility, intensively involving urban areas.

Mapping first reception

Methodology

Within the given framework the contribution carries out a qualitative observation of the institutional first reception centers in the city of Milan, between 2015 and 2016. The choice to look at the case of Milan is based on the fact that in those years the city undergoes a crucial transition, having been a transit place since 2013, in 2015 it quickly turns into an arrival and destination city. The will to focus on the institutional answer to first arrival is based on the belief that in a long-term perspective hospitality should more and more be seen as an institutional and ordinary urban function, relying less on informal solutions. In this sense, it appears significant to investigate the answer and outline the main characters of the reception system, planned at a formalized and institutional level.

In order to carry out the qualitative observation of the reception system and to build a knowledge framework of the Milanese system, it has been chosen the tool of a *qualitative and multilayered mapping* (Figure 1). The map allows to maintain throughout the work the reference to the spatial dimension, while the multiple layers help building a richer framework able to include not only information on space, but also on time, actors etc. Within a specific timeframe (April 2015 - November 2016), the observation has been carried out on three main levels: collection of newspaper articles and reports to draw a map of existing reception centers in Milan, in depth interviews with various actors involved in the system and direct observations and insights on the spaces and life in the centers. The use of the news to detect the opening and closing of reception centers allows to overcome

the static information often provided by institutional documents and to rather express the dynamic nature of the geography of reception; the visits to the centers are “windows” on realities where often unexpected environments are outlined beyond very introvert spaces; the interviews give voice to a broad set of actors, from the Municipality to the third sector institutions managing the centers, to their hosts, passing through the associations more lightly involved in the hospitality of newcomers. The three maps have been drawn at the same time, always considering the crossed-relations between them.

Milan, from transit to destination city

Context

The system of reception in Italy considers three main steps: First Aid and Identification, First Reception, and Second Reception and Integration; each moment is meant to represent a specific phase of the reception path, and it should correspond to a stage of the legal procedures for the achievement of a recognized status and to a set of services and spaces provided. Soon after accessing the country and being identified, migrants should present their request for asylum; while waiting for a temporary staying permit, they are hosted in the so-called Hotspots, i.e. centers of first aid and assistance mainly placed in the border areas of the country. When - and if - having obtained a temporary staying permit as asylum seekers³, migrants wait to be called by territorial commissions; during this period they should be distributed among centers of first reception (Centri di Accoglienza per Richiedenti Asilo [CARA]), or Hubs across the country, big structures where basic services are provided. After being called by the commission and while waiting for a definitive response, asylum seekers are supposed to undergo the phase of Second Reception and Integration, spending their time in smaller centers distributed among different municipalities where both primary and complementary services for integration are delivered (Sistema di Protezione per Richiedenti Asilo e Rifugiati, SPRAR). Such structured system very rarely develops according to the expected and planned steps, both in terms of time and space; in the case of first reception spaces for instance the duration of staying should not exceed one month, but people often end up spending in the centers up to two years, similarly the transfer from first to second reception facilities is often based on the availability of spaces rather than on the correspondence to a certain stage of the legal procedures. In 2014, moreover, due to the increasing crisis of reception management, Italy introduced a further typology of reception facility with a clear “extra-ordinary” nature and with lower managerial and spatial requirements (Centro di Accoglienza Straordinaria [CAS]), which soon became the most common center across the country, used both for first and second reception (Bovo and Lippi, 2017).

Among the Italian regions, Lombardy is between the firsts for the role it plays in the reception system, it counts 13% of the country reception, and Milan also plays a central role in the regional context. The most recent migratory fluxes start involving the city during August 2013, when the first Syrians arrive

3 When the asylum request is not accepted, migrants are rejected and destined to repatriation centers (originally, Centri di Identificazione e espulsione [CIE], from 2017 Centri di Permanenza per il Rimpatrio [CPR]), often very similar to detention structures, where people are supposed to be waiting to go back to their home country.

at Milan Central Station; for the two following years the Municipality hosts 74500 people, of which less than 1% asks for asylum in the city, but only spend there from five to eight days, before continuing the journey towards other European countries. Milanese reception in these years is shaped around the figure of the transiting migrant and the city grows as a transit place. The situation dramatically changes in autumn 2015 due to the enclosure of the Italian Northern borders, so that in April 2017 the amount of asylum seekers is set around 99% and Milan is no more a city of transit but of destination (Municipality of Milan, 2017).

Temporary populations and spaces of first reception

Observations and results

Within this context, the work of mapping tries to investigate the conditions of intersection between new arriving populations and the city, conceiving it as an interaction, or dialogue, among the claims and needs of the firsts and the tentative answer of the second, particularly explored in its territorial and spatial dimension, i.e. starting from the observation of first reception facilities.

Populations at first arrival experience very different interactions with the urban environment, often depending also on their personal background, networks, and in general terms, “capital of use” of the territory. It seems reasonable to address their presence in the city as expressed by their needs. The claims of arriving migrants in their first period - months - of staying certainly compose a quite complex mosaic of different situations, nevertheless some common traits outline the importance of considering the variable of time when dealing with such populations. Within the first days of arrival, migrants who enter the reception system seek very basic services, such as a night shelter, medical and legal assistance, nutrition and acquisition of certain information; the essential nature of such demands makes it easily sharable by a wide target. Even if still deeply uncertain of the possibility to settle in the city, migrants often express some further, and complementary, needs, regarding education and information, recreational activities, worship, food’s and clothes’ purchase and transport. If the essential claims could (mis)lead to an interpretation of migrants’ way of inhabiting the city as a mere presence “at low intensity”, the consideration of the complementary needs clearly outlines the complexity of such presence, in a phase which is instead often concerned as merely and continuously “of emergency”. Whereas the mentioned definition of needs may appear easy to outline, their complexity lays in the consideration of their extreme variability in time, the same service or space may be oversized or undersized depending on the amount of people arriving, on their origin or family composition. In other words, transitory migrants may be defined as special inhabitants, “dwellers with an individual impermanence and a collective permanence” (La Cecla, 1999). Thus, in a perspective of spatial answer to these needs, the factor of time not only becomes an essential element to consider but it is also what makes the answer more complex. In other words, the observation of the claims of arriving populations outlines the need for reception spaces not only able to provide specific services, but also able to adapt in time to their dynamic nature.

With the aim to respond to such temporary populations, the institutional system of first reception opens, between 2015 and 2016, seventeen facilities in the Municipality of Milan, some managed by the Municipality and some others by the Prefecture. The work maps them in a moment of transition from spaces mainly devoted to transiting migrants to structures hosting for several months asylum

seekers willing to stay in Milan. The location of the centers depends on the real estate availabilities of the management institutions, since in most cases the call regards the service and the space of reception; therefore, the distribution obtained does not respond to any lodging criteria and could vary in time. Based on the great number of transiting people in the previous years, in 2015 the Municipality decides to open a filter space, the Hub, very close to the station, where people could spend few hours or days before continuing the journey or being relocated in the city. Once gone through this first filter, asylum seekers are displaced in more traditional structures, mainly functioning as dormitories. The kind of spaces may be grouped in five typologies: former barracks, disused schools, reception facilities, big-sized structures and small-sized spaces normally devoted to other services. The barracks, accommodating on average three hundred people, maintain a military character and result extremely fixed and evidently close to the surrounding, often with high walls preventing to look through. The schools host averagely two hundred migrants at time, they provide more welcoming spaces often surrounded by small gardens or sport halls, but the organization of the space makes them hardly usable, often the beds also cover the common spaces. The third case is that of buildings already functioning as reception facilities, both for homeless or as previous hostels; these spaces are much more suitable, thanks to the way space is organized and to the size of each room, the number of hosts is usually lower. Reception facilities are also big-sized structures originally conceived for other uses, such as sport halls or former warehouses, where the reception function rarely fits the space; the most evident case is the one of a sport arena, where migrants are accommodated in foldable beds, asked to free the space during the daily hours and on Fridays, when Milanese Muslims use the structure for collective worship. Finally, there is also the interesting case of smaller buildings, which normally have different functions and that try to host a limited number of migrants while keeping on their activities; this is the case of Cascina Cuccagna, the Shoah Memorial and the San Marco library. Besides the centers, should be briefly mentioned a network of further spaces, also used by migrants: i.e. daily services. These spaces include day-care centers, canteens and public showers; only few of them are originally thought for refugees and asylum seekers, but their nature allows also migrants at their first arrival to access them.

Looking back at the relation between quickly changing needs and the answers in terms of reception spaces, at least three main issues arise. Firstly, the fact that the geography of first reception does not follow any localization criteria, but largely depends on the real estate availability of the managing institutions; such consideration showcases how, similarly to other welfare fields, also in the case of reception the public actor currently does not play a role of complete control on the system, but rather of overall coordination, in this case worsened by the emergency-based approach towards migrations. The second observation refers to the way the services are provided within the mentioned structures; first reception facilities provide the hosts with dormitories and canteens and only in some cases further services are offered, in most cases anyways all services are concentrated within the reception centers, such polarization leads to a strong isolation of the structure from the rest of the neighborhood, limiting the need and the opportunity of any kind of interaction between migrants and local residents. Thirdly, the physical features of first reception facilities should also be taken into account; the most used building typologies are indeed characterized by a strong rigidity, which prevents any kind of adaptation to the changing needs described above, and are therefore often implemented with rather temporary solutions, such as tents, indoor and outdoor.

In conclusion, the mentioned dialogue between arriving populations and spaces appears to be a *mute* dialogue, where the spatial answer to the structural presence of temporary populations struggles in building an effective reaction to migrants' arrival and rather opposes a certain degree of inertia.

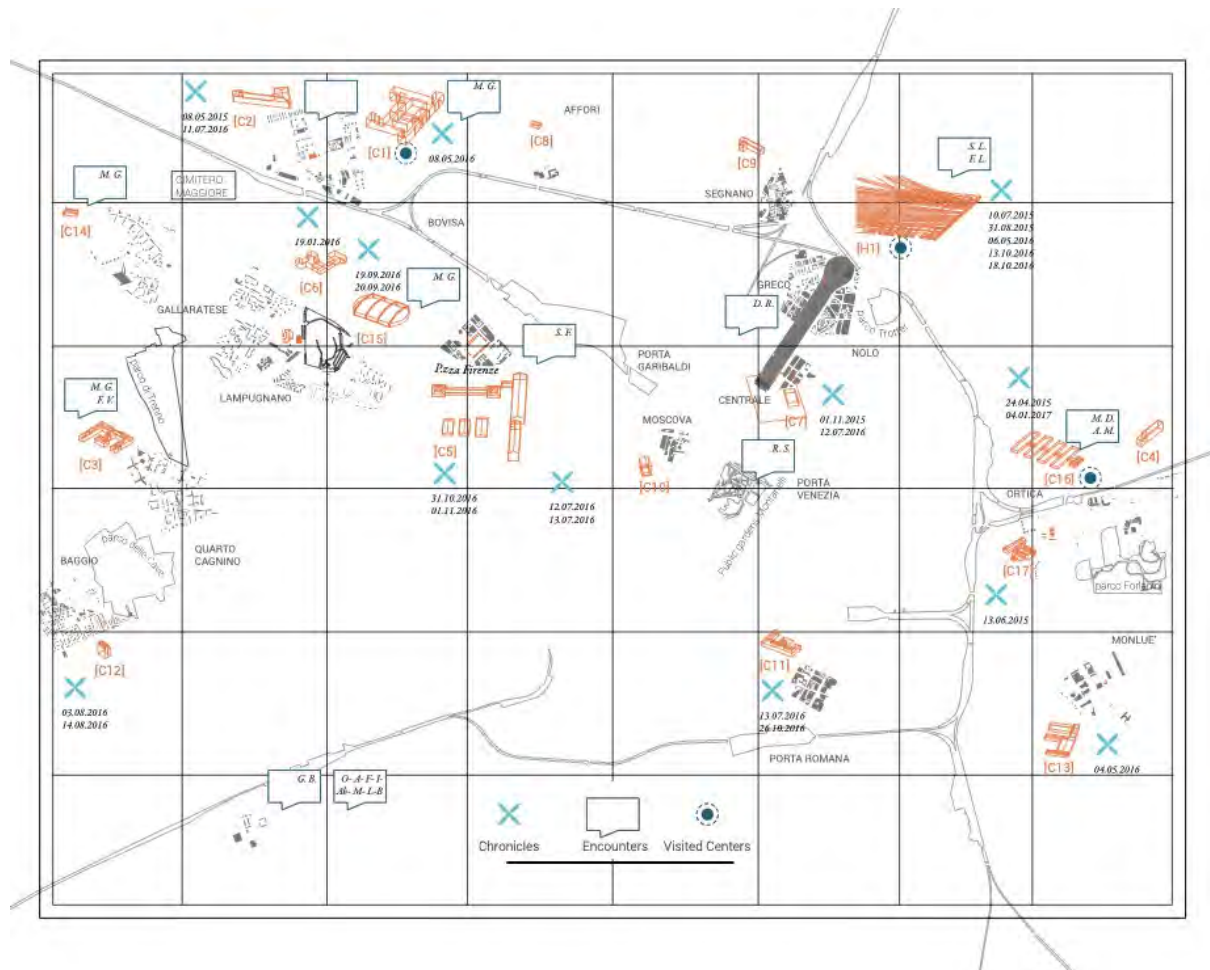


Figure 1. Map of Milanese First Reception, between 2015 and 2016 (Bovo and Lippi, 2017)

Towards a renewed urban vocabulary for hospitality

Conclusions

The structural nature of migrations and the clear impact they have on cities underline the urgency of considering reception as an ordinary urban function. Exploring the less ordinarily-managed part of reception, i.e. first reception, in this perspective, reveals different issues, and focusing on the spatial dimension outlines at least one main theme.

As seen, the lack of any localization criteria, the polarization of reception services within single facilities and their rigid physical character hint at the incapacity of the space to deal in a not temporary way with populations that are only individually temporary, but collectively permanent. Investigating the intersection between the short temporality of the latter and the longer temporality of the physical city opens up a broader question, i.e. the contradiction between *temporary and permanent*

and the apparent impossibility to combine the two within a spatial answer to reception. Interestingly, the same theme has been developed by professor Mehrotra in his work on Ephemeral Urbanism; by looking through very different cases of temporary settlements, Mehrotra argues that the arising distinction between permanent and temporary should not be conceived as a binary but should rather activate a broader understanding of permanence. In this sense, one of the clearest example refers to the Hindu festivity of Kumbh Mela, which every three years gathers millions of people - in 2007 they were 16 million - for only 45 days; here what makes such temporary settlement successful is the fact of being organized, in terms of management and space, as if it were permanent, i.e. by following rules very similar to those of long-term settlements (Mehrotra, 2016). Such theme opens up the question how the design of spaces of reception could build a structural answer to populations even at their first arrival. In this perspective some of the crucial characters of first reception structures are very much challenged: on the one hand, the notion of reception space as confined within single centers prevents hospitality to be combined with other urban functions and to build any interaction with the rest of the city, thus it could be interesting to shift from the existing single structures to a system of spaces, scattered in the territory and combined, when possible, to existing services; on the other hand, the physical inertia of reception centers introduces the theme of *plural spaces*, broadly addressed in the debate on the design of contemporary (welfare) facilities (Crosta, 2010; Oosterlynck *et al.*, 2015; Bricocoli and Sabatinelli, 2017).

In conclusion, the developed map of Milanese first reception certainly represents a partial picture of reality, in terms of space and time, but it seems to reveal both the specificity of the dimension of first arrival and some crucial issues emerging from that. In other words, looking at the intersection between migratory flows and the answer of the city through the spatial dimension of first reception outlines the urgency of working on a renewed urban vocabulary for hospitality.

Looking through first arrival to the city

Open questions

The choice to consider first arrival as a privileged point of observation does not aim at defining it as a predetermined and fixed condition of precariousness, but it is rather based on its understanding as an interesting lens to discuss the relation between certain populations and the territory.

As seen, the dimension of first arrival outlines issues around the vocabulary of reception, but it also opens up questions that more broadly deal with the city. In the first place, the definition of arriving migrants as temporary populations with a structural presence suggests a comparison with other temporary populations (Pasqui, 2008), crossing our cities that - with the due differences - also build with the urban environment a relation limited in space and time; thus the question arises how does and might the city support their presence. Secondly, the spatial dimension of reception reveals the contradiction between temporary and permanent, which is crucial in the case of first reception spaces but is also very relevant in the current debate on Ephemeral Urbanism. Similarly, the dimension of

first arrival seems to be able to trigger broader and relevant debates also when seen from the perspective of services, actors and policies⁴.

In conclusion, the mentioned considerations certainly still remain as open questions, but the fact of being raised starting from the investigation on first arrival and of going beyond the realm of first reception, might be an evidence of their relevance. In this sense, the dimension of migrants' first arrival seems to be an interesting starting point to address *also* broader dynamics challenging the contemporary city.

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⁴ Such fields are currently object of investigating within the PhD research of the author.

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Understanding the Urbanite-oriented Performance of Ecosystem Service in Peri-urban Areas: An analytical Framework*

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Abstract: Peri-urban area is the transitional territory between rural and urban areas and the most diverse area that the ecosystem confronts the urban development. It is probably one of the fastest growing areas across the world, especially in developing countries, among which China is recognized as one of the most important contributors. Extant research document peri-urban area not only as the most dynamic and growing territories, but also the territories haunted by urban sprawl, environmental pollution, social segregation, etc. Based on the particularity of the ecosystem in the peri-urbanized area, this paper proposes a human-centered analytical framework for assessing ecosystem functions based on the original ecological service value assessment method. First assess the performance of ecosystems (ES), including cultural services, supporting services, regulating services and provisioning services to meet the diverse needs of urban dwellers, rather than equal value or biomass carbon. Further, instead of simply superimposing the four types of ES, clustering analysis is used to classify the ES types of each analysis unit because they differ in the four dimensions of the ES, and finally some scenario predictions were made through the classification results.

Keywords: peri-urban; ecosystem service; people-oriented; developing countries

1 Introduction

Ecosystem services play an indispensable role in the human environment, including supply of food and fresh water, climate and temperature regulation, soil diversity maintenance, spiritual culture and entertainment value (Costanza *et al.* 1997; Ma and M. E. A., 2005). Ecosystem services not only play a decision-making tool in the growing urban population and social system, but also an important tool for maintaining human health (Gomez-Baggethun and Barton, 2013). Currently ecosystem system services are still one of the priorities of multidisciplinary research (Seppelt *et al.* 2011, Fisher *et al.* 2009), and the demand for urbanization and other practical applications is becoming more and more obvious (Daily *et al.* 2009, Burkhard *et al.* 2010).

With the rapid urbanization process, urban population expansion and land expansion are also ubiquitous, resulting in rapid and disorderly changes in land use (Haas and Ban, 2014), which gradually destroys natural ecosystems, especially the decline of ecosystem services. At the same time, in the rapid development stage of urbanization, the rapid growth of the built environment and social capital has replaced the natural capital which centered on the value of ecosystem services and become a mainstream value orientation, and the contribution of the ecosystem network to human well-being has been greatly underestimated (Costanza *et al.* 2014a; Costanza *et al.* 2014b). This phenomenon is particularly remarkable in the circle-type and regionalized “peri-urban areas” in the suburbs of megacities.

The peri-urban area is not only one of the most economically active areas (Zhang *et al.* 2008), but also the frontier areas where the urban built environment and the natural environment face each other. The composition of ecosystem service functions is more diverse and complex, and more Urban planning is urgently needed (Hudalah *et al.* 2007; Webster, 2011; Wu *et al.* 2008; Tian *et al.* 2013). Studies have shown that urban land use management affects changes in natural ecosystems directly or indirectly, and management policies and planning decisions also largely influence land management practices (Carpenter *et al.* 2009; Maring and Blauw, 2018; Bai *et al.* 2004). Therefore, spatial planning may effectively control the negative effects of semi-urbanized development (LeGates *et al.* 2014; Zhao, 2013; Huang *et al.* 2009). But the planning system itself also needs to make profound changes (Hudalah *et al.* 2007)

Judging from the service value assessment of ecosystems, the traditional performance research is mostly based on the economic value judgments measured in the form of currency, carbon sink or land change, and does not fully consider the real ecological needs of people. In this paper, an ecosystem service evaluation framework is proposed for the peri-urban areas, which based on township streets and human needs. This framework will help bridge the gap between the scientific assessment of the value of ecosystem services and the administrative management of urban ecological functions, and provide decision support for ecologically oriented planning interventions.

2 Particularity of ecosystems in peri-urban areas

2.1 Prominent contradictions between construction and ecological land

Peri-urban area refers to the progressive, fragmented and transitional regional type of rural areas that are gradually transforming into urban areas in the economic, social and spatial attributes out of the urban core built-up area (Webster, 2011). In the process of rapid urbanization, the peri-urban areas are in dynamic spatial reconstruction and social economic transformation. Industrialization and urbanization

erode the original ecological landscape, lifestyle and production mode. The coupling of various forces such as the disorderly spread of urban space, the urbanized standardization of landscapes, the deprivation of capital and power through space reconstruction, and the destruction of ecological base by industrialization lead to acute contradiction of land use in peri-urban areas, and the evolution is particularly complicated. It also makes the land in the peri-urban areas completely different from the cities and villages (Cheng *et al.* 2017).

Land use in peri-urban areas is characterized by a mix of industrial, commercial, residential and agricultural uses, of which a large amount of land is still used for agricultural purposes. Industrial land is scattered and spreads rapidly along major traffic routes, intertwined with rural settlements and agricultural land (Tian and Ge, 2011). From the perspective of eco-environmental effects, the expansion of construction land in peri-urban areas has had a strong impact on the land ecosystem, and economic growth is followed by a higher environmental cost.

From this point of view, the peri-urbanization process itself will have a greater impact on the human settlements. The land use in peri-urban areas changes drastically. It is the region where the contradiction between construction land and ecological land is the strongest, which has a great impact on the service of ecosystem. The problems such as human-land conflict, land shortage and environmental pollution are very prominent in the peri-urban areas, which become the focus of land remediation and transformation development. It is necessary to formulate corresponding land use and eco-environment policies for different ecological background characteristics of different regions, optimize land use patterns in peri-urban areas and ease the contradiction between construction land and ecological environment (Pan and Tian, 2018).

2.2 Diversified ecosystem services

The ecosystem services in peri-urban areas are highly diversified. In the central area of the city, the ecosystem is relatively simple, mainly as a leisure place for urban residents, so its cultural (touring) service is the most significant; in rural areas, the ecosystem is also relatively single, mainly responsible for supply, regulation and support services. When it comes to the peri-urban areas, based on the original ecological background, the ecosystem service is more complicated and diversified. It not only undertakes food supply, climate regulation and diversity maintenance, but also maintains certain spiritual culture and entertainment value.

The ecological service of peri-urban areas is closely related to the urbanization process. With the expansion of cities, the ecological land such as farmland and woodland in peri-urban areas will inevitably be transformed into urban construction land, which will be a threaten to the ecosystem and cause a series of social and environmental problems (Simon, 2008; Buxton *et al.* 2006; Liu *et al.* 2003).

Studies have shown that the value of ecosystem supply, regulation, and support services is closely related to the area of ecosystems that provide these services, but rarely have studied the value of ecosystem services from the perspective of “human needs”. In the process of urbanization, due to the expansion of urban built-up areas and reclamation from the sea, the area of cultivated land, offshore waters and tidal flats has been declining, resulting in the reduction and inhibitory effect on the supply, regulation and support services of the ecosystem. Therefore, with the continuous advancement of urbanization, the land use type has been rapidly transformed, and the urban construction land has increased significantly, which has led to a downward trend in ecosystem services on supply, support and regulation. At the same time, the continuously improvement of urban infrastructure and

development of tourism and cultural undertakings have promoted the cultural services of urban ecosystem (Huang *et al.* 2012).

3 Methods and Limitations of Traditional Ecosystem Service Assessment

3.1 Two traditional assessment methods for ecosystem services

The assessment of the value of ecosystem services has long been challenging (Wallace, 2007). There are mainly two types of methods for assessing: one is monetary methods based on cost-benefit analysis, value assessment or payment willingness, and another is based on supply-demand analysis of ecosystem services, carbon sinks, carbon footprints, and ecological integrity.

The first category is a monetary approach based on cost-benefit analysis, value assessment or payment willingness. Innovative approaches to monetary methods such as cost-benefit analysis, value assessment or payment willingness assessment (Costanza *et al.* 1997; Farber *et al.* 2002; Xie *et al.* 2008; Xiao *et al.* 2016), measured the value of ecosystem services quantitatively. The above methods can usually perform spatial simulation and feature calibration, so that ecosystem service assessment can be achieved through map drawing. Existing research is generally based on the estimation of the land classification, and the ecosystem service of the urban area is judged by obtaining a specific economic value. With the advancement of technology, ecosystem evaluation software, such as GIS, InVEST, FUTURES, CA-markov, CLUE-S, SPANs, etc., has been gradually developed, and it is inevitable to modify it into an operational and visual tool for natural resource management (Kienast *et al.* 2009; Burkhard *et al.* 2012; Stürck *et al.* 2014; Wolff *et al.* 2017; Nikodinoska *et al.* 2018; Chen *et al.* 2019; Dang *et al.* 2019). These methods are generally recognized theoretically (Ma, 2005), but due to the complexity and diversity of the ecosystem, the selection of research fields and calibration methods is often “completely integrated”, resulting problems in accuracy and consistency (Ludwig, 2000; Spangenberg and Settele, 2010).

The second category is the methods based on ecosystem service supply and demand analysis, carbon footprint, carbon sinks and ecological integrity assessment. Ecosystem service assessment based on ecosystem service supply and demand analysis has several core methods including carbon footprint, carbon sink and ecological integrity assessment (Wackernagel and Rees 1996; Costanza *et al.* 1997; Ma, 2005; Müller, 2005). For example, Paetzold *et al.* (2010) pointed out that the status of ecosystem services is not only affected by itself, but also by human needs and the needs of society. The relationship between supply and demand of social systems and ecosystem services is inseparable. Syrbe and Walz (2012) propose that there is a service connection area between the supply unit and the use unit area of ecosystem services, which is a common space for the supply and use of ecosystem services, where the transmission and conversion of services takes place. Kroll *et al.* (2012) used data on land use, climate, population, energy consumption, etc. to evaluate the supply and demand of ecosystem services in rural-urban areas of Germany, and to analyze the law of spatial change. Burkhard *et al.* (2012) proposed the concept of ecosystem service supply and demand quantification and related spatial visualization, and pointed out that as time and space change, human activity patterns are different, ecosystem service capabilities and land use will also change. Based on the application practice of land use management, Chen (2019) identified the thresholds of land use ratios required for different services in the ecosystem services to fill the deficit and balance supply and demand.

3.2 Limitations of existing ecosystem service assessment methods

A large number of ecosystem services researches aim to the well-being of human beings. Deriving the extent of human well-being only from the ecosystem service cannot fully consider the real ecological needs of people. Few studies focus on the value of ecological services from the perspective of human needs systematically.

The value of ecosystem services is usually measured by monetary value, carbon sinks, land changes, etc. (As seen in Figure 1). For example: (1) GDP accounting, usually select one element as the benchmark and the rest are derived through simple calculation. It is widely used in explaining the relevant large-scale ecological service mainly in agriculture and forestry. However, there are obvious scale differences in space and time of the ecosystem service in the city, which leads to the planning management department not being able to obtain the judgment information accurately; (2) the GEP accounting, usually calculates the ecological service of the factor as carbon and judges it through carbon storage. In current urban development, people's needs are developing rapidly and the carbon is rapidly consumed, which contradict with the nature of carbon sequestration, so it is difficult to advance decision-making. (3) LUCC land change accounting, usually plots the changes of various factors over the years and reflects the future development trend of the city by superimposing the change of land use. Based on the level of social and economic development, people are more sensitive to changes in the process of urban development, amplifying their own needs and neglecting the needs of others, just like the choice of neighboring facilities. Thus, it is also difficult to put forward decision-making.

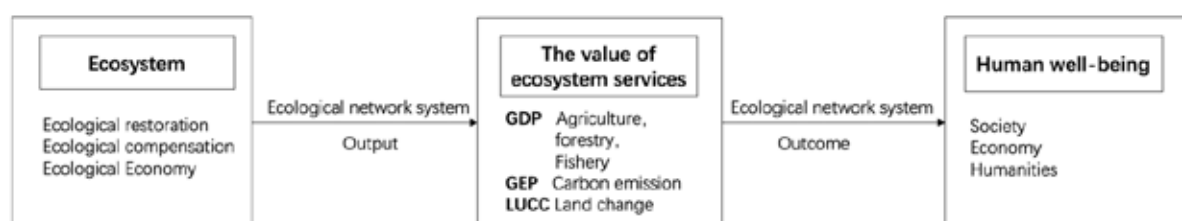


Figure 1 Schematic diagram of the research process of ecosystem service value

Source: Author self-painting

These assessments have certain limitations in supporting urban ecological planning at the application level. Urban ecosystem services are considered as an important basis for decision-making support for decision makers (Bai, 2018), and the integration of demand-side into ecosystem services assessments, ecological processes that focus on time and space are also generally considered to be very important. However, as the spatial characteristics of ecosystem services change by time and usage, the research on ecosystem services is relatively lagging, which makes the correction methods for obtaining human well-being relatively simple, thus affecting the judgment of decision makers. With the aim of ecosystem protection, combined with the land use scenario dynamic-city (LUSD-city) model, looking for key ecosystem service areas and conducting graded protection, the natural resources can be effectively planned, developed and used, which also provide important decision-making basis for urban decision makers. (Knight *et al.* 2008, Lv *et al.* 2013, Lv *et al.* 2017, Orsi and Geneletti, 2010). Rapid and efficient clustering, integration of complex information such as time changes, spatial characteristics and distribution patterns of ecosystem services, and the formation of visual display tools will enable decision makers (such as land managers) to conduct sustainability assessments effectively (Swetnam *et al.* 2010).

4 Construction of ecosystem service assessment method for diversified human needs

4.1 Overall framework

At present, traditional ecological service assessments usually target abstract human well-being, but there are few ways to deal with the relationship between local needs and ecosystem services provided elsewhere (Seppelt *et al.* 2011). The author believes that the value of urban ecosystem services should be measured from the single natural resource supply to the diversified human demand. Relevant scholars believe that in the process of rapid urban development, we should still follow the guidelines of equality and guide the overall balanced development of cities through the changes in the supply and demand relationships of urban land-use unit ecosystem services. Finding acceptable and equitable levels of ecosystem services and properly balancing the supply and demand for local ecosystem services is an important step towards sustainability (Burkhard, 2012). Therefore, we need to follow the overall framework of ecosystem services assessment. According to the study of Costanza (1997), MA (2005), Müller (2007), Burkhard *et al.* (2009, 2012), Groot *et al.* (2010), based on the actual conditions in China, an overall assessment framework for cultural, supporting, regulating and provisioning services of the ecosystem is obtained, meeting the existing data conditions. (As seen in Table 1)

Further, certain human needs may generate a large number of negative ecological effects and should be included in the overall accounting. In the process of urbanization, the ecosystem aims to improve service functions, but the goal of this improvement is not always consistent with the needs of urban development. The diverse needs of human production and life often affect the ecological space directly and destroy the logic of ecological service value optimization, leading to the assessment of ecosystem service far from diversified human needs, which affects the judgment of decision makers.

Based on the content conversion of ecosystem service assessment, this paper considers that the function of ecosystem service in the evaluation unit is a comprehensive process, that is, supporting, provisioning, regulating and cultural services. Although some scholars have proved that the dominant order of human needs is regulation, provision, support and culture, the author believes that rather than the ecosystem of the unit be analyzed separately, it should be considered as a whole. One of the important consideration is that if it cannot be closely related to the needs of urban development, then the research on the value of ecological services can optimize the ecological environment, but it is difficult to meet the diversified

Table 1 Indicators of ecosystem service value assessment revised by author

classification	Ecosystem services	Function of ecosystem services
supporting services	Biodiversity	Whether there is a selected species, (functional) population, habitat composition or species composition
	Abiotic heterogeneity	Providing suitable habitats for different species, species functional groups and processes is critical to the functioning of ecosystems.
	Biological water flow	Balance of the operation of the inter-aquatic water system
	Metabolic efficiency	Refers to the energy required to maintain a specific biomass and is also used as a pressure indicator for the system
	Nutritional loss	Irreversible loss of elements in the ecosystem
regulating services	Storage	Store the system's nutrients, energy and water, etc. and release them when needed
	Climate monitoring	Land cover changes will locally affect temperature, wind, radiation and precipitation
	Global climate regulation	Ecosystems play an important role in the climate by isolating or emitting greenhouse gases
	Flood control	Suppress flooding
	Groundwater supply	Surface runoff, changes in system water storage potential, such as wetland conversion or replacement of forests. Farmland or farmland in urban areas
	Air quality regulation	The ability of ecosystems to remove harmful substances and other elements from the atmosphere
	Erosion regulation	Soil conservation, prevention and control of wind and sand, mountain protection
	Nutritional regulation	The ability of the ecosystem to perform (re)cycles, such as N, P or others.
	Clean water	Ability to purify water
provisioning services	Pollination	Pollination distribution, abundance and effectiveness
	Crop	Grain production
	Livestock	Feeding animal
	Vegetables	Amount of edible vegetables
	Fishery	Capture commercially interesting fish that fishermen can enter.
	Aquaculture	Animals are raised in terrestrial or marine aquaculture.
	Wood	A tree or plant used in wood.
	Wild food	Wild animals, plants
	Combustion consumption	Area used for combustion consumption
	Energy (biomass)	fossil fuel
	Biochemistry and medicine	Production of biochemicals, pharmaceuticals.
	freshwater	Fresh water volume
cultural services	Entertainment and aesthetic value	Landscape and visual quality. Capacity and number of arrivals
	Intrinsic value of biodiversity	Native species, endangered species

Source: According to the study of Costanza (1997); MA (2005).; Müller (2007); Burkhard et al. (2009, 2012); Groot et al. (2010), conforming to Chinese Computable Logic and meeting existing data conditions.

4.2 Indicator selection

This study quantifies the service value of ecosystems from the perspective of people's needs, explores the spatial mismatch between land use and the supply and demand of ecological service related to urbanization, and feeds them back to land management and urban development decisions. Therefore, we select assessment indicators as criteria that are quantifiable, can be quickly mapped and fed back into land management, and can be directly related to human needs. In this way, carbon storage, food production, PM2.5, and entertainment are four important indicators for urban areas, mainly because most urban areas face local pollution (such as polluted air), natural resource waste (such as carbon emissions exceeding the standard), mismatch between supply and demand of living conditions (such as food shortage) and the need for leisure space.

Specifically, 1) Supply: Select the grain crop yield as the core indicator and compare it with the per capita consumption. Food supply capacity can benefit urban residents; 2) Support: Select carbon storage capacity as the core indicator to compare adult per capita use with demand, which helps to improve residents' understanding of global carbon emissions and atmosphere changes; 3) Regulation: Selecting the PM2.5 concentration of climate monitoring as the core indicator, which is helpful to improve residents' awareness and maintain a clean and safe living environment by comparing with the damage of urban population; 4) Culture: Select entertainment as the core indicator to compare the real-time population activity with the land capacity. Cultural and recreational services can help residents maintain a good mental state and enjoy a high quality of life (Bai *et al.* 2018; Chen *et al.* 2019).

4.3 Clustering of ecological service value

This study believes that the township and streets can be used as a unit to cluster and analyze the four types of ecological service values: provision, regulation, support and culture. The functions of ecosystem service of peri-urban areas are classified according to the leading functions of each analysis unit ecosystem. The resulting ecosystem classification may be, but is not limited to, the results shown in the table below (As seen in Table 2) :

Suspended territories and windows of opportunity after the 2016 earthquake in Central Italy.

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Abstract: While globalization is promoting strong economic concentrations in a few urban centres, peripheral regions are negatively affected by decreasing population and increasing impoverishment, due to the lack of policies and the failure to develop and maintain rural economies. Although natural disasters accelerate these trends, the shock created by unexpected events may generate a window of opportunity, linked both to risk-reduction processes and to transition paths towards more desirable futures. This review aims to discuss tendencies in post-disaster management in the central Apennines after the 2016 earthquake, since this shrinking rural region is slowly concluding the emergency phase and starting to plan reconstruction in the medium-long term. According to the UNISDR Sendai Framework for Disaster Risk Reduction, the reconstruction phase is a critical opportunity for Building Back Better. In order to achieve this primary objective, this paper suggests new scenarios based on a multi-scalar approach and on rural-urban interactions. This is a new opportunity for the rural areas in question to re-evaluate the role of the landscape and the environment and act accordingly. The creation of clusters of highly efficient multifunctional agricultural and infrastructure projects is seen here as an opportunity to create future ecosystems and new approaches to land and landscape management.

Keywords: Earthquake, Landscape, Valley Section, Urban Bioregion.

Introduction

We live in a world where it is becoming more and more difficult to distinguish between the urban and the non-urban; in the current age of Anthropocene, all the earth is urbanized and the environment is transformed by profound human interactions. A number of scholars have offered new conceptualizations to inform on the role of humans in shaping the environment; among them, Neil Brenner and Christian Schmid have attempted to describe the ubiquity of the “urban condition” and radically to rethink the epistemic enclosure of “the urban” as a category. They put the urban age under discussion and suggest innovative interpretations for “the creation of new scales of urbanization” (Brenner, 2013), proposing a shift from an urbanization made up of agglomerations and settlement types to the planetary urban fabric of operational landscapes. Operational landscapes support human agglomerations by transforming resources and energy and describing the planetary dimension of contemporary metabolic processes (Brenner *et al.*, 2014). This analytical construct helps us to understand the complex spatial relations of cities, political regionalism and the rescaling of state intervention to intermediate levels such as the city-region.

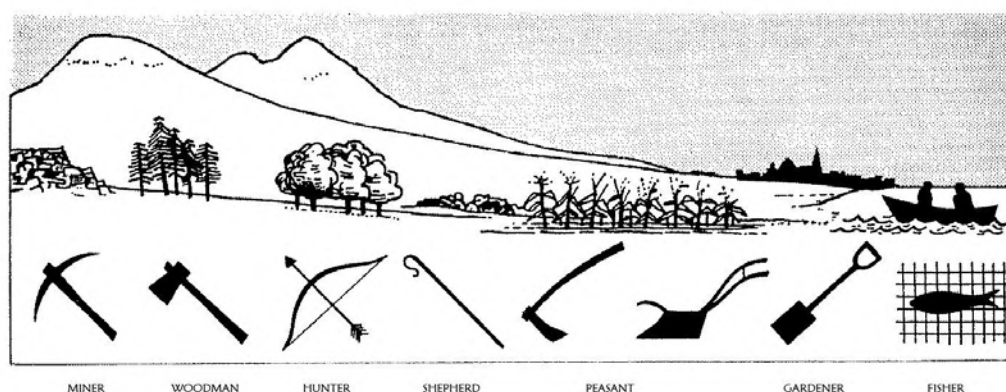


Figure 1. The Valley Section by Patrick Geddes.

Patrick Geddes was the first to stress the dependency of urban areas on the territorial configuration of society within its hinterland. In 1909 he drew The Valley Section (Figure 1), which depicts an ideal regional-urban condition. This is a topographic section, which begins in the mountains and then follows the course of a river down through a plain towards its estuary; where different forms of human occupation were related to specific geographic features.

“The valley section does not comprise a single valley, but a number of valleys. Seen from a bird’s-eye perspective, the diagram depicts a fan-shaped region of valleys focusing on the river’s estuary. Into this region, Geddes inscribed different meanings. Along the bottom of the diagram, he notes the so-called natural, i.e. best adapted, occupations represented by tools of different trades and crafts. [...] Higher up in the mountains one finds isolated huts and small villages, further down these settlements increase gradually in size until they culminate in a metropolis at the coast. This large metropolis is the one settlement which is not matched with one particular natural occupation. Ultimately, the large city was created by the united efforts of all the other natural occupations and smaller settlements. [...] Geddes does not refer to the obvious fact that a geographical hinterland might support a coastal metropolis. Instead, he expresses in The Valley Region that Enlightenment theory of social evolution that describes mankind’s development through the four stages of hunting, pastoral, and agriculture toward commercial societies. [...] It is important to note that the Valley Region was for Geddes not primarily a planning suggestion but first of all a depiction of an ideal type of city which could be found time and again throughout mankind’s evolution (Welter, 2001)”

These “occupations” and the use of natural resources through extensive agro-silvo-pastoral activities have been the driving force which has shaped landscape structures, and created functioning “cultural landscapes” (Antrop, 2005). Globalization has expanded the close sectional relationships described by Geddes “as it began to transcend the local (Masoud, 2013). Furthermore, the deep socio-economic changes that arise from industrialization, mechanization of agriculture and intensive farming have generated the abandonment of rural and mountain areas after centuries of human presence (Bracchetti *et al.*, 2012). These evolutions have dramatically transformed land use, as highlighted by the EEA report “Landscapes in transition: an account of 25 years of land cover change in Europe”; there are three emerging trends (EEA, 2017):

- expansion of urban areas (roads, rail, industrial parks, housing, commercial zones);
- decrease of agricultural land continues at an average rate of 1,000 km² per year;
- the area of European forests has increased since the 1960s.

Beside this, the Valley section remembers the morphology of Italian territory, where the Apennine Mountains divide the Adriatic coast from the Tyrrhenian: as in the Geddesian section, medium-large cities are mainly

located along coastal areas while networks of minor towns, villages and rural areas are located in hilly or mountainous zones. In recent decades, a combination of globalization, contemporary capitalism and technological change have accentuated the agglomeration and the density of many large metropolitan areas, leading to spatial and economic inequalities. Major urban systems host primary services and are a spatial concentration of innovative activities and knowledge, making them the major driving force of economic growth (Iammarino *et al.*, 2018). Major cities are becoming more important as concentration of economic activity, whereas marginal regions and centres of small and medium-sized manufacturing cities are affected by trends of demographic and economic decline. This current development path, characterized by unequal distribution of resources and opportunities, increases the vulnerability of peripheral regions, and produces differential risks (Collins, 2008). Furthermore diverse studies, in the field of *Disaster Research* and *Environmental Justice*, have observed how “hazard exposure, structural characteristics, and socioeconomic characteristics are significant predictors of structural damage” (Highfield *et al.*, 2014) and how pre-existing vulnerabilities influence the quality of the recovery process (Finch *et al.*, 2010).

This paper focuses specifically on the case of the 2016 earthquake in Central Italy to look at short- and long-term consequences on marginal territories affected by a natural disaster. The main question addressed here is the following: can catastrophes generate a window of opportunity to rethink the future of the territory? This contribution has been divided into three sections. The first offers a background of the pre-existing context; the second deals with the emergency management phases, with reconstruction after the impact of natural hazards and with tendencies in mid-term reconstruction; finally, in the last section a scenario is suggested on the regional scale.

Pre-existing context

Starting from 24 August 2016, several earthquakes struck the Central Appenine region, producing casualties and damage on structures and infrastructures. Those disasters involved a very large territory including several Regions (Abruzzo, Lazio, Marche and Umbria,) and 140 Municipalities; creating a new geography, the so called “Seismic Crater” (Figure 2). The crater area covers nearly 8,000 square kilometres (2.6% of the national territory), of which 2,000 square kilometres are located in protected areas or natural parks. Most of the municipalities in the earthquake area are located in the hilly and mountainous areas of the regions involved (more than 50% located at an altitude of over 900 meters asl). The Municipalities involved in the disaster are composed of small and very small settlements, 130 of which with fewer than 10,000 inhabitants and 56 with fewer than 1000; the total population amounts to almost 600 thousand. 25% of the inhabitants are seniors over 65, while 12% are children under 14, 2 percentage points below the national average. In 107 of the 140 Municipalities the population is decreasing, with rates of decrease up to 30%.

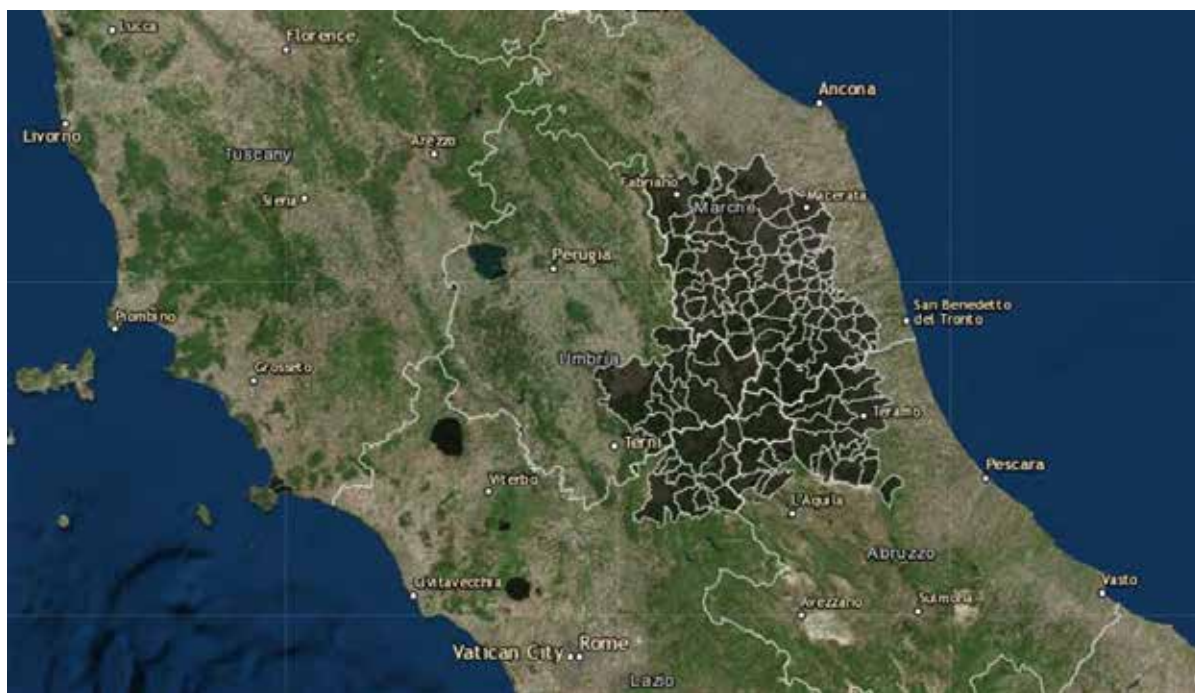


Figure 2. The Seismic Crater (Credits: Protezione Civile)

The economic sector is fragmented and diversified, the productive activities are almost exclusively limited to the sectors of agriculture, zootechnics and tourism, without, however, the presence of strong productive vocations and with a very low entrepreneurial density (the number of local units per sq km is equal to 5.9 against 15.6 at the average national level). There are about 25,000 farms for an average of 4 per 100 inhabitants, compared to a national density of 2.7 per 100 inhabitants. Almost all the farms are family-run (96.5%), often dedicated to small breeding and related activities such as the management of holiday farms, while the cooperatives are few and malfunctioning. Moreover, alongside the registered activities, there are many others that survive in the world of the informal economy, mostly managed by the elderly and voted to the exchange market or self-subsistence. Because of these, agricultural activity must therefore be considered an integral part of the culture and identity of the resident population, since it assumes not only economic but also social importance. While there are many shared aspects that can describe the crater as a whole, it is necessary to consider the areas affected by the earthquake as diversified from a socio-economic point of view. Indeed, it is possible to distinguish between the poorer inland areas most severely affected by depopulation dynamics and others, that before the disaster went through a phase of considerable recovery, placed at the centre of agro-food systems of excellence and dedicated to export (Olori *et al.*, 2017).

However, depopulation and cessation of traditional farming in the central Apennines is causing the disappearance of local cultural landscapes, which are the result of the millenarian integration between land use and natural processes.

Emergency management and reconstruction

The Presidency of the Council of Ministers, in reaction to the seismic events, provided a government structure in which the emergency and reconstruction activities were divided. On one hand, the emergency management phase was assigned to the Italian Civil Protection Department, through the establishment of the operational centre DICOMAC (Direzione di Comando e Controllo); on the other, the recovery and reconstruction management phase was delegated to an Extraordinary Government Commissioner. The Italian Civil Protection Department administrated the aspects connected with immediate support to the population and to the productive activities, in particular the recognition of damage to buildings and infrastructures, the management of

emergency housing solutions, support for zootechnics activities and collection and transport of rubble. A useful tool for supporting decision-making processes, rescue and aid delivery activities was provided by the European Space Agency, through the Copernicus Emergency Management Service activated for Earthquake in Central Italy. Real-time satellite images were used to make immediate broad assessments of damage, to calculate requirements for temporary accommodation, and, in general, to take stock of an evolving situation over large areas (Figure 3).

While the DICOMAC continued to manage the emergency phase, the Extraordinary Government Commissioner started the reconstruction phase. According to the Decree Law 189/2016 the Commissioner had the following tasks: to work in agreement with the Civil Protection, to coordinate the reconstruction and restoration of buildings and infrastructures, to support economic activities, and to monitor and supervise the funds, assisting the local authorities in planning the interventions. The Decree Law 189/2016 described a strongly centralized governance structure, in which the Extraordinary Commissioner acted as the pivot of the system and connected the Presidency of the Council of Ministers, the individual Ministries involved, and the Presidents of the four Regions who assumed the role of Vice Commissioners.

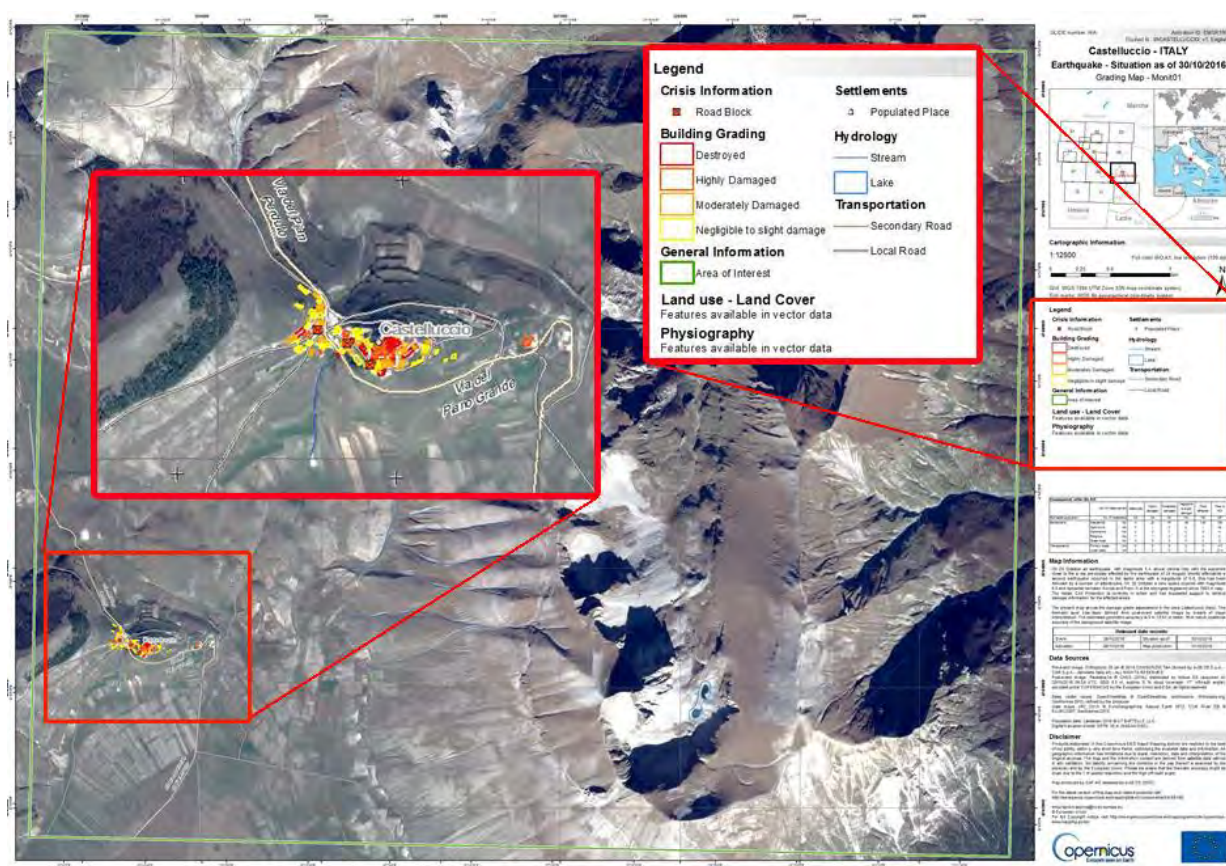


Figure 3. Copernicus EMS Grading Map of Castelluccio di Norcia, Italy (Credits: Copernicus Emergency Management Service).

This structure was organized on several institutional levels, where each institution was accountable for the matters of its competence, and, in some cases, even overlapping in order to define the strategic elements of the reconstruction. Furthermore, the reconstruction plan designed with the D.L. 189 was based on some fundamental elements, which established in particular:

- special reconstruction offices, set up by each Region together with the local administrations, with the task of managing the reconstruction;

- a reconstruction fund, established by the Ministry of the Economy and Finance, whose resources were allocated to the special accounting of the Extraordinary Commissioner;
 - a central commissioner structure to assist the activities of the special offices for reconstruction and to implement the decisions of the Extraordinary Commissioner.
- (Bertelli *et al.*, 2017).

Today, two and a half years after the first earthquake, three different Commissioners have followed one another in close succession and the general situation is incredibly precarious, while reconstruction and recovery proceed at a slow pace. There is still work to be done to clear away all the rubble: in November 2018 only 50% of the public debris produced by the earthquake's destruction had been removed. In March 2019 some prefabricated post-disaster transitional dwellings were still lacking. Another issue concerning these transitional settlements relates to the question of how long people must stay there: experience from past disasters has shown how this temporality will last for at least ten years. Such delays are the result of a whole host of factors: on the one hand the considerable scale of the disaster and the different earthquakes that have taken place over time; on the other significant problems with the Italian Government's strategy for managing the aftermath of the disaster. This is because of a fatalistic attitude to disasters and "a pervasive lack of planning and a corresponding inability to set strategic priorities for resilience" (Alexander, 2013).

Furthermore, as pointed out in the investigation led by the independent research collective Emidio di Treviri, special post-earthquake legislation is characterized by a lack of social participation, indeed the involvement of the earthquake affected populations in crucial choices for their territory is at present completely absent (Barra *et al.* 2017). Furthermore, the current political approach on the national, regional and local scales indicates that no proper longer-term strategy is being developed.

Future scenario

Although the disaster has accelerated pre-existing conditions of marginalisation, post-earthquake reconstruction and related funds offer uncommon resources that may generate a window of opportunity, linked both to risk-reduction processes and to the possibility "to intervene on the wider and longer-term socio-spatial trajectory of a certain territory" (Coppola, 2016). Natural disasters serve as focusing events that generate policy windows (Solecki *et al.*, 1994) "they dramatize interdependencies between different scales, spatialities and temporalities creating a sort of augmented territorial condition" (Coppola, 2016). Evidence from past disasters indicates that policy windows are transitory opportunities: they may close quickly and do not ensure the adoption of transition paths towards more desirable futures. Before this window closes, there is a strong need to design participative settings aimed at involving a variety of local actors to outline transformative patterns of development, cooperation and innovation, in the search for a transition from current states of socio-economic decline to states of affairs considered more socially desirable.

Looking at the seismic crater through the lens of regional approaches offers valuable potentials for imagining new spatial outcomes related to the concept of operational landscapes "for the creation of selective regional closures of the regional economy and productive structure in relation to the global system" (Fanfani, 2018). Moreover "integrated multiscale design and planning can address the consequences of development at the regional level while creating a context for designing on progressively smaller scales. [...] If regional design is the action that brings intelligence from the overall vision to the everyday detail, it also integrates disciplines such as economics, ecology and social policy as well as design and planning (Wall, 2008)." In this perspective, the re-appropriation of the Valley Section becomes relevant, as an exploration tool and as "a fundamental relational diagram between project and geography"; and also as a "design and planning tool, to recalibrate our understanding of regionalism and employ it as a substantial device in developing a contemporary attitude towards urbanism" (Masoud, 2013). The true potential of such investigation relates to the development of a contemporary conception of environmental and systemic thinking, which is leading to the design of alternative

relationships between places, communities and nature. Another important condition to develop new scenarios is the "new cooperation between urban and rural areas, conceived as basic tool of territorial innovation and local development" (Fanfani, 2018) linked with the dimension of the urban bioregion. This refers to geophysically and ecologically coherent area of territory (Atkinson, 1992) "defined by its natural physical characteristics, not by man-made political boundaries" (Tonn *et al.*, 2006) and characterized by a polycentric settlement model. An urban bioregional approach aims to achieve a balanced co-evolution between human settlements and the surrounding environment (Magnaghi, 2014), through the introduction of place-based development concepts "enabling especially local production/consumer clusters such as regional food-sheds or local food systems, local energy systems, districts of fair economics" (Fanfani, 2018). Moreover, the reconnection of urban and rural ecosystems, reinvented in an age of social innovation and networks, offers space for cooperation between alternative food networks, food businesses, education, research and policy-making. These may contribute to the "design of social infrastructures that enable the emergence of new enterprises, and the deployment of technology" (Thackara, 2019).

Indicators of the pre-earthquake statistics show that the agricultural system of the crater area, which now requires to be strengthened, has a development potential that is still largely unexpressed. These indications suggest a path of qualitative enhancement of local production, the reinforcement of the innovation processes of small companies also through the modernization of production structures and cooperation between producers in a supply chain logic (Arzeni *et al.*, 2017). To this end, it is necessary to invest in processes of institutional and social innovation to create alternative systems of food production, based on a framework of small-scale agro-ecological production, that are environmentally sustainable, economically viable, and socially fair. Furthermore, there is need for an urgent change in attitudes in the policy of recovery, in order to reverse the trends outlined herein. A more locally based, socially inclusive public governance is required, capable of dealing with multidisciplinary matters and delivering original and shared visions of development.

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Lithuania at the crossroads: experience from the ‘making’ of a National Spatial Plan

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Abstract: For the past decades, Lithuania has been facing various challenges, including a massive emigration, shrinking towns and cities as well as a rapidly changing demographic, social and economic structure of the society. Inevitably, such dynamics produced a ‘spatial imprint’ in both, urban and rural areas. At the same time, different levels of governance attempt to catch up with such an accelerated development, lacking alignment, values and collectively agreed directions. Due to these pressing and complex challenges, a very recent process has been initiated by the Ministry of the Environment, aiming to move the existing national strategic planning approach to the next level and to develop an active, inclusive Comprehensive Spatial Plan of the Republic of Lithuania (CSPRL). The plan and the process behind it, are expected to set a new, transformative and innovative direction, addressing the future of the entire territory of the Lithuanian Republic and bringing all sectoral strategies into alignment. At the spotlight of the ongoing discussions are the definition of the nation-wide values, ambitions and vision, determining the future roles of existing urban centers and potentially redefining their relationship with suburban and rural ‘backlands’.

Keywords: transformation, value, vision, integrative development

Introduction

This contribution reflects upon the overall approach, process and methodology of the ongoing national Comprehensive Spatial Plan development in Lithuania. The transformational nature of the current events in the Lithuanian spatial planning scene shapes the core of the content and discussions in this article. The aspiration of the planning experts and political actors presently driving the development of the Comprehensive Spatial Plan of the Republic of Lithuania (thereafter - CSPRL) reaches beyond the established planning routines and aims to create a ‘living’ spatial planning framework capable to overarch and align all other national strategies and plans as an umbrella framework.

Following the collapse of Soviet Union, Lithuania went through remarkable shifts and in the ways, how national spatial organisation, policy making, stakeholder involvement and implementation have been approached: starting off with heavily centralized, top-down controlled spatial planning system on all levels and rapidly transitioning into market driven, neoliberal planning practice, based on the Anglo-Saxon planning traditions. This transformation has taken place in the relatively short time of nearly thirty years, facing challenges in the establishment of a mature and democratic planning culture.

The current spatial planning practice in Lithuania contains characteristics of two quite contradictory mindsets and approaches in addressing the spatial distribution and allocation of the economic, cultural, environmental and social interests and priorities and related negotiation between the public and private interests. The top-down, national planning and policy setting, still featuring remaining traces of the centralized planning inheritance of the past, collides with the neoliberal local spatial development dynamics, driven predominantly by the private and sectoral interests, controlled using zoning and land-use instruments. This situation generates a variety of conflicting interests and fragmented approaches, exposing an urgent need for the definition of collectively agreed values and priorities, joint vision, alignment, assessment, and cross-sectoral integration of development directions, followed by the consistent and effective implementation on the local level.

At the heart of the described issues are the numerous general misperceptions concerning the role that space takes up in the context of political and economic development priorities and debates. The understanding of space as a key asset, resource and catalyst for the cultural, environmental, economic and social transformation, shaping the identity of a country, has not yet been sufficiently anchored in the collective consciousness of the population, political actors and the key stakeholders which drive the process and direction of the national development.

For the most part, the focus of this paper lies on the elements of fundamental transformation, process and methodologies enveloping the spatial development dynamics in Lithuania. However, some specific contents (such as sustainability principles and two alternative development schemes) will be touched upon, to convey and illustrate significant moments and the nature of development dynamics and changes.

CSPRL development stages and structure

Following the national law and regulations of Lithuania, National Spatial Plans are developed for a period of at least twenty years (concept), while the related detailed local plans (solutions) are valid for ten years. Since the Restoration of Independence of the Republic of Lithuania, it is the second time that a National Spatial Plan is being prepared. The CSPRL - currently under development - is in the hands of the Ministry of the Environment of the Republic of Lithuania (thereafter – MoE) and is scheduled for official approval by the Seimas of the Republic of Lithuania in autumn 2019. Assuming a successful approval, it will be valid until 2050, the related detailed local plans (solutions)– until 2030.

The MoE initiated a four-stage tendering process targeting the development of a ‘New Generation’ CSPRL, which is expected to outline a clear vision and values as well as set the direction for the national development. The four tendering stages entail: 1) the assessment of the existing situation (completed in 2018); 2) conceptual development of the CSPRL (tendering completed, development ongoing); 3) Strategic Environmental Impact Assessment (tendering completed, development started) 4) development of detailed local concepts (solutions).

At present, the winning expert team is engaged in the second stage: conceptual development of the CSRLP, which is set for completion in autumn 2019. Two of the authors: Kristina Gaučė and Giedrė Ratkutė-Skačkauskienė are the leaders of the Lithuanian expert-team; the two remaining authors: Daiva Jakutyte-Walangitang and Nikolas Neubert served the Lithuanian team in the process as

external, international advisors. Thus, the collectively generated experience and knowledge, reflected in this contribution, compiles the outcomes derived from an almost a year long transdisciplinary collaboration.

Expectations towards the CSPRL development

According to numerous comparative analyses by different authors from a variety of EU countries (Reimer et al 2014), the nature of Lithuanian spatial planning system and practice (this also applies to the majority of post-Soviet countries and the UK (Cullingworth, Nadin 2001)) tends to be rather “land use planning” than “comprehensive planning” due to the lack of spatial, regional and economic planning traditions and integrated, multi-sectoral approach. Thus, turning to a comprehensive spatial planning approach that aims for the development of a clear, integrative and flexible spatial document, backed and owned by the key actors and stakeholders, communicated, discussed and agreed across different layers of governance is a new and promising direction that Lithuanian planning culture has taken up. However, such transformation naturally encounters challenges and conflicting interests on its way, especially bearing in mind its ambitious aims, pushing the existing sectoral as well as collaborative boundaries and expectations. The key objectives of the CSPRL contain, but are not limited to:

- Enabling a more effective implementation of all national sectoral long-term strategies and actions by exposing their spatial relevance and alignment, minimizing conflicting spatial functions and use.
- Aligning and guiding the national economic, environmental and social development by the means of budgetary distribution, based and in accordance with the guiding principles compiled in CSPRL.
- Finding an adequate and meaningful path and format for the establishment of sustainable spatial development principles, capable to accommodate, align and guide all sectoral national strategies in one direction while being sufficiently flexible and assimilative concerning future (long-term) trends, changes and adjustments.
- Establishing a robust foundation for an effective decision-making process, based on well informed anticipation, forecasting and appropriately planned actions, avoiding the ramifications of delayed and fragmented reactions to existing and arising challenges.
- Identifying the key principles and best-practice examples for an effective integration of European and international sustainability aims and goals (e.g. SDG's).
- Defining and applying most suitable methodologies enabling a coherent, consistent and integrated approach to the development of an agile Comprehensive Spatial Plan.
- Deriving the key principles from such European national spatial planning examples that have proven successful across numerous European cases. Discerning the main elements potentially relevant and useful in the context of Lithuanian national spatial planning from identified examples while taking in to account the diverse and locally specific processes behind national planning experiences, cultures and perspectives.

- Addressing the question, how the present planning process can enable, open up and encourage adequate forms and formats of the key local actor and stakeholder engagement as well as public participation (vs. information), turning the shaping of the future of Lithuania into an authentic and collective effort reflected in the equally collective ownership of the plan.

All the points outlined above aim to further, connect and maximise the integration of already existing processes, knowledge, data, and debates in the portfolio of the Government of the Republic of Lithuania.

The CSPRL development steps

To ensure an extensive consultation and adequate integration of experts, representatives of different political and governing bodies as well as to create a platform for discussion among the general public, the content of the CSPRL conception (second tender stage) has been gradually elaborated in four steps:

- First – setting up a consistent methodology and approach for the development of CSPRL;
- Second - identification of the key nation-wide values, ambitions and vision for an aligned and congruent development of Lithuania;
- Third– spatial assessment and allocation of the main attributes of the vision and related functional priorities. Elaborating two alternative spatial development paths;
- Fourth – definition of respective recommendations related to the upcoming development of detailed local concepts (solutions), national sectoral strategies and related legal acts.

The conception of the CSPRL in the format of specifically focused steps has enabled the core development team, comprised of 13 transdisciplinary expert groups, to engage in a broader discussion, including transdisciplinary perspectives in each of the development steps. Most particularly, the Public Forums, organized approximately every two months, enabled the carrying on of discussion, ‘anchoring’ the main topics and raising awareness beyond the involvement of experts.

Understanding development priorities – exploring national values, ambition and vision

This section briefly touches on the key CSPRL content related elements, principles and discussions. The core principles of CSPRL development are based on the universally recognised triple bottom line for sustainable development (Figure 1). The overall concept rests upon the interlinking of the triple bottom line and core values (specified and governed by the Constitution of the Republic of Lithuania), ambitions and vision for the next 30 years of national development.

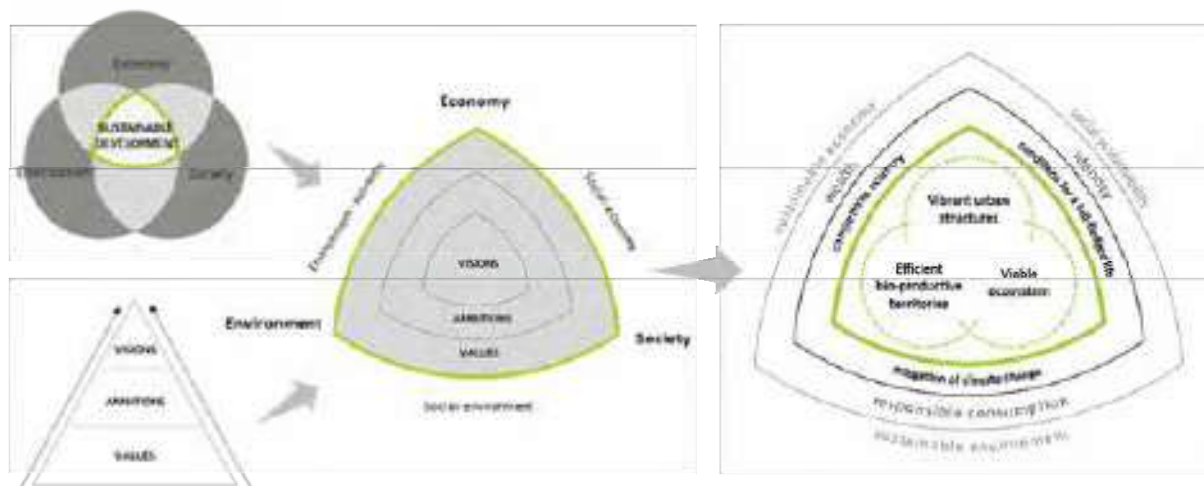


Figure 1 Foundation, underlying sustainable development of the Republic of Lithuania

High level of complexity that understanding of sustainability entails, raises the question, how it can be broken down and made ‘actionable’? How will the application of sustainability principles affect different sectors and systems of Lithuania? What are the concrete implications that these development goals and aims will have on cities, regions, rural areas, etc.? What are the specific roles that different spatial agglomerations will play in the overall context? What are the best means for an effective distribution of national resources in alignment with different regionally specific development settings? In search for answers to these questions, three main dimensions have been elaborated and defined, aiming to create a matrix (Figure 2), which identifies more specific structure and steps for further development of CSPRL:

1. Definition of the main systems of national importance:

- Urban system
- Economic system
- Connectivity - infrastructure
- Engineering systems - infrastructure
- Ecosystem
- Ressources

2. The differentiation of national territorial typologies

- Urban centers and towns
- Rural and agricultural areas
- Sea and coastline
- Natural landscapes

3. Special priority themes:

- Strong identity
- Competitiveness
- Objects of national importance

The elements outlined above have been interlinked in the form of a matrix (Figure 2), which enabled the experts to assess different degrees of interdependency on a variety of layers and to link the outcomes with the two alternative development scenarios (Figures 4 and 5).

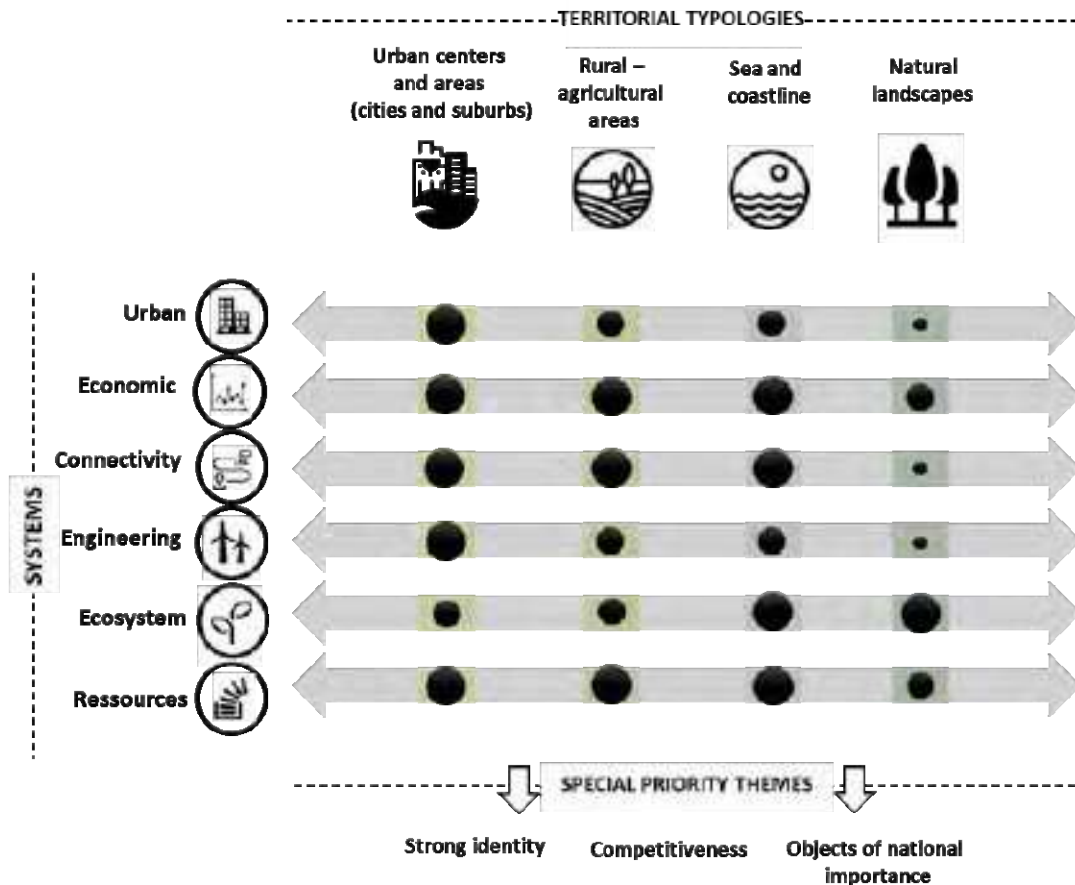


Figure 2 Systemic matrix: correlation between different domains and their spatial relevance

Two alternatives for the spatial development of Lithuania

In the past decades Lithuania has been facing a substantial decline in population mainly due to high and consistent emigration, causing many regions to rapidly shrink and loose population. Most European (Cities of Tomorrow, 2011) countries are familiar with this challenge, exposing rapidly changing development dynamics between growing and shrinking regions. The approaches in addressing this situation vary greatly from country to country, depending on the local planning culture and related legal framework conditions.

In the process of current CSPRL development, this topic lies at the bottom of ongoing most controversial debates concerning the roles of different regions, facing limitations in their capacity to sustain the local quality of life and supply of public services in the short, medium and long terms. To date, the discussion among the experts, politicians and population in Lithuania is concentrated on two main alternative approaches, which are at the core of the CSPRL development.

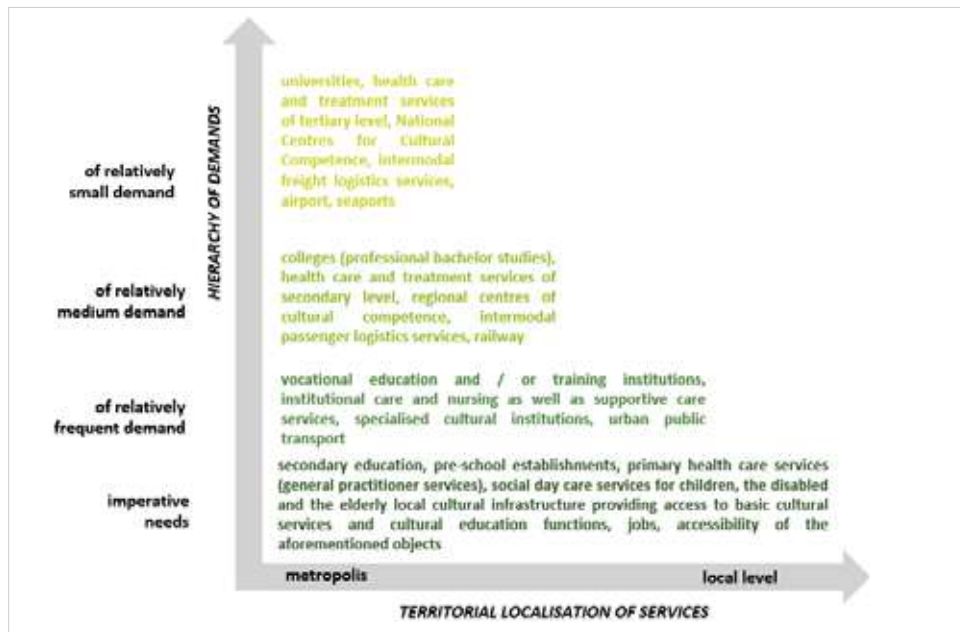


Figure 3 Distribution of needs and services by the level of urban centres

Most controversial points of discussion concerning the future development options are centered around the distribution of the national budget, resources and provision of the public services in correlation with the local spatial, social, cultural and economic development characteristics and features in specific regions and their urban centers. Multidisciplinary experts, politicians, key stakeholders, local administration and wider public are engaged in continuous debates and the decision for the final direction will likely be made by the end of this year. However, going into depths of this topic would overstretch the boundaries and the purpose of this paper, therefore the two alternatives being elaborated and discussed currently, are described in a brief comparison, conveying the essential points and differences only.

The **first alternative** (Figure 4) contains the proposition to sustain and further develop ten regions, driven by the respective urban centers, namely: Vilnius, Kaunas, Klaipėda, Šiauliai, Panevėžys, Alytus, Marijampolė, Utena, Telšiai and Tauragė. This alternative gives priority to the principle of autonomy of equitable regions, whereby public investment is distributed as evenly as possible and a wide range of basic services is equally concentrated in each region. It distinguishes the following categories of urban centers (Figure 3):

- **Metropolitan** – internationally active system of urban centers, containing a range of services and operating as national economic engines: Vilnius- national Capital, Kaunas - cross border center and Klaipėda – port city.
- **Regional centers** – concentrating a wide range of regional services and amenities, intense level of regional economic activities and playing a key regional role in maintaining and improving quality of life in the given region. The cities in this category are further subdivided in the regional development driving centers: Šiauliai and Panevėžys and regional development supplementing centers, such as Alytus, Marijampolė, Utena, Telšiai, Tauragė.
- **Local centers** – towns with the primary objective of maintaining the viability of the regions by working with regional centres and providing some services.

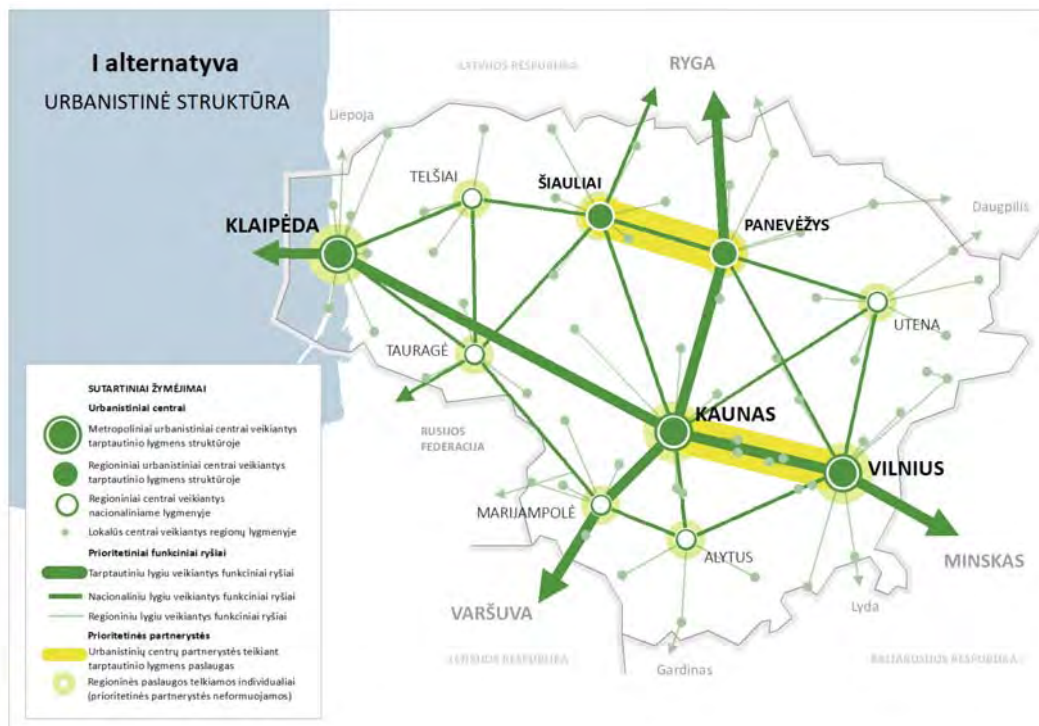


Figure 4 Development Alternative I - Regions, urban centers and connectivity network

The main East-West and North-South transportation corridors connect and further strengthen the network of named urban centers. The first alternative maintains the existing administrative structure and distribution of agricultural land-use, natural landscapes and resources as well as protected structures and objects of national importance.

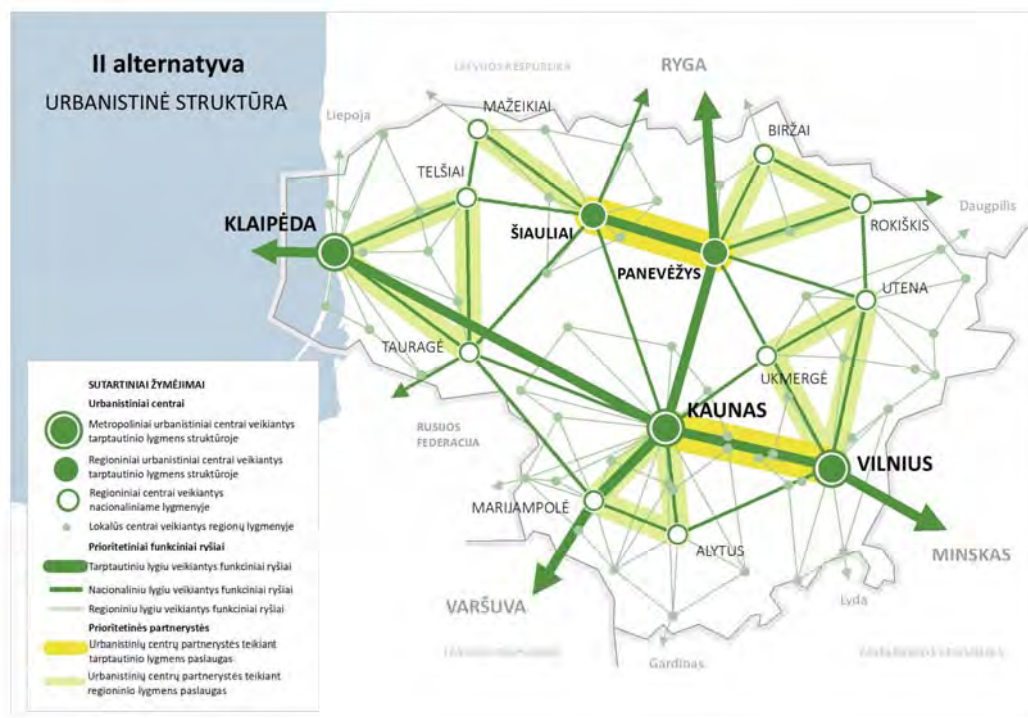


Figure 5 Development Alternative II – Regions, urban centers and connectivity network

The **second alternative** (Figure 5) proposes a greater degree of differentiation between the regions and their urban centers, consequentially followed by an adequate allocation of national budget, resources and public services, depending on the more specific local characteristics and development typologies. This alternative expands the understanding of the future development potentials beyond the existing administrative and institutional boundaries, aiming for a greater integration between functional, natural (environmental) and economical features that specific areas contain. This approach aims to identify synergies and common potentials that different territorial units expose, including the integration of geographical-morphological characteristics (planes, hills, water bodies, etc.); potentials for specific functional use (e.g. agricultural, recreational, tourism, etc.); economic features (based on 'Invest Lithuania' data); connectivity (including different types of connectivity); proximity between different urban centers, towns and rural settlements (Figure 6).

The hierarchical distribution of the internationally and nationally important urban centers of Lithuania, as well as their regional and local roles differ slightly from the first alternative. The core difference lies in the focus on different city- region relations and the long-term intention to stabilize shrinking regions (mostly in the Northern and North-Eastern areas of Lithuania, adjacent to the Latvian boarder) by strengthening their collaboration with the strongest adjacent regional center. Main regional centers in this alternative are grouped along three tiers: 1) Šiauliai and Panevėžys, 2) Alytus and Utena and 3) Marijampolė, Telšiai, Tauragė, Mažeikiai, Ukmergė, Rokiškis, Biržai. Vilnius, Kaunas and Klaipėda contain the same categorization and importance as in the first alternative.

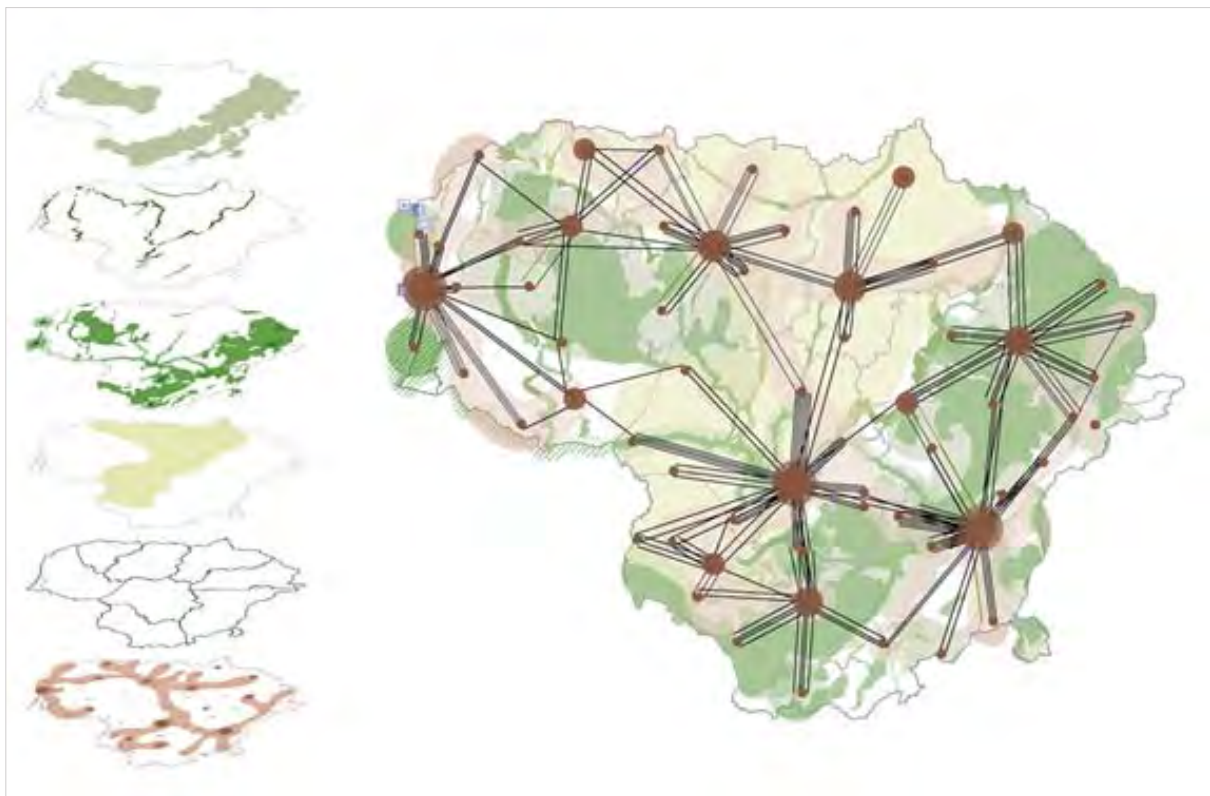


Figure 6 A scheme for the identification of common territorial potentials and synergies

Both alternatives outline the same development direction concerning the sustainable development of agricultural land-use, protection of natural resources, large scale open spaces, objects of national importance, sustainable treatment and development of the coastal areas and the strengthening of

transportation infrastructure and key corridors ensuring the sustaining and improvement of connectivity between urban centers.

The process of the CSPRL conceptual development and stakeholder involvement

The CSPRL development is an ambitious undertaking and a widely discussed document. The overall aim is to engage a broad audience into the planning process, starting with political representatives and going all the way to students who are very likely to be involved in the actual implementation and further adjustment of this document in the future. There are several dozens of actors in the project, who are driving the entire process and are involved in different formats and roles:

1. Direct participants, containing clear responsibilities throughout the project, working on the project and informing other participants about certain results:
 - decision-makers (e.g. coordination of the working group);
 - experts (e.g. core development team).
2. Indirect participants providing feedback on the interim results:
 - containing the right to veto decisions (e.g. politicians);
 - involved directly in the consecutive implementation of the CSPRL (e. g. the Ministry of Environment of the Republic of Lithuania);
 - likely to be involved in the development of certain parts of the project in the future (e.g. academic community);
 - regional and local administration, which will be implementing and integrating the plan on the regional and local level (e.g. regional representatives).

The main structure and connections between the key parties involved in the development of the CSPRL are depicted in the Figure 7. The scheme illustrates the process of interaction between the participants. Two main roles: 1) the owner and initiator of the plan development process – the Ministry of the Environment of the Republic of Lithuania and 2) and the expert-development team, implementing the actual development of the plan. The strategic and methodical core of the project (in the oval section of the scheme) consists of the project owner/organiser and related consultants, the coordinator of the project preparation, the methodical project preparation manager, and a range of topic managers. The project structure shows that the generated outcomes are controlled and dependent on the expectations and competence of the project owner, government working group and official project consultants.

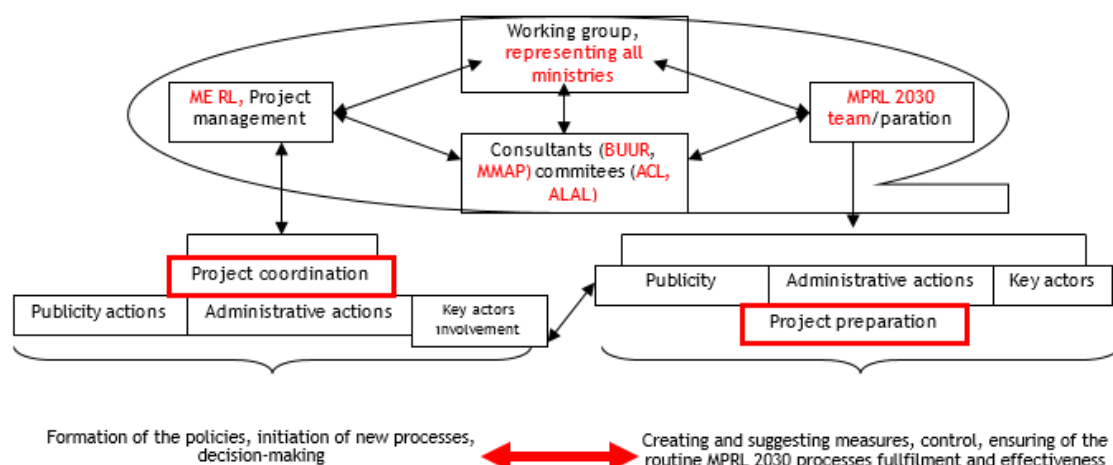


Figure 7 Organisational structure and overall management of the CSPRL development process

The team of local experts consists of over 20 professionals: urbanists, architects, engineers, geographers, environmentalists, sociologists, anthropologists, economists, geologists, heritage and cultural specialists. The project marketing team contains geographic - information systems professionals and communication experts and graphic designers.

Key elements of the multi-level stakeholders involved in the planning process:

1. Political level. The concept of the plan (MPLR 2050) will be approved by the Seimas of the Republic of Lithuania, the detailed solutions (MPLR 2030) – by the Government, therefore, from the very beginning of project initiation, political institutions are actively informed and included in the discussion, MoE RL periodically reports on project's progress and content updates.
2. Governing bodies:
 - Central government. All 14 Ministries of the Republic of Lithuania are part of the CPRL 2030 coordination working group. Responsible deputy ministers, their advisers and business professionals of the ministry participate in the activities of the Group. The activities of the group are coordinated by representatives of the organiser of the plan (deputy minister of MP LR with a team of advisers). The authors of the plan also organise meetings, discussions and workshops to discuss ministerial / business issues.
 - Regional Development Councils. Lithuania is administratively divided into 10 regions that unite 4–8 municipalities each. By way of rotation, the organiser of the plan participates in the Regional Development Councils meetings providing the latest CPRL material presentations, responds to issues relevant to politicians / municipal leaders, documents and expresses their expectations to the organisers.
 - Municipalities. 60 Lithuanian municipalities are represented by the Association of Local Authorities in Lithuania, however most productive work with representatives of municipalities takes place through the Architectural Chamber of Lithuania (ACL). Representatives of both, the plan organiser and the developer, through their reports and intermediary material, involve the Community of Lithuanian Architects (almost 1500 professionals in the field, including municipal architects) in the preparation of the CPRL 2030.
 - Associations: a variety of associated structures is involved in the CSPRL development process (e.g. academic community, business association), non-governmental organisations (e.g. cyclists' community, geographers' union), as well as companies operating under the Ministry: Lithuanian Railways, Lithuanian NGDO Platform, etc.

Content development and management process

The project process map (Figure 8) is subject to regular updates throughout the duration of the entire project. Its complexity and patterns are easier to explain through the scheme of achieving any intermediate result (Figure 9).

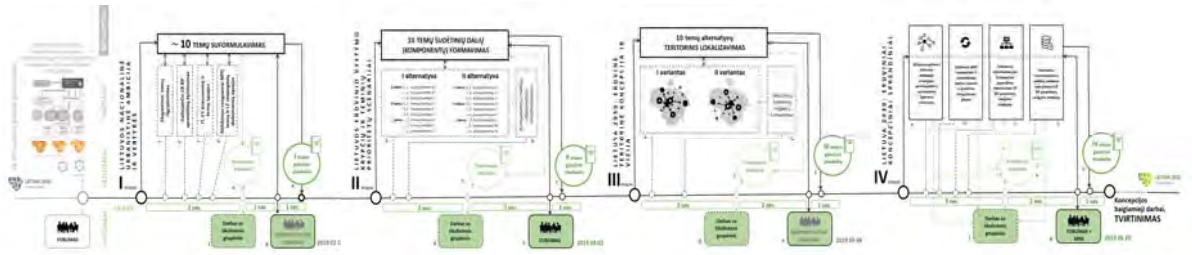


Figure 8 CPRL 2030 Process Map

The ongoing work on the conceptual development of the CSPRL (any segment of it) is organised in stages that contain the following pattern:

- Methodological tasks (a) are formulated, their scope and expected results are checked by the organiser of the plan (b);
- The team of experts is informed on individual or team-specific business and related tasks. Based on a schedule of activities, the work is performed by and *in cloud-based* principle using a variety of technological solutions remotely and/or in the format of thematic creative workshops among the experts (c). Thus, the ongoing discussion between the organisers, the compatibility between the specific elements of the project and a sense of authorship and community is ensured.
- The intermediate progress and outcomes are communicated to the organiser of the plan (d).
- The organiser of the plan, together with the expert team, ensures that the results (e) are presented to the government representatives (deputy ministers, interinstitutional meetings), cross-sectoral discussions (creative workshops with experts from different fields are organised to discuss interim results) (f), expert society and the public (open forums / conferences, 9 forums during preparation period (g) are planned).
- The obtained outcomes are carefully documented, ensuring that the result of all discussions as well as new insights are integrated accordingly into the final interim report(h).
- The process diagram depicting the generation of an intermediate outcome is depicted in the Figure 9.

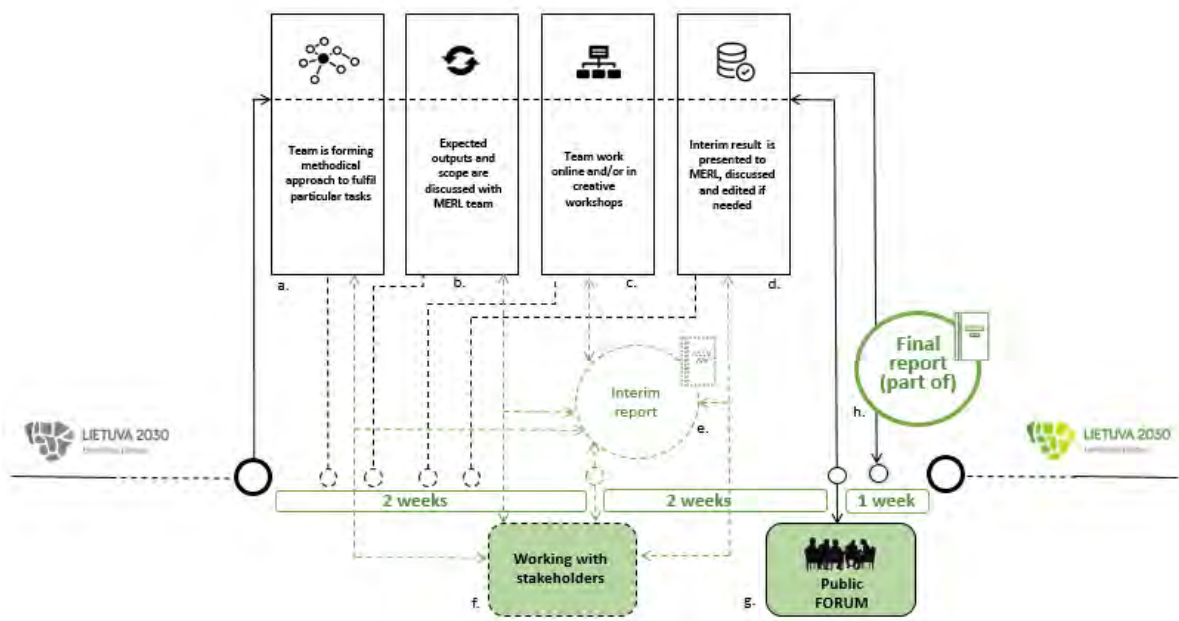


Figure 9 Intermediate outcome - process diagram

Encountering the benefits as well as challenges in the process of CSPRL development

Along with the new approach towards the spatial development and importance of the CSPRL in the overall agenda of Lithuania's strategic goals and decision-making processes, a number of common and specific challenges as well as benefits were encountered by the expert team, in charge of the plan development:

- Organisation of the CSPRL development – new groups of experts are involved in each stage of the CSPRL development, making it challenging to ensure continuity and consistency of the overall development format.
- The development process requires adequate allocation of time linked to specific tasks. The development intensity and the overall frequency of the events in the relatively short total development period creates a conflict between different priorities at the peak times, in which case the quality of the focus on the contents often suffers.
- Integration of the new development methodologies – great focus is being placed on the clarification of the planning methodologies, in some cases placing the experience and competence of the local expert team in a disadvantaged position.
- Application of the new stakeholder and public engagement methods – great focus is placed on the process, publicity and the integration of public opinion.
- Application of new tools and formats, including indicators, interactive platform and Public Forums are beneficiary and enriching to the overall process and outcomes.

Summary and Conclusions

Shaping the national spatial development direction is a demanding and challenging task. The conceptual development phase of the CSPRL is nearing the finish line and the present transdisciplinary expert team has entered the end-phase of the task completion and the finalisation of the outcomes accomplished to date. However, the next stages of the CSPRL development will continue until the year 2020. The new CSPRL will unfold its impact and effectiveness in the years 2020-2050 guiding the overall spatial development dynamics of Lithuania and serving local municipalities and authorities as well as sectoral strategies by outlining and allocating clear principles and development objectives.

The process of the past two years, since the onset of the CSPRL development has been a transformative experience on multiple levels:

- The degree of vertical (between different levels of governing bodies and administration) and horizontal (among experts from different disciplines, academic community and the wider public) integration, understanding and communication has grown consistently throughout the process, allowing the quality and the effectiveness of the debates to mature and progress; This is an important achievement, considering that the democratic planning culture in Lithuania is relatively young.
- The extent to which the general awareness and acceptance of the need for spatial planning is increasing, exposing a generally growing interest in this topic.
- The capacity to work in an integrative, open and discursive environment is developing and increasing continuously, shifting from the sectoral-silo mentality and exposing more and more interest and willingness for a synergetic, discursive and interconnected generation of outcomes.
- Different levels of national governance and local administration continue to narrow down the existing gap between the national strategic planning and local capacity to implement comprehensively managed local plans through the increasing levels of transparent, inclusive and productive communication and consultation.

This reflection upon the experience gathered in the process and context of CSPRL development to date captures a fragment of time, that encapsulates only a relatively short phase of the overall expected 'lifespan' of this significant undertaking and document. The promising implications and effects will expose and prove their transformational potential in the years to come. The outlook however, is encouraging!

Acknowledgements

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Brex City: Current and Future Urbanities of the United Kingdom/Republic of Ireland Border

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Abstract: The political crisis produced by the UK's June 2016 referendum decision to leave the European Union, 'Brexit', has brought focus on the UK/Republic of Ireland (RoI) border as a microcosm of the renegotiation of the territorial relationship between the EU and UK. The location of the UK/RoI border results from the internationalisation of former county boundaries. Its status reflects shifts in connectivity across a border created from within what was historically a single territory. Settlement around this border reveals spatial utilisation, type, and patterns that are particular to this place. A dispersed urbanism has emerged, actively embodying difference; between legal structures, tax regulations, building and urban codes, currency fluctuations and cultural values, united by freedom of movement. Building types, settlements and localities where access and egress is only possible by passing through another state reflect a relationship with the border that objectively embodies the lived reality of territorial difference. Through a process of critically reviewing the current border condition, identifying latencies and potentialities through enquiry by design, this paper proposes possible futures for this place. Brex City is a unique urbanism embodying a range of possible futures, mirroring the challenges, absolutes, ambiguities, paradoxes and tensions established by Brexit.

Keywords: Brexit; Borders; Frictionless/Seamless; Urbanism

Introduction: Data Mapping the UK/RoI border

One unintended outcome of the 23 June 2016 EU Referendum vote was to place the status of the UK-Republic of Ireland (RoI) border into sharp focus. In the situation of the UK leaving the EU, this border, historically existing as a set of county boundaries before its formalisation with the creation of the Republic of Ireland and the UK province of Northern Ireland, will become the only international land border between the UK, now a third state, and the EU, massively increasing its international importance and status.

The complexity and interconnectedness across this border reflect its historical origins and the reality of the border region acting as an interconnected whole. The historic interdependencies across the border line have been interrupted by periods of military hardening as seen during the establishment of the Irish Republic and the Troubles 1968-98. Since the 1998 Good Friday Agreement the border has reverted to an entirely porous boundary, barely noticeable when it is crossed.

The complexity of the border is often discussed in abstract through news reportage and the border has been mentioned by the UK media on an almost daily basis since the referendum result, but detailed understanding of its spatiality and use is elusive, partly the result of this single place being split between two states. This raises questions around how the border actually operated, how it has informed

communities on either side of it and what is the operational and societal spatiality of the border as seen in Figures 1 and 2.



Figure 1: The Gates of the United Kingdom, near Crossmaglen, looking into the UK from the Republic of Ireland 2018 (photo author's own)



Figure 2: Gateway to the European Union, Killea, looking from the UK into the Republic of Ireland 2018 (photo author's own)

The Data Mapping Method and Research Through Design

This research has two primary goals:

1. To use data mapping as a methodological approach to explore, identify and reveal crosscutting insights into the operation and performance of space and place in the UK-RoI border and its wider regions.

2. To use the findings of these spatial explorations to explore novel approaches to design which tackle multi-dimensional problems in relation to services, physical and invisible infrastructure, and the role of built form.

This work originates from a starting point that considers the UK-RoI border as a form of dispersed urban space, developing an exploration of new and emergent forms of contemporary urbanism undertaken by the Infrastructure Space Research Group at the Manchester School of Architecture since 2015.

Initial desk-based analysis was followed up by immersive fieldwork. This analysis produced exploratory mappings that compare and give spatial context to publicly available, existing data sets to identify contemporary and historical patterns of occupation across the border region, and from this frame opportunities and challenges for the region. The analysis explored thematic approaches to physical and invisible networks and patterns of use and occupation.

With an overarching goal to understand the context and infrastructure that supports activity around and across the border, the study investigated four key themes within the context of the border:

- Health and Lifestyle
- Energy and Power
- Demographics and Economy
- Networks and Connectivity

This enabled patterns of use to be clearly represented, and through this process of representation to establish questions and gaps in knowledge within which further actions can be located.

Mapping Border Settlement

Preliminary data mapping and spatial analysis undertaken between September 2018-January 2019 mapped extant data from publicly available sources, including census and local authority data, against the UK/RoI border and its wider geography. This involved academic staff and postgraduate architecture students from Manchester School of Architecture working with a range of stakeholders and sources. The approach allows the cross-thematic referencing of data sets to give an overview of the border condition which provides initial insights into the way in which spaces along the border are populated, inhabited and occupied on a day-to-day basis. Desk work was tested and developed through extensive fieldwork undertaken October-November 2018 that followed the full length of the 499 km border from Muff in the Northwest to Warren Point in the Southeast and also included a number of N-S and E-W transects through key areas of the border to understand them in more detail, including Derry/Londonderry-Muff, Lifford-Strabane, Armagh-Monaghan and the A1-N1 corridor between Newry-Dundalk. This work has provided a basis for the development of spatial (architectural and urban) proposals which serve as exploratory tools to evaluate the socio-spatial effectiveness of technological and policy mechanisms that have so far arisen from the Brexit negotiations. The process of spatialisation

and visualisation is key to accessible and meaningful communication to a wide range of audiences, to support a better understanding of ‘place’. This work builds on previous data mapping studies undertaken in the Highlands of Scotland and Cornwall in Southwest England between 2015-2018 (Jefferies, Coucill et al 2017). The Data Mapping method affords:

- the engagement of diverse audiences in place-specific data;
- the representation of place-specific, multi-level and cross-cutting spatial and socio-economic relationships;
- the recognition of new and emerging spatial conditions and characteristics.

The preliminary research project exposed many questions about the effect of the border, the spatial integration of technologies and their social and community implications, raising further questions in terms of understanding the effects of potential changes in border demarcation and operations. Evaluation of this data through architectural design methodology based cross-disciplinarily engaged workshops involving stakeholders and academics allowed the understanding of this place to be substantially advanced through the form of the critical design project.

Turning Latency into Opportunity: Research Through Design

A complex understanding of a place through data mapping enables the identification of latency within a situation. This may be the result of types of either realised or potential surplus or the result of two or more factors creating synergies. The examples of proposals discussed below demonstrate that through a focus on maximising the potential of place physical and systemic infrastructural solutions can act as drivers for creating inhabitable and beneficial places that are measurably good. We recognise that technological obsolescence is faster than cultural change, and that society’s view of what is good or bad built form also shifts over time. Consequently, new infrastructures that support the development of culture must be able to both accept redundancy as an inevitable part of their lifecycle, and embody the potential to support culture as future heritage components and spaces in often radically redefined contexts.

The purpose of research through design is to critically test and extend ideas and situations that are identified through the initial Data Mapping phase of the work. The outcome of this are proposals that can be used as mechanisms to explore potential futures of the region and ask questions of current decisions, processes and spatial operational models.

A number of key themes emerged from the data mapping phase, ranging in scope from tightly defined built or policy based proposals, through to significant and potentially radical co-created geopolitical changes, all framed by the reality of Brexit.

- Built infrastructure interventions
- Harmonised cross-border activities
- New spatial, territorial and temporal entities

Built Infrastructure Interventions: Designing the Frictionless Border

Upon completion of the Data Mapping phase of the work, between December 2018-June 2019 design proposals that developed infrastructural approaches to the Border were developed. These were partially triggered from the findings that certain key infrastructures were missing, raising questions about what should be in place. These included a limited rail network, incomplete motorway network, no domestic gas supply network, patchy digital communication coverage and service delivery models that engaged with cross border cooperation on a sector by sector basis. It became apparent that an approach to infrastructure that both acknowledged the border and sought technological advantage would potentially be productive. It was also clear that the costs of developing coherent infrastructural approaches to the Island of Ireland either required significant politically driven prioritisation or a longer-term perspective to justify the cost of implementation.

The Consolidated Solution and Customs Fulfilment Centre. The discussions around the ‘Irish Backstop’ have hinged on the possibility of developing a technological solution to frictionless cross border condition. The spatiality of what such a condition might entail has been left open but is currently seen as a technologically led solution. This is a flawed approach and ignores the necessary interplay between spatial scales and technological provision that could provide the basis for a frictionless border.

This proposal shown in Figure 3 envisages seamless and efficient cross-border logistics through a systematic arrangement of policies, procedures, workflow and technology, coupling architectural typology and scanning technology at both macro and micro scales through designed spatial and technological infrastructure. This design proposes a feasible and proveable alternative to the Irish Backstop proposal by the UK government, thus providing a potential spatio-technical solution to the Brexit conundrum.



Figure 3: Designing the Frictionless Border: The Consolidated Solution Customs Fulfilment Centre (Tan, J supervised by Jefferies, T and Morton, R)

The work was underpinned by an investigation of the present value, nature, demographics, volume and condition of cross-border trade and logistics. Existing customs policy, regulations, border procedures, import and export arrangements, infrastructure and technology adopted by the Republic of Ireland and the UK were analysed, with particular focus on third country trade conditions in preparation for post-Brexit scenario. Scenario-testing reviewed the Kent Resilience Forum Contingency Plan for Dover

Straits Ports as a precedent to anticipate potential disruption at the UK/RoI border. The in-depth understanding and findings informed the proposal of the All-Island Customs & Logistics Network, a series of key macro networks and strategically placed consolidation/distribution nodes that facilitate the possibility of a frictionless border condition for cross-border goods logistics. The macro spatial framework is developed around logistics demand, type and capacity, supported at micro level by buildings and facilities that are crucial to frictionless border operation through the typology of the Customs Fulfilment Centre (CFC).

This is the architectural component enabling the transition from macro to micro scales of the Consolidated Solution. CFCs provide a network of goods consolidation facilities central to future cross-border logistics on the Island of Ireland. The potential handling capacity of these CFCs are established by analysis of cross-border goods trade figures, thereby determining the infrastructural capacity and spatial requirements. This defines a typology that can be applied across the network of CFCs designed to embody scalability to different capacity (i.e. volume and type of goods and freight traffic).

Learning from the innovative retail distribution model of Amazon, the proposed establishment of a network of CFCs throughout the island streamlines customs logistic traffic through designated border crossings as well as distributing customs processes throughout the island. Legislative control of the border is expanded to these CFCs, which receive, check and inspect goods from regional traders. Goods are then consolidated and dispatched across the border via the designated crossings to fulfilment centres on the other side of the border, before being received by private traders to be distributed to the final destination. These CFCs are equivalent to a port for ground logistics and can be nationally or privately owned as representative of the relevant customs authorities just as all sea ports in UK are currently privately owned and operated.

Harmonised Cross-border Activities

The Border Farm. Agricultural production is a key activity of the Border Region. Figure 4 shows this design proposal that envisages a series of spatial interventions along the entire length of the UK-RoI border to form a 499 km long continuous farming region that can prosper irrespective of the hard or soft status of the border. This has material, historical and societal implications in how this situation is addressed at a settlement and architectural scale.



Figure 4: The Border Farm (Moloney, J supervised by Jefferies, T, Morton , R and Brook, B)

The Border Farm design is based on research conducted into identity and the value of agriculture in Northern Ireland and the Republic of Ireland. In a post-Brexit world where there would likely be calls for a form of physical border that is monitored, the new border interventions form a secure barrier, designed to contribute to the physical, social and cultural landscape. The formation of a Border Farm appeals to the common agricultural heritage between the nations either side of the border and the mutually shared identity of caring for the land. The proposal also forms an economic model for continued seamless trade in a post-Brexit landscape, reinforcing the agricultural jobs market and enhancement of the border regions social infrastructure and connecting to the wider landscape through the mechanism of the marketplace and distribution hub.

Tax Free Living. In the context of the U.K/Irish Border Condition and, by Extension, Brexit, What Does a Tax-Free Lifestyle Look like? Fieldwork identified dwellings that can only be accessed by crossing an international border, raising questions of the *raison d'être* for such buildings. What draws houses to be built directly onto the border and what are the benefits that could be developed from this particular situation?

The Tax-Free Living project strategically attempts to identify loopholes and exploit the two jurisdictional tax systems of the RoI and the UK across their border.

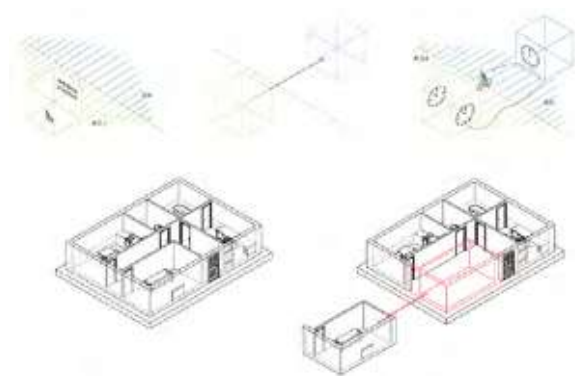


Figure 5: Built Strategies for Tax-Free Living, (Hykin, M supervised by Jefferies, T and Morton, R)

It asks the question, is it possible to construct the physical environment for a tax-free lifestyle as explored in Figure 5? Through the inspection of the spatiality of UK and Irish Tax laws, legislative definitions became design parameters. These designs offer architectural and urban typologies that side-steps tax liability definitions from each jurisdiction through exploiting the immediate border condition. The proposal builds on research of the secretive world of tax avoidance and proposes a strategy and theoretical framework to avoid tax liability.

The research identified definitions in tax legislation of both the U.K and Ireland to provide parameters for spatial design of these laws. This identifies loopholes and contextualises the development of new architectural typologies that build out tax avoidance in their realisation. This strategy exploits the two tax jurisdictions of the U.K and Ireland across an immediate border that sits between the two to test and explore the typologies that allow a tax-free lifestyle. An architectural taxonomy of tax avoidance emerges, one that defies the defining laws on tax, and enables lifestyles directly engaged with the border condition.

New Spatial, Territorial and Temporal Entities

Tibos: The Irish Border State. The departure of the UK from the EU, Brexit, has been recently postponed to October 2019. The issue of the UK-RoI border persists and raises questions, such as national identity, sovereignty, citizenship and migration. This project shown in Figure 6 seeks to redefine the notion of borders and propose an alternative solution to the Brexit stalemate, one that is neither 'Hard' nor 'Soft', but both.

Tibos is a new citizen-led sovereign and buffer state, that acts as a mediator following Brexit where current deals and agreements between the UK and the EU cease to exist and be valid. Tibos is formed by the declaration of independence of neglected and generally deprived villages and smaller settlements that are located alongside the border region, on either side of the border. This new state does not approach the border as a two-dimensional line a map, but as a complex and dynamic three-dimensional region. Each village located within the state's territory gains control of the border everything that moves through it. The project investigates what is required across the newly established territory to control and mediate all cross-country movements and flows. It embraces different levels of border control friction and proposes a situation where users have the freedom to decide the speed at which they travel through the new state, and most importantly the level of border control friction they would like to go through.

The journey from the UK to the RoI and vice versa, through Tibos, is used as a focal point. All objects, scenes, landscapes and components witnessed across this journey are compiled as spatial experiences across each village. These spatial interventions range in type, scale, timespan and level of friction, all creating a collective experience-led architectural language that belongs and is governed by its people. By challenging traditional notions of national identity where belonging derives from physical locality and proximity, the project explores and questions the meaning and existence of borders in an age of identity saturation, mass migration and large-scale political upheaval. Tibos demonstrates that to be citizens of virtual space, we need to understand our physical space, and particularly our frontiers, challenging pre-conceived norms of territorial division at political and social scales.

Throughout the 2 years of Brexit negotiations, the Irish border has been a key topic of concern and contention by all parties involved. The UK and therefore Northern Ireland's exit from the EU has severe social and economic implications, particularly in the event of a no-deal scenario triggering a hard border condition. Apart from contributing to the peace process within the region, current border conditions exemplify significant economic cooperations between UK and the Republic of Ireland, through strong supply chain activity and trade, particularly in the agri-food sector. Therefore, finding a solution to prevent a potential disruption to current frictionless cross-border trade, businesses and operations, is paramount.

However, so far, the UK government in negotiation with the EU has yet to arrive at a plausible solution. Proposals include the highly controversial 'Irish Backstop', as well as the customs partnership and maximum facilitation 'frictionless' proposals. However, none of these have fully addressed the demands of the border, especially in the event of a hard Brexit.

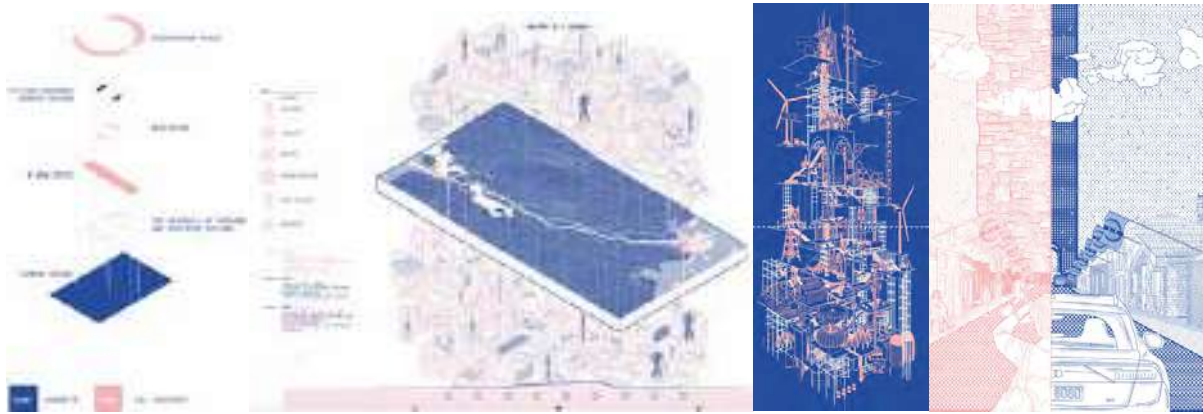


Figure 6: Tibos, The Irish Border State (Leonidou, A supervised by Jefferies, T, Morton , R and Brook, B)

Unity and the Archaeology of Sport. Northern Ireland's religious and political identities have affected migration, housing and education. Although religious segregation can be seen in sport too, certain sports such rugby union and association football are loved and enjoyed by both communities. The project shown in Figure 7 both surrounds and is at the heart of Belcoo (NI) and Blacklion (RoI), twin villages located across the Belcoo River. The design embodies sport and ancient structures common to the whole island of Ireland, preceding contemporary political structures, to directly mirror shared historical memories through the medium of the large-scale earthwork, a form that will outlast contemporary history, producing a future archaeology and urban shape that directly engages with the moment of Brexit.



Figure 7: The Future Archaeology of Sport, Belcoo (NI) and Black Lion (RoI) (Kipic, I supervised by Jefferies, T, Morton , R and Brook, B)

Conclusion

The initial process of data mapping, developed as a basis for testable design proposals has identified the reality of the UK-RoI border as a complex dispersed urban space. In some areas there are clear interdependencies between settlements across the border, with some places straddling the border itself. Muff, Lifford-Strabane, Pettigo, Belcoo-Black Lion, Belleek, Monaghan-Armagh, Jonesborough-Dromad, Newry-Dundalk. This reflects the historic settlement patterns that preceded the creation of the border and that have persisted despite changes to the border's status in the past century. It is also clear, from both data mapping and fieldwork, that economic and social activity freely engages with and

crosses the border to maximise the locational advantages of the extended border region and the status of the two adjoining states.

The mapping and fieldwork process identified significant gaps in infrastructural provision across and along the border, this includes infrastructures that have been removed as a result of policy decisions, e.g. railways and through direct removal e.g. bridges across the border demolished during the Troubles. These physical absences can be considered alongside gaps between data sets produced by governmental methods used to assess produce and capture data in the UK and RoI. This ability of the border to both create ellipsis as a form of space *and* data allows activity and settlement types to emerge that are unique and point towards potential modes of occupation that overtly engage with the quality of ‘borderness’ as a distinctive spatial and societal condition.

The Brexit vote and subsequent negotiations have established the basis to explore the many unintended consequences of the UK leaving the EU. Design research enables the development of testable proposals that engage with both the found condition and possible future trajectories of the UK-RoI border, triggered by the potential status shift of the relationship between the UK, Ireland and the EU. The changes across the border may be significant or imperceptible depending on the final outcome of the Brexit process. Proposals above range from concrete physical interventions to engaging with invisibles such as tax regimes between two neighbouring states. The proposals also establish the rationale for significant regional identities to be recognised as new territories with their own distinct identity, in the case of Tibos as a means of radically resolving the relationship between the EU and a third state. Proposal also exist and can be mapped through time, both in the near term and as future archaeology. Borders are recognised as being places themselves, rather than the edge of two adjoining territories.

The methods discussed above can be applied to numerous contexts, enabling complex locations to be understood both as factual entities and as new places of inhabitation and potential.

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Building urban futures through an exploratory project: how can innovative design approaches be used to regenerate urban planning routines?

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Abstract: Technological change and emerging social concerns signal the advent of new economic innovations and social inclusion challenges for cities, in addition to the transition to an ecological and smart society. These changes raise questions about urban planners' routines, which may need to be reviewed. They clearly call for a review of planning processes, especially in urban projects, in order to explore the potential of new paradigms. Some private and public companies have responded to this challenge, with convincing results, by developing tools based on innovative design theories. One of these methodological tools, Definition-Knowledge-Concept-Proposition (DKCP), was used to regenerate the range of planning options of an urban district in Montreal, Canada. Elected officials wanted to adopt a planning vision for the next 20 years. Some observations emerge from the use of the DKCP method: 1) the introduction of a necessary "deterritorialization" at the beginning of the process (failing this, spatial constraints act as cognitive fixations, limiting expansive thinking); 2) disciplinary decompartmentalization, in order to integrate a diverse range of knowledge and disciplines (engineering, health sciences, arts, agribusiness, etc.), to rethink the identity of projects and develop new routines among planners.

Keywords: Urban futures, routines, rule-based design, innovative design

Introduction: the necessary paradigm shift in urban planning as a design activity

In the coming years, most Western cities will face increasingly complex challenges related to the emergence of many social, environmental, economic and technological changes. In particular, this is reflected in a new view of traditional urban activities:

- In many cities, inequalities in access to housing become critical, which calls for a reinvention of urban density. Housing will be marked by flexibility and affordability, the search for a "enjoyable density", the reinvention of the family unit and nomadism. This transformation of housing may heighten tensions between permanent and temporary residents of neighborhoods, or create social, economic and even environmental disparities between central and peripheral neighborhoods;

- The world of work will face strong mutations: it will be influenced by an explosion of forms of work and workplaces, open innovation and the emergence of a community of innovations, robotics and experiential work. However, our cities are structured under a logic of daily home-work commuting and highly segregated activities. The redevelopment of activities in the city is also likely to create tensions between The reorganization of activities in the city may also create tensions between mobile, multi-purpose and urban youth compared to older, sedentary, off-centre youth who holds a single job that fully satisfies them;
- Leisure time faces the challenge of social inclusion and sustainability, while having to resist the pressure of algorithmic standardization. Entertainment will need to be redesigned to take into account the individualization of leisure, the bursting of “urban rhythms”, but without increasing inequalities. The frenzied development of digital and immersive technologies may lead to new experiences for which no organization (city, museum, theaters) is currently capable of hosting the content.
- Finally, the current environmental crisis (climate, local atmospheric pollution) requires cities to urgently reinvent their mobility system. Proximity could be redeployed by the desire for experiential mobility, the offshoring of all activities, mobile internet, ubiquity. The changes in the nature of the activities set out here should bring about new forms of mobility that are more flexible and experiential, but also less predictable.

Many cities are translating these challenges into policy statements that take the form of concrete utopias: the carbon-neutral city, the circular city, the smart city. In addition, cities must ensure that the necessary living conditions are in place to ensure the social integration of all populations, as well as economic prosperity.

These challenges and the complexity of implementing effective responses to them thus raises questions about the practices, tools, and methods of intervention in urban planning. They raise questions about traditional instruments, such as urban planning, zoning, financial tools and other policies, as to their ability to properly equip upstream public policies (Ascher, 2006). The practice of urban planning thus takes the form of a "rule-based design activity¹": it frames collective action to make it effective in a given context, according to rules that ensure predictability. However, it is less convincing as a way to guide change in the long run.

In recent years municipal organizations have tried some new practices or approaches to renew their processes and instruments. For example, in terms of processes, the City of Copenhagen has encouraged the networking of contributions by urban planners, citizens and designers. Its "Create Your City" project has helped shift the city planner's perspective towards the less technical and more humane aspects of planning (Munthe-Kaas, 2014). For example, on instruments, several North American and Canadian cities have formalized new urban planning tools and reworked the zoning with a form-based code to integrate the user experience (installation of benches and landscaping, display and other visual cues, etc.) (Duany and Talen, 2007). This enriched conception of rule-based urban design may propose new directions for the work of the town planners, but it remains, however, insufficient to reinforce the capacity of urban planners to innovate. It avoids revisiting the identity of design objects (what is

¹ According to this formulation, which draws on ideas proposed by Schön (1980, 1993) and Simon (1969), town planning constitutes a “design discipline”. The goal of urban planning and the work of the urban planner is to "conceive" of the right sequence of problem solving, exploration, informed decisions and experimentation to guide the organization of a geographic area in order to produce, in the long term, the greatest collective satisfaction.

a public square, urban density, or smart and sustainable mobility?) and, in its place, seeks to capitalize on and disseminate good practices.

In spite of the obvious interest of these developments, there remains a gap between the scale of contemporary challenges and the capacity of these tuned instruments of design - even those that are enriched - to respond appropriately. The urban planner still has difficulty reconciling the disparities that exist, for example, between an abundant supply of active and collective transport in urban centers and the outskirts of the city, areas where car ownership is essential.

To ensure that urban planning is fully able to respond to these challenges, we propose focusing on the practices, references and paradigms that structure the routines of urban planners. This concept of “routine” has been used in organizational theory to characterize activities and to think about a genealogy of productive models, associated learning dynamics and possible performance (Brem 2017, Coriat and Weinstein 1995, Nelson and Winter 1982). The interest of this work lies in being able to closely analyze professional practices in order to understand what makes innovation possible and to emphasize their framing effects.

One of the challenges is how an innovative design culture can take hold in municipal organizations. A first reading of the legal and educational framework suggests that this has not yet occurred in the practices of urban planners in Canada in general and in Quebec in particular. Legal and regulatory tools favor normative or prescriptive considerations and ignore the activity of design. On the professional development side, university urban planning programs focus on learning and applying a variety of regulatory audit tools. Except for a few exceptions (Scherrer *et al.*, 2017), there is no training in Québec in how to innovate, as there is in most architectural or design training programs.

However, such methods that make it possible to revisit the identity of routines can be found in private organizations that are facing rapidly changing technological or social contexts (Arnoux and Béjean, 2015, Potier, *et al.* 2015). To anticipate these changes and force adaptation, they intentionally introduce elements of rupture. For example, they will create new roles for the actors, explore new identities for objects, and enable the regeneration of tasks and jobs (Le Masson *et al.*, 2017). The transposition of these methods to the public sector is currently limited to a few organizations with specific missions (moving people in urban Paris (Amar and Michaud, 2009) or between urban areas with the French railway company (Laousse and Hooge, 2015)). However, by associating them with forward-looking methods (Durance 2010, Durance and Godet 2010), they could probably be applied in municipal organizations.

Given this increasingly complex context for cities, what would these future professional planners' routines look like? We hypothesize that an existing set of innovative routines developed in business companies could inspire public urban organizations. This set of innovative design routines is understood as four successive activities called DKCP (where "D" is a common definition of desired explorations, "K" is an assessment of known and unknown knowledge, "C" is the generation of concepts and "P" is their transformation in proposals or projects) (David and Scheffer, 2017, Hatchuel *et al.*, 2009, Le Masson *et al.*, 2011). Can this set of routines can be transposed into the urban public organization? If so, will the routines be identical or take other, specific forms?

These innovative design routines in private enterprise and their transposition to urban public organizations have been the subject of some research (Georg *et al.*, 2011; Croisel, 2014). These routines are yet far from being systematized. We intend to contribute to this discussion. First, we will propose the value of routines as a way to better understand the design activity in urban planning. We will then explain the usefulness of intervention research as a methodology for framing the necessary scientific approach in urban planning when exploring the unknown. Third, we will present a specific case of experimentation that took place in a Montreal organization. Finally, we

will present a sketch of a set of routines in the four phases (D-K-C-P). We will conclude by specifying the usefulness of these steps to the future of the practice of town planning.

1. Professional routines at the service of creativity

Let us return to this notion of a professional routine. In our opinion, it possesses indispensable virtues for the members of organizations, both private and public, who wish to implement responses to social and technological change. It is also useful for understanding the work of urban planners. In particular, we will present a theoretical model that proposes moving from the current paradigm to an innovative design paradigm, thereby revising the identity of the routines.

1.1 Professional routines to formalize organizational learning

In general, the notion of a routine refers to its comforting dimension: a series of habits which, repeated daily, structure the life of each and every one of us, as is the case in our daily travel to and from the workplace. In organizations, individual habits are transposed into routines that formalize behaviors shared by colleagues, forging standardized behaviors (Hodgson, 2008). The most effective of these behaviors eventually become rules to be followed by all. The word “routine” also refers to the repetitiveness, disenchantment and lack of surprise in day-to-day life. This can even become enslavement and alienation from individual desires (Juan, 2015) by preventing workers from trying out new tasks or services. Finally, “routine” may refer to favoring ready-made solutions that are not always adapted to the changing social or environmental context (Knudsen, 2008).

Routines can also be something positive. The most ordinary gestures and processes are easily transmitted within an organization. A new employee will quickly be able to rely on these skills, methods and tools shared by public or private companies to quickly carry out their tasks. Nelson and Winter (1982) pointed to the particular evolutionary context of organizations, in which they must constantly take into account social and technological changes. How these organizations respond becomes part of their particular identity, a formula of codified language that defines the organization’s personality. It is compared to the role played by genes for human, in that the manner of formulating this response determines the behavior of the firm’s employees. The strength of an organization then becomes its ability to continually adapt and regenerate its routines to threats that could undermine the organization. It must learn from the inside, letting its employees question the methods, tools and processes so that they can be constantly improved.

1.2 Turning Design Routines into Innovative Design Routines in Municipal Planning

Thus, one should not see professional routines as ways to freeze an organization in an immutable space-time. Routines adapt and evolve in response to the new tools, methods or processes that employees adopt (Coriat and Weinstein, 1995). They also help support a learning dynamic within organizations by empowering employees, allowing them to see problems from different angles that otherwise might not have emerged (Miner *et al.*, 2008). At the same time, in large public organizations such as cities, routines can create path dependencies (Teece *et al.*, 1997). Routines optimize past structures rather than favoring disruption and demanding changes in how they are implemented. Conversely, Labatut *et al.* (2012) have shown that the techniques and methods used can produce unsuspected generative effects that completely change the practices of organizations and produce a new range of actors. The effects of innovations are not only felt on the objects themselves, but also on those who produce them.

It is our opinion that the above discussion of professional routines highlights the particular challenges faced by urban planners’ practices in municipal organizations. On the one hand, the empowerment dimension of urban planners highlights the rigor with which they use their various instruments to solve the problems presented to them, without being given the time or the opportunity to question the ins and outs. On the other hand, the dimension

of path dependencies is illustrated by planners' reflex to reproduce in new projects or approaches what may have worked well in the past, without enriching it in any particular way. The long lives of public administrations and the sequence established to avoid displeasing one or another of the stakeholders, which applies to the two previous dimensions, makes it difficult to effect a change in direction once a process has started. However, to obtain the disruptive effects of innovation, it becomes useful to place planners from the outset in a position to generate unsuspected effects.

1.3 Exploring an original model for conceptualizing urban planners' routines

Thus, it is also necessary to question the professional identity of urban planners by having them ask themselves how to regenerate regulated routines (professional routines that support their work, new ways of conceiving and doing, their repertoire of knowledge and tacit actions, the ability to act and learn). Rampa *et al.* (2017) formulated another set of criteria in a study conducted in a public administration (an energy producer and supplier in Québec): the ability to identify the missing knowledge in the dominant design of an object; the ability to produce knowledge expansions that enhance the initial functions of the dominant design; and enthusiasm and excitement about the creative process.

To characterize the design regimes of municipal organizations and their attempts at enrichment, we propose an original model of analysis. The model (as seen in Figure 1 and detailed in Table 1) combines the relation to the objects under design and the type of professional routines:

Figure 1

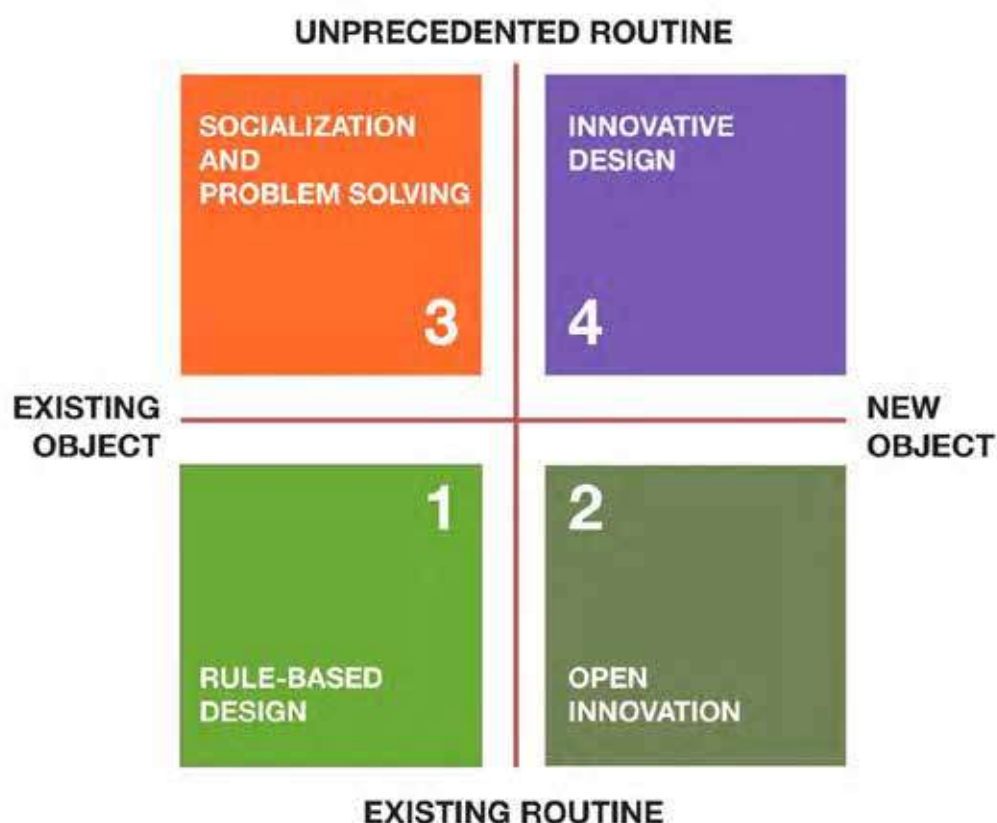


Table 1

	Combination	Description	Benefits	Limits
Quadrant 1	Existing routine, existing object	Includes the well-known, traditional practices of urban planners, strongly marked by detailed knowledge of objects and past learning, but also by tools from the regulatory, legal or legislative framework, budgets, and best practices.	Makes it possible to ensure consistency and common identity in the profession	There is a danger of not being up to the challenges that will arise. The possibility of limiting ourselves to path dependencies is also present.
Quadrant 2	Existing routine, new object	Consisting of open innovation practices. This is often carried out by a consultant who has a method that is applied consistently, regardless of the context. Standardized activities (architectural or design competitions) to encourage urban innovation, for example in eco-neighborhood projects (Susse <i>et al.</i> , 2011), also belong in this category. In France, the exploration study agreement is an excellent example of enriching the traditional call for tenders. However, these approaches do not allow the municipal organizations to learn about the innovation process, since they rely on the invisible routines of others (those who compete).	Makes it possible to recognize a quick contribution of new knowledge.	Learning ability may be low. The municipal organization may also be able to steer the content. Finally, there is a danger of the “black box” effect, i.e. participants only share part of their content.
Quadrant 3	Unprecedented routine, existing object	Creative tools to play with the (re)organization of forms, activities, actors. Typically, these are knowledge-sharing activities (Lehman, <i>et al.</i> , 2015),	This is an enriched public participation formula. It encourages better contributions from	Generally proposes an original reorganization of the existing routine, but one that is

		that foster new routines such as hackathons or brainstorming. On the other hand, these positions remain in the existing paradigm. They favor the sharing of existing ideas, without raising questions about their foundations (Agogu�� <i>et al.</i> , 2014).	everyone in involved in the thinking process.	thought about and discussed under the same parameters.
Quadrant 4	Unprecedented routine, new object	Composed of tools or methods to facilitate the process of disruption in the design of urban referents, to call into question the identities of objects or actors. The challenge lies in whether these innovative ideas can be reintroduced in projects. Examples of these kinds of products are more common in private companies (Arnoux <i>et al.</i> , 2015) and parastatal organizations in France (Hooge, <i>et al.</i> , 2018).	Opportunity to identify new spaces of values, new actors and the resulting practices.	May be very creative, but this approach can neglect the important task of returning to transform the current organization. One can also stay too close to the design brief frame and limit the expansion of knowledge.

Currently, urban planning routines are essentially confined to the first quadrant of the diagram, with some attempts to move to quadrant 2 and 3 to enrich them. On the other hand, what is learned remains the property of the designers, and the participants remain confined to their usual practices. However, it is only in the fourth quadrant that the planner can truly attribute new identities to objects, which will eventually condition creative professional routines (Le Masson *et al.*, 2017). The fourth quadrant therefore represents a new space which deserves to focus on it. Our hypothesis is that this innovative design routine can be generated by a set of four phases and their interrelationships.

2. Methodological relevance of the intervention study and its DKCP formalization tool

To illustrate this model, we will now present a real case that took place in Montreal. This section presents the method used to make innovation take root in a municipal organization.

Our proposal to generate unprecedented routines for urban planners requires the identification of new forms of reasoning, to describe and explain new realities (new routines, new urban objects, and the relationships that are established between them). Since we are in the field of manufacturing the city of the future, these new reasonings must be based on observations of real situations.

In this context, the data must be produced within organizations with real urban problems. This requires strong and consistent investigative methods that position the researcher in a position of listening to practitioners. For all these reasons, we believe that methodologies inspired by action research and its derivatives, particularly research-intervention or research-experimentation, deserve our full attention.

2.1 Intervention research as a mode of knowledge production

Two points of similarity between the approaches used in action research and in intervention research may be summed up by the fact that the search for solutions and the validation of these solutions by the actors constitute mutually supportive and self-sustaining operations. Although action research and intervention research both come from "field" analysis, intervention research is unique in that it establishes a space for collaboration between actors and a researcher who jointly seek solutions that will allow them to both contextualize the problem, but also test possible solutions with the actors (David, 2002).

On the other hand, intervention research is not only about producing knowledge for potential action, it is also about producing knowledge through action (Hatchuel, 2000). Like action research, actors adopt a variety of strategies designed to produce consequences, each of which is weighed and analyzed. On the other hand, from this perspective and more specifically than in action research, intervention research implies the involvement of the researcher-intervenor in the production of the action. This is not only intended to guide the reflections of stakeholders, but also to have stakeholders actively involved in the process of defining this (collective) action.

Intervention research is therefore not compatible with observing participants detached from stakeholder analysis in action. The "laboratory" model - in which the actions of the participants are scrutinized - gives way to a field study in which it is possible to interact with real actors defending legitimate personal or collective issues (David and Hatchuel, 2014). The researcher-intervenor will need to respond to stakeholders' questions. The answers can and will have to take into account the particular context experienced by these stakeholders.

2.2 Mobilization of a tool for an innovative design process: DKCP

To clarify the nature of these innovative design routines, we took this model as our hypothesis. To identify the richness of this disruptivity, we used a methodological tool inspired by the theory of innovative design (Hatchuel and Weil, 2003). This tool, called "DKCP" (Amar and Michaud 2009, Hatchuel *et al.*, 2009), therefore favors the formalization of creative ideas in response to a particular problem formulated in neutral terms. The tool takes its name from the four main phases of its reasoning (Abramovici *et al.*, 2016):

1. A definition and initial framing of possible innovation fields (phase D);
2. A pooling of knowledge useful for reflection, with important work to identify out-of-the-box knowledge (phase K)
3. An expansion of the knowledge, translated into new concepts with high disruptive potential (phase C);
4. The translation of these disruptive scenarios into concrete projects (phase P).

This reasoning relies on the formulation of stimulating briefs². By adding new attributes, drawn from a knowledge disjunction, it is possible to partition this brief, thereby opening new avenues of exploration from a bold (re)

² A brief is a bold formulation of a problem, an original description of a way to solve it. At first glance, it does not have a logical status (Hatchuel and Weil, 2002), so it is considered *prima facie* neither true nor false. An example

formulation of the problem (imagine, for example a retractable public square rather than simply a comfortable public square) (Le Masson *et al.*, 2010). The process of expanding knowledge and concepts leads, after a few steps, to the creation of a tree of new functions, uses and designs, unexpectedly leading to one or more unprecedented prototypes.

3. Results: An application of DKCP to the Montréal territory

The first experiment conducted with the DKCP method was carried out in the *Rosemont-La Petite-Patrie* Borough, one of the 19 boroughs of Montréal³. This municipal organization asked the team at “Lab Ville prospective” to initiate a reflection to develop original approaches to land use planning (Abrassart *et al.*, 2018). The borough expressed its initial vision in the following terms: “Live, Work and Play within Walking Distance in 2037” (more simply called P37). It was aware that, in the next twenty years, it will be strongly transformed by the many social, economic and technological changes mentioned at the beginning of this text. These changes will have an impact on the routines practiced by urban planners. It was therefore particularly stimulating to investigate these changes by thinking about the future. These changes could also generate new needs, inspire new lifestyles or generate a new form of governance, more responsive and forward-looking. This municipal entity wanted to better identify these developments, which will have consequences on its provision of services. The four DKCP phases were applied continuously over a period of about five months (as shown in Table 2).

Table 2

	Phase	Description	
Pre-project		Conducted by the Université de Montréal team in close collaboration with a "project team" made up of professionals and executives (half of whom came from the planning world).	Seminar ⁴
	D	This phase ended with the establishment of a schedule of exploration activities. Deliverables: a calendar of activities and a roadmap specifying the desired learning	
	K	This knowledge was produced by the University of Montreal team in close collaboration with three speakers. Their presentations focused on experiential mobility, the city and aging, as well as “third places” ⁵ . The	

of a brief: design a boat that flies. In appearance, a boat floats but does not fly. By applying principles specific to aviation, it was possible to design the hydrofoil (Agogué *et al.*, 2014)

³ Montréal, along the St. Lawrence River, is the second largest city in Canada in terms of population (3.4 million) and is a metropolitan area and an island (2 million inhabitants) composed of 16 cities, including Montréal (1.8 million inhabitants), itself divided into administrative units called "boroughs" whose size and area vary.

⁴ This seminar took the form of eight meetings spread over five months, with meetings every three weeks. It was punctuated with preparatory exercises for the discussions, creative exercises, conferences, and disruptive activities.

⁵ Oldenburg (1989) has proposed the concept of third places to identify those spaces that are neither places of work nor places of employment (cafes, bars, restaurants), where one goes for entertainment or to work. These places may, however, become new friendly spaces as found in all urban fabrics.

Pre-project and projects		<p>exploration of current trends and their extrapolation into the future allowed the team to imagine four evolution scenarios by variables, called in this case "evolution hypotheses". Each of these hypotheses was briefly described to the project team in order to transparently share the thinking behind the development of these so-called "evolution hypotheses". These trends have relied on identifying "non-knowledge" that would potentially be crucial to innovation.</p> <p>This phase concluded with the formulation of projector concepts (which can be understood as new spaces of values) or triggers (which prepare the design activity of the next phase).</p> <p>Deliverable: disruptive projector concepts</p>	
	C	<p>This phase began with the organization and holding of a prospective codesign workshop with borough stakeholders. The codesign workshop encouraged reflection on the transformations expected by the borough over the coming years in order to better address them.</p> <p>This phase ended with the formulation of a new prospective scenario, a narrative of fictitious characters in 2037 and the illustration of these scenarios by cartoonists.</p> <p>Deliverables: enriched scenarios and generative concepts rooted in the territory, and suggestions of possible action plans.</p>	
	P	<p>Some suggestions were made during the course of the codeign workshop. This pre-project stage would make it possible to propose a variety of projects that the Borough can propose in the coming years as a way to respond to the new issues identified at the outset.</p> <p>This phase produced a report outlining ten (10) possible paths to carry out the ideas generated.</p> <p>Deliverable: an action plan to transform the municipal organization</p>	

Four 2037 briefs were proposed to planners with the municipal organization and to various stakeholders. Among the various formulated projectors revisiting the initial problems of the district (live, work, entertain, proximity (250 m)), two foresight scenarios were particularly full of unknowns.

- Circular environments with positive energy:** This first scenario proposes dividing the borough into 26 sustainable living environments (or ecovillages) where citizens can engage in most of their activities: working, living, entertaining and shopping, and all within walking distance. These living environments generate "positive social energy" because the inhabitants would be encouraged to participate in the social life of the community through daily service. Two ways of living tend to collide. On the one hand, there is collaborative private housing (with grandparents, children, etc.) where one wants to stay in one's house for life. On the other hand, as access to housing has become expensive, "the micro-habitat" (as seen in Japan) becomes a solution for residents of 20

years in 2037. They live in intimate spaces small dimensions, basically intended for sleeping. They live their urban life out of their homes. In this scenario, people do several jobs in a day or a week and they participate through their productive "hobbies" in the production of goods and services: it is the era of multi-work-leisure. Entertainment is serious, residents want to become performing being, and games/competitions between communities are regularly organized. In addition, residents are invited to travel, staying in Rosemont, another village.

- **E-care zones with companion robots:** In this scenario, inhabitants live away from their "homes". During the day, they are separated from their loved ones because they work elsewhere, but with the help of the Internet of Things and companion robots, it is possible to provide support and care to loved ones remotely. The borough has set up 12 pilot "e-care zones" (screens, gardens equipped with the Internet of Things, "companion robots" that can be activated remotely, etc.) around places where their loved one are fragile or have less autonomy (schools, nursing homes). The habitat is individualized, digital (with home automation, controlled remotely) and the inhabitant can stay in this house, if possible, for life. To include all inhabitants in these accelerated technological changes, the borough has set up ongoing training for citizens ("robotic literacy") in public libraries. Permanent commercial entertainment dominates, and the robots are the good facilitators of "e-care" in public spaces. They are also companions who let inhabitants travel in their minds by telling them stories from around the world.

The participants were then invited to participate in a working group led by facilitators previously trained by the research team. Three activities were proposed to them:

- In the first exercise, participants were asked to present the elements of the scenario and comment on their interest (membership) or disinterest (dissent).
- The second exercise was aimed at enriching the triggering scenarios presented in the introduction. The participants were asked to imagine a logic of starting the scenario, through a day in the life of a family in 2037 (agenda, living experiences, work and entertainment).
- The last exercise, backcasting, was to develop possible strategies and routes for guiding between 2017 and 2037 the borough towards the desirable futures.

The approach was built by going in new directions, moving away from local or current problems. The proposals also ventured well beyond the confines of traditional planning tools. Ideas emerged for how to better integrate the activities of certain institutions into the urban fabric. In many respects, travel in the city was more understood as an activity unto itself, a source of fortuitous encounters, a constraint experienced with difficulty by citizens. Some concrete ideas were formulated:

- Recognize and value social involvement in living environments: most people contribute to their community by taking daily actions to help their fellow citizens. Inspired by the idea of the "Carbon Pass" and local currency proposals, this "Social Pass" draws on good actions taken by citizens in the neighborhood in terms of social and community investment. In exchange for good actions, points are accumulated, and could become marketable at the borough level since they contribute to its influence and to improving living conditions for the citizens. Value would be attributed to the points to motivate good actions.



- Consider the proliferation of "circular" third places; inspired by the concept of the circular economy as a principle of local economic development, circular third places could be developed to encourage the development of innovative entrepreneurial initiatives in every living environment (e.g. repair cafes, tool libraries, textile micro-enterprises and urban agriculture). Some of these circular economy activities could be grouped into third places of various sizes to allow for economies of scale and greater capacity for investment in specialized equipment (e.g. specialized Fab-Labs with 3D printing of spare parts, but also highly productive and sustainable urban farms). In addition, these third places registered in the urban area could be part of a network of specialized skills at the metropolitan level.
- Talk in terms of "movement in the city" and experiential mobility, rather than transport or displacement: following Amar (2010, 2015), the "speed-distance" paradigm, in which the journey between origin and destination is considered lost time, was discussed and criticized throughout the process. It was then picked up and supported by stakeholders during the codesign. The discussions often returned to the idea of promoting "time-substance", i.e. to take advantage of the fact that we are in movement in the city to fill our travel time with rich and varied moments of life (the pleasure of a walk, to meet with other people, to stop along a route to work or play). This idea recognizes the emergence of a population that seeks this connecting and experiential mobility, a form of everyday nomadism within the city. This drift is supported, even encouraged, by new technologies (and defines a way of thinking about "intelligent mobility"). This trend could bring vitality to the living environment (new passers-by creating surprises, an opening, meetings, bringing customers and users to the economic activities of communities). It could also cause tension in case of conflicts of use, a new form of NIMBY (e.g. ephemeral nomadic gatherings occur in a living environment at a late hour or on weekends).

4. Discussion: tackling future urban issues from the perspective of a set of routines

For the majority of municipal organizations, formulating creative ideas only focus on one step in the process, represented by phase "C". This is a much more complex activity. Innovative design in large organizations (the 4th quadrant of Figure 1) is more of a succession of phases that predispose planners to discovering a new set of routines. This new innovation process consists in turn of routines intertwined with each other, as represented by the DKCP steps. They must be well coordinated to avoid the pitfalls that would prevent discovery or cause participants to move into the other boxes too quickly.

The first routine is that of definition, "D". This is a necessary first step in order to fully understand the opportunities available and imagine new spinoffs. It was at this stage that the team of researchers met with borough planners to identify various paths for exploring ideas.

The second routine is that of knowledge, "K". Disciplinary decompartmentalization is used to bring a diversity of knowledge and disciplines (engineering, health sciences, arts, agribusiness, etc.) into the process in order to re-imagine the identity of the planners' routines. This routine is also about identifying where a particular municipal organization lacks knowledge. More specifically, it involves seeing how other knowledge can help reopen the pockets of knowledge that have been identified. It is in this sense that the concept of mobility has been re-imagined in terms of temporality (promote the notion of time-substance (choosing which mode of transport to choose for a displacement of a certain duration) rather than of time-distance (250 m) (Amar, 2010)). The notion of ubiquity (being two places at the same time) also opened up great possibilities. Finally we find in this routine "K", the need to involve non-experts and to imagine the future users of the city.

The third routine is a design activity, “C”. This is a delicate and complex step. The urban planners were both surprised by the formulations of these scenarios and somewhat confused - they did not imagine being able to formulate them with *such* originality. Projector concepts must be formulated in terms sufficiently open to allow for the expansion of knowledge, and use relevant approaches for communication: scenario writing, maps representation, illustration in comics. In the Montreal project, imagining the “e-care zone” was a completely disruptive new idea to urban planners and citizens (although several participants disagreed with the scenario). Projector concepts must also be described in understandable terms, failing which citizen participation will be ineffective. Moreover, the casting of the participants becomes a crucial question. The time required to complete a prospective territorial project requires participants setting aside their short-term expectations. So they must also be chosen according to their ability to “expand” the knowledge mobilized in the urban project, not only according to their representativeness.

These first three routines, D-K-C, also have a particular dimension specific to urban planning. Indeed, from the definition phase, there is a need to deterritorialize knowledge (Scherrer *et al.*, 2017). This does not suggest that we should ignore the spatial or technical constraints, but rather that we move away from them temporarily, to better explore the “field of breaks and possibilities” (Debarbieux, 2009, Klauser, 2012, Raffestin and Butler, 2012). Otherwise, when spatial constraints act as cognitive fixations (Hatchuel *et al.*, 2011), they limit expansive thinking. These ideas will later be recontextualized. In the case of the Rosemont project, this recontextualization step was an important step in the codesign project, but only occurred once the participants had responded to the initial scenarios.

The fourth step is therefore the routine of the propositions, “P”. This is possibly the most important, most underrated, forgotten and most complex step for urban planners. This is when we determine the actions to be taken and their sequence, in order to ensure that the most desirable scenario can be realized. This step of backcasting can, however, impede important changes that may occur along the way. In the Rosemont project, participants had a mandate to imagine a major and potential event in 10 years’ time that could require the reorientation of the scenario.

The last routine could be considered as a binding routine, since it turns out to be transversal to the process. It took the form of a seminar (several successive sessions, each time enhancing the knowledge generated earlier), during which the members of the project team built their own knowledge. They learned to let themselves get caught up in this search for the unknown, even if it raises doubts about the predictability of their methods. The fact of documenting this step, punctuated by disruptivity, in an iterative way, made them feel less destabilized.

Conclusion

Urban planning is a social science discipline in constant turmoil. This boiling point is driven by social and technological changes that now punctuate the activities of municipal organizations, and by the same token, those of their territorial planning teams. Municipal organizations and urban planning departments must therefore renew their methods and develop their organizational functions: will it be by the creation of municipal Innovation Labs ?

Since Weber, municipal organizations have often been encouraged to assimilate instruments and methods used in private companies into their processes (Lascoumes and Le Galès, 2004). This contributes to the interest in innovative design approaches used in the industry.

The example presented here is only an experiment established in a particular context. It has proven its usefulness in generating ideas that are at odds with the way urban planners approach urban planning. While the DKCP set of routines has proven its usefulness in regenerating urban planners’ practices, it has yet to demonstrate the real ability

of urban planners to implement each of the steps. Routines for defining innovation fields are an easy process to implement. Establishing a routine interested in new knowledge. On the other hand, it is difficult to formulate projector concepts and so much for the transformation of disruptive scenarios inspired by these projector concepts into concrete projects.

Any municipal organization, unlike private companies, must demonstrate public accountability for the time and resources invested in innovation activities. The difficulty of taking risks, the rigidity of organizations, the difficulty of controlling long time, are all obstacles that must be overcome. The most effective way to act would be for a municipal organization, through its urban planners in particular, to promote innovative design approaches. Project P37 is a first step.

We must now move on to the next step. And dare to implement disruptive processes. And to accept that these projects are invaluable sources of learning to prepare for current and future urban challenges. In this way, it would be possible to design the innovative design of tomorrow's urban planning.

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Adaptation. A metaphor for the age of climate change.

[1]

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Abstract: The following contribution aims to explore the projective qualities of the metaphor, with a specific focus on the organic metaphor, and its potential applications within the milieu of climate change. Firstly, the paper will concentrate on the understanding of the metaphor as a tool for the construction of referential images and imaginary projects, taking into consideration some of the projects that have been generated through this powerful, cognitive means. Secondly, analyzing the term *adaptation* and the whole of its spatial connotations, an investigation will be proposed, which will identify this very concept as the vector for the modification of cities and areas that are – or soon will be – facing the impact of current and prospective climate transformations.

Keywords: climate change, urban theory, anthropology, adaptation.

1 | The orienting potentiality of the image.

Over the course of his professional career, Franco Farinelli demonstrated that the construction of the map, far from being an objective gesture of graphic translation, always inherently implies a certain degree of representational bias, be it conscious or unconscious. (Farinelli, 1992). At the dawn of the modern age, the shift from celebrative cartographical models to denotative models, marked by the «the disappearance of the paradise of the map»[2], (Farinelli, 2009 p.22) inevitably corresponded to the epochal shift from an otherworldly legitimation of power to a system based on its worldly distribution (Cfr. Heidegger, 1927). «Grasping the analogy between the cartographic representation and the market, which is its very implementation, the natural form becomes value-form [...] In other words, space and money are all the same, in the sense that cartographic symbols and money function, the former in the map and the latter in the market, exactly in the same way [...] The organization of reality dovetails with its geographical manifestation, namely, cartography»[3]. (Farinelli, 2009, 28-28) This very shift, whether conscious or not, transforms the role of cartography, from celebrating the Earth as a metaphor of the divine power – that is embodied in the worldly power – to employing it as the site (and metaphor) of human power. Thus, the renowned philosophers of natural law postulated the existence of the Social contract – a concept that referred to the transposition of the primary source of power from God's will to the collective being. Michel Foucault, similarly to what Farinelli proposed in his definition of the map, describes how the first change is the economic-political change, which is then followed by the

justification. In other words, we can say that the descriptive metaphor is a product of the context and not vice versa. (Cfr. Foucault, 1961)

With regard to the field of urban planning, we might trace back this process to the very shift from the city of God – such as Plotinus' Platonopolis, More's Utopia, (Mumford, 1922, 45-61), and Campanella's City of the Sun – to the novel understanding of the town planner as a social physician, bearing in mind the notion of the corrective machine, introduced by Bentham's Panopticum and Haussman's *artiste démolisseur* (Cfr. Foucault, 1975). Together with the turn from an otherworldly to a worldly power attribution, the very focus of urban development shifted from the divine field to the earthly one.

Thus, this archetypally orienting value resides in an understanding of the image as an «act of territorialization, whereby it becomes possible to take up the definition of a relational system, connecting physical territory, built environment, and anthropic space»[4] (Guida, 2011); this had been previously described by Giuseppe Guida in his *Immaginare Città*, and, in turn, inspired by the work of Pasqui (2004) and Bruzzese (2001).

«The construction of images is, essentially, a cognitive act that unfolds according to a precise set of mental proceedings, apt to explore new areas of knowledge, by taking up a known context as the starting point of the map. In dealing with these overlapping interpretational layers, imagination can function as a complex and ambitious space, located in between rhetoric, poetry and speculation» [5] that is defining of the metaphor. (Guida, 2011). Thus, Guida understands the metaphorical structure of the image as an operation «in between the layer of scientific knowledge and that of a mere opinion», (*Ivi*, p.45) which aims at the alteration of a specific research as well as at the production of space and institutions. According to Guida, the act of generating the metaphorical image is at once interpretational and orientational. In other words, the image is able to give substance to a description not only via comprehension, but also through a dimensional quality of the productive thought. «According to what has been previously stated, when it comes to territorial sciences and urban planning, a figurative approach can facilitate a horizontal and vertical dialogue among the actors involved in the practices of planning, thereby structuring a *shared vision* that is necessary in order to describe and act upon complex realities»[6]. (*Ibidem*)

If this is the case, that is, if «description is to urban planning not only a sort of reconstruction of reality, but also a generative notion, implicitly introducing a projective stance»[7], (*Ivi*, p.46) we might be able to ask ourselves, with a certain degree of both malice and awareness, which metaphorical images can be orientational towards the desired projects and models. Specifically, we might wonder which class of images has the capacity to take over the very role of the *paradise of the map* – or of the leviathan – in guiding urban planners and citizens towards a pertinent collective response to the challenges posed by the contemporary tendencies in urban planning. Having said that, the critical question regarding the relationship between risk management and its actual concrete implementation, posited by Gilber White, Robert Kates, and Ian Burton in *Knowing better and losing even more*, remains unsolved (White et al., 2001). In their work – which was proved solid by the reiteration of their experiments in the following decade – it was argued that the progressive improvement of risk and emergency management techniques did not result in an increase in the number of cases where these very techniques could have been applied to tackle local issues.

Our essay is intended as an analysis of the relationship between risk-management techniques and the metaphors that are currently adopted in the field of urban planning, with specific interest paid to the management of the risks brought about by climate change. Moreover, it will question the actual efficacy of these metaphors as tools for the production of imaginary scenarios and local problem solving.

The main focus is put on *adaptation*, which here will be analyzed against the backdrop of the long

lasting tradition of organic metaphors it originates in, as well as within the context of its current potentiality to foster a transformative change in the approach towards the city – which is needed in tackling climate change.

2| Climate change and the city. A new organic metaphor.

With regard to his own definition of *hyperobjects* – entities that question the very notion of the object due to their ambiguous positioning within the fields of time and space – philosopher Timothy Morton [8] argues that climate change has rendered climate a substance rather than an accident. This is a tendency that permeates every aspect of contemporary life. Opposing it requires urban planners, politicians, and citizens to rethink their approach towards the city and the territory, as a response to extreme natural phenomena such as flooding and rising temperatures – be they temporary or permanent.[9] «This challenge will lead buildings, cities, and wider areas to shape our lives and our environmental footprint. Aside from the transition to clean energy, urban planning will play a critical role in facing the intertwined menaces. As a matter of fact, it will be impossible to provide a successful answer to climate change and to our energy challenge without a more sustainable form of urban planning» (Calthrope, 2009). Accordingly, the future of urban planning will reside in a global understanding of the urban territory, as well as in coming to terms with the consequences of its unprecedented growth and expansion. [fig. 1]



Figure 1 – Judy Natal, Future Perfect 2040, Solar Panel and Steam Portrait Woman With Helmet. Judy Natal is a contemporary artist who explores the future of the anthropocene between science, philosophy and climate change.

This essay will question, firstly, the efficacy of the organic metaphor of *adaptation* as a tool for fostering human agency within the context of «a world of planetary disasters, emerging pandemics, tectonic shifts, strange weather, oil-drenched seascapes, and the furtive, always-looming threat of extinction» (Thacker, 2018). Secondly, in a more pragmatic fashion, it will ask whether the notion of adaptation [10] is able to serve as useful conceptual framework for the study of the urban form, its morphological features, and its potential development.

3 | Some key points on organicism.

In the last two centuries of the brief history of urban planning, organic metaphors have provided a fundamental basis for theories and projects concerning the city and the territory. In parallel with the development of science and biology, we can observe that *organicism* [11] has progressively broadened its field of action. It first emerged as a discipline based on the sole quest for formal harmony, and then evolved to one focused on the imitation of the biological processes. Since the beginning of the 20th Century, it started to incorporate the models offered by machines, technological networks and social relationships.

It is possible to observe some trace of organicism as early as in the writings of Vitruvio and Alberti, (van Eck; 1997) wherein the notion of harmony was employed to draw comparisons between the human body and the shape of the Corinthian and Doric columns. This ideal was bound to change as a consequence of Galileo's scientific method as well as of the advent of natural sciences. In Piccinato's *La progettazione Urbanistica. La città come organismo*, an organic viewpoint was understood as necessary to both the explanation of the evolutionary patterns that led to the transformation of the medieval city, and to the grasping of their resemblance of an anthropomorphic organism, wherein brain, heart and muscles can be metaphorically discerned [12] (Piccinato; 1941). «In 1628 William Harvey explained how the human heart causes blood to circulate mechanically through arteries and veins. [...] A century later Harvey's discovery about the circulatory system became a model for urban planning; the French urbanist Christian Patte used the imagery of arteries and veins to invent the system of one-way streets we know today. Enlightenment planners imagined that if motion through the city became blocked at any major point, the collective body would be prone to a crisis of circulation like that an individual body suffers during a heart attack». (Sennet, 2018)

According to Benedikte Zitouni, since the beginning of the XIX Century, the School of Edinburgh developed an ecosystemic understanding of the urban dynamics, which was useful for the analysis of the historical evolution of the city, and best epitomized in the writings of Scottish sociologist and urbanist Patrick Geddes. In *Cities in evolution* (Geddes, 1915), observing the origination of the English cities following the industrial revolution, Geddes detected – with regard to their birth, development, expansion, and contraction – a precise correlation between the location of the residential areas and that of potential mining sites. An organic approach becomes further explicit in his infamous concept of the *valley section*, which – in reference to the relationship between plants, animals, and biotopes included in Von Humbolt's *Geographie des plantes equinoxiales* – pins down the strong link between the potential productivity of a specific territory and the process of settling. In *Garden Cities of Tomorrow*, Ebenezer Howard established that the foundational aspects of a city are one central node and the set of smaller satellite nodes connected to it, thereby proposing a model wherein the well-being of the citizens is granted by a close connection to the countryside, to avoid the congestion of the big city.

At the beginning of the 20th Century, the School of Chicago made a similar use of the organic metaphor. However, a new set of concepts was introduced, which also included the organic features embedded in machines and new technologies, and characterized the city as an indefinite entity, inherently devoid of

any physical and conceptual threshold. In this context, Frank Lloyd Wright's *Broadacre City* was able to bring this very mutability to the forefront. In support of the ideals of democracy and individual freedom, a *Jeffersonian grid* established a new set of spatial relations directly tailored on the individual, thereby assuming the organic metaphor as a fundamental interpretative framework – based on living in harmony with nature. In keeping with this no longer anthropomorphic perspective, it is worth to mention the *Inflation der Gross-Städte* (Gloeden, 1923), a model according to which an understanding of the city as a multicellular living organism is theorized. Its form is indefinite, and capable to comply with the whole of the urban necessities, by dint of a process of functional specialization of the individual cells, which is governed by the logics of production, habitation, and mobility. [fig. 2]

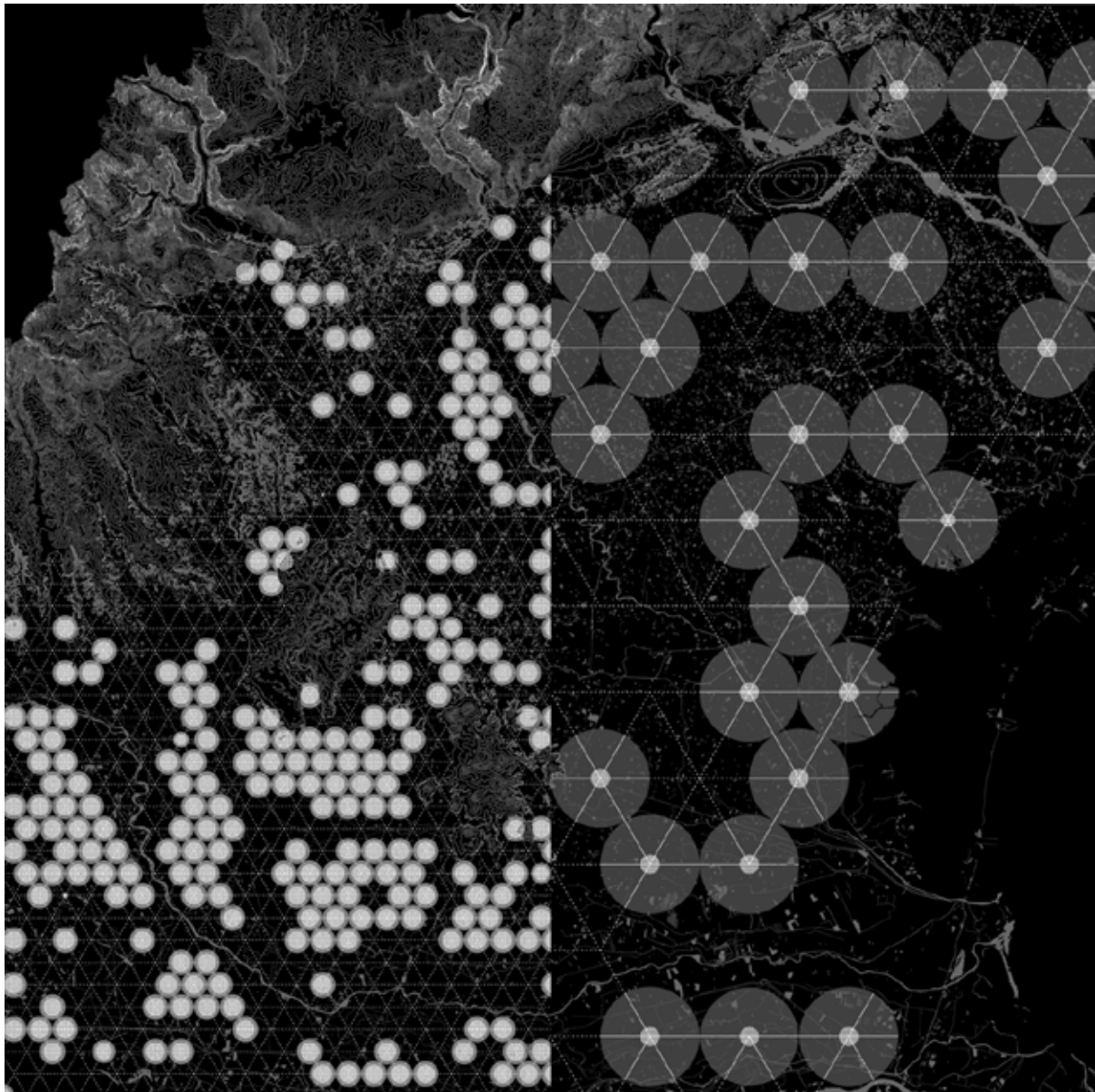


Figure 2 – The model proposed by Gloeden applied to the central Veneto area according to a principle of cellular duplication according to purely settlement parameters (left) and according to metabolic parameters (right). Author's processing.

In the same period, Le Corbusier fostered a shift in the interpretation of what had been generally described with the notion of organicism. In the context of his *machine à habiter*, we can observe that the machine, far from being biological per se, begins to be understood as such, insofar as its inner functioning reproduces the same dynamics as those of an organism [13].

In Japan, over the course of the 1960s, the aforementioned understanding of the machine as an organism morphs into an even more radical acceptance – which results into the project for the Tokyo bay [14], the Osaka Expo, and the *Nakagin Capsule tower* [15]. «Metabolism [16] [...] regards human society as a vital process – a continuous development from atom to nebula. The reason why we use such a biological word, the metabolism, is that we believe design and technology should be a denotation of human vitality». (Kurokawa, 1977) The result is a cyborg architecture, or capsule, wherein man, space and machines are all part of a unique organic entity.

Thus, the capsule becomes a tool for social differentiation, namely a shelter protecting the cell as the minimum unit in the potentially infinite process of growth of the Japanese city.

In the last decades, the theoretical discourse around the organic metaphor has evolved further and sharpened the focus on the social drivers underpinning the construction of space. This tendency is best epitomized in the project for MVRDV's *Almere Osterworld*, where it is implied that «both the passing of time and the new residents are (f)actors influencing the future design of the district» (Schilders, 2010). The metaphor here becomes the ideal support of a *bottom-up* approach, understood as the concrete manifestation of a natural process of self-organization, whereby spontaneous actions fuel the main vectors of the process of planning. Given the relevance the organic metaphor maintained in urban planning over the course of the last centuries, it is timely to reflect upon the potentialities of such powerful cognitive tool – in relation to the transformations brought about by climate change. A useful reading might be found in the words of Zitouni, who argued that «The city needs breadth of vision [...], there has been a need for sidetracking into biology or life sciences in order to describe intricate action patterns. The organic metaphor gives us a sense of what causality may be like in a complex urban system. Causality, then, is the way in which action travels inside a system or set of interactions». (Ivi)

4| Adaptation: a metaphor for urbanism in the age of climate change.

As previously stated, a set of terms borrowed from biology – such as *evolution*, *metabolism* and *resilience* [17] – has come to be, over course of the last two centuries, a source of inspiration for the development of organic metaphors in the field of urban planning. Specifically, with regard to the last decades, evolutionary biologists' notion of *adaptation* [18] has become a shared frame of reference for ecological thinkers (Morton, 2017), architects, and urban planners alike.

The employment of this very metaphor, which has been transposed from biology and ecology to urban planning, helped architects and urban planners to focus on new features – *anatomical* (shape, orientation, local specificities, fixed capital), *physiological* (flows, metabolism, territorial capital), and *behavioral* (modes of use, lifestyles, cultural capital). It further allowed for an analysis of society, environment, and urban territory, based on a continuously evolving system of interconnected implications. According to this interpretation, which sheds new light on the *modification theory* [19] developed in Italy over the course of the '90s, *adaptation* introduces a soft approach to planning, which is oriented towards progressive, continuous and non-traumatic transformations of the build space – whose effects can be measured in the long term. In radicalizing these concepts – in order to foster a pertinent response to the shifting environmental conditions – it might be useful to turn to the four variants of adaptation recently identified by French biologist and evolutionist Guillaume Lecointre: *préadaptation*, *exaptation*, *transaptation*, *adaptation* [20].

In the context of Lecointre's own distinction between primitive and derivative structures and functions, *préadaptation* and *exaptation* describe the process whereby the fully-evolved character of a specific function is repurposed into a new one (e.g. theropods' plumage, which was critical to their evolving into flying species, was originally meant to carry out a set of thermoregulatory functions). On the other hand, according to *transadaptation* and *adaptation*, the evolutionary process resides in the global function of a particular element, which can be identified as *anatomical*, *physiological*, or *behavioral*. [fig. 3]

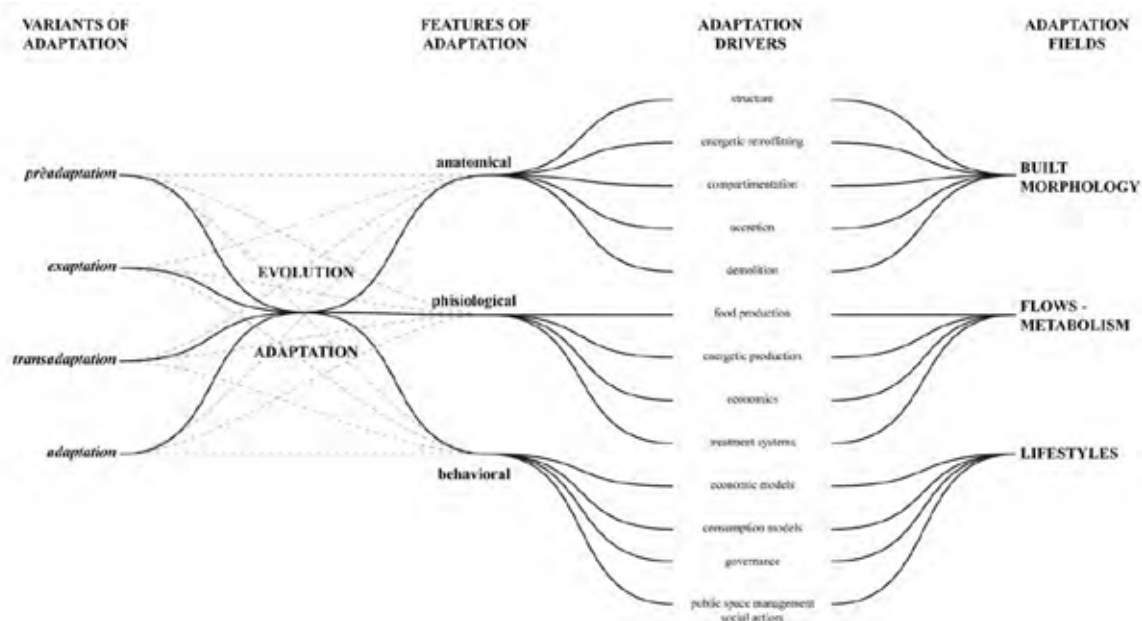


Figure 3 – Adaptation process diagram. Author's processing.

Hence, acting upon the variants of adaptation of the *anatomical* features of the territory – such as the building stock, the road system, the water distribution system, and the energy and technology networks – it is possible to build a set of evolutionary scenarios that simulate the potential progressive transformations of the fixed capital. For instance, adapting the construction stock in conformity with the consumption patterns (by dint of operations such as building compartmentation, infill, accretion, structural adjustment, volumetric extension, and energy *retrofitting*) allows for a sustainable implementation of the urban density, which does away with additional land consumption (*transadaptation–adaptation*). Another example might be the process of river adaptation (based on operations such as the transformation of the streambeds and the redesign of the riverbanks), which allows to acquire a new series of specialized sites for the controlled water infiltration in the soil, and, at the same time, to obtain – as a derivative function (*exaptation*) – a series of infrastructures that might couple the solution of hydraulic problems with the safeguarding of the environmental biodiversity as well as with the leisure related requirements of the communities.

Furthermore, the adaptation of the energy networks (via the redistribution of the systems of accumulation, the employment of *off-grid* systems, and so forth) allows for the progressive transition from a centralized system to one based on the distributed and decentralized generation of energy.

On the other hand, acting upon *physiological* features such as density, *mixité*, energy, water, and food, it becomes possible to revise the metabolic flows powering the city, as part of a process of optimization of the pre-existing peculiarities (*transadaptation – adaptation*), which is realized via operations of recycling and waste reduction – inspired by *circularity* as well as by a *systemic design*. (Berger 2009).

Finally, the adaptation of the *behavioral* features requires a gradual valorization of the territorial capital – which is understood as the totality of the socio-cultural and environmental skills of the citizens (Camagni 2009) – on the basis of the potential behavioral shifts in the context of an evolutionary scenario, wherein individual action can still be considered useful for global scale transformations.

It is this very process of adaptation, which lays the grounds for «a world where everyone designs», that prompts an understanding of the urban planner as a designer, who facilitates the ongoing process of social innovation by fostering new collaborative economies, everyday politics, and life projects that concretely change the world (Manzini 2015; 2018).

Given the wide range of the observational methods making use of the organic metaphor in the past century, it is not hard to imagine how *adaptation* can become a unifying force in the reconciliation of the different natures of the notion of the project, as well as in the definition of a fruitful combination of urban space and architectural possibilities.

However, despite the manifest potentiality of the concept of *adaptation*, it is equally important to keep in mind that this soft approach does not take into consideration the radical revolutionary processes that are necessarily required by the most pressing and catastrophic issues caused by climate change. If the role of the image as a territorial metaphor is that of acting descriptively not only in the process of understanding, but also in the prospective thinking concerning the production of space, it becomes necessary to investigate the limits and the opportunities of *adaptation*, when applied to the relation between climate change and built environment.

It becomes necessary – in observing the city and its development from an organic standpoint – to hermeneutically anticipate the effects of *adaptation* in all its spatial implications, thereby focusing on the modalities through which the adaptive model can productively affect the metabolic understanding of the city.

Assuming the efficacy of this metaphor in favoring the resilience of a given territory, we must fully understand the potential of its specific features (anatomical, physiological, behavioral) and of its biological variants of adaptation (*préadaptation*, *exaptation*, *transaptation*, *adaptation*). Doing so fosters concrete and useful developments, capable of both tackling short-term emergencies and building a robust set of long-term derivative structures. In other words, we need adaptation – and its variants – to lay the foundations for ambitious projects capable of nurturing an effective and meaningful evolution of the settlements.

Acknowledgments:

[1] Although this paper is a collaboration between three authors, whose content has been thoroughly discussed by all of them, the writing process has been distributed as follows: paragraph 1, was put into writing by Mattia Bertin, paragraph 2 and 3 were put into writing by Giacomo Magnabosco, paragraph 4 were put into writing by Lorenzo Fabian.

[2] «la scomparsa del paradiso dalle carte» (Farinelli, 2009).

[3] «Cogliendo l'analogia tra la rappresentazione cartografica e il mercato, che è la sua messa in opera: la forma naturale diventa forma di valore [...] In altre parole spazio e denaro sono la stessa cosa, nel senso che il simbolo cartografico e la moneta funzionano, il primo sulla mappa e la seconda nel mercato,

esattamente allo stesso modo [...] La gestione della realtà passa attraverso la sua espressione geografica, cioè cartografica» (Farinelli, 2009).

[4] «atto territorializzante attraverso il quali è possibile parlare esito di un processo e sistema relazionale fra ambiente fisico, ambiente costruito, ambiente antropico» (Guida, 2011).

[5] «La costruzione di immagini è, in sostanza, un atto cognitivo che avviene secondo definiti processi mentali che consentono di esplorare campi nuovi della conoscenza, utilizzando come mappa un campo già noto. Nella sintesi dei diversi livelli interpretativi può agire, quindi, l'immaginazione quale spazio complesso e ambizioso tra dimensione retorica, poetica e speculativa» (Guida, 2011).

[6] «Da quanto si è accennato in precedenza, relativamente alle scienze del territorio e all'urbanistica in particolare, l'approccio figurativo può, in sostanza, facilitare il dialogo orizzontale e verticale tra gli attori in gioco nei processi di pianificazione, strutturando una *visione comune* necessaria per la descrizione e l'azione in realtà complesse»

[7] «per l'urbanistica la descrizione non è solo una sorta di ricostruzione della realtà, ma una descrizione propedeutica all'azione, implicitamente progettuale»,

[8] With the term *hyperobject* Timothy Morton describes an entity that questions the very notion of the object due to its ambiguous positioning within the fields of time and space. The most dramatic example is our understanding of climate change, which forces us to acknowledge our own existence as part of a continuously endless chain of *hyperobjects*.

[9] Large-scale floods, local inundations, sea level rise, saltwater intrusion, heat waves, urban heat islands, anomalous storms, tornados, whirlwinds, and general hydrogeological instability.

[10] In his 1968 *The cultural present*, Yehudi Cohen describes adaptation as a process aimed at the fruitful alteration of a given habitat, which is primarily achieved via cultural means.

[11] Organicism is here understood as "[...] any of various theories that attribute to society or the universe as a whole an existence or characteristics analogous to those of a biological organism." Merriam-Webster online dictionary, "Organicism".

[12] Government and administration offices; Churches; production sites.

[13] The origins of the understanding of the machine as an organism can be traced back to the School of Chicago, as well as in Sullivan and his employment of new technologies in the field of architecture.

[14] In 1960 Kenzo Tange proposed a new physical order for the Tokyo bay, which would have to accommodate the progressive expansion of the city on the basis of an incremental infrastructure.

[15] The *Nakagin Capsule Tower* is a multifunctional building, designed by Japanese architect Kisho Kurokawa.

[16] Metabolism is a movement oriented towards both architecture and urbanism, which was founded in 1960 in Tokyo by architects Kiyonori Kikutake, Fumihiko Maki, Masato Otaka, Takashi Asada, and

by architecture critic Noburu Kawazoe. The group is deeply engaged with urban planning and urban development, in the context of the Japanese metropolis.

[17] *Evolution*, the term originally used by Darwin and Lamarck in the context of biological science, was later transposed to urban planning by Geddes and Mumford. *Metabolism* was introduced in urban planning by Wolman in order to describe «the metabolic needs of a city, in terms of the materials and goods needed to sustain dwellers in their everyday activities» (Wolman, 1965). The term *resilience*, which was born in the context of physics and materials science, is understood in ecology as «the measure of the perseverance of a given system, as well as its ability to absorb changes and disturbances, while still being able to maintain the same relations between population and state variants» (Hollin, 1973).

[18] Adaptation in biology is defined as the transformation of any anatomical, physiological, or behavioral character of a specific population, similar to both the process and the result of the evolution of an organic entity. (Cohen, 1968)

[19] With reference to Casabella's issue 488 and 489, published under the direction of Gregotti, and, specifically, to the contributions by Gregotti (1984) and Secchi (1984).

[20] Evolutionary biologist Guillaume Lecointre, in the light of his own distinction between primitive and derivative structures, and between primitive and derivative functions, recently put forward the definition of four potential variants of adaptation: préadaptation, exaptation, transaptation, and adaptation (Lecointre 2009).

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Questions of justice in hydrological extremes: advanced review

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Abstract: Current geographies of hydrological risk are rooted in deep inequalities. Every year more than 100 million people are stricken by hydrological extremes, which disproportionally affect low-income and marginalized groups. The severity and the frequency of floods and droughts have often increased as a result of climate and socio-economic changes. In addition to the impacts produced by the event, hydrological extremes also compromise the future of affected communities. The production and distribution of hydrological risk thus raises important questions of justice. Although critical studies have developed different conceptual tools to define and capture how power manifest through unjust water flows, there remains a gap in understanding how this power intersects with hydrosocial extremes and results in disproportionate experiences of drought and flood events. Drawing on different perspectives of justice, this paper reflects on what justice entails in the context of hydrological risk. It argues that understanding injustices in hydrological extremes requires unravelling the dynamics of risk emerging from the mutual shaping of hydrological extremes and society. Finally, the review stresses the need for an inter-disciplinary approach to holistically address the uneven production and distribution of hydrological risks.

Keywords: hydrological extremes, justice, water, vulnerabilities

Introduction: Hydrosocial extremes

Sustainable development of different societal groups hinges on its continuous interactions with risks and losses caused by severe floods or prolonged droughts (Fraser et al. 2017). Every year, these hydrological extremes affect more than 100 million people (Di Baldassarre et al. 2017a). The expansion of the human pressure on water resources, together with other anthropogenic changes, can increase the severity and frequency of hydrological extremes and in turn, affect the environmental and societal systems (Rockström, et al. 2014; Vorosmarty et al. 2013). As a result, in the Anthropocene, floods and droughts do not solely result from atmospheric and hydrological processes, but also continuously re-shaped and triggered by socio-economic processes. These continuous interactions between water and society render floods and droughts hydrosocial rather than solely hydrological extremes.

Socio-economic processes do not merely incubate environmental crises, but also magnify their uneven impacts. If on the one hand, they trigger hydrosocial extremes intensifying the magnitude and frequency of the hazard, on

the other socio-economic processes influence and exacerbate the vulnerability of the systems affected by the hazard (Verchick 2012). In light of this, hydrological risk is best described with the term hydro-social to fairly account for responsibilities and impacts in the production and distribution of floods and droughts risk. We thus define hydrosocial risk as the combination of the probability of occurrence of a hydrosocial extreme and the potential negative consequences it entails. The first component of risk reflects the flood or drought hazard and very much depends on the materiality of water and its continuous interactions with socio-natural systems. The second component instead, reveals the vulnerabilities of the systems exposed to the hazard.

Considering drought and floods hydrosocial extremes means recognizing that they occur within certain political spaces and result from prevailing power structures (Douglass et al. 2018). While water and society co-evolve, they produce uneven geographies of risk. And this co-evolution is marked with power, class, religion, gender and ethnicity (Zwarteveen et al. 2017). As Sanderson (2018) presents it, water flows unevenly, because humans and their social structures are also stratified and unequal. In turn, uneven water flows often result in uneven distribution of hydrosocial risks (Zwarteveen et al. 2017). Current geographies of hydrosocial risk are thus rooted in deep inequalities, which further exacerbate as water and society co-evolve (Fraser et al. 2017).

For this reason, floods and droughts solicit a claim for justice, for the way they unevenly materialize and distribute across nature and society (Douglass et al. 2018; Sultana 2018; Zwartveen et al. 2017). Driven by this call, this paper aims to create a better understanding of the injustices that produce or are produced by hydrosocial extremes. Although justice debates have long existed within environmental, water and climate studies, they have not entirely retraced the co-evolution of human-water systems, nor have they accounted for the complex facets and manifestations of hydrosocial risk in an integrated form.

This paper develops the concept of hydrosocial justice to capture its dimensions of inequalities and their relations to hydrological risk. Section 2 briefly reviews analyses of justice in relation to water and environment to elaborate on the different dimensions of hydrosocial justice. Section 3 integrates these definitions with an analysis of the relationship between power and vulnerability in hydrological extremes. Section 4 and 5 advocate for an inter-disciplinary approach, which makes allowance for the manifold factors producing hydrosocial injustices. By dialectically engaging socio-hydrology with critical studies, scholars could comprehensively explain the ways hydrosocial injustices are produced and truly experienced.

What Justice for hydrosocial extremes?

Concepts of justice, equity and fairness have a long history in academic debates. Yet it was only a few decades ago, when environmental and climate concerns started to raise scholarly and public attention, that justice debates interweaved also with water and environmental concerns (Lele et al. 2018).

Environmental justice for instance, provided a deep critique of the uneven distribution of costs and benefits of environmental degradation across different societal groups (Holifield 2001; Schlosberg 2013). More recently, global debates on climate mitigation and adaptation, have raised specific questions around climate justice, focusing on equity implications of climate change and its responses (Steele et al. 2015). While the water justice movement questioned how to fairly distribute water access rights and political water decision-making (Zwarteveen et al. 2014; Sultana 2018; Perreault 2014). Lately, disaster justice became concerned with how issues of socioecological justice follow moments of crisis, rupture, and displacement (Douglass et al. 2018; Williamson 2018). The injustice theorized by those scholars, manifests for instance, in the release of pollutants into a river affecting marginalized areas or in the over pumping of groundwater sources which mostly deprive less powerful water users. Injustice materializes as well in government resettlement plans that exacerbate floods' impacts mostly in resettled areas.

Whilst departing from different standpoints (climate, water, and the environment), this scholarship places much attention on distributional justice, which focuses on the outcomes of distribution mainly in economic and material terms (Schlosberg 2013; Perreault 2014; Zwarteven et al. 2017; Zwarteven et al. 2014). The procedural and recognition justice instead, emphasise the ways in which decisions are taken and who is involved (Zwarteven et al. 2014). These concepts have also been expanded to include intergenerational justice, which appeals with ideas of fairness and obligations among different generations (Weiss 1990). Moreover, understanding that distribution, procedure and recognition are necessary but not sufficient conditions, Schlosberg (2013) adds the dimension of capability to better understand and eventually achieve justice. When capabilities are opposed to idealized rights, justice becomes the actual possibility of an individual to fully function and maximize its potential (Schlosberg 2013). Lately, most of these scholars, emphasising the integrity of socio-natural systems, aim to expand the arena of struggle also to non-human species (Schlosberg 2013; Zwarteven et al. 2014; Strang 2016).

From the dimensions through which these scholarships dissect justice, it becomes clear how justice closely relates to questions of power and how analysis of power structure and power imbalances are essential for understanding injustices (Cook et al. 1986). These many dimensions of justice are all equally relevant and significant when it comes to justice in hydrosocial extremes. Overlooking these aspects would mean to ignore how certain disparities originate and manifest (Klinsky 2017). However, these wide-ranging characterizations of justice give little help to scholars, which seek to recognize the injustices entangled with hydrosocial extremes. Any claim for hydrosocial justice should make allowance for and understand how floods or droughts risk is produced and distributed across nature and society. Particularly, scholars should examine the two components of hydrosocial risk for understanding how hydrosocial extremes can become unjust.

Here, the evolving fields of the political ecology of water, human geography, hazard and vulnerabilities studies or disasters studies, are particularly relevant. These scholars have fundamentally retraced how power reshape the water regime and (unevenly) redistribute water flows. Similarly, they have also illustrated how such power generates differential vulnerability to floods and droughts. The following paragraph recasts major critical studies, with an attempt to describe and define injustices that produce, or are produced, by hydrological extremes.

Unravelling power and injustices in hydrosocial extremes

Injustice in hydrosocial extremes manifests in the disproportionate vulnerability to floods and droughts of certain social groups in relation to others. These inequalities (in risk and opportunity) are largely a function of the power relations operating in every society (Bankoff, 2003). The following paragraphs illustrate how hydrosocial injustices deeply relate with power when it materializes in uneven water flows or when it produces disproportionate vulnerabilities to hydrosocial extremes. This section finally recommend not to discount the materiality of the water systems, and look at the ways power intertwines in the production of extreme hydrological conditions and their uneven experiences.

About power that produces disproportionate vulnerabilities

‘Vulnerability’ (Adger 2006) is defined as the ‘state of susceptibility to harm, powerlessness, and marginality of both physical and social systems’ exposed to stresses (Adger 2006). Therefore, different vulnerabilities imply different hydrosocial risks and result in unequal experiences of hydrosocial extremes.

Vulnerability studies have often guided normative analysis of interventions necessary to reduce risk and subsequently enhance well-being (Adger 2006; Pelling 1999; O'Brien et al. 2004). The many methods and

epistemologies developed in vulnerability research (e.g. Entitlements studies, Human ecology, Natural hazard, Pressure and release model or Vulnerability, adaptation and resilience of social-ecological systems) reflect the divergent objectives of the research and the phenomena studied (Adger 2006). However, Adger (2006) identifies common features among the conceptual tools used for assessing vulnerability. He mentions among them, the resources available to cope with risk exposure or their distribution across space, and the institutions that facilitate the access to these resources and other coping strategies (Adger 2006). In particular, those studies describe vulnerability and its manifold manifestations, as the result of social and economic processes of marginalization and inequalities (O'Brien et al. 2004). Pelling (1999) has been exemplary in following these processes when studying the political ecology of Urban Guyana. There, he showed how the vulnerability to flood hazard, represented by the local conditions of coastal areas, was the result of the global political economy which influence the society-nature relations and therefore the experiences of hazard (Pelling 1999). The reduced access to economic assets, the inadequacy of infrastructure, and underdeveloped civil society for instance, they all contributed to expose Guyana's urban and peri-urban households to floods.

Critical geographers like Mustafa and Collins, use the hazardscape concept (Mustafa 2005; Collins 2010; Huber 2019) to further illustrate the way power through discourses and ideologies, influences vulnerability to hazard at multiple geographical scales. Mustafa (2005), in his work *The Production of an Urban Hazardscape in Pakistan*, unpacks the politics that shape the geography of hazard in the Lai floodplain, Pakistan. He analyses the vulnerability and response to floods with reference to the material and discursive context influencing those factors. In this way, hazardous places become function of multiple and diverse variables across different scales, i.e. the global political economy (Mustafa 2005). The vulnerability of the Lai floodplain residents is thereby view as the result of policies and projects biased toward engineering solutions. The technical and engineering bias of policy makers and consultants do not entirely reflect the river's hydrology nor the social reality of power imbalances and capitalist structures. As a result, certain residents inevitably end up in harm's way. Mustafa (2005) goes further by arguing that the vulnerability to floods in the Lai floodplain is the consequence of a social structure that systematically excludes the poor from the management of their living spaces, gives power to a bureaucracy hostile to the civil society, and facilitates alliances between that bureaucracy and the land mafias. Similarly, Collins (2010) describes the unequal distribution of flood risk in the 2006 El Paso (USA)-Ciudad Juárez (Mexico) flood disaster. He compares the two areas of El Paso and Ciudad Juárez, to show how their distinct urbanization has influenced differential vulnerabilities to hazard and created different flood-prone landscapes. Through a marginalization/facilitation framework, he further illustrates how USA and Mexican urbanization processes amplified unequal vulnerabilities and reshaped the 2006 flood disaster. In this uneven hazardous landscape, only the elite can expose themselves to hazard in pursuit of environmental amenities and charming locations. Those benefits accessed by the elite are mostly the result of unjust socio-economic processes (Collins 2010).

Also disaster studies scholars emphasize the socio-political production of disasters and their unjust experiences (Douglass et al. 2018; Williamson 2018; Huang 2018; Parthasarathy 2018; Bankoff 2003; Verchick 2012). These scholars refuse to consider disasters merely natural events, as this would obscure and flatten the political space where they unfold and eventually stop any quest for justice. Moreover, framing of such disasters as natural or divine, could refrain from attributing responsibilities to governance processes or uneven development. Each one of these works usually focuses on a specific context and a singular disaster where scholars analyse the anthropogenic sources of uneven vulnerabilities to hazard. Fiona Williamson (2018) for instance, attributes to the political decision to resettle the Paya Lebar farming community into a flood prone site, the exacerbated scale and cascading impacts of the Singapore extreme flood in 1954. She argues that the framing of the flood as an 'Act of God' was a linguistic and legalistic way for Government and responsible authorities to avoid culpability (Williamson 2018). Accordingly, vulnerability to flood (and drought) starts from the political process that produce unsafe conditions and often determine the highest vulnerability among the marginalized and disadvantaged populations (Douglass et al. 2018).

About power that shapes uneven water flows

Following water flows and the manifold ways this flows distribute in space, political ecologists and critical human geographers have unravelled the choreographies of power, structural processes and hydraulic relations that mark water-human interactions (Ahlers et al. 2009; Swyngedouw 2009; Loftus 2009; Budds 2016). By refusing a-political ecologies this scholarship foregrounds the role of power in shaping the water flow and producing uneven geographies of hydrosocial risk.

Loftus (2009) conceptualisation of (in)justice starts from the injustice of water poverty (Loftus 2009). Throughout his research, he identifies the power relationships through which water is produced and distributed thereby exposing the related injustices. In his 'Rethinking Political Ecologies of Water', Loftus (2009) shows how Durban Water provision becomes an "accumulation strategy" because of broader political economic processes. Durban residents do not freely access to drinking water because water distribution needs to ensure profit and return on investment. As a result, Durban system differentiates among people with free access to their means of production and those who can only sale their labour power to get access to water. Using Loftus words "water is divorced from the majority for the profit of the few" (Loftus 2009). While mobilizing the concept of hydrosocial cycle, waterscapes or hydrosocial territories, other critical scholars have conceptualized water as inherently social and political (Linton et al. 2014; Swyngedouw 2009; Boelens et al. 2016; Swyngedouw 1999). This explains how every instance of the hydrologic cycle is shaped by particular social structures and geometries of power (Linton et al. 2014; Swyngedouw 2009). In turn, it also shows how the social or natural induced variations of the water flow change existing social linkages and reshape social spaces and territories (Boelens et al., 2016). While enhancing environmental quality in some places and reducing them in others, those hydrosocial circulations result in processes of inclusion-exclusion, development and marginalization, and distribution of benefits and burdens that differently affect the concerned social groups (Boelens et al., 2016). So far, their theorizations of human-water interplays have not yet explored the way power manifests in extremes conditions of water scarcity or water flooding which are produced by particular human-water dynamics and which inevitably cause different socio-natural responses.

Swyngedouw uses the Spanish and Ecuadorian waterscapes, to demonstrate how water and power are mutually constitutive (Swyngedouw 1997, 1999). In the city of Guadalquivir, he shows that more than a third of the population remains excluded from supplies of potable water. This injustice for Swyngedouw is the result of an urbanisation which is simultaneously a political economic and a political ecological process (Swyngedouw 1997; Loftus 2009). Through the Spanish waterscape, he illustrates the role that water plays in shaping relations of power. In a way that Franco's fascist project for Spain was produced and reproduced through transforming the hydraulic engineering of the country (Swyngedouw 1999). Boelens (2014) employs the hydrosocial cycle to disclose how Andean cultural beliefs were and are still used to reinforce certain power strategies and therefore legitimize uneven reconfigurations of the water flow (Boelens 2014). Budds (2016) adopts the same conceptual framework to discuss a conflict over water resources for agriculture in Chile. Finally, Rusca et al. (2018) explain the Mozambican State projects (the colonial era, the socialist post-independence state and the neo-liberal state) as a "material re-patterning of hydrosocial territories". As if at different stages in history, water infrastructure helped consolidating the state power by materializing its discursive ideologies (Rusca et al. 2018).

Other scholars, as Rusca et al. (2019), have also tried to materialize political ecology in order to show the role infrastructure has in affecting hydrosocial configurations. By means of redirecting ecological flows and harnessing resources, infrastructure does regulate water and society interplays (Slinger et al. 2011). Water infrastructure reshapes hydro-social systems not only by changing the water flow yet also by reordering societies institutionally, politically, economically and culturally (Rusca et al. 2018; Ahlers et al. 2017; Tiwale et al. 2018; Slinger et al. 2011). While Ahlers et al. (2017) for instance, present Dams as agents in dynamic and

contested spatial strategies; Tiwale et al. (2017) employs water pipelines or storage reservoirs to trace uneven water flows across the City of Lilongwe, Malawi and understand how inequity perpetuates throughout the water supply network.

Overall, those studies unravelled hidden human-water dynamics, retraced invisible flows, and revealed how social inequalities materialize throughout water flows. While focusing on politics and power, they also become useful instruments for promoting equitable hydrosocial relations (Linton et al. 2014). However, this same perspective often overlooks the materiality of hydrological flows and risks missing the co-evolution of human-water systems. In fact, those studies rarely retrace how politics and power can lead from normal to extremes hydrological conditions of floods and droughts. Giving to water anthropogenic traits should not obscure its biophysical characteristics and its continuous interactions with the atmosphere, the land surface and the ecosystem. As the climate and the hydrological cycle, strongly relate between each other as well as with land surface and ecosystem processes. As a result, they influence the production of hazard and the resulting geographies of risk.

How does power exacerbate hydrosocial extremes?

The critical studies examined in this review, comprehensively address the role of power in creating inequalities and struggles for justice at different scales. On one hand, vulnerability, hazard and disaster studies describe how powerful interests assimilated by discourses and policies, influence the decision-making process and in turn, the production of disproportional vulnerabilities to hydrosocial extremes (Adger 2006; Mustafa 2005; Douglass et al. 2018). On the other hand, critical water studies show how power intertwines with water. By uncovering powerful voices, authorities, knowledge and expertise of water, these scholars foreground the role of power and politics in shaping water and society dynamics and creating uneven hydrosocial configuration (Ahlers et al. 2009; Swyngedouw 2009; Loftus 2009; Budds 2016; Zwarteveen et al. 2017).

What remains less explored instead, is the way this power, by creating certain hydrosocial configurations exacerbates into hydrosocial extremes and results in disproportionate experiences of drought and flood events. To explore these processes it is important to recognize the materiality of water and the co-evolution of human and water systems (Linton et al., 2014). Water should therefore remain an active co-agent in the production of hydrosocial risks both for its biophysical characteristics, and for its continuous interactions with atmospheric, land surface, ecological and social processes. A short-sighted focus on human processes already had and will continue to have on the long-term detrimental impacts on human and nature (Strang 2016). The following section reflects on the potential of engaging with socio-hydrology to re-materialise the production of hydrological extremes and to account for both physical and social processes in the production of injustice in hydrological extremes.

Materializing the production of hydrosocial extremes

Conceptualizing hydrosocial extremes as the result of human-water interactions, hydrology started to introduce humans and society in the production of hydrosocial risks and expanded his field of study to Socio-Hydrology (Sivapalan et al. 2012). This research strand is thus a major breakthrough in understanding human-nature interactions and describing how hydrosocial risk materializes throughout history. Socio-hydrology stresses the importance of accounting for the mutual feedback between water and society and posits that ill conceptions and poor understanding of those dynamics might lead to counterintuitive and dramatic consequences (e.g. levee effects, supply-demand cycle etc.). While addressing current societal challenges represented by hydrological extremes, this theory stresses the relevance of a more holistic understanding of human and water systems dynamics.

Sivapalan et al. (2012) introduce socio-hydrology as the science of people and water by presenting the case of the Murrumbidgee River Basin in Australia. With this example, he argues that traditional hydrologists cannot entirely predict neither human induced changes on the water system nor their impacts on water cycle dynamics: *“The common history of hydrology and the societal changes seen in the Murrumbidgee is an example of unexpected process dynamics. Prediction of water cycle dynamics over long timescales is not feasible without including the interactions and feedbacks with human systems (Sivapalan et al. 2012, p. 1271)”*

Socio-hydrologists posit that society and nature change interdependently as well as in connection with each other and that their mutual reshaping continues and evolves over time (Di Baldassarre et al. 2018a; Kallis 2010). On the one hand, society importantly alters the hydrological regime. It modifies the frequency and severity of floods and droughts through continuous water abstraction, dams and reservoirs construction, flood protection measures, urbanization, etc. In turn, hydrological extremes shape societies which respond and adapt to the impacts of floods and droughts spontaneously or through collective strategies (Di Baldassarre et al. 2018a).

Di Baldassarre et al. (2018) elaborate on those human-water interactions explaining the relevance of coupling socio- with hydrology and highlighting that these elements do not merely interact but actually co-evolve and reshape each other over time. In fact, neglecting nature and society interaction and co-evolution might lead to unintended and often counterintuitive consequences. Unforeseeable feedbacks within human-water systems could be i.e. increased flood risk and fatalities due to human settlement in flood prone areas and increased vulnerability due to non-occurrence of flooding or to over-reliance on reservoirs (Di Baldassarre et al. 2018b; Di Baldassarre et al. 2017b; Di Baldassarre et al. 2014; Sivapalan et al. 2015). Di Baldassarre et al. (2017) use the case of Rome to demonstrate how the construction of levees meant to limit future flooding of the Tiber River, by reshaping the socio-economic development of the city has also increased the vulnerability of the people living on the riverbanks (Di Baldassarre et al. 2017b). Through Las Vegas and Athens, Di Baldassarre et al. (2018) demonstrate instead how the construction of complex storage systems by altering the water regime and water availability can increase water demand and people vulnerability to droughts (Di Baldassarre et al. 2018b).

In general, Socio-hydrology should draw on different disciplines and include historical studies, comparative analysis and process based modelling to explain the co-evolution of human and water systems (Sivapalan et al. 2012; Di Baldassarre et al. 2013). Most of the socio-hydrological efforts to date have focused on investigating recurring social behaviour and societal development resulting from their coevolution with hydrological systems (Pande et al. 2017). The majority of these studies have explained coupled human and water systems through quantitative approaches and dedicated efforts to capture human-water interactions and feedback through mathematical model, mostly as non-linear differential equations (Wesselink et al. 2017).

Accounting for both water and nature interactions, socio-hydrology re-establishes an equilibrium that anthropocentric perspectives have so far unbalanced. They have explained and conceptualized the production and of floods and drought risks as the result of human and water interactions. Fewer examples to date explore instead the way those risks unevenly distributes across space. Xi Chen et al. (2016) propose a socio-hydrologic model of the Kissimmee River Basin (Florida, US). This river underwent a channelization in the 1960s and a subsequent restoration in the 1990s for a shift in emphasis from flood protection to ecosystem health policies. Defining this shift as the result of changed human values and preferences, Xi Chen et al. (2016) develop a conceptual model to simulate the interactions between community interests and hydrology. In this model, they are able to account for the power imbalances between the more numerous and wealthy upstream urban residents (in favour of wetland restoration) and the downstream rural residents (in favour of flood protection). Similarly, O'Bannon et al. (2014) are able to expose how the externalization of pollution is disproportionately borne by few countries. They assess the impact of agricultural pollution based on international trade records and nation

specific grey water footprints. By so doing they first show how international trade co-produces and unevenly redistributes pollution. Secondly, they explain how social development status also contributes to such inequality.

So far, socio-hydrologist have mostly formalized hypotheses about generic socio-economic patterns and formulated explicit assumptions about the interactions and feedbacks between human and water systems. Significant aspects that influence the production of hydrological risk as well as shape responses to environmental changes remain unexplored. Except fewer studies similar to the ones presented above, socio-hydrologist did not extensively elaborated on the uneven distribution of risks across nature and society. Also, most of their conceptual tools do not account for the plurality of human values, different human agencies and path dependency of societal power relationships (Massuel et al. 2018). Neglecting power imbalances in hydrosocial extremes can conceal the unfair production of risk and flatten its uneven distribution. As a result, there will remain questions of justice not properly addressed.

Addressing injustices in hydro-social extremes

This reveals how hydrosocial injustices are intertwined with the manifold ways hydrosocial risk is unfairly produced, distributed across, and experienced by those who have power and those who do not. Power materializes in the production of uneven hydrosocial configuration, manifests in disproportional vulnerabilities to hydrosocial extremes and results in unjust experiences of floods and droughts. Together with risk, hydrosocial (in)justice emerges and unfolds within society and nature continuous interactions. As a result, ensuring socially-just governance of hydrological extremes entails unravelling the dynamics of risk emerging from the mutual shaping of hydrological extremes and society. From here, this review leaves three major recommendations to scholars that engage in justice in hydrosocial extremes.

First of all, considering the complexities uncovered throughout this paper, analyses of hydrosocial justice entail moving beyond addressing simple or singular aspect and widening the analysis to broader recognitions of ecological, political and social issues. In other words, this justice requires combining geo-hydrological and climatological insights with understandings of the socio-technical and legal-cultural determinants of water flows. These observations demand an inter-disciplinary approach that combines different disciplines and as a result, is able to make allowance for the manifold factors producing hydrosocial injustices (Massuel et al. 2018). This paper suggests to dialectically engage socio-hydrology with critical studies in order to comprehensively explain the ways hydrosocial injustices are produced and truly experienced.

Second, and more as a philosophical reflection, this review stresses the need to equally appreciate society and nature in the production of hydrosocial extremes. If critical theories have attempted it by insisting on the inseparability of the social and the physical; socio-hydrologists instead, did it by theorizing the co-evolution of social and water systems. This conceptualization should on one hand, help avoid anthropocentric perspectives, which prioritize human needs and gives insufficient significance to the needs of the non-human (Strang 2016). On the other hand, it must also account for the human interventions and consider how existing power structures reshape water flows and related risks (Douglass et al. 2018; Verchick 2012). This conceptual but also practical effort, is crucial when the objective is to ensure a justice for all, which avoids long-term detrimental impacts on human and non-human species (Strang 2016).

Third, questions of justice are scale sensitive as their appreciation also depends on the unit of time and space that are considered. Scale matters when considering those relations and phenomena that are spatially or temporally distant but still contribute to the production of injustice. As a result, justice research should not constrain itself to fixed or predetermined scales but rather maintain time and space scale flexible. In this way any analysis can account for relations and phenomena that may be spatially or temporally distant (Perreault 2014). Studies on justice should explicitly assess the way scales are constructed and how they relate to

hydrosocial dynamics (Zwarteveen et al. 2014). In particular Zwarteveen et al. (2014) suggest to pay attention to terms such as ‘local’ and ‘global’, because so-called ‘local’ phenomena are often manifestations of supra-local processes and powers.

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The strategic dilemma of an open and closed approach of transitional change. Comparing three transition paths to sustainability in the Netherlands.

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Abstract: The paper aims to make two contributions to the literature on planning and transitions. First, it analyses transitional change as an open and closed process. The policy challenges are ‘wicked problems’ with unforeseen uncertainties, multiplicity of political values, and complex institutional systems. Dealing with these kind of challenges requires an open approach. Yet, in spite of the wickedness of the issues at stake, policymakers tend to treat transitional change as a closed process: as a large project with fixed goals, road-maps, time-tables, and strategies to reduce uncertainty. The paper argues that this is not a matter of ignorance but the result of institutional mechanisms that push policymakers towards a closed approach. Second, the paper analyses how a closed approach leads to the exclusion of crucial aspects of transitional change, in particular the matter of social justice. It argues that, whereas some transition processes exclude social justice issues, it is better to include them in order to design an open and viable transition strategy. These issues are demonstrated by a comparative analysis of three transition paths to sustainability in the Netherlands: climate and energy, agriculture and food, circular economy.

Keywords: Sustainability; long term planning; the Netherlands; comparative analysis

Introduction

The political debate on climate change has triggered a renewed interest in long term policy. The downfall of the Berlin Wall and the following two decades of ‘less state, more market’ had given long term policy and planning in general a bad reputation, albeit less so in continental Europe than in the USA and UK. But the urgency of a transition to a more sustainable society has changed this. Long term policy is back on the political agenda, but in a different way than during the 1960s and 1970s. The ‘rationalistic’, ‘blue-print character’ and the ‘central-rule approach’ of former long term policies have been effectively criticized by political scientists and economists (Simon 1957, Rittel and Webber 1973, Van Gunsteren 1976, Pressman and Wildavsky 1979, Rhodes 1996). The times of modernist, rationalistic planning are behind us. Long term policy nowadays has a more reflexive character:

rationality is bounded by principal uncertainties of long term processes, the long and complex road from plan to action is recognized, and the central government rule is replaced by the concept of governance. But this new, more reflexive context of long term policy produces its strategic dilemma's. One of them is the dilemma between an 'open' and a 'closed' approach: the recognition of uncertainties and multiplicity of political values, multi-actor processes, adaptive strategies and learning processes versus policy as a large project with fixed goals, road-maps, time-tables, and strategies to reduce uncertainty. This dilemma is at the heart of long term transition policies to a more sustainable society.

The transition to sustainability is not the first long term transition policy in the Netherlands. During the first decades after the Second World War, the transition to a modern economic system was a big issue in Dutch politics. The industrial sector was to be modernized, rationalization of the agricultural sector was thought to be necessary to rise food production and to keep prices low, and new relations between labor and capital should prevent economic conflicts in the future. Central government and its institutions played a big part in this transition. The result was a rise in economic production, not only in the industrial sector but also in agriculture (Luiten van Zanden 1997: 171). A number of new institutions came into being: knowledge institutes for the economy and agriculture; corporative structures for consultation between government, capital and labor; organizations to rationalize and coordinate different economic sectors. They formed a sound institutional base for the future Dutch welfare state.

During the 1960s and 1970s it became clear that economic growth caused a lot of environmental problems: pollution of water and soil, smog, reduction of biodiversity by the use of pesticides. Environmental policy gained importance, at the national as well as the local level. Environmental policy led to a reduction of some of these problems. It took some years before it was evident that long-term transitions were needed in order to create a sustainable economy for the future generations, and that some problems could only be tackled on a global level. In the Netherlands, the National Environmental Policy Document 4 (NMP 4, 2001), was an important starting point for transition policies. The document named three essential transitions: of the energy system, of the agricultural system, and towards sustainable use of raw materials. These transitions still are dominating Dutch long term policy, albeit with somewhat different names. Energy transition was related to climate policy, sustainable use of raw materials became circular economy, and agriculture now includes the food system.

The paper is structured as follows. The next section discusses the central theoretical concepts of this paper: open and closed approaches, the role of uncertainties and multiple values, institutions and transitional change. Next, three long term transition policies to sustainability in the Netherlands will be discussed: climate and energy, agriculture and food, and circular economy. In the last section of this paper the transitions will be compared, and some conclusions will be formulated.

Transitions, cognitive systems and institutions: open and closed strategies

Transitions to sustainability differ from day-to-day policies. Whereas the latter usually stay within the borders of the existing policy system, transition policy deliberately aims to change the policy system itself. The existing policy system has to be replaced by a new policy system, embedded within political values reflecting sustainability, with new goals and instruments. Therefore, transition policy is long term policy almost by definition, and involves reflection on political values and the knowledge structure of the policy system. Geels and Schot (2010: 11-12) defined the main characteristics of transitions, which can be summarized as follows.

Transitions are:

- Co-evolution processes that require multiple changes in socio-technical systems or their configurations, including technologies, markets, regulations, infrastructures, cultural symbols.
- Multi-actor processes, usually with interactions between groups from the private sector, public sector, and civil society.
- Radical shifts from one system or configuration to another. ‘Radical’ refers to the scope of change, not to its speed.
- Long term processes, very often 40-50 years.
- Macroscopic. The level of analysis is that of ‘organizational fields’.

This definition refers to transitions as socio-technical systems. In this paper we will concentrate upon the policy systems, connected with those socio-technical systems. The distinction between socio-technical systems and policy systems is important, because policy systems are connected to other policy systems and the political system as a whole. Economic policy, social policy, environmental policy, spatial policy, agricultural policy, they all have developed their own core values, goals, instruments and institutions. They interfere on the level of political choice. Sometimes their core values conflict, leading to political debate and struggle. The last century showed a lot of conflicts between maximizing economic growth and social justice, asking for a more equal distribution of welfare. And during the last decades, conflicts between the values of economic growth and protection of the environment. These value conflicts lead to a shift from the daily routines within the policy systems to the field of political deliberation, political choice, and the search for compromises. It is a shift from a ‘closed’ to an ‘open’ policy context: from a context of policy making as a rather technical set of routines with well-defined risks and no debate on core values to a context with multiple values, unknown risks and shifting institutional structures. The balance between ‘closed’ and ‘open’ contexts within policy systems changes in the course of time, and so does the need for ‘closed’ and ‘open’ policy strategies.

This is also true for transitions to sustainability. Although they often start within the borders of an existing policy system, in the course of time they are confronted with the need to change the policy system and to challenge its core values. But they do so within different contexts, the context of different policy systems and their core values. A transition path to sustainability of the agricultural policy system may be different from the energy system or transport infrastructure. This makes a comparison between transitions to sustainability within different policy systems interesting. It learns us more about which factors matter and which not, and which policy strategies can be transferred to other policy systems and which not. Therefore, this paper compares three transition paths to sustainability in their policy systems: climate and energy, agricultural and food, and circular economy.

The policy systems and their transitions will be compared on following two aspects.

- The cognitive structure of the policy system/transition (knowledge, values)
- The institutional structure of the policy system/transition, including its political, economic and social contexts.

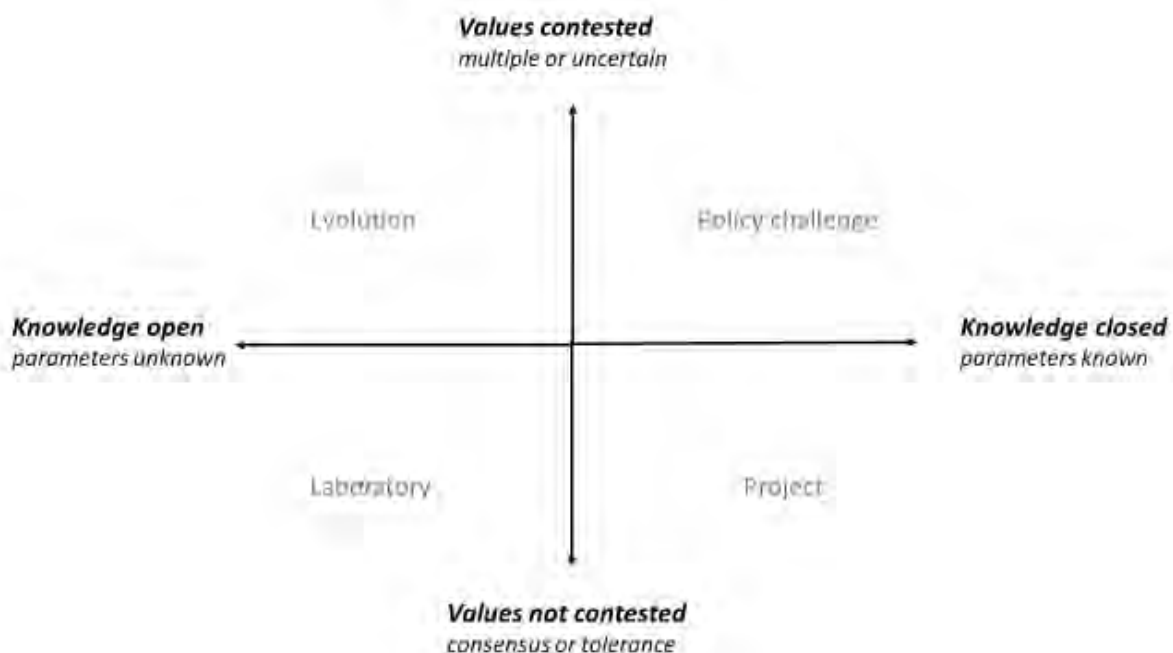
The cognitive structure of the policy system/transition

Policy systems are problem solving machines, among other things. Social, economic or environmental problems enter the policy system through interaction between (parts of) the society and public institutions (problem finding and defining), these problems are ‘structured’, translated into policies (‘solutions’), and matched with the set of available policy instruments, thus leading to bureaucratic action. This is a brief description of the policy making process as a cognitive activity. It is slightly idealized, because very often the policy making process goes the other way around: the existing policies and instruments are matched with a set of policy problems. But either way, it is important to notice that this cognitive dimension of policy making involves both knowledge and values. Sometimes the values seem to be hidden, but they always are there, because policy problems define the gap between an existing situation and a more desirable situation, between ‘is’ and ‘ought’. No ‘ought’ without values, not even in day-to-day policies. But the more ‘fundamental’ the policy problems, the higher the change that the underlying values are debated and contested.

There is a growing collection of scientific literature on the cognitive dimensions of the policy process, especially on the structure and structuring of policy problems. In 1973, Rittel and Webber published their seminal article on ‘tamed’ and ‘wicked’ problems, followed by the publications of many others (Rittel and Webber 1973, Levin et al 2012, Crowley and Head 2017). Others discern ‘structured’, ‘moderately structured’ and ‘unstructured’ problems, referring more or less to the same characteristics as Rittel and Webber did (Dunn 1981: 103-104, Hoppe 2010: 72-75). For ‘tamed’ or ‘structured’ problems, a solution can be found through careful analysis, for ‘wicked’ or ‘unstructured’ problems this strategy does not work. For wicked problems there is no definitive formulation, let alone a ‘best’ solution. Wicked problems are always connected with other problems and therefore lack a final and verifiable knowledge base (there are always ‘unknown unknowns’), and are often situated in a multi-value environment. Environmental policy problems very often belong to the category of wicked problems (Crowley and Head 2017: 533-534), and this is even more true for the long term policies for transitions to sustainability, Levin et al. (2012) even labelled them ‘super-wicked’.

How to connect this cognitive dimensions of transitions to sustainability with ‘open’ and ‘closed’ policy strategies? *Figure 1* shows a typology.

Figure 1. Structure of transitions



The horizontal axis shows the knowledge system, at left side the ‘open’ system (parameters unknown), at the right side the ‘closed’ system (parameters known). The vertical axis shows the value dimension, on top the ‘open’ value situation (values contested or uncertain), on the bottom the ‘closed’ value situation (consensus or tolerance of differences). This results in four quadrants with different policy strategies. The two extremes are Evolution and Project. Evolution means finding your way while constantly dealing with wicked and changing problems definitions and multiple values, with uncertain time-paths and instruments. Core values of policy systems (sustainability) sometimes conflict with others (social justice), often resulting in compromises but without final solutions. This is the most ‘open’ strategy. Projects deal with a tamed problem, consensus over values/goals, optimal instruments, and the possibility to make a fixed time-table. This is the most ‘closed’ strategy. Policy challenge and Laboratory are in between these extremes.

Transitions to sustainability seem to fit into the Evolution strategy. But as we stated before, the structures of policy problems are not ‘fixed’, problem structuring is a cognitive and political activity that sometimes results in a move to another category. An example is the transition of the energy system in the Netherlands. The ‘cutting up’ of the policy problem into several smaller problems resulted in a move from Evolution to Policy Challenge, at least temporally. This will be discussed in the next section. However, there is a constant pressure within policy systems to move from ‘open’ to more ‘closed’ strategies, not only because the necessity to operationalize of policies demands this, but also for reasons of political accountability (‘what results can be expected and when?’). All forms of reflexive long term policies face the dilemma between an open and a more closed approach, according to Voss, Smith and Grin:

‘On the one hand, the requirement is not to suppress diversity, but to nurture bottom-up spontaneous developments that are open to ambivalence and contestation, and to retain adaptability towards the complex dynamics of change. On the other hand, there remains a requirement to achieve coordination, to take a synoptic view on broader developments, to close contingency, to fix long-term goals for orientation and mobilization.’ (Voss, Smith, Grin, 2009: 281).

The institutional structure of the policy system/transition

Policy systems do not only have a cognitive structure, the institutional structure is equally important. Most of the ‘mature’ policy systems have complex institutional structures. Usually, they consist of central and local governments, private organizations, pressure groups, knowledge institutes, etc. The institutional structures of those mature policy systems are multi-actor and multi-level, and they have uncertain border-areas with other policy systems. Whereas some of the policy outcomes are the result of the actions of one governmental organization, the more often are not. Other actors from the organizational field are ‘co-producers’ of the policy outcomes. This reflects the shift from ‘government’ to ‘governance’ (Rhodes 1996, 2017; Hajer 2009), from central-rule to network policies (Castells 1997).

Transition policies have to deal with this complex ‘organizational fields’. Sometimes, they cut through different policy systems, with different institutional structures. Complex institutional structures are not easy to change, they create their own path-dependence. The complexity of institutional structures is influenced by:

- The combination of public, private, and civil actors
- The number of government layers involved (international, national, regional, local)
- The number of policy systems involved

These policy systems and organizational fields function within the broader institutional contexts, both national and international. Political factors: the legitimacy of the national political system, the role of international organizations and agreements, the level of political consensus and conflict. Economic factors: the preferences of consumers, the role of the international markets, the consequences of the digitalization of the economy. Social factors: national and international pressure groups, the level of trust in a society, the role of civil society (see Geels *et al* 2016, comparing transitions of the electricity systems in Germany and the UK). This varied set of factors is hard to categorize, and their effects differ from policy system to policy system. For example, the globalization of food markets has strengthened the lock-ins in the agricultural sector, and has reduced the capacity of farmers to change their ways of farming. But on the other hand, the 2015 Paris Agreement on Climate Change has enhanced the national capacity for the energy transition. We will discuss the influence of the most relevant external factors in the next section.

Transition policies can move through this institutional and organizational fields with different strategies, again ranging from more ‘open’ to more ‘closed’. The governance-based strategies are more open (collaboration between actors, collective responsibility), the government-based strategies are more closed (public organization responsible). Here, the political pressure comes from both sides. There are pressures towards an open strategy, because of the necessity of a broader public support. But there are also pressures towards a closed strategy, because of political accountability and the need to develop clear ‘guidelines’ for transition policy.

Analyzing transitions to sustainability in the Netherlands

Climate change and energy

The energy system has gone through many transitions in history: from wood to coal, and to oil, gas and nuclear energy. Nowadays, the transition of the energy system is connected with the political discourse on climate change. In order to reduce global warming, there is a growing sense of urgency to switch from fossil energy to more sustainable sources of energy. The 2015 Paris Agreement on Climate change underlined this urgency, and its goals were adopted in the national climate and energy policy in the Netherlands. There is a national Climate Agreement in the making, and a new Climate Law has already passed the Second Chamber of Parliament. The energy transition is the most important, but not the only policy issue in climate policy. There are also policy programs to tackle the consequences of rising sea-level and changes in the river system because of climate change. Recently, political debate on climate policy has flamed up again, because of the rising prices of energy for households.

Its global character and its relation with other political issues has made climate change into a ‘super-wicked’ problem. These are the most important reasons: 1. despite the Paris Agreement, there is no central authority to coordinate and enforce policies; 2. those who are willing to solve the problem are also causing it; 3. time is important and running out, delay enhances the risk of passing a point of no return in global warming; 4. politics discounts the future irrationality (Levin *et al* 2012, 126-130). And we can add one more reason: 5. in the political arena the core value of climate policy (towards a sustainable world order) potentially conflicts with other political values. With these characteristics, climate policy seems to be firmly rooted in the Evolution quadrant of *Figure 1*. But the combination of the Paris Agreement and its translation in national goals with the energy system offered the opportunity to structure the climate change problem into policy programs for energy transition. Policy makers used the strategy of ‘cutting up’ the energy transition into different parts, in order to develop more viable policy programs (PBL 2017). Some of these programs are connected with innovations in the field of energy production. Whereas the energy transition as a whole cuts through a number of policy systems, the ‘cutting up’ in different policy programs connected each program more or less one-to-one to an existing policy system (industrial policy, agricultural policy, housing and built environment, production of electricity, mobility and transport). By this strategy, the energy transition moved from the Evolution quadrant of *Figure 1* to the Policy Challenge quadrant.

The ‘cutting up’ strategy has its strengths and its weaknesses. It has made the implementation of the energy transition easier. Policy makers could concentrate themselves upon their own policy programs and projects. For example, the energy transition in housing and the built environment has been translated into many projects on the level of urban residential areas, very often in cooperation between public and private actors. The possibility to translate abstract goals into action is one of the strengths of this strategy. But it also made the energy transition more ‘closed’, in two ways. First, the different parts of the energy transition had to be ‘fitted into’ existing policy systems: housing, mobility and transport, agriculture, economic policy. Thus, these parts of the energy transition had to adapt themselves to the dominant rules and institutions in the policy system. Second, public and private actors concentrate upon their own part of the energy transition, and lose sight upon the broader context. And this broader context is the source of conflicting values, as became clear in the course of 2018 and 2019. The prices of energy for households did rise more than predicted, whereas the industrial companies with much CO₂ pollution did not seem to pay their just part of the costs of the energy transition. Thus, the energy transition came into conflict with social justice as one of the core values of tax- and income policy. All of a sudden, the

energy transition seemed to be back in the Evolution quadrant. Both the core values and the knowledge base (uncertainty on the income effects and the feasibility of some programs) were contested again. But at the same time, most of the policy programs and projects continue. The energy transition may be situated in both the Evolution and the Policy Challenge quadrants at the same time. The outcome of this balancing act is uncertain, and partly depending on political forces. On hindsight, it would have been wiser to have kept the energy transition more 'open' in order to include social justice issues.

The institutional structure of the climate policy and energy transition ranges from international (Paris Agreement) to regional and local. On the national level, the development of a National Climate Agreement includes many actors, ranging from public to private and civil society, including NGO's. On the regional level, provinces, municipalities and water boards cooperate in the design of regional energy strategies. Here, the shift is made from a government to a governance system, from a closed to an open institutional system. But the balance between government and governance in climate and energy policies is still a dilemma that comes to the surface of the political debate from time to time. On the one hand, more government actions and choices can create more certainty for investments from the private sector and citizens (electric cars, sustainable houses), on the other hand an inclusive governance structure enhances the legitimacy of the climate policy and energy transition and makes room for innovative initiatives.

Agriculture and food

Agriculture has a long history of transitions and a strongly institutionalized policy sector. National agricultural policy started after the crisis in food prices at the end of the nineteenth century. Farmers formed cooperative organizations for the purchase of seeds and fertilizers as well as for the production of dairy products. The government started with information services for farmers, research institutes and an educational system, ranging from basic vocational training to the Wageningen agricultural university. After the Second World War the institutionalization of the agricultural policy sector became stronger. The Ministry of Agriculture was established, as well as a number of corporative structures and a new research institute, the Agricultural economic institute LEI (Keulen 2014: 24-71). This institutionalized cooperation between government and the agricultural sector became very effective in defending the interests of the agricultural sector, and was known as 'the green front' or even the 'iron triangle'. A modernization program started, including rationalization of production methods, a more efficient use of land, and the enlargement of farming companies. As a result of these actions, there was a strong growth of agricultural production and export of agricultural products. A successful transition to modernity (Grin 2010). There was broad consensus on the core values of agricultural policy: efficient production methods and land use, food security, and secure incomes for farmers. These values formed a rather closed policy system. The wicked problem of fluctuating food prices and food shortages seemed to be tamed. Agricultural policies were firmly situated in the quadrants of Policy challenges and Projects of *Figure 1*. Technological innovations were framed by the search for rationalization and efficiency of agricultural production.

But the economic success had its downside. During the 1960s and 1970s it resulted in the overproduction of dairy products, and the first environmental problems became visible. There were concerns on the effects of pesticides on human health, on the degradation of the landscapes by the agricultural companies, and on animal welfare. The spatial impact of the modernization of agricultural sector was huge: agricultural land use covered about two-third of the Netherlands, and changes were visible everywhere in the countryside. The societal image of the agricultural sector became more and

more negative: from successful economic sector to 'bio-industrial complex'. A strong environmental counter-discourse against modern agricultural production came into existence, and soon gained much social support. This critical current existed of two branches: a 'eco-fundamentalist' and a 'eco-efficient' branch. The first branch based itself upon counter-values against the dominant agricultural practice: small-scale and biological production methods, living in harmony with the earth, less or no meat consumption. It promoted an alternative agricultural and food system. The second branch tried to reconcile ecological values with economic values, promoting more efficiency in order to reduce the environmental effects of agricultural production while preserving the economic vitality of the sector. And more efficiency implies large scale rather than small scale farming. From the 1990s onward, the globalization of food markets and the decrease of national government subsidies led to a downward pressure on food prices, and the 'eco-efficient' branch became dominant, in production as well as in the policy system (Schoorman 2013). This resulted in a 'lock-in' of agricultural production. Farmers have to rise their production levels and to invest in new technologies (often with borrowed capital) in order to survive. Alternative ways of production become more and more difficult, if not impossible. And the changes in the institutional system have enhanced this. There is less government influence, but instead the farmers have become more and more dependent upon the big supermarket-companies, the most powerful actors in the food system. The 'lock-in' of agricultural production itself is related with this institutional 'lock-in'. Compared to the two other transitions discussed in this paper, the agricultural policy system does not have to deal with many other policy systems, but is by far the most institutionalized policy sector, thus creating its own path-dependencies. The complexity of the institutional arrangements was enlarged by the growing influence of EU-policies, not only in agricultural policy, but also in environmental and nature policy.

But at the same time, a number of crises (BSE, Q-fever, animal welfare issues, reduced biodiversity, and degradation of nature close to agricultural areas) shows that the eco-efficient approach has reached its limits. Some environmental goals have been absorbed into the rather closed approach of eco-efficiency, but a transition to a more sustainable agricultural and food system asks for more changes (PBL 2018b). A more 'open approach' is wanted, to combine the value of efficient food production with sustainability values. However, there is consensus that the negative environmental effects of agriculture should be reduced, but far less on the transition itself. What values must prevail: animal welfare, reducing the effects on biodiversity and climate change, protecting landscape and nature? And can these values be combined with protecting the economic vitality of the agricultural sector, with affordable food prices, or with feeding a growing world population? What to expect from technological innovations, and how to prevent more dependency of farmers from banks and supermarkets? How can the policy system influence agricultural production and consumption? These are the fundamental issues in the transition of the agricultural and food system in the Netherlands nowadays.

Answering these fundamental questions for a future transition policy asks for an open approach, including and confronting the different values in a public debate. And an open approach on the institutional level: including producers, governments, consumer organizations, supermarkets and NGO's. The need to take this essential step towards a transition to a more sustainable agriculture and food system is now recognized by the Dutch government (LNV 2018). In 2019 further steps in the debate and the design of a transition policy will be taken.

Circular economy

Compared to the two other transitions to sustainability discussed in this paper, the transition policy from a 'linear' to a 'circular' economy is quite recent. However, the transition policy was preceded by a policy program aiming at recycling waste, from the end of the 1980s onward. In the course of the years, the policy program also focused upon the reducing the use of raw materials, as a stepping stone towards attending the circular economy as a whole. Since 2016 the government of the Netherlands adopted a National Program Circular Economy, with an even stronger focus upon raw materials (I&M and EZ 2016). The program developed a policy goal: a reduction of 50% in 2030 in the use of raw abiotic materials (minerals, metals, fossil energy sources). In 2018, five priorities were formulated: biomass and food, synthetic materials, industrial production, building industry, and consumption goods. There is a strong link with the priorities in the EU-policy on promoting a circular economy.

The transition policy is based upon a ranking order of strategies, ranging from refuse, rethink, reduce, reuse, repair, to recycle and recover energy (PBL 2018c: 11). The ranking order starts with the most fundamental strategy. Refusal, rethinking and reducing the need for raw materials is more fundamental than recycling or using waste for energy purposes. But the most fundamental strategies also demand the most fundamental changes in the economic system, the innovation of products and the process of production. In the Netherlands, the majority of policy actions have been aiming at bringing more efficiency in the process of production, and the recycling of waste in the process of consumption. Here, the situation is comparable to the agriculture and food system: policies are directed at maximizing the eco-efficiency of the existing economic system, not at transforming the system itself. There is no operationalized transition strategy, the strategy is still in the phase of translating concepts into policies. In this respect, it lags behind the Climate change and energy transition program.

A more fundamental transition strategy also demands innovation, in products and in processes. In 2019, PBL published the results of a research project monitoring circular activities in Dutch society (PBL 2019). This study had two important conclusions. First, not all circular activities are new. The majority of activities is rooted in the traditional economy, such as the repair of bicycles and cars, and reselling used furniture. Second, only a minority of the activities have an innovative character, in the sense that they are aimed at the change of products and processes of production. Many of these innovative activities are 'recycling' initiatives, experimenting with new ways of reusing materials. This innovative initiatives situates the transition policy towards a circular economy in the Laboratory quadrant of *Figure 1*: trying to find out what works and what not. The PBL report advises the government to give more support to innovative initiatives outside the recycling category, in order to develop a more fundamental transition strategy. This strategy could bridge the gap between policy concepts and practice. It is also a strategy to postpone fundamental debates on the core values of the transition, and its potential conflicts with other political values. The approach is 'open' in its experimental search for new knowledge, but 'closed' towards the debate on core values, at least temporally.

The institutional context of the transition to a circular economy is potentially complex. It connects activities on many levels, from the global markets of raw materials to local activities. And it at aimed at changing the most fundamental social system, the economy as a whole. Therefore, it involves many policy systems, and many public and private actors. But in this phase of the transition, much of the institutional complexity is still hidden. There are some initiatives to coordinate activities towards a circular economy, such as the national Raw Material Agreement. But compared to the Climate and energy transition, this 'open' approach is still in its starting phase, and it misses the urgency of

internationally agreed goals like the ones in the Paris Agreement on climate change. But on the other hand, the transition policy toward a circular economy can learn from the successes and failures of the other transitions to sustainable development. And recently, the Minister of Agriculture adopted a circular approach to promote more fundamental change in the agriculture and food system. This could give a boost to the circular economy transition.

Comparison of transitions and conclusions

In the preceding section the three transitions are analyzed separately, in this section the transitions will be compared in relation to the cognitive and institutional aspects discussed in the previous section. The results are summarized in *Table 1*.

Table 1 Three transitions compared

Aspect	Climate/energy	Agriculture/food	Circular economy
<i>Wicked/structured</i>			
Knowledge	Structured by partial policy programs, innovation	Partly structured by research and knowledge	Not much structured, growing innovation
Values	Urgency, from consensus to re-politicization	Urgency but no consensus, Different core values	Medium consensus and urgency
<i>Institutional structure</i>			
Role private sector	Mixed: some policy issues low, others large	Large	Mixed: some policy issues low, others large
Policy systems involved	Many	One dominating policy system	Many
Layers of governance involved	Global (Paris Agreement) to regional/municipal	European and national dominating	European to municipal
<i>Open and closed approaches</i>			
	Closed on policy programs, opening on (conflicting) core values; governance mixed	Open on core values, tendency to more open governance under social pressure	Open towards innovation processes, fuzzy governance

Some conclusions can be drawn from this comparison:

- There are many similarities between the climate/energy transition and circular economy, especially in their institutional characteristics. Both transitions involve many policy systems, both have a mixed public-private structure. Their governance structure is a bit different, because

of the existence of the global agreement on climate change. A similar agreement is absent in the transition to a circular economy. This is an explanation for differences in both the urgency and the development and implementation of policy programs. The process of transition for climate and energy seems some steps ahead of the transition to a circular economy. This implicates that some lessons can be drawn from the climate/energy transition process for the circular economy transition.

- At the same time, the climate/energy case clearly shows that this large transition is not a linear process. The process of structuration of the initially wicked problem through the creation of partial policy programs was confronted with a renewed political debate on the consequences of the transitions for the incomes of households in the Netherlands. Thus, the core value of the transition, i.e. sustainability, came into conflict with the political value of social justice. The transition process was forced to 'open up' for this political debate. This did not mean that the process of structuration in the partial policy programs stopped, both processes have parallel lives. But it creates an uneasy balance, which can be disrupted by political shifts. On hindsight, it would have been wiser to have kept the energy transition more 'open' in order to include social justice issues.
- The situation of the agriculture and food transition is completely different from the other two, to begin with the institutional structure. Whereas the two other transitions have relatively new policy programs that 'cut through' various policy systems, agriculture has a longstanding policy tradition, resulting in a strongly institutionalized policy system. During the last century, the prime goal of this policy system has been the modernization of the agricultural sector, supported by the rationalization of the production of food. From the 1980s onward, there were two major changes. First, worries about the environmental effects of agriculture became an important policy issue. The 'eco-modernist' strategy tried to combine environmental goals with the modernization program. This strategy has reached its boundaries. Second, the agricultural system has moved from a 'policy ruled' to a 'market-ruled' system, with price-based competition. This creates lock-in situations for farmers, making it difficult to change their ways of production. Most of the actors involved agree that it is necessary to move towards a more sustainable system, but there is much debate about the core values, including the economic vitality of the agricultural sector. But apart from an already initiated open debate on these core values, it is clear that this transition cannot do without a strong program for institutional change.
- What about open and closed approaches? At the level of core values, it is clear that a more open approach is emerging in some transitions. It has the advantage of the possibility to identify potentially conflicting values in an early stage, especially social justice values. Energy prices and food prices are crucial for most households, and lower income households spend a relatively large part of the incomes to food and energy. Social justice values are strongly institutionalized in Dutch society, and therefore it is better to include them in the transition strategy by an open approach (Van der Wouden 2017). This is less clear at the operational and institutional levels. Sometimes a more closed approach can create an operational 'fast lane' for the development of policy programs with clear goals, a transition path with certainty for investors, and accountability towards politics and society. But this strategy comes with some risks. The 'cutting up' of both the energy transition and the transition towards a circular economy into different policy programs implied that these transitions had to adapt themselves to existing policy systems (for the energy transition: housing, mobility and transport,

agriculture, economic policy). At least, the closed approach may be combined with a more open approach at the project level: bottom-up, experiments and trying out innovation. And at the institutional level there is an essential tension between the more open governance strategy and the more closed government strategy. A governance strategy will facilitate economic and social support (and sometimes resistance) and also the use of the creativity of private co-producers of transition policy. But for some types of institutional change, especially when laws and rules are involved, a more closed approach is suitable. Decisions on these issues are the legitimate domain of government.

- The transitions to sustainability will have consequences for land use, especially at the regional and local level. Wind energy, solar panels, combining nature and agriculture, electric cars, water retention because of climate change, new ways of urbanization, they all imply changes in land use. This is where the urban and regional spatial planning comes in, because land-use planning is its core business. The default strategy at this level is an open approach, because the land-use claims of different transitions often have to be combined in the context of scarcity of available land. Involvement of different policy sectors and actors is crucial for success. On top of this, an open approach can facilitate creative innovation in the combination of functions in land-use.

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PA10

Climate proof cities
and resilient societies

Urban Resilience to Disasters: A Policy Case from Turkey

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Abstract: Due to continuous increase of world urban population and urbanization rates, cities are confronting many challenges and problems as over-consumption of the resources, the impacts of global warming, climate change and natural disasters. With the increased concentrations of people and commodities in cities, risks and vulnerabilities are also increasing. This has resulted in the development of new visions for cities to overcome the adverse impacts like achieving disaster resilience or becoming a resilient city. Resilience notion, by covering coping and adapting capacities in multiple aspects of ecological, social, economic, community and governance, also help to connect disaster risk management and envisioning sustainability within cities with several public policies and community-based movements. Disaster resilience is described as a set of actions for preventing the possible losses and reducing risks while increasing the capacity to recover when facing any disturbances like disasters. In this respect, resilience thinking in urban planning helps to understand the capacities, vulnerabilities, risks, to connect multiple aspects with each other and to build or enhance capacity in a systematic way. This paper that is based on the MSc research study seeks to identify the relationship between urban regeneration policies and disaster resilience by using the Turkish Law no.6306 “Transformation of Areas Under Disaster Risk”. For this reason, the law and its regulations were analyzed by using urban resilience to disasters framework. Based on the findings of the study it could be asserted that the Turkish urban regeneration experiences reflect that the policy instruments of the Law like “risky areas, risky buildings and reserve areas” are as a way of disaster risk mitigation including protective, preventive and transformative measures which contributes to the reduction of vulnerabilities, addressing different dimension of resilience yet with several limitations and challenges.

Keywords: Resilience; Disaster Resilience; Urban Regeneration; Turkish Law no.6306

Introduction

World’s urban population has been rising day by day resulting in a continuous increase in urbanization rates. Due to increased rates of urbanization cities are now facing variety of problems and challenges, like over consumption of the resources, the impacts of global warming and climate change. It is widely accepted that natural disasters are results of human activities so that the risks and vulnerabilities in cities are increasing because of increased concentration of people and commodities. In this respect along with the sustainable development goals, several universal targets are set as achieving disaster resilience or becoming a resilient city (UNISDR, 2012). In this respect, originated from the ecological studies, resilience is now a notion used across many other disciplines varying from social sciences, engineering to development studies. The principal characteristic of resilience is, it is a concept for describing the adapting, coping and transforming capacities of

complex systems when facing disturbances, shocks or changes (Brand and Jax, 2007). With the evolution of the concept, some argued that resilience thinking includes the ‘learning’ capacity as well as coping and adaptive capacities in systems. So, one way of defining resilience is, developing the capacities through learning to sustaining development when come up against unexpected or wonted changes and disturbances (Folke, 2016). This concept is adapted to the new challenges in cities like disaster risk management. As highlighted by Cutter (2014), resilience thinking help connecting disaster risk management, disaster risk reduction and envisioning sustainability within cities with several public policies and community-based movements. Resilience notion in disasters research stands for set of actions for preventing the possible losses and reducing risks while increasing the capacity to recover when facing any disturbances like disasters (Johnson and Blackburn, 2014; UNISDR, 2017).

On the other hand, with the economic restructure in cities beginning in 1980s, urban regeneration policies became one of the core urban policy of local governments as a solution to the challenges and problems occurred in urban areas. Even though the main purpose of the urban regeneration concept was commonly accepted as to develop new urban spaces within the deindustrialized cities, the policy and its instruments used in solving many other urban problems such as regeneration of illegal settlements (Roberts, Sykes and Granger, 2016). Lately, the policy is also used as a way of disaster risk management, a mitigation or a recovery tool in facing disaster risks in cities. A variety of urban regeneration cases from world, show that urban regeneration help addressing the urban problems in multiple dimensions in cities. Yet there is no clear description about the ways of developing urban regeneration policies in the context of disaster resilience in cities.

From this point, this research seeks for finding answers to the question of “in what ways urban regeneration policies connected to the disaster resilience?”. With this aim, the Turkish Law no.6306 Transformation of Areas under Disaster Risk (hereafter the Law no.6306) is analyzed in this research.

Research Methodology

This study was designed based on the major research question and finding answers and evidences from Turkish Case with analyzing the Law No. 6306 Regeneration of Areas Under Disaster Risks in Turkey. Although the research covers 3 steps of analysis which were policy, institutional and sample implementation project analysis, within the theme and track of the AESOP 2019 Conference, the focus of this paper is policy analysis based on the Turkish Case.

Main reason for selecting this case from Turkey is because the author herself has experience in the practice of decision-making and implementations of this law. Even so, the literature was reviewed to identify other cases to study where urban regeneration policies and/or projects were developed in the context of disaster risk management. However, there is very limited information about other examples in the literature.

On the other hand, the Turkish Case of Law no. 6306, was used as an evidence because the law is enforced since 2012, which provide six years of practice experience to be analyzed. And also, this law is covering the whole country and is implemented in many different cities which provides the wide range of implementations for analysis and discussion rather than a project-based analysis.

To allow a comprehensive analysis of the law with the policies defined this study includes a secondary data collection. The statistical data about the implementations of the law, urban development plans were collected from the Ministry of Environment and Urbanization. The secondary data resources that were used in this research were mainly the academic articles and researches, theses and official reports both about the theoretical background of the study and for the analysis of the urban regeneration policy case of Law no.6306.

Disaster Resilience and Urban Regeneration

This section would like to draw theoretical framework of this research which is about the urban regeneration policies in the context of disaster resilience. For this purpose, firstly the resilience concept is evaluated with respect to the evolution of the concept, the components and its system. It is emphasized by several researches that the main elements of resilience are adaptive, coping and transformative capacity of complex systems (Figure-1) (Brand and Jax, 2007; Béné *et al.*, 2012; Eraydin and Taşan-Kok, 2013). And the resilience is “a way of thinking” which aims to not only have the capacities but also improve these capacities by learning while facing sudden or expected disturbances (Folke, 2016).

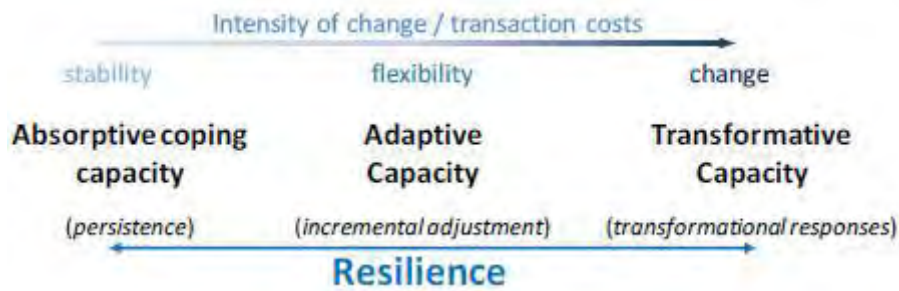


Figure-1: Resilience Framework (Bene et al., 2012)

Based on this research about resilience, before drawing the connections between resilience and disasters, first, it is essential to explain the urban resilience concept and its four dimensions about metabolic flows, governance networks, social dynamics and built environment (Figure-2) (Resilience Alliance, 2007; Chelleri, 2012). In this respect, urban resilience is defined as the capabilities in all dimensions within the urban system to keep up or restore the functions after facing any kind of disturbances for providing adaptation to change and building transformation capacity to enhancing future adaptive capacity (Resilience Alliance, 2007; Chelleri, 2012; Meerow, Newell and Stults, 2016).

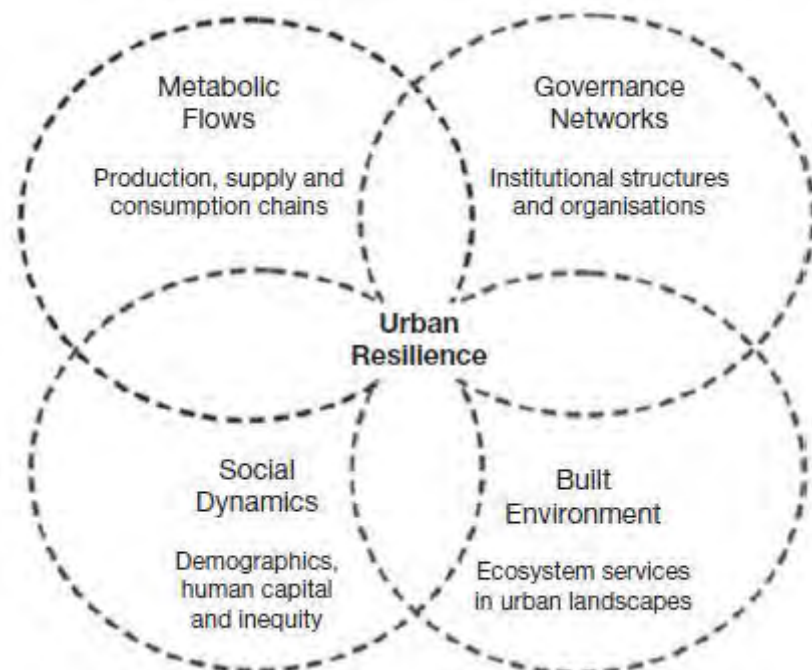


Figure-2: Conceptualizing Urban Resilience (Chelleri, 2012; Resilience Alliance, 2007)

For revealing the framework of disasters and urban resilience, the literature regarding the disaster risk management, was also reviewed. This review shows, there exist different disaster management approaches and the literature about disaster risk management evolves with the help of international conferences such as World Conferences on Disaster Reduction took place in Yokohama in 1994 and 10 years after in Kobe Hyogo Framework and the Sendai Framework for Disaster Risk Reduction (DRR) (2015-2030). The development of disaster risk management reflects the emerging concepts such as disaster risk reduction and mitigation planning and other measures targeting not only post disaster actions but also pre-disaster approaches to achieve disaster resilience and sustainable development. As can be seen in Figure-3, after 2015 with a paradigm shift from managing the disasters to management of risks, the 2030 Agenda, the Paris Agreement on climate change, the New Urban Agenda (NUA), the Addis Ababa Action Agenda (AAAA), cover Disaster Risk Reduction and resilience measures, parallel with the goals and targets of Sendai Framework and accept the Disaster Risk Management as one of the prerequisites to building resilience (UNDRR, 2019). This new approach creates window of opportunity in cities and societies to “build international coherence and foster risk-informed policy and decision-making; promote multi-hazard and cross-sectoral approaches to assessing risk; and encourage a deeper understanding of socioeconomic and environmental vulnerability across different sectors and levels of government” (UNDRR, 2019, p.30)

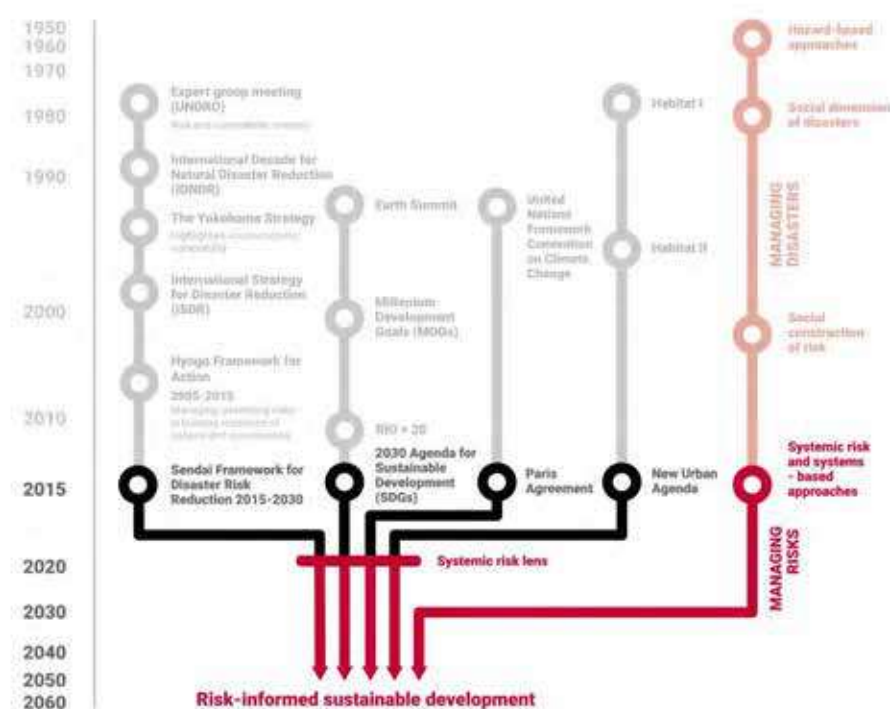


Figure-3: Timeline of Global Disaster Agenda (UNDRR, 2019, p.25)

Sustainable Development Goals (SDGs) for 2030 Agenda, acknowledge the role of risk reduction and resilience in sustainable development policy giving direct reference to the Sendai Framework. In this respect, there exist several indicators and targets related to risk reduction. Another milestone agreement is Paris agreement on climate change where DRR and resilience encrypted in the Agreement’s several Actions include call for actions that have direct implications for disaster risk (UNDRR, 2019). As reviewed in the latest Global Assessment Report on Disaster Risk Reduction, Paris Agreement has common objectives with Sendai Framework related with strengthening communities’ resilience across the full range of environmental, technological and biological hazards. The global framework for financial aspects of development, in post-2015 period is mainly driven by the Addis Ababa Action Agenda where there exist some references to the Sendai Framework. For instance, it reinforces climate and disaster resilience measures in financing development and entails innovative ways of

financing development with allowing prevention and management of risks, enhancing the national and local actors' capacity while managing DRR (UNDRR, 2019). Further, the New Urban Agenda includes visions, principles and commitments related with DRR and resilience. According to NUA, there exist measures including the sustainable management of natural resources in cities for promoting DRR, promoting proactive risk-based, all-hazard and all-of society approaches (Habitat III Secretariat, 2017). For the resilience, there exist commitments of Member States for improving the resilience of cities to disasters with implementing approaches defined in the Sendai Framework (UNDRR, 2019)

As reflected within the global development and disaster risk management agenda, disaster risk reduction and resilience are core of the global policies. In this respect in for understanding how resilience thinking is integrated with disaster risk management the literature related with (urban) resilience to disasters were reviewed. Cutter (2014), highlighted the non-existence of a universal definition of the 'disaster resilience' concept where consensus on some parameters exists. In the majority of the definitions, besides the engineering notion, the disaster resilience concept developed for connecting disaster risk management, disaster risk reduction and envisioning sustainability of communities by adopting several top-down and community-based actions (Cutter, Burton and Emrich, 2010; Cutter, 2014; Johnson and Blackburn, 2014; Parsons *et al.*, 2016; UNISDR, 2017)

The definition adopted in this study is; resilience to disasters is about, capability of a system or a community to prevent, absorb, adapt or recover from the impacts of a disaster while ensuring to preserve, restore or improve its structures and functions (Cutter, 2014). The components of this system or community which also creates the adaptive, coping and transformative capacity are described as; resilience of ecological, social, economic, institutional and physical (built environment).

Finally, the development of the concept of urban regeneration is reviewed with respect to its contribution to and relationship with the disaster context. For these purposes also, the international cases are analyzed. Concluding from the findings of the literature, there exist an increasing emphasis on urban policies and also urban regeneration as a way of pre-disaster mitigation and risk reduction approach and post disaster recovery and reconstruction mechanisms.

Turkish Case: The Law no.6306

Starting with the review of urbanization and policy context in Turkey, the findings shows that the fast urbanization pattern starting from 1980s with taking the economic restructuring in cities into consideration created new urban forms, new production patterns, new relationships between the people and its environment (Tekeli, 2014). These increased densities of people and buildings, new production and consumption patterns, spatial development phenomenon within the urban areas also have an impact on disaster risks and vulnerabilities in cities. As explained Turkish cities are prone to many disaster risks, primarily earthquakes and floods (Şenol Balaban, 2016). But also, the urbanization experience in many cities created new types of risks such as; the reinforced structures constructed in high rates without having technical consultancy, the urban development without allocating the required amount of open spaces, construction of infrastructure without a plan, the location of emergency facilities, the location of industries and ineffectuality of central and local administrations (Balamir, 1996; Şenol Balaban, 2019)

The urbanization pattern and economic restructuring in Turkish cities resulted in the need for regenerating the areas where illegal settlements were built named as Gecekondu, and the historic centers in metropolitan cities which was mainly dominated by industrial activities. For these purposes, several urban regeneration policies were developed with laws and regulations. The first urban regeneration policies were mostly highly centralized policies adopted to the squatter settlements by the central government (Şengül, 2012; Balaban, 2013; Tekeli, 2014). This was followed by a more decentralized urban regeneration laws in 2000s focusing on redevelopment in historic sites, regeneration and development areas with the law no.5393 and no.5366 implemented by

municipalities. Lately, with the law no.6306 a new centralized urban regeneration policy was developed focusing on regeneration of areas under disaster risk with three types of implementation tool; risky buildings, risky areas and reserve area.

The analysis of the policies of the law no.6306 was conducted through the lens of resilience to disasters framework described in the previous section. The analysis shows that the law has protective, preventive, promotive and transformative intervention mechanisms which have an impact on coping, adapting and transforming capacities at different levels and scales. For instance, the risky building and risky area implementations aim to transform the risky building and places and create new and safe living areas for the community. This approach can be identified as a both preventive and transformative intervention mechanism for protecting the people before any disaster take place and transform the system into a more resilient one with creating or sustaining the existing coping and adapting capacity of places and people. Here, the adapting capacity is about the capacity of organizing responses while facing internal or external disturbances in favor of development and coping capacity is about balancing or safeguarding the impacts of any disturbances or shocks related with disaster risks on livelihoods and commodities. Also, it defines a requisite of negotiation in risky area and risky building implementations which also have an impact on the resilience in a community by increasing the transformative capacity with creating a room for developing a new system when the current system is indefensible. However, this analysis shows the possible impacts of the policies defined in the law, neglects the real impacts faced in implementation of these policies.

Lastly in the analysis of risky area implementations; the data about 230 risky areas were collected from the Ministry and studied for providing a comprehensive idea of the implementation principles and methods. When the risky areas studied countrywide, the majority of the risky areas are in metropolitan cities which is in high earthquake hazard zone. However, this analysis expresses limited information and needed to be developed with a multi-risk analysis. Also, when the distribution of the risky areas considered the dominance of metropolitan cities like Istanbul and Ankara proves the fact that regeneration projects were still developed with a knowledge based on previous experience about urban regeneration.

Findings and Conclusion

The analyses about the urban regeneration and disaster resilience in cities explored the connection between urban resilience to disaster concept and urban regeneration policies and show that regeneration policies like within the Law no.6306, contribute to the resilience to disasters in cities but with some limitations and shortcomings. From the analysis of the policies developed within the Law no.6306, it can be said that there exist several measures aiming disaster resilience and providing actions for disaster risk management with the help of urban regeneration. For instance, the law aims creating resilient cities with safe and liveable environments. With including the resilience in the context of a policy which is administered by a central institution as the Ministry of Environment and Urbanization, the law is contributing to the relationship between built environment, planning and disasters. However, even the law includes both building level and area-based implementation tools such as risky buildings and risky and reserve areas, the connection between these measures and regional and city level urban development policies left ambiguous within the law. More, there exist limited policies defined in terms of comprehensive disaster risk management. The instruments within the law targets primarily the regeneration of the built environment. There also exist only several financial instruments and a negotiation method defined in the law which could contribute to social and economic resilience. But as reflected in the theoretical chapter of this thesis, there need to be ecological, social, economic, institutional and physical resilience measures covering all four dimensions of urban resilience.

As a concluding remark, when the current global urban development agenda is recalled, as reflected in the SDGs and NUA, developing *risk-based, all-hazard and all-of society* approaches while setting the objectives for resilient cities and societies is essential. In this respect, the Law contributes to the proactive risk-based

approaches with including policy instruments focuses on risk concept in buildings (risk building) and urban areas (risky area) yet still have shortcoming related with the all-hazard approaches as the implementations of the policies concentrates on earthquake prone areas.

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CLIMATE CHANGE IMPACTS IN THREE REGIONS OF GREECE: INTERCONNECTIONS WITH REGIONAL PUBLIC PERCEPTIONS AND PLANNING POLICIES

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Abstract: The purpose of this work is to study and compare the impacts of climate change in three regions of Greece, in particular in Sterea Ellada, Thessaly and the Peloponnese. This crisis refers to the impacts of Climate Change, both current and expected, and concerns the social, economic and natural environment, the perceptions of people and the competent authorities, as well as the planning policies which either incorporate or not appropriate mitigation and adaptation measures. In the present work the authors test the fundamental hypothesis, that outdated regional plans and climatic blind regional policies are inadequate in coping with the challenges arising from new climatic environments which characterize new or more pronounced climatic and meteorological risks and vulnerabilities.

Keywords: Climate Change, Public Perceptions, Regional Planning Policies

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1. Introduction

Over the past decade, the parameters that make up our planet's climate have undergone significant changes. Since the 19th century, a rise in atmospheric temperature has begun and an important part of this increase has been attributed to the change in the composition of the atmosphere due to human activity. According to the forecasts of the Intergovernmental Panel on Climate Change (IPCC) this rise will continue in the 21st century in most regions of the world, with an increase expected to range between 1.8 – 4 °C (IPCC, 2007).

This rise is estimated to have a greater impact on the mainland and will help to increase the average sea level and incidences of extreme weather events (IPCC, 2013). Recent studies have shown that in the area of the Mediterranean region the intensity of hot invasions is expected to increase drastically and long duration of drought periods causes constant increase of the risk of forest fires (Giannakopoulos, 2009). These changes are expected to have a significant impact on primary, secondary and tertiary sectors (livestock, fisheries, tourism, natural disasters, urban environments, etc.) (Bank of Greece, 2011).

Climate Change (CC) is increasingly a matter of daily discussion, with international studies proving that it is considered by ordinary citizens to be an environmental problem that already exists (Tsakmakidou, 2013). In the following paragraphs, we present the climatic changes and the implications of CC in three regions of Greece, which are the subject of our study examining the socio-economic and natural environments of these regions, the perceptions of both people and the competent authorities, as well as mitigation and adaptation measures implemented or not by the competent authorities, (Bank of Greece, 2011).

The study of the impacts that CC is expected to cause is of paramount importance in terms of planning for sustainability of these three regions. The three regions under examination are very different from each other in terms of geomorphological, socio-economic and climatic conditions, leading us to some key questions:

- How are the impacts and risks of CC specified in and differentiated between the three regions and the climatic zones included in each case? Are these differences reflected to the response priorities of the competent authorities and organizations?
- What mitigation and adaptation measures are taken or considered by the competent institutions?
- Do planning policies incorporate appropriate CC mitigation and adaptation measures?
- What are the public perceptions of the three regions regarding CC? Is there any feedback to these perceptions on the part of competent institutions pushing forward adaptation and mitigation measures?

The above series of questions is certainly not exhaustive. Whatever the answers they will contribute to (a) better understanding of CC's geography, (b) understanding and mapping of the respectively perceptions of the public and responsible institutions and (c) identification of reflections of the above on regional CC adaptation and mitigation policies

The methodological approach is a process of successive steps as follows: first, consideration of the factors related to the different climatic zones in each region and anticipation of current and future climate changes; secondly, identification of the particularities of each region in terms of regional human and economic geography; thirdly, recognition and mapping of public and competent authorities' perceptions of climate change and fourthly actual climate policies and reflections to the actions of competent institutions. The basic sources supporting the work were climatic variables' statistical data, socio-economic primary and secondary data, reports on sectoral and regional distribution of climate change impacts in Greece, regional planning policy documents and public inquiry data.

2. The physical and socioeconomic geography of the Regions Sterea Ellada, Thessaly and Peloponnese - CC impacts and planning policies

Greece is a country featured by different climatic zones. This is due to interaction of weather systems with its complex topography, resulting in climatic characteristics that change within a few tens of kilometers. The study of the three regions of the country highlighted these differences.



Figure 1: Map of the administrative Regions of Greece, Date of Access: 12/4/21019, Source: Hellenic Oncology Foundation

2.1 Sterea Ellada

Sterea Ellada is located in the southern part of mainland, constituting the second largest Greek Region. It is located in an enhanced geographic location that makes it the hub and corridor of the mainland transportation, communication and energy networks of Central Greece (Ministry of Environment and Energy -MEE-, 2018).

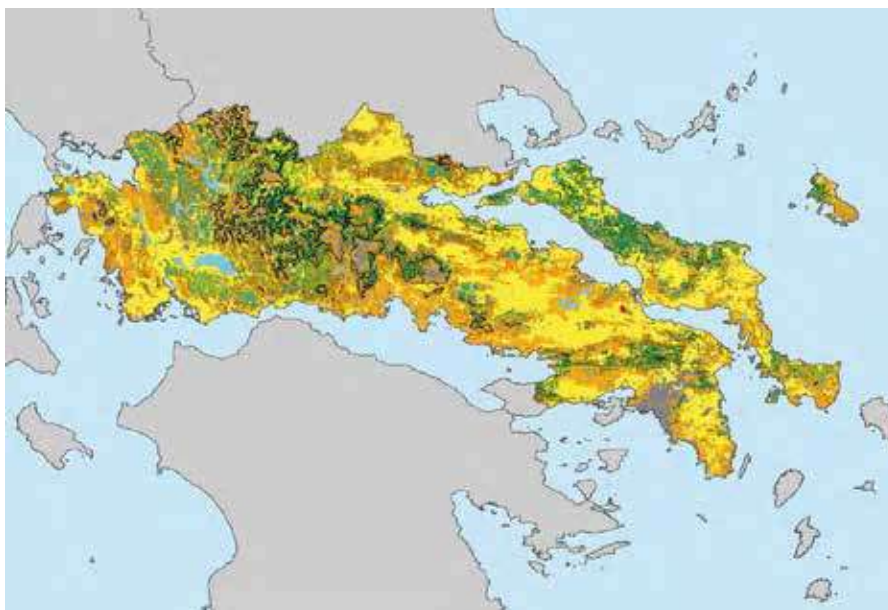


Figure 2: Map of the region of Sterea Ellada, Source: WWF Greece, 2012a

It is characterized by intense mountain volumes, a large number of lakes and several important wetlands and rivers. As a result, the high and steep mountains contribute to the formation of intense climate diversity, with the coasts generally having a smaller annual temperature range, the rainfall being more pronounced in the west often resulting in intense flood phenomena, and the central mountain complex being featured by cold climate with frosts and snows (Zografou et. al, 2012a).

In relation to climate changes, for the time being, desertification or drought phenomena have not been observed, although some areas (Fokida, Evia) are expected to be classified as high risk in the long term. Management and protection of water resources, which are a valuable source of water supply in the region, as well as prevention of natural disasters (fires, floods) with significant socio-economic impacts, are important challenges expected to increase by CC and calling for adaptation measures (Ministry of Environment, Energy and Climate Change -MEECC-, 2013).

The effects of CC are expected to be quite severe due to increasing incidences of extreme weather events and interactions between physical and social systems on one hand and the climate system on the other. According to the report of the Bank of Greece (2011) in the period 2021-2050 the very warm days (and nights) are expected to reach 20 and 40 in the period 2071-2100 in the lowlands and mainland of Sterea Ellada. In addition, the days of extreme rainfall in eastern Sterea Ellada are

expected to increase by 30%, while increases are expected in the periods of consecutive drought days where rainfall will be less than 1 mm per day.

According to the Regional Spatial Framework (RSF) of Sterea Ellada that was approved by a decision signed by the Minister of Environment and Energy (2018), one of the basic policy objectives is *“adaptation to the impact of CC and energy needs, with priority being given to planning development of Renewable Energy Sources (RES) and the restructuring of transportation systems”*.

RSF (2018) provides for primary sector to become the basic tool for extrovert development, exploiting certain advantages of the region of Sterea Ellada for agriculture and livestock farming, forestry, fisheries and aquaculture. Particular attention is also put at the significant activity of mining. Secondary sector pursues an important role for the region in the field of energy and the promotion of designated origin and high quality food products with export orientation. Expansion and growth of the tertiary sector, particularly the tourism sector, is among the priorities of the RSF.

The RSF (2018) provides for the protection of the natural environment by means of basic principles for the management of protected areas and guidelines for tackling pollution and CC.

To ensure the protection of the primary sector, some of the specific directions given are:

- *“Preservation of agricultural land.*
- *Rational management of irrigation infrastructure and land reclamation projects.*
- *Rational management of pastureland.*
- *Organization of fishing facilities.*
- *Interconnection of local nutritional products with tourism”.*

Regarding the protection of water resources, which are a valuable source of water supply for cities and a major input to agricultural production, since 2013 MEECC has promoted management studies per water basin, which are expected to prove particularly useful for the treatment of upcoming drought periods due to CC. According to the RSF (2018) priority is also prevention of natural disasters, such as fires, floods, landslides, etc., having significant socio-economic impacts on settlements and technical infrastructure. Adaptation to CC requires further specialization as it is expected to affect adversely and distinctly several of the region's productive and residential sectors, such as tourism, housing, agriculture, livestock farming, fishing etc. (MEECC, 2013).

2.2 Thessaly

The region of Thessaly is located in a privileged geographic position at the center of the Greek territory and bordering with the region of Sterea Ellada.

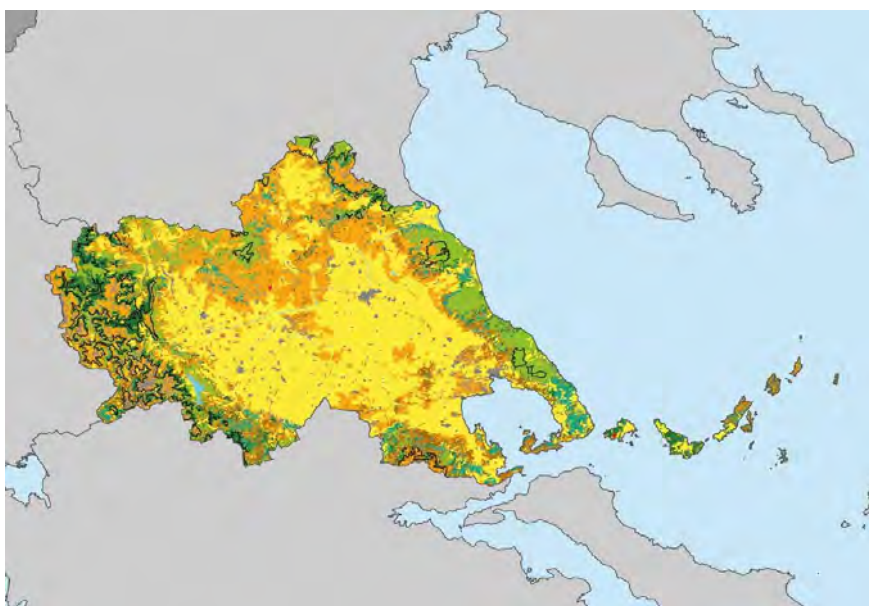


Figure 3: Map of Thessaly region, Source: WWF Greece, 2012b.

It is featured by the Thessalian plain, which is the largest plain of the country. The plain is enclosed by large mountainous volumes, of which the highest is mount Olympus. Its longest river is Pinios, which is fed by several tributaries and its largest natural lake was Carla which was drained in 1962 causing serious problems to both the natural and the social systems in the region. There are also artificial lakes in the region as well as several wetlands. The climate is characterized as Mediterranean, with hot summers and cold winters and rainfall presenting great spatial variability (Zografou, et. al, 2012b).

The impacts of CC are expected to significantly affect the region with greater changes in the climate to be anticipated in the plains and mainland, where change in the number of days with maximum temperature figures up to 20 in the period 2021-2050 and up to 40 in 2071-2100 (Bank of Greece, 2011). According to a study by the Ministry of Environment (1997) there will be a reduction of cotton production in the area up to 29% due to mean temperature increase in the period 2071-2100 in. However, according to IPCC (2007), moderate warming will likely increase crop yields in the temperate zone while according to the Bank of Greece Report (2011) there will be a change in the days of night glaciers in the region, with a reduction between 10 and 15 days in the years 2021-2050 and 25 days in the period 2071-2100, describing this parameter as very important for rural areas, especially those with sensitive crops such as citrus fruits.

By decision signed by the Minister of MEE in 2018, the RSF of Thessaly was approved with the aim of preventing and adapting to climate change, by increasing energy efficiency and promoting RES and co-generation in all sectors (MEE, 2018). Basic aims are to promote the sustainable, balanced and integrated development in accordance with the natural, social and economic particularities; to preserve biodiversity; prevent pollution and improve the quality of life; restrict the dispersed structure and siting of tourism activity infrastructure and maintain significant power plants (Hydroelectric stations of Plastiras and Smokovo Ponds).

According to the RSF (2018), the Thessalian plain is and must retain its role as the most important agricultural area in the country. Sustainable management of this natural resource is of particular importance at both the regional and national level. In order to fulfill this objective, it is necessary to:

- *"Declare agricultural land in terms of its productivity.*

Eliminate building development out of statutory plans exclude uses and activities related to and compatible with agriculture.

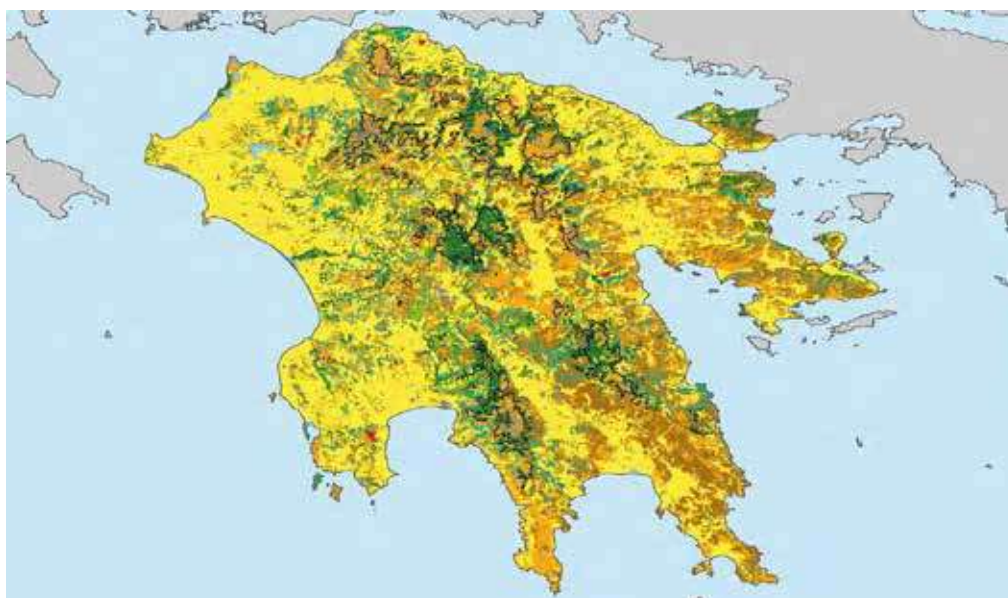
- *Implement measures foreseen by water planning of the basins of Thessaly;*
- *Protect and promote the branded/local quality products;*
- *Support the production of "organic" products (including livestock)".*

Livestock farming is an important factor in the development of the agricultural sector of the Thessaly region and it is considered as a first priority policy sector, alongside other compatible uses in the designated zones. Aquaculture plays also a key role in the delta of Pinios, while RES occupies an important position in the development of the area including small hydroelectric works photovoltaic installations and the mining.

Three horizontal guidelines are foreseen by the RSF (2018) for CC mitigation and adaptation in the region of Thessaly: (a) *"Reinforcing the application of the best available practices and technologies to increase energy efficiency"*; (b) *"Promotion of RES and co-generation of energy in all sectors"* and (c) *"Reduction of energy consumption in accordance with national commitments arising from international and European policies for CC"* (MEE, 2018).

2.3 Peloponnese

The region of Peloponnese includes the largest peninsula of Greece and its relief is mainly mountainous and steep. The largest plains meet at the seaside, but also in the valleys of the rivers of the region.



. Figure 4: Map of Peloponnese region Source: WWF Greece, 2012c.

The climate of the Region is characterized as Mediterranean with prolonged droughts during the summer months and mild rainy winters. However, climate differentiation between western, central and eastern Peloponnese is quite noticeable. In the coastal and lowland areas of Western Peloponnese a Mediterranean Sea climate pertains with heavy rainfall. Centrally, the climate is characterized as mountainous, cold, with frosts and snows during the winter months (Zografou et. al, 2012c) and an average annual temperature about 10° C (Bank of Greece, 2011), while in the east rainfall is limited and the climate is characterized as semi-arid (Zografou et. al, 2012c). Rainfall and air temperature are the most important climatic elements of a place. On the coasts of the Peloponnese region, humidity of the air approximates that of sea climates, while the average annual amount of rain received by the mountain ranges reaches 1,600 mm. (Bank of Greece, 2011).

CC is expected to influence the region considerably, as in the years 2021-2050, the number of extremely hot days and nights are expected to reach 20, in southern Peloponnese, while in the years 2071-2100 to reach 40. At the same time, the expected reduction of frost days is 10-15 days for the period 2021-2050 and 25 days for the period 2071-2100 (Bank of Greece, 2011).

Regarding CC and its impact, it is estimated that several parts of the region will be affected, due to the rise of sea levels and parallel salinization of aquifers (MEECC, 2013). According to the report of the Bank of Greece (2011), vulnerability of the coastal regions of northern Peloponnese is expected to increase because the sea level is estimated to rise, until 2100, from 0.3 to 1.5 mm/year as a result of northern winds. In turn it will threaten port and athletic facilities, erode beaches and increase floods and the salinity of rivers, bays and groundwater (Stavropoulou, 2017).

In the region of Peloponnese, there are several areas of sensitive coastal ecosystems, which will undergo geographical changes due to sea level changes which are estimated in turn to affect the extensive alluvial coasts of Western Peloponnese and the alluvial fields of the Messinian, Laconian and Argolic Gulfs (Triptsidis, 2010). In Figure 5 illustrated in red are the coastal areas estimated to be affected by one meter sea level rise.

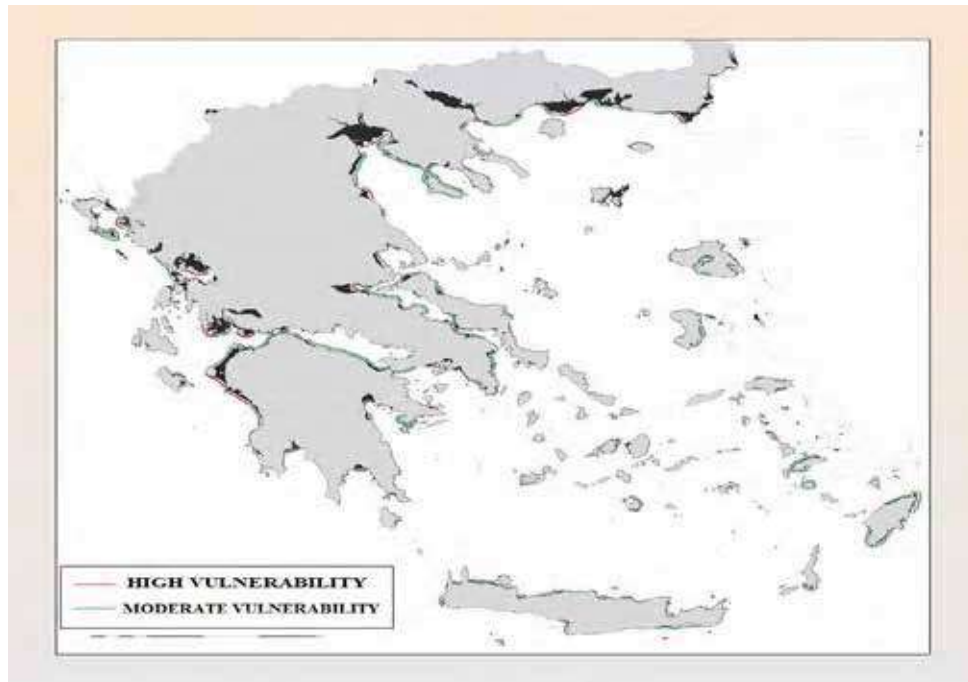


Figure 5: Map of Greece indicating coastal moderate and high vulnerability to the rise of sea level, Source: Bank of Greece (2011).

The effects of the rise in temperature, especially in the urban centers of the region, the tourism destinations and the primary sector (livestock, fishing, agriculture, etc.) are also important. As far as desertification is concerned, several coastal areas are at risk (Argolikos, Laconian Gulf) and some already suffer from aquifer salinization, while areas at high risk of erosion may be found eastwards (MEECC, 2013).

A significant number of environmental studies have been developed for the region and protection zones have been established for both mountainous areas of Parnonas and Erymanthos-Chelmos. In other mountainous areas the protection zones are expected to be institutionalized. As for the water supply of the area, the region is mainly served by boreholes, water tanks and desalination units. During the summer months, there are problems of water adequacy, due to the inadequate water supply network and the always increasing demand in various tourist areas, such as Messinia and Laconia (MEECC, 2013).

As it becomes apparent, there is a pressing necessity for revision of the outdated Regional Framework for Spatial Planning and Sustainable Development (RFSSD) of Peloponnese. Since more than 15 years have gone by its institutionalization a series of substantive and significant new conditions and necessities have appeared: (a) utilization of solar and wind potential, (b) satisfaction of growing tourism demand, (c) protection and sustainability of natural resources, (d) new irrigation projects etc.

3. Public Perceptions

Over the last few decades, CC has become one of the world's most serious problems, already causing and expected to cause more huge impacts in the future, in both social and economic terms. After multiple research projects, the scientific community has acknowledged the challenges of CC and, to some extent, has been mobilized to meet these challenges. However, the communities' and people's perceptions play a crucial role in coping with these challenges. Appropriate education and continuous information dissemination on CC issues can help individuals and societies to understand the serious impacts out of the interaction of the natural with anthropogenic environment and gain knowledge and practical skills for adaptation and mitigation actions. However, before organizing appropriate information campaigns and education programs, we should first obtain knowledge about people's current understanding and perceptions of CC.

According to surveys and polls that have been conducted from time to time, it seems that the majority of people in Greece consider that CC is due to anthropogenic factors while a small percentage of people consider either that it does not exist or it is due to natural causes.

In November 2015, on the occasion of the United Nations Conference, the European Commission carried out an investigation in EU countries. According to the findings Greeks support the need for collective action for CC. Almost nine out of ten respondents in Greece believe that CC is a “very serious” problem, while about six out of ten say that the national governments are responsible for dealing with CC in the European Union (EU). When asked if they have taken any personal action to combat CC in the last 6 months, only four out of ten responded positively. However, when they were presented with a list of practical measures (e.g. effort to reduce rubbish) the percentage of positive answers increased up to 89%, thus proving that many respondents did not associate certain environmentally friendly actions with CC mitigation or adaptation (European Commission, 2015).

The research was repeated in March 2017, with the results showing that 8 out of 10 Greeks considered that CC was a serious problem, while half of the respondents argued that they had taken personal action to combat it. Two thirds of the respondents reported that they were trying to reduce waste and separate them regularly for recycling. A percentage of 14% of respondents have, as they replied, installed solar panels at home, while 20% regularly use environmentally friendly alternatives for their movements and buy locally produced and seasonal food, whenever this is possible, at a rate of 35% (European Commission, 2017).

In June 2017, on the occasion of the World Environment Day, the polling company “Aboutpeople” on behalf of electronic newspaper “Athens Voice”, conducted a poll regarding the view of the Greeks on CC, in a sample of 731 people over the age of 18. According to this poll, 78.2% believe that CC is mainly due to human factors, and 17.2% that it is mainly due to natural causes, while 3.9% believe that it does not exist (A.V. Team, 2017).

In November 2018, the European Investment Bank, in view of the international climate Summit, published a public opinion survey on CC carried out by the polling company YouGov in a sample of 25,000 citizens. According to this research, the middle social class in Greece is more concerned about climate change (96%) than the lowest (90%) and higher (78%) classes. The same research shows

young people more concerned (94%) than the elderly (85%) and women more concerned (94%) than men (89%) (Voutsadakis, 2018).

In our three areas of study, various initiatives have been undertaken from time to time to inform and raise public awareness about CC.

3.1. Sterea Ellada

As far as the region of Sterea Ellada is concerned, public information is primarily undertaken by the local media, through published articles highlighting the dangers of CC and respective consequences on health of the region's residents, as well as on the regional and national economy. They inform people about relevant to CC actions, lectures, workshops and conferences that take place in the region, urging them to take action for adaptation and mitigation, while disseminating wider information about actions of EU citizens.

In November 2015, on the occasion of the meeting on CC in Paris with the presence of 150 leaders from around the world, a demonstration was held in the city of Lamia against any policy degrading and polluting the environment. This was indeed a mass meeting of protesters who gathered to send their own message against climate aggravating activities and forms of development (LamiaReport, 2015).

In addition, on the occasion of the World Wetland Day, in January 2019, a group of cCitizens carried out an informative intervention in the city of Chalkida for the rescue of Kolovrechti. This activist initiative aimed to remind the inhabitants of the region of the importance of protection of the environment and the necessity to preserve the remaining natural wetlands in Greece, thus contributing to the planet's climate balance (Pantiora, 2019).

Since the beginning of 2019 the Municipality of Lamia, has organized a series of actions to raise awareness and inform citizens about CC, with the slogan: "Let's Do It Lamia 2019". The initiatives aimed at raising concern and protect the natural environment and reinforcing the spirit of voluntarism besides. This was attempted through promotion of the volunteering school week (with the assent of the Ministry of Education and Religious Affairs), where each school organizes its own actions and cooperate with the municipality for supportive assistance. The overall objective has been to inform and sensitize pupils and students at all levels (Municipality of Lamia, 2019).

3.2. Thessaly

In Thessaly, mainly the local media has taken over the task of informing and sensitizing citizens by posting scientific articles raising citizens' awareness and motivating them to act individually and collectively to combat CC. In November 2015, the "Global Climate Action" was held on the beach of the city of Volos enabling citizens to send a strong message to the governments' representatives attending the climate conference in Paris, including claims as "turning to green energy" (e-thessalia.gr, 2015).

In June 2017, the 1st Panhellenic Congress on CC was held in the city of Karditsa, where many local people participated and were informed about the significant impact of CC on the environment and humans. Almost two years later, in March 2019, on the occasion of World Forest Day, the Association of Forest Guards of Central Greece, invited all citizens of Thessaly to ask for a new forestry policy providing for a new single forest protection body (Association of Forest Guards of Central Greece, 2019).

Finally, in April 2019, the gymnasium of Platykampos, acted and marched against CC in the city of Larissa, in the context of the event "School open to society", sending the message that it is the responsibility of the young people to act for the sake of the climate with slogans such as: "Save the Earth" (OnLarissa, 2019).

3.3. Peloponnese

As with the previous two regions, the local media mainly have undertaken the task of informing and sensitizing the people of the region of Peloponnese about CC. However, in this region the local mass media hardly mention the negative impact that CC is expected to bring to the region. Citizens are informed mainly through scientific reports, conferences and lectures on the overall impact of CC, without particular reference to the specific locally expected negative impacts. The reason maybe related to political orientation of those controlling the local media or simply to lack of knowledge.

In January 2008, a public event was held in Patra. It was organized by the MESOGEIOS SOS network in collaboration with the environmental education offices of primary and secondary education and the Association of Environmental Organizations of the wider region. During the event the response of the public was particularly warm, and the discussions indicated that CC concerns considerably the residents of the region, who seemed to realize the need of mobilization (MESOGEIOS SOS Network, 2008).

In November 2015, a group of citizens, in view of an environmental protection event, made an internet call inviting the public to claim for the transition to 100% clean energy, thus protecting the future for the next generations and demanding an agreement from world leaders that would release clean energy for all (Tempo24, 2015).

4. Results and Discussion

The three regions presented, although very close to one another differ considerably in terms of their natural, geomorphological and climatic characteristics; also in terms of their socio-economic profile differ to a quite large extent. the three regions illustrate perfectly the strong spatial dimension of CC and its impacts on the diverse human activities affecting consequently spatial policies and regional development (Kartalis et.al., 2017). According to Davoudi (2009), there is a two-way relationship between CC and spatial planning, since spatial planning has the potential to mitigate the effects of CC, while CC may lead to a revision of the basic norms, objectives and directions of spatial planning.

According to research and statistical analyses, CC spatial variations, cause diverse and different pressures on the natural and anthropogenic environment, where the challenges that are posed to many sectors of the economy differ from one region to another (European Environment Agency 2005, 2008, 2012). Indicative cases of such sectors are tourism, energy production, agriculture, fisheries, etc. (European Commission, 2009).

In recent years, the regions have taken a number of initiatives to adapt to CC. Below are three tables comparing the three regions in terms of: (a) physico-geographical and climatic features and challenges; (b) the predominant economic activity and income sectors and (c) the impacts of CC on urban, tourist, agricultural and forestry areas.

Table 1: Physico-geographical and climatic features and challenges of three regions in Greece: Sterea Ellada, Thessaly and Peloponnese.

	Sterea Ellada	Thessaly	Peloponnese
Physical Geography	<ul style="list-style-type: none"> • Intense Mountain Volumes • Large number of ponds • Wetlands • Rivers 	<ul style="list-style-type: none"> • Extensive Plain accommodating agricultural development • Intense Mountain Volumes • Rivers • Lakes 	<ul style="list-style-type: none"> • Mountains • Plains • Valleys • Beaches • Rivers
Climate	<ul style="list-style-type: none"> • Mediterranean • Hot Summers • Mild Continental Winters • Frequent snowfalls in mountainous areas 	<ul style="list-style-type: none"> • Continental • Cold winters • Hot Summers 	<ul style="list-style-type: none"> • Mediterranean • Mild and warm on the coast • Cold in centrally located mountainous areas
Natural Hazards	<ul style="list-style-type: none"> • Desertification • Drought • Forest Fires • Floods • Frost 	<ul style="list-style-type: none"> • Desertification (due to intensive agriculture) • Drought • Floods • Frost 	<ul style="list-style-type: none"> • Floods • Rainfall • Forest Fires • Earthquakes
Climatic Challenges	<ul style="list-style-type: none"> • Increase of the number of hot days and nights • Increase of the number of days with extreme 	<ul style="list-style-type: none"> • Hot days increase • Reduction of the days of night Frost • Rainfall reduction 	<ul style="list-style-type: none"> • Hot days increase • Reduction of the number of days of night Frost • Rainfall reduction

	rainfall <ul style="list-style-type: none"> Freezing during consecutive drought days 		
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Source: author's elaborations

Table 2: Predominant economic activity and income sectors in three regions of Greece: Sterea Ellada, Thessaly and Peloponnese.

	Sterea Ellada	Thessaly	Peloponnese
Areas of Activity and Employment rates	<ul style="list-style-type: none"> Agriculture (20,90%) Livestock Farming (20,90%) Fishing 	<ul style="list-style-type: none"> Agriculture (14,26%) Livestock Farming (14,26 %) Sea Fishing Aquaculture 	<ul style="list-style-type: none"> Agriculture (13,47%) Livestock Farming (13,47%)
Areas of Income	<ul style="list-style-type: none"> Primary Sector Energy sector Tourism Research and innovation 	<ul style="list-style-type: none"> Primary Sector Tourism The field of mineral wealth, energy and industry Research and innovation 	<ul style="list-style-type: none"> Primary Sector Exports of primary sector products Tourism Research and innovation

Source: author's elaborations and Greek statistical authority (2009).

Table 3: The impacts of CC on urban, tourist, agricultural and forestry areas

	Sterea Ellada	Thessaly	Peloponnese
Impacts:			
Urban Areas	<ul style="list-style-type: none"> Extreme Precipitation Floods Droughts Heat waves Frosts Extreme Rainfall Fires Rising sea level Atmospheric pollution 	<ul style="list-style-type: none"> Heat waves Atmospheric pollution On Tourism On Economy On Public health On Energy demand 	<ul style="list-style-type: none"> Extreme Precipitation Floods Heat waves Fires Rising sea level Atmospheric pollution On Tourism On Economy On Public health On Energy demand On Availability and

	<ul style="list-style-type: none"> • On Tourism • On Economy • On Population health • On Energy demand • On Availability and supply of water 		supply of water
Tourist Areas	<ul style="list-style-type: none"> • On Winter Tourism • On Demand Energy 	<ul style="list-style-type: none"> • On Winter Tourism • On Summer Tourism • On Energy demand 	<ul style="list-style-type: none"> • On Winter Tourism • On Summer Tourism • On Availability and supply of water • On Energy demand
Agricultural Areas	<ul style="list-style-type: none"> • Extreme Rainfall • Droughts • Floods • Heat waves • Frosts • Rising sea level • Fires • On Availability and provision 	<ul style="list-style-type: none"> • Heat waves • Droughts • Rainfall reduction • On Availability and supply of water • On Productivity Cultivation 	<ul style="list-style-type: none"> • Droughts • Floods • Heat waves • Rising sea level • Fires • On Availability and supply of water
Forest Areas	<ul style="list-style-type: none"> • Droughts • Fires 		<ul style="list-style-type: none"> • Rainfall reduction • Fires

Source: author's elaborations

It becomes evident that the effects of CC are expected to affect to quite a large extent primary sectors of all three regions, as well as in the secondary and tertiary. Significant changes have been recorded and are anticipated also in various climatic parameters, such as temperature, rainfall, snowfall, sea level, etc., while heat waves, extreme weather phenomena (including extreme precipitation) and droughts are expected to increase. Most of these impacts are negative as they are expected to affect the agri-food sector of these regions by increasing cooling costs during the summer months and reducing tourism due to extreme temperatures and shortages in water supply availability. All of the above are a priority in drawing up plans for adaptation to CC with linkages with sectoral and spatial policies (Kartalis et. al., 2017).

The region of Sterea Ellada is expected to suffer mainly in the primary sector where it bases most of its economy while the energy sector follows. The region of Peloponnese is expected to suffer the largest impact, since it will affect all regional sectors to a large extent. The region of Thessaly will be affected also, but in some cases of the primary sector it will benefit besides, for instance due to the anticipated increase in the production of citrus products.

Our research also revealed the perceptions of the people about CC, that relate to their individual actions regarding CC mitigation and adaptation with an emphasis on issues regarding consumption of energy and the use of environmentally damaging products. After analyses of statistical and poll data, it was found that the Greek middle class consider the problem of CC and acts to tackle it, in a higher percentage, than the higher and lower social classes.

Conclusions

The Mediterranean has been recognized internationally as a vulnerable area to the impacts of CC (Bank of Greece, 2011). This study presents the impact of CC in three regions of Greece, Sterea Ellada, Thessaly and Peloponnese, with climatic conditions appearing to change in urban and non-urban areas. According to the methodology used, potential impacts of CC and the exposure and sensitivity of each region and sub-regions have been addressed. According to the findings of a series of climatic simulations and the IPCC reports (2007, 2013), by the end of the 21st century the temperature in Greece will increase significantly, while the height of precipitation is expected to continue decreasing, with a parallel significant increase in the number of events of temperature extremes and extreme rainfall values (Bank of Greece, 2011). Because of these conditions, the dry areas will become even drier due to the reduction of water resources, the productivity of forests will decrease, and the number of forest fires will increase. Forestry and agriculture have at times shown their susceptibility in the increasing trends of heat waves, droughts and floods, while coastal wetlands are vulnerable to the long-term rise of the sea level. The most acute negative impacts are expected in the western Peloponnese and the lower in Thessaly and southern Peloponnese (Kartalis et. al., 2017).

According to the results of the present study, the impact of CC on the three study regions, especially in the sectors of agriculture, tourism, energy, livestock and public health will generally be negative, without, however, bringing equal results in all three regions. In some cases, CC can produce positive results, for example Thessaly may experience an increase in agricultural production due to the reduction of frost nights.

The planning and sustainable development spatial frameworks institutionalized in 2003 include only with a few references to CC with a visible deficit in the spatial specialization of the counter-actions concerned.

As found in this study, informing people in three regions is being conducted by local media with limited school penetration and limited information by the state, both at educational and operational level. As reflected through the research of "Public Issue" in 2008, Greeks consider that the CC exists primarily in the agricultural sector and not in the urban areas, leading us to the conclusion that information through the local mass media is inadequate, as local media may be biased with the CC or lack the necessary knowledge.

In spatial frameworks, it was found that CC appears at the target level, but not at the operational level, while absent from the urban space and planning. In the field of spatial legislation, CC is practically absent, but there are often references to energy issues, but through the technical prism of the energy infrastructure, not CC. The same applies to urban planning legislation (Kartalis et. al., 2017).

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Urban green spaces in transition: Urban social-ecological resilience in the region Frankfurt Rhine-Main—A review

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Abstract: This study reviews the fundamental literature and emphasizes the significance of urban green spaces (UGSs) of the studied case, the Frankfurt Rhine-Main region (FRM). UGSs as natural resources provide benefits against main climate-related urban hazards—floods, droughts, and heat waves—and are considered as essential components of climate adaptation. Also, UGSs are spatial resources for densification, a key instrument against sprawl. UGSs' competing functions cause urban land-use conflict in many growing metropolitan regions. FRM, with its increased frequency, randomness, and severity of climate hazards and peaking rates of housing demand, is no exception to this trend. In this study, the literature review is guided by a conceptual framework which assigns urban land-use competition as the point of departure and the concepts of regional economic development and environmental protection as entry points to urban social-ecological resilience. Although resilience, as a theory of social-ecological system property, is already studied extensively, it still needs to be unpacked to be operationalized in planning practice. This work looks at the links among theory, policy, and practice and suggests that resilience is most purposeful when it is approached rather as an integral process to planning and management than an end destination. (195 words)

Keywords: urban green spaces; urban social-ecological resilience; urban transformations; Frankfurt Rhine-Main

Introduction

Background

This study emphasizes the significance of urban green spaces (UGSs) in urban planning practice and looks at their contribution to urban social-ecological resilience in the context of the Frankfurt Rhine-Main (FRM) region in Germany. In the face of ongoing urban transformations triggered by the peak housing demand, ensuring sustainable urban growth in planning practice is a major concern. Improving and sustaining the benefits UGSs provide, especially during times of inevitable urban transformations and a changing climate, is essential.

Since the preindustrial times, FRM has been a region of high economic activity. Today, after its industrialized and de-industrialized phases, the region is still home to production, commerce, and high international financial activity, administration, and services. The region performed relatively stable during the global financial crisis of 2008-2009, and a reason for this has been the diversity economic

activities and socio-demographic composition. As this diversity and stability is attracting an unprecedented rate of domestic (mainly due to shrinking and declining cities in some German and European regions) and international migration (mainly due to refugee situation since 2015 and Brexit, as the city of Frankfurt is assumed to carry further some financial functions of London in continental Europe), activating spaces to provide housing requires immediate responses from national and subnational levels of administration. Recent prognoses showed that additional regional housing supply until 2030 should number approximately 184.000 dwellings (Regionalverband FrankfurtRheinMain, 2016). According to a recent analysis, the region can actually provide 220.000 new housing units through densification (106.000 units), through new development on open land (100.000 units), and through promoting mixed-use in available industrial and commercial zones (14.000 units) (*ibid*). A great majority of this potential (183.000 units) is located at the areas with well-connected public transportation facilities. The motivation behind providing more housing at the areas with well-connected public transport is to directly contribute to less car dependency (Figure 1).

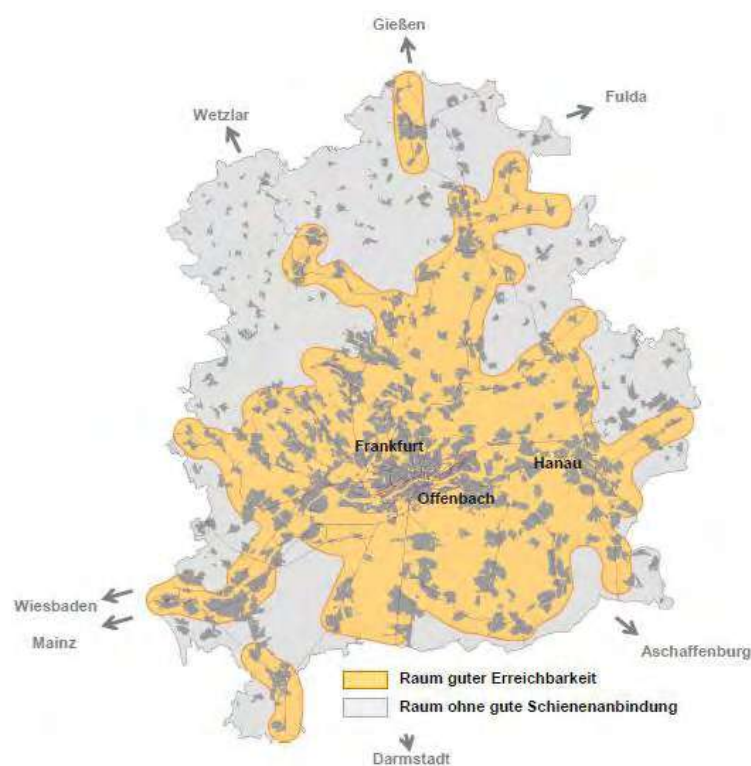


Figure 1: The area of well-connected public transportation with a housing provision potential of 183.000 dwellings (yellow) mostly through densification (source: Regionalverband FrankfurtRheinMain, 2016).

Problematization

Due to the accelerated rates of housing demand in regions with high economic activity, urban growth should be spatially controlled and managed to avoid sprawling over natural landscapes and urban densification is a strategy often employed in achieving this. At the same time, the impacts of increased frequency, randomness, and severity of main urban hazards—namely flood, drought, and heat wave—on human wellbeing become more severe, as urban densification might take place at the expense of UGSs.

In this regard, UGSs can fulfill two mutually incompatible roles: as natural resources for climate adaptation and as spatial reserves for urban growth. These competing functions of space bring about a major challenge in urban land-use planning and management in many growing metropolitan regions in the world. The FRM region, with its peaking rates of housing demand and increased damage of urban climate hazards, is no exception.

Purpose of this study

The aim of this work is to discuss and reflect on the results of an extensive literature review. The texts with the greatest potential to inform the concept, content, and context are reviewed. The most relevant previous work is identified and input from key scholarly body is brought together. The reviewed body of literature is compiled, thematically grouped, and critically reviewed between December 2018 and March 2019. The relevant literature body is found out by systematic searches in major scientific databases (Web of Knowledge, Scopus, Google Scholar) and the University and State Library of Darmstadt University of Technology. Following keywords are used with various combinations: urban green spaces; land-use conflict; urban densification; urban sprawl; regional economic growth; environmental protection; climate adaptation; resilience; social-ecological systems (SESs). Initial output is narrowed down by a category (architecture, urban planning, urban development, urban studies, landscape ecology) and document type filter (articles, books, book sections, proceedings, policy documents). Among these, 55 documents inform this study. The workflow to carry out the literature review has been as follows: 1. defining review questions based on the research problem (i.e. urban land-use competition); and 2. selection and review of relevant key literature. The below conceptual framework guides the review:

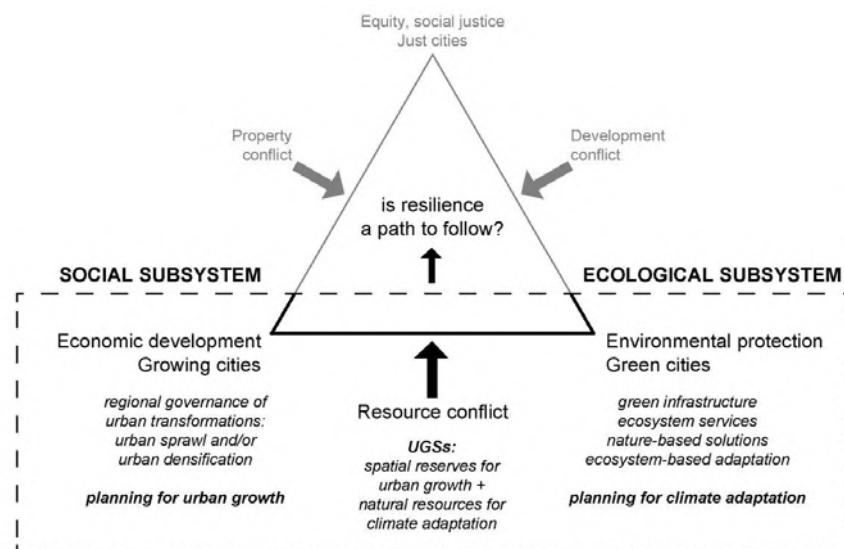


Figure 2: Conceptual framework: a model of priorities, relationships, and conflicts associated with the components of SESs (source: adapted from Campbell, 1996).

Resource conflict

Land as a scarce resource

Urban areas are where most of the global population and economic activity is concentrated. As hubs of knowledge and innovation, they are the engines of national economic growth. As dynamic systems

being constantly exposed to both abrupt and steady change, today's urban areas face massive social, economic and environmental challenges which calls for a restructuring in conventional planning and management to adequately address human wellbeing.

The aftermath of Second World War marks the beginning of an era in which human activities have started to alter the environment more extensively and rapidly than any other time in human history, with increasingly devastating environmental impacts (Grimm *et al.*, 2008). Although cities are not covering more than around 3 per cent of Earth's overall land surface, these devastating global impacts are attributed to cities (Alberti *et al.*, 2003; Grimm *et al.*, 2008; Gago *et al.*, 2013). Growing evidence shows that the functioning of urban systems is dependent on the environmental benefits provided by UGSs. How urban growth takes place influences the quality and quantity of UGSs and their benefits to a great extent: *growing in* (urban densification) might tend to take place at the expense of green spaces *within* an urban area; whereas *growing out* (urban sprawl) might tend to cause a significant loss of green spaces *around* an urban area. Furthermore, it cannot be ignored that both economic and ecologic systems need an interconnected critical mass of land to be sustainable, and that "the continuity of one system invariably fragments continuity of the other" (Campbell, 1996, p. 20)

Arguably one of the most comprehensive works produced in reframing the conflicts and tensions inherent in planning discipline is Campbell's "Green cities, growing cities, just cities? Urban planning and the contradictions of sustainable development" (1996). This article invites to rethink what sustainability is and to acknowledge the inevitable conflicts in planning discipline so that we no longer romanticize our sustainable past, as this attitude seems to be misleading in addressing contemporary problems. In preindustrial times communities had no alternative but be sustainable, because the feedback mechanisms were too short-term: if our ancestors destroyed vegetation, they would die out. Today, the scope of our alterations on nature is so massive that we do not necessarily suffer the consequences of these alterations (*ibid*). As Neuman (2005) also agrees, urban models from old, preindustrial European and North American cities keep inspiring us as sustainable models of urban form, however, today's complexities require thinking beyond that.

Campbell (1996) describes the resource conflict, the conflict between economic growth and environmental protection priorities as the '*Ur-Konflikt*' (p. 6). Resource conflict is mostly evident in urban land-use, as it is nearly always a tradeoff between social, economic, and environmental goals, a result of decisions that are irreversible, long-term commitments (European Environment Agency (EEA), 2015). Because of this, drivers and consequences of, and control for land-use is always a societal matter: land-use decisions shape the built environment and determine where and how economic activity takes place, where communities develop, and how natural and built environment is configured and reconfigured (Goetz *et al.*, 2004).

Studies aimed at classifying and qualitatively assessing the state of understanding on global trends in land-use found out that urbanization is one of the major drivers of massive change (Lambin *et al.*, 2001; Alberti *et al.*, 2003). It is also observed that massive changes in land-use and land-cover often overlap with new practices motivated by regional incorporation into a world economy. Triggered by globalization, transformation of urban-rural linkages at regional scales is taking place quite intensely and, consequently, ecological footprints of a city-region in the developed world might expand over several hundred times of the actual surface it covers (Grimm *et al.*, 2008; Gago *et al.*, 2013).

Compact versus sprawl

Based on above discussions on globally driven urbanization and its consequences on land-use and land-cover change, this subsection focuses on a particular spatial form of urban land-use competition: compact versus sprawl. This is of crucial relevance to UGSs, because what remains as inner-city green spaces after implementation of urban densification strategies can tell much about the extent of densification practices.

In Europe, urban development in the form of sprawl first appeared after the Second World War. In parallel to economic and population growth, planning and management of urban growth promoted a spatially expansive model and resulted in the formation of large peripheral extensions to existing urban settings. These extensions were not limited to provision of new housing as more expansion required more social and technical infrastructure, which eventually triggered progressively more sprawl (Olofsdotter *et al.*, 2012). Today, this spatial configuration has important costs as it fragments landscapes, degrades water quality, demands a great deal of provision and upkeeping of social and technical infrastructure (Alberti *et al.*, 2003).

Sprawl indicates an urban form that is to be avoided and connotes not only a massive loss of natural environment but also an increase in car dependency, greenhouse gas emissions, air pollution, high infrastructure investment, operation, and maintenance costs, and social segregation. Today, sprawl is found out to be the most dominant form of urban transformation as several studies have found out that even some shrinking European cities are sprawling, and it cannot be claimed anymore that population or economic decline and spatial shrinkage are directly tied (EEA, 2006; Kabisch & Haase, 2012).

Based on this, compact urban form with higher density receives recognition as a key remedy against urban sprawl (Olofsdotter *et al.*, 2012; Davern *et al.*, 2017). The ideal of compact urban form is however not unproblematic (Olofsdotter *et al.*, 2012). Although the compact city approach as a key response to urban sprawl has benefits such as limiting ineffective land-use and subsequent problems, provision and conservation of UGSs during densification is a major challenge in planning practice (Dallimer *et al.*, 2011; Haaland & van den Bosch, 2015). Urban densification is associated with increased impervious surfaces and decreased vegetation cover. It is also necessary to highlight that the parking spaces for the additional housing provided by densification is a great contributor to the increase in impervious percentage. This, in turn, is one of the main drivers of the urban heat island effect and increased risk of water-related hazards (Grimm *et al.*, 2008) and, therefore, requires alternative ways of densifying urban areas, through implementations such as adding floors on existing buildings and using underutilized parking spaces for new construction.

Moving beyond urban form

The root causes of the resource conflict are not always only spatial, and it could not simply be eliminated by just a ‘spatial fix’ (Campbell, 1996, p. 13). Similarly, Neuman (2005) argues “one cannot overlook the fact that form is both the structure that shapes process and the structure that emerges from a process. Yet the question that should be asked is whether the process of building cities and the processes of living, consuming, and producing in cities are sustainable” (p. 22).

A unifying concept: Rethinking resilience thinking

The aforementioned urban land-use competition in general and the conflicting views on compact and sprawled urban form in particular can be framed under the resilience concept, because the regional economic development end of the tension aligns with the social subsystem and the environmental protection end of the tension aligns with the ecological subsystem of the SES thinking.

The existing resilience literature covers various disciplines, has different starting points and different definitions and a fragmented structure (Chelleri, 2012). In this study, normative assumptions and prescriptions of how to become resilient are of little importance. The discussions rather revolve around the components of what makes resilience thinking a rich concept that is capable of informing today's highly complex challenges in urban planning. Therefore, it is acknowledged that cities are complex, adaptive systems of constant steady and abrupt change ongoing with a degree of uncertainty and UGSs are approached as SESs by unpacking SES thinking that is actually embedded in planning discipline.

As the aim is to operationalize the resilience concept in urban planning, it is necessary to briefly revisit some key definitions in the evolution of the concept and how it made its way to planning. At an earlier stage, engineering resilience is defined as “the ability of a system to return to an equilibrium state after a temporary disturbance” (Holling, 1973, p. 14). This definition emphasizes the capacity to *bounce back*, to return to original state and being fail-safe. To *bounce back* is however not always favorable. There are cases that it is better for a system not to return back to previous equilibrium or stable state, as it might actually mean returning back to status quo which caused the system's current problems at the first place (Eraydin, 2012). Holling (1996) then defines ecological resilience as “the magnitude of the disturbance that can be absorbed before the system changes its structure” (p. 33). Here, the emphasis is rather on the capacity to *bounce forward*, the amount of disturbance a system can take before reaching a new stable state.

What is common in both descriptions is the assumption that there is an equilibrium state to return back or to reach to. However, such an ideal of equilibrium is “too mechanical to reach” in planning discipline and can be misleading (Davoudi *et al.*, 2012). Instead, evolutionary, *i.e.* social-ecological, resilience is described as the ability of complex SESs to change, adapt, and transform while undergoing change (Folke *et al.*, 2010). This approach is promising in planning discipline as it acknowledges not only fast and abrupt (*e.g.* disasters) but also slow and cumulative (*e.g.* hazards) changes which might also bring extreme outcomes (Davoudi *et al.*, 2012).

SES thinking is as central to planning as it is to resilience. As cities are being acknowledged as human-dominated ecosystems, this approach brings together otherwise separated domains of natural and social sciences in explaining how the interactions between humans and ecological processes create cities (Alberti *et al.*, 2003). Resilience Alliance (2010) defines SESs as “an integrated system of ecosystems and human societies with reciprocal feedbacks and interdependence” (p. 52). Human-nature interactions are closely coupled in cities (du Plessis, 2008) because “cities are SESs and should be studied as such” (Grove *et al.*, 2015).

This is particularly important as resilience is, broadly speaking, the study of what systems do while undergoing change (*e.g.* in this study: change that is reflected in form (land cover) and function (land-

use). To ignore or to resist to change has costly consequences: it creates a vulnerable condition for the system, as it foregoes emerging opportunities and limits its options (Walker & Salt, 2006). Still, a thorough understanding of today's societal and environmental change is no simple task to tackle. Today, as we are transitioning from "known extremes to unknown extremes" (Coaffee & Lee, 2016, p. 135), regardless of how well we study and learn from past patterns, the new patterns of change tend to unfold in unexpected ways. Resilience thinking, as it emphasizes humans-in-nature perspective, integrates SES thinking in urban studies, and embraces system attributes such as complexity, adaptability, and uncertainty, is a positive vision of human wellbeing as for it proposes tools to understand change (Pizzo, 2015).

Social subsystem: Housing must be provided

In order to analyze the drivers and consequences of regional economic growth and what it entails within the social subsystem, some phenomena and trends must be well-understood. Perhaps one of the most discussed trends in the scholarly literature is the impact of globalization and global networks on emergence and functioning of urban regions, as today's cities are competing and cooperating to belong to a socioeconomic network that operates at a global scale (Alberti, 2003). Supranational governmental and corporate institutions have enabled the rise of global city networks and this influences the urban processes to a great extent (Neuman & Hull, 2009). Within the inter- and transnational hierarchy and ranking and the complex global network, internationalization of resource flows has the power to shape contemporary cities (Sassen, 2005), their forms and processes.

In the midst of the global pressures, it is of critical importance how scarce land resources are used: is the benefit of society as a whole a central concern in terms of economic prosperity and quality of life? (Goetz *et al.*, 2004). As previously discussed, population growth is a predictable outcome of regional economic development, which in most cases requires immediate responses from public and private actors to activate spaces to accommodate the growing population. Accustomed technical planning options are to grow inwards through densification, grow outwards through sprawl, grow upwards through high-rise, and various combinations of these. Whichever path is followed has strong societal, environmental, and economic implications (*ibid*). It is therefore necessary to understand how these processes are planned and managed.

Based on this, regional governance appears as an important field of investigation within the social subsystem. Regional governance can be defined as the interaction among public and private actors in an institutional context with a normative basis to address and solve societal problems. It either builds bridges and has a supportive nature, or it builds barriers and has a restrictive nature (Bressers & Bressers, 2016). Complementarily, Resilience Alliance (2010) defines governance as "the interactions of diverse public and private actors, their sometimes conflicting objectives, and the instruments chosen to steer social and environmental processes within a particular policy area" (p. 51) emphasizing the fact that different actors will potentially bring different and conflicting objectives, and this, too, is a part of governance.

An important attribute of governance in the context of resilience and SESs is its adaptability. Adaptive governance is defined as "institutional and political frameworks designed to adapt to changing relationships between society and ecosystems in ways that sustain ecosystem services" (*ibid*, p. 51). It promotes interactions across levels and scales of conventional administration, including

interactions between formal (laws, constitutions, rights, etc.) and informal (social and behavioral norms of society) institutions of a governance system. Adaptive governance emphasizes the capacity to adapt to changing interactions between social and ecological subsystem in a way that it sustains its functions and services. When adopted, adaptive governance can be a switch from rigid to flexible, exclusive to inclusive, uniform to diverse, and conventional to innovative.

Ecological subsystem: Environment must be protected

Although regional economic growth priorities tend to exploit the nature simply to sustain growth, environmental protection is also a major goal in planning research and practice, because growth is dependent on the environment. Therefore, the ways to ensure that this dependence is a healthy dependence instead of a parasitic one should be understood. There is growing recognition that the natural environment provides tremendous benefits to human wellbeing, and that urban areas can only function depending on these benefits. The benefits of UGSs—as crucial contributors to adapting the local outcomes of a changing climate—cannot be separated from some key concepts that landscape ecology introduces to urban planning. Of course, applying ecological knowledge to cities is nothing new, though a revolutionary approach has been to investigate the ‘ecology *of* cities’ rather than the ‘ecology *in* cities’ (Grove *et al.*, 2015), which has found the separation of the natural and unnatural in a city rather artificial, and observed the city as a whole.

The increase in the frequency, randomness, and intensity of the three primary climate-related urban hazards, namely floods, droughts, heat waves (Depietri *et al.*, 2012; EEA, 2012; Chen *et al.*, 2016), is coupled with and aggravated by urbanization. In Europe, flooding is the most important hazard in terms of economic loss (EEA, 2010). UGSs have a big capacity to absorb excess, runoff water, unless their quality is not reduced by poor land-use practices (Depietri *et al.*, 2012). Even small patches of vegetation cover in urban areas, such as pocket parks, are contributing to the natural hydrological cycles (Grimm *et al.*, 2008; Green *et al.*, 2016) and decreasing the pressure on the aging and mostly centralized water infrastructure in post-industrial cities of Europe (Green *et al.*, 2016). Drought, on the other hand, is not directly visible in urban areas as flood is (Bressers & Bressers, 2016), but it has dramatic interruptive and costly consequences such as the damages in agricultural supply. This imbalance between too much water and too little water is damaging economies. UGSs are an important component of water-sensitive urban planning and design especially because their contribution to closing water cycles, vegetation cover is to be protected and provided in contribution to harvesting and reuse of water to tackle drought (EEA, 2010).

Heat waves are associated with long-term high temperatures with notable impacts on human mortality, regional economies and ecosystems, and have been the most important hazard in terms of fatalities (EEA, 2010). As a local impact, urban heat island (UHI) phenomenon has also been studied quite extensively. Due to UHI urban areas tend to have higher temperatures compared to their rural surroundings, especially at night (Grimm *et al.*, 2008). Its magnitude at a local scale far exceeds its impacts on global climate (*ibid*). Based on their quality and size, the cooling effect of UGSs can reach up to 50 to 100 meters offset in the built environment. It is therefore important to involve protecting and providing green in response to heat waves and UHI effect.

These are some major outcomes of a changing climate that has local impacts and can be addressed locally through integration of adaptation measures into planning. Adaptation is defined as “the ability

of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences” (IPCC, 2007). Adapting to the outcomes of climate change does not entail that negative impacts are to be eliminated through climate-proofing, rather it addresses reducing the severity of these impacts in a way that is not solely physical, but also political, institutional, and even behavioral. At its core, adaptation differs from mitigation measures, which has a supranational motivation to slow down the pace of climate change. Although UGSs have benefits in climate change mitigation efforts, as well, the scope of this study is deliberately limited to the local scale and it focuses on benefits of UGSs in local climate change adaptation.

Grove *et al.* (2015) propose four main propositions to be integrated when studying at the intersection of urban studies and ecology: 1. The ecology in and of cities looks at the entire metropolitan land-use and land cover system, not just the rural green. 2. It embraces the spatiotemporal and scalar complexity of urban mosaic. 3. It integrates knowledge from the social and ecological sciences and highlights the need to integrate diverse disciplines within the abovementioned layers of complexity. 4. The overarching aim is to be useful both for decision-making and science (p. 2, 7, 9). In order to make full use of and derive benefits from UGSs in adapting the impacts of local climate change hazards, it will be necessary to borrow some key concepts from landscape ecology (green infrastructure, ecosystem services, nature-based solutions, ecosystem-based adaptation) (Figure 3) and integrate them to theories and practices of urban planning. As these four concepts are gaining prominence both in theory and policy, it is therefore necessary to have a clear understanding of what they entail.

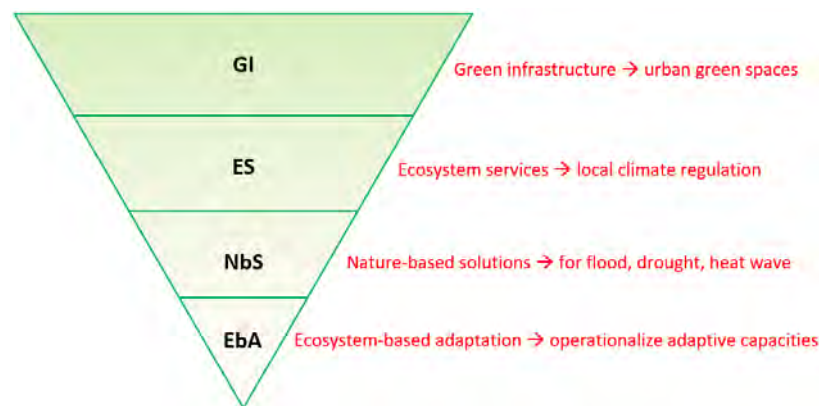


Figure 3: Four key concepts of landscape ecology in urban planning (source: author).

Green infrastructure is “an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations” (Benedict & McMahon, 2002, p. 7). Similar to any other infrastructure, major physical components of green infrastructure are its nodes (*e.g.* parks, gardens) and connections (*i.e.* green corridors). Connectivity is an essential quality and characteristic, because it enables the green network to function as an ecological whole (*ibid*; EEA, 2004). The ‘infrastructure’ approach to UGSs is actually more than just a metaphor, since in planning discipline it is planned and managed as such.

Ecosystem services is defined as the benefits people obtain from ecosystems (Millennium Ecosystem Assessment (MEA), 2005). Costanza *et al.* (1997) listed 17 ecosystem services from gas regulation to

cultural; MEA (2005) further developed these categories as provisioning services; regulating services (including local climate regulation); cultural services; and supporting services. Due to the abstract nature of the concept, grouping and regrouping ecosystem services have not eased the difficulties in practical use of ecosystem services (Niemelä *et al.*, 2010), particularly in planning.

Nature-based solutions are defined as the “actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” and approach ecosystem services as resource-efficient and adaptable responses to societal challenges (Cohen-Shacham *et al.*, 2016, p. xii). These societal challenges entail water and food security, human health, disaster risk reduction, and climate change (*ibid*). Nature-based solutions is a relatively newer concept which can be quite helpful in translating the knowledge of ecosystem services to urban planning. According to Faivre *et al.* (2017), nature-based solutions have the capacity to turn ecosystem services into innovative responses to “optimize the synergies between nature, society and the economy” (p. 509).

Ecosystem-based adaptation is a subset of nature-based solutions (Pauleit *et al.*, 2017) and defined as “the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change as part of an overall adaptation strategy” (Convention on Biological Diversity, 2009, p. 9). Another definition by Munang *et al.* (2013) is as follows: “fundamentally, ecosystem-based adaptation is the use of natural capital by people to adapt to climate change impacts, which can also have multiple co-benefits for mitigation, protection of livelihoods and poverty alleviation” (p. 67). The concepts nature-based solutions and ecosystem-based adaptation are implementation-oriented and, therefore, frequently utilized policy arena. This is promising in terms of benefitting from the richness of the ecosystem services concept, which has so far mostly studied in the scientific literature. Moreover, the intersection of urban studies and ecology is rather concerned with the identification of root causes of SES change as a whole, than to figure out a ‘quick fix.’

Theory-policy and policy-practice interface

Up until this point, this study has been a summary of an extensive critical review of the major scientific literature, guided by the concepts urban land-use conflict, social-ecological resilience, regional economic growth, and environmental protection, with limited reference to context-specific implications. Given the importance of operationalization of theoretical knowledge in practical knowledge in the field of urban planning, it is necessary to integrate the main findings from the key policy literature to understand the transition (*i.e.* social and ecological change) in the specific contexts of international (mainly Europe), national (Germany), and subnational levels of administration.

International level: Among the concepts which constitute the conceptual framework of this study, the resilience concept is quite frequently forming the basis of many international policy documents created by international organizations such as the World Bank, OECD, ICLEI. There seems to be a tendency that these policies are aiming at ‘making cities resilient,’ referring to resilience as a quality that is with no exception preferable, a state of being that is to be achieved. Another tendency is that the resilience concept is employed often in the context of disasters, though it can still be a key policy element in response to transitions through which slow, gradual change has great impacts on urban systems.

European level: Europe is a small but a very densely populated continent. More than a quarter of its land is affected by urban land-use, around 80 per cent of its population is living in these areas (EEA, 2006). Though urban sprawl in the Anglo-Saxon literature is mostly observed as a challenge that is specific to north American and Australian cities, sprawl poses great challenges for European cities, too (*ibid*). Because of this, European-level policies are inclined to promote compact city ideal in parallel to green growth strategies. Having the majority of its member states located in Europe, a similar tendency can be observed in OECD's policies, as well (OECD, 2011).

National level: Federal-level planning principles in Germany prioritize strategies against sprawl, *e.g.* reducing daily open land consumption from 113 hectares to 30 hectares by 2020 (*30-ha-Ziel*) and by protecting natural environment through "inner before outer development" (The Federal Government, 2002). Although this ambitious goal will probably not be reached (NABU (2017) pointed out that in year 2017 daily land consumption was still around 66 hectares per day), this strategy urges sub-national governments to protect natural environment and to adjust urban growth strategies accordingly. Since this strategy gives a clear vision and a direction, it is arguably a practice-oriented goal towards an optimal land-use. As a response, from 2006 onwards, the dual inner development policy started to appear in policy literature. According to dual inner development strategy, spatial reserves in an urban area should be utilized in favor of urban densification, while at the same time green space qualities (proximity, accessibility, connectivity, etc.) are secured (Böhm *et al.*, 2016). However, the question of whether an increase in urban green space quality can offset the decrease in urban green space quantity requires more investigation (Haaland & van den Bosch, 2015).

Subnational level: This level of administration is divided into two sublevels in itself (federal states, *e.g.* Hesse, and their governmental districts, *e.g.* South Hesse) and of strategic importance as it provides data for federal-level policymaking and also for local-level implementation. For instance, regional land-use planning falls under the responsibilities of the governmental district of South Hesse, to be prepared in cooperation with the towns and municipalities.

Municipal level: Local administrations in Germany have full authority and responsibility within their administrative boundaries. As in the example of FRM region, some municipalities in metropolitan regions are members of regional authorities. The Regional Authority FRM with its 75 member municipalities including the city of Frankfurt, is the governance body of the metropolitan region, in charge of creating regional-scale concepts to address current regional challenges through enabling vertical and horizontal dialogue and bridging federal and subnational levels of administration. For instance, Regional Authority's task for the urban land-use competition has been to develop a strategic plan for its member municipalities that addresses regional (economic) growth on one hand and environmental protection on the other. In cooperation with the governmental district of South Hesse, the Regional Authority provides its municipalities with information and guidance in implementing social and ecological measures. It is also important to note that, as Keil (2011) argues, the FRM region has had continuous economic growth while undergoing massive industrial restructuring, which urges for a restructuring in its governance mechanisms.

Conclusions

What this study amounts to is that by critically reviewing a multidisciplinary body of literature it emphasizes the significance of UGSs in urban planning practice. To understand the context of the

studied case, the FRM region, the findings from key policies are also integrated. The point of departure is a major challenge in planning: how to activate spaces to provide housing while at the same time protecting the natural environment. Urban growth should be spatially controlled and managed to avoid sprawling over natural landscapes and to also to avoid densification if it is at the expense of UGSs.

Many studies argue that compact urban form is the most sustainable urban form, while many others argue the opposite, and there is empirical evidence for both. And yet, there is a third group agreeing that sprawl is not a sustainable urban growth pattern, and also being critical about the viewpoint that just because compact urban form is the opposite of sprawl, it does not mean that compact is necessarily sustainable, for whatever positive meaning the word sustainability entails. Therefore, it seems like the question of either compact or sprawl is flawed: focusing only on urban form is inadequate and can be misleading in addressing the highly complex urban growth challenges. That is why it is necessary to think beyond the urban form and consider involving urban processes in the equation.

At this point, resilience concept is employed to align regional economic growth and environmental protection with the functioning of SESs. It is acknowledged that cities are complex, adaptive systems of permanent change, ongoing with a certain degree of uncertainty. Whether or not resilience thinking can help open up new ways of embracing and working with change will largely depend on its operationalization as an integral part of and parallel to urban processes.

In planning, resilience can be a very useful concept as it can make actors involved in planning and management processes to consider the social and ecological components of an urban system and how these subsystems are in constant interaction and producing and reproducing themselves. Resilience thinking also calls for acknowledging system properties such as resistance, adaptation, and transformation, and to embrace attributes such as complexity, uncertainty, and adaptive capacity. It is argued that in order to operationalize the resilience thinking in planning practice, it should be rather approached as a process that is integral to planning and management processes, than aimed as an end destination. Only then can resilience be effective in reaching the elusive goal of sustainable urban growth in general, and the sustainable development goal (SDG) 11 “make cities and human settlements inclusive, safe, resilient and sustainable” in particular.

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A Study on Establishment of the Flood Protection Standard - A Case Study of Dali River Basin in Taiwan

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Abstract: Due to global climate change and rapid urbanization, the increasing impervious areas has resulted seriously human lives and property loss during flood disaster. The design standard of structural engineering measures could not stand with the extremely intensified flood disasters. In addition, such structural engineering measures might mislead the public that such areas are safe. In fact, urban stormwater integration planning and management has been implemented in the worldwide. After setting the flood protection "protection standards" for the region, the plan is adopted according to the standard. As a whole, it is the key to setting a reasonable, objective and scientific regional "protection standard" for the city. Therefore, the study will then clarify the theoretical connotation of "protection standards" and collect domestic and foreign past protection standards. Afterwards, the study will then develop a framework for "protection standards" suitable for operation in Dali River Basin in Taiwan. The cost-benefit analysis will then be applied to do the calculation.

Keywords: Global Climate Change; Protection Standard; Cost-Benefit Analysis; Floods

Introduction

Global climate change is very likely to increase the uncertainty of future water resources, and in particular there will be more extreme patterns in rainfall (Gelt et al., 1999; Serrat-Capdevila et al., 2007; Gallo et al., 2013). The report released by the United Nations and World Bank indicating that more people in urban area will suffer in the next 20 years for the influence of climate change, the extreme heavy rainfall caused by urban floods is more likely to expand its economic losses risk of today's 50 times. United Nations Office for Disaster Risk Reduction (UNISDR) stated in the Global Assessment Report on Disaster Risk Reduction 2015 that global economic losses might increase up to \$300 billion every year. Due to global climate change and impermeable surface in urban settlement, the torrential rain and surface runoff put cities in increasing risks and threats than ever before.

Flooding is a challenging issue in the worldwide (Line and White, 2007). Traditional flood management relies on structural engineering measures largely including reservoirs, levees and flood walls, improvements to channels and the floodways (Thampapillai, 1985). However, multiple weaknesses have been identified. The risk of building damage and the loss of life are possible wherever development is allowed in hazardous areas. Taiwan is an island country, and may be the place on Earth most vulnerable to natural hazards, with 73 percent of its land and population exposed to three or more hazards (World Bank, 2005). With the global climate change, there is an increasing rainfall in warmer world and will likely intensify typhoons in south-western Pacific where

Taiwan located. In order to cope with serious flood issues, we have relied on hydraulic engineering heavily. According to Special Act for Flood Management in Taiwan, project of flood-prone areas has been budgeted 3.8 billion US dollar for eight years since 2006. Nevertheless, urban development changes land-use coverage directly which affects overall performance of hydraulic engineering and eventually leads to flood disaster (Beighley et al.,2003; Haase et al.,2009).

In the past, the government has been planning flood management via setting appropriate design standard for waterways. The design standard for flood management has been adopted to ensure the flooding capacity of the waterway under certain return period. However, the existing flood management and drainage facilities have been largely completed, and there is financial limitation to the increase in the amount of engineering facilities in response to runoff (Ministry of Water Resources and Water Resources Planning Laboratory, 2014). From the past flooding events - Netherlands, although the design standards have been continuously improved, it is impossible to avoid flooding. The design criteria for setting the 10,000-year return period in the coastal areas in the Netherlands have failed, and it occurred in the 1993 flood event.

As a whole, in order to cope with the above-mentioned engineering disaster reduction measures with their limits, and in response to climate change impacts on urban areas, Taiwan's water management measures have gradually changed into integrated flood management in recent years. Currently, the government is advocating the establishment of "Regional Flood Protection Standards" and the degree of protection specified by the protection standards, through engineering and non-engineering means to share floods to achieve a certain degree of protection in the region. International countries, especially the Netherlands, Japan, and the United States, have incorporated the concept of protection standards into flood management and developed protection standards. If the protection criteria are clearly defined, the governments can allocate a limited budget and resources for engineering and non-engineering measures in advance to maximize the efficiency of flood management. By promoting the concept of protection standards to the public, people's awareness of disasters is raised. Through the information disclosure of such flooding disasters, people can fully prepared in advanced with complete information. Therefore, this study attempts to review the practices of countries around the world in the protection standards, and attempts to develop a framework for possible operations in Taiwan.

Protection Standard

The term protection standard is derived from the risk evaluation criteria for technological hazards and is often used in hazardous installations such as nuclear industry, chemical industry, aviation transport, and rail transport etc. (European Maritime Safety Agency, 2015). In these categories of industries, it is basically inevitable that risk accidents will occur, even if such accidents are unlikely to occur, but if they occur, they may cause harm and loss to humans, the surrounding environment and economic aspects. Therefore, in order to ensure its safety, a "safety benchmark" is often established, and further safety measures are taken to reduce the risk level to protect human life and protect public safety. Nowadays, this concept is gradually applied to the field of flood management in natural disasters (Vrijling, 2001).

As far as the domestic situation is concerned, the concept of "protection standards" is often confused with the meaning of "design criteria" for water conservancy facilities for two main reasons. First, since the past flood management was limited by manpower, budget and technology, it was only managed in a "point" or "line" mode. Therefore, the so-called "protection standard" refers to flood management and drainage works. In fact, the implication is that in the past, the "design criteria" of the region were regarded as "protection standard." Secondly, in response to the impact of climate change, according to the comprehensive water management strategy to improve flooded areas, the protection standard has been revised to "regional flooding safety benchmark for flood disasters."

Netherlands is located in the western coastal areas of Europe. As the same time, due to the low terrain and two-thirds of the country's land below sea level, it is vulnerable to floods and tides. In 1953, Netherlands experienced the worst flooding in the country's history, invading the coastal areas of Netherlands, killing about 2,000 people and inundating more than 200,000 ha. Of land (Klijn and Deltares, 2013). Therefore, the Delta Committee was established the following year and is responsible for the improvement of the national flood management plan. When the Delta Plan was released in 1958, scholar Dantzig (1958) proposed a method for exploring design criteria using cost benefit analysis. Through this analysis, Netherlands has set design criteria for 14 coastal dike areas and decided to protect this extremely important and extremely vulnerable area for 10,000 years (Kind, 2014).

In 1993, the province of Limburg in the southeastern part of Netherlands was still suffering from flood, with more than 180 square kilometers of land accumulating 1.5 meters of flood; this time, water experts recommended dredging riverbeds, setting up flood detention areas and capping dikes. In 1995, just two years later, the scale of floods in the same location was once again surpassing the past. Although there were no major disasters at this time, the two flood threats forced policymakers to reflect on the traditional way of "fight against the water" and "living with water." The Netherlands launched the 21st Flood Protection Project and began to develop new protection standards and conduct necessary research. Because the country has experienced major flood losses and caused tens of thousands of deaths, it has placed great emphasis on the protection of "life" in flood prevention and mitigation strategies. Therefore, the concept is the threshold value that individuals can bear to ensure that everyone achieves the lowest level of safety.



Figure 1 Protection Standard in the Netherlands

In the past, due to over-exploitation of the land, Japan's impervious surface continued to expand, so that the rainwater could not be infiltrated smoothly, the collection time was shortened, and the natural water circulation rules were disrupted. As a result, when the urban area encounters heavy rain, it is prone to flooding. In order to solve the flooding disaster, the Japanese government began to implement the "Integrated Water Management" in 1977. The purpose is to meet the impact of rapid increase in surface runoff due to insufficient water retention

and flood detention skills after rapid urbanization. Japan's flood management mainly targets the basin, and breaks the boundaries of the territories according to the different characteristics of each river basin.

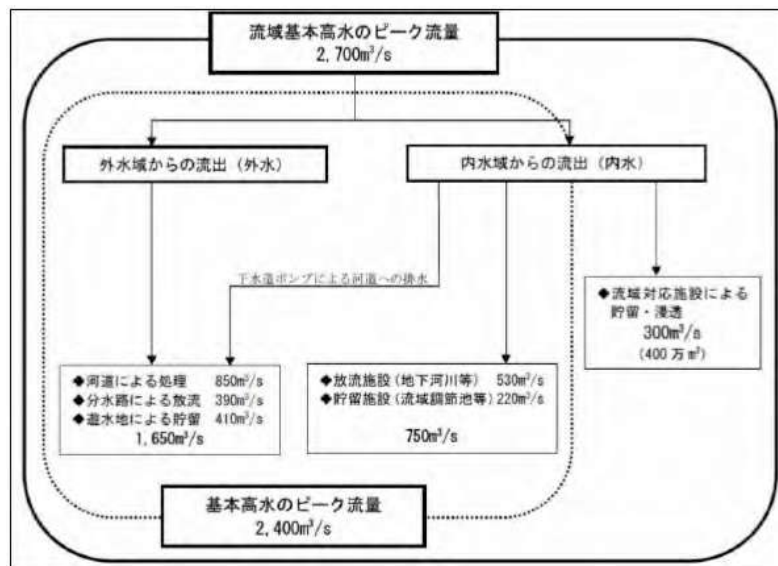


Figure 2 Flood management in Japan

New Orleans area is located on the delta plain of the Mississippi River in the United States, and the unique natural environment surrounding it makes the area vulnerable to flooding. Except for most of the area surrounded by water, it is estimated that more than half are below sea level, and some areas are below average sea level of 9.4 feet. Floods caused by storm surges have affected New Orleans, such as Hurricane Betsy in 1965, which flooded 164,000 houses and caused huge losses. Later, New Orleans began to work on the flood protection works, but it failed to withstand the unprecedented disaster caused by Hurricane Katrina. Therefore, the New Orleans began to review and discuss the protection standards in the local areas. The US protection standards are fairly similar to those in the Netherlands, and mainly use the concept of personal risk criteria as described above to ensure that everyone achieves a minimum level of safety.

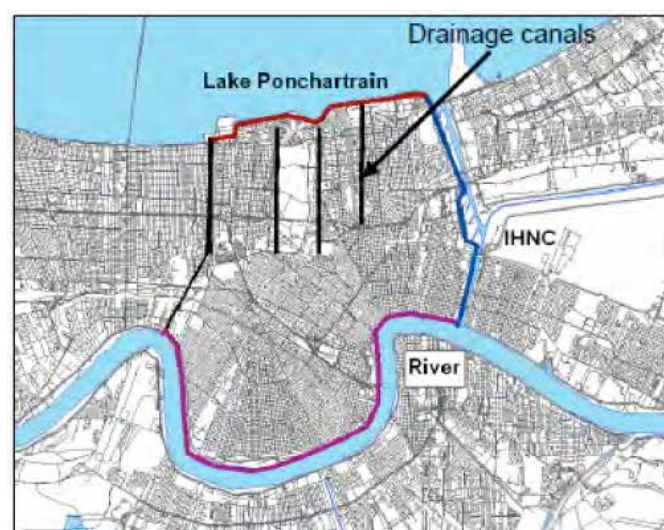


Figure 3 New Orleans

Research design

The study selected the Dali River Basin as the verification area. Dali River is located in the middle reaches of Wuxi River Basin. Dali River is an important tributary of the middle reaches of Wuxi. It originates from the hilly area in the east and flows into the Taichung Basin to the west. Because of the loss of the binding of the upstream valley in the downstream area, the actual flooding in the past floods are concentrated in the intersection of the lower reaches of Dali River and the other tributaries. Dali River flows through the highly developed area of Taichung City, Taiwan. The river basin contains and spans a total 12 urban planning areas. The threat of flooding to the industrial economy and the safety of life and property cannot be ignored. Therefore, it is necessary for the Dali River Basin to be planned for flood prevention.

The Dali catchment area belongs to the secondary catchment area of the Wuxi River Basin. There are 10 sub-catchments with a total area of 400.72 square kilometers, of which 35% are urban planning areas and 52% are non-urban land. Among them are 12 urban planning areas, mainly distributed in the western half, with the largest number of residential areas (32%), followed by scenic areas (19%). Non-urban land use zones are dominated by hillside conservation areas (65%), followed by specific agricultural areas (20%). According to the present land use, the Dali River basin is dominated by agricultural land (26%) and forest land (33%), and is distributed in the eastern and southern parts of the catchment. The land used for conservation (18%) is concentrated in the west and is consistent with the distribution of urban planning areas. As a whole, urbanized areas are concentrated in the western portion.



Figure 4 Study area

This study used the third-generation flooding prone map produced by the Water Resources Planning and Research Institute of the Ministry of Economic Affairs in 2014. The simulation considers the river, hydraulic structures (pumping stations, seawalls, etc), rainwater and underground waterway systems (rainwater manholes, rainwater pipelines etc), and has integrated the results of the flood management plan. Therefore, if the water cannot be withstanding by the engineering facilities might be regarded as flood disaster.



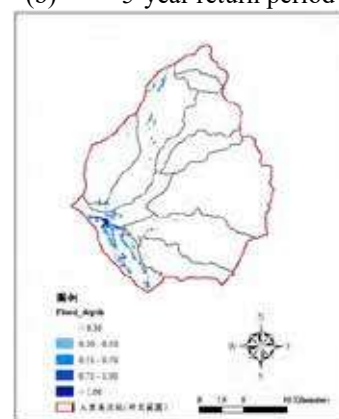
(a) 2-year return period



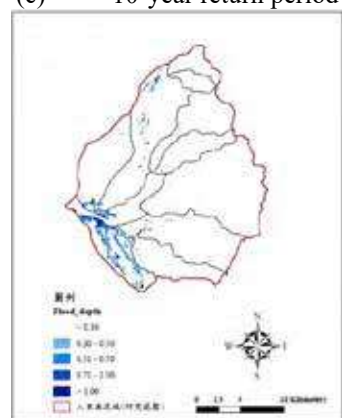
(b) 5-year return period



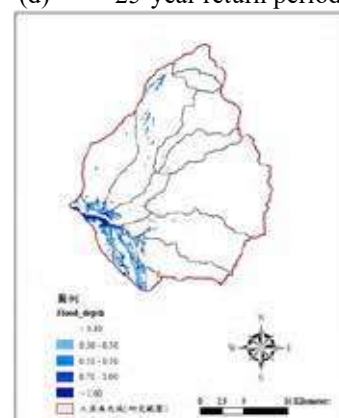
(c) 10-year return period



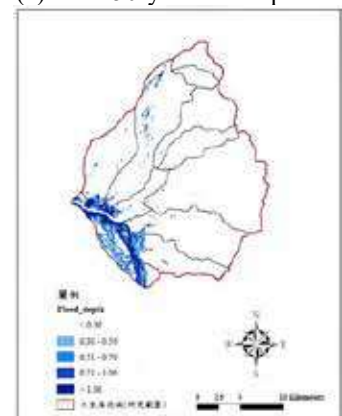
(d) 25-year return period



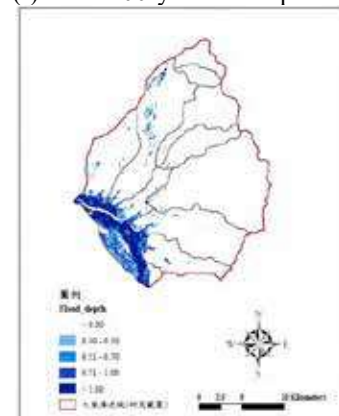
(e) 50-year return period



(f) 100-year return period



(g) 200-year return period



(h) 500-year return period

Figure 5 The various return periods

Cost-benefit analysis is often used in decision-making by evaluating the cost and benefit of a comparison program to achieve the most cost-effective option (Kuiyu, 2001). In the field of disaster prevention, the cost is regarded as the amount of cost of disaster reduction engineering costs; “effectiveness” refers to disaster losses that can be avoided or reduced by disaster reduction projects (Kron, 2005; Penning-Rowsell, 2013). In the cost-benefit analysis, it can be further divided into “financial benefit analysis” and “economic benefit analysis.” The financial benefit analysis is usually based on the view of operating revenue and expenditure. The analysis of the project from the perspective of “financial aspects” measures financial profitability; and the economic benefit analysis is based on the perspective of social benefits and social costs, from the “financial side.” The “economic aspect” and “environmental aspect” are three kinds of aspects to analyze the plan and measure its economic rationality.

According to the research topic, the setting of protection standards is quite high by the society and the public. As the same time, referring to foreign experience, such as Netherlands, it is seen in the cost-benefit analysis of the protection standard. The study not only considers the financial and economic aspects but also considers the elements of the “environmental surface” of the flood, such as nature, landscape, and cultural heritage (Kind, 2014). Based on the above, the study applies “economic benefit analysis” as a research tool to explore regional flood protection standards, and then explores its elated costs and benefits.

Results

The meaning of the “cost-benefit analysis” in this study is the benefit value that can be obtained for every cost of 100 million NT dollars. Therefore, if the result is less than 1 indicating that the structural engineering measures are inefficiency based upon the economic perspective. However, if the result is relative high indicating that such structural engineering measures are cost effective. In the 200 and 500 years of the recurrence period in the table, the profit ratio is less than 1, which means that if the protection standard in the Dali River Basin is increased to 200 and 500 years, the cost-effectiveness may not meet the economic benefits of flood control and disaster reduction. Although the protection ratios of the protection standards 2, 5, 10, 25, 50 and 100 are both greater than 1, they are still different in economic sense. At the same cost, the five-year economic benefit of the protection standard will be the most significant, which means that the basin can cost the same cost in the situation, but can achieve relatively high disaster reduction benefits. The protection standard for 10 years is second to none, and the second is the standard of protection.

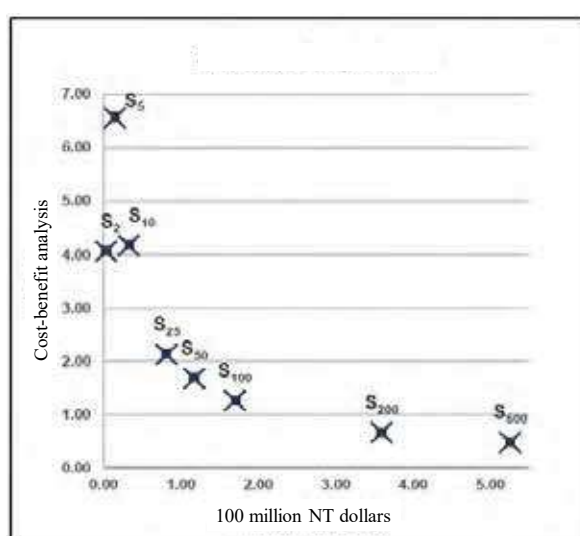


Figure 6 Study area

Conclusions

In the face of uncertain global climate change in the future, “no flooding” is an unrealistic goal and a misinformation that might leads people to confront relative high risk. In order to let the public know the threats and challenges, we should clarify the concept of “protection standards.” Therefore, this study proposes a framework for the protection that Taiwan can operate, and discusses the protection standards that Taiwan can operate. The basin was used as the main spatial unit while there are 10 sub-catchments in the basin and the socio-economic environment is quite different from the sub-catchments. Therefore, it is more appropriate to explore the regional protection standards form a relative smaller scale to improve such accuracy.

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Climate Justice and integrated flooding risk assessment and management: A framework and case studies in USA and Taiwan

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Abstract: Climate justice reveals inequitable coping capacity to climate change impacts among socially vulnerable groups. As extreme events have become more frequent and intense under climate change, increased flooding risks have threatened communities around the world, and the hardest hits are the socially vulnerable populations. How can planners assess climate justice and manage integrated risks? What is the role of planners for addressing climate justice and enhancing resilience of vulnerable communities? Climate justice and risk assessment are aligned to integrate exposure to climate change associated hazards (ecological vulnerability), sensitivity (social vulnerability) and adaptability (technological vulnerability) assessment. The framework was applied to case studies in Michigan, USA, and Tainan, Taiwan. Employing Geographical Information Systems, climate justice hotspot in three cities were identified in the Huron River watershed, Michigan, USA. Interviews with planners gauging their institutional capacity towards climate change adaptation revealed that Ypsilanti is the most climate unjust because of a lack of resources to act on climate change. In the case for Rende District, Tainan, Taiwan, the community is identified as one of the most flood-prone districts in addition to a growing aging population of 65 years old and older, which is considered a climate justice hotspot. A series of technical interventions were conducted with district leaders and residents and demonstrated a range of adaptive capacity among the seniors with various arrangement of dwelling unit. Additionally, the leadership to mobilize community-based risk management integrating smart technology and residents' participation in risk management has enhanced their coping capacity to climate change-induced flooding. The two case studies implied that planners can bridge the gaps between calculated and perceived risks by applying both quantitative and qualitative assessment in order to identify and address climate justice in local communities. Finally, the community-engaged climate change adaptation with the strength of local leadership and stewardship can ensure the long term sustainability and resilience of the community.

Keywords: climate justice; social vulnerability; integrated flooding assessment and management; aging population; Taiwan; USA

Introduction

Urban planning investing infrastructures for flood mitigation, risk management, and resilience building in the communities is urged to integrate climate change planning and prioritize investment to address climate justice (Cheng 2019). Socially vulnerable groups (e.g., female, children, the elderly, low socio-economic status,

migrant and minority groups, people with special needs) who are likely possessing less coping capacity for climate change-induced natural hazards, thus constructing *climate justice* describing inequitable burdens for socially vulnerable people who suffer more under the condition of higher ecological vulnerability as a result of climate change impacts (Cheng 2016). Integrated risk assessment incorporating social-ecological-technological systems (SETs) vulnerability assessment framework provides a critical tool for assessing complex and wicked urban challenges in the built environment under climate change impacts (McPhearson et al. 2016; Cheng 2016). Climate change-induced flooding refers to the increased intensity and frequency of rainfall events and associated flooding as a result of changing precipitation and temperature patterns under global warming impacts (IPCC 2014), which affects hydrological cycles and flooding hazards in the watersheds for local communities (Cheng et al. 2017a). This paper applies an integrated climate justice and risk assessment and management framework and discusses two case studies in Michigan, USA, and Tainan, Taiwan, to investigate vulnerability of place and opportunities and challenges in implementing risk management strategies and addressing climate justice in communities.

Michigan's Case

Study Area and Context

The Huron River watershed drains more than 2,300 km² covering seven counties in southeast Michigan, USA, due west of Detroit. The watershed area has a population about 500,000 across 65 municipalities. Based on the previous study, a climate justice index was created based on social-ecological vulnerability assessment (Cheng 2016). Social vulnerability index was constructed based on Cutter's method (Cutter et al. 2003) using 33 socio-economic indicators in 220 census tracts. Ecological vulnerability index was derived from climate change-induced flooding hazard built upon a hydrological model, toxic and waste facility sites, and water quality impaired stream data. The intersection of the high social vulnerability and high ecological vulnerability analysis units constructs climate justice hotspots. Three cities were identified as climate justice cities: Ann Arbor, Ypsilanti, Wixom. A follow up study was conducted to survey the use of climate justice map information in gauging the changing risk perceptions of vulnerability to climate change (Cheng et al. 2017b). Wixom is a middle-class and family oriented suburban city; Ann Arbor is where the University of Michigan is located and has the highest median household income; Ypsilanti has the lowest income level among the three cities in 2015 census. The watershed is predominately white (83.5%) while the climate justice cities are more diverse with African Americans (29.2% in Ypsilanti and 11.1% in Wixom), Asians (14.4% in Ann Arbor), and Hispanics (4.3% in Wixom). This case study focuses on additional interviews with managers in the climate justice cities.

Method

A structured interview of ten questions with managers who oversee long-range planning, public works, and sustainability in the three climate justice cities was conducted. The questionnaires include a) responsibility in the institution and in relation to climate change planning, b) access to resources for climate change planning, implementation, and management, c) equity goals in city's plans, d) incentives and obstacles to implement climate change actions, e) trans-boundary coordination, f) green infrastructure as a strategy for climate change planning and its implementation challenges.

Results

In general, the three managers revealed several challenges in coping with climate change: 1) the general obstacle in city's operation with a lack of resources both internally and externally and motivation to go beyond day-to-day tasks, 2) a lack of strong leadership in addressing climate change and equity in long range planning, 3) inability to integrate multi-disciplinary tasks across departments, 4) short-term project driven rather than

achieving sustainability goals, and 5) a lack of community-driven and place-based planning process. For example, one city has a Climate Action Plan

“but it was prepared by a consultant. They did a lot of public input and they’ve got a plan that looks great, but it’s not something we’ve been in the habit of incorporating into decision making and all that good stuff. It did feed into our master plan, which we did in 2013, but a lot of the pieces that are in this are things that aren’t quite underneath our purview or things that just aren’t feasible for a community of our size, to incorporate green building standards into incentive programs. We don’t have a whole lot of incentive programs, so this is kind of a meaningless.”

In terms of moving forward, *“I think that very much relies on strong leadership...and we don’t have that right now. We have multiple competing priorities.... It’s that sort of thing. Between these two projects, most of our discretionary funds are being used, and even some nondiscretionary funds are being allocated to these things.”*

Taiwan’s Case

Study Area and Context

Taiwan is a Pacific island country exposed to multiple ecological vulnerability such as earthquakes, typhoons, floods, and droughts. This study investigates the social-ecological-technological impacts from two extreme and disastrous flooding events in the past decade: Typhoon Morakot on August 8, 2009, and the “823 floods” on August 23, 2018. Typhoon Morakot attacked Taiwan with a record-high daily precipitation resulted in the worst floods in Taiwan since 1959 (MOEA 2009) and the accumulated rainfall reached the world’s record of heaviest storm event in the 24- and 42-hour durations (Figure 1). The associated flood damages have resulted in a total loss of 1.6 GDP. The “823 floods” was signified by a short duration but heavy rainfall. The precipitation exceeded design standards of many drainage systems and resulted in heavy flooding.

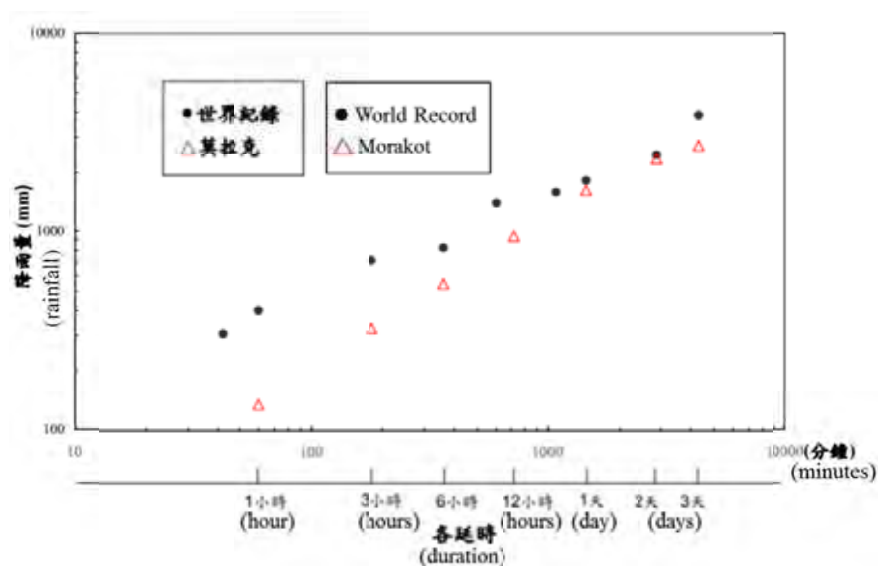


Figure 1. Rainfall duration in the typhoon Morakot compared to the world record

The flood-prone areas in Taiwan are located in western coastal low-lying areas susceptible to land subsidence. Some areas are lower than the sea level, as much as one or more meters below. Under this circumstance, drainage systems applying gravity flow to achieve drainage was very difficult. Therefore, excessive water could only be drained away by intense pumping equipment.

In terms of social vulnerability, Taiwan is becoming an aged society with increasing percentage of population are equal or greater than 65 years old (typical retirement age). Rende district in Tainan, Taiwan, is a community at outskirts of the city and composed of 13.82% of aged population in 2017, increased from 10% in 2012, and continues to grow. The most predominate housing type in this community is multi-story single family house or townhouses without basement. In order to accommodate aged population in the built environment during flooding events, this study explored the interactions between technological (flood-proof building infrastructure) and social vulnerability and resilience (physical and mental state of adaptive capacity).

Method

Targeted interviews and measures of their physical and mental state of the elderly and their realistic needs are conducted. In addition, an integrated management with smart technology and collaboration between home security industry, China steel Security, and community on flooding monitoring and preparation is implemented in two houses that are in flood-prone areas (point 1 and 2 in Figure 2) based on the interviews and entrusting the local community leader to select the appropriate locations.



Figure 2. Locations of smart monitoring devices in point 1 and point 2 within flood-prone areas Rende District, Tainan, Taiwan

According to the United States Federal Emergency Management Agency (FEMA), the disaster prevention architecture flood-proof design is necessary to incorporate the following equipment: a) water level sensor, b) security reporting system, c) CCTV camera, d) security host, and e) the 24-hour control center (Figure 3). The water level sensor is located at the low-lying location to collect water level information during the flood. The CCTV camera is installed in a position where the water level change is clearly observed remotely by the security control center. The video data from the CCTV camera can be combined with the video host to set the video recording time and provide query images of historical data. The water level sensor's signal will be connected to the security host, and then the security host will pass through the ADSL or dedicated lines sending the signal back to the control center. Whenever the water level sensor's signal exceeds the warning value, the signal will be transmitted back to the control center through the security host. The control center will contact the emergency contact person and the lieutenant of the community to visit and investigate the needs of the observed residents.



Figure 3. Smart technology system equipment for flood risk management: a) water level sensor, b) security reporting system, c) CCTV camera, d) security host, and e) the 24-hour control center

Results from Users Experience

The US Federal Emergency Management Agency (FEMA 2017) provides four resilient design suggestions for flood-prone buildings: 1) Relocation, 2) Elevation, 3) Wet-proof, and 4) Dry-proof. The most common dry-proof approach taken in Taiwan is to install the floodgate. However, according to interviewees, there are several obstacles and dilemmas for implementing technological solutions:

1. There is no sufficient monitoring and evaluation for the performance of the floodgate. Many owners lack the knowledge of maintenance and drill procedures.
2. The access route is blocked once the floodgate is installed, causing risk for residents to escape from emergency situations.
3. Residents living in flood-prone areas are constantly facing enormous psychological pressures, especially during the rainy seasons, due to the difficulty in making decisions on an appropriate timing of floodgate installation.
4. A lack of maintenance on existing panels of floodgate could cause malfunction and fail to prevent from flooding in the dwelling unit.
5. A large portion of the elderly or physically disabled individuals who live alone need various help from others to install the floodgate.
6. When flooding occurs, water usually back flow from drain pipe, causing serious public health issues (Figure 4). Therefore, if there is no satisfying solution to these problems, it is suggested to elevate their living unit and life-support equipment to avoid such affliction.

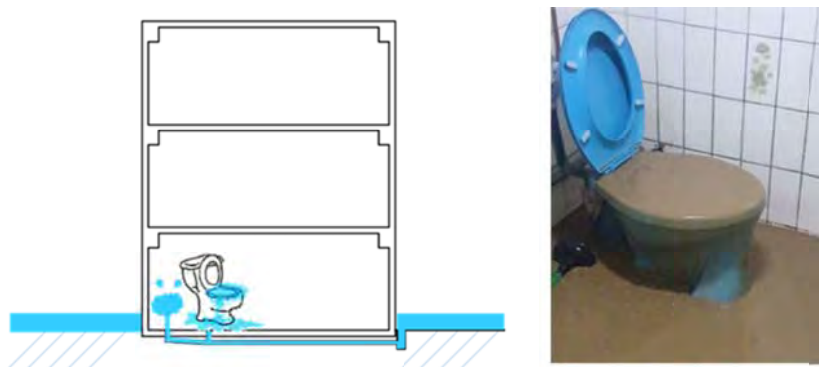


Figure 4. Floodwater back flowed from drain pipe into the building

7. Building with basements and elevators (such as hospital, nursing home) will encounter another problem. Water intrusion in elevator pits is common in the rainy season. Given that the elevator pits are usually on the lowest elevation in a building and therefore water accumulates there and disable the elevator. This will seriously threaten the daily lives of the elderly, especially those with disabilities (crutches, wheelchairs, bed-ridden) who rely on the elevators for transportation (Figure 5).

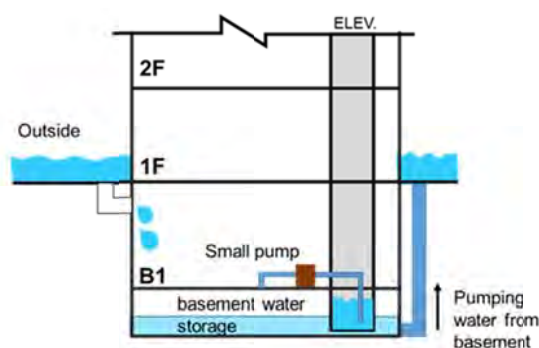


Figure 5. Water intrusion in an elevator pit

Discussion

Bridging the gaps between calculated and perceived risks

Based on Michigan's case in a previous survey with residents, there exist a gap between calculated and perceived risks (Cheng et al. 2017b). People who have recently experienced flooding would consider less susceptible to future events. Similar findings from Taiwan's case that residents tend to think that the devastating floods will not come to their life again. In Taiwan, people have developed different attitudes towards installing floodgate in different regions. Acceptance of floodgate was affected by the individual's experience, opinions of the elders who have lived long in the neighborhood, community associations, and government's attitudes. Most interviewees cannot picture the level of inconvenience and particular accommodation that the elderly will face and need to prepare in advance. In addition, most elders felt that they are incapable of doing any changes to their own buildings or even influence their own resilience to cope with emergency situations. However, regular seasonal flooding has already become a part of their lives and become a source of cyclical psychological pressure for residents.

Place-based integrated risk management

Due to the close relationship between the neighborhoods and local government such as community leaders (elected officials) in Taiwan, the access to local community resources and support is the most immediate and

effective way for risk management and disaster relief before upper level government resources would arrive. As a result, the accumulated local wisdom from the elderly plays an important role for place-based risk management and disaster relief efforts.

Challenges for technology and resource-intensive strategies

Implementing advanced technology systems often rely heavily on external resources, which can lead to vulnerability to the community once the access to the resources is constrained. An integrated central and local government disaster prevention units require sufficient funds, manpower and capacity to coordinate across institutional scales and boundaries. In Taiwan's case, connecting the industry with community and governmental resources to facilitate the dispatch from all parties to carry out disaster relief is the key to the success of the smart technology system. Finally, the intervention of technology should not be limited to the planning of infrastructure and software development. Technology plays an important role in assisting decision-making across institutional scales and various sectors, connecting individual to national security.

Strong leadership in building resilience

It is the leader's ability to communicate the common goals and motivate the public as well as the enterprises to work in collaboration to achievements the common goods. In Taiwan's case, strong local community leaders with well-supported and connected network internally and externally is critical to gain trust and resources needed for building community's resilience. For example, the community leader has effectively mobilized community-based risk management integrating smart technology and residents' participation in risk management, which in turn has enhanced the community's coping capacity to climate change-induced flooding. On the other hand in Michigan's case, a weak leadership leads to a lack of hope and incentives for envisioning futures and implementing strategies that can benefit long term suitability and resilience of the community in lieu of day-to-day tasks and short-term priority projects.

Conclusion

The two case studies implied that planners can bridge the gaps between calculated and perceived risks by applying both quantitative and qualitative assessment in order to identify and address climate justice in local communities. Finally, the community-engaged climate change adaptation with the strength of local leadership and stewardship can ensure the long term sustainability and resilience of the community.

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Land policy tools in flood risk governance: The differentiated experiences arising from the basins of the Rivers Evros (Greece) and Scheldt (Belgium)

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Abstract: Land policy as an all-encompassing practice has been providing a wide variety of instruments to proactively and reactively deal with disasters and promote resilient territories. Historical experiences related to periods of post disaster recovery (the rebuilding of cities after World War II, earthquakes, fires, floods) have revealed the importance of the land policy system as well as the institutional structures that in combination to planning policy determine the efficacy of the safety environment of the affected areas. The operation of expropriation and compensation mechanisms, land re-allocation provisions, land amalgamation and readjustment and the re-distribution of land development rights have proved to be highly critical in disaster management cycle, and principally, during the recovery-reconstruction and the prevention-mitigation phases. What has to be underlined in this respect is the way the aforementioned tools and mechanisms have developed historically under accentuated demands posed by crisis or disaster conditions and are implemented in different institutional vis a vis spatial planning contexts aiming to fostering resilient communities. Set in this context, the aim of this presentation is to examine the effectiveness of land policy in two distinct settings of flood risk management: the Evros River Basin in Greece and the Scheldt River in Belgium. This comparative approach allows to identifying the different obstacles and potentials that could contribute to the formation of an integrated land and safety-resilience strategy.

Keywords: land policy; flood risk management; property rights; risk governance

Introduction

The recent series of catastrophic events in Europe define exceptional situations that have partly overturned advanced civil protection systems and at the same time have forcefully brought back in the agenda the catalyzing importance of the social political and planning milieu in determining a safe environment. From an evolutionary perspective, this situation is determined by two different level processes: at a broader level, the evolution of state policy as a whole and at a more specific level, spatial policies aimed at sustaining safe development. More specifically, historical experiences demonstrate that crisis conditions and exceptional forms of demand caused by natural or manmade disasters might -though temporarily- enforce a radical transformation of state policy. This could

engage the extraordinary transfer of economic (and other) resources to those in needs and to the imposition of political power (expansion of state authority) in ways that contradict prevailing policy patterns and priorities during normal development periods. Thus, disaster demands are in principle accompanied by “exceptional forms of state intervention”, the character of which is specific by definition; it relates to the affected population strata, to damaged economic sectors and obviously to affected geographical (disaster) areas. These demands also have an urgent-time limited character and embody a potential for exerting structural influence on socio-economic systems and developmental trends (O’Connor, 1987; Fine, 1984, 1999; Sernini, 1979, 1994). In addition, they inflict changes on pre-existing institutional-organizational structures by involving the joint mobilization of state agencies of various tiers, competences and by generating new relationships of “trust” between the state and society (Beck, 1992, Giddens, 1999, Wisner *et al.* 2004: 18).

Land policy has been strongly influenced by the implementation of distinct recovery policies (Grebler, 1956: 151) and/or those aimed at increasing future safety. In order to meet the demands posed by disasters and recovery processes, state institutions (national, regional, local) have been obliged to change the existing framework of operation especially in the land policy field (Mileti, 2001: 26). The land policy system is defined as the whole complex of socioeconomic and legal prescriptions that dictate how the land and the rights of use and access to land are to be allocated (UN/ECE, 1996). It incorporates a wide range of tools (expropriations rights, compensations mechanisms, land redistribution, value capture and property rights re-allocation) that guide state and social action for the control, acquisition and management of landed assets (Delladetsimas *et al.*, 2019). What is interesting in this respect is the way the aforementioned tools and mechanisms have developed historically under accentuated demands posed by crisis or disaster conditions and are implemented in different institutional vis a vis spatial planning contexts aiming to foster safe and resilient communities. At the same time the efficacy and evolution of land policy has relied strongly on the interrelationships structured with spatial planning, safety planning and socio-economic strategies; and how these are mobilized to meet exceptional demands.



Figure 1: Interconnected policy fields related to spatial development and safety planning.

This paper places land policy within the emerging trends of disaster mitigation planning in European regions. The rationale for such analysis associates to the identification of key issues that could be

possibly revealed from the comparative case study approach of two distinct risk environments and already adopted disaster (flood) mitigation policies. Clearly the European setting embodies exceedingly different experiences and policy patterns for the protection of local economies and societies. In this respect, empirical evidence is provided from the Greek case of the River Evros Basin, and the Belgian Scheldt River. The selection of the two countries/case-study areas is based on the key common characteristic defined by the dominance of small private land ownership (Delladetsimas, 2006; Broeck and Verachtert, 2016) and the way this affects safety policy; since natural disasters might pose demands and increase land shortages resulting in more competition for and increased conflict over land.

Land policy in a safety and planning rationale

The land policy system as implemented at the national, regional and local context has been reciprocally shaped by its interrelationships to spatial planning (land use plans, regional plans, development control), safety planning (emergency planning, recovery-reconstruction planning, risk prevention-mitigation planning), and socio-economic development (economic zones, economic incentives, compensations, agricultural policies). All these imply the structuring of strong links between decisions on land tenure and decisions on land uses made in the context of implemented plans. In addition, land policy and its impact on land tenure rights and rights of access to land allow for the development of improved land management as a component of adaptation to natural disasters. There have been, for instance, many cases in which the land policy system has historically assimilated risk mitigation demands and emergency management experiences; which in turn have been dialectically combined with the development of an effective spatial planning system, stipulating also a favourable (safe) environment for socioeconomic development. This has been the case of the Netherlands, for example; a country exhibiting a long-standing tradition in safety planning (water and polder management, land reclamation and flood prevention infrastructure). This tradition has led to highly effective processes of upgrading and institutionally upholding land policy instruments, which has reciprocally shaped the development of an elaborated spatial planning system that further provided a complimentary spatial setting for socioeconomic development.

The spatial structure and urbanization history of Greece are tightly associated to disasters (earthquakes, landslides, floods, fires, man-made disasters) and the subsequent recovery processes, involving distinct rebuilding experiences for numerous cities, relocation of towns and villages, and the development of considerable safety practices, especially in the development control domain (seismic code, fire safety code, building regulations). Evidently we are dealing with an exceedingly multi-risk environment (earthquakes, floods, forest fires, extreme weather events), in which -interestingly enough- the land policy system has not developed strong links with spatial planning. It is worth mentioning that the Hellenic Cadastre was introduced in 1995 (Law 2308/1995) and is not yet completed. When it comes to safety planning and disaster recovery periods, implemented policies are limited to mere compensations of affected landowners and re-parceling procedures in urban expansions, as well as disjointed applications of expropriation policies and land use changes in compliance to land-use plan provisions. The prevailing role of land policy is mostly evident in economic development priorities as expressed (partly independent from spatial policies) in conjunction to major infrastructural works (expropriations), the long-standing experience of agricultural re-parceling and land systemization and on the whole to measures related to sectoral policy incentives (fiscal measures, economic incentives especially in agriculture). In relation to safety

policy, the land policy system is regarded as more active in emergency planning (land confiscations-expropriations for emergency sheltering) and in the recovery-reconstruction processes (rebuilding loans, crops compensations, business recovery programmes). Land policy proves to be rather inert or forgotten when it comes to prevention strategies and disaster mitigation planning. At the same time, safety planning exhibits two discrete features: a prevalence of structural technical priorities and an overwhelming emphasis on emergency planning as a mere civil-defense (command-control) practice. On the whole, the interrelationship between all these domains in Greece is highly disjointed and weak since each one appears to be following an independent trajectory. The situation is further conditioned by the proliferation of spatial governance systems for the implementation of safety measures, and by the absence of an effective land policy as a safety practice.

In the case of Belgium, the risk environment is determined by coastal, pluvial and fluvial flooding, and by numerous man-made industrial hazards. The country however, assumes particular importance as a multi-level governance setting (OECD, 2017) in relation to safety policy, conditioned by its decentralized system with the autonomous status of the three regions (Flemish, Walloon and Brussels-Capital Region). In the federal state of Belgium, competences on safety policy (especially flood protection and water management) and spatial planning have been transferred to the regions. In each of these, spatial planning and flood risk management thus fall within different legal trajectories and policy patterns (the central state however maintains overall competences related to crisis management and safety insurance policy). It could be argued that flood risk management and spatial planning are institutionally intertwined. A first bond is clearly revealed in the "2003 Act on Integrated Water Policy" (Flemish Government 2003), which clearly states that the water system is one of the ordering principles in spatial planning, meaning that the water system is amongst the first priorities when developing an area (Mees *et al.*, 2016). Second, a spatial planning instrument used for risk mitigation purposes is the so-called 'signal areas' (*signaalgebieden*); endorsed in disaster prone zones in which spatial development objectives contradict with water management priorities, demanding particular spatial planning decisions to alleviate them. It should be stressed however, that both the Flemish and the Walloon Regions have established Coordination Committees in order to foster the co-operation between different water management agencies and spatial planning authorities (*Coordination Committee on Integrated Water Policy* and *Interdepartmental Flood Group* accordingly). Moreover, the Strategic Advisory Council on Spatial Planning provides advice during the preparation of water management decrees, while in the same context, Water Tests (*water toets*) present the assessment of the impact of a proposed plan on the water system, further fostering the compatibility of planning and water policies. Water assessment thus relates to plans, programs, and licenses not only with regard to building activities but also to environmental licenses (De Smedt, 2004). Within this context and in terms of land policy, water management institutions are equipped with the competence to exercise expropriation and pre-emption rights within their jurisdictions. Furthermore, the 2003 Water Policy Act systematized the enforcement of pre-emption rights and land acquisition processes in flood risk prone areas and signal areas (Mees *et. al.*, 2016). In certain cases, a property owner may demand that the government acquires the property, for example, when the owner is confronted with a delineation of a retention area. With respect to development control, building requirements are enforced aiming to avoid rainwater damages by requiring a minimum storage capacity of 5,000 liters per property for (uni)family homes unless a green roof has been provided (Rainwater Regulations 2014). On the whole, the system requires the assessment of potential effects and in turn the adoption of mitigation or compensation measures. In Belgium, safety policies are also extended in the potential recovery-

reconstruction period with the inclusion of flood damages in the general fire insurance. After modifications of water management legislation in 2010 and 2013, advice by water authorities has now become mandatory in the formation of spatial planning and its scope has been broadened even further to ‘leave more room for water’ (Mees *et al.* 2016). Hence the Belgian (Flemish) experience has been adjusting to the presence of small property structures diversifying its policy and moving towards “flood risk and flood risk prevention” and also to preparedness and to (potential) recovery-reconstruction measures as a proactive rationale.

Insights from the case of the Evros River Basin

In the Eastern Balkan Peninsula, Evros River extends on the borders between Greece and Bulgaria and between Greece and Turkey. Only 6,3% of its total length extends in the Greek state (3,340 sq.km) having as the main tributaries the rivers Ardas and Erythrotamos. A plethora of activities related to Evros have been historically developing and vary from irrigation, domestic water supply, urban sanitation and power supply, corroborating the high contribution of the river to the socioeconomic trajectories of the wider area. More than the 70% of the total dry cotton and sunflower seeds production in Greece, among others, comes from the Evros region. Due to the fact that the fertile agricultural land uses alongside the river basin has been systematically contributing to the local as well as national economy, land policies implemented in the regional unit of Evros has been focusing on the increment of agricultural efficiency. Land consolidation and readjustment measures have been undertaken during ‘50s, ‘60s and ‘90s adding plots for cultivation designated as ‘highly productive agricultural land’ alongside the river. In 2018, a new wave of land consolidation plans came into force for 50.000 acres in the regional unit of Evros, as a consequence of constant pressures by local farmers.



Figure 2: The location of the Evros River basin on the country borders of Greece, Turkey and Bulgaria (Ministry of Environment and Energy [MEE], 2016:8).

At the same time, the areas of high agricultural productivity experience accentuated social and economic vulnerability. The long-standing riverbed management and numerous interventions revolving around the pressures of the farmers to preserve arable land have reduced the capacity of the flood plains (Chouvardas and Papapostolou, 2016). Moreover, the land consolidation plans were not followed by the necessary flood risk infrastructure development, further aggravating the existing flood risk levels (Tsesmelis, 2006). Devastating floods have been a constant concern for local communities as well as for local and regional authorities, while the capability of national response amid extreme weather events is being questioned. Flood risk management works date back to 1934, when the Greek and the Turkish government signed an mutual agreement (The Agreement on the Installation of Hydraulic Systems to start hydraulic and flood protection works on both sides of Evros river). In 1963, the Protocol on the rehabilitation of the Evros River Basin, brought the issue of flood management back to the two countries agenda. The development of infrastructure initiated at that time, lasted until the mid '70s through a number of bilateral agreements and included channels alignment, the construction of levees and dams-reservoirs. It was further accompanied by land policy measures for agricultural land reclamation and state border adjustments. During the same period - although with less conflicts- similar policies were agreed upon Greek and Bulgarian state for their shared part of the river. The aforementioned works remain up to present the dominant flood control engineering structures and have oftentimes proved inefficient to address severe floods (Kanellopoulos *et al.*, 2007). Besides, agricultural activities have expanded and intensified through time without the proportional development and enhancement of the irrigation system, the pumping stations, and the flood control infrastructure (Tsesmelis, 2006).

Some of the most recent flood disasters records denote the huge damages inflicted on infrastructure and agriculture in 2005, the evacuation of two settlements as well as damaged transportation and water supply networks in 2006, the flooding of several households in 2010, and severe damages in 2018. Since 2005, risk management actions undertaken by local and regional authorities, as well as by the General Secretariat of Civil Protection are merely based on: (1) the restructuring and the improvement of engineering infrastructure (embankments, drainage systems etc.), (2) command-control emergency management including the evacuation of households and settlements and the controlled flood events in order to protect inhabited areas, and (3) post disaster relief measures based on compensations for affected population and cultivated land. Indicative of the focus of the prevailing disaster management system on emergency response and post-disaster recovery is the distribution of local and regional expenses. In 2018, for example, the Greek army received in Evros region received 6.000.000 euros to strengthen disaster preparedness, and disaster recovery costs were around 400.000 euros only for Didimoticho municipality (Kritou, 2018). In 2019 compensations to affected population in the area reached 1.164.013 euros. Set in this context, it could be argued that the risk management system regarding Evros floods focuses on tackling flood impacts rather than mitigating flood risk. Land policy instruments are almost absent in flood prevention, with the exception of cross-border land readjustment alongside the Evros River basin.

What has to be underlined here, is that even in the Evros Flood Risk Management Plan (FRMP), enacted in 2018 (Law 2639/2018) -in compliance with the European Commission's Directive- the preservation of agricultural land appears as its outmost priority. More specifically, in the FRMP report it is stated that any flood risk mitigation measures and interventions should be implemented with a view to preserving agricultural land and to avoiding land use fragmentation; especially in the case of

High Agricultural Productivity lands, where any proposed work or activity should not jeopardize the preservation of its qualitative characteristics (Par.1.4.-L2639/2018). Furthermore, the FRMP proclaims the restructuring of agricultural crops in the inundation zones, but not involving land consolidation and land use reallocation processes, but for incentivizing the cultivation of certain species that could operate as a barrier to future flood hazards (Par.1.8. - L2639/2018). On the whole, it could be argued that land policy measures implemented through the years have not been combined to flood risk mitigation, but have acted autonomously and what's more have aggravated the vulnerability conditions of the area.



Figure 3: The operation of the Greek land policy system in conjunction with other policy sectors. Emphasis is given to tools that serve planning implementation and socioeconomic priorities (related to agricultural development in the case of Evros River Basin).

Insights from the case of the Scheldt River Basin

The Scheldt River flows from the northern part of France, crosses Belgium, and reaches the North Sea through the Dutch territory. It constitutes an important waterway, having a long navigable part and several canals that connect the river with significant industrial areas of Belgium. What is more, its banks host one of the largest European ports, in Antwerp. However, major fluvial and pluvial floods have been recorded on the Scheldt River Basin (1953, 1976, 1998, 2002, 2010) and have historically demanded for particular water management actions. Until the end of the '90s, flood management included merely engineering projects and infrastructure works for dams, dikes and water barriers. Since European Directives on Water and Flood Management emerged and were incorporated into Flemish and Walloon legislation, flood management became part of an integrated water policy that operates in line with spatial development strategies, urban and regional plans and environmental protection guidelines. One of the most indicative examples that reveal the crucial and leading role of

spatial planning in coordinating policies of flood management, land use regulation and environmental protection in Belgium is the *Sigma Plan*. After the devastating floods that hit the wider area of the Scheldt River in 1976, the Belgian government launched a plan, named ‘Sigma’ from the initial letter of the river Scheldt, inspired by the Dutch Delta Plan. Since 2005, the Plan has been updated and several Sigma projects have been developed integrating different strategies and measures associated with flood prevention, spatial development, land use planning and environmental protection. Moreover, the Sigma Plan forms a legal-institutional underpinning for the coordination of multiple actors, ranging from Agencies in charge of Sigma projects, namely the Agency for the Management of Flemish Waterways (De Vlaamse Waterweg nv) and the Agency for Nature and Forests (Agentschap Natuur en Bos), to several public and private actors such as local and regional authorities, the Flemish Land Agency, farmers associations, NGOs etc.

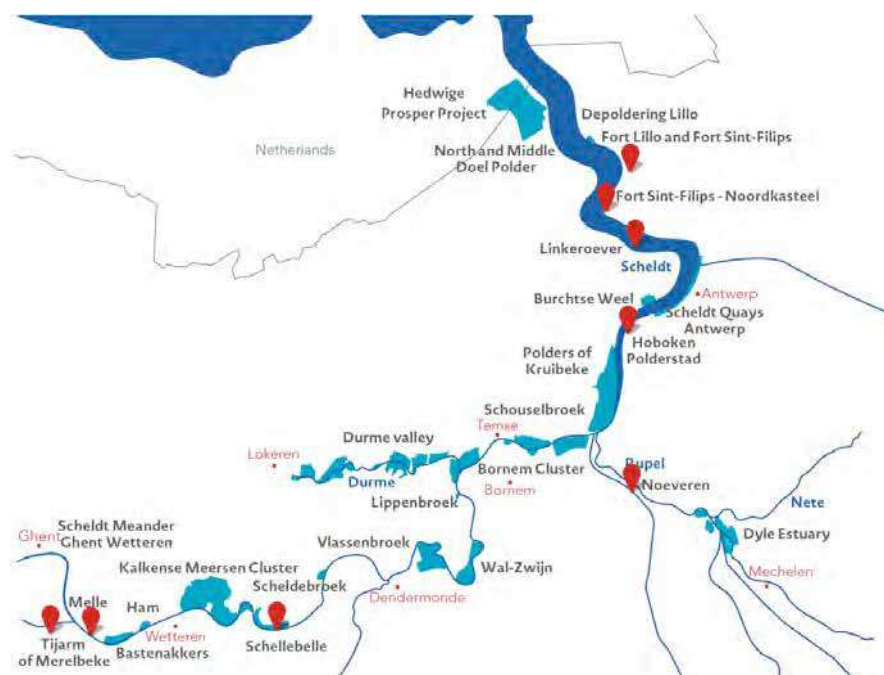


Figure 4: Scheldt River and Sigma Plan projects (source: *sigmaplan.be*).

The nexus developed between flood management and spatial planning has provided a fertile ground for the integration of land policy tools into several phases of the Scheldt’s flood management cycle, especially in mitigation strategies. These include land reclamation, expropriation and compensation, land exchange through the Flemish Land Bank, compulsory land purchase, re-parcelling and land swap. Land expropriation and land swap have taken place either to ‘move’ plots located in vulnerable areas to low-risk zones, or for the permanent evacuation of flood control areas and the construction of hydraulic engineering. One of the largest expropriation projects was implemented in the Kruibeke-Basel-Ruppelmonde Flood Control Area (KBR-FCA) for the complete transformation of 600 hectares land uses and the removal of a quarter of the local community. Despite the conflicts and the resistance by farmers, who apart from ceasing their agricultural activities, were consequently excluded from related European subsidies supported by the European Agricultural Policy, the project was realized and the area was transformed into a flood control zone, a meadow for protected bird species, a sustainable tourism destination and recreational services (Bruzzone, 2013). Moreover, *signal areas*

have been defined alongside the river Scheldt, where land-use allocation and rezoning options are examined (De Smeldt, 2014). In signal areas, a wide range of land policy tools can be implemented in order to minimize flood disaster risk. For instance, re-parcelling with land swap can be effectuated in line with the Decree on Land Organisation for transferring population located on high vulnerable areas to safer zones, followed by related provisions for land expropriation and compensation. However, several procedures are ‘time and money consuming’, thus take a long time to be completed. In this regard, expropriations and compensations often constitute a significant economic burden for local authorities, given the extremely high land values in the Belgian territory, hindering the implementation of re-parceling and land swap in flood prone areas. Especially in Wallonia, such mechanisms are followed by negotiations on land prices that even lead to Peace Court, often resulting in spatial development halts (Mees *et al.*, 2016).

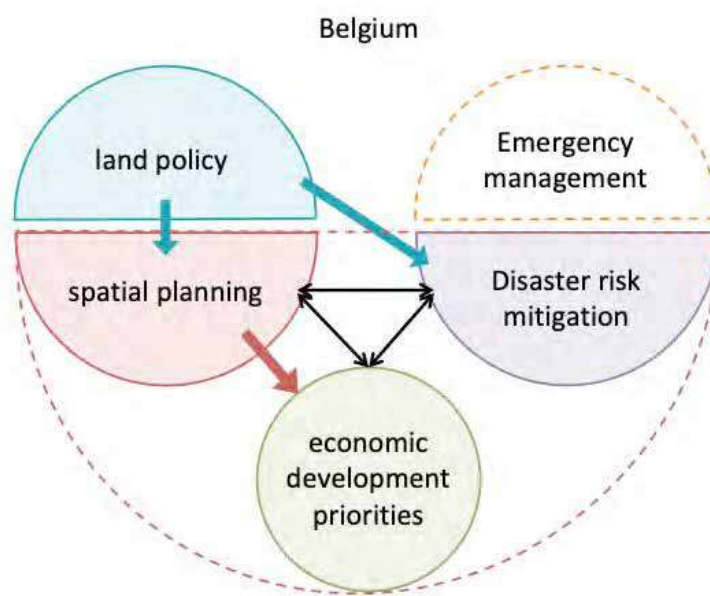


Figure 5: The operation of the Belgian land policy system in conjunction with other policy sectors. It provides tools for the implementation of spatial plans, flood mitigation strategies and environmental protection policies.

Two additional flood risk mitigation instruments have to be highlighted here. First, the 2013 modification of the Decree on Integrated Water Policy (DIWP) introduced the “*duty to inform*”, with which risk mitigation measures are incorporated in all real estate transactions in Flanders. Consequently, all actors involved in private contracts for selling or renting out properties alongside the River Scheldt, as well as for transferring usufructs, leasehold, and superficies (notaries, owners, brokers) are obliged to inform candidate buyers and tenants whether the assets are located on flood vulnerable areas (Doorn-hoekveld, 2017). Second, of particular relevance are the complementary regulation on insurances and disaster compensations. Flood affected population and buildings used to be compensated by the National Disaster Relief Fund if the flood was recognized as a natural disaster. Since 2003, the Belgian Federal government enforced a mandatory insurance coverage against floods as an extension of the fire insurance policy, and only damages caused by very exceptional events are

eligible to compensation by the Belgian State (Boardman *et al.*, 2010). Moreover, the disaster fund used for compensations has been transferred from the central state to the regional governments, aiming to better align prevention and recovery strategies (Mees *et al.*, 2016). The aforementioned provisions are partially implemented and still lack institutional clarifications and legislative improvements especially in the Wallon Region (Mees *et al.*, 2016:47). Nevertheless, it can be argued that in the case of the Scheldt River, the Belgian land policy system provides a plethora of tools that can be mobilised within the competences of other policy sectors (spatial planning, water management, flood prevention), and even in real-estate market, to achieve safe and resilient land development.

Conclusions

The two cases presented in this study demonstrate how the interconnectedness between land policy and risk management may determine the vulnerability of a given area, and thus the amount of losses and damages in cases of extreme disaster (flood) events. First, the Greek case reveals the disjoint operation of spatial planning and flood disaster management, but also the aggravation of flood disaster risk caused by previously implemented land policies. In the wider area of the Evros River Basin land consolidation measures adopted during different periods, since 1950 and up to 2018, were the result of social demands aiming to safeguard and improve the agricultural sector. Flood damages that mostly hit cultivated land in the same area are addressed through post-disaster relief measures and high compensations. On the other hand, in Belgium, land policy instruments are applied in flood risk mitigation projects strengthening the relationship between spatial development and flood prevention. Moreover, spatial planning appears as an institutional ‘umbrella’ for the integration of different sectoral policies (environmental, agricultural, economic) and for the cooperation between several public and private actors involved. In this context, the Sigma Plan operates as a basis for coordinating actions in different areas under its jurisdiction and principally those emanating from the Scheldt water management strategies. This study has also underlined the differentiated operation of compensation mechanisms in Greece and Belgium; a policy tool whose use seems to further influence the links between spatial policy and risk management. Belgium, adopts disaster compulsory insurance as a proactive tool for a potential recovery-reconstruction phase. In Greece, the policy system heavily gravitates on post-disaster recovery compensation relief measures; thus acting as a mechanism to cover the weaknesses and voids of spatial plans, safety regulations and implemented land policies. On the whole, the cases examined present two crucial differentiations that are both associated to the focal role of private landownership and the embeddedness of the land policy system into spatial development and risk management. In the case of Belgium, land policy has been an active domain making use of distinct tools (expropriations, pre-emption rights, re-parceling) in co-ordination (relatively) and combination with other policies (spatial planning, water management, flood prevention-mitigation). Thus the whole system departs by inherently recognizing the role of land tenure relations and realistically structuring a coherent safety strategy. In Greece, the aforementioned domains remain disjointed, while land policy mechanisms are mostly activated in compliance to demands posed by landowning groups related mostly to the economic sustainability of the existing tenure regime and the associated land-use patterns. Thus, as a result, disaster mitigation and prevention appears as an “external” (exceptional) policy domain, shifting the emphasis to emergency and post-disaster recovery measures.

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Study on countermeasures and spatial potential of China's coastal cities in response to heatwave and flood hazards

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Abstract: Global warming has caused frequent occurrences of various extreme events. Coastal cities are facing a series of severe flood hazards led especially by rising of sea level and threats caused by severe heat island effects and extreme heat waves. This article first summarizes the shortage of planning actions in coping with extreme climate of flood and extreme heat wave hazards faced by coastal cities in China. Then sorting out international experience of technologies and policies in mitigating and adapting to flood and heatwave hazards, and focuses on the main problems solved by applied technologies and the indicators involved (including time, costs, etc.). Through the identification of quantitative techniques, the spatial potential of the two major types of extreme climate disasters in downtown Shanghai and the priority application of mitigation and adaptation technologies are identified. Finally, from the technical and policy aspects, suggestions for mitigating and adapting to two types of extreme climate disasters in Shanghai's central urban areas are proposed.

Keywords: heatwave and flood hazards; mitigation and adaptation technology; downtown Shanghai

Introduction

Issues such as rising sea levels, global warming, and frequent extreme weather have become common challenges for cities around the world. China's coastal cities are areas of strong economic activity and key areas for the construction of marine ecological civilization, facing the dual challenges of natural and human activities. At present, flood hazards has become a major economic loss in coastal cities, and heatwave has affected the health of people. In the face of these hazards, coastal cities have made some planning actions in the context of national

policies, such as the construction of hazards prevention facilities. However, these cities still lack detailed and scientific technological framework and policies to mobilize enthusiasm and implementation. Therefore, from the perspective of international experience, this article expounds how international cities respond to flood hazard and heatwave in terms of technology and policy. Finally, taking Shanghai as an example, this article studies the spatial distribution of hazards in downtown Shanghai, and give suggestions on how to deal with the heatwave and flood hazards from two aspects of technology and policy, combining international experience. At present, the research on climate change in the field of urban planning in China mostly focuses on national macro-policy research, urban design methods under the background of climate change, trade-offs of mitigation and adaptation actions, and planning technology and policy research for specific hazards or specific urban types is still lack. Other fields are targeted at hazard risk assessment, hazard distribution characteristics, quantitative estimation of hazard intensity, etc., strategies and methods for dealing with hazards are also lack. Therefore, this article combines the two aspects to enrich the technical and policy research on specific hazard types in the urban planning field.

1. Heatwave and flood hazards faced by coastal cities in China and insufficient planning actions

Under the background of global climate challenges, China's coastal cities face severe climate hazard risks. On the one hand, China's coastal cities have some characteristics, such as high population density, intensive economic activity, and high levels of urbanization. Cities with more populations, resources, industries, and infrastructures are more negatively affected by climate change. Large-scale human activities make the region more vulnerable to climate hazards. Climate change overlaps with urbanization. The Organization for Economic Cooperation and Development ranked coastal cities exposed to global flood risk by population and social assets in 2070. The results showed that the coastal cities of China, such as Guangzhou, Shanghai, Tianjin, Ningbo, Hong Kong and Qingdao, were listed in the top 20 cities with the greatest risk (Yuanyuan Zhang *et al.* 2017). On the other hand, China's coastal cities are affected by complex hazards due to the interaction between land and sea. China's coastal areas are close to the Pacific Ocean. Due to the subtropical monsoon climate, floods caused by extreme weather such as typhoon and rain are highly prone to occur. In particular, coastal cities such as Tianjin, Shanghai, and Guangzhou are high-risk areas threatened by floods and submerged in lowlands. Based on the three aspects of ecological environment vulnerability, climate change impact risk and socio-economic exposure, a study on natural hazard risk assessment of coastal cities in mainland China shows that the high-risk areas of natural hazard are concentrated in Liaodong Bay, Laizhou Bay, Hangzhou Bay, some coastal areas of Zhejiang, Eastern Guangdong, Pearl River Delta and Haikou Sea Port (Figure 1). These areas are not only the areas with high vulnerability of natural ecological environment, but also the high-risk areas affected by climate change. They are vulnerable to more serious natural disasters (Hui Chen and Chenyan Ma, 2018). The following is a brief introduction to flood hazards, urban heat island effects and heatwave hazard faced by coastal cities in China.

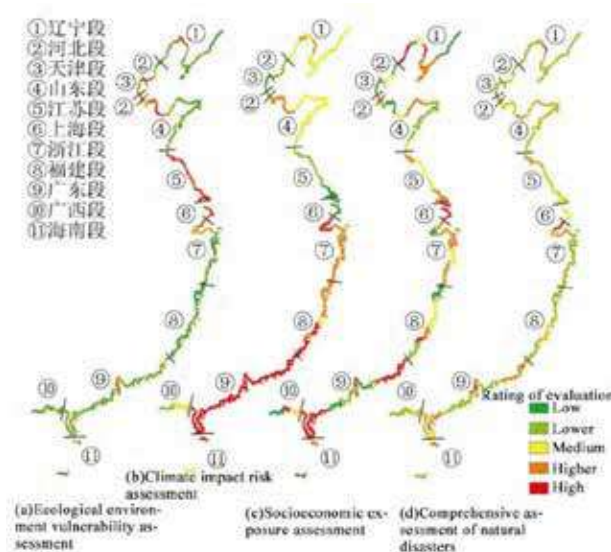


Figure 1 Results of natural hazard risk assessment in coastal cities of mainland China (Hui Chen and Chenyan Ma, 2018)

1.1 Flood hazards

China's coastal cities are facing the risk of flooding in the low-lying areas of coastal cities on the background of rising sea levels. According to the China Sea Level Bulletin, the sea level changes in China's coastal areas are generally fluctuating upward trend. From 1980 to 2018, the sea level rise rate in China's coastal areas was 3.3 mm/year, which was higher than the global average of the same period. Internationally, coastal areas below 5 m above sea level are considered to be dangerous areas for climate change, sea level rise and storm surge disasters. Most of the coastal cities in China, such as Shenzhen, Guangzhou, Shanghai, Suzhou, Qingdao, Tianjin, etc., have an elevation of only 2.0 to 3.0 m. The Yangtze River Delta is a low-lying area with an elevation of 11,000 square kilometers below 2.0 m. Most of the Pearl River Delta has an elevation of less than 1.0 m (Suocheng Dong *et al.* 2010). As a result, most coastal cities in China are at risk of submergence due to rising sea levels. In addition, sea level rise will increase the extent of intrusion into the ground freshwater layer of land. Coupled with the problem of over-exploitation of groundwater in coastal cities such as Dalian, the contradiction between supply and demand of freshwater in coastal cities has intensified.

In addition, storm surges and floods are major sudden hazards that threaten coastal cities. In 2018, there were 16 storm surges on the coast of China (the statistical scope was the storm surge process reaching the blue and above warning levels), resulting in direct economic losses of 4.456 billion yuan, accounting for 93% of the total direct economic losses of marine hazards in 2018. Storm surges can cause seawater backflow, they can also cause urban flooding when meet the river flood peaks. Coastal cities are generally rich in water systems, which aggravates the chain hazards caused by storm surges (Yue Zhao and Baishi Zhang, 2017). In addition, the

coastal cities have a large population and the urban area is expanding constantly. In the process of urbanization, a large number of reclaimed development activities such as reclamation, over-exploitation, and disorderly development of rivers have destroyed the ecologic and resilience of coastal areas. During the 30 years from 1980 to 2010, the reclamation area was as high as 3577.93km², and the large-scale extensive behavior has produced many negative effects. The urban ground's ability to cope with short-term heavy rainfalls is reduced, and the flood risk is increased (Honglei Yu 2015).

1.2 Heatwave hazards

China's coastal cities are an important area for China's economic development. High-density cities such as Shanghai, Guangzhou and Shenzhen are all located in coastal areas. The urban heat island effect has become a common problem in high-density urban centers. Some scholars used daily temperature range to quantitatively assess the intensity of urban heat island in remote sensing. They found that the intensity of urban heat island in eastern coastal areas of China was increasing (Zhongli Lin and Hanqiu Xu, 2018). The heat island effect can exacerbate the negative effects of heatwaves. During the period of extreme heatwaves, the effect of heat island is obvious at night, which will reduce the temperature difference between day and night in the urban center. The heat island effect also creates a low-pressure vortex that causes the accumulation of atmospheric pollutants and exacerbates air pollution. Under the background of global warming, there are more and more heatwave events, which have brought enormous adverse effects on human health, agriculture and ecosystems. Heatwave are characterized by variability, sustainability, and predictability, and are related to weather-scale circulation systems, urban heat island effects, subsidence warming, and topography. Heatwave can cause discomfort to residents, fires, endanger crops, increase water and electricity consumption. Among the coastal areas of China, the southeast coastal cities are affected by the subtropical high-pressure climate and become an area with sweltering heatwave hazards. Due to the short coastline, northern coastal cities often suffer from dry heatwave hazards (Xinyu Wang 2017).

According to the distribution map of China's high temperature days published by the China Meteorological Administration (Figure 2), it can be seen that the high temperature phenomenon in the southeast coastal cities is relatively serious, especially in the Zhejiang section, which can last for nearly 30 days. The distribution characteristics of coastal cities can be seen from the temporal and spatial variation characteristics of heatwaves in China (Figure 3, Figure 4, Figure 5, Figure 6). The frequency of heatwave and the number of days of high temperature have both showed higher in southeastern coastal cities and Zhejiang ranked the highest. In the linear variation trend of frequency and number of days of heatwave, the southeastern coastal cities showed a significant increase trend, while the northern coastal cities showed an increasing trend

(Dianxiu Ye *et al.* 2013). Combined with the heatwave warnings that have appeared in China's meteorological bureaus in recent years, the heatwave phenomenon in China's coastal cities has increased and the coastal cities need to take measures to face them positively.

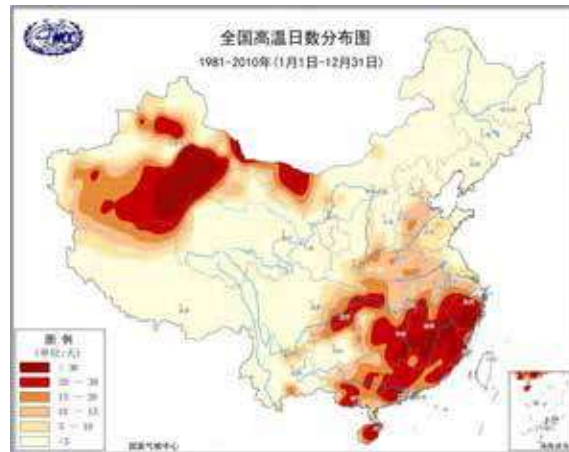


Figure 2 Distribution of high temperature days in the country (1981-2010)
(<http://www.cma.gov.cn/>)

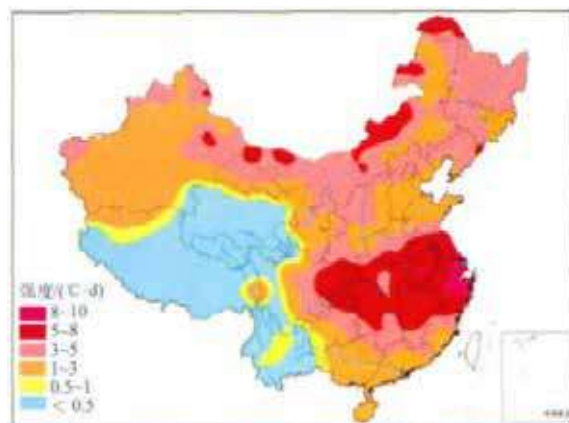


Figure 3 Distribution of mean summer heatwave intensity in china (1961-2010)
(Dianxiu Ye *et al.* 2013)

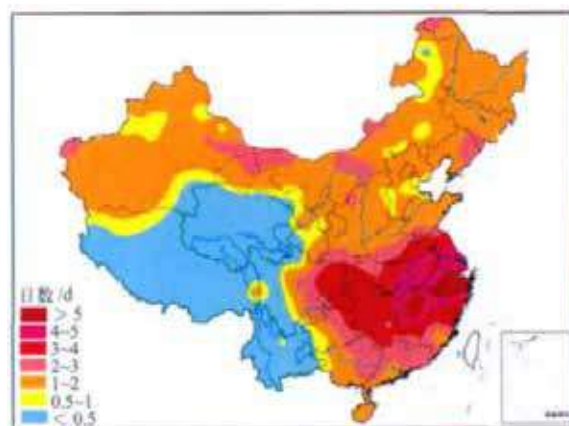


Figure 4 Distribution of mean summer heatwave days in china (1961-2010)
(Dianxiu Ye *et al.* 2013)



Figure 5 Linear variation trend of heatwave intensity in single station in summer in China (1961-2010) (Dianxiu Ye *et al.* 2013)



Figure 6 Linear variation trend of heatwave days in single station in summer in China (1961-2010) (Dianxiu Ye *et al.* 2013)

1.3 Insufficient planning actions

In the face of global climate change, China has been proactive in taking action. For example, the state has launched the National Climate Change Plan (2014-2020) and provincial-level special plans, China's Special Action on Climate Change Science and Technology, China's National Independent Contribution to Enhancing Action on Climate Change, and the Action Plan for Cities to Adapt to Climate Change. Coastal areas have actively carried out the construction of marine ecological civilization and the construction of climate-adapted cities, as well as the pilot work of climate-adapted urban construction. China has made some progress in mitigating climate change, adapting to climate change, improving institutional mechanisms, strengthening capacity building, encouraging local action, and raising public awareness. Coastal cities are actively responding to national strategies, such as Shanghai drew up “13th Five-Year Plan for Energy Conservation and Climate Change in Shanghai”. However, there are still many shortcomings in Chinese cities in terms of planning actions to address climate change.

In the planning and management system, the Shanghai 2035 Master Plan proposes to build a more sustainable and resilient city of ecology, and clearly articulate measures to deal with sea level rise, to mitigate extreme climate impacts, and urban heat island effects. However, the task of coping with global climate change has not yet been clearly stated in the urban planning and management for many coastal cities. Urban planning does not refine and deepen specific planning techniques and methods (Zuda Ye 2017). The lack of technical content will affect the planning response to climate change.

In the planning of macro-policies and local actions, the content of energy-saving emission reduction and low-carbon actions is too much, and the content of improving infrastructure adaptability is relatively little (Quan Zhou *et al.* 2016). There is a lack of integrated regional coordination mechanisms among local governments (Dongfeng Yang *et al.* 2017). Some local governments have taken into account the financial shortage, other economic and social problems, cost of human capital, risk of damage to their own economic interests, and relatively less serious climate hazards. They are not active in facing regional cooperation (Yan Song *et al.* 2011). In addition, national or local policies lack classified guidance, while different cities in coastal cities face different status and challenges.

At the level of planning control and design, domestic cities mostly carry out the construction planning of low-carbon city, resilient city and sponge city, which responds to the ecological concept from the aspects of land use, traffic planning, infrastructure planning, open space design, ecological green space system planning, wind corridor planning, green building, municipal engineering system planning, hazard prevention and mitigation planning, etc. Such as low-impact development, roof greening, and cold microclimate construction. However, in addition to hazard prevention and mitigation planning, these control designs are often fragmented, and there is a lack of systematic, direct and in-depth guidance and linkages with specific climate disasters. Some designs are too microscopic and formal, and it is difficult to exert effects (Weiwen Zhang and Liangjiang He, 2009). Planning and climate change are likely to be tightly integrated if there is a framework for multi-level planning and design control that responds to climate change mitigation.

In short, faced with heatwave and flood hazards, China's coastal cities lack legal, scientific, cooperative, proactive, targeted and systematic planning. These coastal cities need to draw lessons from other countries' technical and policy strategies.

2 International experience in mitigating and adapting to heatwave and flood hazards

There is growing recognition and awareness that nature can help provide viable solutions that use and deploy the properties of natural ecosystems and the services that they provide in a smart,

'engineered' way. These nature-based solutions provide sustainable, cost-effective, multi-purpose and flexible alternatives for various objectives. The European Union (EU) defines it as Nature-Based Solutions (NBS), it refers to the sustainable management and use of nature for tackling socio-environmental challenges. In Table 1 and Table 2 , a series of relatively mature NBS solutions are collected and sorted out according to internet sources.

2.1 Heatwave hazard solving technology

Table 1 summarizes the technical indicators and construction costs and effectiveness of different scales to mitigate and adapt to heatwave. As can be seen from Table 1, although the scale of solutions for heatwave hazard is different, the construction of green facilities plays an extremely important role, and the greening of the surface is particularly emphasized from the building, the block to the city scale. The small-scale greening facilities are more suitable for the transformation of the built-up areas, and generally can achieve significant results in a short period of time, and are easier to be implemented. The common greening method is to provide more green vegetation coverage. It is generally divided into two major types of plants, planting trees and grass. The average effective time for increasing tree coverage is shorter than the average effective time for increasing grass. Studies have shown that there is an extension effect on the cooling effect of the green area. Although it is not clear whether there is a minimum scale, the effect of cooling extension with the increase of green area has been verified. The cooling extension effect of a 156-hectare park can even be reach the park boundary 1 km away (Diana E. Bowler *et al.*, 2010). This extension and cooling effect beyond the boundary of the green area indicates that the cooling effect of parks of different scales can be preliminarily considered in the urban park system planning to effectively reduce the heat island effect. Another study also shows that mosaic-style dense and frequent small green space improves the urban thermal environment better than large concentrated green space (Xinyu Wang and Jian Zeng, 2017). Therefore, for the dense construction area, the green transformation is more suitable for increasing the horizontal or vertical green vegetation coverage through the dense plaque method.

In addition to the green transformation, providing different cooling spaces are also effective strategies for heatwave, especially for the more vulnerable groups (such as the elderly over 65 years old, the poor, the population with low educational level). The cooling space can be used effectively not only to provide a sufficient amount of cooling space (air-conditioned indoor space and shaded outdoor space), but also ensure accessibility to these spaces, especially vulnerable people (Babak J.Fard *et al.*, 2016). The elderly group is at a disadvantage in terms of physical fitness, and they are inconvenient to move. It is easy for them to be limited by the distance cost and cannot reach the cooling space far away for them. The poor and low-educated people are more likely to be low-income people, and the accessibility to air-conditioned indoor

space for low-income people is often subject to cost constraints. The accessibility to cooling space is thus often limited by cost. Therefore, adequate cooling space and good accessibility must be seriously considered.

Table 1 Technical methods and reference indicators for mitigation and adaptation to heatwave at different scales

Scales	Methods	Costs	Expected efficacy (year)	Descriptions
Building	Wetland roofs	——	< 1	A special type of extensive green roof which is evenly planted with wetland or marsh plants. It can help slow things down and spread the impact of heavy rain out over a longer period along with rainwater collectors.
	Green roofs	Initial costs: 100-250 €/mq Maintenance: 10-15 €/mq per year	< 10	It refers to the space on the top of a building that is covered partially or entirely with vegetation that is planted in a growing substrate.
	Green facades	——	< 1	It is comprised of plants grown in supported vertical structure attached to an internal or external wall or freestanding.
District	Shade provided by trees	Initial costs: \$50-80 per tree Maintenance: \$.10 - \$.22	< 1	Planting vegetation on streets, squares, parks creates shade and evapotranspiration and therefore has a cooling effect.
	Green bus shelters	Initial costs: \$14.500	< 1	Bus shelter provided with green roof for water retention and cooling and with all the smart facilities that make waiting times more comfortable.
	Tree-lined streets	Initial costs: \$50-80 per tree	< 10	It is the street that has trees on either side.

		Maintenance: \$.10 - \$.22		
	Communi- ty gardens	Initial costs : \$3,750 to \$7,500 Maintenance: \$50-\$100 per year	< 1	It is an urban, suburban or rural piece of land in which it can grow flowers, vegetables or a community. It can be one community plot or many individual plots which are located at different scales.
Overall city	Increasing total vegetation index	Initial costs: \$50-80 per tree Maintenance: \$.10 - \$.22	Trees: < 10 Grass: < 1	Increasing green areas by planting trees or growing grass.
	Access to cooling facilities	——	——	Cooling facilities refer to indoor buildings with air conditioners and outdoor spaces shaded by vegetations.

2.2 Flood hazard solving technology

On the scale of building, the usual solution is still the green transformation of the roof. It not only achieves the cooling effect, but also fully utilizes the rainwater. It is a low-cost solution that can effectively solve the heatwave and flood hazards at the same time. It should be noted here that different forms of the roofs have significantly different effects on the speed of the stormwater runoff. The rainwater flow rate on the sloping roof is much faster than that on the flat roof. Therefore, in order to achieve efficient mitigation and full utilization of the stormwater runoff, the flat roof and slope roofs take different forms of treatment, which is evident in the solution of wetland roofs as is seen in Figure 7 (retrived from website).



Figure 7 The wetland roof

The block-scale accommodates more diverse flood disaster resolution technologies, which are characterized by increasing surface permeability and slowing down surface runoff and runoff velocity during rainstorm periods. Most of these measures are low-cost and easy to implement, and can achieve results in the short term. This method can be summarized into two categories: one is to increase the vegetation cover on the surface, while playing a role in mitigating heatwave; the other is to design small-scale surface engineering, such as building infiltration ditches.

Overall city scale. Such measures are usually applied to large-scale urban ecosystems, such as suburban parks, wetlands, etc., and require a large amount of technical and engineering quantities and financial support. What's more, the general construction period is longer. However, once such measures are successfully implemented, they can greatly improve the overall capacity of cities to cope with disasters.

Table2. Technical methods and reference indicators for mitigation and adaptation to flood hazards at different scales

Scales	Methods	Costs	Expected efficacy (year)	Descriptions
Building	Wetland roofs	——	< 1	A special type of extensive green roof which is evenly planted with wetland or marsh plants. It can help slow things down and spread the impact of heavy rain out over a longer period along with rainwater collectors.
	Green roofs	Initial costs: 100-250 €/mq Maintenance: 10-15 €/mq per year	< 10	It refers to the space on the top of a building that is covered partially or entirely with vegetation that is planted in a growing substrate.
District	Permeable paving	Initial costs: €4 - €8/ sqft Maintenance: 0,5-2 euro cents / sqft annually.	< 1	It is a type of paving that allows fluids to seep through them and are commonly used on pedestrians and light vehicle pathways.

	Bioswales	Initial costs: €5,17/m ² (Bioswale) ; €8,97/m ² (Sewage) Maintenance: €0,37/m ² (Bioswale); €0,26/m ² (Sewage)	< 1 or < 10	It is a long, channeled depression or trench that receives rainwater runoff and has vegetation and organic matter to slow water infiltration and filter out pollutants.
	Living Garden	Initial costs: solar panel 3 € per watt, green area 20 € Per sqm and structure 40 € per sqm	< 10	Concept developed by the Dutch Garden and Landscape Contractors Association in which green and sustainable gardens for private or public spaces are proposed, in which water, energy, soil and edible greenery are concentrated.
	Rain garden	——	Depends on the scales	A low-cost rain garden can be built to prevent rainwater runoff from the roof, the various impermeable surfaces of the building and its perimeter from being directed into the stormwater drainage system (Mélissa Giguère <i>et al.</i> 2016).
	Gutter	——	< 1	Gutters are wide and shallow simple form of channels, which are above ground that carry the storm runoff in excess of the capacity of the minor drainage system from streets and squares.
	Infiltration strips and meadows	Initial costs: 1,73 €/lineal foot	< 1	Infiltration strips and meadows are green or permeable areas that provide opportunities for slow transportation and infiltration of water.
Overall city	Urban wetland	——	< 10	A wetland is a zone where the distribution of living beings is mainly characterized by the presence of water, whatever its degree of

				salinity or its persistence during the year.
	Re-meander rivers	Initial costs: £ 100-300/m	< 10	Re-meander rivers (where they have been artificially straightened) to help reduce speed and height of flood peaks.
	Rainwater run-off ponds	—	< 10	A system for purifying polluted rain and run-off water, preventing direct infiltration.

2.3 Policies for urban mitigation and adaptation to heatwave and flood hazards

Policy on heatwave hazard solutions. The most common action is the heatwave warning system, the most important of which is when to issue an early warning. In determining publication time, the most effective method is comparing historical local daily mortality data with complex weather data for time periods when mortality rates exceed normal averages (Carlson and Ann E., 2008). Heatwave are closely related to the age of the population. As the health of the elderly is more fragile, they are more vulnerable to heatwave. Heatwave can lead to more health problems for the elderly. By investigating the effect of urban heatwave early warning for the elderly population, some scholars found that when cities issue heatwave early warning to the elderly population through traditional media, the effect of early warning is significantly improved than that without heatwave early warning for the elderly population (Carlson and Ann E., 2008). In the cities surveyed, the heatwave warning awareness rate is between 83% and 91%. Therefore, there are three important technical indicators in the heatwave early warning system: historical local daily mortality data, complex weather data for time periods when mortality rates exceed normal averages, elderly population distribution data.

Policy on flood hazard solutions. Private flood protection measure has long been implemented in the German Rhine River, which has received increasing attention in flood risk management measures across Europe and even at the global level. Private flood protection measures are long-term flood mitigation and response measures maintained by private households. They can be understood as a private sector's liability system for flood damage, such as flood-adapted building use or the deployment of flood barriers. The key to the long-term sustainability of the system is that a series of major flood events have become an important trigger for the implementation of accelerated mitigation measures. An analysis of private sector actions after the floods in the Rhine section of Germany in 1993-1995 and 2011 confirmed that flood experience has a strong impact on pre-disaster precautionary measures. Moreover, there is a strong positive correlation between the number of flood incidents reported each year and the

number of flood response measures adopted, which continuously strengthens the private households' sense of responsibility to solve flood problems (P. Bubeck *et al.*, 2012). Interestingly, in the process of implementing pre-disaster preventive measures, personal preventive behavior is often strongly influenced by the behavior of others, which makes the flood experience not only enhance the sense of responsibility through its own experience, but also expand the positive behavior of pre-disaster prevention through upstream and downstream flood events in the waters. The three important positive aspects of flood hazard experience, key reports, and preventive behavior impacts have played a very positive role in maintaining the long-term effectiveness of the private flood control responsibility system.

3 Study on countermeasures and spatial potential of China's coastal cities in response to heatwave and flood hazards

3.1 Spatial distribution of heatwave and flood areas and potential areas in downtown Shanghai

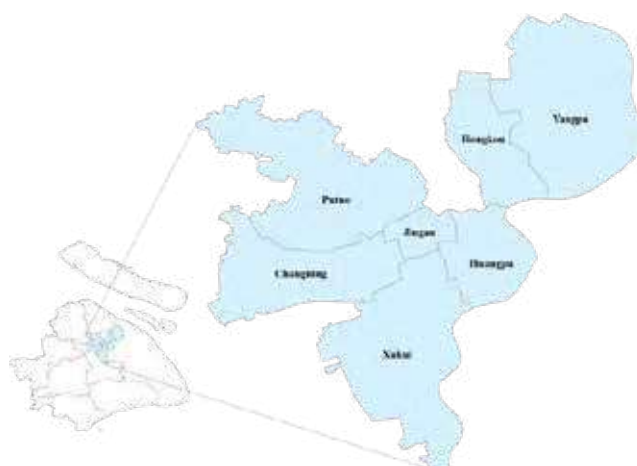


Figure 8 Administrative district map of downtown Shanghai

The research scope of this study is the central area of Shanghai (Figure 8), including Xuhui, Changning, Jing 'an, Putuo, Huangpu, Yangpu and Hongkou.

Spatial distribution of vulnerable areas of heatwaves. Figure 9 and Figure 10 respectively show the surface temperature changes in downtown Shanghai from 1989 to 2013 (Rong Jiang, 2016) and surface temperature retrieval in 2014 (Jian Cai, 2017). It can be seen from Figure 9 that the overall thermal environment increase in Shanghai is mainly concentrated in the central area of the city and its marginal areas. Only Changning District and Xuhui District have plaques with greatly reduced temperature, and the remaining areas are only show slightly and scattered plaques of temperature reduction . The overall thermal environment changes slightly, indicating that the heat island effect has not been significantly improved.

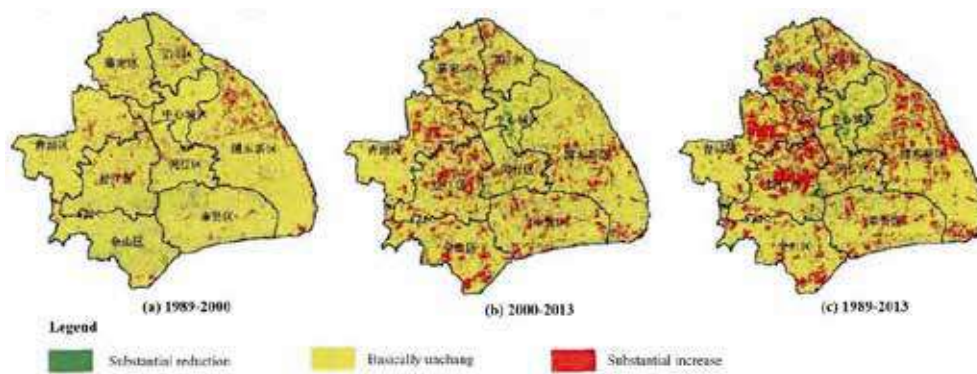


Figure 9 The changes in Shanghai's land surface temperature

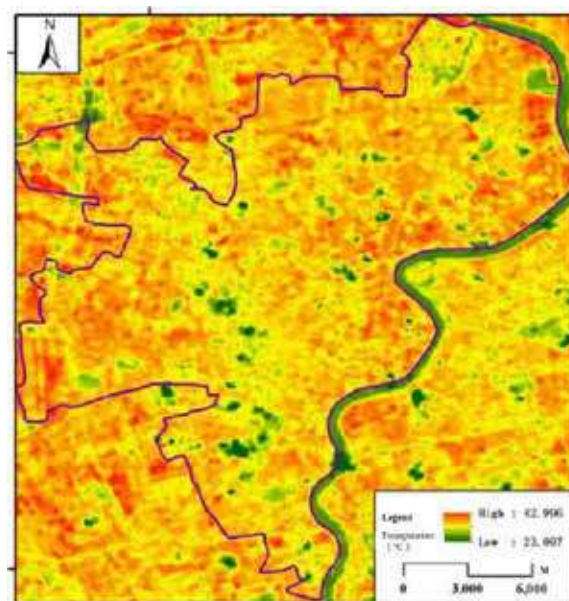


Figure 10 Land surface temperature retrieval of Shanghai

According to the data downloaded from the OSM map, the natural waters and different types of green spaces within the central area of Shanghai are extracted. The green space shown in Figure 11 is urban green space. As is seen in Figure 11, the total amount of green space in the central urban area of Shanghai is extremely scarce. There are not enough large green spaces or dense plaque green spaces. The lack of green space is particularly acute in Jing'an District, Huangpu District and Xuhui District. There are a large number of buildings in the downtown area that have not been remodeled with any green roofs and green facades, but it must also be noted that there are also a large number of slope roof buildings in this area. Due to the lack of accurate building roof data, the buildings with 6 floors and below were initially considered as sloping roofs based on the Shanghai building data provided by the Urban Data Party. The rest were considered as flat roofs, which can roughly estimate the distribution of the two types of buildings. When the green roof is reconstructed, the cost and difficulty of the renovation of the flat roof is lower, so it can be considered as the object that can be prioritized for transformation.

In contrast, the proportion of flat roofs in Yangpu District, Hongkou District, Putuo District and Changning District is higher, and the proportion of slope roofs in Huangpu District, Jing'an District and Xuhui District is higher.

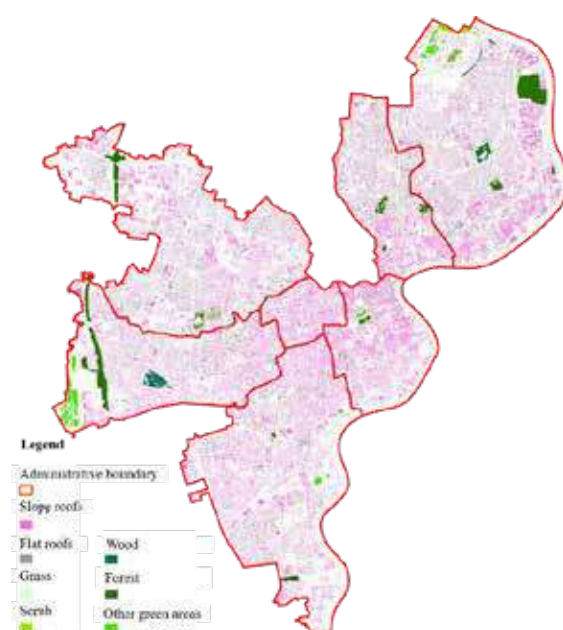


Figure 11 Distribution of Shanghai's green areas

Spatial distribution of vulnerable areas of floods. The 2017 Shanghai Digital Elevation Model (DEM) data with a precision of 30m*30m is downloaded from the Geospatial Data Cloud. Based on this data, the distribution of river networks in the central city of Shanghai was analyzed through ArcGis hydrological analysis tool (Figure 12). Firstly, the data is padded to reduce the error caused by the concave area of the image data; then the water flow direction data is extracted; for the next step, the cumulative amount of confluence of water flow direction data is calculated according to the natural water flow from the place where the elevation is large to the place where the elevation is small; finally, the streamnet is obtained by extracting grids with a cumulative amount greater than 100. Excluding the flood period of the Huangpu River, according to this data processing principle, it can reflect the distribution of the largest surface runoff value in the central city of Shanghai. The greater the density of the river network, the more likely it is that urban flooding is likely to occur. As can be seen from Figure 12, the density of the river network can be divided into two levels: the denser areas are Xuhui District, Putuo District, Changning District and Yangpu District; and the sparse ones are Huangpu District, Hongkou District and Jing'an District. However, for the Yangpu District, Hongkou District, Huangpu District and Xuhui District along the banks of the Huangpu River, the huge flood threats of the Huangpu River during the flood season cannot be ignored. Although Changning District and Xuhui District have more natural river channels than other districts, it can be found in comparison with Figure 12 and Figure 13 that the natural river network and the streamnet accumulated by the convergence do not overlap, indicating that the river network is not the only important reason that easily leads to the waterlogging in these two districts. The causes of flood vulnerability reflected by different districts vary.

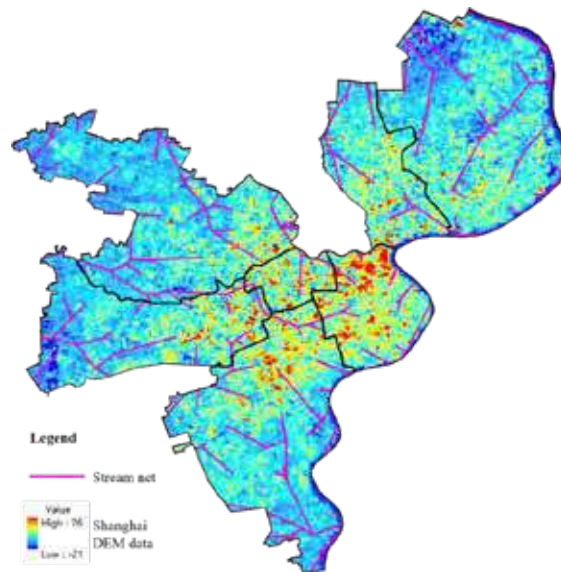


Figure 12 Analysis of river network in downtown Shanghai

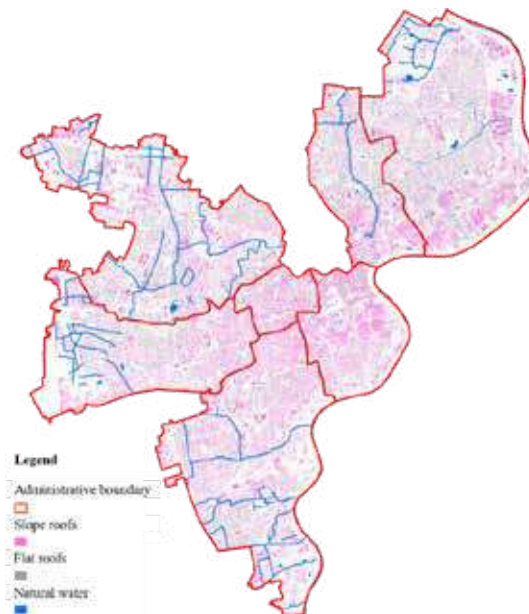


Figure 13 Distribution of Shanghai's natural river

3.2 Countermeasures and suggestions to solve the heatwave and flood hazards in downtown Shanghai

Different districts in downtown Shanghai face different major disasters. In addition to the threat of floods in the flood season that may be brought by the Huangpu River, Changning District, Putuo District, Yangpu District, Hongkou District and Pudong District are facing more flood threats. The heatwave hazard in Huangpu District and Jing'an District are more severe, while Xuhui District faces the challenges of both hazards. Each district should propose different and targeted measures to adapt to and mitigate extreme climate disasters based on the primary problems it faces. In addition, for technical measures such as green roofs that can

simultaneously solve heatwave and flood hazards, more cooperation should be carried out between administrative districts, which should be incorporated into one system and effectively implemented from planning and design to planning implementation and regulation.

In order to effectively implement a series of measures to adapt and mitigate heatwave and flood hazards, each department should first make accurate survey about the distribution of vulnerable population (such as people more than 65 years old, low-income groups, etc.), not just consider engineering technology. By this way, departments of downtown Shanghai can determine the priority implementation area, reduce time and cost waste, and improve the efficiency of problem solving.

In addition, government departments must provide a corresponding set of supporting implementation policies, make full use of and mobilize the power of social resources, and ensure that all adaptation, mitigation of heatwave and flood hazards can be effective in the long run, rather than just construction, regardless of subsequent maintenance.

4 conclusion

Through the analysis of the internationally adopted technical measures for mitigating and adapting to heatwave and flood hazards, the green-oriented solution plays a very important role in solving both hazards, both on the micro and macro scales. The technical method can solve two kinds of hazards at the same time, effectively reduce the repeated implementation costs, and achieve two goals. Therefore, the green-oriented solutions must receive sufficient attention in the future when coastal cities in China responding to extreme climate hazards. In the application of technology, we must first clarify the scope and type of different technology adaptations, and systematically summarize correspond requirements according to the technical details, in order to achieve efficient mitigation and adaptation to heatwave and flood hazards. For different districts of the city, unified technology cannot be fully adopted, and each city must have its own targeted classification guidance program. The technical considerations for adapting to and mitigating heatwave and flood hazards should be incorporated into the planning and design system and management system at the same time, so that design, implementation and maintenance are closely integrated. Disaster mitigation and adaptation measures are not the final result of the application of technology. Subsequent maintenance is an important link as well. Therefore, in the process of dealing with extreme climate disasters, planning, design, implementation, and planning management must attach great importance to mobilizing the enthusiasm and participation of the society from the beginning, shaping the sense of responsibility of individuals and collectives, and learning from the long-term maintenance effectiveness of the German private households. Actively supervise the mechanism and implement responsibility to individuals. China's coastal cities face serious challenges of heatwave and flood hazards. The methods of adapting to and mitigating hazards are also extremely complicated to operate. They must pay special attention to the legality and scientificity, systematicness, cooperation and initiative in the implementation process.

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Erratic Climate Change Planning: The Gold Coast's Alternating Transition

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Abstract: Planning the future spatial development of coastal cities is a challenge that has become even more difficult due to the impacts of climate change, governing institutions that were not designed to address such wicked problems, and the reluctance of some right-wing governments to respond. The Gold Coast, Australia, provides a case in point. The city is highly vulnerable to the impacts of climate change having been hard hit by storms, floods, heatwaves, and droughts over decades. The governing system for the region is part of a complex three tiered hierarchy involving national (Commonwealth), state (Queensland), and local governments (City of Gold Coast). Governments periodically swing between a right-wing Coalition (of the Liberal and National parties) and the left-wing Labor party (sometimes with the support of the Greens party). In the period 2007-2012 all levels of Australian government had started to take the first steps in addressing the challenges posed by the need to adapt to the impacts of climate change. The shift to right-wing governments during the period 2012-15, however, saw many climate plans and policies and plans reversed due to the combined effects of: gaps in the three tiered system of government; the ideology of the right-wing parties in power; powerful economic interests; electoral politics; fears of legal liability; and, the unique features of the Gold Coast. Since 2015 there has been a divergence with the state-based Queensland Labor government moving back into the climate change adaptation space but the national Coalition government still refusing to act. The science is clear: climate change is happening, the impacts are serious, and low-lying coastal settlements like the Gold Coast are highly vulnerable to its effects. The constant policy and planning reversals over the last decade, however, have made consistent long-term planning and investment in building resilience very difficult.

Key words: climate change adaptation; resilience; policy reversals; Gold Coast.

Introduction

The Gold Coast has experienced erratic swings in policy and planning over the last decade with regards to climate change adaptation. Queensland is highly vulnerable to the impacts of climate change and parts of it, including South East Queensland, have been identified by the IPCC (2007, 2012) as climate change hotspots. The Gold Coast is Australia's sixth largest city and is located on the coastal fringe of the state of Queensland in the north east of the country. It is particularly vulnerable because of its sub-tropical climate, coastal geography, settlement patterns and socio-economic profile (NCCARF 2016). In recent decades the population has grown rapidly with much of the urban development occurring along the low-lying coastal zone (Torabi, Dedekorkut-Howes & Howes 2018; Dedekorkut et al. 2010). Over the same period the region has experienced severe droughts, fires, storms, floods, and coastal erosion (Howes 2013a).

Australian governing institutions were designed in the 19th century and have had difficulty dealing with the challenges posed by climate change (Torabi, Dedekorkut-Howes & Howes 2018; Howes et al. 2015; Heazle et al. 2013; Howes & Dedekorkut-Howes 2012). Australia has a hierarchical three tiered governing system that encompasses one national (Commonwealth) government, six states (including Queensland) plus two territories, and 537 local councils. Elections occur every three to four years for each level, with government periodically swinging between a centre-right coalition of the Liberal-National parties and the centre-left Labor party. A similar periodic swing in governing parties occurs in

many European countries, although the dramatic shifts in policy direction analysed here are more akin to North American politics (Dryzek et al. 2003; Howes 2005). Between 2007 and 2012, all levels of government had begun to implement a set of strategies, plans and policies that could have increased the resilience of the city of the Gold Coast (Howes & Dedekorkut-Howes 2012). After 2012, however, each level of government started to wind back their climate change adaptation governance, despite the risks being better understood (Matthews 2013, Climate Council 2014, Dedekorkut-Howes & Howes 2014, MacCallum et al. 2014, Mustelin and Burton 2014). In 2015 a change in the Queensland government brought reintroduction of some climate adaptation policies at the state level.

The periodic policy vacuum at higher levels leaves local governments to their own devices in combatting climate impacts, which results in a range of responses (Dedekorkut-Howes and Vickers 2017, Torabi et al. 2017a, 2017b). By July 2017 a total of 35 local governments had signed up to the *Cities Power Partnership* that committed them to act on both adaptation and mitigation. Three participants were located in Queensland (Noosa, Bundaberg and Douglas Shire) but the Gold Coast was noticeably absent, although it did get a mention for investing in transport infrastructure (Climate Council 2017a, 2017b). This paper examines the causes and consequences of lack of a consistent policy direction in climate change adaptation through a multi-level policy review of the case of the Gold Coast over the last 12 years. The next section briefly outlines the environmental, social and economic features of the region, as well as its vulnerability to climate change. An explanation of the structure of government is then presented. After this, the growth in climate change policies and plans from 2007 is explained up to its peak in 2012. The demise of these responses to 2015 and subsequent renaissance of state-level planning in Queensland is then summarised. A brief analysis of the causes and consequences of the constant reversals are then offered.

A Snapshot of the Gold Coast

The Gold Coast covers an area of 1400 square kilometres that is bounded to the east by 57 km of coastline with a string of beaches interspersed with headlands and estuaries. In terms of the natural environment, the Gold Coast is a low-lying coastal city built on a network of canals and rivers. It has a sub-tropical climate and is prone to severe storms during the long, humid summers (GCCC 2013a). The urban form is a mixture of clusters of high-rise apartment blocks along the coast, with low and medium density developments centred on the waterways and estuaries behind (Torabi, Dedekorkut-Howes & Howes 2018; Dedekorkut-Howes and Bosman 2015).

The region has experienced rapid population growth, with the numbers of residents rising from 88,000 in 1976 to 606,774 in 2018, and it is expected to climb to 730,000 by 2026 (CoGC 2019; GCCC 2013a & 2013b; DIT 2013; Spearitt 2009). This growth has put stress on urban infrastructure and led to questionable developments in vulnerable areas such as floodplains and sand dunes (Torabi, Dedekorkut-Howes & Howes 2018; Dedekorkut-Howes & Bosman 2011; Bosman et al. 2016, Torabi et al. 2017c). Socially the region is a magnet for retirees and the area has a significantly higher proportion of its population over 60 (20.3%) compared to the nearby city of Brisbane (17.0%) as well as a higher proportion of low-income households (20.8% versus 17.8% respectively) (CoGC 2019; GCCC 2013c, 2013d, 2013e & 2013f). Finally, the region is heavily reliant on tourism, with the beaches adding an estimated \$106-\$319 million to the local economy (DCC2009; GCCC 2013e & 2013f). The lower incomes and health issues due to age make retirees a vulnerable group. Low-income residents employed in the service sector are transient in nature making them less socially connected and therefore lacking coping capacities to deal with disasters (Torabi et al. 2017c). These features make it particularly vulnerable to the physical, social and economic impacts of extreme weather events, flooding and coastal erosion, which will be exacerbated by climate change (NCCARF 2016; IPCC 2012 & 2007; DCC 2009). The Gold Coast has experienced more than forty-five floods since 1925, is subjected to severe storms every spring and summer, and experienced its largest flood event in 1974 (City of Gold Coast 2017). It was fortunate to avoid the worst of the flooding that hit Brisbane in 2011.

Hierarchical Government

At the local level, the City of Gold Coast is governed by an elected council made up of a mayor and fourteen councillors (each representing a different geographical division). The residents of the region

elect ten members of the Queensland state parliament (which has a total 89 seats in a single chamber) and five members of the Commonwealth House of Representatives (out of a total of 148). This makes it a politically significant entity, particularly at the state level.

At the national level, the powers of the Commonwealth government are defined by the Australian Constitution (Australian Parliament House [1900] 2012). Anything not specified as a power of the Commonwealth is deemed to be a residual power and falls to the states (this includes powers relating to the environment, planning and climate change adaptation) (Brown 2006; Howes 2005; Toyne 1994). The Commonwealth has therefore adopted three intergovernmental strategies: 1) leaving some issues to the states; 2) cooperating with the states on other issues; or, 3) selectively intervening by creatively interpreting its powers. It has used its external affairs power (i.e. to sign and enforce treaties), for example, in conjunction with international environmental agreements to halt some damaging developments (Howes & Dedekorkut-Howes 2012; Howes 2005). Local councils are created, merged or abolished by acts of state parliament, as happened in Queensland in 2007 when the number of councils was reduced from 156 to 72 (ABC News 2007). Further, any council may be sacked by a state government and replaced by an administrator, as happened on the Gold Coast in 1978 (Queensland Government [1978] 2009).

The resulting hierarchical three tiered system has created ongoing power struggles between the different levels of government (Ghazarian 2012; Rolfe, et al. 2009; Brown 2006). This has an impact on many policy areas, including climate change adaptation, environmental protection, water resource management, regional development, health care, and education (Howes et al. 2015; Heazle et al. 2013; Howes & Dedekorkut-Howes 2012). All levels of government have moved to find methods for improving the system. One of the main strategies has been to establish organisations that encourage intergovernmental cooperation (Howes et al. 2015; Howes, et al. 2013; Heazle et al. 2013). The Council of Australian Governments (COAG), for example, includes the leaders of the Commonwealth, state and territory governments, as well as the president of the Australian Local Government Association. It has played a key role as a forum for negotiating agreements to tackle issues such as the environment, transport, health care and education (COAG 2011).

Despite the best efforts on networking and partnership-building, the hierarchical Australian system of government still has difficulty in addressing major policy issues (Heazle et al. 2013; Berwick 2006). There remains considerable disconnection between the different levels that manifests itself in administrative duplication, resource wastage and disputes that undermine collaborative organisations (Ghazarian 2012). In addition, the jurisdictional turf wars between departments and agencies persist (Howes et al. 2013; Rolfe et al. 2009). These structural problems can impede efforts to find effective, efficient and appropriate responses to complex issues that cut across borders and portfolios. Wicked problems, such as climate change, exacerbate the situation further because they are also difficult to understand, there is a lack of agreement on an appropriate response, they require a whole of government approach, and need the cooperation of business and the community on a large scale (Howes et al. 2015; Heazle et al. 2013; Howes et. al. 2013; Howes & Dedekorkut-Howes 2012; Australian Public Service Commission 2007). The Gold Coast is on the frontline of such issues.

The Rise of Adaptation Responses up to 2012

By early 2012 a plethora of policies and plans had emerged that influence how the Gold Coast would respond to climate change. These emerged at the national, state, regional and local levels – the key ones, along with more recent developments, are presented in Table 1.

The National Climate Change Adaptation Framework (COAG 2007) is the main agreement that has guided work between the different levels of government. It had ‘building understanding and adaptive capacity’ and ‘reducing vulnerability of key sectors and regions’ as two key areas for action and coastal regions were named as one of the priority areas (COAG 2007, 6). The National Climate Change Adaptation Research Facility (NCCARF) was established to inform policymaking and planning at all levels by networking researchers across the country and funding strategically targeted projects (NCCARF 2013). It was initially funded for five years and gained another five years of funding at a

reduced level in 2012 so that it could focus on developing tools that would help coastal settlements build their resilience (NCCARF 2016).

Table 1. Key climate change policies and plans affecting the Gold Coast

Level	Policy or Plan (Strikethrough indicates repealed or lapsed documents)
National	<ol style="list-style-type: none"> 1. <i>National Climate Change Adaptation Framework</i>. April 2007. Council of Australian Governments. 2. <i>National Climate Change Adaptation Research Plan: Settlements and Infrastructure</i>. December 2009. National Climate Change Adaptation Research Facility. 3. <i>Adapting to Climate Change in Australia: An Australian Government Position Paper</i>. 2010. Department of Climate Change. 4. <i>National Climate Resilience and Adaptation Strategy</i>. 2015. Commonwealth of Australia.
State: Queensland	<ol style="list-style-type: none"> 5. <i>ClimateSmart2050</i>. 2007. (including <i>ClimateSmart Adaptation 2007-12</i>) Environment Protection Agency (now Department of Environment and Heritage Protection). 6. <i>Toward Q2: Tomorrow's Queensland</i>. 2008. Department of the Premier and Cabinet. 7. <i>ClimateQ: Toward a Greener Queensland</i>. 2009. Department of Environment and Resource Management (now Department of Environment and Heritage Protection). 8. <i>Queensland Coastal Plan</i>. 2012. Department of Environment and Resource Management. 9. <i>State Planning Policy</i>. 2013. Department of State Development, Infrastructure and Planning. 10. <i>Governing for Growth: Economic Strategy and Action Plan</i>. 2014. Department of State Development, Infrastructure and Planning. 11. <i>Coastal Management Plan</i>. 2014. Department of Environment and Heritage Protection. 12. <i>The Queensland Plan: Queenslanders' 30-year Vision</i>. 2014. Queensland Government. 13. <i>State Planning Policy</i>. 2016. Department of Infrastructure, Local Government and Planning. <ul style="list-style-type: none"> – Replaced by: <i>State Planning Policy</i>. 2017. Department of Infrastructure, Local Government and Planning. 14. <i>Advancing Climate Action in Queensland: Making the transition to a low carbon future</i>. 2016. Queensland Government. 15. <i>Queensland Climate Adaptation Directions Statement</i>. 2016. Queensland Government. 16. <i>Pathways to a climate resilient Queensland: Queensland Climate Adaptation Strategy 2017–2030</i>. 2017. Queensland Government. <ul style="list-style-type: none"> Sectoral Adaptation Plans: <ul style="list-style-type: none"> – Built Environment and Infrastructure (2017); – Agriculture (2017); – Emergency Management (2018); – Human Health and Wellbeing (2018); – Biodiversity and Ecosystems (2018); – Tourism (2018); – Small and Medium Enterprise (due 2019); and, – Industry and Resource Sector (due 2019). 17. <i>Pathways to a clean growth economy: Queensland Climate Transition Strategy</i>. 2017. Queensland Government.

Regional: South East Queensland	<ol style="list-style-type: none"> 18. Draft SEQ Climate Change Management Plan. 2009. Queensland Department of Infrastructure and Planning (now Department of State Development, Infrastructure and Planning). 19. <i>Rural Futures Strategy for South East Queensland 2009</i>. 2009. Department of Infrastructure and Planning (now Department of State Development, Infrastructure and Planning). 20. <i>South East Queensland Water Strategy</i>. 2010. Queensland Water Commission. 21. <i>Connecting SEQ 2031: An Integrated Regional Transport Plan for South East Queensland</i>. 2011. Department of Transport and Main Roads. 22. <i>Managing Natural Assets for a Prosperous South East Queensland 2014-2031: An Update to the South East Queensland Natural Resource Management Plan (2009-2031)</i>. 2016. South East Queensland Catchments Ltd. 23. <i>Healthy Land and Water Strategic Plan 2017-2022</i>. 2017. SEQ Healthy Waterways Partnership. 24. <i>ShapingSEQ: South East Queensland Regional Plan 2017</i>. 2017. Department of Infrastructure, Local Government and Planning.
Local: Gold Coast	<ol style="list-style-type: none"> 25. <i>City Plan 2015</i>. 2015. City of Gold Coast. 26. City of Gold Coast. <i>QCoast2100</i> adaptation plan started development in 2017. 27. <i>Gold Coast Climate Change Strategy 2009-2014</i>. 2009. Gold Coast City Council.

At the state level, ClimateQ, the SEQ Regional Plan 2009-2031 and the Draft SEQ Climate Change Management Plan were of particular importance to the Gold Coast. These all promoted further research into the vulnerability and the provision of better information to the community. ClimateQ focused particularly on the areas of disaster management, water use and biodiversity protection. The Queensland Office of Climate Change was established in 2007 to coordinate the state's response, review existing policies, and provide advice to government.

At the local level, in 2008 the Gold Coast City Council developed its own Climate Change Strategy 2009-2014 (GCCC 2009). This summarised the problem, acknowledged the vulnerability of the Gold Coast, promoted further research into resilience building, called for coordinated action across all levels of government, audited the operations of council and called for further funding.

Although many of these initiatives were quite modest when compared to the size and urgency of the risk, they represented important first steps that could be built on in later years. Many of the policies did not get the opportunity to be fully implemented, however, before the elections of 2012-13.

The Decline of Responses Post-2012

Election at the local and state levels in 2012, and at the Commonwealth level in 2013, saw governments at all levels change from Labor to the coalition Liberal-National parties across most of the country. The incoming governments were dominated by leaders who were either sceptical of climate change or placed greater importance on economic development. This led to major reversals in policy (Matthews 2013, Climate Council 2014, MacCallum et al. 2014, Mustelin and Burton 2014; see also for a more detailed history of these changes see Howes & Dedekorkut-Howes 2013). At the national level, the Abbott government moved quickly to abolish the Climate Commission, reduce climate change from departmental status to a unit within the Department of Environment, and draft legislation to repeal the *Clean Energy Future* policy (Metcalf 2013; DoE 2013). Both the Prime Minister and the new Minister of Environment were quick to deny any connection between the 2014 bushfires in the state of New South Wales and climate change, despite 2013 breaking several climate-related records with regards to heat (CC 2014; Grant 2013; Howes 2013a). The government's bill to abolish the greenhouse gas emission trading scheme (more popularly known as 'the carbon tax') was passed by the senate in July 2014, although other cuts were blocked. NCCARF did survive with reduced funding after 2012 but was only kept going after 2017 by funding from Griffith University.

At the state level, the Queensland election in March 2012 ended fourteen years of Labor government and brought to power the conservative Liberal-National Party (LNP) with Campbell Newman as the new Premier (QEC 2012). The party went to the election with an *Action Plan* to ‘Grow a Four Pillar Economy through focusing on tourism, agriculture, resources and construction and by cutting red tape and regulation’ (LNP 2012). None of their policies mentioned climate change or adaptation. In power the government abolished the Queensland Office of Climate Change (OCC) and abandoned the climate policies developed by the previous Labor government (Queensland Government 2012; Ironside 2012). Their *Sustainable Planning and Other Legislation Amendment Bill* (2012) focussed on cutting ‘red tape’ and green tape’ in order to speed up the approval of developments. Queensland’s main planning law, the *Sustainable Planning Act 2009* was replaced. The *Queensland Coastal Plan* originally required coastal development to consider the projected effects of climate change such as sea-level rise and increase in the maximum cyclone intensity and local government authorities to prepare a coastal hazard adaptation strategy for areas that are at risk (Dedekorkut-Howes & Howes 2014). Its replacement transferred the task of land-use planning and development in coastal areas to the 2013 *State Planning Policy* which did not address climate change but mentioned climate variability. The *Queensland Plan*, the new 30-year vision for the state, only mentioned climate change in passing. This was quite different from its predecessor, *Toward Q2*, which was developed specifically to tackle the challenges of rapid population growth and climate change and was followed up by the state strategy *ClimateQ: toward a greener Queensland*. In May 2013, a review of the South East Queensland Regional Plan was commenced with no mention of climate change.

These changes suggest that there had been a significant shift in state-level planning and climate change adaption policies which affect not only the Gold Coast but the whole state (Matthews 2013, MacCallum et al. 2014, Mustelin and Burton 2014, DEHP 2016). Neither climate change nor adaptation was a priority in any of the LNP’s policies, either before or after the election, and it does not appear in any of the legislative changes outlined above. The party has been consistent in its pursuit of its ‘four pillar’ policy of economic development, with environmental and planning laws being streamlined if they are considered as inhibiting development. Further, there has been a deliberate move to hand back more responsibilities to the local level of government without the necessary increase in funding and capacity building.

After the local council elections in May 2012, a new government took over the Gold Coast City Council and the attitude towards environmental protection, climate change and development shifted in parallel to the changes in the state government. While the council website stated that climate change was one of the biggest challenges, the climate change department was abolished in 2013 (Weston 2014). The *Gold Coast Climate Change Strategy* expired and was not replaced. A comparison of this strategy with that of the Sunshine Coast revealed that the Gold Coast considered lower end of the IPCC climate change projections in its strategy (Torabi et al. 2017a). A more holistic evaluation of the local planning schemes, disaster management plans, and the climate change strategies of the two cities indicated that Gold Coast policies were less integrated, did not incorporate climate adaptation and disaster resilience well, contained less detail regarding allocation of resources and identification of roles and responsibilities (Torabi et al. 2017a), and focused mostly on coping approaches to climate resilience rather than transformational adaptation (Torabi et al. 2017b).

Divergence of State Policy from National and Local Levels after 2015

The 2015 state elections brought the Labor party an unexpected victory and subsequently state climate policy trajectory started to diverge from the federal and local levels. At the national level, the Coalition Federal government introduced the *National Climate Resilience and Adaptation Strategy* and ratified the Paris Agreement. The strategy articulated how Australia is managing climate risks for the benefit of the community, economy and environment and is anchored by the 2007 *National Climate Change Adaptation Framework*. It outlined the Government’s vision for the future as: “We act together to support prosperity and wellbeing in Australia and beyond by building the resilience of communities, the economy and the environment to a variable and changing climate” and identified a set of principles to guide adaptation practice and resilience building and establishes priority areas for future consultation and action. The guiding principles include shared responsibility between all levels of government, businesses and communities; factoring climate risks into decision making; an evidence-based risk

management approach; helping the vulnerable; collaborative, values-based choices, and revisiting decisions and outcomes over time. The priorities for national engagement are understand and communicate; plan and act; check and reassess; and collaborate and learn. While the vision and the principles are admirable, their implementation and impact at policy level is yet to be seen as the strategy does not set out how they will be realised, rather it compiles examples of leading practice from around the nation.

The divergence between different levels of government on climate change policy has been clearly indicated in recent developments in mitigation and energy policy. Australia made a commitment to reduce its emissions by ratifying the Paris Agreement, but how this commitment will be met is extremely controversial due to disagreements on the nation's energy policy. The Coalition government repeatedly refused to countenance any sort of price on carbon, either as a cap and trade or energy intensity scheme, which puts them at odds with the Labor opposition. The 2017 the Chief Scientist's report offered a way to break the deadlock by focussing on clean energy targets rather than carbon pricing (Finkel 2017). This won support from the federal opposition and Labor states, but the Coalition government rejected the idea and continued with a direct action policy after being returned at the 2018 election. This variance bears all the hallmarks of a wicked policy problem and bodes ill for the development of consistent adaptation responses.

At the state level, the current Queensland Labor Government updated the State Planning Policy (SPP) in 2016 to better align the content with current government policies and priorities and to ensure it supports a balanced planning system focussed on liveability, sustainability and prosperity. The SPP identifies state interests important enough to require protection and enhancement within the land use planning and development system. It reintroduced the term "climate change" to replace "a variable climate", considerably expanded the natural hazards section to include risk and resilience, and introduced discussion of climate change. A new version of SPP came into effect in July 2017 with the launch of the Queensland Planning Reform. The 2017 SPP integrates climate change fully into the planning agenda as an important consideration for planning at all levels and discusses impacts of climate change for all state interests.

The state government developed the *Queensland Climate Adaptation Strategy* (Q-CAS) in 2015. The first steps were the release of *Queensland Climate Adaptation Directions Statement* and *Advancing Climate Action in Queensland: Making the transition to a low carbon future* in 2016. Together they cover adapting to the impacts as well as transitioning to reduced emissions as well as integrate climate adaptation considerations into planning. In 2017 these were followed by *Queensland Climate Adaptation* policy and *Transition Strategies* (see Table 1). Industry-led Sector Adaptation Plans (SAPs) were released progressively over the following years covering: Built Environment and Infrastructure (2017); Agriculture (2017); Emergency Management (2018); Human Health and Wellbeing (2018), Biodiversity and Ecosystems (2018); Tourism (2018); Small and Medium Enterprise (due 2019); and, the Industry and Resource Sector (due 2019) (Queensland Government 2019). The state government also provided A\$12 million in the *Coastal hazards adaptation program—QCoast₂₁₀₀* to help coastal local governments adapt to the impacts of climate change.

Adaptation and resilience building are also prominently featured in regional level plans. Both the revised South East Queensland Regional Plan, *Shaping SEQ* (September 2017), and the update to the *South East Queensland Natural Resource Management Plan* include strategies on adaptation and resilience to natural disasters.

However, at the local level climate change continued to be downplayed. A review of the local planning scheme and disaster management plan found that in the lengthy *Gold Coast City Plan*: "the term 'climate change' appears only nine times in passing ... and 'adaptation' does not appear at all. ... In one of the most vulnerable cities in Australia ... it is as if the threat of climate change does not exist" (Torabi et al. 2017a, p. 6). More recently, the council has signed up for *QCoast₂₁₀₀* funding from the state government to develop an adaptation plan.

Why the Reversals?

The risks that climate change poses to the Gold Coast are increasing and are better understood than ever before (IPCC 2012 & 2007; DCC 2009), yet adaptation policies and plans at all levels of government have been erratic. What are the possible explanations for this situation? Limited space does not allow for a detailed analysis, but we would like to offer some observations based on this research that might be useful to follow up with later investigations.

First, the three-tiered structure of the Australian system of government may create a situation where a wicked policy problem can fall between the gaps because each level argues that it is the responsibility of the others (Howes & Dedekorkut-Howes 2012). In this case, the Commonwealth sees climate change adaptation as a state government responsibility, the Queensland government passes it onto local councils, but local governments argue that they do not have the necessary resources to respond (DCC 2010; Bitá 2012; Westthorp 2012). This ‘buck passing’ is exacerbated by the wicked nature of the problem.

Second, in Australia there is a strong correlation between centre-right political parties and climate denial (Pearse 2009; Jacques, Dunlap & Freeman 2008). The predominance of Liberal-National Party (LNP) governments at the state level 2012-15 and at the national level since 2013 inhibits action because climate change challenges three strongly held beliefs of the right-wing of Australian politics (Howes 2013b). First, it shakes faith that the market leads to the best allocation of resources by pointing out a large negative externality (i.e. greenhouse gas emissions undermine the climate services on which the economy depends). Second, it runs counter to the suspicion of ‘big government’ by highlighting the need for intervention to correct this market failure. Third, it challenges the view that environmentalists who warned of serious climate change were wrong. The challenge posed to these core beliefs has even led some Liberal senators to claim that climate change is not happening and is a conspiracy of the left to attack capitalism (Howes 2013b). When the Labor party took back power in Queensland in 2015 another reversal occurred. The Premier and Minister of Environment’s message at the front of the climate action discussion paper accuses the former LNP government of: “systematically [dismantling] the forward-looking climate policies of previous governments, leaving Queensland unprepared” and promised to get Queensland back on track (DEHP 2016, p. 2). This ideological barrier is acute on the Gold Coast with the LNP holding a majority of the state and federal parliamentary seats for the region.

Third, there are significant economic forces at work that discourage action on environmental issues in general, and climate change in particular, that are due to the peculiar structure of the Australian economy (Howes et al. 2010). The coal industry is a significant part of the domestic economy, a major export, a large employer in regional areas, as well as a major source of tax revenue and royalties for different levels of government. The industry has therefore been exposed as having undue influence in shaping the climate policies of Liberal-National parties when in government (Pearse 2009). This is why the LNP opposes or neglects climate change policies. This is prevalent in Queensland that has a significant coal industry.

The fourth point comes down to electoral politics, where a party leader might see a switch to opposing action as a way to both differentiate themselves from their opponents and a way to pick up marginal seats. This was the case with the Commonwealth elections in 2010, where the Liberal-National opposition made great gains by promising that removing the emissions trading scheme, more popularly known as the ‘carbon tax’, would reduce household energy bills (Tranter 2011). The strategy helped them win the 2013 election even though they had originally supported the scheme and has made formulating a coherent climate and energy policy extremely difficult ever since (Howes 2013b).

Fifth, some governments might be reluctant to acknowledge the impacts of climate change and impose restrictions on development because they are concerned about the potential legal liability for economic losses that may result (England 2007). This has been a particular concern for the City of the Gold Coast with respect to the recent public release of flood mapping that identifies the risks for individual properties and developments (Weston 2014).

Finally, the Gold Coast has a unique social, economic and political environment, so local factors could also be at work (Howes & Dedekorkut-Howes 2012, Bosman et al. 2016). In Australia, scepticism of climate change and support for centre-right parties is historically higher than average in older citizens (Reser et al. 2012; Watson 2011) and the Gold Coast has a significantly higher proportion of older residents. Further, the economy and politics of the region is dominated by developers, who oppose restrictions being placed on where they can build.

Conclusions

This brief history gives an indication of the erratic adaptation policy and planning that cities like the Gold Coast have suffered over more than a decade. In the period 2007-2012 all levels of Australian government had started to take the first steps in addressing the challenges posed by climate change. The shift to centre-right governments 2012-15 saw many policies and plans reversed due to the combined effects of: gaps in the three tiered system of government; the ideology of the parties in power; powerful economic interests; electoral politics; fears of legal liability; and, the unique features of the Gold Coast. Since 2015 there has been a divergence between the different levels of government, with state-based Labor governments such as Queensland moving back into the climate change adaptation space. The science is clear: climate change is happening, the impacts are serious, and low-lying coastal settlements like the Gold Coast are highly vulnerable to its effects. Erratic policy/planning reversals, however, have made consistent long-term planning and investment in building resilience very difficult.

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Enhancing cities' resilience in the face of multiple challenges: on-going experiences in Italian and Greek cities

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Abstract: Nowadays cities are widely considered as main actors in the challenge against climate change, since they act both as generators of climate-related hazards and as vulnerable targets to their impacts. Although the issue of climate change has been for long addressed on a global scale, the key-role of cities, required to translate global objectives and strategies into tailored to the site actions, is nowadays widely acknowledged. However, climate urban strategies are often largely pushed by international initiatives. This contribution focuses in particular on the 100 Resilient Cities Initiative, launched by the Rockefeller Foundation and addressed to financially support cities all over the world in developing and implementing strategies capable to increase urban resilience in order to better cope with multiple shocks and stress factors, including climate change. In detail, the contribution provides a comparative analysis of 2 selected case studies, Rome and Athens, focusing on their resilience profile, their goals and objectives, the governance of the resilience building processes (actors involved, engagement of local communities, etc.), the set of the proposed actions, highlighting strengths and weaknesses of the whole process as well as the relevance assigned to climate issues and the potential impacts of climate-related actions on cities' resilience.

Keywords: urban resilience; climate change; 100 Resilient Cities; Rome and Athens

1. Enhancing Cities' Resilience: why and how

Cities are nowadays at the core of the international planning debate, due both to their rapid growth that will further increase in the next decades, and to the multiple and heterogeneous challenges, mostly social and environmental, that require urgent attention since they are seriously threatening their current livability as well as their future development. As pointed out some years ago by the Italian planner Bernardo Secchi (2013), social inequalities, which are more and more exacerbated by migration flows, and the impacts of climate change are probably the most important aspects of a "new urban question" that demands new approaches and tools.

The Agenda 2030 provides large emphasis on the need for renewing and planning our cities in order to reduce their impacts on environmental resources and on the global climate systems. In particular, The Agenda 2030 for Sustainable Development includes a specific goal, the 11th, that aims to "make cities inclusive, safe, resilient and sustainable", stressing on the need for "adopting and implementing integrated policies and plans towards

inclusion, resource efficiency, mitigation and adaptation to climate change”, enhancing their resilience to disasters, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030.

Thus, how do we cope with the multiple and heterogeneous challenges threatening cities? How to outline new directions for a responsible urban development, capable to achieve the goals established by the Agenda 2030? What are the new approaches and tools capable to guide cities towards future and largely uncertain development scenarios?

According to numerous scholars, the polysemic concept of resilience, enriched over time by multiple meanings and interpretations thanks to its migrations across different disciplinary fields (Galderisi, 2018), can be nowadays considered as a key principle to “frame scientific and political discourses on cities” (Sharifi, Yamagata, 2018), paving the way to new urban development strategies capable to overcome sectoriality and specialisms (Gabellini, 2018). In the last decades the resilience concept has gained more and more prominence, also thanks to numerous international initiatives aimed to translate this concept into practice, by providing both a theoretical frame and operational tools capable to support the resilience building at city scale, in order to enhance their capacity to deal with current and emerging environmental, social and economic challenges.

The numerous on-going initiatives largely differ from each other, as they are promoted by different organizations, pursuing different aims. The most relevant ones, in terms of number of involved cities, are the ‘Making Cities Resilient’ Campaign, launched in 2010 by the United Nations International Strategy for Disaster Reduction (UNISDR) and the 100 Resilient Cities Initiative (100RC), promoted in 2013 by the Rockefeller Foundation.



Figure 1: The City Resilience Framework. Source: (The Rockefeller Foundation/ARUP 2016)

We will focus here on the 100RC Initiative, which aims at supporting cities, both in economic and organizational terms, in developing and implementing strategies capable to increase urban resilience in the face of a wide range of stresses and shocks, ranging from migrations to water shortage, from earthquakes to climate change (The Rockefeller Foundation/ARUP, 2016). This Initiative provides an interpretation of resilience as “the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience”¹.

¹ <http://www.100resilientcities.org/resources/>

Thus, it seems to combine an “adaptive” perspective, aimed to continuously adapt cities to a constantly changing context, with a “transformative” one, which implies actions aimed to change and innovate the existing state of urban systems, providing new answers to new contexts. Moreover, in order to support the selected cities in the building up of a Resilience Strategy, a set of tools are provided. The ‘City Resilience Framework’ (CRF), set up by the Rockefeller Foundation in cooperation with the global design firm Arup, represents the main reference to measure and assess cities’ resilience (Figure 1).

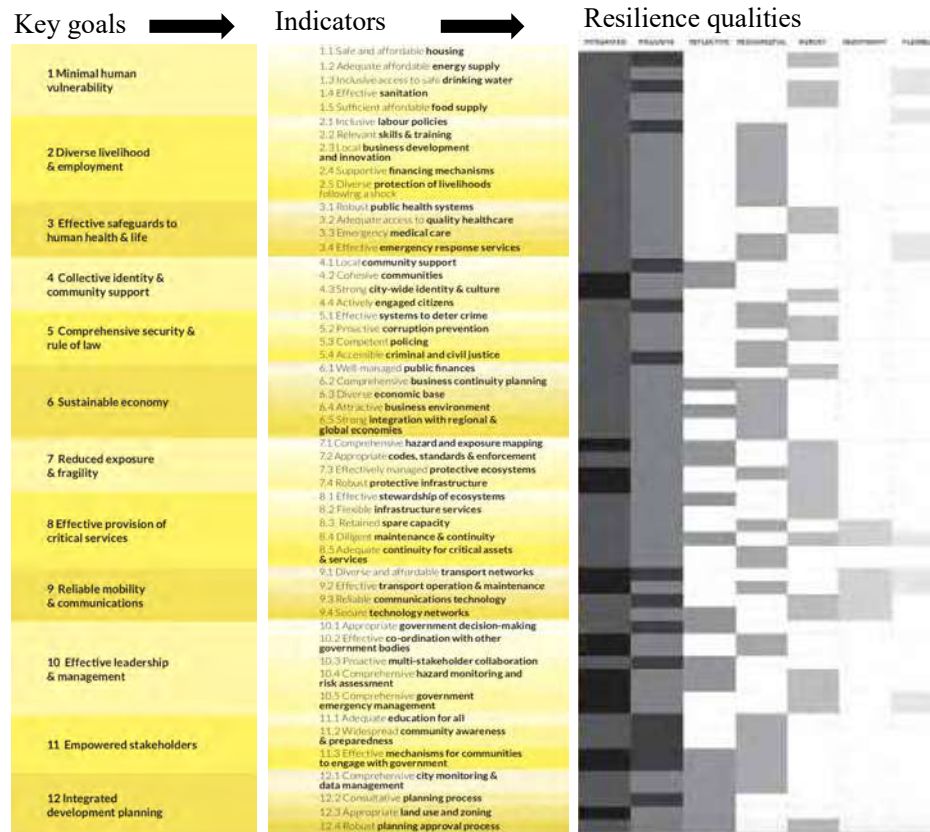


Figure 2: The City Resilience Framework: key goals, indicators, resilience qualities. Source: (The Rockefeller Foundation/ARUP 2016)

The CRF is structured as a circular model composed by different rings and sectors: it identifies four dimensions (Health & Wellbeing; Economy & Society; Infrastructure & Environment; and Leadership & Strategy) and 12 key goals (3 for each dimension) that cities should achieve for improving their resilience. Then, in respect to the 12 key goals, a set of 52 indicators, and the most adequate qualitative or quantitative metrics for their measurement and assessment, are provided. Finally, each indicator is related to the seven qualities that a resilient system should strengthen to effectively withstand, respond and adapt to shocks and stresses, and namely: inclusiveness, integration, reflectiveness, resourcefulness, robustness, redundancy, and flexibility (Figure 2).

This paper, based on an in-depth analysis of two selected case studies, Rome and Athens, provides a brief overview of their resilience profiles as well as of their goals and objectives; then, a methodological path for analyzing and comparing the resilience strategies carried out for the two cities, with a specific focus on the climate mitigation and adaptation measures, will be outlined. The main aim of this contribution is to critically analyze which is the relevance assigned in the two case studies to climate issues, which type of actions have been outlined in respect to each context, how these actions contribute to achieve both the key goals and the seven resilience qualities identified by the CRI.

2. Cities' profiles

As mentioned above, the scope of the 100RC Initiative is to support cities all over the world in enhancing their resilience features in order to better cope with environmental, climatic, social and economic challenges. In the following section, the profiles of the two selected cities, Rome and Athens, will be briefly outlined in order to show the main criticalities as well as opportunities that characterize the two contexts.

2.1. Rome: the city profile

Rome, the Italian capital, with its about 2.900.000 inhabitants and a territorial extension of more than 1.280 square kilometers, is the fourth largest city by population and one of the widest in Europe. From an administrative point of view, the city is composed of 15 Municipalities with managerial and financial autonomy, which refer to the Mayor and the Capitoline Assembly. The Municipalities are articulated in 155 urban zones for land management. The development of the city has been largely shaped by the presence of the Tiber river: since the ancient times, the Tiber represented an attraction as well as a constraint, and often a threat, for the city, as largely documented by Tacitus, who devoted large room in the *Annales* to the frequent floods affecting the city as well as to the numerous efforts, never succeeded, to reduce flood risk. Thus, over time Rome has constantly tried to achieve a balance between limits and constraints set by the natural environment and urbanization dynamics. In the last century, the population growth and the societal development let arise new demands, contributing to further exacerbate the fragile balance between the city and its natural environment (Resilient Rome, 2018).

Current urban structure reflects the demographic growth of the city over the years: the dense city center, where about 500.000 inhabitants currently live, with high levels of population density, the post-war belt, which hosts about 1.600.000 inhabitants and the peripheral low-density areas, with about 750.000 inhabitants.

The index of social disease highlights the significant difference, in socio-economic terms, between the central districts and the suburbs, characterized by a severe social marginalization. In addition, the old age index and the increasing migration flows require more adequate services, capable to better respond to the needs of the most disadvantaged categories (elderly, immigrants, low income population), by increasing their opportunities to access public facilities, promoting social inclusion and ensuring higher safety levels.

The historical, cultural and natural heritage, which represents one of the main strengths of Rome, suffers from the lack of effective maintenance policies as well as of an integrated governance of the urban system; moreover, although green areas cover more than the 60% of the municipal area, public green areas represent only the 5%. Even the infrastructural networks suffer the effects of the economic crisis: the aging and scarcely maintained transport, water supply, waste disposal networks struggle to satisfy the population needs. Moreover, the low efficiency of public transport contributes to the continuous growth of the car-based mobility and, consequently, to the increase of GHG emissions and air pollution.

Finally, it has to be underlined that land take and soil sealing in flood prone areas have significantly exacerbated flood risk in the municipal area: almost the 82% of the total land take in the Municipality occurred in flood prone areas, while soil sealing seriously increases surface runoff and, consequently, the damage due to extreme rainfalls (Munafò and Polverini 2018)

2.2. Athens: the city profile

The City of Athens, characterized by an important and intricate historic and cultural heritage, has a population of 664.046 inhabitants (2011 Census), covers the central area of the Attica Region and is one of the most densely built and populated municipalities in Greece. The Region of Attica presents a complex and interesting

morphological landscape, with the city of Athens located in the immediate vicinity to mountains, protected areas (Natura 2000 network, National Park), forests and coastal areas and to the Port of Piraeus, which is the largest in Greece and one of the biggest in the Mediterranean area and Europe.

According to the Resilience Strategy, urban environment is characterized by high population density, insufficient planning as well as by a low quality and aging built urban fabric, narrow streets and lack of green (public) open spaces. Uncontrolled land take and soil sealing (more than 80% of the Municipality surface is waterproof), coupled with the depletion of peri-urban green areas and the covering of the majority of the natural water network of the Attica plain, intensify phenomena such as Urban Heat Island (UHI), flash-floods and low levels of air quality. Moreover, since Athens is highly exposed to earthquakes, the dense and aging built environment largely contributes to increase the potential damage levels. Furthermore, the major flash-floods and forest fires occurred in the last years in the Attica Region clearly demonstrate how unprepared the city is to cope with these kinds of events.

For several years the city has been facing a serious socio-economic crisis (an aftermath of the global financial crisis of 2007-2008), resulting in severe austerity policies and measures. Among the main consequences of the resulting recession were declining incomes, growing personal debt, high real estate taxes as well as increasing levels of unemployment, poverty and homelessness, leading to violence and civil unrest. Moreover, austerity led to significant cuts in local government's budget and thus in public works and social services, which deeply affect the most vulnerable population.

At the same time, the large flows of refugees and immigrants in the city, intensified the social pressures and the feeling of mistrust between citizens and local Authorities. Currently, about 20.000 migrants and refugees are living within the municipality of Athens, with an increase of about 5% of urban population. This shock, however, has provoked a wave of citizens' mobilization and solidarity networks, and the growth of civil society responses, including non-profit organizations and informal groups. Gradually, it became clear that refugees may represent an opportunity for the city's crucial problem of sharply declining and aging population. This changing in demographic features affects city's cultural mix and identity. It is worth noting that the City of Athens, in contrast with the other municipalities of the Region, is a socially mixed area, characterized by the existence of vertical social differentiation² (Maloutas & Karadimitriou, 2001, Maloutas, 2004, Maloutas & Spirellis 2015). City's urban structure with multi-story residential building and mixed uses has enabled, to some extent, this vertical differentiation among social classes and ethnic identities, thus avoiding the creation of urban "ghettos" (Resilient Athens, 2017).

2.3. Rome and Athens: common challenges

Both Rome and Athens have experienced several changes and transformations throughout their history, and they stand now at the crossroads of challenges, many of which common to other cities in Europe and beyond, but also of opportunities for triggering more responsible urban development processes.

Climate-related impacts, such as flash floods, heat waves, forests fires, represent a major challenge in both cities, also due to a highly vulnerable built environment: high population density, inadequate infrastructures, lack of public green areas as well as of effective maintenance policies result into a limited capacity of both cities to cope with more and more frequent climate-related hazards. Moreover, in the last decade economic crisis and migration flows significantly affected both cities, increasing poverty and social inequalities, in particular in

² There is however a northwest part of the municipality mainly occupied by lower-middle class.

Athens, where large-scale flows of refugees, combined to the severe consequences in terms of loss of jobs, reduction of incomes and increase of taxes, led to acute social conflicts.

Thus, Rome and Athens are here assumed as representative of two main aspects of the “new urban question” (Secchi, 2013): the impacts of climate change and the growing social inequalities. The two selected cases study could provide useful insights on the effectiveness of a resilience-based approach in tackling the different challenges threatening urban future development and, in particular, climate change.

3. The resilience building process

In December 2013, Rome was selected as one of the first 32 cities to be included in the 100 Resilient Cities network. After the start of the activities in June 2014, with the Agenda Setting Workshop in Rome, the selected working team started the first phase of the resilience building process, aimed to outline the reference scenario for the resilience strategy (Figure 3). Athens was selected in 2014, in the second round, to join the Initiative and in the spring of 2015, through the Agenda Setting Workshop, it presented the framework and the methods of the 100 Resilient Cities program (Figure 4).

The Agenda Setting Workshop represented for both Rome and Athens an opportunity to trigger a participatory, interdisciplinary and innovative decision-making process, by engaging a number of stakeholders from public and private sectors, Councilors and Directors of the different Departments of Municipality, local and regional administrations, NGOs or local organizations. In particular, the participation of Rome in the 100 RC network was part of a wider action promoted by the Urban Transformation and Environment Department and aimed at launching urban innovation pathways in a context characterized by a significant lack of internal resources (Coppola, 2016). When the city joined the 100RC initiative, local administration was characterized by a culture strongly rooted in traditional procedures and tools and scarcely innovation-oriented (Tocci, 2015). In Athens, the Office of Resilience and Sustainability (ORS), established in February 2016, laid the foundations for drafting and implementing the resilience strategy with the participation of 130 individuals from the municipality, the public, private, non-profit and academic sector as well as the civil society. The ORS gained official status as part of the Mayor’s Office in December 2016 (Government Gazette No 3812/B’/28-11-2016). In both cases, the first phase of the resilience building process was carried out through open seminars and focus groups and addressed to outline: current socio-economic context and governance, strengths and weaknesses of each city, as well as shocks and stresses affecting them, existing plans, programs and related actions.

Based on these activities, the working group of Rome’s Strategy drafted 4 intermediate reports in September 2015 and, finally, published the Preliminary Resilience Assessment (PRA) in January 2016. The Preliminary Resilience Assessment highlights strengths and weaknesses of the city and identifies 5 main vulnerable assets: economic recession and vulnerability of the population, integrated governance, quality of life, land safety and climate change, maintenance of the city’s heritage. The vision for a resilient Rome, arising from the preliminary activities, outlines an inclusive and supportive city with an exceptional natural, historical and cultural heritage, capable to safeguard its past and to develop it by promoting environmental sustainability, economic development and public well-being (Resilient Rome, 2018).

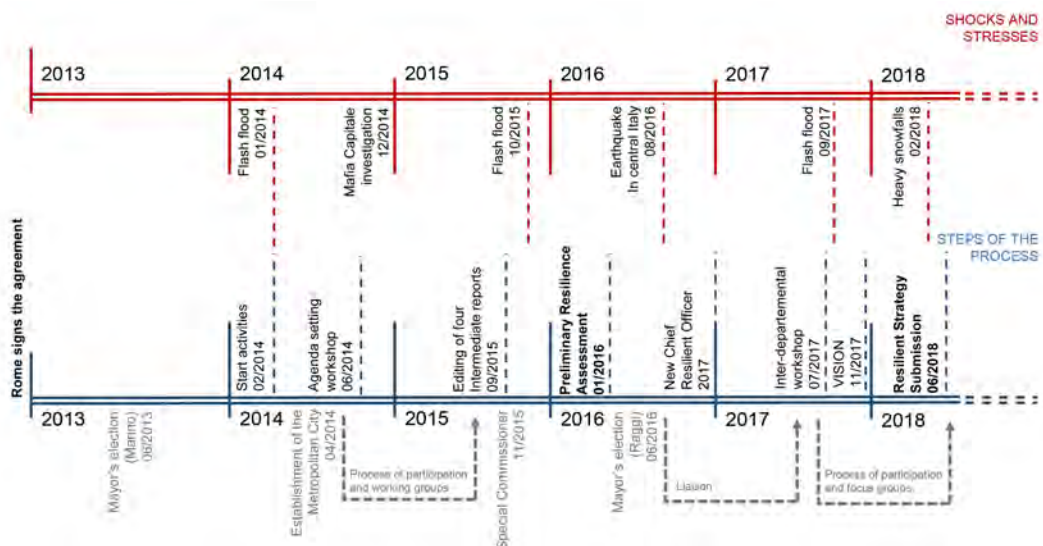


Figure 3: Occurred shock and stress events (red) and steps of the process aimed to outline the Resilience Strategy in Rome (blue).
Source: Resilient Rome (2017)

Citizens' engagement was one of the most important goals of the Athens' Strategy too, thus stakeholders mapping and the development of an integrated Stakeholder Engagement & Communication Plan were the first steps of the process (Resilient Athens & ADDMA S.A., 2016). During the first phase of the drawing up of Athens' Strategy (February - June 2016), 11 focus groups³ were created. The participants were interviewed about city's critical assets, shocks, stresses and vulnerabilities and their personal view about what makes Athens resilient. Based on the above diagnostic activities, in July 2016, the PRA was released: it presented 5 discovery areas that Athens had to explore in detail in the second phase, in order to discover opportunities that would contribute to resilience building. Moreover, the vision for a resilient Athens was shaped, namely a city that is open, green, proactive and vibrant (Resilient Athens, 2017).

It is worth noting that during the process aimed at building up the Resilient Strategy, Rome suffered numerous climate-related events (Figure 3) that have probably contributed to increase citizens' and decision-makers' awareness on climate issues. In the case of Athens, the major events that affected the whole Attica Region in the time span of reference are reported (Figure 4). It is worth mentioning that every year this Region is affected by numerous flash floods (the several less intense events occurred are not mentioned in Figure 4). Moreover, in 2018 severe wildfires, which exacerbate climate change impacts, hit the Attica Region: however, they are not reported, since the city of Athens was not directly hit by the event.

Following the release of the PRA, Rome has gone through a phase of strong political instability leading to a slowdown of the activities. After the establishment of the new City Government, in September 2017, a new Chief Resilience Officer (CRO) was appointed. This transition led to a review of the identified challenges, according to the political agenda of the new Mayor, and significantly affected both the timing of the process and the involved actors. Hence, after the selection of the new CRO in September 2017, the working group outlined the final Resilience Strategy that was officially launched in June 2018.

³ City districts' council members, advisors to the Mayor, architects, start-uppers, tour guides, young entrepreneurs, CSOs, NGOs, migrant women, homeless street paper vendors and elders.

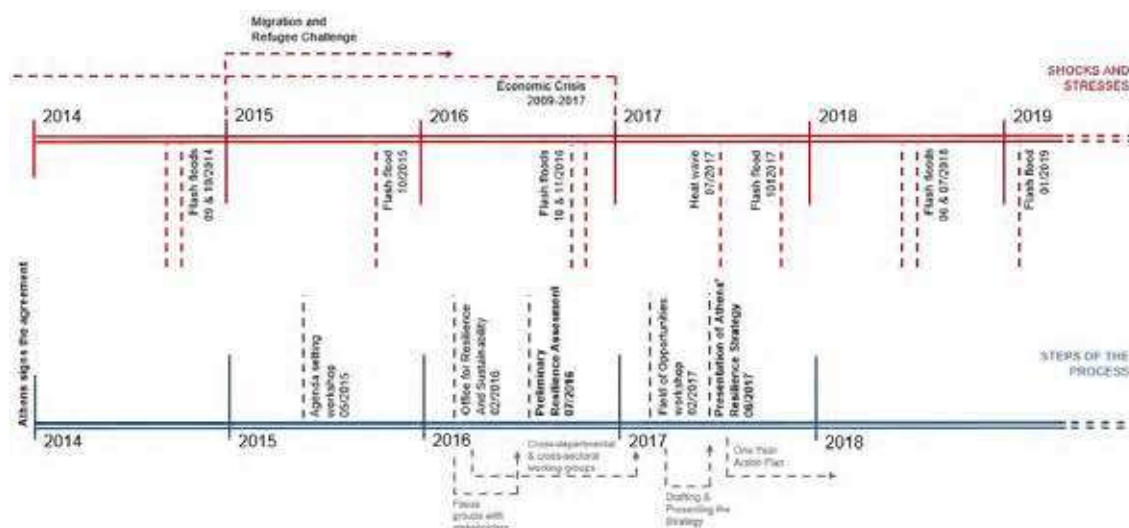


Figure 4: Occurred shock and stress events (red) and basic steps of the process aimed to outline the Resilience Strategy in Athens (blue).

Source: Resilient Athens. (2017) meteo.gr, www.hnms.gr/emy/

From March to June 2017, the Athens Resilience Strategy was drafted and presented to the Mayor of Athens, the city Council, the municipal Executive Committee, the Resilience Steering Committee (RSC) and the municipal political parties. Its official public launch was held in June 13, 2017. Finally, Phase III (from July 2017) has included the launch of the One Year Action Plan and the start of the Strategy's implementation.

Hence, by comparing the timelines, it is evident that, despite being chosen in the second round (one year later), Athens filled the temporal gap, by surpassing Rome in terms of speed of the Strategy building process. Moreover, while the process in Athens was linear, in Rome it was considerably affected by the political instability of the city.

In both cases, stakeholders' engagement was very relevant through all the different steps of the process and allowed the working groups to:

- ground on heterogeneous perspectives and approaches in defining critical issues and visions for the cities' future development;
- increase the stakeholders' awareness about challenges and opportunities of the contexts at stake;
- ensure an active stakeholders' engagement in the implementation of the Strategies.

4. Rome and Athens Resilience Strategies: the relevance of climate related actions and their role in enhancing cities' resilience

4.1. A methodological path for analyzing the Resilience Strategies

The analysis of the Resilience Strategies carried out in Rome and Athens has been addressed to understand, firstly, the relevance assigned in both strategies to climate issues; then, the potential impacts of climate-related actions on the resilience qualities identified by the CRI. To pursue these aims, a common methodological path has been outlined. The latter has been structured according to the following steps:

- the identification of the most relevant shocks and stresses as perceived by the stakeholders, with a focus on the relevance assigned to climate issues, and of the key challenges that, according to the stakeholders' opinions, each city has to face;
- the identification of the key goals that the two cities should improve, according to the stakeholders' opinions;
- the singling out of the actions directly or indirectly addressed to counterbalance climate change, in respect to the whole set of actions outlined by the two strategies, by distinguishing mitigation actions, adaptation actions or actions that could address both;
- the qualitative analysis of the potential impacts of the actions directly aimed to counterbalance climate change on the set of 52 indicators identified, in respect to each dimension and related goals, by the CRI;
- the qualitative analysis of the potential impacts of the actions directly addressed to counterbalance climate change on the resilience qualities that, according to the CRI, depends on the relationships between the indicators (to which each action is positively or negatively related) and the resilience qualities;
- the relationships among the Resilience Strategies and other existing plans/programs/initiatives specifically addressed to counterbalance climate change.

The different steps have been developed through an in-depth analysis of both the Preliminary Resilience Assessment and the Resilience Strategy carried out by each city.

It is worth underlining that the potential impacts of the actions directly addressed to counterbalance climate change on the set of indicators provided by the CRI have been evaluated according to a qualitative judgment structured as follows: positive, indifferent/no, and negative. The provided qualitative judgments are based on the description of the actions provided by each Resilience Strategy and refer to potential impacts, since only few actions are currently in progress, while most of them have to be still implemented; thus, their actual impact is not evaluable at this stage.

Moreover, the potential impact of the identified climate-related actions on the resilience features, expressed according to a binary qualitative judgment (increase/decrease), has been singled out according to the relationships between the indicators to which each action is positively or negatively related and the seven resilience qualities identified by the CRI (Figure 2).

4.2. The baseline assessment

In the case of Rome, the PRA, released in January 2016, described the current situation of the city, by providing qualitative and quantitative data on population, economy, services and infrastructure and governance. During this phase, stakeholders' engagement was addressed to define both the most relevant shocks and stresses and the main challenges that cities had to face. According to the stakeholders' opinions, natural hazards (earthquakes) and climate-related events (pluvial and river floods, landslides, sinkholes, heat wave) represent the most relevant shocks, while the numerous identified chronic stresses refer to the lack of integrated planning, to the soil, water and air pollution, to the loss of ecosystem services, to the poor maintenance of public areas, infrastructures and building, to the inadequacy of public transport and the lack of citizenship (Figure 5).

Moreover, they identified five main challenges that Rome has to cope with, referable to the economic recession and the increasing vulnerability of population, the need for a more effective and integrated governance, the urban safety, in respect to both geological and climate-related hazards.

MAIN STRESSES	Lack of integrated and updated planning Insufficient communications and information shared by offices Slow and inefficient bureaucracy Limited access to broadband telecommunications Air, water and soil pollution Critical issues in the urban solid waste cycle Loss of ecosystem services Degradation of a part of the areas and public buildings Lack of citizenship Aged infrastructure A high level of commuting Inadequate public transportation system Limited redundancy and continuity of services and critical infrastructure Increase in the number of arrivals of migrants with the right to asylum Impoverishment of the population Housing emergency	MAIN SHOCKS	Flash floods River floods Flooding due to bad surface water runoff Earthquakes Sinkholes Landslides Heat wave Heavy snowfall Instability of trees Infrastructure failures and accidents Blackout Vandalism Forest and weeds fires Cybercrime
	THE MAIN CHALLENGES Economic recession and vulnerability of the population Effective management of the impact that the global economic recession has had on employment, on social networks, on vulnerable groups, and on increased migration trends. Integrated governance Supporting efficient and effective governance of the city by encouraging better communications and transparent information as a result of the use of digital media and overcoming the limits caused by slow red tape procedures. Quality of life Encouraging well-being and the quality of urban life of citizens: from access to housing to the efficiency of public transport; from cultural projects to improving differentiation and recycling of post-consumption materials. Land safety and climate change Monitoring and planning to secure the region against geologic problems (earthquakes, opening of sinkholes, subsoil pollution, geological instability) and predicting and mitigating the impacts of climate change (heat islands, drought, floods, landslide, etc.). Maintenance of the city's heritage Protection, preservation and valorization of the ecological, cultural and landscape heritage of the city, by encouraging sustainable tourism, and urban regeneration processes.		

Figure 5: Rome: shocks, stresses and challenges perceived by the engaged stakeholders.

In respect to the key goals identified by the CRI, the engaged stakeholders recognize the need to improve all the key-goals related to the *leadership and strategy* dimension, and namely to an integrated development planning, considered as a precondition for achieving the key goals related to the *health and well-being, economy and society, infrastructure and ecosystems*. As a matter of fact, an integrated development planning would also contribute to enhance city's resilience and, namely, city's *robustness*, transformability and adaptability to hazardous events, especially those related to climate change.

Athens' PRA, released in July 2016, describes Athens' current status at that time, regarding the demographic and social analysis of the urban area, the economy, the physical and man-made infrastructures, the cultural resources, the development strategy, the funding tools as well as the administrative structure. Three basic tools were used for a diagnosis of Urban Resilience: a perception tool based on the stakeholders' opinions, an action tool and an asset and risk tool. The perception tool was addressed to collect the perceptions about city resilience from a wide range of stakeholders. Based on their answers, shocks and stresses as well as the main challenges that the city have to cope with were identified: also in the case of Athens, natural hazards (earthquakes) and climate-related events (heat waves and flash floods) are perceived as important shocks to be faced, combined with civil unrest (largely due also to the pressure of the economic crisis) and cybercrime. Regarding chronic stresses, less numerous than in Rome, the most relevant ones refer to the impacts of economic crisis, to the aging infrastructures and to the increasing migration flows. The identified main challenges, also in this case five areas, range from the urban decay to climate impacts (Figure 6).

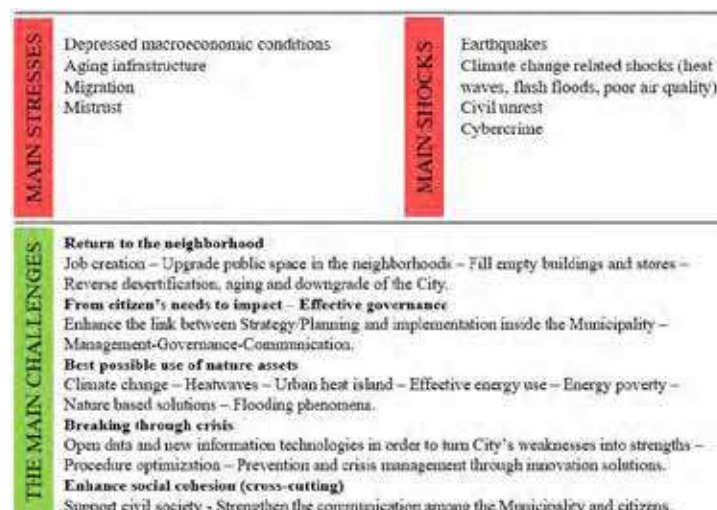


Figure 6: Athens: shocks, stresses and challenges perceived by the engaged stakeholders.

In respect to the key goals identified by the CRI, the engaged stakeholders ranked citizens' participation and the cohesion of the communities as an area of strength for city's resilience (*Goal 4: Collective identity and community support*): this positive rating depends on the widespread idea that, despite the weakness of the local authorities that generally fail in communicating with citizens, in providing access to information and education, and in taking into account citizens' needs, citizens are active and mutually supportive. On the opposite, they provide a negative evaluation of the Goal 8 (*Effective provision of critical services*), 12 (*Integrated development planning*) and 10 (*Effective leadership and management*). The criticisms revolve around the issues of the emptying out of the city, the aging infrastructure, the abandoned buildings, the lack of public services as well as of open and green spaces, the traffic congestion. They also complain the lack of long-term planning and of an effective coordination among different plans and actions.

4.3. Resilience strategies: relevance and impacts of climate related actions

The Resilience Strategy carried out for Rome is based on four pillars, mirroring the strategic vision outlined for the city. In respect to each pillar, some priority actions, directly linked to the pillars, the key goals and the actions that will allow the city to achieve these goals have been identified (Figure 7).



Figure 7: The structure of the Rome Resilience Strategy.

It is worth noting that in respect to the whole set of priority actions and actions outlined by the Strategy (58), more than half are related to climate issues (Table 1). All the climate-related actions have been classified according to their role in counterbalancing climate change, by distinguishing mitigation actions, adaptation actions and actions that could address both; moreover, these actions have been distinguished according to their direct or indirect impact on climate change.

	CC RESPONSE	IMPACT
PILLAR I: AN EFFICIENT CITY AT THE SERVICE OF CITIZENS		
PRIORITY ACTION 1: Create an operation and management center	Mitigation & Adaptation	Indirect
PRIORITY ACTION 2: Establish a Resilience Office	Mitigation & Adaptation	Indirect
GOAL A: Make the city's administration more efficient, transparent and participatory; ensure the monitoring of procedures		
I.A.1. Link the budget commitments to the three-year annual program of the Departments' activities	-	-
I.A.2. Reorganize the running of Departments and encourage synergies with other institutions	-	-
I.A.3. Create a unique communications interface between private citizens and Public Administration with the help of new technologies	-	-
I.A.4. Establish guidelines to optimize the planning, construction and management of projects	-	-
GOAL B: Incentivize centralized governance actions		
I.B.1. Complete the implementation of the 'Rome' laws required to ensure greater governance autonomy of the region (e.g. archaeological parks, rivers, etc.)	-	-
I.B.2. Create a unique geographical database that may be updated and shared	Mitigation & Adaptation	Indirect
I.B.3. Establish a Geological Survey of Rome to unite the governance of the urban subsoil	Adaptation	Indirect
GOAL C: Implement the Smart City plans		
I.C.1. Introduce guidelines for updating the Open Data platform	Mitigation & Adaptation	Indirect
I.C.2. Upgrading the public Wi-Fi network and coverage	-	-
I.C.3. Construct a Smart Grid	Mitigation	Indirect
PILLAR II: A DYNAMIC, STRONG AND UNIQUE CITY		
PRIORITY ACTION 1: Govern the relaunch of the River Tiber by implementing projects coordinated by the Special Office for the Tiber	Adaptation	Direct
PRIORITY ACTION 2: Evaluation of the resilience potential of the regeneration of Ostiense Marconi district	Mitigation & Adaptation	Direct
PRIORITY ACTION 3: Change the perception, use and promotion of the archaeological and cultural heritage sites in Rome for citizens' everyday life	-	-
GOAL A: Promote the cultural life of the city		
II.A.1. Reorganize the management of the cultural sector	-	-
II.A.2. Support stakeholders in the contemporary cultural sector in the dissemination of the cultural offer	-	-
II.A.3. Organize seasonal programs of cultural events throughout the city	-	-
II.A.4. Assign a new role to public libraries by organizing innovative socio-cultural programs for the local communities	-	-
II.A.5. Start the application to list Ostia Antica as a UNESCO World Heritage Site	-	-
II.A.6. Fashion Relaunch Plan of Rome	-	-
GOAL B: Promote urban regeneration		

II.B.1. Activate Fabbrica Roma (Rome Factory), a regeneration plan for abandoned public buildings	Mitigation & Adaptation	Indirect
II.B.2. Upgrade the Building Regulations according to new housing and working needs	Mitigation	Indirect
II.B.3. Regenerate the Tiburtina Stations and Pietralata areas	Mitigation	Indirect
II.B.4. Reorganize the network of public and private transportation to streamline the mobility system (tram lines, bus lanes, cable cars, etc.)	Mitigation	Direct
II.B.5. Establish incentives to facilitate the transfer of know-how between small-medium businesses, start-ups, institutions and research centers	-	-
GOAL C: Promote the landscape and natural heritage in the urban environment		
II.C.1. Restore and/or reorganize the use of and access to the Roman coast by implementing the Utilization Plan for Rome's Coastline	Adaptation	Indirect
II.C.2. Implement the management reorganization of parks and historic villas by establishing a Curator who would also be responsible for planning the fundraising processes	-	-
GOAL D: Encourage the farming tradition of the city		
II.D.1. Relaunch farming companies managed by the Municipality	Mitigation	Indirect
II.D.2. Develop new markets for farmers to support the direct sale of produce and products to consumers	Mitigation	Indirect
II.D.3. Increase food forests and urban vegetable gardens	Adaptation	Direct
GOAL E: Improve the attractiveness and the safety of Rome		
II.E.1. Create tourist facilities to promote youth and student tourism	-	-
II.E.2. Plan activities to promote the attraction of urban areas by increasing the number of cycling tracks, environmental islands and use of the public transport system	Mitigation	Direct
II.E.3. Regulate businesses in the historic center in order to protect the quality of products and craftsmanship so as to preserve the identity of the historic center	-	-
GOAL F: Ensure the safety of the public and private heritage in the city		
II.F.1. Protect infrastructure, public buildings, and schools	Mitigation & Adaptation	Direct
GOAL G: Prepare city's adaptation to climate change		
II.G.1. Create green and blue infrastructure to reduce urban heat islands	Adaptation	Direct
II.G.2. Assess the impacts of climate change and raise awareness among citizens	Adaptation	Indirect
II.G.3. Create infrastructure and pilot projects to reduce the risk of flooding	Adaptation	Direct
PILLAR III: AN OPEN INCLUSIVE AND SUPPORTIVE CITY		
PRIORITY ACTION 1: Implement a program to encourage everyone into sports to enable social integration of diverse communities	-	-
PRIORITY ACTION 2: Implement the new social integration program for asylum seekers and other people covered by international protection	-	-
GOAL A: Promote a hospitable city that respects diversity		

III.A.1. Implement a program to strengthen and extend the support network for vulnerable communities	Adaptation	Indirect
III.A.2. Establish assessment criteria to assign public spaces under concession to NGOs, associations and organizations that promote social inclusion, education and sustainability	-	-
III.A.3. Finalize Public Housing Development Programs and develop new energy-efficient social housing	Mitigation	Direct
GOAL B: Promote the cultural growth of the vulnerable population		
III.B.1. Introduce projects for the inclusion of children in the cultural life of the city in collaboration with other institutions	-	-
III.B.2. Implement the new intervention policies for unaccompanied foreign minors to facilitate opportunities of growth and integration	-	-
PILLAR IV: A CITY THAT PROTECTS AND ENHANCES ITS NATURAL RESOURCES		
PRIORITY ACTION 1: Renew the public vehicle fleet and introduce eco-sustainable buses	Mitigation	Direct
PRIORITY ACTION 2: Optimize separate waste collection of post-consumer materials	Mitigation	Indirect
GOAL A: Protect the ecological system and restore the value of the water resources		
IV.A.1. Implement sustainable urban forestry principles to protect biodiversity, enhance and protect parks and nature reserves	Adaptation	Direct
IV.A.2. Protect and enhance local water resources	Adaptation	Direct
GOAL B: Promote the use of renewable energy sources		
IV.B.1. Incentivize the use of renewable resources	Mitigation	Direct
IV.B.2. Introduce incentives to secure the safety and energy efficiency of private real estate property	Mitigation	Direct
IV.B.3. Review the green credential and safety of the public structures	Mitigation	Direct
GOAL C: Create sustainable mobility and introduce solutions to reduce pollution and GHG emissions		
IV.C.1. Develop an efficient and economic transport model for people and goods	Mitigation	Indirect
IV.C.2. Develop sustainable electric mobility plan	Mitigation	Direct
IV.C.3. Test new technologies for decreasing emissions into the atmosphere	Mitigation	Direct
IV.C.4. Develop the pedestrian and cycle network and sharing transport schemes	Mitigation	Direct
GOAL D: Promote a zero-waste circular economy		
IV.D.1. Open centers for the direct processing and reuse of post-consumer materials	Mitigation	Direct
IV.D.2. Develop sustainable waste plants	Mitigation	Direct

Table 1: The whole set of priority actions and actions outlined by the Rome Resilience Strategy and the actions addressed to counterbalance climate change.

Once the actions aimed to counterbalance climate change have been identified, the potential impact of each action, limited to those directly related to climate change, on the set of 52 indicators provided by the CRI, has been evaluated. Then, based on the outcomes of the qualitative assessment and according to the relationships between indicators and key goals identified by the CRI (Figure 2), the examined actions are expected to have a positive impact on the key goals 8, 10, 11, 4 and, consequently, on the related dimensions *Infrastructure and Ecosystems* and *Leadership and Strategy* (Figure 8).

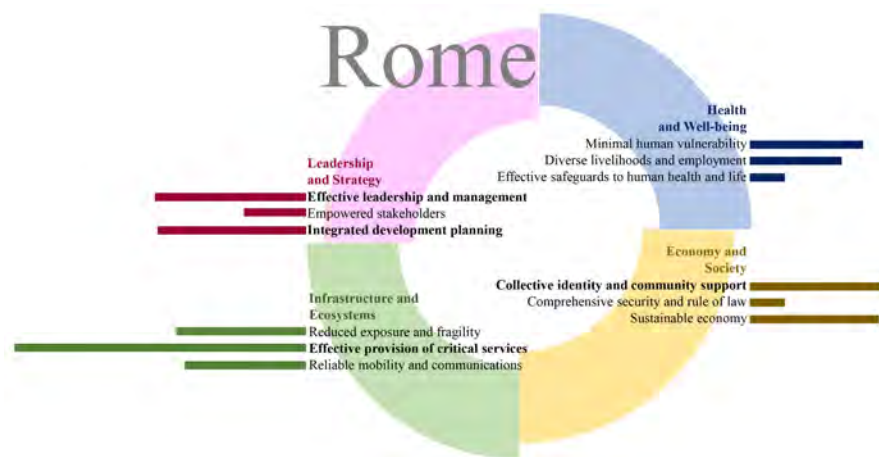


Figure 8: The potential impacts of directly climate actions on CRI's key goals.

The potential impacts of the actions have been largely regarded as positive or neutral and only in few cases as negative, even though some of them could induce, once implemented, some negative externalities related, for example, to an increase in soil consumption or to the occurring of gentrification phenomena. However, it is difficult to assess such externalities, only based on the general description of each action provided by the Resilience Strategy.

Finally, the potential impacts of the selected actions on the resilience qualities that, according to the CRI, depends on the relationships between the indicators (to which each action is positively or negatively related) and the resilience qualities, have been assessed. Based on this, it is possible to highlight that the selected actions could contribute to significantly enhance at least three out seven resilience qualities, making Rome a more integrated, inclusive and robust city, and contributing to a lesser extent to enhance the other resilience qualities (Figure 9).



Figure 9: The potential impacts of the climate actions on the resilience qualities.

Athens' Resilience Strategy has been structured into 4 pillars, 13 goals, 44 actions and 55 supporting actions. Each goal of the Strategy is related with the goals of the CRI (Figure 10).

ATHENS 41344

pillars goals actions



Figure 10: The structure of the Athens Resilience Strategy.

Among the 44 actions included in the Strategy, the ones addressed to counterbalance climate change have been identified, by identifying those contributing, directly or indirectly, to the reduction of GHG emissions as mitigation actions, those related to the adjustment and regulation of urban system as well as to changes in behavior in order to better cope with the more and more frequent climate impacts, as adaptation actions. There are, of course, actions that address both mitigation and adaptation (Table 2). This analysis indicates that more than the half of the actions concerns climate-related issues (28 out of 44 actions), half of which are directly related (15 out of 28).

	CC RESPONSE	IMPACT
I. An Open City		
GOAL A. Become more transparent and accountable		
A.1 Open data	Mitigation & Adaptation	Indirect
A.2 Communication campaigns	Mitigation & Adaptation	Indirect
A.3 Major public events impact assessment	-	-
GOAL B. Enhance and streamline the city's processes		
B.1 Digital agenda	Adaptation	Indirect
B.2. Smart operational center	Adaptation	Indirect
B.3 Health & social service centers	-	-
B.4 Map of the public realm	Mitigation & Adaptation	Indirect
GOAL C. Foster collaboration and engagement		
C.1 Thematic stakeholder platforms	Adaptation	Indirect
C.2 synAthena platform	Adaptation	Indirect
C.3 University and City Synergies	Adaptation	Indirect
C.4 Athens Partnership Fund	-	-
C.5 Athens Culture Net	-	-
II. A Green City		
GOAL A. Integrate natural systems into the urban fabric		
A.1 Climate Change adaptation action plan	Mitigation & Adaptation	Direct
A.3 Triple green development project (Mega Resilience Project)	Mitigation & Adaptation	Direct
A.4 Elaionas: a resilient district (Mega Resilience Project)	Mitigation & Adaptation	Direct
GOAL B. Make our city cleaner		

B.1 Waste management action plan	Mitigation & Adaptation	Direct
GOAL C. Promote sustainable mobility and co-create public spaces		
C.1 Sustainable mobility roadmap	Mitigation & Adaptation	Direct
C.2 Public space rejuvenation initiative	-	-
C.3 Public space co-development framework	Mitigation & Adaptation	Indirect
GOAL D. Foster sustainable food systems		
D.1 Sustainable food policy plan	Adaptation	Direct
GOAL E. Establish sustainable and equitable energy system		
E.1 Climate Change mitigation action plan	Mitigation & Adaptation	Direct
E.2 Energy poverty mitigation roadmap	Mitigation & Adaptation	Direct
E.3 Renewable energy cooperatives	Mitigation	Direct
III. A proactive city		
GOAL A. Enhance planning in the face of serious challenges		
A.1 Crisis preparedness and management plans	Adaptation	Direct
A.3 Metropolitan Authority and other legislative and policy making reforms	-	-
A.4 Detailed resilience studies	Mitigation & Adaptation	Direct
A.5 Old building retirement	Mitigation & Adaptation	Direct
GOAL B. Empower the municipal workforce and elected officials as well as the voice of the local community		
B.1 Municipal neighborhood network	-	-
B.2 Municipal capacity building	-	-
GOAL C. Engage with our neighborhoods		
C.1 Schools open to the neighborhood	-	-
C.2 Migration integration action plan	-	-

IV. A vibrant city		
GOAL A. Enhance the City's identity and promote new types of belonging		
A.1 Athens ID	-	-
A.2 Creative economy strategic plan	-	-
A.3 Holistic city brand	-	-
A.4 Green and cultural urban corridors	Mitigation & Adaptation	Direct
A.5 Sustainable municipal Real-estate management	Mitigation	Indirect
A.6 City center development project	Mitigation & Adaptation	Direct
GOAL B. Maximize existing City assets and support employment		
B.1 Vacant buildings: crucial urban resource	Mitigation	Indirect
B.2 Employment action framework	-	-
B.3 Social housing program	-	-
B.4 Old train stations refurbishment	-	-
B.5 Expropriation and greening of abandoned lots in Athens	Mitigation & Adaptation	Direct

Table 2: The whole set of actions outlined by the Athens Resilience Strategy and the actions addressed to counterbalance climate change.

Following the methodological path previously outlined (see paragraph 4.1) and based on the potential impact of the actions that directly address climate issues on the 52 indicators provided by the CRI, it is possible to state that the selected actions have a positive impacts on the Goals 4, 8, 10, 12, whereas the least positive impact is on the Goal 5 (*Comprehensive security and rule of law*) (Figure 11). Comparing these results with the stakeholders' opinions previously mentioned, we can argue that these opinions have been largely taken into consideration in

the drawing up of the Strategy. However, a potential negative impact, in social terms, of the numerous regeneration projects included in the Strategy, should be highlighted. The potential gentrification effects of these projects may significantly affect Goal 1. Thus, in the implementation of the foreseen actions the potentially negative social impacts should be carefully analyzed and compensated through appropriate measures.



Figure 11: The potential impacts of directly climate actions on CRI's key goals.

Finally, based on the correlation between the indicators and the resilience qualities provided by The Rockefeller Foundation & Arup (2016), the potential impacts of the selected actions on the resilience qualities have been assessed. According to the outcomes of the evaluation, the selected actions might help the city to become more integrated, inclusive, reflective and resourceful while also increasing, to some extent, its robustness. However, redundancy and flexibility should become more prominent (Figure 12).



Figure 12: The potential impacts of the climate actions on the resilience qualities.

4.4. The relationships with other urban strategies, plans and policies

One of the main opportunities for cities that decide to adopt a resilience strategy is to systematize and link all the heterogeneous actions planned by different actors and included in different planning tools, framing them into a common and shared vision for future development.

The attention devoted to create links among actions already included in other plans and programs, approved or with a still pending approval, is surely a strength of the Rome Resilience Strategy. The number of actions already in progress at the time of the adoption of the Strategy and framed into the strategy is double in respect to

the new actions. As clearly stated in the Strategy, this may contribute to guarantee both their implementation and a higher continuity in the city's development policies. Hence, the Rome Resilience Strategy is closely linked to numerous existing plans and projects (plans for urban regeneration, plans for sustainable mobility, urban greening, etc.). All actions aimed at building platforms for the dissemination of knowledge, involving citizens, creating a unique interface between public and private actors, stakeholders and decision makers, updating and integrating data and information from different specific sectors, can be traced back to the Digital Agenda of Rome (2016) , addressing the digital transformation of the public administration. Moreover, as regards the relationships among the Rome Resilience Strategies and other existing plans/programs/initiatives specifically addressed to counterbalance climate change, it is worth noting that most of the actions classified as mitigation actions are already in progress, being already included into previously approved plans, although not fully implemented (e.g. the SEAP submitted in 2013). On the opposite, adaptation actions are generally new, due to the lack of a previous adaptation plan: the Municipal Council, that took office in 2016, joined the New Covenant of Mayors for Climate and Energy in 2017, with the commitment to submit the SECAP by November 2019. The objectives set up for the SECAP are fully in line with the actions aimed to counterbalance climate change included in the Resilience Strategy, namely in the second and fourth pillars, mostly addressed to promote urban regeneration, to ensure a sustainable development in mobility, to improve public green areas. Despite the numerous links among plans carried out by the different sectors of the Municipality, it has to be underlined the persisting lack of coordination among different Public Bodies. In particular, the actions related to the goal "Prepare city's adaptation to climate change" could have benefited from a closest relationship between the Strategy and the 10-year program of actions designed by the River Basin Authority to guarantee the safety of Rome from floods, landslides and sinkholes (River Basin District Authority 2018), which is not even mentioned in the Strategy, probably due to its recent adoption.

Athens' Resilience Strategy also draws upon other local, regional, national and international strategic documents and it seems to be aware of the lack of communication among the different municipal departments and public bodies and, consequently, of the lack of coherence among policies and plans. Moreover, it clearly acknowledges the citizens' need of more information and mechanisms allowing them to better engage with decision-making processes. Hence, the Strategy supports and creates information platforms, for municipal departments, stakeholders and communities, promotes partnerships with national and international networks and favors linkages with other plans, programs and initiatives (throughout its four pillars). These endeavors make data and services available to everyone, ensure the comprehensive dissemination of relevant information and raise the awareness about resilience issues. As regards the relationships among the Athens Resilience Strategy and other existing plans/programs/initiatives specifically addressed to counterbalance climate change, it is worth noting that the Athens Climate Change Adaptation and Mitigation Plan represents a fundamental part of the Resilience Strategy. This plan, which includes 2 parts, respectively focused on mitigation and adaptation, outlines specific actions aimed at improving quality of life, mostly in respect to increasing temperatures, flash floods and poor air quality. Many of the Adaptation and Mitigation Plan's actions are incorporated in the Strategy as new actions (apart from the supporting action "Enhance Green infrastructure in city", which is already on-going). Other actions are linked with urban, regional and national plan and programs for sustainable mobility, waste management, energy saving, as well as with the economy strategic plan, the migrant integration action plan, the public space co-development framework, the crisis preparedness and management plans and the sustainable food policy plan.

Finally, it is worth reminding that in November 2017 Athens entered the Smart Mature Resilience (SMR) project, which responds to the need for enhancing resilience in European cities. Athens is one of the Tier 3 cities (as well as Thessaloniki): thus, it is one of the 'engaged' cities that receives training in the use of finalized tools (which are piloted in a group of three core cities/Tier 1) (Grimes, 2018). The engagement of the city into this project could represent a further opportunity to strength awareness, capabilities and skills within the different sectors of the public administration and to empower, in so doing, local institution, making the latter more autonomous in respect to the leading role hitherto assumed by the Rockefeller Foundation.

5. Concluding Remarks

The two selected cities, Rome and Athens, show numerous similarities both in terms of shocks and stresses that the two cities have to cope with, and in terms of strengths and opportunities. Climate-related impacts are recognized as a major challenge exacerbated, in both cities, by a vulnerable built environment: high population density, inadequate infrastructures, lack of public green areas as well as of effective maintenance policies. Although economic crisis, migrants and refugees are mentioned as chronic stresses in both cities, their relevance in Athens is significantly higher, while the lack of integrated and participatory governance represents a very sensitive issue in both cases.

Due to the relevance assigned to climate issues by the stakeholders engaged in the resilience building process activated in the last years in the two selected cities, the examined Strategies include a significant number of climate-related actions that represent, in both cases, more than half of the total. However, while in the case of Rome these actions are mostly addressed to mitigation issues, being adaptation a new challenge for the city, in the case of Athens, most of the foreseen actions contribute to address both mitigation and adaptation issues.

By joining the 100 RC Initiative, Rome and Athens brought resilience into the urban political agenda, relying on a set of tools for understanding, assessing, and improving their capacity to cope with different stresses and shocks and raising meanwhile community and decision makers' awareness on resilience issues. The engagement of multiple stakeholders and the collaboration among different sectors of local governments can be interpreted as an opportunity for both cities to overcome the still prevailing "silo" approach to urban policies (Proust *et al.*, 2012) and to promote more participatory decision-making processes. However, the case study examples, and mainly the case of Rome, clearly show how sensitive is the resilience building process to the political leadership: the weakness or the frequent change of the latter could significantly affect the resilience building process that, to be effective, requires continuity on a long-term perspective.

For both cities, the Resilience Strategy represents an opportunity to address some critical issues related to different urban dimensions (society, economy, environment and governance), grounding on a shared vision for future development, capable to systematize into a common frame new measures and on-going actions already included in different tools (e.g. climate plans, urban regeneration projects, etc.).

However, being the resilience building process only at a first stage or, better, at a "planned stage", it is quite difficult to assess its effectiveness in the long term. Numerous actions could induce negative impacts if not adequately designed and implemented, as in the case of neighborhoods' redevelopment projects that could increase social inequality while improving environmental quality.

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From the Viewpoint of Ecosystem Services: A Study of Functional Regionalization in Chiayi City, Taiwan

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Abstract: In order to achieve the sustainable development goals on the spatial development of Taiwan's future land space, we need to comprehensive and systematic analysis of environmental resources. After the implementation of the Spatial Planning Act, all land is divided into four districts that are National Territorial Preservation district, Agricultural Development District, City-Country Development District, and Marine Resources District, with subsequent each county (city) need to according to the National Territory Planning Act, and propose their county (city) land plan. This study tried to explore the ecosystem service of Chiayi county area, and quantification of ecosystem services. Then applying spatial mapping and k-means cluster analysis, mapping bundles of ecosystem services. An understanding of the location and characteristic of different bundles of ecosystem services, may take us a step further to mapping systems that have direct policy and decision-making relevance for sustainable resource management and land use planning.

Keywords: Ecosystem service, Ecosystem services bundle, Spatial Planning Act.

1. Introduction

1.1 Background

On 18 December 2015, the Spatial Planning Act bill was passed by the Legislative Yuan in Taiwan. This Act specifically establishes guidelines concerning measures to be taken to cope with climate change, assure land use safety, conserve the natural environment and cultural assets, promote the reasonable allocation of resources and industries, strengthen land consolidation and management mechanisms, and restore sensitive areas and damaged land in pursuit sustainable development.

According to the provisions of the Spatial Planning Act, the central competent authority shall announce the National spatial plan within two years after this Act takes effect, which including the

establishment of functional zone demarcated priorities and principlesd(environmental conservation zones, marine resource zones, agricultural development zones and urban-rural development zones). Then the competent authorities of municipalities and counties (cities) shall according to those functional zone demarcated priorities and principlesd, demarcate the county (city) functional zones and land use control measures.

In order to echo the legislative spirit of the sustainable development of the Spatial Planning Act, this research try to lead into the concept of ecosystem services into the demarcation of the municipality and county (city) functional zones and enforcement of land use control measures. The key to sustainable development is achieving a balance between the exploitation of natural resources for socio-economic development, and conserving ecosystem services that are critical to everyone's wellbeing and livelihoods(Falkenmark et al., 2007). Ecosystem services is an excellent way to understand human well-being and regional sustainable development, and can also be viewed as an important part of land use planning and ecosystem management (Daily et al., 2009).

1.2 Ecosystem services

According to the website of the World Forum on Natural Capital, natural capital can be defined as the world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this natural capital that humans derive a wide range of services, often called ecosystem services (ES).

For the specific ecosystem functions or processes that contribute to human well-being, MEA (2005) classifies the various benefits of ecosystems into four categories based on the 17 service classifications proposed by Costanza et al. (1997):

- Provisioning Services: Provisioning Services are ecosystem services that describe the material or energy outputs from ecosystems. They include food, water and other resources.
- Regulating Services: Regulating Services are the services that ecosystems provide by acting as regulators eg. regulating the quality of air and soil or by providing flood and disease control.
- Support services: Ecosystem services that are necessary for the production of all other ecosystem services. eg. provisioning of habitat.
- Cultural services: Refers to the benefits of non-material benefits that humans derive from ecosystems through entertainment and aesthetic experience, including aesthetics, entertainment, cultural heritage, spiritual religion, and science education.

Since Daily (1997) and Costanza et al. (1997) proposed 13 and 17 types of ecosystem services respectively, the literature related to the type of service and the way it is classified is still being discussed and updated. However, Costa Zanza et al. (2017) compares the following four of the main ecosystem services classification systems used worldwide and their differences and similarities: 1) Costanza et al., 1997; 2) Millennium Ecosystem Assessment, 2005; 3)TEEB, 2010; 4) CICES (v.4.3). While there are differences in the details, these classification systems are broadly very similar.

1.3 Ecosystem services bundles

In addition, since each ecosystem service is not independent, but instead exhibits complex interactions (Nelson et al., 2008). When ecosystem services are subject to interactions between themselves, as a result of natural processes (i.e. ecological drivers) or management decisions (i.e. socio-ecological drivers), “trade-offs” and “synergies” may emerge (Bennett et al., 2014). In simple terms, a trade-off between ES is characterised by the decrease in the provisioning of one or several ES as a result of increasing the supply or flow of one ecosystem service (Turkelboom et al., 2016). A synergy refers to situations in which two or more ecosystem services are simultaneously enhanced or simultaneously reduced (Li Peng et al., 2012).

Regarding the interactions among ecosystem services bundles, cluster analysis was mostly applied. Cluster analysis based on mapping is a powerful tool to identify ecosystem service bundle types and analyze ecosystem services trade-offs and synergies (Raudsepp-Hearne et al., 2010). This approach maps ecosystem service clusters based on where we find recurring services throughout the landscape, and their distribution is often interpreted as a distribution of known major human activities or land use in the area, so it is believed to help communicate the potential impact of management decisions to policy makers (Crouzat et al., 2015).

Nada Saidi et al. found that in recent years, related research generally uses statistical clustering analysis for detection. The most common types can be divided into the following two types:

- Cluster analyses (k-means or hierarchical).
- Graphical/tabular detection using lower dimensional projections with PCA, factor analysis, multiple correspondence analysis (MCA) or multidimensional scaling.

The most straightforward way to conduct spatial mapping research is by clustering landscape units (grids or administrative units), using cluster analysis methods such as k-means or hierarchical grouping. **Materials and methods**

2. MATERIAL AND METHODS

2.1 Study site

Chiayi County is a county in southwestern Taiwan surrounding. It is the sixth largest county in Taiwan. Chiayi County borders Mount Yu to the east, Taiwan Strait to the west, Tainan City to the south and Yunlin County to the north. It spans over 1,903 km² (735 sq mi). Chiayi County is located along the Tropic of Cancer. On the North of The Tropic of Cancer is temperate zone, while on the South is tropical zone. This is also a dividing line for agricultural climate as tropical and subtropical climates.

Bordered by mountains on one side and sea on the other side, Chiayi County holds three major national parks, which are Alishan National Scenic Area, Southwest Coast National Scenic Area and Siraya National Scenic Area, each represents a unique view of nature's wonders, from mountains, plains to ocean views.

2.2 Ecosystem service indicators and assessment tools

Wood et al. (2018) used a bipartite network analysis to plot the 178 ES-T interactions of ‘High’ perceived importance by each SDG target. In the pooled surveys, provision of food and water and habitat & biodiversity maintenance services were the most frequently evaluated; Followed by carbon storage & sequestration; Water quality, water regulation, raw material provisioning and recreation & tourism also contributed a number of sustainable development targets. If we consider the trade-offs and synergies between ecosystem services, we need to increase erosion control and pollination. Therefore, we collected proxies for ten different provisioning, regulating, supporting and cultural services.

Integrated modeling tools, the most commonly used tool is Integrated Valuation of Ecosystem Services and Trade-offs (InVEST). The InVEST mode is characterized by its ability to interface with the GIS interface and to perform different levels of elastic analysis based on the amount of data, so that the results are more clearly presented. In addition, users can use the functions of GIS for front-end or mode simulation. Subsequent analysis allows users to process the resulting data more efficiently.

In order to meet the data type requirements of the InVEST model, this study converted the land use data from vector data (shapefile) to grid file (shapefile). We use the ArcGIS10.3.1 for the grid transformation, which has the highest proportion of land use area in the grid, represents the land use category of this grid. In addition, when assessing and mapping ecosystem services, the spatial extent (scale) and resolution (analysis unit) will affect the interpretation and application of the assessment results. However, Jung-Wen Hsiao(2013) suggested the most appropriate resolution for modeling ecosystem services is 100m*100m. The resolution is 100m*100m, so this study converts the land use map with a grid size of 100m*100m.

Table 1 Ecosystem service indicator calculation

Classification	Ecosystem services	Significance	ES Calculation process
Provisioning Services	Food	Ecosystems provide the conditions for growing food. Food comes principally from managed agro-ecosystems.	The agricultural development zone Type 1~4 are assigned 1, 0.75, 0.5, 0.25, respectively, and the other assignments are 0.
	Raw materials	Ecosystems provide a great diversity of materials for construction and fuel including wood, biofuels and plant oils that are directly derived from wild and cultivated plant species.	Assign the plantation to 1 and the other to 0.
	Fresh water	Ecosystems play a vital role in the global hydrological cycle, as they regulate the flow and purification	The first and second water resources protection zones are assigned 1 and 0.5 respectively, and the other

		of water. Vegetation and forests influence the quantity of water available locally.	assignments are 0.
Regulating Services	Carbon sequestration and storage	Ecosystems regulate the global climate by storing and sequestering greenhouse gases. As trees and plants grow, they remove carbon dioxide from the atmosphere and effectively lock it away in their tissues. In this way forest ecosystems are carbon stores. Biodiversity also plays an important role by improving the capacity of ecosystems to adapt to the effects of climate change.	Calculation of comprehensive carbon stocks of four major carbon pools of surface organisms, underground organisms, soil and humus through the InVEST model ----- Total carbon stock (mg/pixel)
	Moderation of extreme events	Extreme weather events or natural hazards include floods, storms, tsunamis, avalanches and landslides. Ecosystems and living organisms create buffers against natural disasters, thereby preventing possible damage. For example, wetlands can soak up flood water whilst trees can stabilize slopes. Coral reefs and mangroves help protect coastlines from storm damage.	Average annual production (mm/watershed/year, mm/pixel/year)
	Waste-water treatment	Ecosystems such as wetlands filter both human and animal waste and act as a natural buffer to the surrounding environment. Through the biological activity of microorganisms in the soil, most waste is broken down. Thereby pathogens (disease causing microbes) are eliminated, and the level of nutrients and pollution is reduced.	Water purification by ecosystem nutrient retention (kg/basin/year, kg/pixel/year)
	Erosion prevention and maintenance of soil fertility	Soil erosion is a key factor in the process of land degradation and desertification. Vegetation cover provides a vital regulating service by preventing soil erosion. Soil fertility is essential for plant growth and agriculture and well functioning ecosystems supply the soil with nutrients required to support plant growth.	Calculated using the modified universal soil loss equation (RUSLE model). Calculate the amount of soil erosion in the bare land: $RKLS = R \times K \times L \times S$, and the amount of soil erosion with management measures and vegetation cover: $USLE = R \times K \times L \times S \times C \times P$, and then obtain soil retention: $RUSLE = RKLS - USLE$. Where R is the rainfall erosivity, K is the soil erodibility factor, L is the slope length factor, S is the slope factor, C is the vegetation coverage factor, and P is the soil conservation factor. If there

			<p>is no significant difference in rainfall in the area, the rainfall erosivity R is taken as a constant 1. Other factors are based on soil data, DEM and land use data, and are obtained by reference to the InVEST model specification.</p> <p>-----</p> <p>Average annual erosion (ton/watershed/year, ton/pixel/year); average annual sediment retention (ton/watershed/year, ton/pixel/year)</p>
	Pollination	Insects and wind pollinate plants and trees which is essential for the development of fruits, vegetables and seeds. Animal pollination is an ecosystem service mainly provided by insects but also by some birds and bats.	Pollinator abundance index (relative abundance/pixel, relative abundance/watershed)
Supporting Services	Habitats and Biodiversity Maintenance	Habitats provide everything that an individual plant or animal needs to survive: food; water; and shelter.	<p>The InVEST model is used to analyze the combined effects of various threats to habitats in the matrix, including: the relative impact of each threat, the relative sensitivity of each habitat type to each threat source, habitat patches and threat sources. The distance and the extent to which the land is protected by law. The legal protection of land in the study area is effective and the value is 1; the threat factors include farmland and orchard in addition to roads of all levels, various types of construction land, industrial and mining land, because agricultural fertilization and spraying of pesticides also directly threaten the original The survival of species. Refer to the InVEST model specification and expert opinions to determine the weight value of the threat factor and sensitivity factor and the maximum impact distance of the threat source on the habitat. Finally, input the InVEST model to obtain the habitat quality distribution map.</p> <p>-----</p> <p>Habitat degradation index; habitat quality index</p>

Culture Services	Rwcreation & Tourism	Ecosystems and biodiversity attract tourists, and natural beauty brings considerable economic benefits. It is an important source of income for many countries, and culture and ecotourism can educate people about the importance of biodiversity.	The country forest parks, large urban parks, important public service centers, important cultural activity centers and other areas are assigned importance values of 1, 0.7, 0.5, 0.3, and 0 according to their importance, and then the distance is interpolated to obtain the distribution map of the importance of the whole tourist attractions.
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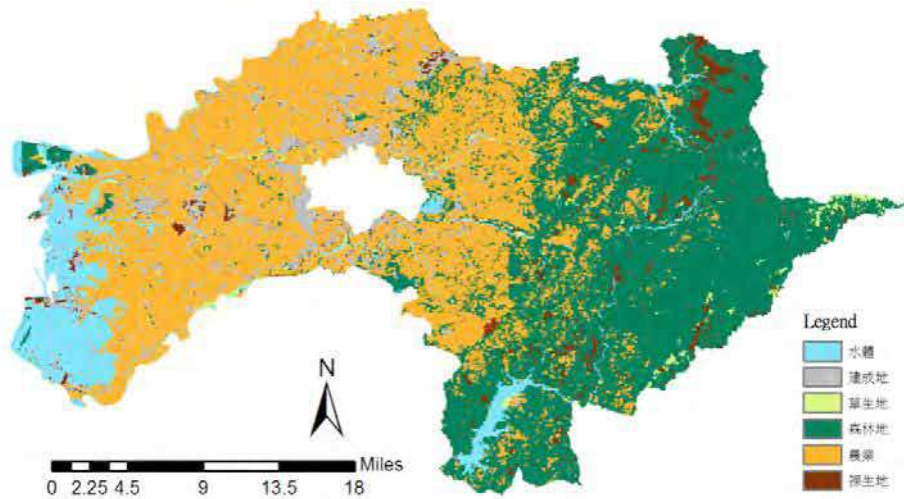


Figure 1 Land use classification and conversion

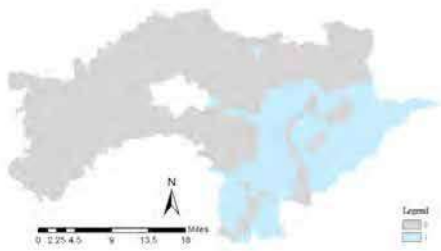


Figure 2 Fresh water



Figure 3 Carbon sequestration and storage

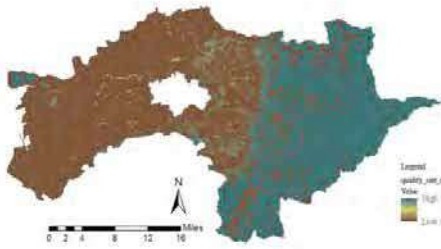


Figure 4 Habitats and Biodiversity Maintenance

2.3 An analytical framework for ecosystem service bundling

The research design architecture can be divided into three phases:

- The first phase is the evaluation of individual ecosystem services: We chose ten ES for bundle analysis, which could be classified into provisioning, regulating, supporting and cultural services. Application of GIS spatial analysis function and InVEST model for assessment of various ecosystem services
- The second phase will predict the ecosystem service bundles (ESBs): determine the optimal number of clusters by Elbow Method(with the smallest total variation within the group), and identified ESBs by using K-means clustering. This phase had four main goals as follows: (a) to assess spatial patterns of multiple ES; (b) to characterize the interactions between each pair of individual services, (c) to detect ESBs and identify the main characteristics of each bundle, and (d) to discuss the influencing factors of trade-offs between each pair of services.
- The third phase identifies the relationship between the ecosystem service bundles and the land use: Calculate the distribution ratio of the corresponding ecosystem service clusters according to each country's functional zone. Try to understand the main ecological functions of each functional zone. Finally, through the relevant cases in the literature review, the reference recommendations for the follow-up management strategy for the land function of the Chiayi area will be given.

Results and Discussion

The definition and functional classification of ecosystem services is not only the basis for the formulation of relevant ecological policies, but also the issues that must be clarified before urban development and formulation of management strategies. It is related to the rational use of land resources and the sustainable development of human society.

Follow-up will take the Chiayi area as an example. The research results may provide a reference for the future development of the land area management strategy in the Chiayi area. It is expected to respond to Taiwan's vision of sustainable development of the future land space.

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Research on the Construction of Sponge Campus from the Perspective of Low Impact Development

——A Case Study of Jiangpu Campus of Nanjing Tech University

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Abstract: The rapid development of cities has caused serious damage to the urban ecological environment and has caused great changes in the global climate. In recent years, sponge city planning and construction have been carried out in many cities. As an important part of the city, the waterlogging problem of universities should also be paid attention to. Taking Jiangpu Campus of Nanjing Tech University as an example, through field investigation, we found that there are 9 locations with serious water accumulation on campus, 4 locations with different water accumulation degree were analyzed and selected. The causes of water accumulation were analyzed by controlling variables (including green space scale, green space density, terrain height difference, permeable pavement area, drainage facilities, etc.). Among them, we selected two indices include green space scale and distribution, using FRAGSTATS3.3 software, to describe the characteristics of green space patch landscape of 4 locations in detail. The analysis shows that the causes of waterlogging in the campus. Based on the study of 6 classical cases in China and abroad. Eight measures for building the campus as a "sponge campus" are put forward from two aspects of construction technology and management, in order to alleviate campus waterlogging, improve water environment quality and increase water recycling.

Keywords: Low Impact Development; campus waterlogging; sponge campus; strategies

Introduction

With the acceleration of urbanization and the expansion of urban scale, extreme weather occurs frequently in the world. At the same time, the change of urban land use pattern leads to the change of hydrological effect and the increase of the proportion of impervious surface, which leads to the continuous increase of urban rainwater runoff and the coexistence of waterlogging and "Thousand Island Effect" in cities. This series of problems are also prominent in our university campuses. Nanjing University of Technology is located in the rainy southern city, and its waterlogging problem is particularly evident in the rainy season. The construction of sponge city is an effective way to maintain a good ecological environment and alleviate urban floods. Therefore, applying the concept of sponge city to the construction of campus and forming "sponge campus" is an important means to solve campus waterlogging and maintain a good ecological environment of campus.

Drainage Status and Existing Problems of Jiangpu Campus of Nanjing University of Technology

1. Campus introduction

Geographic location: Jiangpu Campus of Nanjing University of Technology is located in Jiangpu Street, Pukou District, Nanjing City. It is located at the foot of Laoshan Forest Scenic Area. It faces Puzhu South Road in the south, Yanshan Avenue in the north and Flower Avenue in the west. Pukou District of Nanjing City is located on the North Bank of the Yangtze River in Nanjing City. It is located in the north latitude of 31 degrees 14'-32 degrees 17', east longitude of 118 degrees 20'-119 degrees 13'. It faces the Yangtze River in front, followed by Chu River, Laoshan Mountains in the middle, and hills in the west. There are alluvial continents along the rivers. According to the topographic differences and geomorphological characteristics, four major areas are formed naturally, namely, the polder along the river, the polder along Chu, the mountainous areas, the nearest hills and the distant hills, as shown in Figure 1.



Figure 1 Nanjing University of Technology Campus Plan

Climatic conditions: Jiangpu Campus of Nanjing University of Technology is located in the middle and lower reaches of the Yangtze River. It belongs to the subtropical monsoon climate zone. Rainfall varies greatly between years and seasons, with obvious abundance and drought and uneven distribution of rainfall. According to many years' data and statistics, the average annual rainfall in the whole region is 1102.2 mm, 1778.3 mm in flood year (1991), 465 mm in dry year (1978), 712.1 mm in flood season (May-September), 1324.5 mm in flood season (1991), 248.8 mm in minimum rainfall (1978) and 301.9 mm in maximum daily rainfall. (5 July 2003). The local annual average runoff is about 262 million cubic meters.

Topographic features : Jiangpu Campus of Nanjing University of Technology is located in the hilly area at the foot of Laoshan Mountain. It is an irregular rectangle, about 2200 meters in length from north to South and 920 meters in width from east to west. The terrain is low in the South and high in the north, with an elevation of 10 to 60 meters. The campus is a multi-channel alluvial land separated by many hills, with large fluctuations and scattered land use, as shown in Figure 2.

2. Current Situation of Drainage in Campus

Research object : During the rainy season in Nanjing, Jiangpu Campus is often affected by rainstorms, resulting in campus waterlogging. The survey selected nine places with serious water accumulation in the campus, which were: (1) the front square of Yifu Library; (2) the entrance of Pujiang Canteen; (3) the South downhill of Dongyuan Canteen; (4) the front of Thick School Building; (5) the main road of the campus; (6) the east side of the school gate; (7) the music platform; (8) the south side of Building A of Pujiang River; and (9) the west side square of Building C of the Zongpujiang River. The distribution of nine places is shown in Fig. 4. According to the average water depth of nine places, the severity of waterlogging in nine places is sorted. The order from heavy to light is the entrance of Pujiang canteen, the South downhill of Dongyuan canteen, the main road of campus, the front of thick school building, music platform, the east side of school gate, the west square of Pujiang C building, the south side of Pujiang A building and the front square of Yifu library, as shown in Figure 3.

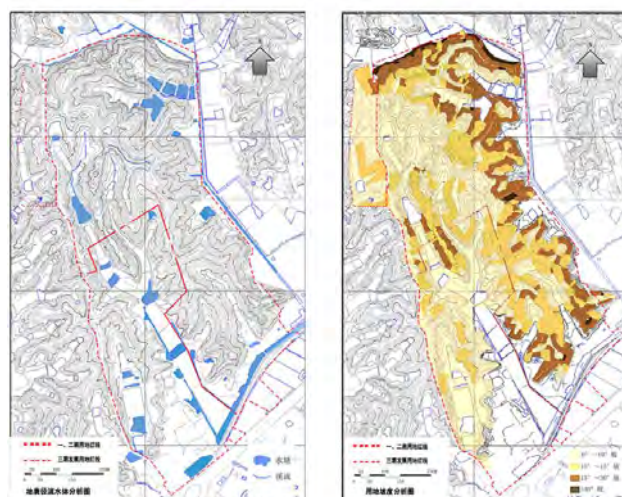


Figure 2-1 Distribution of Surface Runoff System in Jiangpu Campus, Nanjing University of Technology (left)

Figure 2-2 Analysis of Land Slope in Jiangpu Campus of Nanjing University of Technology (right)

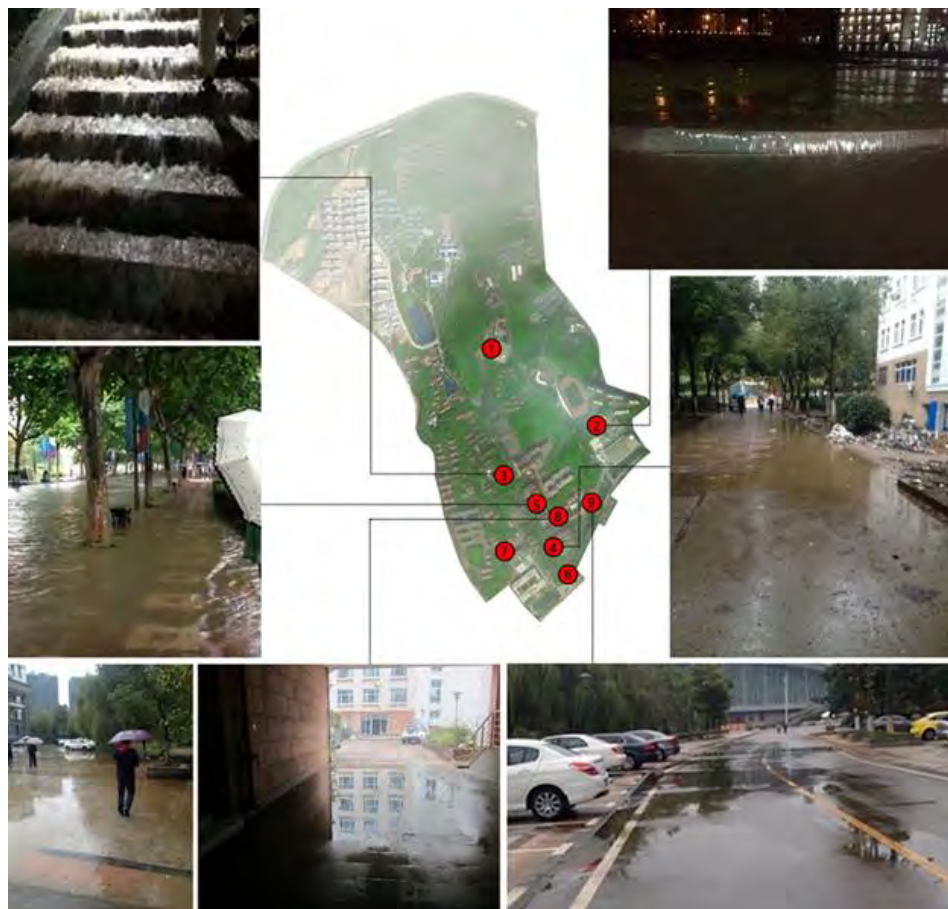


Figure 3 9 Distribution of Severe Points of Water Accumulation

Interpretation of the Current Situation: According to the above survey data, it is preliminarily speculated that the formation of campus waterlogging is mainly related to the degree of green space coverage, and secondly to the height difference within the campus and the area of water area. Therefore, this paper selected four sites with different water accumulation degree to analyze the control variables. The four points selected are: A Music Platform; B East Court basketball court; C Pujiang Canteen Gate; D Houxue Building Gate (see Figure 4). Firstly, the landscape pattern characteristics of green space patches around are described from two aspects: the scale and distribution of green space. Two landscape indices, Class area and Patch Density, are selected (see Table 1). A window with a length of 50 m and a width of 50 m is established. The moving window is calculated by FRAGSTATS3.3 software, and the landscape spatial distribution characteristics of each patch are obtained (Yin Xuewen, 2014).



Figure 4 Four Control Variable Analysis Locations

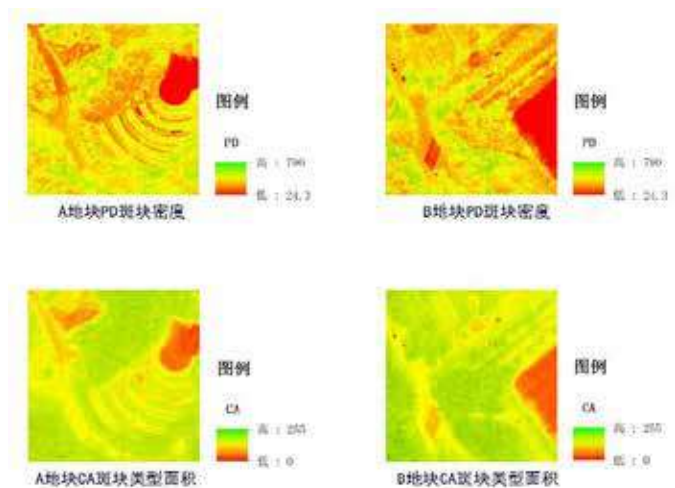
Table 1 Green Space Scale and Distribution Landscape Index

Evaluation content	Name of Landscape Index	Definition of Landscape Index	Implications in this study
The Scale of Green Space	Class area, CA	$CA = \sum_{i=1}^n a_{ij}$	Total area of urban green space in a certain range (m^2)
Distribution of Green Space	Patch Density, PD	$PD = \frac{n_i}{A}$	Patch Density Reflecting Urban Green Space in a Certain Range
	Landscape Division Index, LDI	$LDI = 1 - \sum_{j=1}^n \left(\frac{a_{ij}}{A}\right)^2$	Reflecting the fragmentation degree of urban green space patches in a certain range, when $LDI = 0$, it shows that there is only one patch in the area, and the closer LDI approaches to 1, the more fragmented the patches are

(Note: a_{ij} is the area of a certain green patch type, n_i is the number of green patches in a certain range, A is the total area of the landscape.)

(1) Contrast between A Music Station and B Dongyuan East Basketball Court

According to the software analysis, the following four pictures are obtained. From the PD and CA maps of A and B blocks, we can see that the green patch density and patch type area of the two blocks are comparatively similar. But from the field investigation, we can find that the water accumulation in the red area of A block is more serious than that in the red area of B block. By analyzing the similarities and differences between the two plots, it can be found that the height difference between the red area and the green area on the southwest side of Block A is larger, about 1.5 meters, and the pavement in the red area is hard



impermeable pavement, while the green area is good permeable grassland. The red area in Block B is permeable and flat, as shown in Fig. 5.

Therefore, the analysis shows that Table 2:

Table 2 Comparisons of plot elements and water supply in A and B

Land	PD	CA	Height difference	Permeable pavement area	Drainage ditch	Accumulation of water
A Music Station (Red Area)	Low,	Low,	Large	NO	More	Serious
A Music Station (Green Area)	High	High	Large	Large	Less	Slight
B Dongyuan East Basketball Court (Red Area)	Low,	Low,	Small	Large	More	Slight

Comparing the red area of Block A with the green area, under the same height difference, the factors affecting the water accumulation are the coverage area of green space and the area of permeable pavement; comparing the red area of Block A with the red area of Block B, we can find the factors affecting the water accumulation when the green area is also small. There are height difference and permeable pavement area.

(2) Contrast between A Music Station and the entrance of Pujiang Canteen

According to the software analysis, the following four pictures are obtained. After comparison, the green patch density and patch type area of A plot are higher than those of C plot. Through field investigation, it is found that there are certain height differences in A plot and C plot, even the height difference in A plot is greater than that in C plot, but the water accumulation in C plot is obviously more serious than that in A plot. See Figure 6.

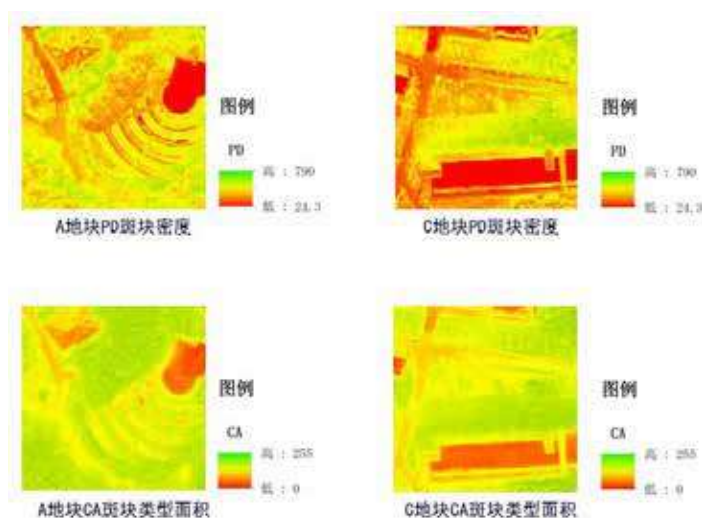


Figure 6 Comparison of Landscape Index of Blocks A and C

Therefore, the analysis shows that table 3:

Table 3 Comparisons of plot elements and water supply in A and C

Land	PD	CA	Height difference	Permeable pavement area	Drainage ditch	Accumulation of water
A Music Station	High	High	Large	Large	Commonly	Slight
C Pujiang Canteen Gate	Low,	Low,	Large	NO	Commonly	Serious

Comparing A plot with C plot as a whole, under the same condition of large height difference, the factors affecting water accumulation in plot A are the coverage area of green space and the area of permeable pavement. Even the plots with large elevation difference are more conducive to rainwater evacuation because they have more green space coverage.

(3) A comparison between the basketball court on the east side of B Dongyuan and the entrance of D Houxue Building

According to the software analysis, the following four pictures are obtained. From the PD and CA maps of Block B and D, we can see that the green patch density and patch type area of the two plots are comparatively similar, but from the field investigation, we can find that the water accumulation phenomenon in Block D is more serious than that in Block B. By analyzing the similarities and differences between the two plots, it can be found that the plots B and D are located in the relatively flat area in the campus, but the plot B is close to more landscape rivers, as shown in Figure 7.

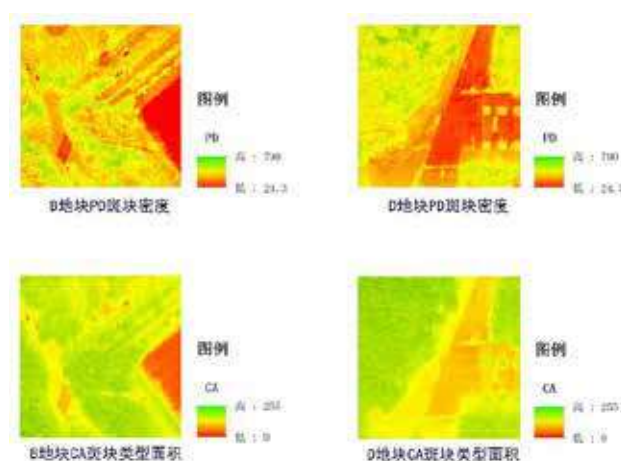


Figure 6 Comparison of Landscape Index of Blocks B and D

Therefore, Table 4 is drawn from the analysis.

Table 4 Comparisons of plot elements and water supply in B and D

Land	PD	CA	Height difference	Permeable pavement area	Drainage ditch	River	Accumulation of water
Near the East Basketball Court of B Dongyuan	Commonly	High	Small	Large	Commonly	Near	Slight
Door of D Houxue Building	Commonly	High	Small	Small	Commonly	Far	Serious

Comparing Block B with Block D as a whole, under the similar conditions of green patch density, patch type area, elevation difference and drainage channel, the factors affecting water accumulation in Block B are the area of permeable pavement and river system.

3. Causes of Campus Waterlogging

After analyzing the current situation of drainage in campus, it is preliminarily concluded that campus waterlogging is closely related to the coverage rate of green space, terrain height difference, permeable pavement area and river course. Further analysis of these four factors can lead to the following reasons for campus waterlogging.

Higher relief: The Jiangpu Campus is built in the aftermath of the National Forest Park Mountains. The whole campus is integrated with the mountain body and built in accordance with the mountain. Therefore, the campus interior is low in the South and high in the north. It is separated by many hills into multiple impacting areas. The land is scattered and the height difference is large. In rainstorms or continuous rainstorms, the rainwater flows rapidly to low-lying areas under the guidance of gravity, resulting in the accumulation of rainwater at low places and the formation of campus waterlogging. At the same time, in the process of water flow, small waterfalls will appear on the slopes. It has seriously affected the travel of teachers and students.

High impervious pavement rate in some areas: Jiangpu Campus covers a large area with dense road network and more vehicles. It needs more parking space. Most of the parking lots in the current campus are impervious pavement. At the same time, the school provides more venues for teachers and students, and also for hard impermeable pavement. The large proportion of impervious pavement in the campus has greatly affected the infiltration of rainwater, resulting in many water accumulation in the campus, as shown in Figure 8.



Figure 8 Water accumulation in impervious pavement

utting off bends and straightening up rivers to weaken the links of "stagnation": The natural river course is meandering and winding. The meandering bank can effectively reduce the speed of flow. With the natural grassland revetment, the impact of water stays in the river course increases the permeability of water. In the construction of Jiangpu Campus, many rivers are straight landscape rivers. Straight rivers seem to be able to drain rainwater quickly, but in fact, rainwater will be accumulated in the lowest place after passing through the rivers quickly, forming a campus waterlogging. Most of the landscaped riverbanks in the campus are artificial hard ones, which not only increase the beauty of the campus, but also reduce the infiltration of water and increase the drainage pressure of the riverway in rainy season.

The water system is dispersed and its circulation is not strong: Jiangpu Campus takes "landscape campus" as its design concept and plans a large number of rivers (see Figure 11 for details). These water bodies form a certain water network structure on the plan, but more of them are blocked in the middle, forming the characteristics of water system dispersion, affecting the flow of water, so when rainwater floods, it will form a serious phenomenon of local water accumulation in the campus, as shown in Figure 9.



Figure 9. Distribution of water system in Campus

Drainage ditches are covered to prevent rainwater seepage: Walking in the campus, we can often see fallen leaves, food bags, express bags and other garbage

piled up in the drainage ditches. As a result, when the rainstorm comes, the drainage ditches can not fully play their role, which leads to flooding of the road surface and hindering the travel of teachers and students.

Case analysis and experience summary at home and abroad

1. Case Study of Foreign Countries

In recent years, low impact development (LID) has been effectively used and promoted in the United States. Many famous universities and professional institutions have cooperated to formulate the rainwater management project plan for each school, and ingeniously combine campus landscape design with low impact development technology. The University of Pennsylvania and Yale have worked out sustainable campus rainwater management plans; the Massachusetts Institute of Technology of Harvard University has built ecological rainwater landscape in the process of campus renovation; and the University of Maryland has carried out experimental studies on campus. The practice of low-impact development technology in American universities is mostly to transform the environment after land development, so as to improve the quality of the environment and ecological benefits and form a sustainable ecological landscape on the basis of not destroying the existing concurrent work.

Sunolun Landscape Laboratory: Underwood Family Sonoran Landscape Laboratory, also known as "Home under the Tree", is located in Tucson, AZ USA, See Figure 10.

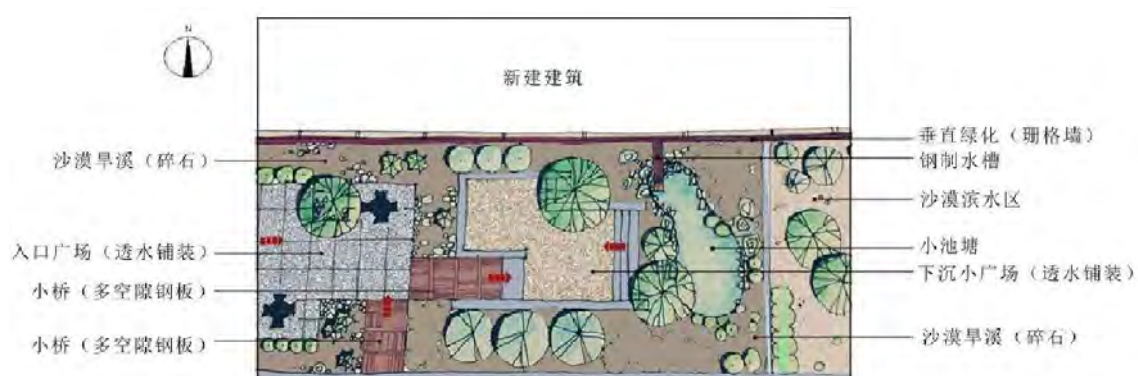


Figure 10 Plane of Suloren Landscape Laboratory

Sunolun Landscape Laboratory fully embodies the concept of sustainable development. Its greatest feature is the collection of rainwater and the recycling of water resources. Through a series of low-impact development facilities, the laboratory has slowed down the speed of rainwater runoff, fully recycled rainwater resources and reduced waterlogging.

Central Plaza, Southwest Residential Area, MIT: The Massachusetts Institute of Technology Southwest Residential District Central Plaza Renovation Project was designed by Stephen Stimson Landscape Design Firm of the United States. The original monotonous and dilapidated square was designed and renovated, and a humanized sustainable open space was created. A visual rainwater system consisting of rainwater conveyor belts and rainwater gardens was constructed, which reduced the impervious pavement rate of the site from 70% to 40%. The coverage of natural vegetation and permeable pavement increased from 30% to 60%, as shown in Figure 11.

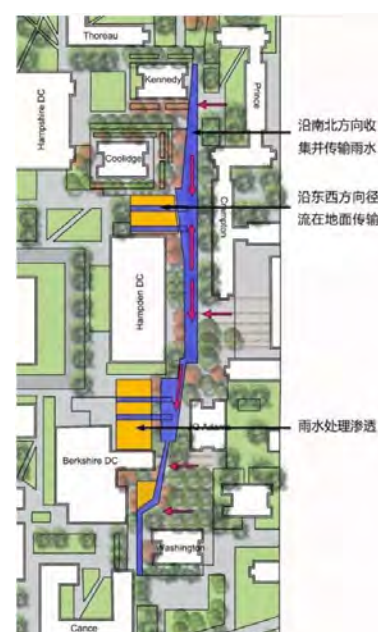


Figure 11 Rainwater system plan of site

In the design, the North-South long green corridor symbolizes the Connecticut River, which is the main channel for collecting and transmitting rainwater from surrounding squares and roofs. The corridor links the blocks of green space between buildings, symbolizes the pasture and farmland in the valley, and is also the main place for rainwater purification, infiltration and teachers' activities. The north-south rainwater transmission bandwidth is 1-1.5 meters, consisting of stone strips, metal plates and plants, and equipped with a certain number of log seats for teachers and students to use, as shown in Figure 12.

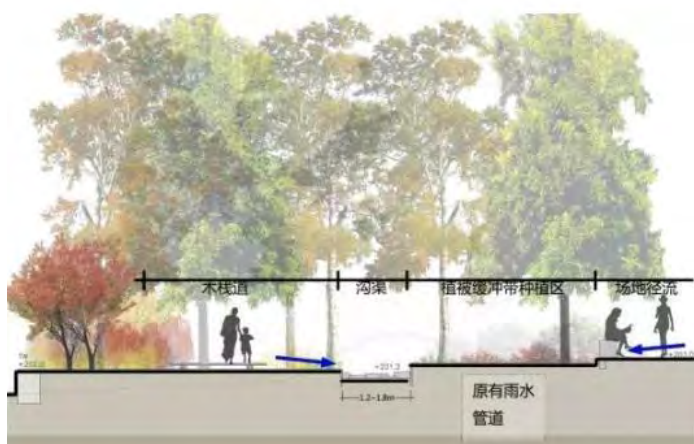


Figure 12 Cross-section of rainwater transport belt



Figure 13 General Plane of the Institute of Biology, Arizona State University

ASU Institute of Biological Design: ASU Biodesign Institute, located in Tempe, Arizona, USA, covers an area of about 16188 square meters. In order to create a sustainable development space, rainwater harvesting facilities were set up in each site to realize the collection and utilization of rainwater resources. Rainwater collection of the project is mainly embodied in rainwater garden, rainwater retention area and permeable material pavement. Through these facilities, water resources are recycled, as shown in Figure 13.

2. Domestic Case Analysis

At present, the construction of sponge campuses in China lags behind the developed countries slightly, mainly in the application of technology, standards, policies and regulations and the overall awareness of co-management. In recent years, the construction of sponge campuses with low impact development has been paid more and more attention in our universities. Tsinghua University, Duke University of Kunshan, Tongji University, Beiyang Campus of Tianjin University, Hunan Agricultural University, Shenyang Architectural University and other universities have carried out the construction and research of rainwater control and utilization projects.

Shengyin College of Tsinghua University : Shengyin College is located in the west of the southern section of the traditional central axis of the auditorium of Tsinghua University. It is one of the modern classroom housing groups of Tsinghua University. With the reconstruction and construction of the school, the surrounding terrain has been constantly raised, and it has gradually become a low-lying area. Every rainstorm will cause serious campus waterlogging.

In the renovation of Shengyin College, the historical style of its architectural heritage was maintained, and the low-impact

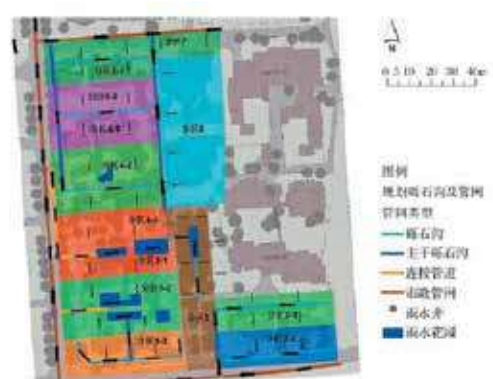


Figure 14 Sewerage Zone of Shengyin Courtyard

development technology facilities and landscape construction were integrated to achieve the collection and utilization of rainwater resources and effectively alleviate the problem of campus waterlogging. Rainfall management facilities in Shengyin Hospital include rainwater garden, dry pool, gravel ditch, grass ditch and so on. See Figure 14.

Duke University of Kunshan: Duke University of Kunshan is located in Yangcheng Lake Science Park, Kunshan City, Jiangsu Province. Its campus covers an area of 1,200 mu (about 130,000 mu). In 2016, Duke University became the first LEED green campus in China to be certified by the American Green Building Commission. Its ecological landscape design and highly hydroelastic "sponge campus" feature are the international leading certification. One of the key elements (Zeng Ying, 2017).

The design of the project combines the characteristics of the space demand of campus users and the change of the water quantity of the central landscape lake, and integrates the analysis of time, space and water level. The central landscape lake will be built as the center of collecting and managing rainwater systematically. Through collecting rainwater from the roof and square of the campus, the original campus will be greened on the West side. The zone is transformed into an ecological park with a series of purified pools connected to the Central Lake, forming a "living water" system circulating and reciprocating in the campus, as shown in Figure 15.



Figure 15 The "Live Water" System of Duke University in Kunshan

In the transformation of Duke University, unlike other universities, the design defines the submergable and non-submergable areas. It describes the elasticity of the sponge campus as allowing the departmental areas to be submerged, but this "submergable" scope and state are controlled within the design scope, as shown in Figure 16.



Figure 16. Different relationships between landscape platforms and water surfaces

Hunan Agricultural University: Hunan Agricultural University is located in Furong District, Changsha City. Its campus covers an area of 2.27 square kilometers. The design of the "Red Axis" landscape in its campus uses the invisible water storage system model. Instead of setting up obvious engineering facilities on the surface, it combines water saving, water storage and other measures with the green space construction and landscape construction of the campus.

Hunan Agricultural University put forward its water storage model based on the current situation of massive waste of energy and resources. The characteristics of this model are to build a series of rainwater utilization facilities by using the accumulation of hard materials such as waste bricks, sandy pebbles and cement blocks, to maximize rainwater storage, to supplement the water retention of groundwater and soil, to improve the growth conditions of plants, to save and adequately water resources, and to reduce them. The pressure of light Rainstorm on drainage pipeline network will build sponge campus.



3. Summary of Case Experience

Adapt measures to local conditions and retain local characteristics: During the renovation of Sunolun Landscape Laboratory, the unique desert landscape was preserved, and many native plants, such as butterfly rattan and mutton tree, were used. These functional elements and social elements were skillfully combined to form a unique and innovative "small sponge" city, which is a demonstration site in the arid and barren southwestern region of the United States.

Analyse the rainwater and flood, study the site sufficiently : The renovation of Shengyin College of Tsinghua University is based on the division of rainwater gathering areas in the site, and then the direction of drainage pressure in each area is analyzed. Finally, the corresponding low-impact development facilities are selected according to the flow of each area, and the implementation location is determined according to the layout of the green landscape. Therefore, a full analysis of the current situation of the plot is the necessary measure for the construction of sponge campus under the concept of low impact.

Recycling and utilizing rainwater in combination with landscape: The Sunorom Landscape Laboratory also has a relatively complete system of reclaimed water in buildings. Designers collect rainwater from roofs, condensate from air conditioners and reclaimed water from automatic water dispensers in buildings through a water tank with a total capacity of 11,600 gallons placed in buildings to meet the needs of inadequate water supply in the site. At the same time, the water can also be diverted to a small pond simulating the desert dry stream by using a steel tank, which can increase the water level and salinity of the small pond and realize the water cycle of the site.

The MIT Square Renovation Project also uses north-south rainwater conveyor belts to collect rainwater runoff and roof rainwater from the site and reuse them after purification of the sunken rainwater garden.

Designers at ASU Biological Design Research Institute set up small gravel-covered basins in the site as reservoirs for rainwater collection.

The renovation of Shengyin College of Tsinghua University integrates the rainwater management facilities with the historical landscape environment, carries out reasonable vertical design, increases the infiltration capacity of the surface, effectively controls the rainwater runoff at the source, and uses the green landscape to treat, recycle and reuse rainwater.

Constructing rainwater recycling system combined with waterscape can not only create a systematic and ecological campus landscape, reduce the phenomenon of water accumulation in the campus, but also greatly save the irrigation water in the campus.

Increase permeability and use permeable pavement : In the design process of Sunolun Landscape Laboratory, many low-impact development technologies were introduced. Permeable pavement was used extensively to increase the infiltration and purification of rainwater. The Massachusetts Institute of Technology (MIT) square renovation increased the permeable pavement rate by 30%, greatly increased the infiltration of rainwater during the rainy season, and reduced surface runoff. Similarly, in the project of ASU Institute of Biological Design, a large number of permeable pavement materials are used to increase the infiltration of rainwater so that groundwater can be recharged and water resources can be conserved.

Optimizing green space and increasing rainwater treatment: Through the analysis of the above six cases and the sponge campus construction of other universities at home and abroad, it is found that green landscape plays an extremely important role in the construction of sponge campus. Its role runs through the whole system, covering the source, middle and end, as shown in Table 5.

Table 5 Landscape Rainwater Disposal Measures for Green Space

Control process	Name	Measures	Function
Source	Roof Garden	Engineering measures for greening roofs, roofs or balconies of buildings or structures	Reducing peak runoff and total rainfall runoff
	Rain garden	Engineering measures for planting shrubs, flowers and plants in low-lying areas, using the biochemical and physical characteristics of plants, bacteria and soil to purify and store the total amount and quality of water in landscape	Purify Rainwater, Increase Evaporation, Blue and Green Space Conversion Place
	Permeable pavement	Engineering measures for the use of pervious materials or engineering practices as engineering measures for the treatment of pervious materials	Rainfall Infiltration Rate Improvement
	Concave green space	A concave green space 50-150 mm below the surrounding hard pavement	Rainwater harvesting, groundwater recharge, blue-green space conversion site
	Landscape tree array	Matrix planting of humidity-tolerant and Saline-Alkali-Tolerant trees at a certain distance to form a characteristic landscape space	Alleviating heat island effect and increasing rainwater infiltration rate
Middle	grassed swales	Landscape Surface Channel Drainage System for Planting Vegetation	Reducing surface runoff velocity and increasing rainwater infiltration
	Gravel grooves	Landscape surface ditch drainage system filled with gravel	Increase rainwater infiltration and purify water quality
End	Wetland	Natural or artificially formed swamps and shallow water areas with stationary or flowing water bodies can provide habitats for birds and fish.	Purify water and precipitate toxic substances
	Landscape water body	Natural or artificially constructed landscapes with water elements, such as concave pools, concave sculptures, dry streams, etc.	Stormwater storage

Divide the area and make sure whether it is submerged or not: When the campus encounters continuous heavy rainfall for many days, even if there is a good water infiltration system and enough river water system to accommodate water, it will cause water accumulation in some areas and form campus waterlogging. At this time, through the division and positioning of the campus area, it is necessary to determine which areas can be submerged and which areas can never be submerged, so as to accommodate rainwater to a greater extent, so that the places with transportation, distribution and other functions in the campus are not affected by waterlogging.

Technical Measures for the Construction of "Sponge Campus" in Jiangpu Campus of Nanjing University of Technology

To build "sponge campus", we must apply the six-character concept of sponge city - infiltration, stagnation, storage, net, use and arrangement to the construction of campus. Based on the investigation and analysis of the current situation of Nanjing University of Technology, combined with the experience of domestic and foreign cases, this paper tries to put forward corresponding measures for the construction of "sponge campus" in Jiangpu Campus of Nanjing University of Technology from the perspective of six-character concept.

1. Infiltration

Green Roof : Green roof has the function of saving energy and reducing emission. It can collect a lot of rainwater in rainy season, control roof runoff, and reduce the pollution of runoff, so as to facilitate the recovery and utilization of rainwater. The southern part of Jiangpu Campus of Nanjing University of Technology is relatively dense, so reducing roof runoff is one of the important tasks of building sponge campus, as shown in Figure 18.

For flat-roofed buildings, when building green roofs, it is necessary to ensure that the roof load, waterproof performance and other indicators meet the construction standards; for sloping roofs, the requirement for building green roofs is that the roof slope should not be greater than 15 degrees. At the same time, green roofs are divided into two types: simple roof and garden roof. The design indicators of the two types of roofs are different, as shown in Table 6.

Table 6 Suggested Indicators for Green Roofs

Form	Greening Roof Area/Total Roof Area	Greening Planting Area/Greening Roof Area	Paved garden pavement area/green roof area	Landscape Art Area/Greening Roof Area	Matrix depth
Simple	$\geq 80\%$	$\geq 90\%$	—	—	~150mm
Garden	$\geq 60\%$	$\geq 85\%$	$\leq 12\%$	$\leq 3\%$	$\geq 600\text{mm}$

Permeable pavement: Permeable pavement has the functions of seepage, stagnation and storage, which can temporarily store a small amount of rainwater. Its main function is to promote the infiltration of rainwater to supplement groundwater and reduce the water volume and speed of surface runoff. In this paper, the analysis of the current situation of Jiangpu Campus shows that most of the water-logged areas in the campus are impervious pavement, such as parking lot, distribution plaza, etc. Therefore, it can be considered to use pervious pavement to update and improve it, as shown in Figure 19.

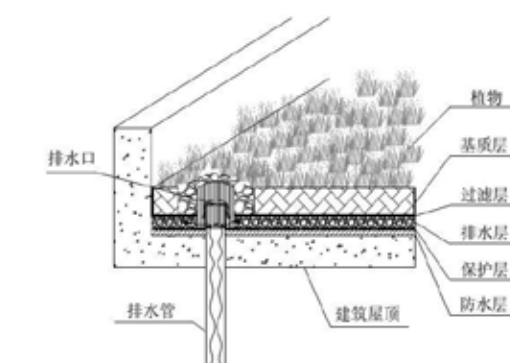


Figure 18 Green Roof Profile

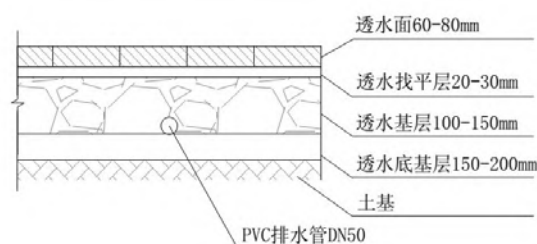


Figure 19 Diagram of Permeable Pavement Section

Natural revetment: From the analysis of the present situation of Jiangpu Campus, we can see that many of the campus landscape rivers have adopted the design of artificial hard revetment, which gives people a beautiful feeling from the visual effect. But when facing the rainstorm, these hard revetments will only increase the flow rate of rainwater and aggravate the phenomenon of water accumulation in low terrain. Therefore, in the construction of "sponge campus" in Jiangpu Campus, we should Restoring the original natural revetment of the river system and increasing the infiltration of water in the river course, at the same time, the original ecological characteristics of the original Jiangpu Campus conform to the theme of its "landscape campus".

2. Stagnation

Concave green space: The concave green space has the natural seepage ability, and can use its concave terrain to block the surface runoff of rainwater, and to a certain extent can store rainwater. The concave green space can be widely used in the reconstruction of campus. It has the advantages of low construction complexity, low

construction cost and saving irrigation water. At the same time, the concave depth of concave green space should be determined according to the drowning resistance of plants and the permeability of soil, generally 100-200 mm. In the construction of sponge campus in Jiangpu Campus of Nanjing



Figure 20: Concave green space profile

University of Technology, the corresponding concave green space should be constructed in the low-lying areas according to the topographic characteristics of the campus itself, so as to increase the process of rainwater "retention", as shown in Figure 20.

Biological Retention Land: Biodetention is a facility for storing, infiltrating and purifying rainwater through plant, soil and microbial systems in low-lying areas. It includes not only rainwater gardens, but also biological detention zones, high flower beds, ecological tree pools and so on. There are a large number of forest areas and low-lying terrain in the northern part of Jiangpu Campus. The construction of biological retention areas in these areas can not only make rainwater retained, collected and purified to a certain extent, but also make rational and efficient use of rainwater to attract teachers and students. In the construction of biological detention areas, the catchment areas with serious pollution need to be treated and discharged, while the roof runoff and rainwater can be directly connected by rainwater pipelines.

In the analysis of the present situation, we know that the waterlogging of the main road in Jiangpu Campus is serious, so we can construct biological detention land in the green belt on both sides of the road. At the same time, when the slope of the road is more than 1%, we need to set up a weir/platform to slow down the flow rate and increase the water permeability. Leakage prevention treatment is needed near the roadbed to prevent the impact on the stability of the roadbed.

Abandoning straight and bending: In the analysis of the current situation, more water bodies in Jiangpu Campus are linear. When the rainstorm comes, the rainwater quickly passes through the river channel and then accumulates at the lowest point, forming a campus waterlogging. Therefore, in the construction of "sponge campus" in Jiangpu Campus, we should abandon the straight river to bend where the waterlogging is serious, and reduce the flow velocity of the water body through the curved river, so as to achieve the effect of "stagnation".

3. Storage

Reservoir: The function of regulating and storing pond is to collect, regulate, save and purify rainwater. It is an intermittent water landscape. It can temporarily collect rainwater and then discharge it slowly according to need. Reservoir pond can lighten the burden of drainage pipe to a certain extent, at the same time, it can increase the water landscape of campus, and create a good hydrophilic environment for teachers and students. When water storage ponds are laid out in Jiangpu Campus, the original catchment depression in the site can be used to increase the value of recreational use combined with recreational and recreational venues, as shown in Figure 21.

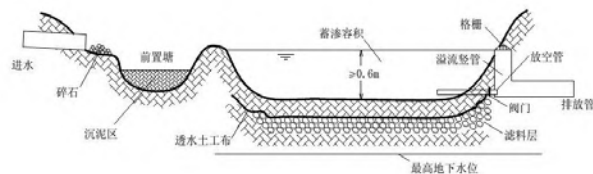


Figure 21 Section Diagram of Reservoir Reservoir

Constructed wetlands: Constructed wetland is a surface water body constructed artificially and operated artificially. It is generally composed of intake, pre-pond, swamp area, outflow pool, overflow pipe, revetment slope, etc. When the constructed wetland is laid out, the mixed plant planting method can not only increase the diversity of campus organisms, but also help to improve the permeability and purification rate, so as to maintain the stability of campus water circulation system, as shown in Figure 22.

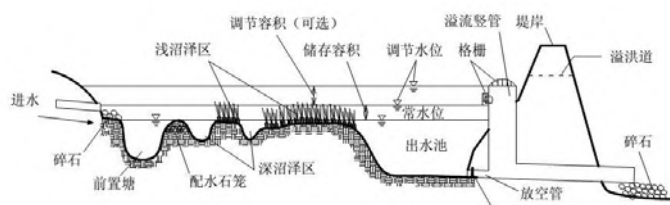


Figure 22 Profile of constructed wetlands

4. Net and Useful

Rainwater treatment and reuse system: After the seepage, stagnation and storage of rainwater, the collected rainwater should be treated and reused. Combined with the facilities of rainwater garden and reservoir mentioned above, the rainwater purified can be used as irrigation water for vegetation, miscellaneous water for teachers and students, emergency water and fire fighting water, so that the rainwater collected can flow. When conditions permit, small-scale rain water purification facilities can be built to produce drinking water up to standard for use by teachers and students in schools.

5. Row

Grass planting ditch: Grass planting ditch refers to the landscape facilities planted in ditches to control flow, transport rainwater and improve water quality. On both sides of the road and around the parking lot square in Jiangpu Campus, the corresponding grass planting ditches can be arranged in parallel with the green space, so as to ensure that the campus ecological environment is not affected, and the rainwater can be drained smoothly. At the same time, pebbles can be set on both sides of the slope of the paper straw ditch, which can slow down the runoff and also reduce the erosion of the slope by rainwater.

Arid stream: Dry stream is a kind of facility to simulate natural streams. It has high flexibility. The streambed has a winding linear distribution. It has no permanent water body. It is usually in the rainy season and dry season. The construction of Arid stream can prevent the soil from being directly washed away by rainwater and reduce soil erosion. At the same time, the combination of layout with campus green space can increase the richness and hierarchy of campus landscape. In the construction of sponge campus in Jiangpu Campus, it can be arranged at the core landscape nodes, such as the side of Junzi Lake, the central landscape belt and Yiqing Tongji Lake.

Measures for the Construction and Management of Sponge Campus in Jiangpu Campus of Nanjing University of Technology

The previous chapter elaborated how to build "sponge campus" under the concept of low-impact development at the technical level. Through the investigation and research of the current situation, it is found that not enough technical means can be adopted to build "sponge campus" well, and the construction of "sponge" city can not be separated from efficient and effective management. Therefore, this paper also puts forward several management measures, as follows:

1. Overall coordination and overall development

Campus as a relatively independent system in the city, is also an important part of the city, so its internal changes often affect the changes of the surrounding and even the whole city. Therefore, in the construction of "sponge campus", we need to consider the construction of the whole city's sponge city as a whole, in order to ensure the coordinated development between the campus and the city.

2. Distribution and recycling of rain and sewage

When rainwater is discharged, the rainwater and sewage should be diverted and treated directly into the sewage pipe, while rainwater can be collected and reused after purification. Therefore, in the construction of sponge campus in Jiangpu Campus, we should strictly implement the rainwater and sewage diversion system.

3. Optimizing water body to ensure water quality

The current situation of water pollution in Jiangpu Campus is serious. Serious pollution has led to the slowdown of water flow rate and the reduction or even disappearance of self-purification ability. Therefore, regular cleaning of water body is necessary to ensure the water quality. At the same time, suitable microorganisms and aquatic animals and plants can be selected and cultivated in the water body to construct a perfect natural ecosystem and water microcirculation system.

4. Zoning and Strict Control

In the "Technical Guidelines for Sponge City Construction - Construction of Rainwater System for Low Impact Development", five regions are divided into five areas to be controlled by indices. Because the terrain of Jiangpu Campus is quite different, and there are differences in the form of building density in different functional areas, the construction of sponge campuses in Jiangpu Campus should also be divided into corresponding zones. The zoning should be carried out from the beginning of the current situation investigation. In the optimizing construction stage, the appropriate facilities should be selected, and which parts of the zones can be controlled. What is submerged in the enclosure must not be submerged. At the same time, it is clear which areas have the most serious waterlogging, so that runoff can be strictly controlled by means of on-line monitoring.

5. Strengthen management and timely maintenance

Investigation shows that more drainage ditches in the campus are covered by leaves and garbage, which affects the infiltration of rainwater. With the development of campus construction, the campus environment is changing constantly. The problem of long-term use of drainage ditches and the old rainwater facilities can not adapt to the changes of the environment are becoming increasingly prominent. Therefore, the construction of sponge campus must strengthen management, timely cleaning of rubbish in rainwater circulation system, and regular maintenance, renewal and repair of drainage facilities.

6. Resource Bearing and Supply-Demand Balance

The purpose of building "Sponge Campus" is to promote the coordinated and balanced development of the campus and water resources, and to realize the optimization of functions while protecting the campus environment. The campus drainage system is planned and constructed according to the number and scale of school development in a certain period of time. In recent years, with the vigorous development of education in China, the expansion of campus enrollment has aggravated the burden of drainage facilities on campus, resulting in waterlogging and other problems. For example, the Central Landscape Department of Jiangpu Campus has developed a large number of departments of the New College of green space construction, resulting in a serious reduction in green space area. Therefore, it is necessary and sufficient to expand the staff and construct the campus under the conditions of resource supply.

Summary

The construction of "Sponge Campus" is based on the existing water system and within the affordable environment, taking scientific measures to carry out in a suitable intensity and manner. The current situation of Jiangpu Campus not only has the problem of waterlogging, but also ignores the "resource" of rainwater. In this paper, the drainage status of Jiangpu Campus of Nanjing University of Technology has been fully investigated and analyzed, and combined with the domestic and foreign cases of "sponge campus" construction, the construction method of "sponge campus" in Jiangpu Campus under low-impact development has been put forward. However, the construction methods mentioned in this paper are relatively general, and only stay at the macro level of what areas can be built. Therefore, it needs further research and textual research on how to improve and improve each existing facility in the campus.

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CONVENING REGIONAL CLIMATE COLLABORATIVES: A CROSS-COMPARISON OF US CASES

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Abstract: Collaboration has been increasingly used to address complex regional problems that cross political boundaries and jurisdictions. The roles, approaches and implementation issues associated with collaboration strategies and networks have been widely discussed in the research literature, but there has been less analysis of the approaches and deliberations associated with convening collaborative efforts. This paper explores the issues, dialogue and framing of collaborative efforts through a cross case comparison of climate change mitigation and adaption actions plans across the United States. In this first phase, we present the findings from our content analysis of documents, agreements and web sites. When analyzed by strategy (mitigation versus greenhouse gas reduction) and approach (alignment versus joint action), we found two distinct groupings: (1) efforts largely focused on mitigating effects through alignment; and (2) efforts drawing on joint action and alignment to consider mitigation and greenhouse gas reduction. Our next phase of the project will use interviews to analyze the political, institutional, and other factors affecting this framing.

Keywords: climate change collaboration; regional governance; consensus building

Introduction

Across the United States, groups of administrators and elected officials are launching collaborative efforts to address climate change. The collaborative efforts involve a wide range of government, nongovernment and private stakeholders responding to calls for convening efforts to create change. These efforts have emerged from the growing concerns about greenhouse gas emissions, impacts from climate change, and the increasing number of severe storm events. They have also emerged from a lack of international and national leadership in addressing climate issues.

The roles, approaches and implementation issues associated with collaboration strategies and networks have been widely discussed in the research literature (Forester, 2013; Healey, 1997; Innes & Booher, 2009; Koppenjan, 2008; Margerum, 2011). There has been less analysis of the approaches and deliberations associated with convening collaboration. Some researchers have identified common processes and issues associated with convening (Carlson, 1999; Margerum, 2011), but have not explored in detail the process of gathering diverse stakeholders prior to the formal launch of a collaboration effort. This paper seeks to understand more about the people and processes that led to the convening of climate change collaboratives. In particular, we are interested not just in its emergence in the places where we would expect it to appear, but also in places where the politics and attitudes towards climate policy are less conducive to action.

In the following sections, we summarize the existing literature on convening collaboratives, discuss the methods we are using to investigate this topic, and summarize the findings to date on this project

Research on Convening

Although there has been considerable research on collaboration, there has been relatively little research on the factors that lead to convening collaboratives. Our review of the literature highlights several themes.

Problem Context

Margerum (2011) notes that the Institutional Rational Choice literature identifies several factors hypothesized to affect collaborative formation. First, there are the attributes of the issue such as whether the problems are severe and whether knowledge about the problem is very good. Second, there are attributes of the institution, such as the initial transaction costs, whether existing institutions are effectively addressing the problem, and whether higher level institutions grant local autonomy. Finally, there are attributes of the community, such as the extent of the social capital, diversity of beliefs and potential costs and benefits related to the issue (Ostrom 2005; Leach and Sabatier 2005).

While these factors are clearly important, collaborative governance is only one tool that leaders could use to address these issues. Scott and Thomas (2017) highlight several reasons why leaders in a given situation may pursue collaborative governance, as compared to different strategies or no action. First, collaboration may improve the quality of decision making through additional research, information and expertise. Second, collaboration may create a broad consensus that allows more actors to become involved—thereby increasing validity of efforts. Third, collaboration allows decision makers to span boundaries with other mechanisms are absent. Fourth, it allows participants to bridge hierarchies between for example, local and state government. Fifth, collaboration allows economies of scale when developing policies and strategies with other jurisdictions. Finally, it allows the diversification of issues, such as combining land use, hazards, and community health through cross-cutting themes.

Convening Roles

A second body of literature summarized by Margerum (2011) relates the convening of collaboratives to specific roles of leaders or conveners. Carlson (1999) identifies the roles of sponsors and conveners. Sponsors are individuals or organizations that support the initiation of a group. Conveners help with the process of identifying stakeholders, bringing stakeholders to the table, and often finding resources to support the process (Carlson 1999). Researchers examining the role of inter-agency and boundary spanning efforts cite the communication networks and external relationships of these individuals as being important to build bridges across organizations (Chrislip and Larson 1994; Morse 2010; Crosby and Bryson 2005). In some cases, sponsoring organizations may hire or solicit a third party or neutral party to help convene a collaborative to avoid perceptions of bias (Gray 1989). The Institute for Sustainable Environment (Adams, Crowley, Forinash, & McKay, 2016) reviewed its role in convening resilient regions and identified several key issues. First, they found that a neutral facilitator was an important asset to allowing each party to represent their views. Second, local goals and context were important for determining membership. Third, as goals evolve it is also important to reassess and iterate to determine the most effective strategy and participants.

Convener characteristics

Carlson (1999) outlines some of the common steps in the convening process. First, there is the step of initial assessment where a convener needs to identify the issues, determine what the collaborative wants to accomplish, identify potential stakeholders, identify the convening steps and potential obstacles, and identify potential resource needs. Second, there is the step of identifying and engaging participants. Third, the necessary resources to convene the effort needs to be secured, including resources for training, hiring

support and reaching out to constituencies and the public. Finally, there is the planning and organization of the consensus building process.

Margerum (2011) also summarizes the characteristics of the convener from the literature. One of the most common characteristics is for conveners to appear as unbiased or trusted. Gray (1989) notes that if conveners are suspected of bias “other stakeholders may refuse to participate.” Another characteristic that can be important for convening some groups is the power of the convener, such as the power of holding formal office or the power of the courts to require parties come together. Researchers also cite more nuanced skills, such as a sense of timing, and the ability to identify stakeholders (Carlson 1999; Gray 1989). Gray suggests that they also need to have appreciative skills, which means that “they need to appreciate the potential value of collaborating”(Gray 1989).

Methods

To research this topic we identified over 20 climate change collaboratives across the United States from prior studies and web sites. We selected cases that (1) were initiated and the local or regional scale; (2) involved a cross-section of government and non-government stakeholders; (3) were using terms such as climate collaboratives; and (4) are mature enough to analyze plans, strategies and agreements.

After selecting the cases, we conducted an analysis of the web sites, plans and reports. This analysis examined the:

- Descriptions of the purpose of the collaborative
- Information about the rationale or motivation for creating a climate collaborative
- Major objectives or types of actions

In the second part of this project, the research team will be interviewing individuals from the cases involved in convening the collaborative. In particular, we are focusing on the nature of interaction and “behind the scenes discussions” prior to the public launch of the effort.

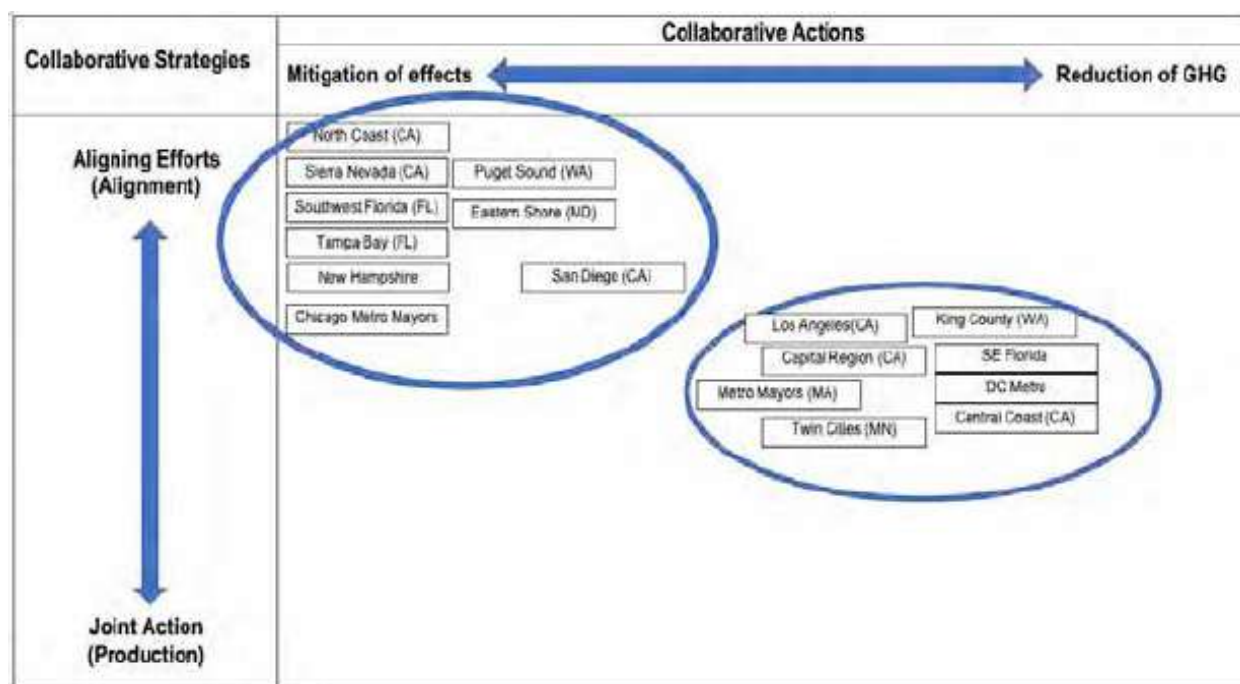
Table 1: Case Studies

State	Collaborative
Washington	Puget Sound Climate Preparedness Collaborative
Washington	King County-Cities Climate Collaboration
California	North Coast Resource Partnership
California	Capital Region Climate Readiness Collaborative
California	Central Coast Climate Collaborative
California	San Diego Regional Climate Collaborative
California	Sierra Nevada Climate Adaptation and Mitigation Partnership
Minnesota	Twin Cities Metropolitan Council: Climate Change and Emissions Team
Illinois	Metropolitan Mayors Caucus: Greenest Region Compact
New Hampshire	New Hampshire Coastal Adaptation Workgroup
Massachusetts	Metro Mayors Coalition Climate Preparedness Taskforce
Maryland	Eastern Shore Climate Adaptation Partnership
District of Columbia	Metro Washington Council of Governments: Climate Energy & Environment Policy Committee
Florida	NE Florida Regional Council: Public/Private Reg. Resiliency Committee
Florida	Southeast Florida Regional Climate Change Compact
California	Los Angeles Regional Collaborative
Florida	Tampa Bay Regional Resiliency Coalition
Florida	Southwest Florida [Southwest Florida Community Foundation?]
Florida	Metro Orlando [East Central Florida Regional Planning Council]
Missouri	Metro Kansas City

Findings

Our research will examine both the content of documents and interviews with those involved in the processes to understand the “behind the scenes” discussions and debates. This paper summarizes the findings related to the content analysis. The interviews with participants is currently in progress (see Figure 1)

Figure 1: Preliminary Analysis of Climate Collaborative Cases



Content Analysis Findings: Collaborative Actions

Our review of the content contained in plans, documents and web sites revealed a range of strategies and approaches to address climate impacts. There were two factors that commonly distinguished the strategies from each other: (1) the type of actions being addressed; and (2) the focus of these strategies and efforts.

The type of action spectrum ranged from those focused on mitigating effects to those focused on reducing greenhouse gas emissions. Typical mitigation actions are those that document and quantify risks from flooding and sea level rise on local jurisdictions. For example the Maryland Eastern Shore Climate Adaptation Partnership cited a primary goal as to “be prepared for immediate long-term coastal hazards and able to survive, adapt, and prosper in the face of uncertainty and vulnerability.” Similarly, the North Coast Resource Partnership (California) emphasizes “solutions to failing infrastructure, degraded ecosystems, emissions reduction, and community health and safety”; its document contain few references to climate change or greenhouse gas reductions. A typical greenhouse gas reduction strategy appears in the Massachusetts Metro Mayors Coalition for Climate Preparedness, which advocates for each jurisdiction to pledge to meet measurable and complementary GHG reduction targets.

Most documents we reviewed contained some elements related to the mitigation of effects. In particular, these collaboratives recognized the need to improve data regarding the accuracy of severe events and long term trends, and share strategies for adapting to this change. The motivations for this relate to the goal of improving the quality of outputs and span geographic boundaries (Scott and Thomas 2017). These are

strategic responses with relatively less political risk because they are contributing to efforts that will reduce future risk. From the interviews, we expect that this kind of outcome will resonate across a broader spectrum and therefore be an easier objective to promote in a collaborative process.

Less common among the plans were strategies focused on reducing greenhouse gasses. Regions such as D.C., Boston (Massachusetts), and the Twin Cities (Minnesota) all proposed specific steps to reduce greenhouse gases, which relate more to increasing the legitimacy of a regional approach and diversifying approaches for a more comprehensive approach (Scott and Thomas 2017). These kinds of actions require more significant policy strategies, such as regulation, surcharges, taxes or other measures to achieve outcomes. We expect the discussions relating to these kind of objectives to highlight more political differences and policy debates.

Content Analysis Findings: Collaborative Strategies

A second dimension used to analyze the plans was to examine the extent to which collaborative strategies focused on aligning efforts versus joint action. Aligning efforts refers to tasks of data sharing, mapping, best practices or other information to support individual decision making. Joint action refers to organizations agreeing to work together on policies, programs or decision making. This is a far more challenging level of activity, because it requires organizations to give up and share decision making authority.

An example of aligning efforts comes from Sierra Nevada Climate Adaptation and Mitigation Partnership (California), which focuses on capacity building, education, and convening. Similarly, the Metropolitan Mayor's Caucus (Illinois) focuses on sharing data, strategies and expertise. In contrast, the Central Coast Climate Collaborative (California) emphasizes the engagement of community leaders to "identifying opportunities for regional action" and providing a voice ". The Southeast Florida Regional Climate Change Compact promotes the creation of a regional climate action plan, hosting leadership summits to identify emerging issues, and working together to advocate for state and federal funding.

Implications

The next stage of this research project is to conduct interviews with the principle parties involved in the convening of these collaboration efforts. These interviews will focus on:

- Issues involved in framing collaboration efforts
- Types of tensions involved in convening collaborative efforts
- Common principles that allowed different parties to come together
- Strategies used to bring different parties together
- Actions and efforts that have helped maintain stakeholder involvement

Preliminary Issues to Explore

Based on the content analysis and previous research, we present several preliminary ideas about the relationship between problem context, policy and institutional context, and the collaborative approach. Because we are focusing only on regions where collaborative efforts have emerged, we interested in two main issues: (1) what motivated participants to address climate issues; and (2) what motivated participants to take a collaborative approach.

Motivation to Address Climate Issues

Our preliminary analysis of the cases and other research highlight several factors that appear to motivate a range of leaders and organizations to address climate issues

- **Recent major events:** Several regions have experienced major storms and events that have raised awareness of changing climate conditions. This has created public and political support for taking action—even in places where there may not be strong political consensus about human induced climate change.
- **Science and data needs:** In many regions, changing climate, increasing storms, and concerns about issues such as sea level rise have created questions about outdated information and policies. Local jurisdictions are motivated to work collaboratively to generate more accurate data and analysis; they also recognize the benefits of more consistency in this technical information.
- **State policy:** In states such as California, there is a proliferation of work around climate collaboratives, many of which are motivated by state policy requiring actions to reduce greenhouse gases.
- **Funding:** Many regions recognize that their efforts will require significant resources to address issues such as infrastructure vulnerability or reduction in vehicle miles. Therefore, leaders see the value of organizing local jurisdictions to acquire more funding from state and federal sources.

Motivation to Pursue a Collaborative Approach

Many individual organizations in the US have undertaken climate or resilience plans, but it has been less common for regions to take a collaborative approach. Based on our preliminary analysis and research, we believe there are several factors likely to explain the emergence of a regional collaborative.

- **Convening resources:** foundations and other funders have played a key role in providing the resources, facilitation expertise and funding to convene collaborative efforts. Particularly important has been the role of third party facilitating organizations that provide a neutral convener and facilitator, and add capacity and experience to organizing these efforts.
- **Peer motivation:** Elected officials and administrators interact on a national stage with other jurisdictions and regions. There is a sharing of ideas and competition for innovation that may play an important role in replicating regional collaboration efforts.
- **Interorganizational problem solving:** Many of the issues involved in addressing climate adaptation and greenhouse gas reduction require solutions that cross jurisdictional boundaries. This motivates jurisdictions to reach out to build a regional consensus among more diverse partners.
- **Lack of Political Consensus:** In many regions across the United States, there does not appear to be public or political consensus on climate-related issues. Even where this consensus does not exist, leaders recognize the value of convening a cross section of political perspectives to address impacts or make regions more resilient to events and changing weather patterns.

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Appendix

Table 1: Case Study Document Analysis

Case	Rationale	Objectives
Puget Sound Climate Preparedness Collaborative	<ul style="list-style-type: none"> Climate change risks Prepare for impacts Prepare and build resilience through adaptation strategies 	<ul style="list-style-type: none"> Build a shared understanding...and facilitate access to climate preparedness tools, research, recommendations, and best practices. Empower regional practitioners through peer-to-peer climate preparedness programming Engage and collaborate with local communities [to understand effects on residents and impacts related to disparity] Communicate and improve the accessibility of information. Identify opportunities for joint research Ensure efforts address equity and existing inequities.
King County-Cities Climate Collaboration	<ul style="list-style-type: none"> Action needed Responses can be disjointed Locals must overcome financial, technical, capacity and institutional obstacles 	<ul style="list-style-type: none"> Outreach: Develop, refine, and utilize messaging and tools for climate change. Coordination: Collaborate on adopting consistent standards, benchmarks, strategies. Solutions: Share local success stories, challenges, data and products. Funding and resources: Collaborate to secure grant funding and other shared resource opportunities to support climate related projects and programs.
North Coast Resource Partnership	<ul style="list-style-type: none"> Focused on achieving outcomes on the ground for North Coast communities and watersheds. Embraces a set of integrated goals related to water quality and supply, ecosystem function, economic vitality, collaboration, climate adaptation and energy independence, and the health and safety. 	<ul style="list-style-type: none"> Watershed restoration Wastewater and water infrastructure Emergency water and water resources resiliency
Capital Region Climate Readiness Collaborative	<ul style="list-style-type: none"> ARCCA was formed in early 2012 out of the urgent need to prepare California for the emerging impacts of climate change, including extreme storm events, heat waves, droughts, and sea level rise. Through ARCCA, member regional collaboratives have come together to amplify and solidify their individual efforts, as well as to give a stronger voice to regionalism at the state and federal levels. 	<ul style="list-style-type: none"> develop a common understanding of regional vulnerabilities and strategies. Identify regional priorities, efforts, projects, strategies and research needs. Forum for local and regional leaders. Coordination support. Identify and obtain resources. Unified voice for the Capital Region. Facilitate information and best practice sharing.
Central Coast Climate Collaborative	<ul style="list-style-type: none"> address climate change mitigation and adaptation. involves representatives from local and regional government, business and agriculture, academia, and diverse community groups to share information and best practices, leverage efforts and resources and identify critical issues and needs. 	<ul style="list-style-type: none"> Identify opportunities for regional action and serve as a clearinghouse. Coordinate grants development and funding. Provide a voice to communicate a consistent message. Inform and empower organizations, communities, leaders and public officials . Educate the next generation of climate professionals and identify research needs.

Case	Rationale	Objectives
San Diego Regional Climate Collaborative	•	<ul style="list-style-type: none"> • Areas of focus • Energy efficiency • Coastal resilience • Climate smart water • Climate action planning
Sierra Nevada Climate Adaptation and Mitigation Partnership	<ul style="list-style-type: none"> • bringing together key voices within the region to vet policy solutions • ... engaging urban downstream communities • ... have leaders from major cities invest in the upper watershed. • mechanism for ensuring that the connection between urban population centers and the rural resources they depend on is recognized and valued. 	<ul style="list-style-type: none"> • Educate and engage • Convene Sierra stakeholders • Develop and strengthen connections. • Catalyze on-the-ground climate demonstration projects in the region. • Build stakeholder capacity by providing climate action resources, education, and technical support.
Twin Cities Metropolitan Council: Climate Change and Emissions Team	<ul style="list-style-type: none"> • Climate vulnerability • Climate adaptation • Inform regional strategies about GHG reduction 	<ul style="list-style-type: none"> • Reduce energy consumption for regional wastewater • Increase efficiency of metro transit • Communities choosing to reduce their contributions can: develop more compact land use patterns, reduce auto dependency, improved pedestrian experience, improve urban forestry
Metropolitan Mayors Caucus: Greenest Region Compact	<ul style="list-style-type: none"> • “Improve the environment” • Help each other do better environmental planning 	<ul style="list-style-type: none"> • Consensus environmental strategic plan for the region • Sharing strategies and approaches • Sharing data
New Hampshire Coastal Adaptation Workgroup	<ul style="list-style-type: none"> • Reduce the risk and vulnerability from extreme events and climate change 	<ul style="list-style-type: none"> • Educate • Improve local planning • Support legislation implementation • Assist with strategies to protect shorelines • Improve economic resilience in light of storms and events
Metro Mayors Coalition Climate Preparedness Taskforce	<ul style="list-style-type: none"> • Prepare the region for climate change and to reduce greenhouse gas emissions. 	<ul style="list-style-type: none"> • Enhance Local Alignment and Capacity Building • Mitigate Heat Impacts across the Region • Mitigate Flood Impacts across the Region • Deepen Regional, State, and Federal Coordination on Public and Private Infrastructure Activities
Eastern Shore Climate Adaptation Partnership	<ul style="list-style-type: none"> • As one of the country's most vulnerable landscapes to flooding, erosion, and sea level rise, the Eastern Shore can become a national model for coastal resilience in rural communities. A resilient Eastern Shore will be prepared for immediate and long-term coastal hazards and able to survive, adapt, and prosper in the face of uncertainty and vulnerability. 	<ul style="list-style-type: none"> • 1) Identify and support local champions of climate adaptation; • 2) Engage collaborative partnerships; • 3) Integrate climate adaptation strategies into planning processes and policies ; • 4) Encourage the state to expand support for local adaptation; and • 5) Collectively, move the ESCAP toward a sustainable funding and governance model
Metropolitan Washington Council of Governments: Climate Energy & Environment Policy Committee	<ul style="list-style-type: none"> • supports the Region Forward vision and Climate Change Report goals by providing leadership on climate change, energy, green building, alternative fuels, solid waste and recycling issues, and by supporting area governments as they work together to meet regional goals 	<ul style="list-style-type: none"> • The Action Plan offers a variety of voluntary and flexible options for local jurisdictions to implement, including options that directly address emissions from government operations and options that support community action

Case	Rationale	Objectives
Southeast Florida Regional Climate Change Compact	<ul style="list-style-type: none"> • reduce greenhouse gas emissions and build climate resilience • allow local governments to set the agenda for adaptation, while providing state and federal agencies with access to technical assistance and support 	<ul style="list-style-type: none"> • RCAP is meant to serve as a tool for municipal and county local governments, • includes a broad set of best practices to guide implementation of emission reduction and resilience-building actions that each jurisdiction can implement. • a framework for concerted regional action rather than a set of directives for specific projects or programs at the local level. • Compact objectives include: (1) advocate for funding; (2) create a regional climate action plan; and (3) support a leadership summit
Los Angeles Regional Collaborative	<ul style="list-style-type: none"> • Measures to reduce emissions • Develop a more climate resilient region 	<ul style="list-style-type: none"> • Recognizing the need for cross-jurisdictional collaboration • Serve as a convening body to ensure consistency of performance, • Facilitates the exchange of information.
Tampa Bay Regional Resiliency Coalition [Tampa Bay Regional Planning Council]	<ul style="list-style-type: none"> • Resiliency • Natural hazards • Sea level rise 	<ul style="list-style-type: none"> • Members shall develop a Regional Resiliency Action Plan which shall include strategies for coordinated regional preparation for adaption •
Southwest Florida [Southwest Florida Community Foundation?]	<ul style="list-style-type: none"> • work to build a coalition of residents across key community sectors, including health, education, faith, business and the environment. • “The partnership is an outgrowth of the climate change survey results released in February,” said Eileen Connolly-Keesler, president and CEO of the Community Foundation of Collier County. “The results were very clear. Southwest Florida residents believe now is the time to take action on this issue. Collective action means we are more powerful when we work together – within and across sectors.” • The recent survey also found that attitudes are changing, and the vast majority of Southwest Florida residents are concerned about the changing climate and believe action is necessary to protect the region’s future. 	<ul style="list-style-type: none"> • Engage stakeholders through educational- and awareness-building efforts • Empower community members and leaders to initiate change. • Understanding of the importance of withstanding the impacts of a changing climate, such as sea level rise, increased extreme weather events and flooding. • Build climate literacy ...and adapt to be more resilient . • Protect natural assets: help the community connect the changing climate to Southwest Florida’s treasured environment, including mangroves, wetlands and dunes that protect the shoreline.

9_Climate proof cities and resilient societies

Sensing the city: climate changes and advanced technologies

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Abstract For several years ecological and environmental issues have become a priority in all global political agendas. The transformations due to climate change oblige us to rethink our development model, stimulating us to look for new solutions able to decrease its negative effects. In these fields, urban planning plays an important role equipping itself with innovative tools, technologies and methods, which can contribute to increasing its effectiveness. The paper aims to report the studies that the interdisciplinary research group has conducted in this direction, with particular reference to the new technologies applied to mitigate climate change. In the first part of the paper we will outline a picture of the current regulatory framework, focusing on the Italian situation. In the second part, we will describe the methods and tools used today to acquire data, in order to outline a state of the art that highlights their strengths and weaknesses. Finally, we will describe the main concept of "Precision Environmental Planning", a methodology borrowed from agricultural sciences to analyse the ecological conditions of small portions of the city.

Keywords: climate change, smart city, innovation technologies, sensor network

Climate changes resulting from human activities.

Until a few decades ago climate change was considered the alarmist hypothesis of a small group of scientists, but now the sensitivity of public opinion on these issues has profoundly changed. Well over 90% of scientific publications agree in affirming the close correlation of these phenomena with the increase of CO₂ in the atmosphere, mainly due to the use of fossil fuels. Although the Earth has seen important climatic changes in its long history - just think of the several ice ages - however these changes have occurred on very large timescales, hundreds of thousands of years and they were due to external causes such as the orbital variations of the planet, or extensive volcanic eruptions on a large scale. Today we can observe very rapid climate changes measured in decades. Scientists no longer speak of reducing phenomena, as they did a few decades ago, but of stabilizing current levels. The effects of climate change are visible to everyone: extreme atmospheric phenomena, modified biodiversity, melting glaciers, rising sea levels, desertification of agricultural soils, etc. And health risks are therefore increasing, both because of the pollutants - in the air, in the water and in the soil - and because of the warmer temperatures that favour the hatching of the main vectors of infectious

diseases, such as the *Anopheles mosquito*¹. This situation was generated by many factors, but it is certain that most of them are attributable to the actions of man and above all to the way in which in the last two centuries he has organized his economic model and his lifestyle. The need for a change is therefore evident, a change on the awareness of phenomena, on the knowledge of the causes that determine them and on the identification of actions that can be put in place. From this point of view the city is a primary place to act on, due to the fact that it is the place where the world population is concentrated most and where the main environmental pollution processes take place.

The world climate summits.

The environmental issue was already introduced into the global political debate in the 1970s, but it is in the 1980s that the contours of the problems began to be more defined with the 1987 “Brundtland Report” and the “Intergovernmental Panel on Climate Change” of 1988. Although climate conferences have since taken place regularly, the results in terms of global agreements and commitments made by the signatory nations cannot be considered satisfactory. In the panorama of world climate summits we can mention: the 1992 “World Conference on the Environment and Development” of Rio de Janeiro, where it was outlined a global picture of the planet's problems, both from an environmental and social point of view; the “Kyoto Protocol” of 1997, which became enforceable only in 2004, when they ratified that 55 nations producing 55% of greenhouse gas emissions; the “Paris Climate Conference” (COP21) of 2015, which provides indications regarding the energy transition from fossil fuels to renewable sources through a global action plan ratified by 195 countries. In these international summits, the subscriber states sign agreements that should then be translated into legislative acts. However the list of signatory states often excludes those most responsible for CO2 emissions - such as developing nations or USA. Moreover in many treaties the signing of the commitment is a voluntary act, which is not followed by any coercive action.

The Italian framework.

So what are the concrete measures that are being implemented in this direction? And what is the Italian situation? First of all, it should be emphasized that at the moment there are no legislative instruments that oblige institutions to apply the actions required by documents produced at European level. Nevertheless some documents on climate change are already available. The Ministry for the Environment Sea and Land (MATTM), together with the Euro-Mediterranean Centre on Climate Change (CMCC), produced in 2015 a “National Strategy for adaptation to climate change” (SNAC) whose main objective was « to elaborate a national vision on how to deal with the impacts of climate change, including climatic variations and extreme weather and climate events; to identify a set of actions and guidelines to deal with, so that through the implementation of these actions (or part of them) it will be possible to minimize the risks deriving from climate change, protect the health and well-being and the assets of the population and preserve the natural heritage, maintain or improve the adaptability of the natural, social and economic systems as well as taking advantage of any opportunities that may arise with the new climatic conditions ” (MATTM, 2015: 10). This is a clear

¹ These topics were studied in depth during a series of interdisciplinary lessons on climate change held at the Architecture Department of Pescara (D'dA) in 2019. More on: <http://www.paolofusero.it/didattica/>

document which could be used immediately as a standard to coordinate the actions at the local level, in order to make them mandatory. Unfortunately nowadays it is just a *vademecum* for the most virtuous regions or municipalities. Then we can consider the "Covenant of Mayors for climate and energy", a more stringent document but still not mandatory: here the signatory mayors undertake to face the challenges linked to climate change (Covenant of Mayors, 2008). Specifically, they commit themselves to act concretely:

1. to reduce CO₂ emissions - and possibly other greenhouse gases - in the city by at least 40% by 2030, specifically through energy efficiency improvements and greater use of renewable resources;
2. to increase city's resilience by adapting them to the effects of climate change;
3. to pool visions, results, experience and know-how with other local and regional authorities of the EU and beyond the Union through direct cooperation and peer exchange.

The objective of these actions is to obtain in 2050 decarbonized, resilient, safe and sustainable territories, striving to maintain the promise made during the Paris COP to keep the global temperature below 2 ° C. To date in Europe there are about 7,000 signatories of the pact, more than 3,000 are from Italy. These municipalities have taken the commitment to deal concretely with climate change, implementing what has been called the "Sustainable Energy and Climate Action Plan": a series of guidelines to help the municipalities to put into practice climate strategies, through a process that alternates operational phases with monitoring phase (Bertoldi *et al.*, 2018). We can therefore consider the "Covenant of Mayors for climate and energy" a first document adequately structured, albeit general, to implement mitigation and adaptation actions. However it does not seem to get the desired results. A few years after the first signature, the general level of Italy's commitment to these issues still seems to be highly inadequate. And the causes could be twofold, linked on the one hand to the fact that adhering to the pact is not mandatory - while to obtain concrete results we would need a complete and widespread mobilization throughout the national territory - on the other hand that there are no rewards or sanctions for the work done, repercussions that would be necessary to spur concrete actions, especially in this first start-up phase.

The availability of environmental indicators.

To draw up environmental planning tools such as "Plans for Adaptation to Climate Change", Strategic Environmental Assessment (VAS), Environmental Impact Assessments (VIA) or simply to monitor the environmental conditions of a specific urban environment, the first problem is to find the right environmental data. The indicators can be referred to the atmosphere (air quality, temperature, dryness index, carbon dioxide emissions, acid gases...), to the soil (permeability, presence of chemical products...), to water (surface water and groundwater quality...), to noise, etc. Unfortunately these indicators are not always available and, even when they are, they almost never have the level of definition expected for a punctual investigation. The missing data must be first integrated with specific detectors necessary to complete the information framework, then compared with the national data and with the sub-regional ones - if they exist. Furthermore, the environmental databases are collected on areas that do not necessarily coincide with the project scale, and they are not easily scalable by interpolation operations. To measure the achievement or non-achievement of specific objectives is therefore not always guaranteed. However, we live in an age in which technology

provides us with sophisticated detection tools, great computing and archiving capabilities, which can help us to remedy this problem.

The sensors network.

Our cities are very complex organisms and it's quite difficult to monitor their climate features. Just think of the different landscape that we can find there: historic centres, peri-urban agricultural landscapes, industrial areas, residential areas, etc. It is difficult to outline an accurate picture of the urban scenario using traditional environmental analyses. Take for example the surveys on air quality: authorities in charge collect the data using fixed machines able to detect the different substances present in the air. The costs of these stations are high, as well as the necessary calibration and maintenance operations. Consequently the number of control units in a medium-sized city rarely reaches ten units. In order to have a complete mapping of the territory it is therefore necessary to use sophisticated calculation models that estimate by interpolation the parameters in the missing areas. So, even considering the high capacity of these models, the result of the operation don't give us a degree of precision satisfactory if we want to operate at the neighbourhood scale. Let's think of the air quality index (IQA), and consider all the series of parameters that can have negative effects on human health: nitrogen dioxide, ozone, sulphur dioxide, PM10 particulates and PM2.5. The data may have substantial differences if we measured it close to a major road or in a peri-urban agricultural area, or in a central urban park. The Euro-Mediterranean Centre on Climate Change (CMCC) has recently created the "CLIME" platform, which offers to users the possibility of conducting climate analyses by their own, using the research centre's databases. Although this platform is at the forefront, the maximum data resolution is 12 km², evidently still insufficient for a precision analysis on a specific neighbourhood. Therefore, the control units currently used allow us to have accurate information but at a low resolution. They also have high costs that do not encourage their spread throughout the territory. It is necessary to looking for alternative methodologies for the detection of environmental data, methodologies that allow us to obtain a level of precision of the surveys at least at the neighbourhood scale.

For some time the use of low-cost sensors is spreading. The price of this kind of sensors is around hundreds of euros, and this make suitable to widespread them above the territory. In this way we can considerably increase the number of surveys, obtaining detailed information that, for example, allows to identify with precision the critical points of the city on which to intervene with punctual environmental recovery actions. A further advantage of these low-cost technologies is precisely the minimum value of the investment, which allows a broad diffusion of these sensors even outside the professional scientific context. Greater diffusion of detection systems means more data available in open source mode, but above all it means greater involvement of citizens on environmental issues. Experiences of this kind are already underway, such as community of citizens who monitor the pollution levels of their neighbourhood through their own low-cost equipment. It must be said, for scientific correctness, that not all scholars agree on a systematic use of low-cost sensors, expressing perplexity on the accuracy of the surveys. Among the most discussed devices there are precisely those for measuring air quality. In an article published on Nature, Lewis and Edwards express their scepticism in this regard and urge us to consider them as valid tools exclusively for educational or informative purposes, avoiding using them to guide decisions that may affect the future of the city (Lewis and Edwards, 2016). A similar position is expressed by the Senseable Lab which in 2017 conducted a specific research on this theme, placing low-cost sensors in Nairobi to measure the quantity of pollutants in the air (De Souza *et al.*, 2017). If on the one hand this approach has allowed to obtain relevant evidence - e.g. to identify some causes of pollution, as well as their location and

peak periods - on the other hand the study showed how the data obtained were influenced by external environmental conditions, and therefore low accurate. The problem of the low reliability of low-cost devices gets worse if we consider that they are used to a large extent by non-experts. Therefore, disseminating low-cost sensors on the territory seems not to be the most effective solution at the moment. Just as the opposite strategy does not seem feasible: to invest in a few very high-performance instruments.

Precision Environmental Planning.

The term *Precision Environmental Planning* refers to the possibility of using ICT technologies to carry out surveys on the health status of restricted urban areas (a neighbourhood, a street, or even a single building), in order to identify the “suffering” areas and the actions to rehabilitate them. The contribution of new digital technologies to monitor the environmental performance of a city can be tested through the experimentation of an easy installation low-cost tool composed of:

1. a system of sensors to detect environmental index
2. a hardware/software platform to process data
3. an adequate system to visualize maps.

Compared to what is already present on the market, the environmental data acquired through such a tool have the characteristic of being customizable by the user who will have to carry out the environmental remediation actions. Moreover data are collected through punctual surveys carried out on site and not through interpolation of existing data obtained from monitoring stations kilometres away from the place of analysis.

An "ordinary" cheap sensor system that is easily available on the market can easily measure:

- temperature, humidity, pressure;
- wind direction and speed;
- solar radiation;
- air pollution;
- electromagnetic fields;
- noise;
- pollen / allergens;
- water permeability;
- urban canopy (covering canopy of trees);
- state of health of the vegetation.

The database acquired in this way could be processed through a dedicated hardware/software platform that compares the data collected by our sensors, those collected from the institutional control units and the open data supplied by users on the various existing platforms. Data could be visualized using parametric representation methods in order to provide dynamic maps. The maps could be of two types: a) "measurement" maps, which show the state of affairs for each measured parameter; b) "parametric" maps, in which the measured parameters are related to threshold values, in order to show the risk level of that area. Once we know all the environmental features of the area, we can design actions that depend on the objectives chosen: from the diversion of traffic flows, if the problem is the reduction of atmospheric pollutants in a given neighbourhood; natural shading or reflective materials,

if you want to counter urban heat islands; usage of sound-absorbing materials or micro barriers, if we want to reduce the sources of noise emissions; etc. The project of a tool for environmental monitoring could be developed within a university spin-off. The innovative idea behind the project consists in making a kit of sensors + hardware / software platform for data processing + maps of parametric representation which, in addition to monitoring the "state of health" of an urban environment, indicate the solutions to improve the area from an environmental point of view, showing, through appropriate communication techniques, how the performance of a neighbourhood can be improved through punctual and targeted actions.

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Note

1st, 2nd, 3rd paragraphs must be attributed to Paolo Fusero; 4th, 5th, 6th to Lorenzo Massimiano.

Translations of non-English texts were made by the authors.

Cooperative bridges: the role of risk perception in construction of resilient communities

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Abstract: This paper discusses the necessity to develop approaches to urban and regional planning and management for climate proof and resilient cities that incorporate the perception of risk associated with climate change. Our paper advocates for seeing community resilience as a process of social learning and highlights how risk perception could play a key role in it, which is crucial for envisioning and learning collectively how to produce more just and resilient socio-ecological urban and regional systems. Public risk perception is usually thought to have overriding importance in community resilience as it plays an important role in shaping community preparedness to risks. Our paper argues that in order to play a relevant role in constructing cities that are resilient to climate change, risk perception should be considered as a socio-cultural construction that embodies citizens' experience of risk and its associated tensions between frames of crises and frames of change. Through a case study we show how the use of the categories that describe the tensions between the frames of crisis and change can be decisive in the constitution of resilient cities and spaces of learning. We call these categories cooperative bridges and discuss their role in building community resilience.

Keywords: community resilience; risk perception; planning and management of risks; floods

Community resilience and risk perception

Risk has become part of our everyday life (Beck, 1986; Douglas, 1992). In a world undergoing a profound metamorphosis (Beck, 2016), dealing with risks associated with climate change involves more than trying to prevent or mitigate them. “Living with risk” requires overcoming the view that risk is a quantifiable and controllable entity, and conceptualizing risk as a complex and fuzzy social construct. For, as underscored by cultural and symbolic approaches to risk, as well as ones that work within Foucauldian or the “risk society” perspectives (Beck, 1992; Giddens 1999), risk and its perception have collective roots, and are not exclusively individual constructs.

The recent years have witnessed the emergence of resilience as a promising conceptual framework for addressing risks associated with processes of urbanization which carry on under climate change. While the notion of resilience has been defined and interpreted in different ways (Costache, 2017), its overarching meaning seems to roughly coincide with a system's ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events. As highlighted by Wilkinson (2012) in planning theory and practice resilience helps to analyse cities and regions as complex adaptive systems focusing on the relationships between communities and the environment and the role that cultural and social relations play in the production of local ecology and habitat.

The degree of success which the concept of resilience enjoys within the field of urban planning and management depends on several factors. Its emergence has highlighted the necessity to overcome linear or otherwise static approaches to disaster risk reduction. Such approaches typically rely on engineering solutions to adaptive planning practices that embrace uncertainty, change and complexity, and propose to cope with risks through iterative processes of monitoring, assessment, and scenario making. The emergence of the concept of resilience has also emphasized the role which communities may play in order to strategically reshape unsustainable socio-ecological relationships (Park et al., 2013), and to promote the planning and management of urban adaptation. Overall, resilience has provided a useful conceptual framework for defining concrete and operative actions which are designed to react to the effects of climate change.

Resilience has also been severely criticized for being a depoliticizing concept which allows for the reproduction of unsustainable processes of urbanization (MacKinnon and Derickson, 2012). For example: while self-reliance might be perceived as enabling communities to become better prepared for facing floods, the focus on self-reliance may also allude to governmental disengagement from local intervention, and to government's devolution of responsibilities to community and voluntary groups (Davoudi, 2012). It has also been alleged that what constitutes the resilience of a community is not at all clear, nor is it what helps a community to function well throughout and in the aftermath of disasters, nor again what allows for incorporating their newly acquired knowledge into new practices and strategies such as may foster the survivors' strengths and resilience.

Some studies have adopted a critical approach to resilience. While trying to grasp its positive challenges to planning and management of risks, they have also tried to descry the factors which may affect the resilience of a community. Some of them have foregrounded strong social bonds, local identity, a lively democratic environment and its preparedness to face risks as preconditions for the existence of a resilient community (O'Brien et al., 2014). Opposing the notion of resilience as a community's property, others have argued that community resilience should be conceptualized as a process which consists in coping with a problematic situation (Prati e Pietrantonio, 2006) through which a community is instituted for the sake of identifying, analysing, reflecting, adapting and transforming its frames and practices so as to live in an uncertain world.

Resilience approaches provide communities with the opportunity "to break down silos and barriers, enabling actors to look across sectors and scales" and to rework social power relationships, as the benefits of resilience may not be distributed equally within and between communities (Twigg, and Calderone 2019: p. 6) Overall, community resilience appears to consist in a community's multi-faceted capacity of adapting to multiple long-term future climate change risks, of reducing the impact of climate variability and extremes through preparedness and planning, and of facing—as well as managing—adverse conditions or emergencies within a given social-ecological system.

While relevant resilience and community resilience cannot be taken as a panacea to risks and disasters reductions, Béné et al. (2012) insist that it is necessary to develop such approaches as are oriented to challenging the status quo so as to transform unsustainable socio-ecological systems of relationships. In this case, community resilience is thought of as a space of social learning that activates unexpected interactions between networks of adaptive/transformative capacities (e.g. robustness, redundancy and responsiveness) and local resources. Coping with climate change and its associated risks requires more than resilient communities: it requires utopian, transformative communities. Thus, even upon

embracing a transformative perspective toward community resilience, the latter appears to be just one piece of a more complex picture. Becoming resilient should be conceived as one among the several important processes that a community should pursue in order to cope with risks and disasters. As opposed to mere adaptation, community resilience is here seen as a space for learning how to live in a changing and uncertain environment.

Resilience as a relational process should be opened to different actors and assets of knowledge and change knowledge/power relations. As a result, we should accept that community resilience is not immune from being entrapped and manipulated by existing and unjust knowledge/power relationships. Following this last stream of thinking, this article inquiry into the role of risk perception in shaping community resilience seen as a space of social learning which mobilizes different assets of knowledge including citizens knowledge and risk perceptions with the aim of acting together.

While it is often thought to be crucial to enhancing preparedness to facing risk and therefore to activating community resilience, the role of risk perception remains quite underexplored in such field of policies and research. In this paper, we pay heed to the insight that community resilience is a process, a space of social learning, and explore the role which risk perception plays in its constitution. We ask: can risk perception allow for the production of knowledges which are not only adaptive but also transformative? Can it activate transformative processes of knowledge production into an immanent and constitutive search for practices of place making, which may enable a profound and radical transformation of unsustainable processes of urbanization?

In order to achieve this goal, our research draws on a cultural theoretical framework developed by Mary Douglas (1992) which portrays risk as the result of a social process which depends on the conventions that "govern" a settlement in a given territorial context. In this paper we suggest that, if seen as a receptacle of everyday collective experience, risk perception can contribute to identifying categories of cooperation between different worlds of cognitions and actions, such as enable the emergence of new ecologies of knowledge that are both adaptive and transformative. As such, risk perception could help community resilience as social learning by favoring forms of co-evolution and risk management which lie beyond the horizon of current unsustainable processes of urbanization and managerial perspectives.

Explorations: a cultural perspective on risk perception

Discourses about resilience and risk perception are inescapably interwoven. Within different approaches to resilience, risk perception is often mentioned as a key factor for developing community preparedness and adaptation. However, the meaning of risk perception is just as often glossed over. As a result, it is still hard to envisage how risk perception and community resilience relate to one another. In order to cast some light on this issue, one may choose to follow either of two ways of considering risk perception (Slovic, 2000): an individualistic/psychological approach, or a socio-cultural/collective one. In this paper, we shall consider risk perception as a socio-cultural collective construction which is tightly connected to places and to the formal and informal institutions which surround them.

Cultural approaches do not aim at denying that risk and dangers exist as rational entities and psychological individual constructions. They rather underscore that risk is also socially constructed, and that as such it can be re-constructed, based on an examination of the beliefs and rationalities of

the various actors which participate in its making (Douglas 1992). The use of a psychological or technical-scientific understanding of risk seems insufficient for grasping its complexity as social construct. Furthermore, using risk as an abstract category amounts to severing the ties between community and territory, risk and territory, hazard and politics within socio-political reality (Douglas, 1992). By forgetting that risk is the result of a particular social and economic order, the technical-scientific vision of risk downplays its political and cultural roots. This helps to maintain the existing dominant boundaries between different cognitive structures, to preserve the status quo underlying unsustainable processes of urbanization, and to avoid removing the causes producing risks. Thus construed, risk depoliticizes decision-making processes. By contrast, if approached as a collective experience of risk, in spite of its emotional and irrational features, risk perception incorporates common knowledge, social memory, processes of knowledge production, local populations' fears, as well as their understanding of existing knowledge/power relationships. The perception of risk, observed as a socio-cultural construct which lies at the crossroads between structures of power, private life, and social interaction, embodies a network of meanings that exists and is shaped in the public and social dimension of life through a process of constitution and transformation (Geertz, 1998).

The socio-cultural perspective opens up some possibilities of inquiry into the role that risk perception plays in community resilience, understood as a space of social learning. From a socio-cultural perspective, risk perception embodies the social memory and challenges taken-for-granted categories and dominant points of view. Thus, risk perception may allow to recognize the tension between the frames of crisis and frames of change, through which members of a community develop strategies of risk-management by drawing on their everyday experience of risk.

Inquiry into community resilience as a space of learning: a methodological approach

Taking risk as a socio-cultural construct, we aim to examine which role, if any, risk perception plays in building community resilience, understood as a space of learning in which people produce strategies for coping with risks associated with climate change. To do so, our research focuses on risk perception as an embodiment of frames of crisis and frames of change. In order to grasp these, our research builds upon interviews of citizens and local stakeholders, and upon the participatory observation of formal plans and programs, as well as of self-organized groups of action in which citizens try to manage flood risks. Our objective is to discover shared frames of crisis and change, and to shed light on their underpinning categories by describing tensions and dialectics between crisis and change. Our research is centred upon storytelling: we pay attention to narratives of crisis and of change that people develop in order to express their own experience of risk in relational terms.

Storytelling builds narrative mechanisms by following which individuals are led to self-identify with certain archetypes and to conform to determinate standards of social practice. Each story unfolds in a place, at a given time and within a culture. It also fulfils a certain political purpose: it stages a definite reality for the sake of countering other statements, whether these be implicit or explicit. Each story is thus intended to fulfil definite purposes, to communicate a set of values, spur feelings, and suggest certain behaviours. What remains to be determined is the degree is a story's effectiveness, and people's ability to recount it and to make it memorable. In what follows, we report the results which we obtained in two different contexts where local populations experienced the impacts of extreme

rainfalls. We seek to illustrate local populations' awareness of risks and its correlations with risks and resilience.

We complement the ethnographic research with the analysis of scientific and political reports and documents as well as newspaper articles and other materials available through social media. Interview and research materials are collected by using the factors that characterize cultural risk perception (Renn and Rohrman, 2011). The questions which were asked throughout our interviews concern five topics: collective and individual heuristics that individuals and groups employ when forming judgments about risks; cognitive and affective factors that influence their perception; the social and political framework in which individuals and groups operate; the cultural context in which socio-ecological relationships unfold. Through a qualitative analysis of the content of the interviews, we interpret the interviews and seek to identify local frames of crisis and of change, as well as the tensions between these.

Coping with floods in a semi-arid region

During the last ten years, several small and medium towns, urban and rural areas in Apulia—a semi-arid region in Southern Italy—have experienced unusual pluvial flooding events determined by the extreme rainfalls caused by climate change. In urban areas pluvial flooding is generated by overland flows before the runoff enters any watercourse or sewer. In rural areas flooding is caused by the inappropriateness of hydraulic systems and profound transformations of the territory which were carried out in order to transform humid lands into agricultural or urbanized ones. A series of events including hurricanes, haling, rainfalls, flash floods have been occurring since the early 2000's in several places in the Region . These events have been consistently followed by long periods of draught characterized by high levels of humidity, usually above the seasonal mean value. As highlighted in several studies (see i.e Boenzi et al. 2007) the increased frequency of rainfalls has been accompanied by a decrease in the number of rainfalls during the year. The reduction of daily rainfall is particularly problematic for the recharge of the local groundwater system. Hurricanes are a result of the rapid tropicalization of the Mediterranean sea.

The occurrence of extreme rainfalls, an unusual event in a semi-arid region, has been catastrophic for agriculture and for the built environment in urban settlements. In urban areas, local administrations have typically reacted to such events by carrying out adjustments of urban drainage systems to the new meteorological regime, for the sake of reducing any future risk of flood. Until a couple of years ago, the resilience of local communities has not been a relevant topic for policy-oriented discussions on climate change in Apulia. More recently, resilience has come to be associated with a scientific-technical intervention aimed at reducing hydrogeological instability.

Ginosa

Ginosa is a small town with around 22.500 inhabitants. It is a rural town in the middle of the Western Arco Ionico, a territory which underwent reclamation works at the outset of the 1900's in order to provide poor people with agricultural lands of which they would themselves be owners. The morphological elements characterizing Ginosa are ravines, deep erosive valleys of karstic origin carved by ephemeral streams. The town is indeed delimited by the two streams of Gravinella e Lagnone Tondo. Its oldest settlement was built upon the slopes of the ravine in which the Gravinella 'flows'. Therefore, the settlement is highly vulnerable. Due to the geological and morphological

configuration of the territory, and to the ephemeral nature of its water regimes, the ravines are naturally subject to hydrogeological instability, when certain thresholds of intensity and rainfall duration are exceeded. The existence of cave settlements in artificial or natural cavities further increases the degree of vulnerability of the ravine and of the town which was built upon it. The greater part of these cavities lie in a state of abandonment and their stability is precarious at best. That is both due to the lack of human maintenance, and to the natural degradation of the mass of rocks which is caused by aggressive humidity, by meteorological agents, and by the presence of fractures, some of which facilitate the infiltration of water. The presence of man-made cavities was a matter of common knowledge, as some of these were owned by local citizens themselves, and entrances thereto were visible from the ravine's riverbed. Still, in spite of the territory's great geological complexity, no study was carried out until 2013 in order to map the exact distribution and the degree of stability of the cavities which lie beneath the town's centre, which rests upon a vast surface of calcarenitic rocks.

In 2013, extreme rainfalls (in October and December) produced an unexpected flow of water in the Gravinella that caused 4 victims and swept away any object or people on its way and the fall of a part of the old city which was built on the ravine's slope. After these floods, which also damaged hectares of vineyards, the public was interdicted from accessing the urban areas surrounding the collapsed buildings in the old town. In order to protect the local population from future pluvial floods, hydraulic and infrastructural works were carried out, and some were designed in order to draw new funds. Some of the works that were proposed in order to restore the area, as well as to mitigate the future risk of further hydrogeological instability, included the consolidation of the slopes of the ravine characterized by the high density of cavities, the development of a monitoring system of the microclimatic conditions of hypogeum, the demolition of ruins and collapsed buildings, and the elimination of all relevant interactions between liquids and rock mass.

A story of flood: interpreting the research materials

As a first step, we analyse the content (fig. 3) of the interviews. By compounding the interviews with other research materials, we seek to reconstruct the story of flood as it took shape through the interplay between the local frame of crisis and frame of change.

Frame of crisis

Citizens perceive climate change as a series of adverse situations ranging from heat waves to extreme rainfalls.

"There is a huge problem: the tropicalization of the climate. I have been fishing in the Galaso river since I was a little child but it had never happened to me to find orange or yellow crabs."

"In recent years events have become extreme: hailstorms, air horns, more frequent snowfalls. Citizens are not very aware of this, perhaps farmers a little more, but we have now adapted."

"After 2013, when it rains people does not feel longer to be safe...they are afraid."

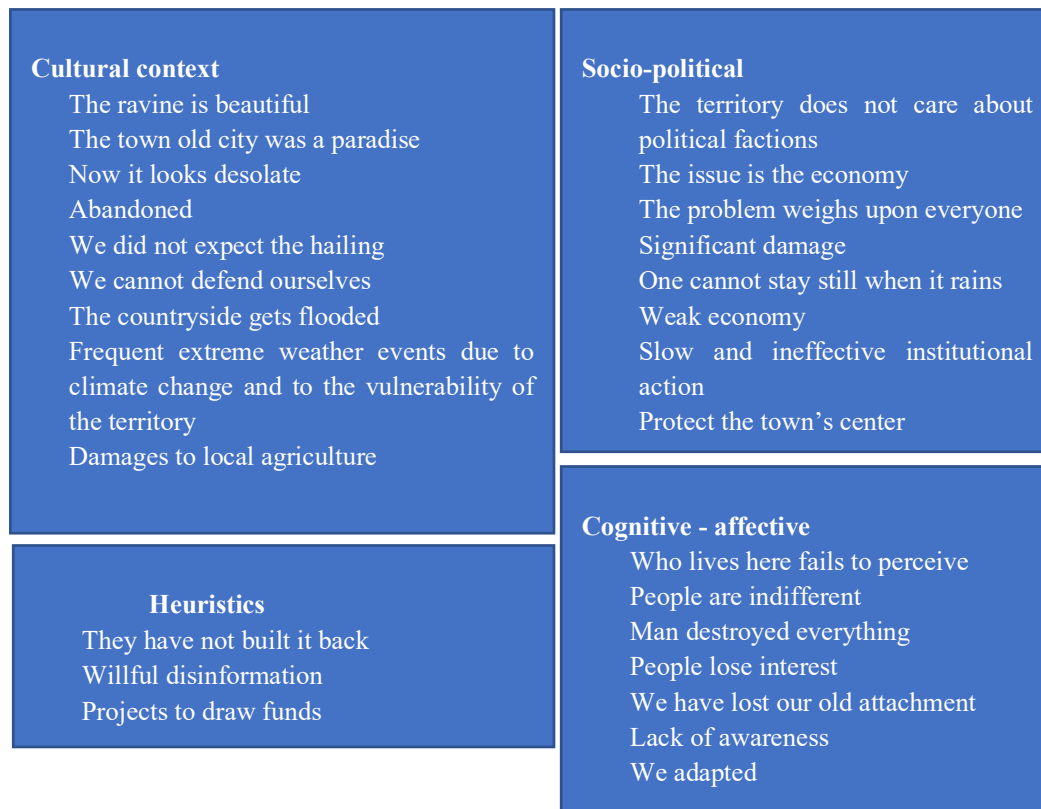


Figure 3: Field work: the analysis of content of the interviews

Awareness about the nature and effects of climate change diminishes with the age of interviewed as well as the interested in the risks. When interviewed, elderly citizens replied:

“We do not know much about climate change.”

or limited themselves to remarking that:

“It is sad when it rains. When the sun shines you feel better.”

By contrast, adults are deeply aware and afraid of the increased frequency of extreme events following climate change because such events will increase the risk that disasters such as the ones that occurred in 2013 will reoccur. The most recently built areas of Ginosa seem to be safer than the most degraded parts of the old city and than the rural areas where floods are quite recurrent. The local population does not feel responsible for the disasters caused by climate change. They rather identify local cultural and socio-political factors as the source of risks associated with disasters.

“Climate change does not depend on us, we cannot do anything to oppose the occurring of extreme events”; “humans are at the base of disasters”.

The origins of risk also tend to be identified with the self-interested behavior of citizens, which threatens the existence of a political community capable of acting and envisioning its future, and in the lack of appropriate public information:

“The local community is divided: the majority are not interested in dealing with the effects of climate change. The ones who are concerned about climate change would like to be heard by public administrators, but exercise no influence whatsoever on local policy making and politics”.

“I have lived abroad for several years so I can see what local inhabitants are unable to see or perceive. If you go and visit the old town you can understand the origin of the problems...Here is the reign of indifference”.

“Human beings have destroyed everything! Nobody takes care of the land and young people leave...”.

“Citizens’ indifference also depends upon the fact that the local administration has not involved and informed the local community so as to explain what happened in 2013. After the disaster, it commissioned several technical-scientific studies in order to mitigate the hydrogeological risks and protect the local population. After the collapse of buildings in via Matrice the administration did not explain to the local population what had occurred and why. It assured citizens that public works would commence immediately in order to restore the damaged areas...Misinformation is planned...Nothing has been rebuilt until now.”

Five years after the collapse of via Matrice, the following evictions of local inhabitants, and the ban from accessing two portions of the historical center have brought about a ghostly silence and fostered the abandonment of this area. And even when citizens’ attachment to these places seems to emerge, it is not accompanied by attachment to the rural area.

“Last Sunday a hailstorm occurred. The countryside is now flooded, it’s raining this morning. Young people do not care! Here the problem is the economy. People become disinterested, they no longer feel the same attachment that they had in the past and they move away.

The countryside is completely abandoned. Agriculture suffers from extensive damage from climate change, but then the problem weighs upon everyone”.

Detachment is accentuated by a non-connected and non-connective community that feels deprived of shared perspectives, values, and vitality. Furthermore, grassroots participation in the preparation of actions for the mitigation of hydraulic instability was very low, as the owners of the collapsed houses and the evicted were the only citizens who took part in these projects. As a result, the institutional and technical-scientific world had limited chances, if any, of communicating with the local community.

Frame of change

This frame involves the projecting of crucial operations, including: the mitigation of risks of hydrogeological instability, the attempt to contrast of abandonment by regenerating the old town, the protection of rural areas and a new approach to the local economy.

The mitigation of risk has been dealt with by scientific and policy experts. Geological and hydraulic technical-scientific studies that aim at consolidating the slope of the ravine (Rapporto CNR IRPI, 2014; Spilotro, 2016) have been produced and conferences have been organized in order to debate issue concerning “Territorial fragility: from hazard to risk”.

The studies which have heretofore been carried out have cast light on how ongoing changes in the climate and their effects, including floods, disrupt the delicate territorial equilibrium and lay bare the fragility of the territory, which is both due to its hydro-geomorphic characteristic and to intense anthropization. These studies suggest that a one-sided vision is insufficient. Acting on the territory without considering the local impact of climate change would constitute a failure to analyse the potential feedbacks that ensue from the increased frequency of extreme weather events. Conversely, focusing solely on the global dimension of climate change would result in an immobilization and the removal of responsibility of institutions and citizens. It is necessary to develop an integrated vision of climate and territory since the effects which climate change will yield at the local level will increasingly challenge populations to learn how to produce resilient socio-ecological systems and to protect dwelled environments. Ignorance, or poor knowledge of the complexities and weaknesses of a territory will make for its population’s incapacity to manage the risks associated with extreme weather events.

While studies and expert reports underscore the necessity of mitigating future risks, popular voices in Ginosa suggest that the rebirth of the local community should set off with the mobilization of the local memory which is embedded in the old town and in the latter’s ties to the ravine, as well as a renewed interest in agriculture and economic innovation. The current state of abandonment in which the old town lies well reflects the opacity of its inhabitants’ vision of the future of Ginosa and of its territory.

“When the old town was all inhabited, living here felt like being in paradise. Nowadays we are in a desolate landscape which is abandoned to itself. I call on our politicians to protect our historical centre by preparing and submitting projects for funding to regenerate it.”

A key step toward contrasting urban decay and abandonment consists in contrasting the flooding of rural areas. Thus, a renewed interest in local agriculture should be promoted.

“We did not expect the hailstorm, we cannot defend ourselves from extreme rainfalls but we can try to understand that everything is connected here: if the rural areas are also flooded we cannot survive as butchers, fruit vendors, or bakers.”

In order to reach these goals, a new idea of Ginosa as a political community should emerge out of the prevailing indifference.

Tensions

Comparing the local frame of crisis and frame of change related to the disasters provoked by floods occurred in 2013 and thereafter leads to highlight certain key tensions. The paralysis which characterizes Ginosa is a result of an ongoing transformation in the processes of local urbanization. The occurrence of this change has not been accompanied by the flourishing of any debate about it. On the other hand, it is underpinned by significant changes economic relations. For while the depopulation of old towns in Apulia carries on side by side with the erosion of local agricultural economies, the coastal areas of those same municipalities become destinations for tourism. Citizens of Ginosa are aware of these transformations, and perceive the risks of flood which are associated with climate change to have facilitated them. Indeed, the abandonment of Ginosa is itself a sign of the transformation affecting the relationships between the territory and the local population and, at the same time, constitutes a dynamic which increases the risk of floods. In a municipality where people forget their relationships to the historical places citizens feel helpless and incapable of taking action for the sake of solving the problem. In a territory where agriculture has traditionally constituted the focus of territorial development and the fulcrum of natural ecological dynamics, floods facilitate the structural abandonment of rural areas. The protection of the environment is perceived as something out of people control. Surely, the ravine should not be seen as a threat to, but a symbol of the dynamic combination of water, karst landscape and human settlements. It is necessary to work on issues which concern how to dwell in the territory in a responsible and synergetic—as opposed to predatory—way, aimed at preserving and recreating a connection with places.

Citizens' ideas of adaptation to climate change and rainfalls in Ginosa speak of a widespread resignation to the impossibility of constructing a different way of inhabiting the local territory. No committee or group of citizens has been set up in order to address the risk of floods, even in spite of the fact that climate change permeates their own daily life. In short, no collective strategy such as might target the flood problem has heretofore emerged. That means that, in Ginosa, it is not possible to speak of community resilience as a form of adaptation. Neither is it possible to speak of community resilience, if we consider resilience as a property, or if we consider it as a process without dealing with the tension among frames. Were we to approach resilience in such terms, floods would merely be considered as events to be controlled and mitigated through technical solutions.

Cooperative Bridges

In the case of Ginosa, the tensions between the two frames of crisis and of change can be described through some categories. Some of them are already known, including change of governance, change of knowledge/power production, and so on and so forth. However, in dissecting risk perception as a tension between frames of crisis and frames of change, we have seen some specific and crucial conceptual categories emerge, which are key for opening up spaces of social learning concerning floods. These are: re-appropriation of place, knowledge (re-)generation, and environmental citizenship.

We call these categories cooperative bridges. Each of them embodies the complexity of the meanings involved in the experience of risk of the local population and reflects a category of connection between thinking and action, which is necessary for activating the local community with respect to issues associated with the risks of floods. We call these categories cooperative bridges because they are bridges between knowledge and action, citizens and local institutions, and community knowledge and scientific and technical knowledge.

The re-appropriation of a place is a way of rethinking the life cycle of a city and of reinserting places within it (Cellamare & Cognetti, 2014). As a place-based perspective, it helps to understand the capacity of communities to withstand or adapt to change or, alternatively, to change its own ways of living. It includes multiple forms of urban life which are based on self-organization as well as a necessary organizational change, which is meant for adapting the structure of institutional governance to risks and disasters (Carson, 2011). This is not only a problem concerning the inclusion or exclusion of actors in a governance process but implies a rethinking of the very idea of the organization of a small community, which is necessary for triggering the latter's creativity, improving or changing unsustainable socio-ecological relations, and promoting social and environmental justice. From the perspective of re-appropriation, knowledge (re-)generation is key to community resilience. It involves the integration and co-production of knowledge, as a way of challenging and redrawing well-established boundaries which delimitate different assets of knowledge, and lie at the base of risks associated with climate change. Re-generating knowledge aims at valorizing existing cognitive, environmental, organizational and relational resources, and above all, at reconnecting them by overcoming silo approaches. Finally, environmental citizenship is a first step to rewrite in a more responsible way the stories of places.

Conclusions

Cooperative bridges are key to developing a place-based perspective to resilience (Mehmood, 2016): they enlarge the horizons of understanding of—and of action upon—risks, and expand the opportunities for defining place-based efficient actions (Frisullo, 2015) so as to nurture social learning. If community resilience is about local communities learning to adapt and transform under change, guidelines and procedures to facilitate the social learning processes are necessary. And yet, it is difficult to see if these processes can foster the learning of categories of cognition and of action that generate practices of management of risks which may transform unsustainable socio-ecological relationships.

One month after we terminated our fieldwork, the Apulia Regional Government funded the project aimed at mitigating the risk of hydrogeological instability and the reconstruction of via Matrice in the municipality of Ginosa. This event suggests that—when mobilized—risk perception can propel local administration to acting for the sake of coping with climate change. At the same time, by ignoring risk perception as embodying cooperative bridges, the mitigation actions built new obstacles to the opening of spaces of social learning and to the emergence of a resilient community. From our point of view, the opening of such spaces is crucial for opposing the political desertification and the abandonment of small, rural towns. If considered as socio-cultural constructs, cooperative bridges and risk perception may offer a key to avoiding the depoliticization of risk-mitigation (Douglas, 1992) in Ginosa and to activating processes of planning and management such as may trigger community resilience. Using the cooperative bridges which are embodied in risk perception can help to manage risks in resilient cities by considering issues of democracy of places, social justice and environmental protection as a compass for community learning and resilience.

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Beyond Barriers: Exploring the Futures of Climate Infrastructure on the Venetian Lagoon

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Abstract: For the last fifteen years the Italian government has been building the Experimental Electromechanical Module floodgates (MOSE) in the inlets from the Adriatic Sea to the Venetian Lagoon, to protect the historic city of Venice from flooding events. At the same time MOSE represents just one technological solution for the climate resiliency of Venice and its surrounding islands--in the face of additional varied and complex socio-environmental threats. Broader threats include subsidence, infrastructure degradation, the pressures of mass tourism, and a decline in the resident population on the islands of the lagoon. MOSE's construction site, a 180,000 square meter concrete platform, at the Malamocco inlet represents a uniquely massive space to respond to these forces. A team of Massachusetts Institute of Technology students use site and environmental systems planning approaches to suggest three hypothetical visions for this site that serve the residents of Pellestrina and the larger socio-economic development for the lagoon islands, while ensuring that these options bolster residents' ability to respond to urban disaster risk. The design concepts explore a range of demolition and reuse possibilities for the site in their three explorations: deconstruction and sustainable fishing, contextual tourism that can shift to disaster resilience, and a potential reuse of the most elevated area on Pellestrina to form a new village in the face of sea level rise.

Keywords: Climate Change, Resiliency, Infrastructure, Venice

Introduction

The most devastating flooding of Venice, when nearly two meters of water inundated the city, occurred in November, 1966. Since then, the Italian State has been focusing on planning initiatives to protect urban areas from high waters, safeguard the coastal islands from storm events, restore lagoon ecosystems, and plan for socio-economic development on the islands within the 550 km² area that makes up the lagoon area. Pellestrina, an island of fishing and agricultural villages spread along the 11 km coastline, has always acted as part of the

larger infrastructure protecting Venice and the Lagoon, but administrative attention has rarely focused on a comprehensive approach to sustaining the economy, culture and social cohesion of Pellestrina itself. As the construction of Venice's Experimental Electromechanical Module floodgates (MOSE) nears completion, the project leaves behind a gargantuan construction site on the northern shores of Pellestrina Island--larger than Piazza San Marco (Figure 1).

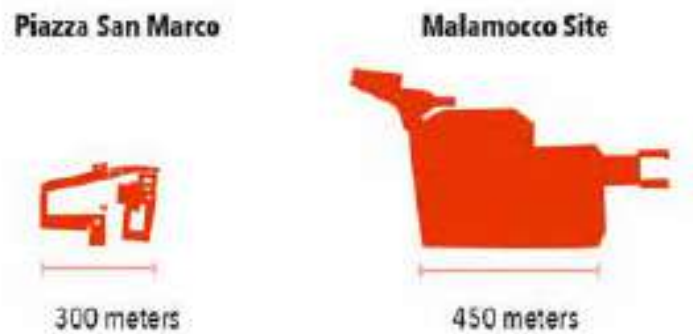


Figure 1: Size Comparison Piazza San Marco vs. Site

In the spring of 2019, on behalf of their client the Consortio Venezia Nuova (CVN) students in the Massachusetts Institute of Technology (MIT)'s Department of Urban Studies and Planning (DUSP) site planning course explored potential futures for the former construction site that increase the vitality of Pellestrina itself. Students analyzed the site, Pellestrina and the larger Veneto context using a multifaceted approach, integrating a study of topography, hydrology, sea level projections, mobility and infrastructure networks, land use, and settlement patterns; as well as spatial and temporal relationships between individual site factors and local and regional contexts. The MIT team combined the traditional site planning approach along with interdisciplinary learnings from oceanography, engineering and urban design to formulate strategies for the site. These strategies for coastal resilience included awareness of physical and cultural infrastructures, housing and economic development, and flood responsive landscapes. The strategies respond to an uncertain projections of sea level rise and climate adaptation, and aim to achieve long-term economic and social sustainability by more flexibly responding to the diverse demands of Pellestrina, as well as the Venice municipality as a whole. Students formulated three hypothetical site plans for the land remaining at the north end of Pellestrina Island following the upcoming completion of the MOSE project, after exploring two central questions:

As the MOSE project nears 90% completion, the Venice Water Authority and Consorzio Venezia Nuova is investigating how this land can best serve the residents of Pellestrina and the larger socio-economic development for the lagoon islands. How can this land reclamation and infrastructure be reimagined?

Ultimately the students developed three hypothetical design options:

1. *The Future of Fishing*: REPURPOSE MOSE's infrastructure for a modern-day local economy based on new and traditional fishing technologies. Utilizes the uncertainty in sea level rise as an opportunity for adaptive aquaculture management.
2. *Resilience in Reuse*: BUILD new form of coastal defense that builds on the site's historic assets, bringing life to the MOSE platform and preparing Pellestrina for a new era.
3. *Murazzi 2.0*: TRANSFORM divisive infrastructure into a connection. This project proposes design elements that connect the villages of Pellestrina to their history, to the Adriatic and to a site of new opportunity.

Course Context

Since its first offering in 1935 MIT's site planning course has been taught by only a handful of instructors including Kevin Lynch, Donald Appleyard, Tunney Lee and Gary Hack. In 1956 Kevin Lynch took what was seen as a mainstream course in site engineering and turned it into a whole-system approach to planning the built and natural environments. Under the direction of Eran Ben-Joseph, the class began incorporating hands-on, client-based projects dealing with a variety of sites. Today, Mary Anne Ocampo brings her experience as a practicing urban designer to continue the whole-systems approach pioneered by Lynch and in this course was able to build upon longstanding relations between MIT, CVN and IUAV (Università Iuav di Venezia). MIT researchers have been involved in the evaluation of multiple steps of MOSE engineering and construction since as early as 1997 (Merali, 2002; Munaretto et al., 2012).

Study Area and Site Context

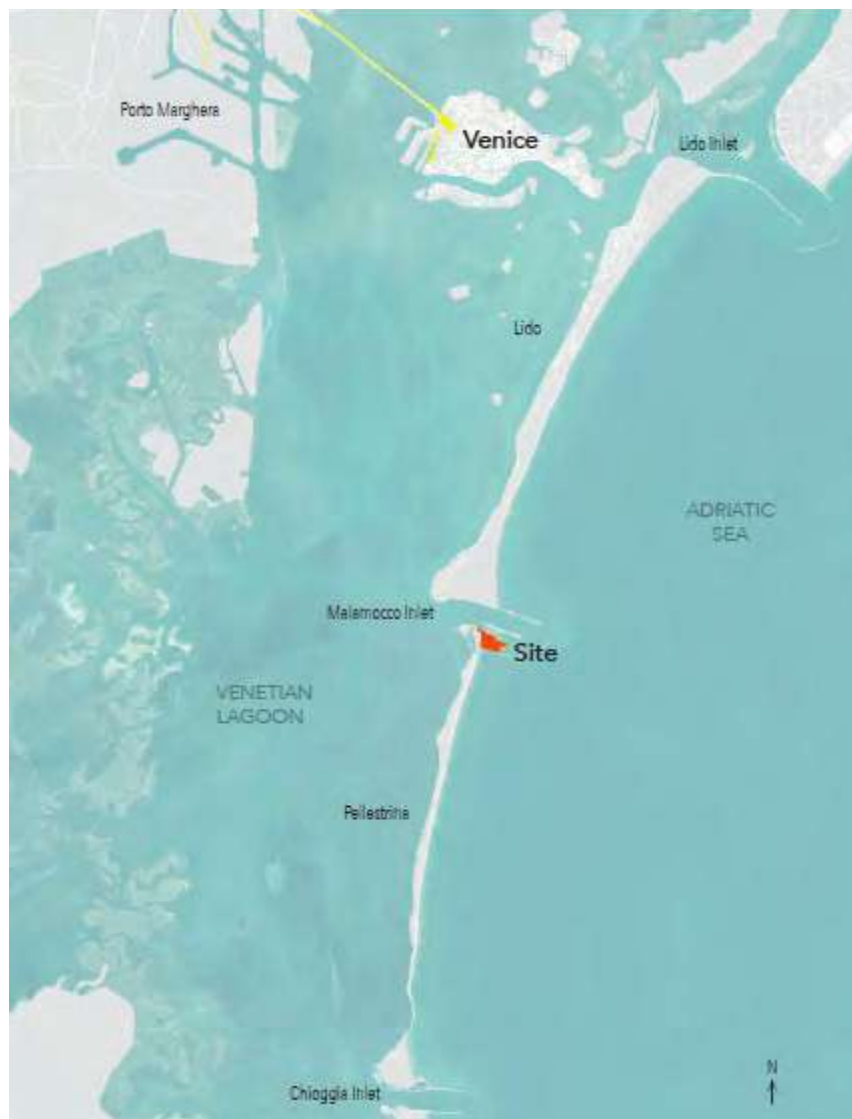


Figure 2: Site Context

Pellestrina and her northern neighbor, Lido, are two crucial barrier islands that separate the Venetian Lagoon from the Adriatic Sea. Pellestrina stretches for nearly 12 kilometers, but is often less than 500 meters wide and in some places as narrow as 50 meters. The island's population of approximately 4,000 people living in 4

villages has declined in recent years due to the lack of affordable housing and employment on the island. With rising environmental hazards, the closing of a major shipyard, and fishing regulations, the island has suffered economically and environmentally for the last decade. An additional impediment is the island's remoteness: the island is removed from the historical city center of Venice and administratively from the adjacent city of Chioggia. Access to Venice and larger employers in Mestre are only possible with arduous travel. Travel to Venice requires transferring from bus to vaporetto (water taxi) on a trip that takes over an hour and up to 2 hours depending on your location

For over one thousand years the site and the island of Pellestrina have served as a vital barrier between the historical city of Venice and the Adriatic Sea. Since its first description in the historical record, Pellestrina has been a place formed by the struggle between the destructive forces of the ocean and human resistance, where storm surge has ripped away earthen dikes, beaches and landfill and the people of the Venetian lagoon have rebuilt even stronger defenses (Goy, 1985).

The worst flooding in Venice's history struck the lagoon in 1966, with some of the greatest devastation occurring on Pellestrina. A combination of sirocco winds, swollen rivers and a low pressure storm brought a devastating high tide, "acqua grande" to Venice on November 4. The storm ripped away the boulders of the murazzi and water levels in the lagoon reached record highs, with a peak at 194 centimeters above the tidal gauge at Punta della Salute. The tides would stay at over 100cm for nearly 24 hours, inundating homes, churches and storefronts. On Pellestrina 4000 people—nearly the entire population of the island—evacuated, as the storm flooded homes, salinized the soil and caused an estimated of 40 billion lira in damage across the lagoon (Gugliuzzo, 2018).

In response the flood of 1966, the Italian government established special legislation for the safeguarding of the city of Venice and the Venetian Lagoon in 1973, which recognized the idea of mobile barriers. A second law in 1984 created a national committee, the Comitato and entrusted design and implementation of to the Consorzio Venezia Nuova (CVN), a concession of the national Ministry of Infrastructure. Multiple designs for the MOSE were considered, but a system of mobile floodgates was finally selected because of their buoyancy, and requirements that the floodgates be invisible when not in use.(Munaretto et al., 2012)

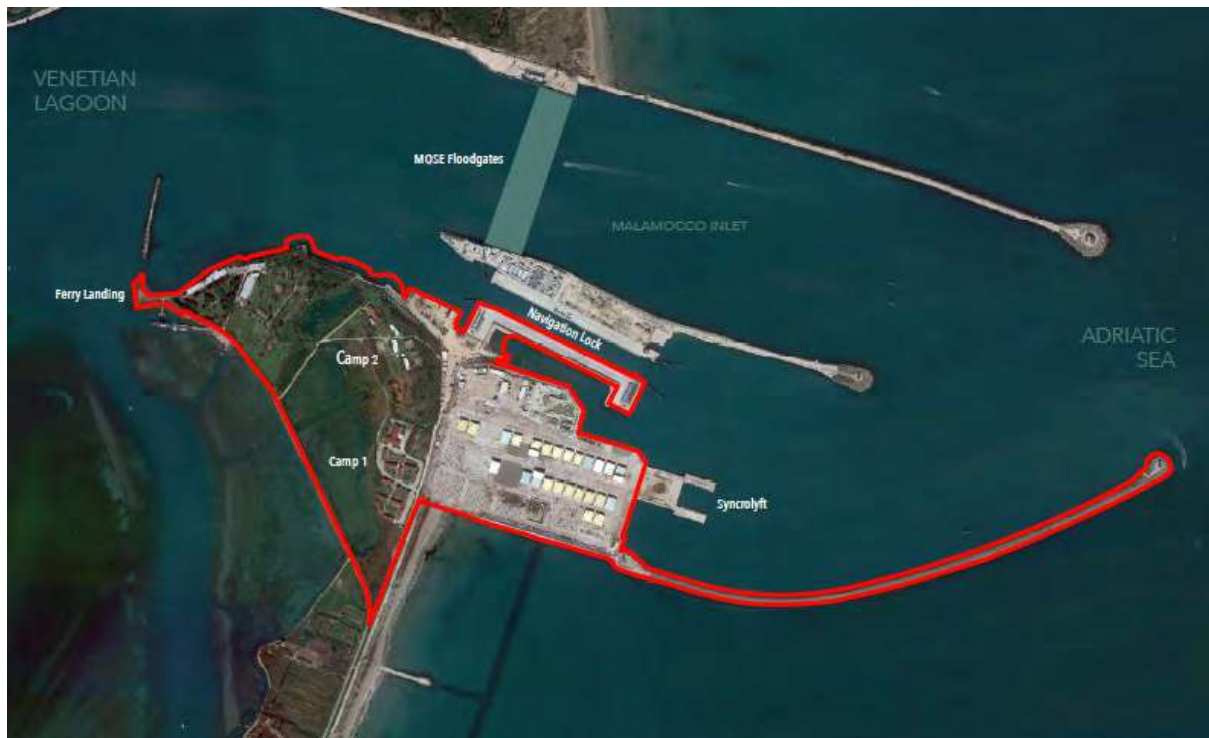


Figure 3: Site

The construction of the MOSE system required a new site near the inlets which occurred in 2005 Initial construction focused on a sheetpile outline of the future platform, which was filled with dredged material, which was then covered with cement and reinforced by jet grouting to stabilize the soil 20 meters below sea level. Here the four-story tall 4200 ton cascons rose at a busy worksite, next to a worker's camp constructed for the large number workers needed for the project. Eventually a "syncrolyft" was constructed on the end of the island that had been a semi-public beach and woodland area, with part that some locals used as a dumping ground. Upon the completion of the construction of the cascons, the MOSE platform has also been used as a storage and staging area for the MOSE floodgates. With the final floodgate installed, this massive piece of infrastructure holds remnants of all of the phases of construction that happened there—anchors, heavy equipment, shade tents and hundreds of concrete piles.

2019 marks the completion of the MOSE floodgate installation and the end of use for the MOSE platform. The current post-construction plan for the site, referred to informally as the "Europe Plan" calls for the deconstruction of the platform in order to restore and reconstitute protected habitats affected by the construction. The plan requires that "For each of the community habitats and species affected by construction activities, one or more compensatory measures have been developed, with a precautionary approach, aimed at the reconstitution or redevelopment of areas that are increasingly larger than those temporarily and permanently occupied by the work." (*Piano delle misure*, 2016)

This plan includes a number of measures for environmental restoration, including seagrass transplantation, rebuilding the barene and reconstructing dunes. At the MOSE site itself the platform is to be removed and replaced with a beach at an estimated cost of € 3,520,000. The worker camp and adjacent area is to be reforested and historical structures renovated as part of a nature park, at an estimated cost of €5,500,000. The MOSE site is situated in a unique position, where both historic military and hydrological defenses sit side by side. These protective structures are located at the entrances to the Venetian Lagoon, and have acted as the first line of defense against man-made and natural threats. (*Piano delle misure*, 2016)

Site Analysis

Environmental and Military Protections

The Venetian Lagoon, which houses Pellestrina Island, is a man-made ecosystem in constant need of protection against natural forces. What began as a shallow estuary formed by natural processes transformed into a haven for communities fleeing from the aftermath of the collapse of the Roman Empire, where the preservation of the lagoon environment became an essential part of the security of the Venetian republic and naval power. The Serenissima would ultimately divert major rivers over the course of centuries to prevent the sedimentation of the lagoon.(Bondesan and Furlanetto, 2012; Tosi et al., 2009)

Throughout the history of the Serenissima, Venetian authorities sought to enhance the defense capabilities of the historical city by fortifying the edges of the protective lagoon. In places like Pellestrina, fortification sometimes included military facilities along lagoon entrances. Hydrological structures--dams, dykes and seawalls--often served a similar military purpose--to maintain the protective characteristics of the shallow Venetian Lagoon. The need to fortify the edges of the lagoon from the encroachment of the sea was a reoccurring theme over the history of Venice. Ultimately flooding led Venetian authorities to embark on a 40 year construction project beginning in 1741 to build 20km long seawall of Istrian stone across Chioggia, Pellestrina and Lido. (Charlier et al., 2005; Goy, 1985)

The Flood of 1966 spurred two special laws for Venice, which resulted in the selection and construction of mobile flood barriers, MOSE, as a protective measure at the entrances to the Venetian Lagoon. Beyond the floodgates, CVN has engaged in restoration and climate adaptation projects within the lagoon itself, including protecting and reconstructing the environment of the lagoon--replanting seagrass, rebuilding the partially submerged islands called *barene* and restoring Adriatic dune structures.

Ranging between 2.5 and 3 meters above sea level, the MOSE platform is one of the highest elevated sites on Pellestrina island, where much of the land is only between 1 and 2 meters above sea level, though is protected by the 5.2m high murazzi wall. A wide range of ecological habitats can be found throughout Pellestrina Island. In general, there are four types of environments: woodlands, littorals, meadows, and areas with sparse amounts of flora. The northern and southernmost edges of the island contain mature woodland and shrub ecosystems. The interior of the island is primarily comprised of agricultural and urban managed landscapes. Meanwhile, the Adriatic Sea-facing edge of Pellestrina is populated by growing dunes, and vegetation to support dune formation. ("Altimetria, Carta Tecnica Regionale del Veneto," n.d.; "Microrilievo della pianura del Veneto," 2015)

Demographics, Culture, and Economy

An analysis of the demographics reveals similar trends across the lagoon: an older generation and declining population due to age and emigration. Since 2014, the city has lost approximately 6% of its residents. Pellestrina's population is also declining, despite regular births and new immigrants to the island. The lives of the residents of Pellestrina are closely tied to other islands in the lagoon and the mainland. Pellestrina residents are dependent on the lagoon for jobs and daily services. Venice's population is declining ("Popolazione," 2017; "Stradario e Popolazione," 2010).

The culture and history in the Venice city center is the most popular tourist attraction within the lagoon. Most tourists come to see Venice's unique art and architecture. Tourists also frequent the historic villages on Murano, Burano, Torcello, and Chioggia which offer crafts, shops, and restaurants. Lido and Sottomarina feature popular beaches that attract tourists. Pellestrina does not maximize the potential economic benefits from tourism, and

there lacks a strong tourism anchor to promote on the island. The nature reserve Ca'Roman is the main attraction on Pellestrina, along with the free beaches and vision of a “real” lagoon community. Pellestrina’s economic history is rooted in agriculture and fishing. However, the sector is declining and local residents are dependent on other areas within the lagoon for jobs and daily services. Most of the surveyed permanent residents of Pellestrina responded that they: were in favor of developing Pellestrina for tourism, believe the island could benefit from tourism, are concerned about changes to daily life, damages to buildings and environment, and trash (“Pellestrina Summer School Survey of Island Residents,” 2018)

Venice is a part of a larger regional economy, the Greater Veneto Region, which it is connected to by road and rail. The region’s public transportation company, Azienda del Consorzio Trasporti Veneziano (ACTV), provides an extensive transportation network by land (buses and trams) and sea (frequent small passenger ferries known as vaporetti). Additionally, international airports connect the Greater Veneto Region to international travelers. ACTV’s transportation system allows access to the barrier islands of Pellestrina, Chioggia, and Lido. Vaporetti flow from Venice to outlying islands and south, via a bus connection, to Chioggia. Flows of water traffic within the lagoon also include pcean-going passenger ships use the Lido inlet, ommercial traffic destined for Porto Marghera through the Malamocco inlet as well as local traffic is comprised of smaller personal boats and fishing craft. The city of Chioggia has a fishing fleet of 221 fishing vessels which use the Chioggia inlet to travel between the lagoon and the Adriatic.

Climate Change Risk leading to 2100

This study used dramatic sea level rise scenarios of 110cm and 160cm for 2100 to guide site designs. The study sought to look further than 2050 given that infrastructure has a long useful life beyond 30 years from today. Global sea level rise projections, which have a wide range of uncertainty, cannot be applied directly to the Mediterranean Sea for several reasons (Centro Euro-Mediterraneo sui Cambiamenti Climatici, 2017; Galassi and Spada, 2014; Hoegh-Guldberg et al., n.d.; Marcos and Tsimplis, 2008): A) Global models do not accurately take into account the Mediterranean Sea. The models’ grid scales are too large to capture the Strait of Gibraltar, the narrow waterway through which the Mediterranean is connected to the Atlantic Ocean. The vertical resolutions of the models also do not capture the shallow Adriatic Sea. B) Globally, thermal expansion of water from increases in temperature is the major contributor to rising seas. However, in the relatively contained Mediterranean, salinity is another key driver to changes in sea levels . Greater evaporation from warmer temperatures and decreases in precipitation lead to increases in salinity of the water body. Greater salinity results in more dense water, which may decrease water levels. The density of the water in the Mediterranean also impacts the outflow and inflow from the Atlantic through the Strait of Gibraltar.

Sea level rise projections are relative to mean sea level. However, note that the datum reference points from which sea level is measured differ for bathymetry and altimetry: Bathymetry tidal heights refer to the tide gauge at Punta della Salute as the 0 reference point. Punta della Salute is currently 23.5cm above the altimetric datum due to subsidence and other factors. Currently, the actual mean sea level is 30cm higher relative to this reference point. Meanwhile, altimetry refers to the IGM 1942 datum, the official datum of the Italian national altimetric network (Città di Venezia, n.d.). Topographers use this datum as the 0 reference point and refer to it as “mean sea level.” It is 23.5 cm above the Punta della Salute reference point. Currently, the actual mean sea level is 6.5 cm higher relative to this reference point.

Given uncertainty in projections, the MIT team sought to plan for a range of possible future scenarios and developed designs to be adaptable. Good planning and design needs to incorporate a myriad of future conditions rather than be limited by a single future scenario amidst uncertainty in projections or assume that the future will be the same as the past given a changing climate.

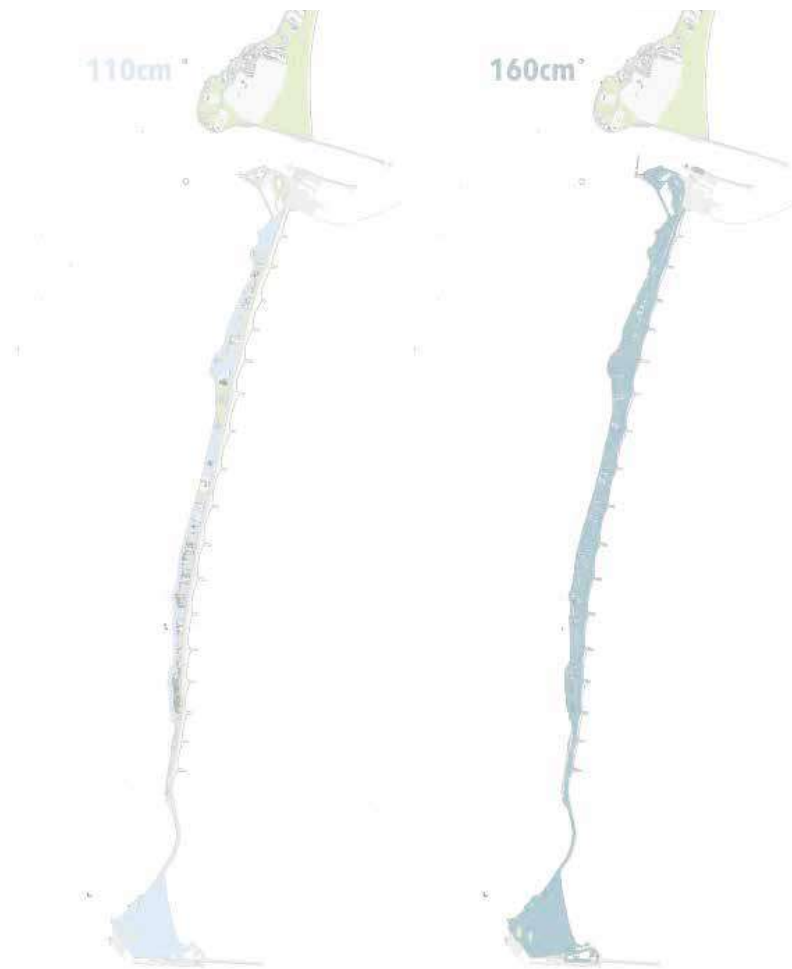


Figure 4: Sea Level Rise Under 110 & 160cm Scenario

Figure 5: Tidal Ranges under 110cm and 160cm Scenarios

Significant portions of Pellestrina will be permanently inundated from the lagoon side under the 110cm scenario. Most of Pellestrina will be permanently inundated under the 160cm scenario. Flooding will be exacerbated with acqua alta events as study flood maps do not take into account storm surge associated with acqua alta events. A team of international experts verified that MOSE gates would be able to protect against sea level of only 50cm (Munaretto et al., 2012). Because of this Pellestrina and the rest of the lagoon may need to undertake adaptation measures to ensure resilience under these future sea level rise scenarios, such as increasing the height of the mini-walls on the lagoon side. It is critical to note that these flooding maps are preliminary and the methodology needs to be refined. The methodology (from MIT Summer Workshop 2017) is based on land elevation points scattered throughout the island rather than sea level and flood modeling. The methodology does not account for a 20 cm mini-wall adaptation measure on the lagoon side of the island, which may mean fewer areas may be permanently inundated under the 110cm scenario. The mini-walls are between +1.30 and +1.40 m high with respect to the IGM zero of 1942 (Franco and Tomasicchio, 1992). Lastly, the analysis was not conducted at a granular scale, which would be particularly useful for site planning purposes. Recent climate conditions serve as a baseline for understanding future projections. In the Veneto region, summers have been hot and mostly dry, and winters have been cold and wet. Over the past 50 years in the Veneto region, temperatures have increased significantly during every season, especially summer and winter maximums and summer minimums. Winter rainfall has decreased over the past 50 years. According to the Italy 2017 National

Plan for Adaptation to Climate Change, in the Venice climate region: temperatures are projected to continue to increase, the wet winter season will become wetter, and the dry summer season will become drier (Centro Euro-Mediterraneo sui Cambiamenti Climatici, 2017). Intensification of winter rains may cause riverine flooding in the drainage basin and exacerbate water levels and acqua alta. Climate projections between 2021-2050 for the Venice climate region under the greenhouse gas emissions scenarios RCP4.5 vary (moderately low emissions scenario) and RCP8.5 (business as usual) but overall trends are projected to continue into 2100.

Design Options

Taking each of these portions of analysis into account, the authors of this study each formed design teams, which formulated three hypothetical design options for the site.

The Future of Fishing: Repurposes MOSE's infrastructure for a modern-day local economy based on new and traditional fishing technologies.



Figure 6: Future of Fishing Site Plan

The Future of Fishing design option re-envision the MOSE construction platform as a hub for a revitalized fishing economy where Pellestrina can be the 21st century leader of sustainable aquaculture, researching how to integrate floating vegetation with fish pens to provide water purification while at the same time producing low-impact food for the region. Furthermore, this site and environment can function as a nursery for species that have been declining within the lagoon and can help to revitalize and repopulate species that have been threatened as a result of the overexploitation and pollution to date. Our design idea centralizes Pellestrina as the focus for this type of environmental research and local economic hub that supports the residents of this island and allows for a reasonable amount of public access to tourists and visitors that can see and be inspired by the leadership of Pellestrina's sustainable food production and lagoon management.

The design recognizes the history of fishing guilds on Pellestrina, which from the 1500s exercised considerable political influence in the region although the work itself was difficult. In the 1880s a cooperative movement arose to unite resources amongst fishermen and protect against the potential economic downfalls associated with the fishing industry. At this time, Pellestrina Island was home to two fishing villages and cooperatives. Until the 1960s fishing was strong, when manufacturing and industry began producing harmful ecological and economic effects. Subsidence, chemical waste, and dredging for commercial shipping damaged many of the habitats of the lagoon that had sustained rich fishing resources. Fishermen either moved away from lagoon resources to the resources of the Adriatic open sea fishing or switched to the manufacturing economy. Today, the continuation of fishing traditions is uncertain, as young Pellestrinans seek job opportunities outside of the islands' bleak economic prospects by moving to the mainland centers of Mestre, Padua, and Treviso. Lack of lucrative job opportunities in fishing, agriculture, and/or tourism puts the island's socio-cultural future at risk and exacerbates the pressures of the tourism industry, shifting the Venice lagoon archipelago from a city structure to a 'park', utilized primarily by outsiders rather than its own inhabitants (Cipriani, 2017).

Lagoons are ecologically important habitats: they provide marshlands for migratory bird species, they filter nutrients in water through vegetative uptake, and they provide marine species nurseries to grow their young. They are also economically rich places, offering their inhabitants a local economy. In 1994, the Venetian lagoon business contributed to \$80 million in economic benefits, directly and indirectly. At that time and into 2000s, the Venetian lagoon contributed 33% of Mediterranean fishery production. In 2011, after years of slow decline of the fishing industry and increase in the aquaculture industry, aquaculture businesses surpassed those of fishing in the lagoon (Rosetto, 2000; Zaccariotto, 2014)

This design team considered the wide range of possible "natures" to be preserved on the site, as between two spectrums, from platform permanence to complete platform removal, and high use and management to low use and management. If the platform is kept, high use could involve a heavily landscaped waterside destination park. An intermediary among these extremes involves partial removal of the platform and moderate management – an ideal opportunity to incorporate Pellestrina's economic history in order to have the site serve as a learning environment for adaptive aquaculture.

This partial platform deconstruction reuses that platforms' concrete, while retaining much of the platform's originally constructed border of filled sheetpile. Deconstruction could retain most of the border, break up the concrete material to repurpose for a new breakwater, and remove the dredge material for appropriate depths for aquaculture. The new breakwater is designed a few meters north of the existing breakwater in order to protect the aquaculture area from currents around the Malamocco inlet. The remaining concrete from the platform could be reused to reinforce the muraizi along the rest of Pellestrina.

Pneumatic and hydraulic breakers could facilitate platform demolition and are often used in concrete demolition projects involving foundations and pavement, including underwater. Demolition could also involve cutting concrete for reuse, as well as pressure bursting, which involves pressure in boreholes to split the concrete. Lastly, wrecking balls and explosives are used for large volumes of concrete but may create a lot of noise, dust, and vibration which may cause damage to the surrounding structure. Pneumatic and hydraulic breakers may be the most suitable for deconstruction of this platform site and would require consultation with civil engineers.

Resilience in Reuse: A new form of coastal defense that builds on the site's historic assets, bringing life to the MOSE platform and preparing Pellestrina for a new era.



Figure 7: Resilience in Reuse Site Plan

The MOSE platform presents a unique opportunity for the Island of Pellestrina. Rather than destroy the platform, the national, regional and local governments could work together to explore possibilities for productively reusing the site. The site's elevation means that it is relatively secure from flooding and the threat of sea level rise and its size means that it can accommodate a variety of different uses. The location on the north end of the island, on the outskirts of the closest village but near public transportation and a beach, make it an ideal spot to develop tourism on the island without disrupting life for current residents. Resilience in Reuse is structured around the notion that different activities can share space, and that existing forms can be repurposed for new uses as the need arises.

In the short term, the site can be used for tourism and events. Though the impacts on the lagoon are still uncertain, climate change will impact Pellestrina and likely lead to increased risk of flooding. In the long term, the site can easily transition to a base for flood disaster response and recovery operations. The short-term uses provide new economic opportunity to the island, while long-term maintenance of the platform ensures islander resiliency in the face of an uncertain future. In addition to the concrete platform, existing assets like MOSE gates and CVN activity could be incorporated into future uses. This design idea provides a venue to celebrate Venice's history of coastal defense and defiance of flooding, surge and sea level rise in the near future. This design concept considers how to protect the island's residents.

While the island is relatively secure from flooding at present, Pellestrina will be at risk of flooding from storm from future disasters like the catastrophic flood of 1966. Space for disaster evacuation and response activities are included in the buildings on the site. It also envisions on-site activities to increase community resiliency, like retrofit construction demonstrations, and a public learning center focused on climate change.

The MOSE platform is higher than most of the rest of island, making it an asset for the island, and a perfect site for recovery and evacuation in the case of disaster. In the future, should parts of the island become permanently flooded, housing built on the platform will be available for resident resettlement.

The Protezione Civile is the government body that manages disaster planning in the Venetian Lagoon. It has an office in Pellestrina and a disaster management plan in place for the island. However, this plan is focused on present risks and does not take the effects of climate change on water levels into account. In the future, the organization may want to change its plan and locate its evacuation, relief, and recovery efforts on the site, because of its proximity to the ferry, space for large crowds, and relative security from flooding.

A small survey of Pellestrina residents completed during MIT's 2018 Pellestrina Summer School found that residents were generally in favor of developing tourism on the island. This design idea would bring a hotel, campsite, and bungalows to the North side of the island. Visitors would enjoy amenities on site, but would have easy access to the ferry or to the villages to the South. Major events could also be hosted on the platform for short periods of time, as an alternative location to sites in the already crowded historic Venice. This level of tourist activity could enliven the economy, but would not overwhelm Pellestrina residents because the site is detached from the nearest village.

Murazzi 2.0: Transforming divisive infrastructure into a connection. This project proposes design elements that connect the villages of Pellestrina to their history, to the Adriatic and to a site of new opportunity.



Figure 8: Murazzi 2.0 Site Plan

Squarely facing the risks of climate change this proposal sites a new village on the highest point in Pellestrina, the MOSE platform, returning the lagoon side to a more natural state that allows for agrotourism. The north side of the platform is now a pier and market and the south side is the commercial and retail pier. The structures of

the blocks are based off of the size and the location of caissons during the manufacturing process for MOSE. This size allows the incorporation of housing and open space, mitigating the amount of concrete expose on the platform. This typology also connects physical structures to the history of resilience and adaptation on the island.

Pellestrina's long history as a barrier island and protector of the region as created infrastructures that have divided island life, both north-south and east-west. The site is located at the north end of the murazzi, at an elevation that is secure from most flooding predictions. It is close by to public transportation, the beach and a natural marshland that makes it an ideal spot for both tourism and a more recreational lifestyle that is well-connected to the region. Easy access to the Adriatic and agricultural space supports the existing fishing and gardening industries on the island. Murazzi 2.0 begins with a transformation of the murazzi from a seawall into a pleasant and active pathway that leads the villages of Pellestrina directly to the MOSE platform site. A development at this site, with the appropriate programming, can provide a destination the brings the villages on Pellestrina together, highlights the island's histories of coastal protection and economic development, and provides a physical and intentional opportunity to open the island to the Adriatic and its uses.

The Murazzi wall separates the beach from the rest of the Island with few points of access. At it's widest, the beach and Murazzi make up to 1/3 of the Island's width and at its narrowest, it is almost 1/2 the width of the Island. The seawall creates a spine, driving development orthogonally with the majority of buildings facing the lagoon side. The sea wall becomes the back and with it, the Adriatic. Sea side is more barren and less utilized. In Murazzi 2.0, the seawall is redeveloped into a multi-modal pathway that connects the villages and ends at the MOSE site. This identity will be celebrated in Murazzi 2.0, by reclaiming the connection with the Adriatic, hosting a MOSE museum that features the history of protection on Pellestrina, and tourism that highlights the design of the site based on past structures. Developing commercial and retail space on the site focused on creating local jobs as well as developing housing and transportation for ease of access to the region is key to the project. In 2016, the cultural association was evicted from their long-time office and they needed to find a new space for the lacemaking school and lace collection. The new development will bring a community space for lace making and other artist spaces for both living and working in. As a destination for these activities, Pellestrina's local economy and tourism may benefit from connecting to the larger region known for its crafts.

Conclusion

The MOSE platform is young infrastructure. The site provides an opportunity to reenvision a controversial, enormous purpose built parcel with knowledge of the value of it's solid base, a foundation on which to build or repurpose. The site is unique, but it has many parallels as other piers and other oceanside developments in the developed world have seen their uses diminished and many have been abandoned or rebuilt for a different use.

Given the size of the parcel approximately 170,000 square meters, or the size of two dozen soccer fields, and its rectilinear shape, the site is well-positioned for a redevelopment which can dovetail with the needs and desires of the surrounding community. At the same time the current Europe plan recognizes the value of adjacent sensitive habitats, and seeks to restore the site's former life as a beach. This course believes the cost and scope of this project may be underestimated at € 3,520,000 for platform removal and beach restoration and €5.500.000 for naturalization of the work camps into nature park preserves (*Piano delle misure*, 2016). As such, the range of options in this study offer paths other than costly destruction, providing options that mirrors the range of development across Pellestrina itself, where villages range in development from densely built Pellestrina to remote Ca'Roman.

The student researchers also kept in mind the reason for the structure itself: the MOSE flood protection system. While Alta Acqua is most visibly present in Venice itself, this student team was keenly aware of how higher

water will affect the MOSE platform site and the surrounding area in Pellestrina. With this in mind, constructing resilient infrastructure, building structures which can accommodate changes in climate in both the long and short terms, and building infrastructure is crucial to sustain Pellestrina's history, culture and economy.

The future of the MOSE platform in Pellestrina is in flux: whether and how long it will stay in place. For the MIT student team, these questions prompted an exploration of the potential futures outside of the Europe Plan.

Students began with the "Future of Fishing": a partial removal, where the resulting structure will form a miniature lagoon adjacent to the MOSE project, and one which will become a new, Adriatic-side, fishing village, complete with supporting structures but without significant permanent population (Figure 9).



Figure 9: Future of Fishing Perspective

The next more intensive use, "Resilience in Reuse," will keep some of the MOSE uses on the site, but retain some new structures for various temporary uses, from large events to emergency evacuation shelter, as well as building some permanent structures on the platform itself, while still retaining significant open space with less programming to promote creativity and happiness (Figure 10).

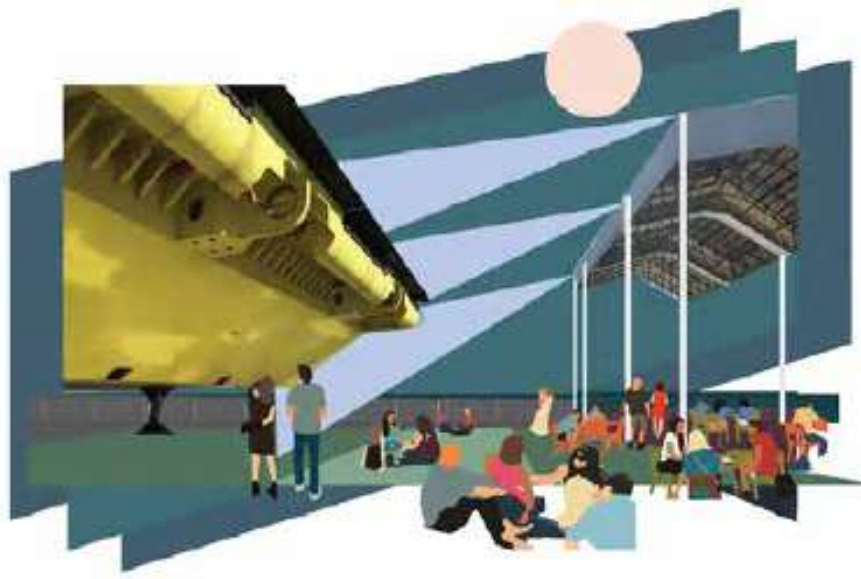


Figure 10: Resilience in Reuse Perspective

Finally, the "Murazzi 2.0" will reimagine the platform as a dense village, building a relationship between the Adriatic and the island and developing the local economy and using the Murazzi to connect the Adriatic side of the island to the Lagoon rather than to separate it (Figure 11).



Figure 11: Murazzi 2.0 Main Road Perspective

Given forward movement on the Europe Plan, the site may not even exist in a matter of years, so the student team sought to uncover a number of alternative possibilities to provoke questions about the tradeoffs and synergies between construction and destruction, naturalization and reuse. The course recognized the legal background for the Europe Plan, as well as a changing European Union environment, where such the future of such a large undertaking may rise and fall based on local, regional, national and even Eurozone politics, finances and policy. Ultimately, the class found a reevaluation of the site's future compelling given the

uncertainty around projected environmental changes due to global warming and the even more uncertain projections about localized environmental changes in the Venetian Lagoon and the Adriatic Sea.

The future of the study site remains to be determined. If current plans proceed, the site must be dismantled and deconstruction of hundreds of thousands of square meters of fill and concrete must be removed sustainably to develop a new beach will form along the lock and breakwater. If the site is kept, a longer range vision for sustainable futures on the littoral islands could be created. Seemingly just as likely, if the site is kept in a state of limbo, the site could serve useful purposes even if retained temporarily. Each of this study's plans begin to address these options, and the authors' hope that the plans, or at least elements thereof, can help planners and policymakers in the Veneto region widen the possibilities planned for the future of this site. This site is at a crossroads, and provides the potential to link sea and lagoon, beach and murazzi, and past, present and future.

While the MOSE platform on Pellestrina is not old, it faces, like much of the infrastructure from other eras, an uncertain future. Yet in many cases, this infrastructure has been creatively reused, creating iconic places out of infrastructure once considered an eyesore. In any number of cities, old, disused piers have been converted in to parkland or even used for housing. Imagine if New York had torn down old West Side Line railroad instead of redeveloping it into the High Line. Disused infrastructure can be an opportunity, and our study of this site seeks to bring the principles of urban design to the site.

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Planning and architecture for climate adaptation: the experiences of the "structure-territories" in low and high density city

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Abstract: The paper reflects on the awareness that climate adaptation planning becomes more effective when it is dealt with a local context. This approach focuses on the relationship between vulnerability, adaptation and urban regeneration processes in territories of a low and high density. It refers to new balances of the urban ecosystem in the two case studies. The experiences highlight fields of experimentation of new forms of the urban project that take into account the peculiarities of each territory. Some urban areas are experimenting new ways of cooperation between public and private stakeholders which, although belonging to two different situations of low and high settlement density, are dealing with the issue of resilience and adaptation in both fields urban planning and architecture. The experiences of these different contexts, spread urban forms in Sardinia and high settlement density in the city of Tunis, reflect on how to rethink the structure of the city through adaptive urban strategies such as the design dispositive of "Structure Territory". This planning approach aims to promote the adoption of new design solutions that satisfy the contemporary needs of inhabitants and, at the same time, are oriented towards the nature-based solutions.

Keywords: Structure-Territory, Climate adaptation, Vulnerability, Urban regeneration

Introduction. Climate adaptation and place-based proximity

The increase in the frequency and intensity of some phenomena related to climate change, such as urban floods, heat islands, land consumption and desertification increase the level of risk to which cities are exposed. If we interpret the contemporary environmental crisis, we can argue that all territories are vulnerable and that the implementation of urban transformation projects must take that into account the different sensitivities and peculiarities of the individual territories from the environmental and socio-cultural point of view.

In this scenario, how the tools of projects and the government of the urban territory can incorporate the processes of adaptation to climate change. What planning actions on the territory can build forms of governance capable of making the solutions adopted durable?

The experiences conducted by the research group investigate project devices in relation to some experiences that implement adaptation actions addressed in relation to the micro-situations of a local

context. The “local” has the meaning of “proximity relational space”. The “localized” approach to changing climate adaptation processes aims to identify more general forms and processes starting from local needs, making the logical link between apparently distant phenomena explicit.

In this direction, the adaptation processes are implemented through the project of transformations that create an anchorage to the place (Augé, 2000), which favour the redefinition of the relationships between territories and inhabitants, which in turn stimulate their ability to take care of the space in which they live, even in situations of environmental fragility. Adapting to the changing climate, which does not always respond to forecasting models and mitigation technologies, means facilitating and preparing the conditions for creating a network space, ensuring that the most vulnerable places in our cities are involved in a process of regeneration that involves new forms of community (which may include institutions, organized social groups, individual citizens, etc.), not necessarily characterised by physical proximity. The regeneration of places as an adaptive process is the instance of one or more communities and their action incessantly, animated by the proximity of interests for places that need not be overwhelmed by climate change. The adaptation calls for a sharing of objectives, the ethics of responsibility, the passion for the same territory, an awareness that local processes have important global repercussions. This is the perspective that the 17 objectives of the 2030 Agenda open up.

The local dimension of the experiences dealt with refers to two distinct situations: the urban territories of low settlement density that regards urban areas, such as the small cities of Sardinia, characterized by a dispersal of settlements and a pervasive environmental dimension; the territories of high settlement density, which we study in relation to complex cities, such as Tunis, where urban growth multiplies the effects of urban concentration that are not always positive.

The “adaptive” project actions we have experimented are based on a close relationship between vulnerability, adaptation and urban regeneration processes in reference to the two territorial situations of Sardinia and Tunisia. What the two experiences have in common is the search for a design approach that makes the strategies of adaptation contextual that different countries both in Europe and in North Africa are implementing. Starting from the sharing of the need to maintain the socio-ecological balance of a city, we explore two devices for planning and governing the territory:

_a *governance* model that realizes it that we have called “adaptive”, recalling some research that calls into question models based exclusively on the central role of institutions. The space of the networks in this second device refers to the new forms of “alliance” (Albrecht *et al.*, 2010) between public and private subjects and those in Europe and more recently in Italy, are fuelling environmental protection policies through the so-called “lagoon contracts”, the “river contracts”, and the “coastal contracts”.

_a spatial device that in our research we have called “territory-structure” to present new urban equilibriums through the settlement transformations, starting from the fragile situations that occur both in small cities and in large urban areas.

Through these devices, we study actions and policies of reconstruction, re-use, redevelopment, having in the background the possibility to design and govern the existing settlement heritage of our territories, to develop scenarios that adapt to climate change as a continuous process of urban and the environmental regeneration of our cities.

Climate change and adaptive governance

The scenarios of the Fifth Report on the Intergovernmental Panel on Climate Change (2013) and the National Strategy for Adaptation to Climate Change highlighted the urban effects and risks associated with climate change. The study confirmed that it is no longer a question of determining whether the climate is changing, rather how quickly it is changing (IPCC et al., 2014). As we know, various critical factors emerge, including drought and a lack of water resources, extreme meteorological events and hydrogeological risk and heat waves. Cities, in this sense, need to evolve with respect to adaptation strategies no matter the action they bring into their urban transformation processes, governance and land management (Wamsler et al., 2013), operating at the local scale which is the level at which we can avoid those that have been called “maladaptive actions” (Swart et al., 2014).

Climate adaptation cannot be separated from the cultural, political, economic, environmental and development contexts in which it occurs and therefore, it is only part of a series of social responses to change. Adaptation has been considered highly specific in relation to the territorial and urban peculiarities of a place, as it depends on its specific climatic, environmental, social and political conditions (Füssel, 2007). For this reason, the adaptation actions involve a wide range of measures aimed at reducing the economic, environmental and social vulnerability to climatic factors (Füssel 2007; Walker et al., 2013).

The extreme events that occur at the local level have more and more repercussions in a wider context, generate new sensitivities and partially influence the public policies of the government of the territory. These events can be considered “catalysts of adaptation actions”, despite the difficulty in realising planning paths and government policies that develop with continuity and strategic visions for the future. The main “adaptation mechanisms” have been institutional (for example, providing guidelines and outlining public address policies) and financial (for example, providing financial support). However, interventions that promote climate change adaptation actions or that focus on vulnerable social groups (marginalized groups, the elderly or children) have been limited (Berrang-Ford et al., 2011; Ford et al., 2011).

The need for effective climate adaptation actions, both in urban areas and in large areas of the territory, is a widely recognized issue, as it is shown that its critical effects on social and natural systems increase. However, efforts to adapt to climate change, as reported in the literature of the last decade, have not produced processes and actions that address planning strategies and environmental policies on the local scale with continuity of the “safe” territories despite considerable investments in adaptation sciences. Furthermore, the actions implemented were mostly focussed on interventions that address sectoral aspects; more systemic and transformative long-term actions are less frequent.

Recent decision-making processes aim to overcome this situation and are framed as “adaptation paths” to emphasise the need for a solid decision-making process within adaptive processes in the face of uncertainty and intertemporal complexity. However, to date, these paths have focused mainly on contexts with clearly identified decision-makers and unambiguous objectives; consequently, they generally assume that prevailing governance regimes are conducive to adaptation and therefore limit responses to the causes of vulnerability.

Responding to global change is a challenge for society. The theoretical developments and the operative researches of some authors in relation to the models of “adaptive governance” allow to

highlight that one particularly difficult and challenging reason are the top-down processes that control systems (Gorrdard, Colloff et al., 2016). In Ostrom's reflections, it is pointed out that "the complexity of social-ecological systems precludes policy and management panaceas and requires decentralized knowledge (Ostrom et al., 2007; Norgaard, 2010, quoted by Gorrdard et al., 2016).

Adaptive governance needs to focus not only on the role of institutions: they "may provide a focus for leadership, but institutional change requires coordinated efforts by people with agency in diverse roles at different levels within a social-ecological system" (Stirling, 2014 quoted by Gorrdard et al 2016). Still Gorrdard, Colloff et al. underline that "the required reflexive analysis of the societal context in which these actors are embedded is innately difficult. Decision makers may be unaware of the influence of societal structures such as norms, practices, cultural regimes, technologies and regulations (Ostrom, 2010, 2011; Leith et al., 2014), especially if such structures have been stable and thus taken for granted" (Gorrdard, Colloff et al., 2016 p. 62).

Achieving greater effectiveness of planning actions and *adaptive governance models* to implement urban transformations of adaptation to the climate can be investigated through the study of decision-making processes defined according to two perspectives (Gorrdard, Colloff et al. 2016). They highlight and question the fact that adaptation should not be addressed as a decision problem, which provides answers to the impacts of climate change within government processes centered on decision-making perspectives, "it is therefore unsuitable for addressing complex, contested, cross-scale problems". The reflections of Australian researchers broadening the *decision-making perspectives* according to a broader perspective that define *decision-context perspective* that focusses on an interconnected system of values, rules and knowledge that creates and limits the set of practical and admissible decisions

Decision-context perspective and project for new "urban alliances"

Adaptive governance refers to the need to understand how the social contexts of a decision-making process can influence choices and how the inhabitants of a territory can intentionally influence these contexts to plan the future of cities. Adaptation projects that focus on *decision-context perspective* represent a pragmatic alternative to the current *decision-making perspective* adaptation. The latter is a perspective based on a top-down approach that is based on the logic of control and has shown over time its ineffectiveness, both in relation to the different time constraints imposed by the actors and to the institutional resources made available. In this perspective, the choices for implementing adaptation actions are based on processes, values and knowledge treated as independently defined variables, which implies that "a decision maker can incorporate any relevant knowledge and values in order to reach a decision within the bounds of the societal rules that enable the decision process" (Gorrdard, Colloff et al., 2016, p. 62).

We exemplify the decision-making perspective according to two project areas. In the first case, there are approaches of "sustainable architectures" that promote punctual transformative actions in the city. In this case, the adaptive capacity of the project is measured through the improvement of the building's characteristics, its durability; adaptability is understood as the improvement of the user's well-being in relation to comfort, health, safety and the quality of the internal environment; the sustainable building counteracts the effects of climate change by becoming more efficient by reducing the consumption of resources and energy, also in relation to the exploitation of technological innovations (Kronenburg, 2007; Schmidt, Austing, 2016). In the field of urban planning, adaptation brings in crucial aspects for the evolution of settlements, especially in relation to fragile environments (such as wetlands, river

corridors or coastal areas). However, the actions implemented are still sectoral and attempt to counter the vulnerability of environmental systems through plans and programmes, to study their susceptibility to change, their capacity to absorb the stresses imposed by the city's infrastructure, while maintaining their ecological functioning and dynamics.

In both cases, it is a process governed by public stakeholders (agency focussed perspectives) and experts from the different sectors who formulate values, knowledge systems, rules and application guidelines to make choices within and within the limits imposed by the context.

The implementation of projects and policies based on decision-context perspective shifts the focus to societal structures and the influences they exert in the decision-making process: they define the role of the actors and whether these roles allow effective and legitimate actions. From the *decision-context perspective*, values, rules and knowledge are “interdependent conceptual systems that represent a particular way of viewing and framing the world” (Gorrdard, Colloff et al., p. 62). In this second approach, our research experiments with territorial projects that attempt to develop responses to climate change adaptation at the local level to contribute to the complex problems of global change.

The durability of urban transformations is proposed in the two experiences illustrated in this article, in Sardinia and Tunisia, through the study of the interdependence between knowledge, values and rules that govern the spatial organization and socio-ecological functioning of the urban territories explored. The environmental regions in which these relations are expressed are defined by us as territorial ecologies of water, “situations in which the forms and processes of the environment contribute to achieving a spatial structure and a structural economy oriented in an environmental sense”. These regions recall the territorial relations with which any transformation project will have to deal at different scales to respond to the need to avoid sectoral approaches that simplify the relational importance of water.

Territorial ecologies do not derive from an a priori perimeter of ecosystems and are not pre-defined by decision makers: it is the project that reveals the structural genesis of physical space and establishes the limits and levels of degradation below which that specific ecosystem cannot be modified without the loss of certain vital functions and attributes (Sechi, 2003). For this reason, transformative choices are the result of a process of co-design and responsible action by all the actors involved, public and private, who assume reciprocal commitments to activate effective actions that are legitimized by the context in which they operate. This “structural perspective”, defined in the studies of Gorrdard, Colloff et al., shows that the actors who enter the process build a sort of “new alliance”, a pact to implement adaptive management strategies, sharing project objectives and future visions for the territory they live in.

The experiences

The experiences pertain to what we illustrate try to highlight how it is possible to open “structural perspectives”, from recognition to the selective representation of environmental matrices of a city. The trend scenarios at both extremes highlight forms of physical and social desertification (Mahmoud, 2017; Spooner and Mann, 1982), which are at the base of an urban regeneration project. In particular, we have concentrated on both in Sardinia, with the city of Oristano as a case study, and in Tunisia in reference to the Grand Tunis – on the water dynamics and related ecologies for developing proposals

for the “reconstruction” of a relationship between fragile lagoon environments and settlements that have progressively invaded natural strategic areas.

The project hypotheses, both in the high-density settlement areas of Tunis and in the low-density areas of Oristano, use *territory-structure* (Maciocco, Sanna and Serreli, 2011). This tool pertains to projects that connect spaces and resources that can create interdependencies between ecological dynamics and settlement spaces. They create new spatial configurations, by selecting resources present in the territory: the project action builds new relationships starting from reality, organising the universe of elements placed in the field by the environment and by the history that resists the succession of transformation processes as seen in Figure 1. This encourages the relational evolution of urban and environmental fragments, even in places obscured by intensive settlement and city infrastructure, reconfiguring them within a common project, thus participating in a single transformation movement.

The adaptive capacity of the project in fragile areas such as coastal and lagoon environments is understood as an ability to “structure”¹ the settlement’s resources and the environment by first interpreting the constituent components of the geo-environmental systems and their interrelated connections between continental processes and marine-coastal processes, dominated by the morphodynamics of river systems, by the wave regime, through the currents coastlines (Costa, 2013).

The urban regeneration project for Oristano and Tunis, albeit with due differences, starts from these premises.

¹ It refers to the definition Anglo Saxon structure to “arrange according to a plan [and provides] give a pattern or organisation”.



Figure 1: *Tendential scenario lagoon strategic areas of Oristano and Tunis.*

Regeneration of the terrain vague in the low density of settlements in Sardinia

The meaning of the territories-structure as generative spaces of the urban project and architecture is interpreted through the design process of *Oristano Est*, a project recently financed by the Presidency of the Council of Ministers in Italy and approved by the Municipal Administrations in the city of Oristano, a small city located in the centre of the west coast of Sardinia².

The project addresses the issue of urban regeneration by extending the field of action to a wider territory than places defined as “peripheral”, as per the criteria of the competition announcement. The urban area taken into consideration extends beyond the compact structure of the city to be refocused with respect to its constituent environmental elements: the river environment to the north and the lagoon area to the south. Thus, the project extends the concept of a centre to several spaces of the urban territory, compared to the “historical” perspective usually recognised as the only place from where to derive the peripheral gradient of the different contexts of Oristano as seen in Figure 2.



Figure 2: *The territory-structure recovers various areas along the compact urban edge of the city and selects and organises the sequence of spaces that create an extended urban and infrastructure corridor placed on the east side and the south of the city.*

1) Oristano-Santa Giusta lagoon; 2) agricultural park dedicated to rice production; 3) area returned to the lagoon environmental processes and intended for urban park; 4) Oristano; 5) Santa Giusta

In the project for Oristano, the territory-structure incorporates the role of an urban director able to relate and interact with areas affected by different phenomena of peripheralisation and degradation: derelict public areas affected by the progressive abandonment by the inhabitants, areas that are no longer discontinued functional in the current urban organisation, connection spaces no longer accessible and areas subjected to flooding processes. Their succession defines three urban directions: western, eastern and southern, configuring three new urban parks that have been termed as “generative contact spaces” (Choay, 2003). These include interstitial spaces that are *terrain vague*, in areas of the

² The project was proposed by the LEAP research group of the Department of Architecture, Design and Urban Planning of the University of Sassari, responding to the need for a global approach to the problems of the territory and, in particular, to the theme proposed by the notice on the redevelopment of the peripheries of the capital cities of Province in Italy. Through the project, the Municipality of Oristano received a loan of 17 million euros. It is currently under construction.

residual agricultural network and set in the current settlement plots. They incorporate punctual elements, such as ancient villas, recent industrial archaeologies, disused areas of the railway network and obsolete areas awaiting new functions. The selection of the fields defines for this or a new urban arrangement, including them in a new spatial organisation. Thus, the park's territory-structure is a catalyst for the relations of spaces and functions, both different actors. Additionally, the generative device that can accommodate both the economic and productive demands of the inhabitants, places of residence and leisure, simultaneously making the city's environmental resources central (river and lagoon), which are currently obscured by the settlement structure that has relegated them to a mere background.

Private subjects and public partners have been called on to participate and present proposals, to share the strategies of the design device. Participation, given the modest size of the city, received a response beyond expectations, both in quantitative and qualitative terms. Thus, the project has to begin an unprecedented evolutionary process involving the city's strategic geographical areas, as an alternative to the logic of current urban evolution with different critical issues related to the environment. The attractiveness of the spatial device of the park and of the areas incorporated by it has had precise feedback owed to multiple requests for participation received from private subjects who, interested in taking an active part in the realisation of this project, have highlighted the potential of reinterpretation and the re-signification of existing settlement assets operated by the park.

The territory-structure of the park for this project can include pre-placing a connection structure that welcomes the public and the private bodies of the city. Furthermore, this could operationally launch a public works program aimed at achieving its feasibility.

The park guidelines initiated by the general project are in this sense new strategic centralities:

- places open to public enjoyment that recall different collective services for recreational, educational and social housing activities;
- attractors of new urban economies, resulting from the location of new services for the city and private individuals;
- places of cultural integration, as welcoming spaces that can trigger processes of social innovation as Oristano recalls different profiles of inhabitants (permanent and temporary residents, stable and occasional workers, different types of tourists, and new migrant citizens); and
- spaces that favour safety conditions, allowing inhabitants to experience public spaces without risk to their physical integrity, often induced by forms of inaccessibility. Additionally, urban security is understood as environmental security, favoured by an awareness of some places that call for a greater sensitivity to the environmental protection of public areas by inhabitants.

The Oristano's territory-structure project symbolises potential spaces still able to accommodate a regeneration process in spaces obscured by incoherent spatial organisations: "spaces in which to act, in which to create new local economies, new stories, new ways of belonging" (Sassen, 2015, p. 238).

The urban directions involved in the project that continuously involve different areas of marginality and peripherality – currently fragmented spaces adrift – have assumed the role of priority and strategic

places from which to start again for a re-foundation of the city as well as for places of re-territorialisation and re-signification.

High density in Grand Tunis and the environmental issue after the "Arab Spring"

The complexity of the Grand Tunis has seen a long process of metropolitan construction over the years. The phenomenon of high urban density has been transformed into a critical reality, with which the city has existed for almost 30 years. The search for new models has been increasingly in line with foreign real estate investments, exposing the city to new forms of spatial and social vulnerability and producing urban approval processes that have involved strategic resources, such as lagoon environments.

The urban lagoons represent the strategic spaces of the city, the places of safeguards necessary to address regeneration interventions: they recall the demolition of solid pollution forms, the mitigation of risks of flooding of neighbouring urban spaces, the creation of public areas for environmental use, the achievement of a quality of residence and related/other services. These are essential questions to start a sustainable regeneration process.

Tunis and its inhabitants, rooted in their territory with an identity, historical and cultural structure, have protected the codes of their civilization through multiple historical periods. However, the political and economic changes, increasingly influential in Tunisian society in recent decades, are the basis for the search for new models increasingly in line with the canons of a contemporary European city. Is a different future possible for the Tunisian metropolis starting from a regeneration scenario based on the historical matrices of the settlement and on urban policies capable of countering the physical and social desertification of the territories?

Starting from recognising ecological dynamics that characterise the lagoon environments of the city being explored, in collaboration with the University of Carthage, evolutionary scenarios based on adaptation strategies with particular reference to the residual areas that are yet unaffected by the progressive consumption of soil are the focus of recent infrastructure investments. Considering factors that can influence urban policies, we have experimented with the spatial nature of the territory-structure to outline alternative settlement models.

As it emerges from the images, Tunis highlights an urban growth where urbanisation and the environment are entities that seem to have been mutually ignored over time. The city's evolution towards areas subtracted from the lagoon has given rise to residual spaces where settlement and environmental dynamics often conflict. These are where settlement forms have generated spatial imbalances, loss of content and pre-existing meanings.

Moreover, around the coastal and lagoon areas, the environment becomes fragile – the level of degradation is increasingly evident. The environmental criticalities are particularly derived from the settlement pressure exerted on the ecosystems of the wetlands, from the proliferation of solid pollution and from the vulnerability of the territory to hydrogeological risks (Chouari, Belarem, 2017).

The popular uprising has fostered the emergence of different and contradictory strategies. In this transitional phase, the environmental and ecological question has assumed a high level of criticality, that remains ignored by the social movements that arose during the revolution³.

The futuristic projects of the new infrastructural investments aim to raise the level of the Tunisian economy, while reducing the unemployment rate. Therefore, proposing different research and strategies to current situations, to look at how to preserve the integrity of the historical landscape and the entire ecosystem of the territory under study, by combating the proliferation of urban density is a good means for change.

Such a scenario would have several serious consequences for the new planning for Tunis, involving different aspects, such as the environmental considerations, identity, social concerns and the landscape dimension of the city. The ecology of the lagoon is explored. The processes governing the integrity of the system has been compromised by the complete cementation of the coastline for the intensification of urban density, with significant modifications associated with the removal of water spaces, without excluding the increased importance of eutrophication phenomena, caused by the increased concentration of pollutants and suspended sediments in the water. Such environmental degradation is already present due to urban expansion on Lake Tunis.

Furthermore, the expansion of the coastline would lead to the alteration and elimination of aquatic vegetation, leading to a reduction in primary production, accompanied by significant changes in microclimates and the impossibility of maintaining the lagoon banks naturally. Therefore, besides the practices of new building expansions, the phenomenon of increasing urban density would not be limited to the alteration and degradation of the ecological processes that govern the lagoon system. Instead, this would extend to problems of identity related to the historical image of the city, since the planned construction dedicated to the entire coastline would permanently disfigure the landscape of Tunis, supported over time by its dominating position on the lagoon.

These new urban projects are influenced by foreign models, where the Tunisian population is practically excluded from this territory, due to the socio-economic contrast and physical and social separation. These future financial centres and high technology elements will be a kind of refuge for Tunisians and the foreign rich, while generating neighbourhoods that are “monosocial”⁴. They would create a road network barrier against Tunis because of their isolation and their confinement on themselves.

³ Tunisia was the driving force behind the so-called “Arab Spring”. The country is faced with important demands for change and renewal by large sections of the population. The social and economic issue is at the centre of the concerns of the Tunisian government and society that triggered the “Arab Spring” until the fall of the regime of former President. The citizens’ revolt concerned in particular the crisis of the social pact that materialised in the request for more employment (see De Facci, 2014), equal rights, social equality and access to housing for the poorer classes. What matters is not the movement itself, but the direct and indirect impact that the “Arab Spring” has had on society (see Mahmoud, 2015). “The environment is the first victim of the revolution”, says environmental activists. The natural environment of Tunisia seems more vulnerable, as Prime Minister states that the environmental situation has deteriorated sharply in recent years, with “negative consequences on the quality of life” of Tunisians.

⁴ Bahri Maroonian, Tunis marine. Une « métropole » au bord de l’eau. EPFL. www.archivesma.epfl.ch

The spatial device of the territory-structure selects, within the problematic urban environments, elements that can be regenerated in the lagoon context of Lac de Tunis. In the tendential scenario, the environmental dimension of the lake is considered as a backdrop for infrastructural actions that saturate the lagoon edge areas, distorting them and irreversibly inhibiting their dynamics and processes.

The size and extension of the Tunisian metropolitan territory, the continuous saturation of spaces apparently without a role, pose countless questions related to the survival of ecologies of the natural environment, which, due to the action of densification by the settlement system, show areas of high criticality and are often characterised by situations of irreversibility. The design of a new spatial organisation reverses the figure-background relationship (Kanizsa, 1993), involving and highlighting vulnerable natural environments, historical pre-existing features, soils taken from their original uses and derelict areas.

In the inversion between the figure and background, the territory-structure changes the connotations of some places that have remained at the edge of the urban organisation as well as the perception that inhabitants have of the same. Its representation, and therefore the selection of the elements of the city, highlights areas of possible connections that can encourage unprecedented relations between pre-existing settlement areas with high criticality and the areas of regeneration of the lagoon. In this manner, the lagoon and its feeding system are taken as a strategic area of the city. The project being proposed for the Grande Tunis restores to the lagoon its spaces of belonging, the seats of dynamics and the vital processes for the lagoon's survival. Thus, large infrastructure investments for residential purposes proposed as the primary figure of the actions of transformation in the trend scenario are placed outside the sensitive areas. The objective of regeneration is the implementation of the most-favourable conditions for creating a lagoon park, interpreted by the territory as a structure of environmental centrality for the entire urban system. Its dimension is not limited to the water mirror, but extends to the whole proximity territory, the seat of dynamics and related processes.

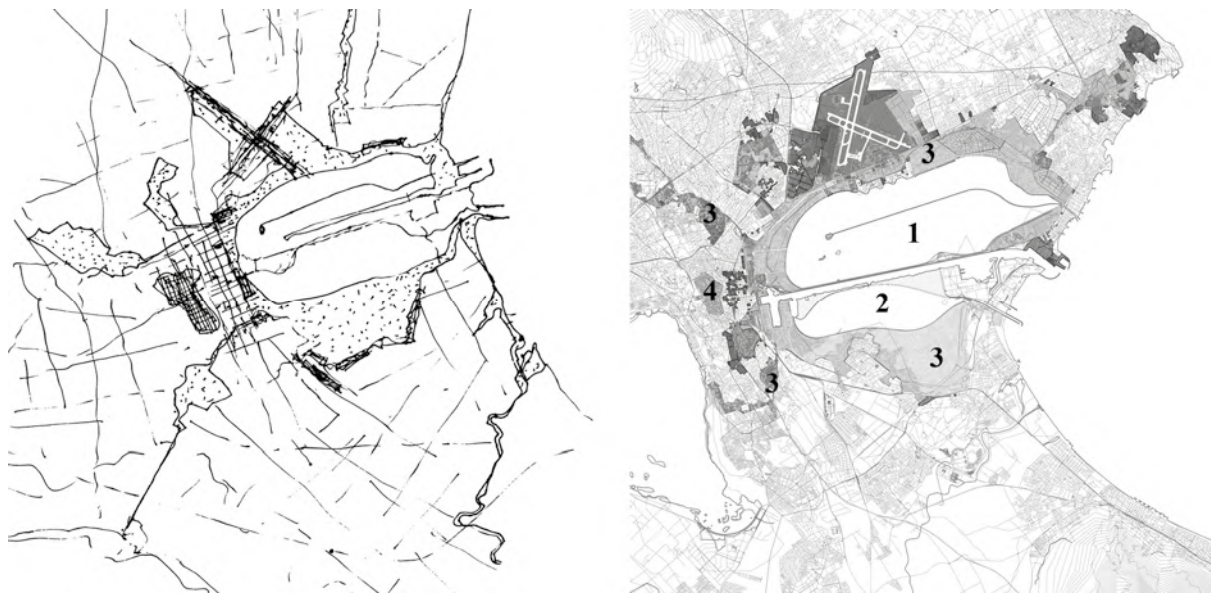


Figure 3: *The territory-structure the lagoon city of Tunis.*

1) North saltworks, Sabkhet Ariana; 2) South saltworks, Sabkhet Essijoumi; 3) Area returned to environmental processes in the lagoon and destined to be an urban park and 4) The Medina.

A possible future scenario, which can be the basis of any reasoning that pursues climate adaptation objectives, makes the lagoon the primary figure of the urban organisation. Thus, it can assume the role of environmental centrality in the city. This possible scenario contributes to orient any future transformation action that pursues the maintenance of the lagoon as a public urban space to be defended.

The adaptive actions of the territory-structure in the strategic areas identified can create the following conditions:

- requalifying spaces that favour the conditions of reorientation of the pre-existing scenario, characterised by areas of fringe marked by significant forms of abuse;
- giving meaning to open spaces and to the components obscured by the prevaricating action of real estate investments;
- favouring the anchoring to environmental elements that can assume the role of a public space, open to the relationships and to different ways of use by various types of inhabitants and
- regenerating the environmental spaces where natural dynamics take place to activate forms of sustainability: thermoregulation, the absorption of CO₂, evapotranspiration, purification, reuse and lamination of rainwater and the improvement of the hydrological response of soils.

The territory structure thus outlined lays the foundations for future planning processes, trying to counteract settlement methods inspired by expansive practices and anchored to the logic of arbitrary occupation of land, regardless of any form of process and dynamics of environmental schedule present within the territory. The project hypotheses reveal the need for a reflection, allowing to arrive at alternative and urgent solutions to put a stop to the phenomena of desertification and de-territorialisation.

Urban generative structures and resilient societies

In our research, we have explored the themes of adaptation in relation to fragile areas, such as the lagoon, in two different contexts. The need for interdependence between conceptual and design devices, such as territories-structure and the implementation of adaptive governance models, continues to fuel our questions.

If, on one side, the *territories-structures* expose explicit urban regeneration projects in certain places to the extent of desertification and deterritorialisation, we try to experiment the methods of implementation of projects through subjects that often have opposing interests, different roles and skills, on the other. In contrast to the current planning and design devices that are based on predefined analysis scales as well as standardised government models, often coming from sectorial disciplinary approaches, the territory-structure offers the possibility to recognise and select the dynamics of a territory using the project as an “exploratory sensor”. It represents a scheme to take action that is anchored to the historical and environmental dimensions of the city, implementing a novel connection between the different urban fragments, to begin forming perspectives of resilient development.

The search for “new urban alliances” puts in the foreground, according to our reflections and experiences, the crucial role played by the “project” and, consequently, “the importance of identifying values, aims, tools and, most importantly, actors in this challenge within structures of government that are changing themselves” (Gambino, 2015).

The protection of vulnerable contexts, such as the lagoon settlement areas of Sardinia or Tunisia, push the research to deepen the ways in which *governance* as an adaptive practice can be addressed on open and flexible approaches to contributing to change attitudes and aspirations as well as to advance a different idea of the city. The territory-structure selects *process-oriented* actions, enhancing the educational quality of the environment and creating the premises for new alliances between subjects (as is the case with the Oristano project), and it favours new learning processes that intensify relations between different actors.

Regardless, the project action arises, therefore, as a learning tool that can contribute significantly to the increase in the level of knowledge and awareness of the subjects that are in focus: “a self-training process that becomes a new socio-political and cultural model of recognition of the established structures of ecological-urban control of the territory” (Clement, 1974, p. 35).

The adaptive capacity is also understood as the ability to *give space* to the term: we believe that the territories-structure are able to counter the rigidity of the canons of functionalism, formalism and standardisation to find new perspectives for the urban project. The adaptation understood in these terms recalls the requirement of interscalarity, a correspondence between micro and macro, a reference to the value of small transformations with respect to their reference context, an anchoring to the reasons of the territory, even when it appears more fragile (Serreli, 2013).

The concept of “adaptation” and “coevolution” requires, as various authors have explained, a process of continuous and reciprocal learning, the overcoming of sectorial disciplinary glances, the affirmation of interdependencies between different configurations of reality, to bring a territorial and urban context towards new evolutionary states. The reconstruction of the vulnerable places in our cities can be triggered by “adaptive architectures” that the territories-structures select: they are projects that have the ability to contextualise themselves with respect to the environmental, settlement and ecological dynamics to modify the space and its functions homologating through minimal transformations to meet the needs of the evolving context. Adaptations subsequent to the different conditions of reality also allow the territories to evolve through small modifications that record variations and changes not only of proximity. In this sense, even existing settlements subjected to multiple pressures, and thereby apparently unfit to innovate the city, may have new opportunities for regeneration. In the urban territories of the lagoon landscapes, the modifications are actions “enzymatic” (Boeri and Gregotti, 2006), which favour the ability to use unusual energies present in the territory to make the context evolve even in situations of fragility and vulnerability. Additionally, they can also develop in normally unsuitable settlement environments (confined, commodified, standardised, and so on), reworking the different components of contextual reality but simultaneously interacting with new rules that arise from the context.

The two experiences of Oristano and Tunis illustrate that the capacity for resilience is the capacity for resistance and recovery (Odum, 1988) of values, rules and knowledge, as described in the “decision-context perspective”. The need for adaptation to the new conditions that the lagoon settlements of the two cities are subjected to have higher priority and will have to be part of a wider design that starts from the “local” dimension and aims to build “resilient societies”, just as many require of the political agenda of all countries. The new alliances between institutions and between institutions and citizens engaging differently in the reorganisation of one’s living spaces are possible thanks to the sharing of a future project to initiate processes of change and lasting learning.

Contributors

The paper is the result of a common research made by the authors. The paragraphs "Introduction. Climate adaptation and place-based proximity" and "Urban generative structures and resilient societies" is edited by Silvia Serreli. The paragraph "Climate change and adaptive governance" is edited by Pier Paolo Spanedda. The paragraph "Decision-context perspective and project for new "urban alliances"" is edited by Giovanni Maria Biddau. The paragraph "The experiences" is edited by all contributors. The paragraphs "Regeneration of the terrain vague in the low density of settlements in Sardinia" and "Environmental and urban regeneration of Lac de Tunis" is edited by Gianfranco Sanna. The paragraph "High density in Grand Tunis and the environmental issue after the "Arab Spring"" is edited by Nesrine Chemli.

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Figures references

Figure 1a_drone image of lagoon Santa Giusta. Photo by Emilio Canu.

Figure 1b_Plane image of quarter of Lac in Tunis. Photo by Citizen59, CC BY-SA 2.0. https://www.flickr.com/photos/t_abdelmoumen/2921193842

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Flood

Can Miami learn from Venice (or the opposite)

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Abstract: On the one hand, “la Serenissima”, a millenary city, which saw its heyday between XIII and XV centuries. On the other “the Magic City”, famous for leisure and pleasure, born in the late nineteenth century from the encounter of two American pioneers. Apparently, they have nothing in common. Yet they share a lot in common. They are both situated in lagoon areas. They rely heavily on tourism and port activity for their economy. And, they find themselves at the frontline of climate change. Venice has always been confronted to flooding, but this condition has been worsening, due to over extraction from aquifers, which caused the city to subside, and to sea level rise. In contrast, flooding isn’t part of Miamians’ culture and tradition. In recent years, however, with climate change bringing about higher rainfalls and storm surges, and causing sea level to rise, Miami has been experiencing more and more floods. Both cities are now highly jeopardised. After developing on the differences and similarities between Venice and Miami, this article proposes to investigate what answers these cities come with to address climate change effects, and to question what they could learn from each other.

Introduction

Upon my first visit to Miami¹, seven years ago, looking at the city from a boat, I felt the same amazement as when, 30 years earlier, I saw Venezia for the first time: a city built not on land, but on water! This vision triggered my interest and I soon started wondering: why isn’t Miami River as busy as the *Grand Canale*? Is Miami also subject to *acqua alta*? My first impression was that, contrary to my idea of Venezia, an aristocratic old lady who lives on in a long term, complex and enduring relation with water - at once ally and foe - Miami is an *enfant gâté*, whose relation to the ocean is mainly hedonistic, apparently unconcerned by either its dangers or the opportunities its offers. Soon I discovered how fragile this *enfant gâté* really was, and how ignorant of his condition he seemed to be. I wondered: how could the old lady last so long in middle of water, lacking everything? I kept asking myself if there was anything the *enfant gâté* could learn from her about surviving with water.

I followed a simple methodology: I spent a lot of time looking around and I asking myself questions. I tried to imagine possible answers, then I looked for elements to corroborate or better to refute them. These elements came from publications, books, or other media. They sometimes resulted from discussions. At a certain point, I tried frame my iteration by summarising factual information that seemed relevant to the matter. I collected most of the data I used from 2015 through 2017.

I chose to include here non-academic references, first because they give an idea of what information non academics might have on the subject, second because non-academic information often refers to academic information, which may encourage further investigation that I did not engage in. Third and most importantly because they participate in the “Zeitgeist.” Indeed, the question that haunts me is how can we really begin to think climate change in the way that it is totally transforming the backdrop of our lives?

Some facts

Geography

Venice and Miami share the condition of being located in coastal lagoons.

A lagoon is a body of water separated from a larger body of water by a barrier. Coastal lagoons are situated along flat continental coastal plains. They are separated from the ocean or the sea by a sandbar also called

¹ I use “Miami” as a generic term designating Miami Dade County

“outer bank”. Coastal lagoons have brackish water, because of the freshwater they receive from rivers and the saline water that enters through inlets in the outer bank.

Lagoons are fragile and unstable environments, sensitive to sea level variations, which can either submerge them or dry them out, and to embankment, due to the settling of sediments carried by the rivers.

Many rivers originally carried freshwater to the “Laguna di Venice”, in particular, the Bracchiglione, the Brenta, the Dese, the Sile, the Piave and the Livenza. Some, including the Brenta and the Piave, were channeled out of the Laguna in an effort to stop silting. The outer bank of the Laguna di Venice is now known as the “Lido,” and Venice itself was built in the middle of the laguna, on four islets.

Miami is located on the coastal side of a lagoon called “Biscayne Bay,” whereas Miami Beach is located on its outer bank. Biscayne Bay receives freshwater from the Everglades, now mainly through the channeled “Miami River” but also from aquifers.

Both lagoons have comparable geology, typically consisting of layers of sediments, brought by the rivers, and confined aquifers, separated from the sediment layers by thin layers of clay. But in the Venice laguna, these sediments are mainly composed of sand, whereas in Biscayne Bay, the sediments consist of limestone.

One of the major differences between these lagoons is their respective coastal geography. In the case of Venice, the continental relief, first characterised by the large plain of the Pô, rapidly rises northward into the Dolomites and the Alps. Whereas in the case of Miami, it consists of the Everglades, a marshland that runs across the Florida peninsula, no higher than two meters above mean sea level, and has been partially drained and urbanised. Another major difference between Miami and Venice is their respective climate: subtropical in Miami², Mediterranean in Venice.

Economy

Venice and Miami rely mainly on tourism and maritime transport for their economy. Venice receives 20 million visitors each year and is one of the favourite destinations of Mediterranean cruise boats. Miami Dade County welcomes 16 million visitors each year and the Port of Miami is now the first cruise ship harbour in the world, with almost 5 million passengers in 2016-2017, Port Canaveral and Port Everglades, also located on the Florida East Coast are respectively second and third. In Miami, real estate is the other essential economical sector, whereas in Venice, petrochemical industry has been an important sector during the 20th century. But it is now in decline³.

History

The two cities differ totally in their respective histories. Venice goes back more than a thousand years, and saw its zenith in the Late Middle Ages, whereas Miami is only 125 years old and is still booming. Obviously, they developed in very different historical contexts and “Zeitgeists,” but both cities exemplify why and how human groups came to live in unwelcoming marine environments, and the specific technical and intellectual resources they developed for achieving that.

In the Venetian laguna, virtually in the sea, the first settlements in date from 500 AC.

This extremely unwelcoming environment was the natives’ best answer to escape invading barbarians. Facing barbaric perils, they preferred the perils of the sea. Or rather, they chose to put themselves under the protection of the sea. A very risky gamble, but one which would prove to have been a winning one. Indeed, the sea not only protected the Venetians from invasions for more than a thousand years, it also made their fortune. From very precarious premises, Venice developed to become one of the most important and richest European ports, dominating the eastern Mediterranean for three centuries⁴, compelling admiration and amazement from visitors⁵ with its astounding settings, its beauty and wealth. Venice’s existence in the middle of the sea, which

² Miami is actually the only metropolitan area of the western world with a subtropical climate

³ For more detail, see Molinaroli, E, Guerzoni, S., & Suman, D. (2018, May 21). *Adaptations to Sea Level Rise: A Tale of Two Cities – Venice and Miami*. Url: <https://doi.org/10.31230/osf.io/73a25> Last consulted on May 24, 2019

⁴ From 1204 and the sack of Constantinople, through 1453 and the fall of Constantinople

⁵ One of them, Marc’Antonio SABELLICO, reports in 1502: « *vien bagnata essa città non come molte altre da alcuna parte con le onde del mare, ma essa tutta in mezzo le acque è posta* » See Marc’Antonio SABELLICO, *Del sito di Venetia Città, Venise* [1502], Venise, Libreria Filippi editrice, 1985, p. 10. Quoted by Jean-François Chauvard, *Centralités et système urbain à Venise (XVe-XVIIIe siècle)*, Rives nord-méditerranéennes 26 | 2007, mis en ligne le 07 mars 2008. Url : <http://journals.openedition.org/rives/851> ; DOI : 10.4000/rives.851 Last consulted on May 23, 2019

had to be constantly fought for, fuelled the notion among visitors but above all among the Venetians themselves, of a Venetian myth, or even of a Venetian miracle⁶. A myth and a miracle that the Venetians political power relied on, nurtured and often orchestrated. Every year, on Ascension Day, the Venetians would celebrate la Sensa, re-enacting their marriage with the sea. The city itself became the theatre stage where architecture acted out the Venetian miracle, while, backstage, the struggle against water went on.

The conquest of Constantinople by the Ottomans, in 1453, is generally seen as having initiated the economic decline of Venice⁷. Very interestingly, it seems to have also triggered the implementation, by the Venetian Republic, of remarkable resource management policies and, in an apparent paradox, its unique cultural radiance. Both lasted until 1797 when Napoleon invaded the Veneto and Venice lost its independence.

Regarding resource management, one needs to bear in mind that, because of the city's settings, it lacked everything, except that which could be harvested from the sea, such as fishing products and salt. Rainwater had to be gathered in wells to provide fresh water⁸. Everything else, food (other than fish), construction material, timber, firewood, had to come from the mainland. Timber and firewood shortage were a major and constant concern, because the city needed enormous amounts of wood for its shipyard, its building activity, for the maintenance of its network of breakwaters and levees, and for domestic and industrial heating. As long as the Venetian fleet dominated the Mediterranean, commerce provided wood, but as of the capture of Constantinople by the Turks, the Venetian Republic saw its area of influence shrink, while its needs continued to grow. To the Venetian Authorities, the lack of wood became just as great a peril as flooding or invasion. Aware that they had to rely on a limited supply area, and despite their reluctance to interfere in the "terraferma," they decided that the Republic should take control of surrounding mainland forests so as to secure its wood provision, stop deforestation by the local population, whom they designated as the main cause of wood shortage because of their selfish, improvident and profligate behaviours which ran counter to common interest and natural order⁹. Seeing themselves as guarantor of natural and common interests, they set themselves to monitor and maintain forest ecology on the mainland in the same way that they had been doing for centuries with sea ecology, in the complex lagoon water system. And their motive was the same: survival, which they saw as depending on working with nature rather than against it. On the mainland, however, the peril did not come from nature itself, but, according to the Venetians, from the populations inhabiting it. The Venetian authorities adopted complex and innovative legislation, which notably designated vast forest estates as common goods, in order to make them inalienable (public good, "res publica," was an intrinsic value of the Venetian Republic), and they developed an unprecedented forestry bureaucracy to implement it¹⁰. Remarkably, their actions dramatically contrasted with the dominant contemporary European ideology, which promoted individual fulfilment through the improvement and privatisation of nature¹¹.

On the 12th of May 1797, Venice finally fell into the hands of the invader.

That day Napoleon Bonaparte's troops took the Veneto, putting a brutal end to the Venetian Republic, with its millennial independence, its comprehensive approach of environment, its sacrosanct principle of common goods, and of course of its arsenal. Napoleon immediately replaced the long enduring Venetian institutions and their organic value system by new ones, based on the values of the enlightenment which ruled the dominant European nations. External domination and mechanical values forced Venice to an abrupt and much deferred plunge into "modernity"¹². The subtle, challenging and painstaking convergence of ecology, public and private interests which characterised the Venetian miracle no longer ruled, indeed the time of miracles had long since

⁶ See Crouzet-Pavan, E. (1997). *Venise, une invention de la ville (xiii^e–xv^e siècle)*, coll. « Époques », Champvallon,

⁷ Another cause is the new navigation routes, which, as of 1492 would replace the old spice and silk routes

⁸ As Venetian historian and diarist Marin Sanudo (1466-1536) wrote : "Venice è in acqua ma non ha acqua"

⁹ For a detailed analysis of the relation between the Venetian Republic and the mainland forests, see Appuhn, K. (2009) *A Forest on the Sea: Environmental Expertise in Renaissance Venice*. Baltimore: Johns Hopkins University Press

¹⁰ Appuhn (2009) Op. cit p.114

¹¹ "The rhetoric of a providential nature that was favoured by Venetian forestry officials, reflects the persistence - in Italy - of Renaissance ideas of an organic, mystical nature, during a period when (...) Protestant Europe was often concerned with demystifying and desacralising nature." Appuhn, K. (2009) Op. cit. p.283

¹² I use "modernity" in the sense of the Modern Era as historical period and value system

ended, Now was the time for heroes subduing and dominating nature. And it was no one less than the champion of modern heroes, Napoleon, the true incarnation of Weltgeist according to Hegel, who finally brought an end to the Venetian miracle. From then on, the resources, which had to be protected before, would be exploited; nature, which had been seen as perfect, would require serious and constant improvement and common good would submit to private interests. This new set of values triggered a dynamic which probably culminated with the construction of the Malamocco-Marghera “canale dei Petroli” and petrochemical complex (1920-1968), which, as Pignatti and Seminara (2009) insist, caused irremediable alterations to the lagoon geology and biology¹³. Furthermore, in the course of the 20th century, over-extraction of groundwater by local industries caused Venice to subside by more than 10 cm while global sea level to rise by the same amount.

Nevertheless, Venice is still there, considered by many as the most beautiful city in the world. It now relies on its glorious heritage for its economy. Indeed, with twenty million visitors each year, in relation a population of now only 53.000 in the historic centre, tourism is Venice's main if not unique source of income, to such an extent that it jeopardises the future of the city as much, if not more, than sea level rise.

When the first Europeans arrived in what is now Southeast Florida, around 1500 AC, the Tequesta, had already been living there, at the mouth of rivers, since the 3rd century BC. But by the time Spanish Florida was traded to the British, in 1763, they had disappeared. A vast number had been decimated by the diseases the Spaniards had brought with them, others perished during their massive relocation to Cuba by the Spanish missionaries. The rest had dissolved into Christianity or into other minorities. Because of the omnipresent marshes, the heat, moist and the mosquitos, Southern Florida stayed basically uninhabited. The first European settlements remained extremely limited and strictly localised along the shoreline. But as of the beginning of 18th century, natives, chased Southward by the second wave of European colonisers coming from the Northeast, began to migrate into the vast and “uninhabitable” Everglades. To quote the above paragraph, you could say that “this extremely unwelcoming environment was the natives’ best answer to escape invading barbarians”. The story of their exodus into the uninhabitable marshlands began like that of the Venetians, but it developed in a dramatically different way. As the “Laguna” protected the Venetians, the wetlands sheltered the Seminoles from their enemy. Indeed, from 1816 through 1858, the US Government carried three long and expensive wars against them without totally submitting them. When the last diehards retreated deeper into the Everglades, the US Government gave up, because of the cost and because it was believed that no white settler would ever want to live there. However, this unwelcoming but vast and very sunny territory, populated by a few hundred natives, kept attracting more and more bold frontiersmen (and women). William and Mary Brickell, Julia Tuttle, John S. Collins, the Lummus brothers, Henry Flagler, Carl Graham Fisher are the heroes of this other American frontier. Today, their names punctuate the cities of Southern Florida¹⁴. But, in a strange analogy with Venice, the hero who must truly be credited for the development of Southern Florida, was also called Napoleon Bonaparte. Indeed, with mottos like “Drain that abominable, pestilence-ridden swamp¹⁵,” Napoleon Bonaparte Broward was elected to the office of Governor of Florida from 1905 until 1909. Draining the Everglades had been on US legislators’ agenda as early as in 1842, after all, the US had inherited the mechanist values from the European enlightenment and the belief that nature had to be improved to render it economically productive¹⁶. In 1906 Broward commissioned an engineer, James O. Wright, to establish the drainage plans and in 1908 the works started, launching a still ongoing process that would deeply modify the Southern Florida

¹³ Pignatti, S. & Seminara, G. (2009). *The future of coastal ecosystems: learning from Venice*. IN Rendiconti Lincei Url: <https://doi.org/10.1007/s12210-009-0048-6> Last consulted on May 23, 2019

¹⁴ In 1871 William and Mary Brickell settle on the south bank of Miami River. In 1891 Julia Tuttle settles on the north bank of Miami River, in Port Dallas (which would become Miami), In 1896, with the Brickells, she convinces Henry Flagler to bring the East Coast Railway down to Port Dallas, Flagler will actually extend it all the way down to Key West in 1905. In 1895 John Edgar and J.N. Lummus settle in Miami. In 1901 John S Collins settles on the barrier island that would become Miami Beach. In 1912, he builds the first bridge across the lagoon, with financing from the Lummus brothers and Fisher. In 1910 Carl J. Fisher buys land on the barrier Island, he is credited for naming it Miami Beach In 1911 Mary Brickell builds Brickell Avenue, running from the mouth of Miami River down to Coconut Grove and develops the area until her death in 1922. In 1912, the Lummus brothers buy land from Collins and start building modest family homes. In 1914 Carl J. Fisher Dixie builds Highway and joins in the development of Miami Beach.

¹⁵ Napoleon B. Broward, quoted by Carter, W. Hodding (2004). *Stolen Water: Saving the Everglades from its Friends, Foes, and Florida*. Atria Books. p. 78

¹⁶ For more on this theme, see: Capra, F. & Mattei, U (2015) *The Ecology of Law*, Oakland, CA, Berret-Koehler

landscape and bring its population from a few thousands to more than 8 million¹⁷. Unforeseen consequences, such as flooding, drought, peat fires, subsiding of the arable peat layer and salt water intrusion (not to speak of flora and fauna destruction) were felt as soon as in the 1920s¹⁸, but the process went on regardless and it is only in the 1970s, when it became clear that draining the Everglades would deprive Southern Florida of drinking water, that it was called into question¹⁹.

Drainage of the Everglades wasn't the only factor that made Southern Florida's demographic explosion possible, as Anthony Oliver Smith puts it: "Technological innovations such as pesticides, air conditioning and mass transportation have transformed Florida from a problematic environment for human habitation into one which is now inhabited by millions. In turn, population growth, agribusiness, tourism, and specific patterns of urban development have seriously affected the fragile ecology of Florida²⁰."

Actually, the technological developments made during the 20th century didn't transform this problematic environment, but they substantially reduced its impact on humans. Set them aside, and the environment is just as problematic as it ever was. Worse, at the scale of the planet, these developments contributed to sea level rise and extreme climate episodes intensification (such as hurricanes), which both particularly threaten Florida. Thus today, this environment inhabited by millions, with its affected ecology, is an outpost on the climate change front line.

Nevertheless, Miami is there today. Like Venice, it is a myth and a miracle, but in a different way. Over a period of the few decades, this somewhat provincial but sunny resort for middle class retirees became an international metropolis.

Sea level rise

For dominant scientific research sea level rise is an effects of climate change, caused by the combustion of carbon rocks (coal, oil and gas). Melting of continental ice caps is the principal factor of sea level rise. Sea level rise isn't homogenous throughout the planet, other factors such as thermal expansion, currents, winds and vertical movements of the lithosphere interfere with it. Its principal consequences include shoreline recession, land and fresh water salinisation, fauna and flora migration. Based on 2006 data, some 100 million people would be affected by a 1m sea level rise²¹. But sea level rise could reach 2,5 meters by 2100²², and population is scheduled to keep growing at least until 2050.

Like all existing lagoon areas, Venice and Miami are highly sensitive to sea level rise, but the risks they incur are different, due to their respective conditions in terms of vulnerability, preparedness and

¹⁷ For an analysis of the James O. Wright project and its consequences, see: Meindl Ch. F. Alderman D. H. & Waylen P. (2002) *On the Importance of Environmental Claims-Making: The Role of James O. Wright in Promoting the Drainage of Florida's Everglades in the Early Twentieth Century*. Annals of the Association of American Geographers. Vol. 92:4 pp.682-701 Routledge Url: <https://www.tandfonline.com/doi/abs/10.1111/1467-8306.00311> last consulted on May 21, 2019

¹⁸ For a summarisation of the Everglade drainage process and its consequences, see: Ingebritsen, S.E. McVoy, Ch. Glaz, B. Park, W. *Everglades: Florida Everglades: Subsidence threatens agriculture and complicates ecosystem restoration IN Land Subsidence in the United States* (2001) US Geological Survey. P. 95 Url: <https://pubs.usgs.gov/circ/circ1182/pdf/12Everglades.pdf> Last consulted on May 22, 2019

¹⁹ See <https://www.miamiherald.com/opinion/editorials/article219304995.html>, Last consulted on May 21, 2019

²⁰ Oliver-Smith, A. *et al. Climate Change, Disasters and Development in Florida*. In press

²¹ See Anthoff, D., Nicholls, R.J., Tol, R.S.J. and Vafeidis, A.T. (2006) *Global and regional exposure to large rises in sea-level: a sensitivity analysis* (Tyndell Centre for Climate Change Research working papers, 96) Norwich, UK. Tyndell Centre for Climate Change Research 31pp.

²² See: National Oceanic and Atmospheric Administration (NOAA) (2017) *Global and Regional Sea Level Rise Scenarios for the United States*. Technical Report NOS CO-OPS 083 url: https://tidesandcurrents.noaa.gov/publications/techrpt83_Global_and_Regional_SLR_Scenarios_for_the_US_final.pdf Last consulted on May 28th 2019

responsiveness, but probably also because of cultural specificities, which can act as invisible barriers, distorting the perception and hindering adequate reaction.

Venice:

Risks

In Venice, the main stake seems to be: “Save the landmark.” It is the principal leitmotif of local and international publications. Even more so since the listing of Venice as a World Heritage Site in 1987 by UNESCO, which forces the Italian Government to take measures to insure its protection²³. But as Antonella Marsico *et al.* (2017) demonstrate²⁴, it is not only Venice that is jeopardised by sea level rise, but the whole highly²⁵ populated, industrial and touristic Northern Adriatic region. Indeed, Marisco’s maps shows that even with IPCC ARS 8.5²⁶ minimum scenario of 0,53 m. rise of mean sea level by 2100, 4.616 km² would be flooded, and the coastline would move back as far as 60 meters.

Preparedness

After the damaging November 1966 acqua alta, Venice began to study answers to flooding. Pressure increased when the city was listed among World Heritage Sites. Institutions at state, regional and local level have the mission to deal with it, but they seem to have been “treading water” because of ill-adapted legislation, poor coordination and corruption²⁷. Academic institutions have been producing abundant research on the subject, faculties have included “ambiente climatico” and “aumento del livello del mare” in their curricula. Concrete measures are being taken, at large scale with the still unfinished Modulo Sperimentale Elettromeccanico (MoSE) project²⁸, at local scale with the renovation of the canals and of building foundations. An environmental approach is also developed, notably with the works of the biologist Davide Tagliapietra²⁹ and engineer Alberto Barausse³⁰.

Responsiveness

One might well doubt if the MoSE will help. First, because one may question if it will ever be completed. Second, because, as Jeff Goodell (2017) observes³¹, the MoSE was initially designed to face high tides of more than 110 cm and up to 270 cm, but not to face sea level rise. In 1987 and the UNESCO listing however, the project was adapted to what was then a “pessimistic scenario” of a 30 cm increase of mean sea level by 2100. But since then, pessimistic scenarios became more pessimistic, many foresee a 50 cm increase by 2050.

²³ See UNESCO’s Convention Concerning the Protection of the World Cultural and Natural Heritage, and more specifically Article 4 (url: <https://whc.unesco.org/en/conventiontext/> Last consulted on May 23, 2019)

²⁴ Antonella Marsico, Stefania Lisco, Valeria Lo Presti, Fabrizio Antonioli, Alessandro Amorosi, Marco Anzidei, Giacomo Deiana, Giovanni De Falco, Alessandro Fontana, Giorgio Fontolan, Massimo Moretti, Paolo E. Orrù, Enrico Serpelloni, Gianmaria Sannino, Antonio Vecchio & Giuseppe Mastronuzzi (2017) *Flooding scenario for four Italian coastal plains using three relative sea level rise models*, Journal of Maps, 13:2, 961-967

²⁵ 853.000 inhabitants for the Provincia di Venezia in 2012, according to official Italian statistics url: <https://ugeo.urbistat.com/AdminStat/it/it/demografia/popolazione/venezia/27/3>. Last consulted on May 23, 2019)

²⁶ Url: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_summary-for-policymakers.pdf

²⁷ For more detail, see Molinaroli *et al.* (2018) Op. Cit.

²⁸ Url: <https://www.mosevenezia.eu/?lang=en> last consulted on May 23, 2019

²⁹ Tagliapietra, Davide & Sigovini, Marco & Volpi Ghirardini, Annamaria. (2009). *A review of terms and definitions to categorise estuaries, lagoons and associated environments*. Marine and Freshwater Research. 60. 497-509. 10.1071/MF08088

³⁰ Url: <http://www.lifevimine.eu/en/index.php> Last consulted on May 23, 2019

³¹ Godell, J. (2017, Dec. 5) *Rising Waters: Can a massive barrier save Venice from drowning?* Yale Environment 360 Url <https://e360.yale.edu/features/rising-waters-can-a-massive-sea-barrier-save-venice-from-drowning>

Regarding the protection of the cultural heritage, the existing situation is daunting, because mean sea level is already higher than the waterproof stone that forms the base of the constructions, and the city suffer from worsening floods. On the other hand, the uniqueness of Venice and its international positioning as inescapable hub of ancient and contemporary art attracts sponsors and donors worldwide and the environmental approaches which reconnect with the Venetian tradition of working with nature rather than against it might open the way to a more global and complex approach of the issue.

Invisible barriers

As Molinaroli *et al.* (2018)³² insist, corruption and extreme political imbroglia stop useful initiatives from developing and drain away financial resources. They add that because public administrations wouldn't resort to public participation and area-based management, locals grew demotivated. Indeed, as Mitchell (2017) insists³³, maintenance of the levees and of the canals went on for as long as Venice was independent, and Venetians acted as a community. When their exclusive competence and responsibility to manage their environment was assigned to external agents³⁴, such as the Italian Government or even the UNESCO, the Venetians no longer cared.

Miami:

Risks

"Save the assets" is the motto of in Miami. The Union of Concerned Scientists estimated in 2018 that, only for Miami Beach, \$6.4 billions of real estate value could be lost by 2045, causing a loss of \$91 millions of property tax³⁵. What about under-privileged neighbourhoods and their inhabitants? In 2013, Miami Dade County had a population of 2.6 million, with a poverty rate of 21%, which places it on the poor side of US counties and increases their vulnerability. Other crucial stakes are of course saline water intrusion in the fresh water aquifers³⁶ and contamination of sea water by polluted soils.

Preparedness

Despite abundant publications as of the late 1980s³⁷ very little was done in Florida regarding climate change and flooding for almost 3 decades. Denial regarding climate change, or blind trust in the ability of technology come up with answers, seem to have prevailed. In the last decade, things started to change. Public authorities adapted their agendas, new agencies were created³⁸, with new officials, like the chief resilient officer³⁹. New

³² Molinaroli *et al.* (2018) Op. cit.

³³ Mitchell, Katherine D., *Cultural Heritage and Rising Seas: Water Management, Governance, and Heritage in Venice and Amsterdam* (2017). UVM Honors College Senior Theses. 161. Url: <http://scholarworks.uvm.edu/hcoltheses/161> Last consulted on May 28, 2019

³⁴ Incidentally, it is interesting to note that choice collective arrangements and monitoring are two of the Elinor s' Design principles illustrated by long enduring common pool resource institutions

³⁵ Union of Concerned Scientists (2018) *Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate*. See <https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-full-report.pdf> Last consulted on May 28th 2019

³⁶ See <https://www.bloomberg.com/news/features/2018-08-29/miami-s-other-water-problem> Last consulted on May 27th 2019

³⁷ In 1982 NASA published its Global Habitability report. Url: <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19820025024.pdf> Last consulted on May 22, 2019

In 1985 the World Meteorological Organisation (WMO) published its first report on the assessment of the role of carbon dioxide and of other greenhouse gases in climate variations in 1986. Url: https://library.wmo.int/index.php?lvl=notice_display&id=6321#XOWG2S2ZPow Last consulted on May 22, 2019

³⁸ For a comprehensive synthesis of these agencies and their actions, see Molinaroli, E, *et al* (2018) Op. Cit.

³⁹ To know more about CROs, see <https://www.100resilientcities.org/what-is-a-chief-resilience-officer/> last consulted on May 23, 2019

zoning plans were drawn. The service sector saw the multiplication of actors. Academic institutions adapted curricula and developed research. Coordination between all these actors was provided for with the creation of The Southeast Florida Climate Change Compact⁴⁰. As for fieldwork, so far, it consists mainly in raising street level, raising sea walls, upgrading water drainage systems, beach sand replenishment, dune build-up, etc. These measures, and their potential effects, are timid if compared with the Venetian MOSE or with the Dutch flood defence, but similar measures would not serve in Miami, because of the porous nature of its soil.

Responsiveness

Miami's awakening to the reality of sea level rise is not simple. The new public and private agencies spent a lot of time debating on definitions and projections. At an institution level, the Climate Change Compact produced guidelines, but even administrations fail to implement them. Indeed, between 2008 and 2016, new zoning plans covered most of the areas of Miami Date County that should be directly impacted by sea water rise. A non-exhaustive list of these plans comprises:

- Coconut Grove Waterfront and Spoil Island Master Plan (2008)
- Museum Pak Master Plan (2008)
- Virginia Key Master Plan (2010)
- Downtown Miami Masterplan (October 2009)
- Miami Beach Strategic Plan (2011);
- Port Miami 2035 (November 2011);
- City of Miami Beach Stormwater Management Master Plan (2012);
- Overtown Mobility Plan (2014);
- The Underline Framework Plan (December 2015);
- Neighborhood Revitalization District (May 2015);
- PlanNoBe proposed North Beach Master Plan (2016 draft);
- Mana Wynwood SAP (2016);

But remarkably, out of these twelve plans, only three (PlaNoBe, Port of Miami and Miami Beach SWMMP) mention sea level rise. Of those three, only two (PaNoBe and Miami Beach SWMMP) describe measures to address it. Basically, the strategy consists in rising urban zones above water before water rises above urban zones. Academic institutions focus mainly on design, technical and engineering solutions⁴¹ when there seems to be major educational and cultural deficiencies.

The physical measures show limits. Beach sand replenishment is a Sisyphean task. Sea walls induce erosion and scouring, they also constitute basins once they are overflowed. Rather than adapting to sea level rise, these two measures protect private property and business at the detriment of public good. Street rising turns private properties into basins, which require pumping when it rains. When they don't fail, pumps spill pollution into the ocean. Geologist Harold Wanless⁴² says that these measures are "just the tiniest little Band-Aid for a cost of hundreds of millions of dollars, and they certainly won't get us to the middle of the century⁴³." He isn't the only expert who has doubts about their effectiveness: Dutch sea level rise expert Henk Ovink called Miami

⁴⁰ Url <http://southeastfloridacclimatecompact.org> Last consulted on May 28, 2019

⁴¹ For an illustration Url: <https://climate.miami.edu/built-environment/> Last consulted on May 23, 2019

⁴² For a more detail on Professor Wanless analysis of the Southern Florida situation, Url: <https://arboretum.as.miami.edu/assets/pdf/wanless.pdf>

⁴³ Excerpt from an interview by Kamp, D. (2015) Can Miami Survive Global Warming? Vanity Fair Nov. 10, 2015 Url: <https://www.vanityfair.com/news/2015/11/miami-beach-global-warming> Last consulted on May 23, 2019

the “New Atlantis”⁴⁴.” Despite all of that, interesting social work is made with disadvantaged communities to reduce their vulnerability and increase their preparedness and responsiveness to flooding⁴⁵.

Invisible barriers

As in Venice, “non-physical” factors complicate this already challenging picture. These non-physical factors are political, like climate scepticism at the head of the nation and of the state, and the consequent muzzling of administrations, or election deadlines which do not facilitate long term perspective. They are structural, with a system based on individualism, private interest and private property. They are economical, with a booming tourism and real estate business which masks the problem, and with a tax system grounded on real estate. They are social, with a high poverty level, and high social disparities⁴⁶, which in turn cause high social vulnerability. They are cultural, with blind confidence in technology⁴⁷, or with the concept of a war between man and nature, which the presentation of the “Miami Beach Rising Above” project during the Philip Levine Mayoral Office (2013-2017) exemplified: « The goal of these actions is to leverage existing resources to develop a mutually-beneficial solution that helps **combat** [emphasis mine] sea level rise challenges in Miami Beach and other coastal municipalities⁴⁸.»

Discussion: What made Venice so long enduring?

Let us at once dismiss that it might have been an amazingly favourable set of circumstance, it would be hard indeed to believe that it might have lasted so long. Environmental determinism, should also be ruled out, because if Venice developed in the laguna, earlier settling in the same environment, such as Spina and Ammiana⁴⁹ on the West side of the laguna didn’t. History shows however that the Venetians held a strategic and naturally protected position on the Middle Ages trade routes. But it also shows that it took them daunting efforts to live and flourish there. From these premises, living in the sea required technologies and competences, social consensus, excellent governance and resource management.

Premises

The humble premises of Venice are essential. Indeed, the first settlers did not come to live in the laguna as conquerors, but as runaways. They preferred the dangers of the sea to those of the barbarians. But once the danger had gone, the settlers never returned to the mainland. Why?

If, fleeing from a dreadful enemy, you placed yourself under “something’s” protection, and if this “something” really scared you enemies off, you would probably be at once grateful, respectful and fearful, and soon you would establish some sort of ritual. This view was shared by French archaeologist Salomon Reinach (1858-

⁴⁴ See <http://www.miaminewtimes.com/news/dutch-sea-level-rise-expert-miami-will-be-the-new-atlantis-a-city-in-the-sea-7628340> Last consulted on May 27, 2019

⁴⁵ Such as the workshops organised by the Cleo Institute and the Miami Dade Office of Resilience. See <https://www.cleo-institute.org/cleo-event-calendar/2019/4/10/sea-level-rise-strategy-workshop> Last consulted on May 27, 2019

⁴⁶ For more on this, see: <http://www.miamidade.gov/planning/library/reports/2007-socio-economic-overview.pdf> Last consulted on May 27, 2019

⁴⁷ “If, 50 years ago, I had shown you an iPhone and an iPad, and how FaceTime works, you would have thought I was insane. So, 10, 20, 30 years from today, humankind will come up with amazing, innovative ideas that will create an even greater level of resiliency for coastal cities.” Philip Levine, Miami Beach Mayor (2013-2017) quoted by Davide Kamp (2015) Can Miami Beach Survive Global Warming. Vanity Fair. Nov. 10, 2015. See: <http://www.vanityfair.com/news/2015/11/miami-beach-global-warming> Last consulted on May 27, 2019

⁴⁸ this page is no longer available on the official Miami Beach website (<https://miamibeachfl.gov>). But it can still be found through this link: <https://www.arcgis.com/home/group.html?id=85b8180f390341dda4903f8d1fc90c4b#overview> Last consulted on May 30, 2019

⁴⁹ for more on submarine archeology in the Venice lagoon, see the works of Ernesto Canal (1924-2018) or more recently Prof. Carlo Beltrame (<https://www.unive.it/data/persona/5591312#>)

1932), who saw in “La Sensa” the Christian re-appropriation of a pagan propitiation and reconciliation ritual⁵⁰. The ritual lasted as long as the Republic did⁵¹, reminding Venetians that their union with the sea must always be renegotiated. It is the basis of the Venetians’ concepts of power, community and property. Human power is limited by forces beyond mankind. In the sea, the individual is helpless, but the community can navigate. If you live on the sea, you know you can’t own it.

Technology and Competence

The Venetians had to develop specific technologies in fields such as marine environment construction, shipbuilding, fresh water harvesting. They also had to develop competence in fields such as hydrology and navigation. And because they had to secure their food supply, they also became strategists and masters in the art of war. They used these technologies and competences with nuance. They managed their unstable sea environment through constant monitoring and careful maintenance. When needed, however, they would actively intervene on it, not to dominate it or to transform it, but to keep it in what they saw as an optimum natural state. Similarly, the Venetians dealt with a challenging geo-political environment with active and astute diplomacy, in order to maintain an favourable equilibrium in the “game of powers.” But when needed, they were ready for war. Maintaining these equilibria was extremely costly. It required a social consensus and an excellent governance.

Social consensus

The Venetians were like the rowers on a “galeazza⁵²,” rowing in the same direction at the same pace. As Elisabeth Crouzet-Pavan (1997)⁵³ insists, the myth or miracle of Venice consisted at once of the impossible longevity of the Venetians in the sea, their surreal city, and the stability of their institutions, which the Venetian institutions exploited to reinforce consensus.

Governance

Governance also played a crucial, with three remarkable qualities: long term vision, provision, pragmatism. These qualities stand out in many episodes of Venetian history, as when the Doge Enrico Dandolo used the 4th crusade to bring down Constantinople, or when Venice decided to divert rivers out of the laguna to stop silting. Abundant documentation shows that the Venetians have always been aware that the survival of their City, in the face of submersion, required constant and towering action.

Resource management

Resource management played a key role in Venice’s longevity. Because of Venice’s permanent need of fresh water and wood. As Appuhn (2009) demonstrates, the question of wood shortfall was a permanent concern. It brought the Venetians authorities to overcome their reluctance to interfere in mainland affairs, in order to enforce as of 15th century, forestry management based what would now be called sustainable exploitation. The Venetians understood that the optimum of private agents operating on high discount rates, was to cut forests clear and convert them into field or pasture, whereas the continuous flow of wood they needed meant low discount rates, which could only be expected if the forest were either communal or state owned. They also understood that they had a limited supply area, and that therefore, the forest must be allowed to replenish. To ensure this, they created “commons” when in the rest of continental Europe and England, enclosure of commons had already been ongoing for a long time. I would argue that, very interestingly, as their knowledge of forestry developed, the Venetians progressively implemented almost all of the eight design principles which, according to Elinor Ostrom, are illustrated by long enduring common pool resource institutions⁵⁴.

⁵⁰ Reinach, S. (1906) *Le Mariage avec la Mer* IN Cultes, mythes et religions, t. II, p. 206-219, Ernest Leroux, Paris Url: https://fr.wikisource.org/wiki/Le_Mariage_avec_la_mer Last consulted on May 30, 2019

⁵¹ It was reestablished in 1966

⁵² XVI Century Venetian boat

⁵³ Crouzet-Pavan, E. (1997). Op. cit

⁵⁴ Ostrom, E. (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press

As a reminder, these principles are: 1) Clearly defined boundaries; 2) Congruence between appropriation and provision rules and local condition; 3) Collective-choice arrangements; 4) Monitoring; 5) Graduated sanctions; 6) Conflict-resolution mechanism; 7) Minimal recognition of right to organise; 8) Nested enterprises⁵⁵.

Conclusion

Venice is the result of an alliance between man and sea. As their dominance over the Mediterranean declined, the Venetians developed awareness of their finite environment and of resource scarcity. They passed another alliance, this time with the Forest. Because of where the Venetians came from, their culture fostered community rather than individuality, common goods rather than private ones, complexity rather than simplification, soft approaches rather than hard ones.

Miami did not rise from the same premises as Venice. The forces that created Miami were similar to those that defeated the Venetian Republic. And if, like the early Venetians, the Seminoles had no better choice but to live in the Everglades, the white settlers, who came after them and triggered the spectacular development of Miami, did not come because they had no better choice. On the contrary, Julia Tuttle, William Brickell, John S. Collins, the Lummus brothers, Henry Flagler, Carl Graham Fisher, etc., had all the possible choices. They did not have to adapt to this environment, they came to adapt it to their visions. The “Magic City” developed at the cost of its resource, the Everglades and their fresh water. The values of conquest, domination and transformation of nature go in a different direction. They brought the world in an environmental deadlock. And that environmental deadlock now particularly threatens both Venice and Miami.

On which forces should Venice and Miami rely for their future?

On the forces of an alliance between man and nature, which carried Venice for a thousand years? Or on the forces of the domination of man over nature, which, a little more than a century, have imperilled both Venice’s and Miami’s future?

Maybe the old lady and the enfant gâté should share their stories.

⁵⁵ It would be extremely interesting to analyze Appuhn’s research from this perspective

A Comparative Analysis of Local Climate Change Adaptation Plans for Natural Disaster Risk Reduction in South Korea

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Abstract: As abnormal weather phenomena due to climate change globally continues, the frequency of natural disasters and human and economic losses from floods, typhoon, heatwaves and heavy snow are constantly increasing in South Korea. For the last ten years (2008~2017), the total disaster damage cost was expected to be about \$3 billion in South Korea. In response, South Korea established climate change adaptation plans based on the Low Carbon and Green Growth Act enacted in 2010. Local governments adopted detailed implementation strategies to mitigate and adapt climate change based on water management, energy, health and natural disaster management since 2011. This study compared 218 local climate change adaptation plans regarding natural disaster reduction strategies. Using content analysis, this study evaluated natural disaster reduction strategies based on natural disaster types and the stage of disaster management. Moreover, this study examined the regional differences in priorities of natural disaster risk reduction strategies to implement through spatial analysis. The result of the analysis shows that the local climate change adaptation plans are mainly focused on the improvement and reinforcement of physical structures to prevent damage from typhoon and heavy rain in South Korea. This study is expected to provide keys and knowledge for basic local governments to establish the next climate change adaptation implementation plan.

Keywords: climate change, natural disasters, local climate change adaptation plan, South Korea

Introduction

Climate change is perceived as a global issue. The phenomenon affects various sectors such as healthcare, environment and energy, and is becoming even more intense. In 1990, when the IPCC First Assessment Report was issued, the main concern was to determine the existence and impact of climate change. However, as climate change incurred various environmental changes, the approach to alleviating the impact of climate change has been expanded to the approach to adapt since the 2000s (Kim et al., 2014). Furthermore, the IPCC emphasized the importance of ‘climate change adaptation’ in the Fourth Assessment Report in 2007.

Climate change causes an extremely cold climate and incurs severe property and human damages in fields such as healthcare, infrastructures, ecosystem, agriculture, etc. In particular, Korea is suffering damages every year due to heat and cold waves, local heavy

rains and typhoons caused by climate change. Thus, the government is establishing climate change adaptation policies to reduce damages from climate change and improve the adaptation capacity of each local government. The ‘Climate Change Adaptation Action Plan’ as a plan to adapt to climate change is established at the national level, as well as in the upper-level and lower-level local governments. Currently the central government and upper-level local governments established the 1st Plan in 2012 and then the 2nd Plan in 2016. Lower-level local governments have begun to establish the 1st Plan in 2013 considering the circumstances of each region, and currently all lower-level local governments except four regions have completed the establishment of the plan. In addition, the central government is advising each region to revise and improve the details of the plan in light of the climate change policy implementation details every year. However, the revisions have not been properly assessed, and it turned out that there are still certain inadequacies in terms of content (Kim et al., 2014).

Accordingly, the present study conducts a content analysis on the details of the Climate Change Adaptation Action Plan of 221 lower-level local governments in Korea, and suggests matters to improve for effective establishment and implementation of the climate change adaptation plan.

Literature Review

Planning may perform the role of supporting decisions for public interests under complicated circumstances, and its level may vary depending on the purpose and contents of the plan, or the conditions and circumstances in which the plan is established (Hopkins, 2001). In other words, it is important to analyze the contents of the plan since it is essential for the right function of planning to operate properly. Moreover, it is also important to analyze whether the plan can effectively deal with the uncertain future (Berke et al, 2012), and also whether it includes the optimum strategies to accomplish the goal of planning (Wildavsky, 1973).

Studies that analyzed planning mostly defined its success or failure, and are evaluating plans by organizing evaluation principles and indexes. Most previous studies evaluated planning based on content analysis, and the evaluation principles and indexes used in each study were based on a basic evaluation framework.

Alexander et al. (1989) conceptualized the evaluation criteria to distinguish ‘good’ and ‘bad’ planning, and presented an evaluation system utilizing the criteria. They presented the policy-plan/programme-implementation-process (PPIP) model for evaluation of planning and detailed criteria for evaluation such as conformity, rational process, optimality ex ante, optimality ex post, and utilization. Brody (2003) evaluated the plan to mitigate national hazards using content analysis. He provided three evaluation principles such as fact base, goals, and action, and evaluated the plan by developing detailed evaluation indexes. Berke et al. (2005) presented an evaluation method focused on plan implementation to resolve the issue of evaluation focused on contents. They defined successful planning as ‘how well plan implementation is done’, and developed detailed items such as plan equality, enforcement style and awareness building. Baynham et al. (2012) used content analysis to evaluate the climate change action plan in terms of adaptation and reduction. They presented fact base, goals, policies, and implementation as the evaluation principles, and used detailed indexes for evaluation. Baker et al. (2012) used multi-criteria analysis to evaluate the climate change plan. They focused on planning-based policies rather than the contents of the plan, or the improvement level through business, and used total 8 evaluation criteria for evaluation. Berke et al. (2012) conducted research on evaluation of the coastal hazard mitigation plan using content analysis. They divided evaluation principles into internal and external indexes, presenting goal, fact base, mitigation policy, and implementation and monitoring for the internal indexes and interorganizational coordination and participation for the external

indexes. Lyles et al. (2014) used content analysis to evaluate the local hazard mitigation plan. They divided evaluation principles into direction-setting and action-oriented principles, with presenting goal, fact base, and policies for the direction-setting principles and participation, inter-organizational coordination, implementation, and monitoring for the action-oriented principles. Kim et al. (2014) evaluated the Climate Change Adaptation Action Plan of 16 upper-level local governments in Korea using the logic framework analysis (LFA). They presented 4 evaluation principles such as goals, fact base, decision making, and implementation and evaluation, and evaluated the plan using 17 detailed evaluation indexes.

As a result of the literature review, it was found that previous studies were organizing the principles of evaluation based on the components of the plan contents. General components of contents are comprised of fact based analysis, vision/goal setting, policy establishment, implementation and maintenance planning, and participation planning. Previous studies defined 'fact base analysis' and 'vision/goal setting' all equally as 'fact base' and 'goal' (Baynham et al, 2012; Berke et al, 2012; Brody, 2003; Kim et al, 2014; Lyles et al, 2014), but defined 'policy establishment' in different ways such as 'policy' (Baynham et al, 2012; Lyles et al, 2014), 'mitigation policy' (Berke et al, 2012), and 'decision' (Kim et al, 2014). They also defined 'implementation and maintenance planning' as 'implementation' (Baynham et al, 2012; Lyles et al, 2014), and also considered 'monitoring' (Berke et al, 2012) or 'evaluation' (Kim et al, 2014), or even newly defined it as 'action' (Brody, 2003). They defined 'participation planning' by considering both 'participation' and 'inter-organizational coordination' (Berke et al, 2012, Lyles et al, 2014).

Moreover, most evaluations were focused on the contents, and also outcomes of planning as well. In other words, previous studies conceptualized the success of planning as the adequacy of content and performance. That is, previous studies mostly analyzed and evaluated the contents of planning using content analysis with regard to the adequacy of contents, and empirically analyzed and evaluated the possibility and outcomes of planning and plan implementation with regard to the adequacy of performance. In this aspect, this study is an evaluation focused on the contents of a plan, and is differentiated from previous studies as it evaluates the climate change plan in terms of disasters.

Climate Change Adaptation Plan (CCAP) in Korea

Korea is establishing the Climate Change Adaptation Action Plan as a means to improve the adaptation capacity of the nation and local governments to climate change. The Climate Change Adaptation Action Plan is a five-year plan established at the level of the nation as well as upper-level and lower-level local governments. The government enacted the Framework Act on Low Carbon, Green Growth in 2010 as well as its Enforcement Decree, and made planning mandatory by law.

The government established the 1st National Climate Change Adaptation Plan in 9 sectors such as public health, water management and agriculture in 2011. Based on the above, the Action Plan for each of the local governments was established: upper-level local governments since 2012, and lower-level local governments since 2013. Then in 2016, the 2nd National Climate Change Adaptation Plan was established based on adaptation as well as economic, social and environmental sectors. Accordingly, upper-level local governments established their 2nd plan, whereas lower-level local governments still only have the 1st plan considering their regional circumstances.

Table 1. Changes in the National Climate Change Adaptation Plan

Division [↗]	1 st National Climate Change Adaptation Plan(2011-2015) [↗]	2 nd National Climate Change Adaptation Plan(2016-2020) [↗]
Sector [↗]	<ul style="list-style-type: none"> • Carry forward adaptation measures for each of the 9 sectors[↗] 	<ul style="list-style-type: none"> • Establish an integrated adaptation system based on adaptation as well as economic, social and environmental sectors [↗]
Paradigm [↗]	<ul style="list-style-type: none"> • Present only the need for measures in each sector to accomplish the long-term vision [↗] 	<ul style="list-style-type: none"> • Differentiate mid/long-term and short-term visions and goals for climate change adaptation at the national level [↗]
	<ul style="list-style-type: none"> • Develop and carry forward measures limited to climate change adaptation [↗] 	<ul style="list-style-type: none"> • Create joint benefits by considering both climate change reduction and adaptation[↗]
Content [↗]	<ul style="list-style-type: none"> • Preferentially select the measures carried forward by each department [↗] 	<ul style="list-style-type: none"> • Establish scientific and demand-based measures based on climate change impact and risk evaluation [↗]
	<ul style="list-style-type: none"> • Parallel structure of measures in each sector[↗] 	<ul style="list-style-type: none"> • Set priorities and key strategies of adaptation in each sector and promote a virtuous cycle of economy, society and environment with climate change adaptation [↗]
	<ul style="list-style-type: none"> • Obtain relevance with government keynote and higher-level plans [↗] 	<ul style="list-style-type: none"> • Secure consistent direction with the value of the policy by establishing climate change adaptation principles [↗]
Implementation	<ul style="list-style-type: none"> • Inspect whether measures are carried forward regularly[↗] 	<ul style="list-style-type: none"> • Strengthen implementation and inspection systems [↗]

Methodology

Subjects

The present study analyzed the contents of the Climate Change Adaptation Action Plans of lower-level local governments in Korea. To this end, the subjects were the Climate Change Adaptation Action Plan of 221 out of 226 lower-level local governments, excluding 4 regions that did not establish the plan (Dongdaemun-gu of Seoul, Ongjin-gun of Incheon, Dong-gu of Daejeon, Jangsu-gun of Jeonbuk) and 1 region from which data could not be obtained (Yanggu-gun of Gangwon).

Analysis method

The analysis process of this study is as follows: 1) data organization, 2) coding of a detailed plan, 3) comparative analysis by region and disaster type, and 4) correlation analysis between disaster damage and plan contents.

To begin with, to analyze the disaster plan in the Climate Change Adaptation Action Plan, this study came up with total 1,684 detailed plans by organizing data based on content analysis. Then, this study set the dimensions for coding of detailed plans, with reference to the principles used in previous studies for evaluation as well as the components of the climate change plan in Korea.

The Climate Change Adaptation Action Plan in Korea is comprised of overview, climate change adaptation status and forecast, goals and detailed strategies, action plans for each field, plan implementation and management. The overview of the plan includes contents about the background and

purpose of planning, basis, and establishment procedures. The climate change adaptation status and forecast include vulnerability analysis on climate change. The goals and detailed strategies include visions, goals and detailed strategies to achieve them. The action plans for each field include the details of the adaptation plan, and plan implementation and management include specific details of implementation such as plan, schedule and budget as well as future management plans.

Previous studies are using fact base, goal, policy, implementation, and participation as the basic framework of plan content evaluation. In association with the Climate Change Adaptation Action Plan in Korea, fact base refers to the overview and climate change adaptation status and forecast, goal refers to goals and detailed strategies, policy refers to action plans for each field, and implementation and participation refer to plan implementation and management. This study ultimately used fact base, goal, policy, and implementation & participation as the dimensions for the content analysis of the Climate Change Adaptation Action Plan in Korea.

Next, the present study provided the operational definition of each dimension. Fact base is defined as ‘Which of the physical, socioeconomic, and institutional vulnerability due to climate change is considered in priority?’. Goal is defined as ‘Is the action plan establishing climate change adaptation and reduction measures considering environmental factors?’. Policy is defined as ‘Is the action plan a structural measure or a non-structural measure?’. Implementation & participation is divided into the point of plan implementation and participation. The point of plan implementation is defined as ‘When is the policy established in the action plan implemented: before, during or after a disaster?’ and participation is defined as ‘Does the action plan consider participation?’. Table 2 below shows the operational definition of each dimension. Based on the definitions, this study coded each action plan, after which it conducted a comparative analysis by region and disaster type and analyzed the correlation between disaster damage and plan contents. Finally, this study came up with the tendency of the contents of the Climate Change Adaptation Action Plan in Korea based on the analysis.

Table 2. Operational definition of each dimension

Dimension [↗]	Operational definition of dimension [↗]	Criteria [↗]	Code [↗]
Fact base [↗]	Which of the physical, socioeconomic, and institutional vulnerability due to climate change is considered in priority? [↗]	Physical vulnerability [↗]	P [↗]
		Socioeconomic vulnerability [↗]	SE [↗]
		Institutional vulnerability [↗]	I [↗]
Goals [↗]	Is the action plan establishing climate change adaptation and reduction measures considering environmental factors? [↗]	Based on the environmental aspect [↗]	EO [↗]
		Not based on the environmental aspect [↗]	EX [↗]
Policies [↗]	Is the action plan a structural measure or a non-structural measure? [↗]	Structural measure [↗]	S [↗]
		Non-structural measure [↗]	NS [↗]
Implementation & Participation [↗]	When is the policy established in the action plan implemented: before, during or after disaster? [↗]	Before disaster [↗]	1 [↗]
		During disaster [↗]	2 [↗]
		After disaster [↗]	3 [↗]
	Does the action plan consider participation? [↗]	Based on participation [↗]	PO [↗]
		Not based on participation [↗]	PX [↗]

Analysis & Result

National-level analysis results of the Climate Change Adaptation Action Plan

<Figure 1> shows the national-level analysis results of the planning ratio of each dimension. The results showed that the Climate Change Adaptation Action Plan of lower-level local governments were not based on the environmental aspect. Physical vulnerability was analyzed as most important, followed by the institutional and socioeconomic vulnerability. Most plans had policy-related plans carried out before disaster, while participation is barely considered. In addition, there was almost an equal distribution of the ratio of planning related to the structural and non-structural measures in terms of the policy. This implies that the Climate Change Adaptation Action Plan in Korea does not consider the environmental aspect and participation overall, includes policies for before disaster considering physical and institutional vulnerability, and has an equivalent distribution of structural and non-structural measures.

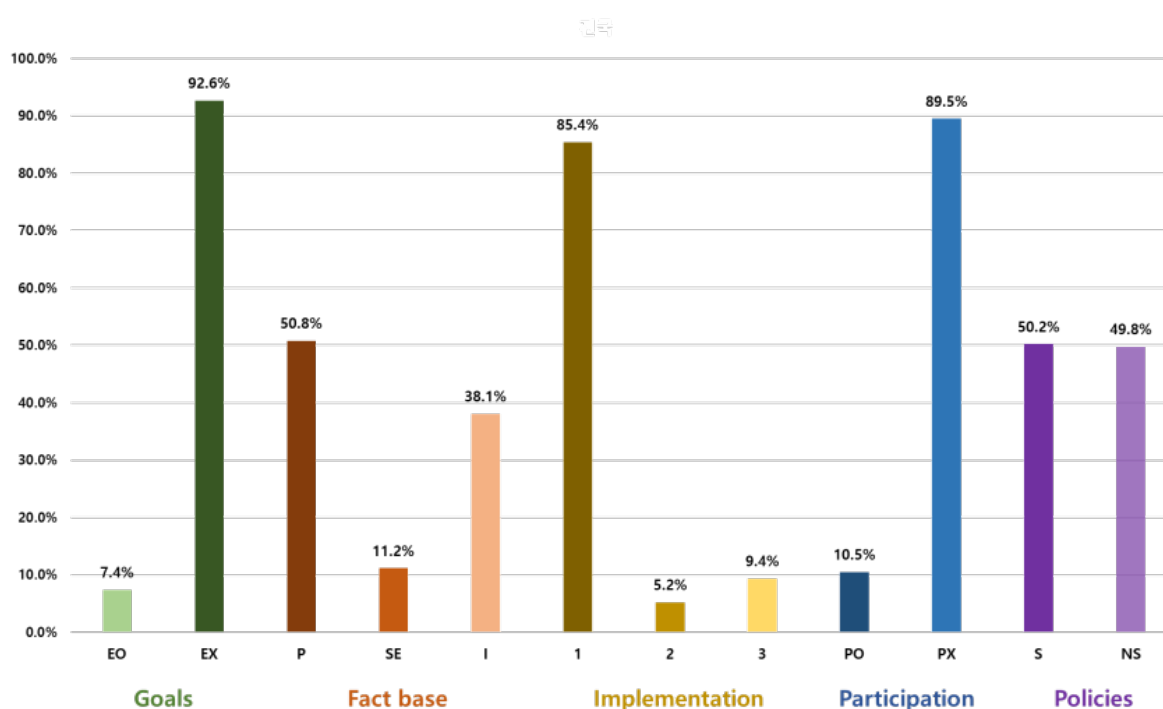


Figure 1. National Climate Change Adaptation Action Plan content analysis

Analysis results of the Climate Change Adaptation Action Plan by region

<Figure 2> shows the results of the comparative analysis on fact base by region. The results showed that physical vulnerability was considered most important in each region, followed by the institutional and socioeconomic vulnerability. Socioeconomic vulnerability was not considered important in all regions, and the ratio was lowest at 4.4% in Jeollabuk-do. This result indicates that the vulnerability factors considered important vary among regions depending on the current state of disaster vulnerability and circumstances, but they share the similarity that all regions did not consider socioeconomic vulnerability as an important factor.

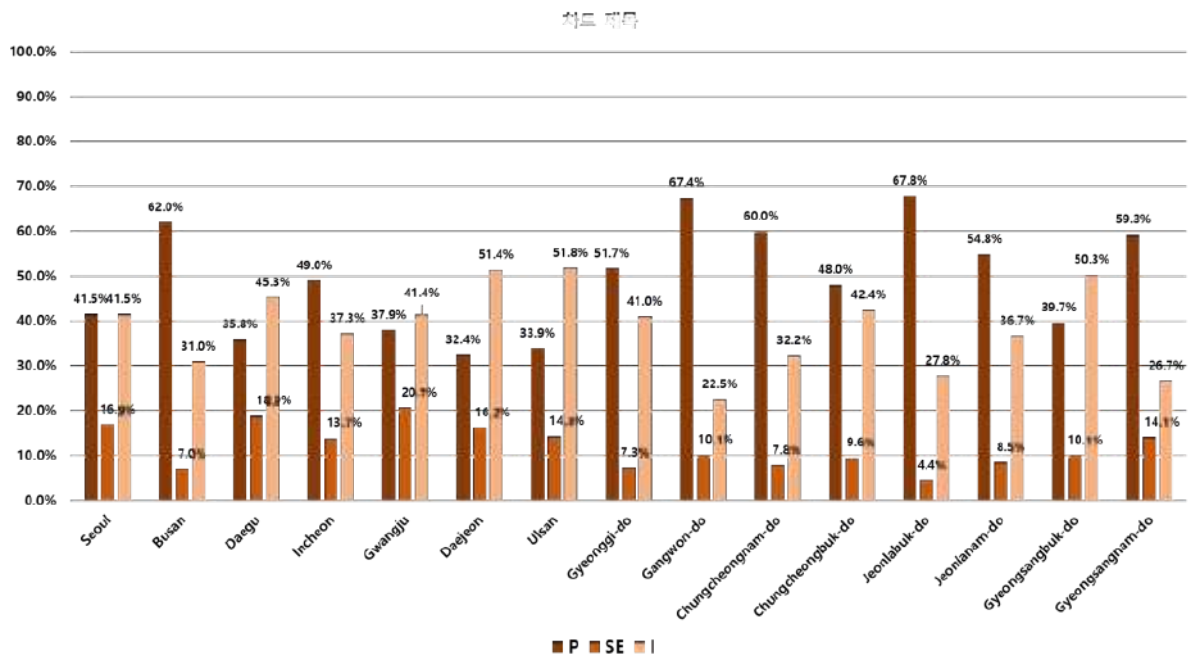


Figure 2. Content analysis of the Climate Change Adaptation Action Plan by region (Fact base)

<Figure 3> shows the results of the comparative analysis on goal by region. The results showed that all regions were establishing plans almost without considering the environmental aspect. In particular, Gwangju and Daejeon did not establish any plan that considered the environmental aspect. This result implies that all regions did not perceive the environmental aspect as an important factor of climate change adaptation.

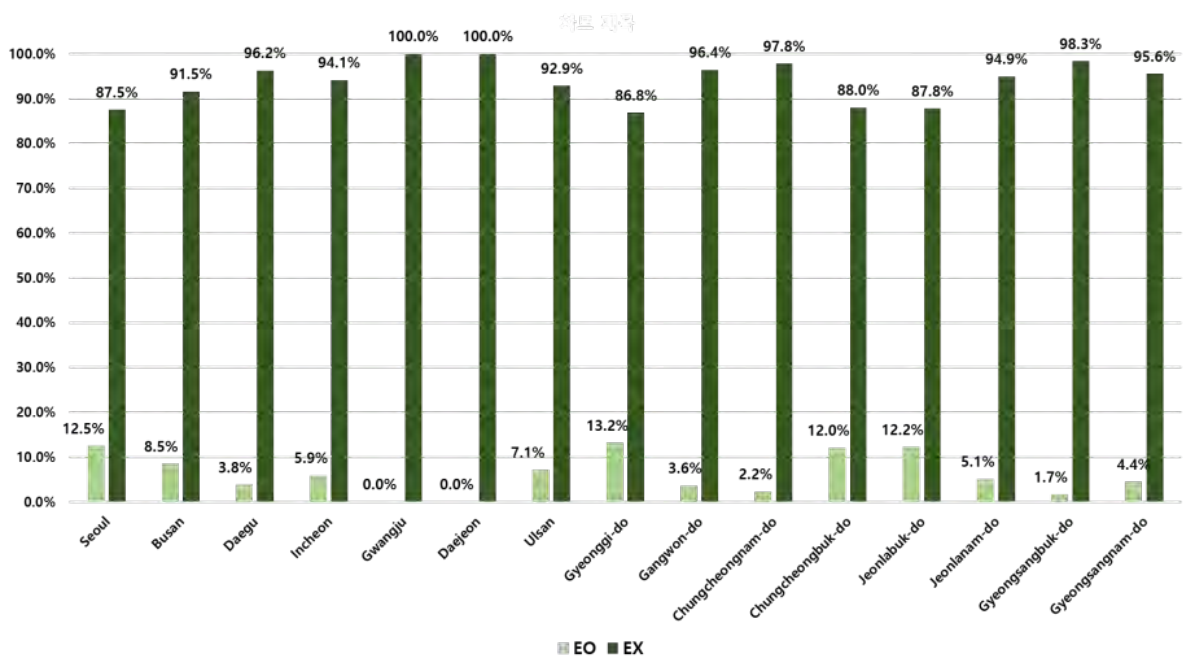


Figure 3. Content analysis of the Climate Change Adaptation Action Plan by region (Goal)

<Figure 4> shows the results of the comparative analysis on policy by region. The results showed that there were relatively more regions that utilized more no-structural measures. Structural measures accounted for a high ratio in Busan, Gangwon, Chungnam, Jeonbuk and Gyeongnam, while non-structural measures accounted for a high ratio in Seoul, Daegu, Incheon, Gwangju, Daejeon, Ulsan, Gyeonggi, Chungbuk, Jeonnam, and Gyeongbuk. This result implies that the regions were establishing policies suitable for them considering disaster vulnerability status and circumstances, and adopting structural or non-structural measures accordingly.

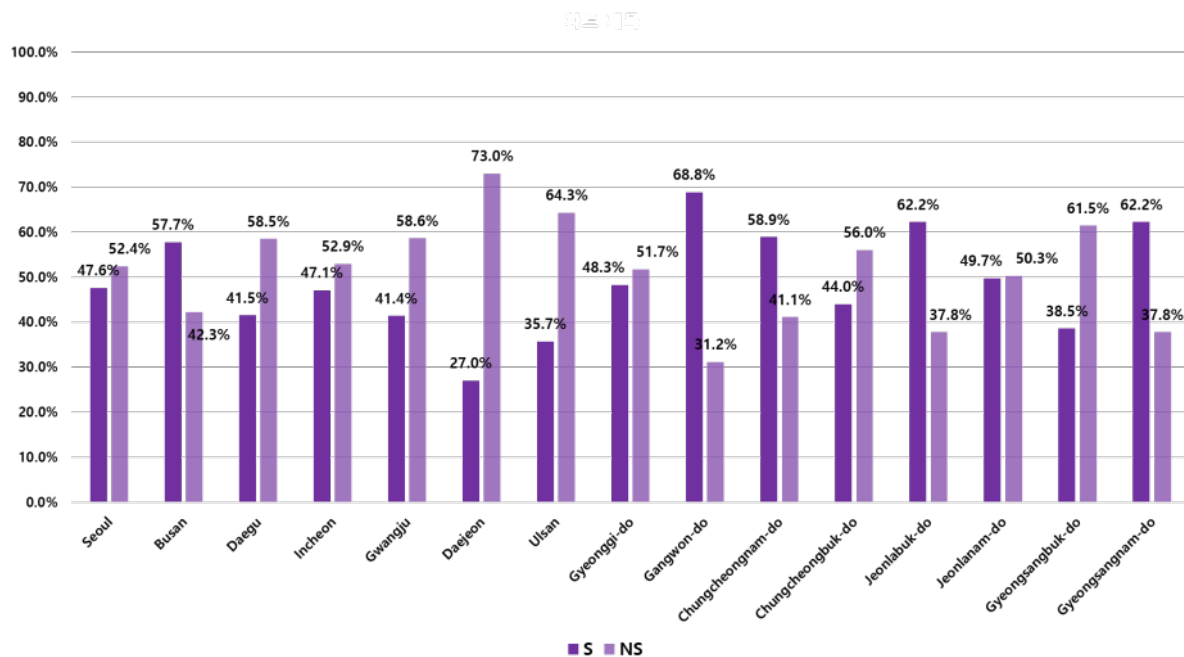


Figure 4. Content analysis of the Climate Change Adaptation Action Plan by region (Policies)

<Figure 5> shows the results of the comparative analysis on implementation and <Figure 6> on participation by region. The results showed that all regions mostly established plans related to policies for before disaster. Moreover, there were relatively fewer plans related to policies required during disaster, and Gwangju in particular did not establish any relevant plan at all. As for participation, all regions were mostly establishing plans that did not consider participation, with Gyeongnam showing the lowest ratio of participation at 3.7%. This result implies that all regions were laying more stress on the role of related institutes and organizations than participation in terms of the Climate Change Adaptation Plan, and focusing on reducing damages through prevention like the conventional disaster management plans.

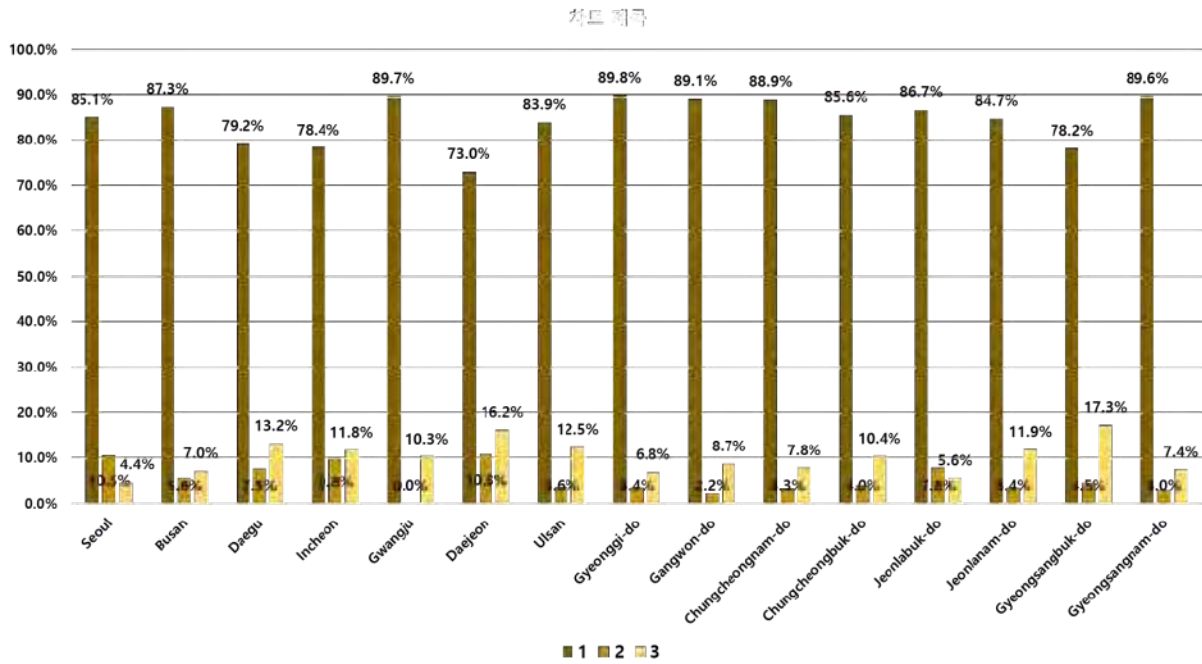


Figure 5. Content analysis of the Climate Change Adaptation Action Plan by region (Implementation)

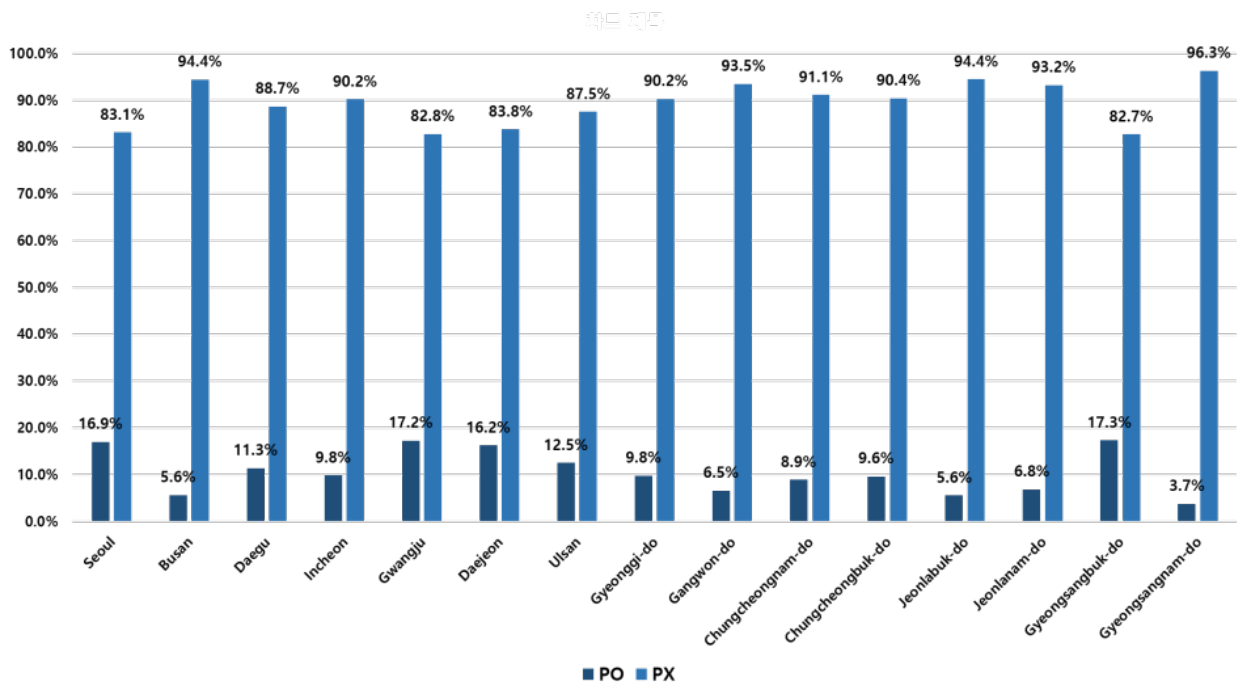


Figure 6. Content analysis of the Climate Change Adaptation Action Plan by region (Participation)

Analysis results of the Climate Change Adaptation Action Plan by disaster type

For comparative analysis by disaster type, this study came up with 12 types of disasters such as general, flood, heat wave, cold wave, typhoon, landslide, heavy snow, etc. focusing on disasters covered in the disaster sector of the Climate Change Adaptation Action Plan.

<Figure 7> shows the results of the comparative analysis on fact base by disaster type. The results showed that disasters that considered physical vulnerability as important were damages from storms and floods such as flood, typhoon, landslide, sea wave, tsunami, etc. as well as a heat wave. Disaster types that considered institutional vulnerability were general, heavy snow, and cold wave, and socioeconomic vulnerability was considered most important in cold wave and combined. In other words, socioeconomic vulnerability was considered the least by disaster type, and not considered at all in typhoon, wildfire, sea wave and tsunami. This result implies that disaster policies for damages from storms and floods and heat wave due to climate change were mostly plans to reduce physical vulnerability. For disaster policies in the winter, plans to reduce institutional and socioeconomic vulnerability were being established. On the other hand, socioeconomic vulnerability was not much considered.

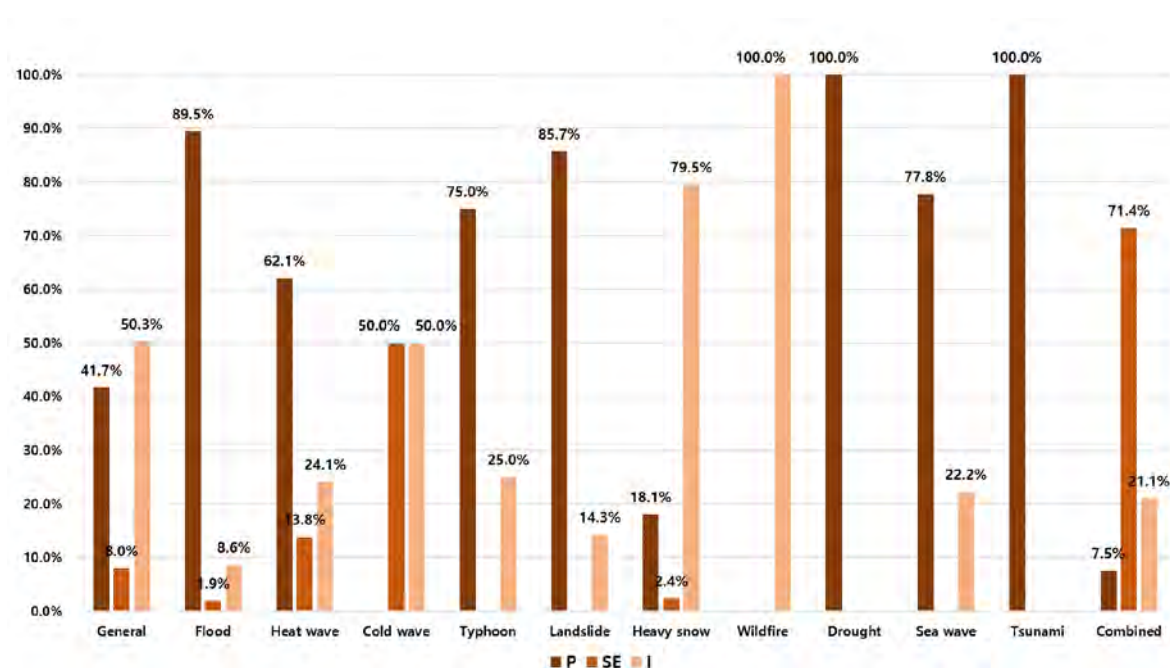


Figure 7. Content analysis of the Climate Change Adaptation Action Plan by disaster type (Fact base)

<Figure 8> shows the results of the comparative analysis on goal by disaster type. The results showed that action plans were established in all disaster types except drought without considering the environmental aspect. There were no plans at all considering the environmental aspects for cold wave, wildfire and tsunami, and the percentage of considering the environmental aspects was approximately 3.6% even in the landslide disaster that requires environmental consideration. On the other hand, all plans of drought were established considering the environmental aspects. This result implies that most disaster types were adopting climate change policies without considering the environmental aspects, even in disaster types in which they can be sufficiently considered. In other words, like the analysis results by region, the environmental aspect was not perceived as a major factor to consider in the Climate Change Adaptation Plan in Korea.

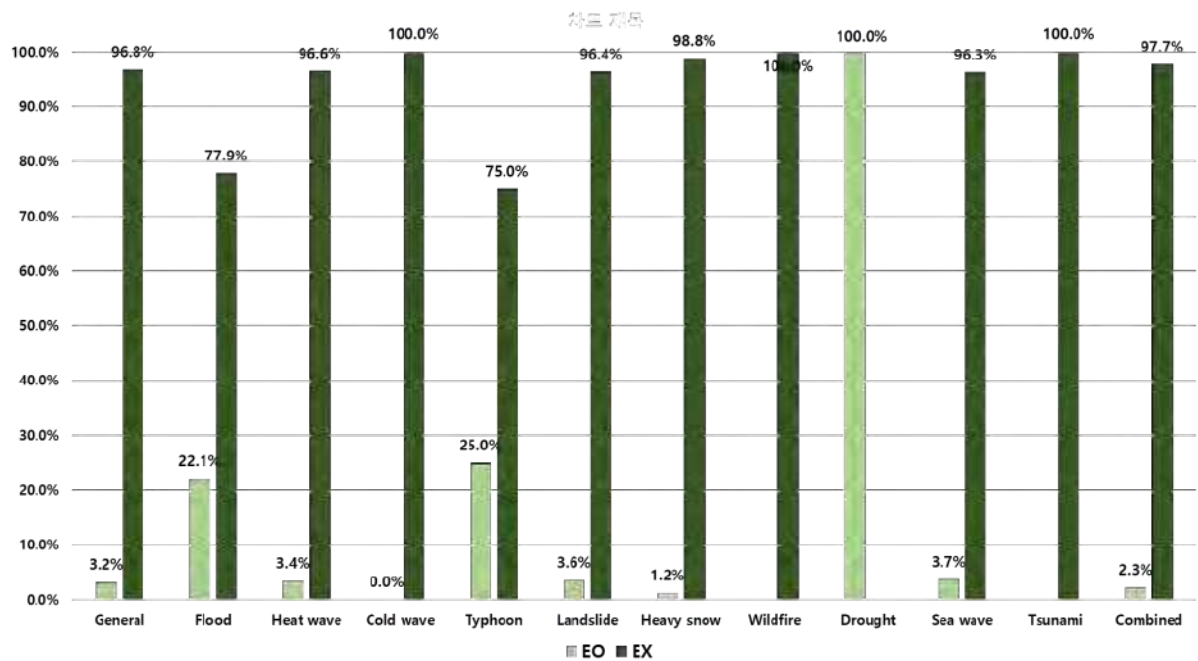


Figure 8. Content analysis of the Climate Change Adaptation Action Plan by disaster type (Goal)

<Figure 9> shows the results of the comparative analysis on policy by disaster type. The results showed that there were more disaster types using structural measures than non-structural measures. Yet, there was a difference in methods adopted based on the characteristics of each disaster type. For example, disasters such as flood, typhoon, sea wave, landslide, etc. mostly adopted structural measures, whereas heat snow mostly adopted non-structural measures. This result implies that methods that can effectively deal with disasters were adopted for each disaster type, which tends to be similar to the plan contents that had been traditionally established in disaster management planning.

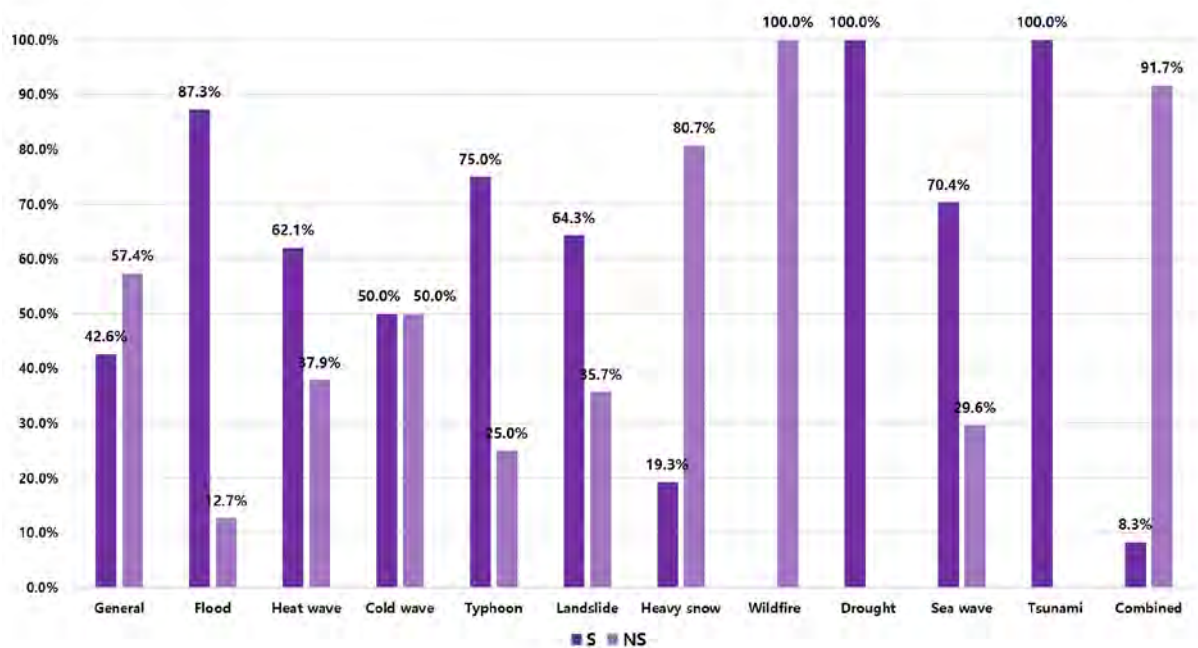


Figure 9. Content analysis of the Climate Change Adaptation Action Plan by disaster type (Policies)

<Figure 10> shows the results of the comparative analysis on implementation and <Figure 11> on participation by disaster type. The results showed that plans related to policies before disaster accounted for the highest ratio in most disaster types, while plans related to during and after disaster accounted for a relatively lower ratio. In particular, most plans had policies before disaster established for flood, typhoon, landslide, wildfire, drought, and tsunami. In the combined disasters, plans related to policies after disaster took up the biggest portion. As for participation, climate change plans that are not considering participation were established in all disaster types. In particular, participation was not considered at all in all disaster types except general, flood, heavy snow, and combined. This result implies that participation is almost not considered in the climate change plan contents of all disaster types, and policies mostly for prevention or preparations are being planned.

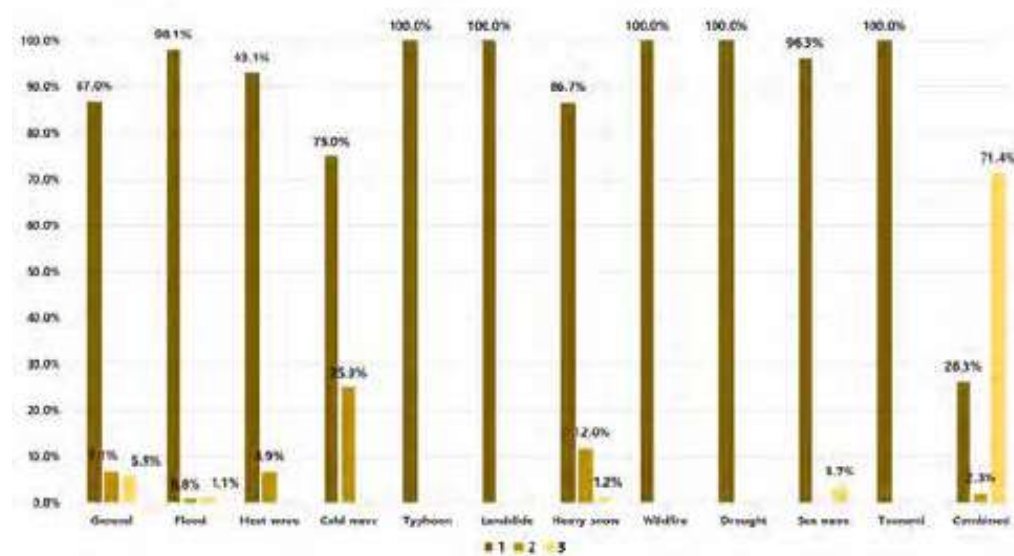


Figure 10. Content analysis of the Climate Change Adaptation Action Plan by disaster type (Implementation)

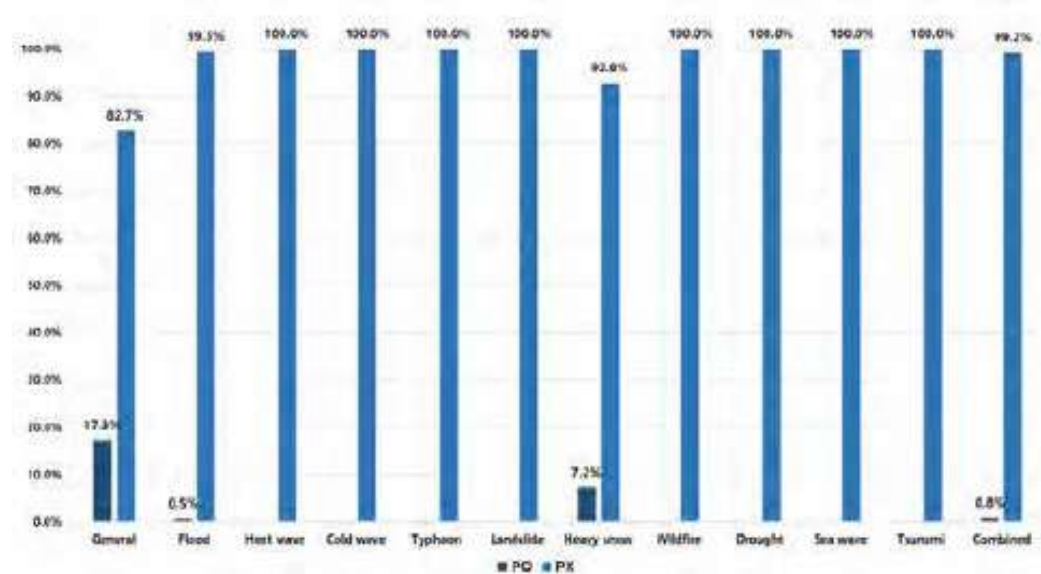


Figure 11. Content analysis of the Climate Change Adaptation Action Plan by disaster type (Participation)

Correlation analysis between disaster damage and the Climate Change Adaptation Action Plan

<Table 3> shows the results of the correlation analysis between plan contents by dimension and disaster damage. The results showed that there was a positive correlation between physical vulnerability and level of human damage, and a positive correlation between institutional vulnerability and property damage. However, the socioeconomic vulnerability had little correlation with disaster damage. There was a negative correlation between consideration of the environmental aspect and property damage, and the non-structural measure had a negative correlation with property damage and a positive correlation with human damage. Consideration of participation had a positive correlation with property damage, and there was little correlation between disaster damage and a number of plans. This result implies that regions with many property damages are concentrating on institutional vulnerability without considering the environmental aspect and tend not to adopt non-structural measures, and rather tend to adopt plans other than disaster response based on participation. Moreover, regions with many human damages mostly focus on physical vulnerability and tend to adopt non-structural measures.

Table 3. Correlation analysis table

Dimension [↗]	Variables [↗]	Economic damages [↗]	Human Injury [↗]
Fact base [↗]	Physical vulnerability [↗]	.313 [↗]	.611** [↗]
	Socioeconomic vulnerability [↗]	-.135 [↗]	-.043 [↗]
	Institutional vulnerability [↗]	.594** [↗]	-.050 [↗]
Goals [↗]	Environmental based [↗]	-.609* [↗]	.195 [↗]
	Non-environmental based [↗]	-.339 [↗]	.105 [↗]
Policies [↗]	Structural measure [↗]	.097 [↗]	.106 [↗]
	Non-structural measure [↗]	-.469* [↗]	.489* [↗]
Implementation & Participation [↗]	Before disaster [↗]	-.285 [↗]	-.354 [↗]
	During disaster [↗]	-.579** [↗]	.254 [↗]
	After disaster [↗]	.114 [↗]	.033 [↗]
	Based on participation [↗]	.445* [↗]	.055 [↗]
	Non-based on participation [↗]	-.366 [↗]	.072 [↗]
Amounts of plans [↗]		-.058 [↗]	.094 [↗]

* : $p < 0.1$, ** : $p < 0.05$

Discussion

The analysis by region showed that all regions were establishing the action plans without considering the environment and participation as important. Moreover, most regions were establishing plans related to physical vulnerability, as well as plans for ‘prevention’ or ‘preparations’ implemented before disaster. Yet, while there were relatively more regions

establishing plans based on structural measures, there was not much difference among the methods.

The analysis by disaster type showed that the environmental aspect was not considered as important in all disaster types except drought, and participation also was not considered as important in all disaster types. Physical vulnerability was considered important in most disaster types, but generally, cold wave, heavy snow, and wildfire considered institutional vulnerability and combined disasters considered socioeconomic vulnerability as important. While there were relatively more disaster types establishing plans based on structural measures, there was not much difference among methods. Furthermore, most disaster types were establishing plans for ‘prevention’ or ‘preparations’ implemented before disaster.

Based on the results above, this study comes up with the following implications about the tendency of the Climate Change Adaptation Action Plan in Korea. First, lower-level local governments in Korea tend to establish the Climate Change Adaptation Action Plan for before disaster without considering the environment and participation. This implies that lower-level local governments have limitations in considering the environment and participation when establishing climate change plans. Above all, this indicates that such factors are not perceived as important factors of climate change plans in the disaster sector. Furthermore, they are focusing ‘climate change adaptation’ in disasters on reducing disaster damages that may be caused by climate change.

Consideration of vulnerability by region varies depending on disaster vulnerability status due to climate change and regional circumstances, but it was found that physical or institutional vulnerability was considered important, while the socioeconomic vulnerability was barely considered. This implies that efforts are made actively to reduce physical or institutional vulnerability due to climate change, but socioeconomic vulnerability is considered relatively less importance. In other words, socioeconomic vulnerability does not take up many portions of disaster vulnerability in the region and is considered less important.

Similarly, climate change policies were adopting different methods depending on disaster type. For example, disasters with damages from storms and floods such as flood, typhoon, sea wave, etc. had a higher ratio of structural measures, while heavy snow had a higher ratio of non-structural measures. However, considering that the major disaster type according to climate change in most regions is damage from storm and flood, the ratio of structural measures is higher in many regions.

As a result of analyzing the correlation between disaster damage and plan contents, plans to reduce physical vulnerability had a positive correlation with human damage, and plans to reduce institutional vulnerability had a positive correlation with property damage. This implies that the action plans in Korea were using plans to reduce physical vulnerability in regions with more human damages, and plans to reduce institutional vulnerability in regions with more property damages. However, the low correlation of socioeconomic vulnerability shows that it is relatively not considered much in the plans by region.

The negative correlation between property damage and consideration of the environmental aspect indicates that regions with greater property damage were establishing plans without considering the environmental aspect. This is because regions with more property damages were more preferentially considering policies that can produce quicker damage reduction effects than long-term measures considering the environmental aspect.

Non-structural measures had a negative correlation with property damage and positive correlation with human damage. This indicates that lower-level local governments tend to more prefer adopting non-structural measures to reduce human damage, but rather tend not to prefer non-structural measures to reduce property damage.

Conclusion

The present study analyzed the Climate Change Adaptation Action Plan of lower-level local governments in Korea by region and disaster type using four dimensions. In addition, it analyzed the tendency to plan contents by analyzing the correlation between the details of each dimension and damages due to disasters. The results showed that many of the Climate Change Adaptation Plans in Korea were establishing adaptation measures that can be performed before the disaster in order to reduce physical vulnerability. There was a difference in the ratio of structural or non-structural measures depending on region and disaster type, but overall there was a balanced distribution. However, the environmental aspect and participation were not considered in most policies.

Regions with many property damages tended to establish plans based on participation in order to reduce institutional vulnerability. On the other hand, they tended to prefer policies based on methods other than non-structural measures without considering the environmental aspect, and plans to implement in stages other than during disaster. Regions with many human damages tended to prefer policies based on non-structural measures to reduce physical vulnerability.

In conclusion, the Climate Change Adaptation Plan of lower-level local governments in Korea were analyzing disaster vulnerability due to climate change faced by each region. However, there were limitations in considering aspects of the environment and participation in the contents of the plan. This indicates that most regions were not considering the environmental aspect as important in establishing disaster policies within the climate change plan. Furthermore, there is lack of consideration for participation as planning is carried out 'top-down'. This tendency may be an obstacle to improving the autonomous adaptation capacity of each local government for climate change and establishing more sustainable plans and policies.

To overcome these limitations in plan contents, the following matters can be improved. First, it is necessary to add policies to induce participation in the Climate Change Adaptation Action Plan. It is important to improve the abilities of major institutes and agencies to deal with disasters caused by climate change, but it is more essential to improve adaptation capacity and knowledge of individual citizens. This is necessary for the nation to effectively handle climate change, based on which the overall climate change adaptation capacity of the nation can be secured.

Second, the Climate Change Adaptation Action Plan must also actively consider the environmental aspect to establish sustainable climate change adaptation and reduction policies. Considering the environmental aspect in climate change adaptation and reduction measures in terms of disaster management indicates that damages can be reduced by improving the nature's and ecosystem's ability to adapt to climate change. In other words, the Climate Change Adaptation Action Plan considering the environmental aspect will improve environmental competencies in the long run, ultimately contributing to improving adaptability to disasters, and can be used as a more sustainable adaptation plan for climate change.

Third, the Climate Change Adaptation Action Plan must further add consideration of socioeconomic vulnerability. Socioeconomically vulnerable groups are more vulnerable to disasters due to climate change, and thus planning to protect them must be considered. This is the nation's duty and obligation to improve the safety of the society overall toward disasters due to climate change, and must be considered additionally in the contents of the climate change plans in the future.

Acknowledgements

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Resilient Planning of Chinese Delta Cities Under Climate Change

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Abstract: Contemporary cities and territories are facing significant challenges of natural disasters due to climate change impacts. Urbanized deltas represent some of the most vibrant and diverse ecosystems. However, its unique conditions of low altitude, land subsidence, and rapid urbanization make it more vulnerable when being subject to risks such as tide, storm surge, rainstorm, etc. caused by climate change. Firstly, this article reviews recent studies on theories and practice of city and regional resilience, and analyzes the spatial implications of it. Secondly, it analyzes the geographical characteristics, regional urban system, economic and social correlation, multi-scaled life cycle, and so on of China Yangtze River Delta cities. On the basis of this, it puts forward several problems in resilience planning practices faced by the Delta area. Thirdly, it proposes that general resilience development objective of delta cities is to promote their ability to deal with climate change. Some strategies including basic principles and steps of resilience planning such as plurality and diversified infrastructure, redundancy and multi-scaled networking, self-organized and self-renewal region / neighborhood / architecture / landscape layout are put forwarded. Lastly, the key thoughts in the China Yangtze River Delta Cities resilience planning are systematically exploring uncertainties related to future trends and disruptive events, thinking through the impacts of each sector on other sectors and the area as a whole, and making joint visions and identifying strategic projects not only among public actors but also with private and civic actors.

Keywords: regional resilience; delta cities; network structure; planning and design

1. Introduction

Urban resilience is of great significance to the sustainable development of cities. As a complex social ecosystem, they have always suffered from various disasters. In order to improve their ability to cope with uncertain risks and enhance the recovery capability after major impacts, it is necessary to conduct research on the resilience of cities and regions. Because of the large population and the developed socio-economic environment, the delta cities have become an important part of the world's urban system. However, due to its special geographical location and complex artificial ecosystem, the delta cities are frequently affected by extreme weather. Therefore, they need to deal with uncertain climate disasters and the changing external environment with more resilient development strategies. As an important area of China, the urban agglomeration in Yangtze River Delta is a node connecting the “Belt and Road” and the Yangtze River Economic Belt, and plays an important role in the national social and economy development. However, the unique geographical location makes the region face the severe challenges caused by uncertain disasters. So building a resilient regional network and making relevant urban planning is very important for the sustainable development of them. This article reviews the theories of city and regional resilience, and proposes corresponding planning and development strategies based on network structure analysis of the Yangtze River Delta.

2. Research on urban and regional resilience

2.1 The resilience theories

The concept of the resilience was first proposed by Canadian ecologist Holling in his article "Resilience and stability of Ecological systems", which means that the object returns to its original state after being damaged. Then the concept has experienced several evolutions. Its meaning gradually shifts from traditional engineering and ecological resilience to evolutionary resilience. The focus of relevant research has also shifted from a linear system that seeks to achieve stability to a nonlinear system that seeks continuous adaptation, and further emphasizes learning and adjustment to the next disturbance.

2.2 Urban resilience

Since the 21st century, resilience has gradually been applied to urban research and planning, forming the concept of resilient cities. Alberti first defined urban resilience as the ability of the city's structure and function to maintain its original state after the internal and external driving forces of urban development changed. The Resilience Alliance proposes that urban resilience is the ability of a city or urban system to digest and absorb external disturbances while maintaining the original main features, structures, and key functions, and they also summarize and construct a framework for resilient urban research. Wilbanks argues that the urban resilience refers to the ability of urban systems to prepare, respond to, and recover from specific multiple threats, minimizing their impact on public safety, health, and the economy. It can be seen that the urban resilience not only refers to the ability of the city to recover after being disturbed, but also pays attention to the city's ability to predict disturbances and disasters.

Scholars from different fields have analyzed the characteristics of resilient cities from multiple perspectives. Verdowski believes that resilient cities should be characterized by dynamic balance, multiple compatibility, efficient flow and moderate redundancy. Bruno believes that resilient cities should have the ability to cope with changes in terms of technology, organization, society and economy. Allan argues that resilient cities should have adaptability, innovation, responsiveness, capital reserve capacity, and ecosystem service capabilities. Overall, urban diversification, cross-scale network connectivity, high adaptability and moderate redundancy are the main characteristics of resilient cities.

2.3 Regional resilience

As the resilience theory is gradually applied to regional scales, research on regional resilience development has received increasing attention. Regional resilience is a comprehensive measure of multi-scale social ecosystems, including prevention of potential threats, defense against disasters, and the ability to recover from disturbances. Compared with urban resilience, it emphasizes the connection between cities and the construction of regional network, which means that by building a resilience framework through urban nodes and their connections can not only enrich and stabilize the regional development process but also promote the inner cities of the region as a whole to resist uncertain disasters and risk. Regional resilience is mainly reflected in four aspects of engineering, economic, social and ecological resilience.

Engineering resilience refers to the ability to promote the coordination of different cities and effectively resist disasters by constructing regional infrastructure networks. Economic resilience refers to improving the adaptability of cities in dealing with external disturbances through the rational distribution of industries, technologies and labor in the region. Social resilience refers to the ability to maintain the stability of social systems in different cities through the cooperation of multi-level organizations. Ecological resilience refers to the ability of diverse and extensive ecosystems to absorb disturbances and maintain original ecological functions.

3. Delta regional resilience

3.1 Delta city and regional characteristics

In recent years, due to frequent climate disasters, the resilience of the delta urban area has become the focus of related research. As a special artificial ecosystem, due to the topographical conditions formed by the impact of water flow, the foundation settlement caused by a large number of constructions and the ecological damage caused by urban sprawl, the delta urban area is more vulnerable to natural disasters such as tides, storm surges and heavy rains. These factors lead to uncertainty in the future development of the Delta urban area. With the increasing climate change, the current economic development-oriented spatial planning is difficult to promote the resilience of the delta region. How to build a network between cities and enhance regional resilience is a question that must be considered in the future sustainable development of the delta urban area.

The Yangtze River Delta region is one of the most important urban agglomerations in China. It is located in the alluvial plain of the Yangtze River estuary and has typical delta natural geographical features. Moreover, the social and economic development of this region is rapid, the population is gathering, and the density of the cities is continuously increasing, forming a complex social ecosystem. This paper evaluates the resilience of this region from the perspective of urban network structure and spatial distribution pattern, and identifies the problems existing in the development process. Based on the above analysis, planning strategies for optimizing the regional network structure are proposed, which provide suggestions for the delta regional resilience development.

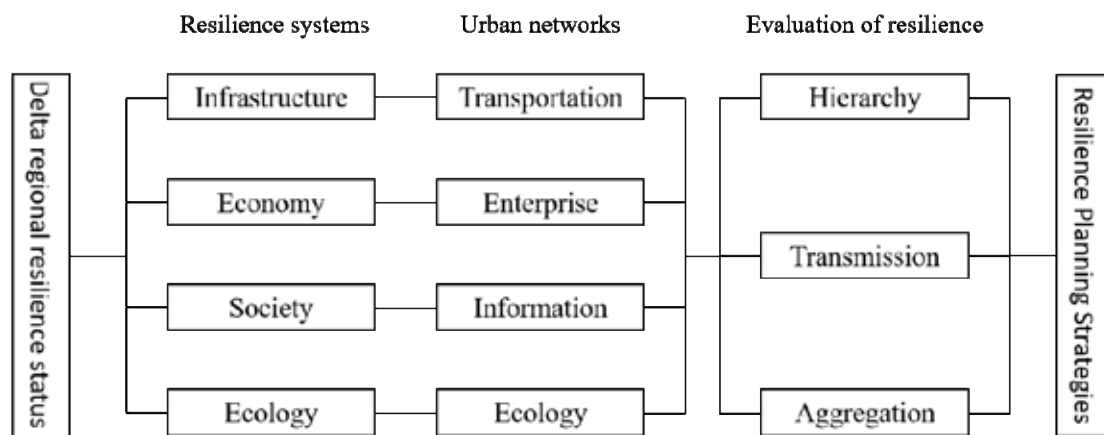


Fig. 1 Research framework for Delta region resilience

3.2 Factors influence the regional network structure resilience

The network consists of nodes and the connections between them. Nodes and connections are the two basic elements of the network. The regional network refers to the urban groups formed by the close integration of the cities as nodes through the flow of elements. And the network structure refers to the state it presents in space, including the size, number, and location of the cities participating in the construction of the network and the strength and concentration of connections between them. The ability of the network structure to cope with external disturbances and gradually restore, maintain and improve the characteristics of the original system is the resilience of the network structure. The attributes of the network structure and the characteristics of its internal systems directly affect its function and resilience. Researches consider that the location and hierarchy distribution of nodes; the heterogeneity, hierarchy, connectivity and aggregation degree of connections are important factors affecting network function and structure.

This paper takes 26 cities in the Yangtze River Delta region as the research object, and uses the complex network theory and UCINET social network analysis tools to evaluate the structure resilience of the region from engineering, economic, social and ecological aspects and proposes planning strategies. Combined with relevant research, this paper takes hierarchy, transmission and aggregation as important indicators to measure the structural resilience of the regional network. Hierarchy is represented by the number of cities of different levels in the network. A strong hierarchy means that the high-level cities in the network are dominant, which will lead to a more vulnerable structure. Transmission is used to evaluate the length of the connection path between nodes.

If it is short, various elements can be transmitted at a lower cost and faster speed, thereby improving the structure resilience of the network. Aggregation reflects the compactness of the network. A network with a low degree of aggregation contributes to the inflow of external information, thus improving the resistance to external disturbances.

3.3 Construction and evaluation of urban networks

On the basis of determining the evaluation indicators of network structure resilience, this paper constructs the transportation, enterprise, information and ecology networks in the Yangtze River Delta region from four aspects of engineering, economy, society and ecology, and analyzes their structure characteristics.

3.3.1 Construction of urban system networks

(1) Transportation network: Passenger and cargo transportation in the Yangtze River Delta region mainly relies on roads and railways. This paper calculates the traffic connection between cities by long-distance bus shifts, regular and high-speed train shifts. According to the formula:

$$T_{ij} = \frac{(Q_i + Q_j)/Q + (C_i + C_j)/C}{2D_{ij}^2}$$

the strength of the connection between cities can be determined, and then the regional transportation network model can be constructed. In the formula, T_{ij} represents the traffic intensity of i city and j city, Q_i and Q_j represent the total passenger traffic of roads and railways between two cities; C_i and C_j represent the total freight volume of roads and railways between two cities; Q and C respectively represent the average passenger traffic and average freight volume of roads and railways between the cities in the Yangtze River Delta; D_{ij} represents the sum of highways and railways between the two cities.

(2) Enterprises network: As typical multi-location organizations, enterprises have branches in many cities among the region for the purpose of expanding their scale and preempting their share, thus forming a complex enterprise network. By analyzing the financial links between the cities where the headquarters and their branches are located, urban nodes and connection matrices can be constructed to study the structure and flow relationship of the economy network. According to the formula:

$$V = \sum_{j=0}^m v_j(a, b)$$

the strength of the connection between cities can be determined, and then the regional enterprise network model can be constructed. In the formula, V is the sum of the capital connections between all the companies in the two cities, that is, the contact value formed by the city a and the city b through m enterprises; a and b are the cities where the headquarters and branches of the company j are located, and $V_j(a, b)$ is the total investment of the company j in these two cities.

(3) Information network: The regional information network is constructed through the information links between cities reflected by the web search index. The web search index is a data statistics platform based on user behavior data. It is an indicator that reflects the attention of website users and mainstream media to some keywords. This paper obtains the web search index between cities in the Yangtze River Delta. And according to the formula:

$$M = A_b \times B_a$$

the strength of the connection between cities can be determined. Then the regional information network model can be constructed. In the formula, M refers to the information flow intensity between City A and City B; A_b refers to the average value of the web search index from A to B; B_a refers to the average value of the web search index from B to A.

(4) Ecology network: Based on remote sensing images in the Yangtze River Delta, the land in the region is divided into forest land, grassland, cultivated land and other types. The areas with better integrated ecological service functions are selected as ecological sources, and the ecology network is constructed by using the least cost path model. Due to the different costs of ecological corridors passing through various types of land use, this paper first gives values for multiple land use within the region. Then according to the formula:

$$MCR = f_{\min} \sum_{j=n}^{i=m} (D_{ij} \times R_i)$$

In the formula, MCR is the minimum cumulative cost value, f_{\min} is the minimum cost value between ecological sources, D_{ij} represents the spatial distance from source j to landscape unit i , and R_i represents the cost value of landscape unit i . The value of $(D_{ij} \times R_i)$ can be used to measure the accessibility of a species from unit j to unit i .

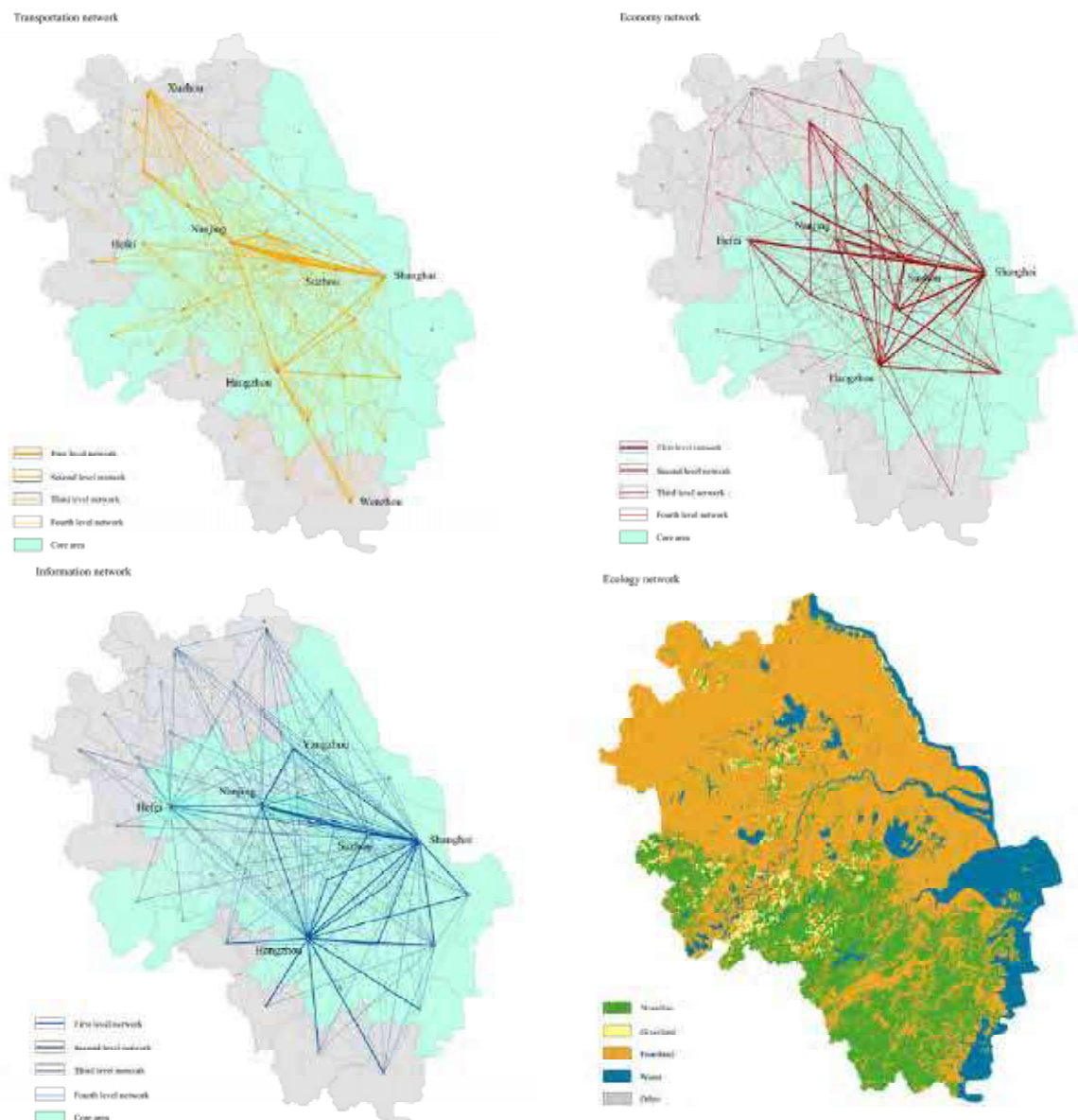


Fig. 2 Transportation, Enterprises, Information and Ecology networks

3.3.2 Evaluation of network structure resilience

(1) Hierarchy evaluation: This paper evaluates the hierarchy of regional network by degree distribution. Degree refers to the number of connections between a node and others in the network. And the distribution of degree reflects the overall structural characteristics of the network. According to the formula:

$$\ln(K_h) = \ln(C) + a \ln(K_h^*)$$

In the formula: K_h represents the degree of the node h ; K_h^* represents the rank of its degree in the network; C is a constant; a represents the slope of the degree distribution curve.

The results show that the slopes of the four networks' degree distribution fitting curves are large, and $|a|$ is between 0.6 and 0.9. This means that the Yangtze River Delta regional network has a high level of hierarchy, indicating that there is a core city group with strong dominance in the region. Among them, the hierarchy of enterprise and information networks is higher and the core cities are more prominent which means that these networks have the characteristics of heterogeneity, while the transportation and ecology networks have flat features.

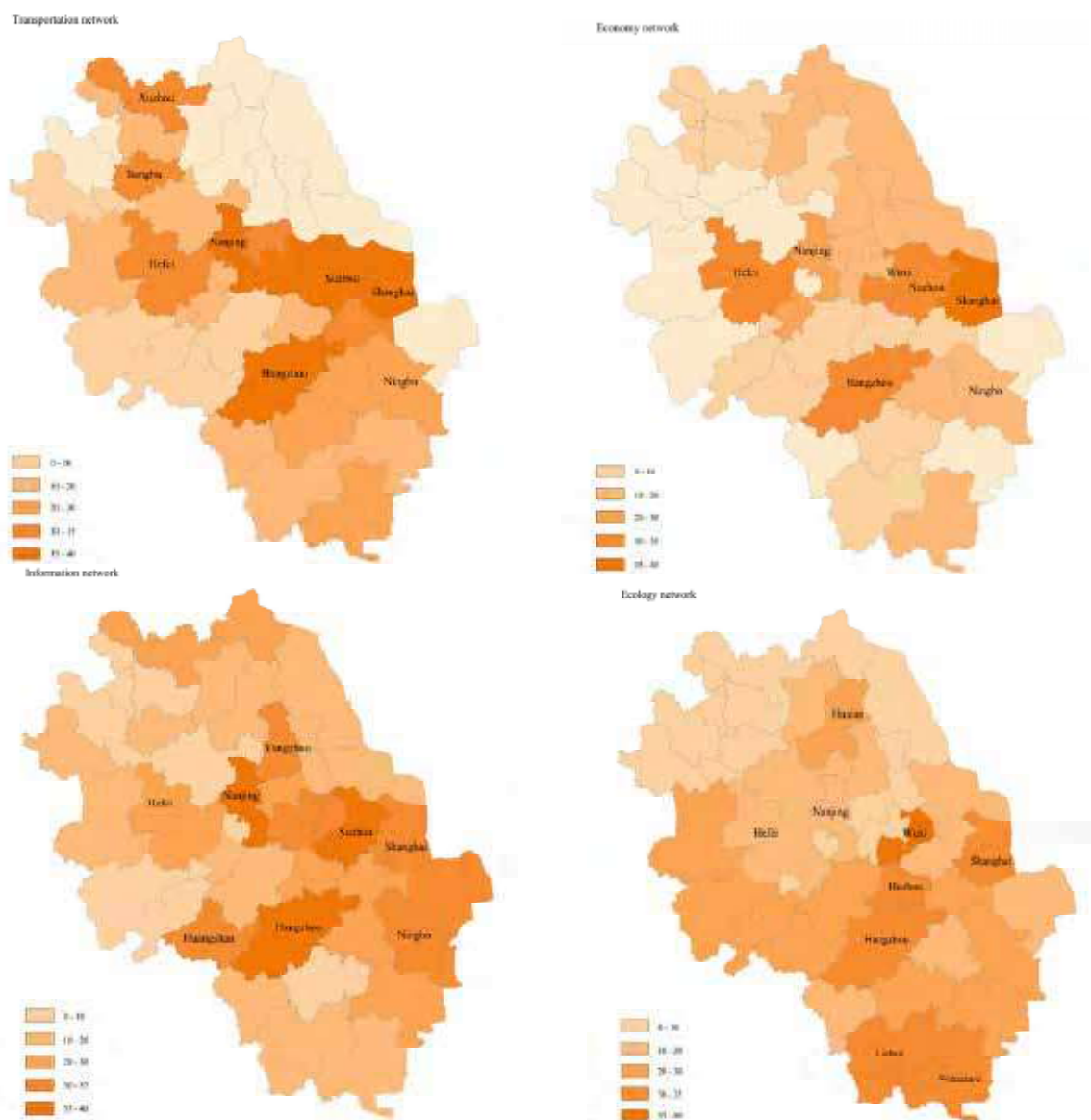


Fig. 3 Degree distribution of transportation, Enterprises, Information and Ecology networks

(2) Transmission evaluation: This paper evaluates the transmission of regional networks by the average path length. The longer the average path length of the network, the more time it takes for elements to spread from one node to another, indicating that the transmission efficiency of the network is lower, and vice versa, the diffusion effect of the network is stronger. Its formula is:

$$L = \frac{1}{1/2n(n+1)} \sum_{i \neq j} d_{ij}$$

In the formula, L is the average path length; n is the number of nodes; and dij is the distance from node i to j.

The results show that the average path lengths of the four networks are between 1.3 and 1.7, which means that the transfer of elements between cities requires only 2 nodes. It indicates that the network transmission efficiency in the Yangtze River Delta region is generally high. The average path length of the transportation network is 1.526, which is the shortest path among the four networks, and its regional accessibility and diffusivity are stronger. The average path lengths of enterprise and information networks are 1.585 and 1.573. The efficiency of factor transmission between cities is lower than that of transportation network, resulting in relatively high additional costs for activities such as personnel mobility, technology diffusion and information transmission. The average path length of the ecology network is 1.625, indicating that the number of ecological corridors in the Yangtze River Delta region is small and the connection between ecological sources is loose. It can be said that the ecological resilience of the region is not ideal.

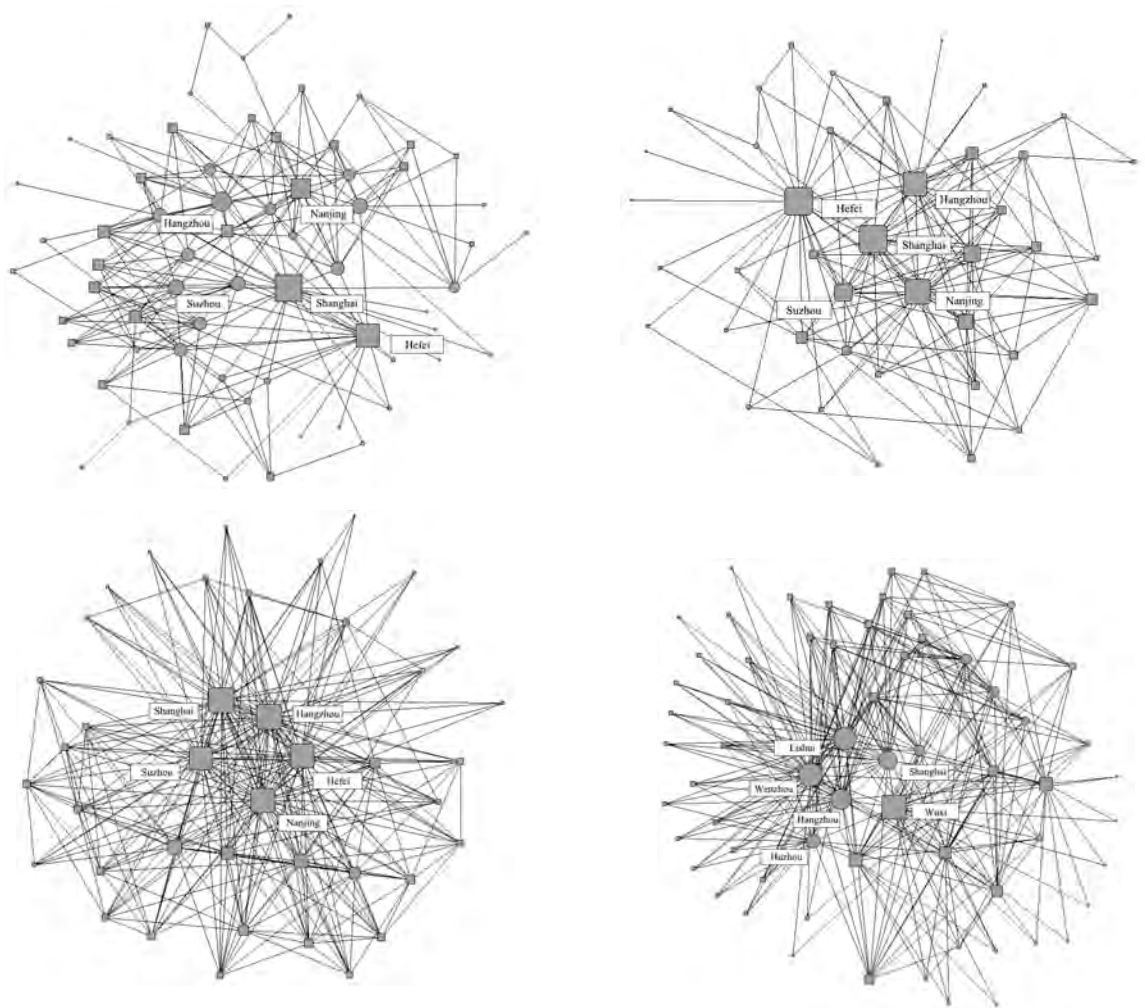


Fig. 4 Topological diagram of transportation, Enterprises, Information and Ecology networks

(3) Aggregation evaluation: Network aggregation can be evaluated by local and average clustering coefficients. The local clustering coefficient is a parameter that describes the degree of aggregation of network nodes. Since it calculates only the aggregation of a single node to neighboring ones, the overall aggregation of the network can be evaluated by calculating the average clustering coefficients of all nodes. Its formula is:

$$C_i = \frac{2E_i}{k_i(k_i - 1)}$$

In the formula: k_i is the degree of node i , which is the number of nodes adjacent to it; E_i is the number of connections between node i and the neighboring ones.

The results show that the average clustering coefficients of the four networks are all around 0.8, which indicates that most cities in the network have connections with their neighboring cities and form groups, and there are only a few isolated nodes. The regional network is well aggregated. If the local clustering coefficient of a single node city is calculated, it can be found that the values of core cities such as Shanghai, Hangzhou, and Nanjing with higher degrees are all around 0.37~0.53. It means that there are fewer connections between low-level cities which are connected to those core cities. The ordinary cities in the regional networks have more one-way connections with core cities, while the interaction between them is less.

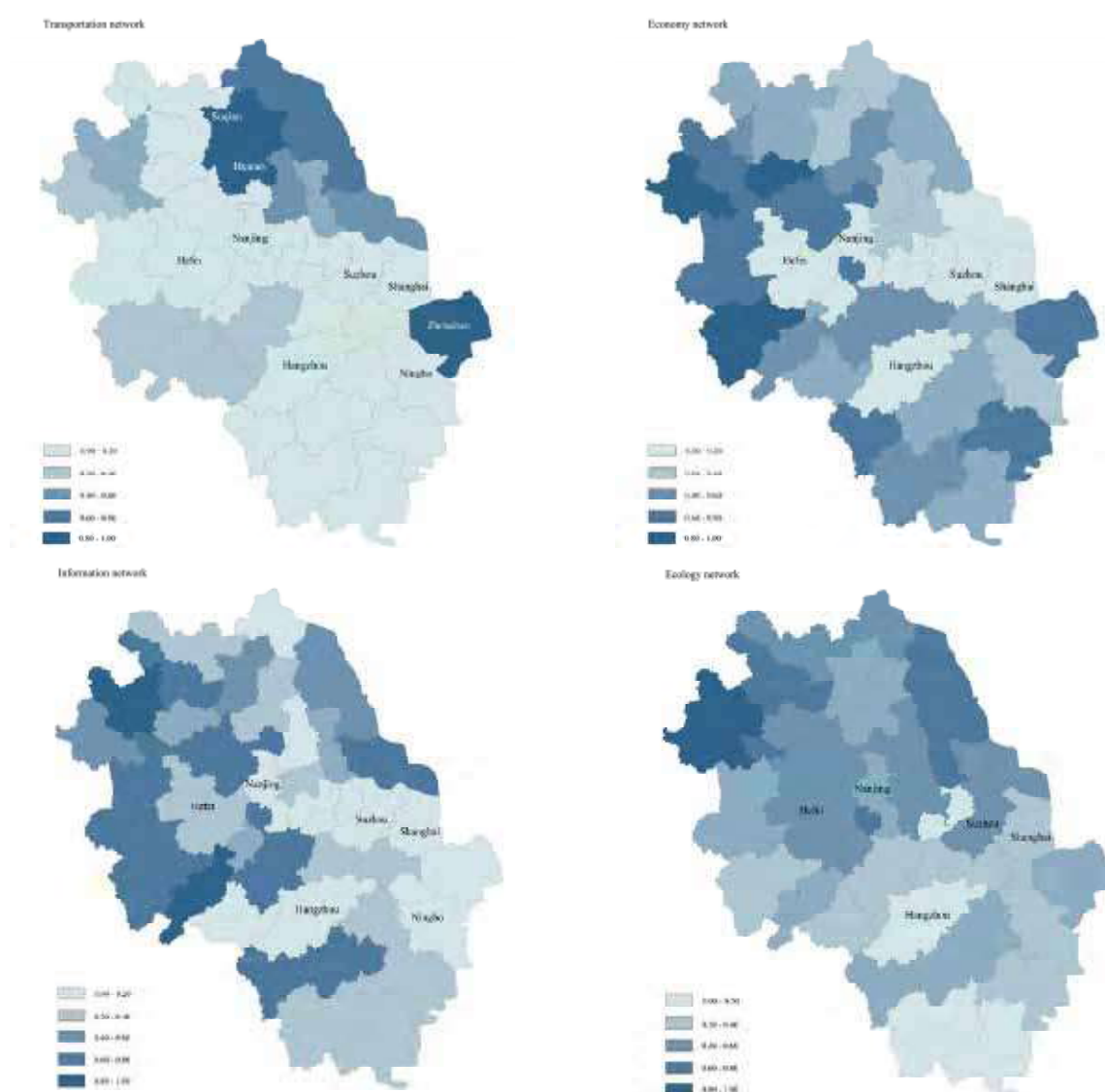


Fig. 5 Clustering coefficient of transportation, Enterprises, Information and Ecology networks

3.3.3 Network structure resilience characteristics

Overall characteristics of the network structure. Through the evaluation of the network structure, it can be seen that the central node groups of the above four networks are composed of provincial capitals such as Shanghai, Hangzhou and Nanjing, which makes the Yangtze River Delta region network forms a core-edge structure with these important cities as the core nodes. Analyze the structural characteristics of the four networks separately. In terms of transportation network, the highway and the railway system form the skeleton of the contact network in the Yangtze River Delta region, and the node cities located on the axis have a high degree of correlation, showing the core-edge structure characteristics. In addition, with the construction of high-speed railway network, the traditional structure is gradually shifting to a flat, uniform structure. The economy network in the Yangtze River Delta region has significant hierarchical characteristics. Shanghai is the absolute core of the region; Nanjing, Hangzhou, and Suzhou are at the second level as sub centers and ordinary cities in the region are in the third level. As the cores of the region, Shanghai, Hangzhou and Nanjing have high network connectivity and form a cohesive city group with the cities around them. The structure of the regional information network is relatively balanced and is gradually forming a compact information exchange circle. Shanghai, Hangzhou, Nanjing are the hubs of the network, and the intensity of information flows between them are huge. As economy and transportation connections rising, the information links within and between provinces are gradually increasing. The regional ecology network has formed a structure in which the Tai Lake is the core and several ecological corridors are connected to each other. A number of ecological sources in the area are connected along the Yangtze River Ecological Corridor, the Hangzhou Bay Ecological Corridor and the Central Ecological Axis. It can be said that the regional ecological structure framework is basically formed, but the resilience ability still needs to be strengthened.

Tab. 1 Summary of measurement results of four kinds of network structural resilience

	Hierarchy	Transmission	Aggregation
	Degree distribution	Average path length	Clustering coefficient
Transportation Network	-0.827	1.526	0.826
Enterprises Network	-0.852	1.585	0.785
Information Network	-0.815	1.573	0.819
Ecology Network	-0.844	1.625	0.751

Diversified characteristics of network connections. According to the evaluation results, the gap between the four networks in terms of transmission and aggregation is not obvious, but there are some differences in their hierarchy. Specifically, the radiation capacity of economy network is weak. The economic connections within the region have strong near-regional jurisdiction, which occur mainly between provincial capitals and cities close to them. There is not much interaction between the central urban agglomerations and the cities farther away from them, even the cities across the province. However, the radiation capacity of information and transportation networks is relatively strong, and there are more interactions between central cities and peripheral cities, which leads to cross-administrative areas connections. In addition, the hierarchy of the information network is weak, which means that it has rich and diverse contact paths while having some strong central city groups with radiation capability, make it respond quickly in the face of external disturbances. Therefore, it has good resilience. The regional ecology network has weak radiation capabilities and its hierarchy is high, which leads to its core-edge structure. The concentrated distribution of ecological sources and the insufficient number of ecological corridors will have an impact on its structure resilience. In summary, the resilience of the information network is the best, the transportation network is second, the economy and ecology networks' resilience needs to be strengthened.

It can be seen that the urban network with the core-edge structure has basically formed in the Yangtze River Delta, and the multi-system networks such as economy, society, space and ecology all have certain development resilience. This single structure reduces the radiation and connection capacity of the system. When the external conditions change drastically, the network may be broken, unable to reconnect, and reduce the resilience of the region. However, with the improvement of regional coordination capabilities and the development of transportation-communication technology, the urban network of the Yangtze River Delta will gradually transform into a center-periphery structure, forming a diverse and stable process of resilience development.

4 Strategies for optimizing network structure in the Yangtze River Delta

4.1 Promote the network structure transformation

The development of the Yangtze River Delta region spans multiple scales, involving social, economic, and environmental factors. There are extensive and complex internal connections between them. In order to enhance the resilience of the regional network structure, it is necessary to take advantage of the core urban groups' promotional capacity to drive the development, and comprehensively consider the hierarchical relationship of cities within the region to guide the coordinated development of large, medium and small cities. The improvement of regional resilience should not only clarify development goals, but also strengthen the radiation capacity of core cities which are the concentration of resource elements, and enhance regional influence and competitiveness. At the same time, it is necessary to increase the connections between cities of various hierarchy, enhance the ability to cooperate, and carry out functional division, coordinate industrial space, and share infrastructure according to the cities' advantages. In the end, it is necessary to achieve a reasonable distribution of the cities' scale and function in the network by structural adjustment, so as to improve the regional resistance to cope with external disturbances.

4.2 Enhance the flow of elements between cities

The current transmission efficiency and diffusion capacity of the Yangtze River Delta regional network is good, and the flow of factors between cities can be further improved in the following aspects. Strengthen the concentration and cooperation of enterprises. The division of functions between cities and the organization of industrial spaces are the important strategies for regional resilience development. By building advantageous industrial clusters across cities and relying on the development axis along the Yangtze River, it is possible to promote the concentration and cooperation of regional industries. Construct information exchange spaces. By implanting knowledge information carriers and focusing on cultivating high-tech innovation parks, research centers and university towns, we can promote the prosperity of regional science and technology. Accelerate infrastructure construction. It is necessary to focus on strengthening the main axis of transportation, making it a comprehensive channel with complete functions and strong transportation capacity. At the same time, we should also integrate the internal transportation networks of each province and cities, improve the carrying capacity of rail transit, and accelerate the construction of expressway and intercity railway networks. Adjust the structure of the ecosystem. In the context of national land planning, we can integrate the current ecological resources and organize existing ecological sources and corridors. And cities of different types and grades should adopt corresponding ecological protection measures, focusing on strengthening the governance and control of fragile urban areas.

4.3 Take into account multiple subjects in the regional resilience development

There are a large number of cities in the Yangtze River Delta, so the resilience development needs to take into account the diversified requirements of multiple subjects. Affected by administrative boundaries and participating entities, the current development goals and speeds of cities are different. As a whole, the Yangtze River Delta needs to eliminate the adverse effects caused by it as much as possible, so it is necessary to consider the demands of different regions. At the regional scale, a city collaborative management platform should be established to actively promote the inclusiveness of resilience development from the aspects of urban planning, industrial development, spatial convergence and infrastructure construction. At the city level, we need to ensure

the exchange of information between governments, developers and community residents, so that communication and inclusion can be used as an entry point for the development of urban resilience. Whether it is the construction of multi-functional sites or the mixed use of land, all the subjects in the city must be as compatible as possible.

5 Conclusion

Resilience is an important trend in the development of the world's cities. It is also the path that China's delta urban agglomerations must choose when they face a changing external environment. The theory of resilience planning has positive significance for both urban and regional planning. Based on the theory of urban and regional resilience development, this paper analyzes the network structure resilience of the Yangtze River Delta from the aspects of hierarchy, transmission and aggregation by constructing four networks of transportation, economy, information and ecology in the region. Overall, the region has basically formed a core-edge network structure, and multiple systems have a certain level of resilience development. The network structure of different systems has diverse characteristics, and there are differences in hierarchy, transmission, and aggregation. Among them, the resilience of information and transportation networks is strong, but the economy and ecology network has weaker resilience due to their poor radiation capability; Based on the above analysis, this paper proposes some planning strategies for optimizing the regional network structure, such as promote the structure transformation, Enhance the flow of elements and take into account multiple subjects. By studying relevant theories and conducting empirical analysis on the Yangtze River Delta, this paper hopes to explore the rational path for the resilience development of the delta urban agglomeration and improve their social ecosystem's ability to resist external disturbances.

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PA11

Urban metabolism
and circular economy

Circular economy in urban projects: a case studies analysis of current practices and tools

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Abstract: Over the last decade, the concept of circular economy has gained momentum among practitioners, politicians and scholars thanks to its promise of achieving sustainability goals. However, there remains a need to demonstrate and assess its positive environmental impacts. With respect to the building sector, circular economy is still a relatively new topic. To date, research has tended to focus primarily on the macro-scale (cities or eco-parks) and micro-scale (manufactured products or construction materials). Nevertheless, the often-neglected built environment is also expected to play a crucial role due to its high contribution to various environmental impacts.

Accordingly, this paper aims to contribute to this growing area of research by reviewing four case studies of 'circular neighbourhood' projects in Europe. First, a conceptual framework analysis is defined and applied to the cases. Second, circular economy initiatives and actions are identified and classified using interviews and document analysis. Third, the use of assessment tools within these circular economy projects is investigated. The results demonstrate a diverse representation of the circular economy paradigm and a growing role played by the assessment tools.

Keywords: Circular Economy; Life Cycle Assessment; Urban Project; Circular neighbourhood.

Introduction

Over the last 10 years especially, the concept of a circular economy (CE) has been gaining momentum in politics, business and academia (Reike, Vermeulen, and Witjes 2017; Kampelmann 2016) in the pursuit of overcoming the contradictions between economic and environmental prosperity (Geissdoerfer et al. 2017). Indeed, the current economic model, which can be characterised as 'linear' based on a 'take-make-consume-throw away' approach of resources, is presently reaching its limits. Conversely, the CE forms an "economic system of trade and production which, at all stages of the product lifecycle, aims to increase the efficiency of resource use and reduce the impact on the environment, while developing the well-being of individuals" (ADEME 2014). For these reasons, CE already represents the core theme of major European plans and regulations (Petit-Boix and Leipold 2018), such as the 'Circular Economy Package' adopted in 2015.

Today, CE is studied by several disciplines ranging from economics to urban planning, though it remains closely linked to sustainable development issues (Kirchherr, Reike, and Hekkert 2017). However, to date, no univocal and shared definition of CE has yet been developed, despite a wide dissemination of the concept (Prieto-Sandoval, Jaca, and Ormazabal 2017). Thus, CE constitutes an

evolving notion (Merli, Preziosi, and Acampora 2018), rather ambiguous and vague (Korhonen et al. 2017).

The built environment, given its important contribution to several environmental issues, is supposed to comprise one of the main targets of CE strategies. However, current scientific literature on this subject remains limited, and concrete application of the principle is slow to be implemented (Densley Tingley, Giesekam, and Cooper-Searle 2018; Adams et al. 2017; Pomponi and Moncaster 2017). Furthermore, little general consensus exists concerning how to best approach and deal with this concept, and the knowledge and tools required to enact it remain to be developed (Leising, Quist, and Bocken 2018).

This is especially true for the building sector, to which CE remains a relatively new topic (Adams et al. 2017; Bocken et al. 2017). Furthermore, there is still a need to demonstrate and assess its positive environmental impacts. Indeed, implementing CE initiatives not only generates potential benefits, but also a number of environmental risks. ‘Closing the loop’ does not always positively affect the environment, and therefore, ‘circularity’ should be analysed against relevant indicators (Petit-Boix and Leipold 2018; Kampelmann 2016). In addition, it is also necessary to ensure that the most environmentally relevant initiatives are realised. For this reason, the need for systemic methods and tools to validate the environmental relevance of the CE applied to the built environment is now evident (Haupt and Zschokke 2017; Haupt, Vadenbo, and Hellweg 2017).

Accordingly, this paper aims to contribute to this growing area of research, which currently remains in its infancy. The results indicate a diverse representation of the CE paradigm and confirm that assessment tools could bring a useful contribution because if CE remains a vague trendy expression, there is a high risk of greenwashing. Life cycle assessment (LCA) appeared in the early 1990's and even if the expression CE was not used at that time, most ideas corresponding to CE were already integrated. For instance, recycling was one of the aspects studied in order to reduce environmental impacts of the built environment. A method has been elaborated that accounted, among other aspects corresponding to the CE approach, for environmental benefits of recycling at the fabrication stage but also after deconstruction (Polster, 1996).

CE in the built environment: from the ‘circular city’ to the ‘circular neighbourhood’

As mentioned, the CE approach is gaining momentum in the field of urban sustainability. Several studies, as well as some international meetings, have investigated the role that the CE can play in ensuring a more sustainable city, and the literature on this subject continues to grow (Cities Foundation 2017; Ellen MacArthur Foundation 2017; Prendeville, Cherim, and Bocken 2018).

According to Pomponi and Moncaster (2017), three scales of CE deployment can be identified from the scientific literature: the ‘macro scale’ of the city, the ‘meso scale’ of the buildings, and finally, the ‘micro scale’ of the construction elements. However, while academic research is more consistent concerning the macro scale (particularly in urban metabolism and eco-parks), as well as the micro scale (particularly in materials and building components), the meso scale remains poorly explored (Pomponi and Moncaster 2017).

Considering their pressures on the environment, to date, the scientific literature on CE has focused more attention on the ‘circular city’ topic.

Several cities, such as Berlin, Rotterdam, Paris, London, Milan and Amsterdam, have recently adopted strategic plans and are launching specific actions and projects to make their economy more circular. In 2014, for instance, the city of Amsterdam adopted ‘The Circular Metropolis Amsterdam 2014–2018’¹, a strategic document aimed at transforming the city into a competitive and sustainable European metropolis. This document, which comprises part of the Amsterdam Smart City initiative, is based on the ‘The City Circle Scan’ approach, enabling areas to be identified where major CE progress can be made. Thanks to this tool, Amsterdam has decided to focus on the construction sector as well as the organic production and biomass sector. In addition, in 2016, Amsterdam became a Fab-City, an international initiative bringing approximately 20 cities together with the goal of becoming self-sufficient². Similarly, the city of Rotterdam also linked the EC to the smart city initiative, adopting the ‘Roadmap Circular Economy Rotterdam’³ in 2016. The proposed actions to ensure the city’s sustainable and circular development by 2030 are based on the results of the ‘Rotterdam Metabolism’ study, which provided a comprehensive picture of urban flows. Rotterdam’s EC strategy focuses primarily on the city’s port area for implementing biosourced projects (Prendeville, Cherim, and Bocken 2018).

More recently, London and Paris also presented guidance documents in 2017. Following the 2015 General Assembly of the Circular Economy, Paris adopted its first ‘Circular Economy Plan 2017–2020’⁴ and its operational roadmap. London similarly published a ‘Circular Economy Route Map’⁵, containing actions involving the construction, food, textile, plastic and electrical industries. This document is accompanied by an economic analysis, which estimates the benefits to the economy in terms of wealth creation, activities and employment at £2.8bn.

Initiatives and actions are multiplying and global networks are being created, bringing together several cities. The Circular Europe Network (CEN)⁶, for example, brings together dozens of European cities to promote the exchange of best practices. At the international level, the Open Source Circular Economy (OSCE)⁷ collects innovative solutions linking EC and open data.

Otherwise, current research on CE has dedicated little attention to the meso scale, whereas some authors have stressed the importance of orienting CE research towards the built environment (Leising, Quist, and Bocken 2018; Pomponi and Moncaster 2017; Glass, Greenfield, and Longhurst 2017). Indeed, in Europe, the built base represents almost half of the total energy consumption, and more than 50% of all extracted materials (European Commission 2011). In France, nearly 40% of energy consumption and 60% of electricity are attributed to this, which is also responsible for the emission of approximately a quarter of national greenhouse gases (ADEME 2012). In addition, the construction sector generates nearly three-quarters of the national waste⁸ volume and consumes approximately 600 km² of natural areas per year⁹.

¹ <https://amsterdamsmartcity.com/circularamsterdam>

² <http://fab.city/>

³ <https://www.pianoo.nl/sites/default/files/documents/documents/rebusfactsheet37-gemeenterotterdam-engels-juni2017-1.pdf>

⁴ <https://www.paris.fr/economiecirculaire>

⁵ <https://www.lwarb.gov.uk/what-we-do/circular-london/circular-economy-route-map/>

⁶ <http://www.circular-europe-network.eu/>

⁷ <https://oscedays.org/>

⁸ <http://www.statistiques.developpement-durable.gouv.fr/lessentiel/ar/326/1097/dechets-secteur-construction.html>

⁹ <http://www.developpement-durable.gouv.fr/Etalement-urbain-et.html>

In this context, the built environment could truly represent an essential cornerstone for implementing effective CE strategies in the city. Concerning the meso scale, several authors have pointed out that the ‘neighbourhood scale’, the link between the city and the building, is the most relevant for addressing numerous environmental problems (Lotteau 2017). In Europe, the attention paid to the neighbourhood scale has even become central to the sustainable city discourse (Souami 2009). By contrast, however, limited research has been conducted concerning the application of CE principles in neighbourhoods, and there is a lack of comprehensive studies summarising recent development. Nevertheless, a number of pathfinder projects are beginning to emerge in the practice. Assessment tools have been developed (Popovici et al., 2004; Herfray et al., 2010; Roux et al., 2013) and applied to the design at neighbourhood scale in Lyon, Champs sur Marne and Paris (Peuportier et al., 2005; 2012 and 2015).

On these bases, the present paper aims to address the two following questions:

Q1) How can the CE be implemented in a neighbourhood?

Q2) What assessment tools are used?

Methodology

The study proposes analysing and comparing four case studies concerning a ‘circular neighbourhood’. The case study method was selected because this enables integrating theory and practice, aptly suiting the exploratory nature of this research (Leising, Quist, and Bocken 2018).

To begin, a literature review was undertaken to identify relevant ‘circular neighbourhood’ cases. Attention was dedicated not only to scientific papers, but also to other types of documents, such as reports and urban planning documents. Indeed, scientific literature was mostly limited to theoretical discourse and only little attention was given to the neighbourhood scale. The research was conducted in English, French and Italian. A total of only four case studies were found and selected: the first case concerns the neighbourhood of Buiksloterham (Amsterdam), which will develop into a sustainable district based on circular principles; the second neighbourhood is Kera (Espoo), an industrial area destined to become a ‘liveable circular economy neighbourhood’; the last two cases are based in Paris, namely, the Groues and Saint-Vincent-de-Paul eco neighbourhoods, both considered an ‘EC living lab’. All these cases were selected on the basis of two fundamental criteria: the willingness to implement the principles of the CE at the neighbourhood scale and the presence of a comprehensive CE strategy at the city level, within which the project fits in.

Following the case selection, CE initiatives and actions were identified and classified using document analysis and integrating data collected through semi-structured interviews with local stakeholders involved in the projects.

Finally, a conceptual framework analysis was defined based on three main criteria: CE practices, strategic city scale integration, and tools employed. This analytical framework has been applied to the four case studies in order to compare them.

Case studies analyses

Four case studies were selected based on their innovative character and central relevance of the CE. Indeed, in all these cases, CE is put forward as one of the key pillars for the urban projects.

Case	Buiksloterham	Kera	Les Groues	Saint-Vincent-de-Paul
City and Country	Amsterdam, Netherlands	Espoo, Finland	Nanterre, France	Paris, France
Size	1000 hectares	22 hectares	65 hectares	4 hectares
Site	Requalification industrial areas	Requalification industrial areas	Requalification industrial areas	Requalification hospital complex
Main Objectif	“key innovation zone for circular development”	“a showcase district for circular economy”	“circular economy living-lab”	“a privileged space to develop and test circular economy”
Starting date	Around 2015	Around 2018	Around 2018	Around 2018

Table 1. Case studies.

As illustrated in Table 1, despite the differences in size and location, the analysed neighbourhoods present some common features. For instance, all four cases constitute urban regeneration projects, and at the same time, they are also experimental and function as showcases to test the CE principles. Moreover, it is important to underline that all the projects are recent and have not yet been carried out or completed. For this reason, this analysis can only be based on the design phase.

Buiksloterham, Amsterdam

Amsterdam represents one of Europe’s pioneering cities in terms of CE. In fact, CE comprises one of the main pillars of the Sustainable Amsterdam Agenda (2015), which aims to, by 2020, reduce energy consumption by 20% and increase renewable production by 20% compared to 2013 (van der Hoek, Strucker, and de Danschutter 2017). In this strategic document, the Buiksloterham neighbourhood is considered “an engine for the broader transition of Amsterdam” (Metabolic 2015) towards a circular city.

Part of a larger redevelopment plan of the northern banks of the river, Buiksloterham is characterised by abandoned factories, wastelands and docks. In the city’s vision, however, this neighbourhood, once the site of Amsterdam’s most polluting industries, can become “a key innovation zone for circular urban development” (Metabolic 2016). Furthermore, the municipality proposed a bottom-up approach for the area’s redevelopment in order to develop a more comprehensive sustainability strategy. For this reason, in 2015, the ‘Circular Buiksloterham Manifesto’ was signed by approximately 20 stakeholders, including local actors, organisations, associations and companies. This innovative manifesto includes the shared guiding principles for redeveloping Buiksloterham, such as the zero-waste objective, the implementation of clean technologies or the use of biosourced materials. Recognising the urgency for a clear operational strategy, all the stakeholders involved commissioned an Urban Metabolism Scan in order to understand the neighbourhood’s complete workings from a systemic perspective. The analysis, carried out by the Metabolic and published in 2015, was divided into three stages (context analysis, stakeholder analysis and metabolism analysis). This ‘Urban Metabolism Scan’ focused on material and energy flows, biodiversity, environmental conditions, socio-economic factors, local actors, urban planning documents and plans, health, and living environment.

Following this analysis, a study was conducted concerning the neighbourhood's CE potential. On these bases, the priority objectives for redeveloping Buikloterham as a 'living lab for CE' by 2034 were divided into eight priority issues (Table 2).

OBJECTIVES	
Energy	Buikloterham is energy self-sufficient with a fully renewable energy supply
Materials & products	Buikloterham is a zero waste neighbourhood that with a near 100% circular material flow
Water	Buikloterham is rainproof and has near 100% resource recovery from waste water
Ecosystems and biodiversity	Buikloterham's ecosystems are regenerated and its base of natural capital is self-renewing
Infrastructure & mobility	Buikloterham's Infrastructure is maximally-used and local mobility has zero emissions
Socio-cultural	Buikloterham has a diverse and inclusive culture, and a high quality, livable environment
Economy	Buikloterham has a strong local economy that stimulates entrepreneurship and encourages the creation and exchange of multiple kinds of value (social, environmental, cultural)
Health & wellbeing	Buikloterham is a healthy, safe and attractive environment with recreational activity space for all residents.

Table 2. Buikloterham's objectives.

In particular, with regard to the built environment, it is interesting to note that a 'Circular Building Standard' will be introduced for all renovations or new constructions. This innovative assessment tool, which is still in the development phase, would allow tax credits once the standard has been reached. Among the key recommendations, all building roofs are equipped for clean energy production and rainwater collection, and all materials are registered in a digital passport to facilitate their identification. In addition, prefabricated building elements are preferred, facilitating deconstruction and reuse.

To ensure these objectives, a first action plan was developed. The proposed actions consist of two types: systemic actions, aimed at ensuring the district's long-term transition, and technical actions, concerning more specific issues. For the definition of the actions, prioritisation work was carried out. In particular, the actions considered most urgent consist of those related to new construction and infrastructure. Consequently, the priority actions concern the energy efficiency of the built stock, the flexibility of new infrastructures, the development of fresh mobility, water recovery and management.

Kera, Espoo

The city of Espoo, Finland is one of the pioneering cities in terms of sustainable development, as demonstrated in a comparative assessment study of 15 European cities carried out in 2017 by the University of Tilburg¹⁰. Indeed, initiatives led by the municipality within the framework of the Helsinki Metropolitan Plan, as well as the Helsinki Metropolitan Area Smart and Clean Cooperation project, are multiplying, with the objective of becoming carbon neutral by 2050¹¹. In most cases, CE constitutes a central issue in these initiatives.

In this context, the Kera neighbourhood, located within the eastern part of Espoo and close to the train station, represents a unique opportunity for the municipality to experiment in innovative CE solutions. Previously an industrial area, and the headquarters of the Finland's largest distribution group, Kera will thus be transformed into a mixed-use and dense neighbourhood of 14.000 residents. In addition to

¹⁰ <https://www.espooinnovationgarden.fi/en/espoo-innovation-garden/media/news/espoo-remains-the-most-sustainable-city-in-europe/>

¹¹ https://www.espoo.fi/en-US/Housing_and_environment/Sustainable_development

commercial services and offices, the project includes day-care centres, schools, sports and recreation services¹².

The municipality's objective is to transform this industrial park into a liveable neighbourhood with a strong CE focus by 2035. The goal of this project is to make Kera "a showcase district for circular economy"¹³, as well as "an international example of circular economy"¹⁴. It is with this perspective that the case of Kera was presented as an example of a 'circular neighbourhood' at the World Circular Economy Forum of 2017¹⁵.

The ongoing project was the winner of the Kera Challenge¹⁶, launched in 2015 with the aim of identifying a vision and project for Kera's future, based on the principles of sustainable urban planning and EC. In the winning project, Co-op City, CE is supposed to be achieved through a "large range of different measures, from boosting resources efficiency and creating closed loop systems to involving the local residents"¹⁷.

The main solutions to support circular economy put forward in the project were analysed and summarised in Table 3:

Green Infrastructure A network of multifunctional public places	Urban Fabric Sustainable Planning and Construction process	Function and Services Mobility Services in a 20 minute city Sustainable energy solutions	Social Environment Livability through co-creation
Ecosystem services Implement green and blue tools Design for multifunctional Evaluate generated values	Cyclical flexibility in buildings Material cycles Temporary use of the logistics Reuse and recycling of asphalt Recycling of the logistic halls	Mobile platforms for emerging services models Autonomous vehicle traffic Logistics Lab Access and smarter use of the spaces Smart parking and shared cars 100% renewable energy On site energy Smart energy grid Passive energy optimization	Participatory processes Common spaces Social engineers Affordable housing

Table 3. Kera's EC actions.

In particular, with respect to the built environment, the EC practices to be implemented are contained within the 'Kera Design Manual'. In the manual, all constructions are required to be biodegradable or fully recyclable in order to gradually phase out construction waste. Indeed, the flexibility of the constructed buildings represents one of the document's first fundamental points. In fact, this flexibility provides the basis for the possibility of a future 'circular regeneration' of the built stock. In this perspective, LCA will be mandatory. In addition, for new constructions, all materials used are required to be fully biodegradable or recyclable in order to reduce construction waste.

¹² [https://www.espoo.fi/en-US/Housing_and_environment/City_planning/Master_Plan/Pending_Master_Plans/Component_Master_Plan_of_Kera/Kera_set_for_sustainable_growth\(105154\)](https://www.espoo.fi/en-US/Housing_and_environment/City_planning/Master_Plan/Pending_Master_Plans/Component_Master_Plan_of_Kera/Kera_set_for_sustainable_growth(105154))

¹³ <https://www.helsinkismart.fi/portfolio-items/an-industrial-area-turns-into-a-liveable-circular-economy-neighbourhood/>

¹⁴ https://www.espoo.fi/en-US/Jobs_and_enterprise/A_dynamic_city/Locate_in_Espoo/Urban_Development/Rail_Zone/Kera

¹⁵ <https://www.sitra.fi/en/projects/world-circular-economy-forum-2017/#wcef2017>

¹⁶ http://www.nordicinnovation.org/Documents/Nordic%20Built%20Cities-dokumenter/NBCC-Kera-COOP-CITY-booklet_small.pdf

¹⁷ <http://uusikera.fi/wp/wp-content/uploads/2016/06/COOP-CITY-Illustrations.pdf>

Concerning reuse and recycling, attention is paid to both existing materials, such as asphalt, which must be recovered, and to the construction elements of existing halls, such as beams, slabs and columns. In addition, the temporary use of some existing buildings is highlighted as an EC practice. For example, during the building construction, the ground floor of the halls will be used as for temporary storage for materials and elements to be reused or recycled. Furthermore, the halls' structure will be reused in constructing new buildings or outdoor spaces.

In addition, it is interesting to note that 100% of the primary energy demand will be produced from renewable sources, some of which will be produced on site. Solar, geothermal and wind energy are planned and will feed into an intelligent energy grid. For new constructions, passive solutions are preferred.

Les Groues, Nanterre

The urban redevelopment project of the Groues in Nanterre, led by the Etablissement Public d'Aménagement de la Défense Seine-Arche (EPADESA), aims to create a mixed district, offering housing, office space, shops, services and equipment and accommodating nearly 12.000 inhabitants and new jobs¹⁸. Near the business district of La Défense and served by a future line of the Grand Paris metro, the Groues neighbourhood, covering approximately 65 hectares, is characterised by numerous wastelands and distressed buildings. The project is recent, as is its realisation. In 2015, a Strategic Operational Project was approved by EPADESA, and in December 2016, the Concerted Development Areas (ZAC) were created. The first lots are currently being awarded, and the operation is expected to continue until 2030 (ADEME 2017).

The goal of the Groues development project is to become a “laboratory for a dynamic, green and inclusive neighbourhood”¹⁹, and more generally, to become “an experimental laboratory for the sustainable city of tomorrow”²⁰. In particular, the project aims to be exemplary in environmental matters and to obtain the EcoQuartier Label, becoming a positive energy territory²¹.

The project is based on five strategic axes:

Objectives				
Energy transition and the fight against climate change	Biodiversity and respect for natural resources	Protection against nuisances and creation of healthy and comfortable environments	Creation of an economic innovation ecosystem integrating a diversity of actors and co-design approaches	Laboratory of circular and solidarity economy

Table 4. Les Groues' objectives.

As such, CE represents one of the main pillars of the project's sustainable development strategy. Winner of the Call for Expression of Interest 'Circular Economy and Urban Planning' launched by the Ademe in 2015, the Groues project offers a place to experiment with a CE at the neighbourhood and territorial scale.

¹⁸ <https://fr.calameo.com/read/00398144113f3e65fce93>

¹⁹ EPADESA. 2016. Les Groues. Plan Guide.

²⁰ <https://fr.calameo.com/read/00398144113f3e65fce93>

²¹ <http://fr.calameo.com/read/0039814413c1330021bdd>

As presented in the figure above, the actions planned for CE are multiple. In particular, concerning the built environment, attention is paid to the local management of construction site waste (choice of materials, grey energy, local management of backfill/burial) (ADEME 2017). In addition, the ZAC project plans to place the built environment at the centre of EC's approach, as well as the project's overall energy efficiency ambition. To this end, 'lifecycle thinking' is encouraged here: "The building must be understood in all its spatial and temporal integrity by real estate operators, who must understand the lifecycle of their building: its manufacturing processes and materials, its duration over time and its capacity to adapt and evolve up to its deconstruction"²². In addition, the concepts of 'grey energy' and 'transformation capacity' are central. Other EC practices are highlighted as well, such as rainwater harvesting, building flexibility and modularity, neighbourhood waste harvesting and reuse of existing buildings.

In addition, in 2016, EPADESA launched two calls for projects, aimed at inspiring innovative reflections and experiments on the CE theme. The first one concerns temporary urban planning approaches, allowing the lifespan of existing buildings to be extended. The ephemeral initiatives presented were highly diverse, ranging from soil remediation to the reuse of building materials, or even innovative start-up incubators. The second one directly concerns new constructions and aims to develop innovative CE solutions in the construction sector. LCA has been applied to the design of 5 office buildings, and the environmental benefit of recycling has been studied.

Saint-Vincent-de-Paul, Paris

Located in the 14th arrondissement of Paris, the Saint-Vincent-de-Paul ancient hospital remained under decommissioning for approximately 10 years. In 2014, however, it was acquired by the municipality of Paris with the aims of transforming it into an innovative eco-neighbourhood (City of Paris 2017a). Covering an area of 3.4 hectares, the redevelopment project of the former Saint-Vincent-de-Paul Hospital represents a rare opportunity for urban transformation in the heart of Paris' particularly dense urban fabric.

In particular, the objectives pursued by Paris are as follows:

Objectives			
Create a predominantly residential area, promoting social diversity	Lead an exemplary environmental approach, making Saint-Vincent-de-Paul an innovative and emblematic eco-neighbourhood for the city	Think of public and open spaces as green spaces, whether on roofs, floors or facades	Enhance the heritage and history of the site

Table 5. Saint-Vincent-de-Paul's objectives.

In December 2016, the ZAC was created and granted to the developer Paris Batignolles Aménagement. The construction work began in 2018, and the planned programme provides for approximately 60,000 m² of total floor area, broken down in housing (including 50% social housing), facilities, equipment (including a school and a gymnasium), shops and a public garden²³.

²² EPADESA. 2016. Les Groues. Plan Guide.

²³ <https://www.paris.fr/services-et-infos-pratiques/urbanisme-et-architecture/projets-urbains-et-architecturaux/saint-vincent-de-paul-14e-2373>

Concerning the built environment, the future district aims to become an exemplary showcase for the entire city thanks to an ambitious environmental approach. Specifically, as stated in the Resilience Strategy adopted in 2017, Saint-Vincent-de-Paul aims to be the city's first resilient and carbon-neutral neighbourhood (City of Paris 2017b). In compliance with the city's framework documents, the project thus aims to create a "pilot district for sustainable development" (City of Paris 2017a), reducing its impact on the environment and promoting innovative technologies while also involving the inhabitants. In this perspective, the new project provides for reversible buildings, pooling resources, converting 60% of existing buildings, developing renewable energies, certifying new constructions, optimising energy systems and recovering waste.

In addition, ZAC Saint-Vincent-de-Paul aims to be "a privileged space to develop the principle of CE"²⁴. Several different actions are being put forward in the field of CE, and the project must respect the orientations of the Parisian CE plan. With regard to the built environment, attention is being paid to reusing certain buildings, which would make it possible to limit demolitions, short circuits and temporary occupation of existing buildings, as well as to ensure continuity with the ephemeral urban planning experimentation of the Grands Voisins, including the smart grids, urban agriculture and bio-waste.

More specifically, regarding waste, more attention is paid to the construction phase, and the following objectives in particular:

- Source reduction of the quantity of waste;
- Material recovery by reuse in place or elsewhere (in particular, building elements such as doors, windows, etc., which can easily find a new use, or concrete waste and bricks, which can be used as aggregates);
- Energy recovery from waste;
- Storage in a technical centre, reserved for final waste.

To this end, a process of recovering dismountable elements likely to be reused is planned for all site operations, thanks to an inventory distributed to various local, potentially interested structures. In this respect, a specific project management assistance service for sustainable development is planned from the project's amelioration. Applying LCA to the design of a project including deconstruction, renovation and new construction is planned in the frame of the PULSE-PARIS project funded by ADEME²⁵.

²⁴ http://www.paris-batignolles-amenagement.fr/pba/sites/default/files/publications/dp_svp_1506_deflite_bd.pdf

²⁵ The PULSE-PARIS research project aims to improve the relevance and operability of eco-design approaches for urban projects in line with the CE strategic plans of the City of Paris. In particular, the project focuses on life cycle assessment (LCA) tools at the neighborhood scale, which are still in their infancy. The project will synthesise strategic approaches at the city scale and eco-design approaches on the urban project, in order to verify the coherence and articulation between these decision-making levels. The evaluation of CE practices on this scale using LCA is innovative and would make it possible to better understand the environmental benefits of these practices. (The research project is led by EIVP and MinesParisTech).

Cross-case comparison and discussion

The results of the analysis are summarised in Table 6 and are compared by applying the analytical framework based on the following criteria: CE practices, strategic city scale integration, and tools employed. Following this three-step analysis, some significant similarities have been pointed out.

	Buiksloterham	Kera	Les Groues	Saint-Vincent-de-Paul
Strategic city scale integration	Sustainable Agenda Smart City Initiative Circular Amsterdam	Lien stratégie durabilité et smart city	EcoQuartier Label	Resilience Plan Territorial Climate Plan CE Plan
Tools employed	Circular Building Standard Materials digital Passport MFA	Kera design manual LCA Buildings	(Perspective cycle de vie)	LCA Building Carbon Footprint Municipality's assessment tool
CE practices	Energy	100% renewable energy PassivHaus Label Local energy production	70% renewable energy	40% electricity by photovoltaic panels PassivHaus Label
		100 % energy recovery from wastewater	Energy recovery from wastewater	Smart Grid
	Waste and materials	Reuse materials	Reuse of materials and existing buildings	Reuse of materials and existing buildings
		100% « circular material flow »	Local management of construction and demolition waste	Local management of construction and demolition waste
		Deconstruction	Waste recovery and valorisation	Waste recovery and valorisation
	Water	Rainwater collection	« Green and Blue Tools »	Rainwater collection
	Other	Temporary occupancy of buildings Buildings flexibility Prefabricated constructions and structures Auto-construction Urban agriculture and local food production	Temporary occupancy of buildings Buildings flexibility Urban agriculture	Temporary occupancy of buildings Urban agriculture Short circuits CE stakeholders point of reference

Table 6. Cross-case comparison

First of all, the four projects are integrated into the strategic documents regarding the sustainable development and EC of each city, such as the Smart City Agenda, Climate Change Plan, and so on. Furthermore, in these documents, the projects are always presented as ‘experimental demonstrators’ of CE in urban projects. However, it is important to note that, in all the cases reviewed, CE is often seen as one of the pillars of sustainable development, and sometimes, no distinction is made among the proposed actions between those related to the CE or to sustainable development.

Second, the analogies are also evident with respect to CE practices identified in the projects. Following the case studies analysis, it is possible to classify four categories of recurrent practices: energy, water, waste and other. In particular, all cases insist on flexibility and temporary occupancy of buildings, the reuse of both building materials and existing buildings, and eco-construction. On this subject, an important focus is placed on the energy aspects of new buildings, with precise standards to

be achieved. Other practices highlighted by at least two cases relate to waste management, particularly construction site waste, as well as water management and urban agriculture.

More generally, the comparative table indicates that the vast majority of the CE practices highlighted by the cases focused more on environmental issues. In fact, the other two pillars, economic and social, would not appear to be central.

However, no consensus is present concerning the tools employed. The Dutch and Finnish cases, for instance, are based on ad hoc assessment methodologies still under development. Furthermore, only in the case of Buiksloterham is a material flow analysis (MFA) conducted. This well-identified assessment tool is often coupled with CE, but according to Elia et al. (2017), it is not sufficient for validating the pertinence of CE practices, because it does not enable explicitly accounting for all of the environmental impacts. Indeed, MFA is an important territorial knowledge tool, but it does not allow to prioritise and make decisions among the different CE actions. Other tools, such as the LCA, could conversely support such decisions.

In this regard, it is interesting to note that the ‘lifecycle perspective’ seems to be central in all cases, but it is not necessarily associated with lifecycle assessment (LCA) tools. The LCA method seems to be the most complete methodology for assessing environmental impacts and CE requirements (Elia, Gnoni, and Tornese 2017), but nevertheless, in the Kera cases, LCA is planned only at the building scale and for new constructions. The assessment of CE practices is not directly mentioned except in Saint Vincent de Paul. This can lead to contradictions, because as demonstrated during the 63rd discussion forum on LCA²⁶, ‘circularity’ does not always positively affect the environment.

Finally, it is important to note that all these projects are currently underway or were recently started, probably contributing to a lack of precision regarding the performance that will actually be achieved upon delivery.

Conclusions

The literature review reveals a lack of research concerning the application of CE principles to urban projects and their assessment. Accordingly, this paper aims to provide a comparative analysis of four ‘circular neighbourhood’ case studies in order to discuss the CE practices implemented and the assessment tools utilised.

The results of this analysis indicate a large panel of CE practices and a limited use of indicators and assessment tools. Further steps in this research field are required concerning the study and analysis of other cases and tools. Moreover, several authors have highlighted the interest of LCA in evaluating CE (Ghisellini, Ripa, and Ulgiati 2018; Zanni et al. 2018; Elia, Gnoni, and Tornese 2017; Giorgi, Lavagna, and Campioli 2017; Haupt and Zschokke 2017; Fregonara et al. 2017). Two key characteristics of LCA are highlighted by these authors: the ‘life-cycle thinking’, which should also be the basis for EC, and the environmental impact assessment. Thus, the relevance of LCA is also becoming increasingly legitimate to experts, who are beginning to emphasise the importance of LCA to implement EC strategies. In this context, one of the objectives of the PULSE-PARIS project

²⁶ www.lcaforum.ch

involves the concrete application of the LCA method for evaluating the identified CE practices in order to study its relevance and propose possible improvements.

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Urban Metabolism and the Circular Economy, The Capital Approach

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Abstract: As global human population continues to increase society is shifting toward more concentrated urbanisation. Urban settlements require adequate, appropriate infrastructure and accommodation to satisfy the increasing population needs. A circular economy is an inclusive approach relying on integrated systems that feedback into the production process. Humanity has reached a position where we must utilise the stock of natural capital more efficiently to ensure that replenishment of stock can occur. An appreciation of the circular economy is required to ensure that the stock and flows of capital can meet the metabolic rate of urbanism. The circular economy provides an opportunity to transition from the linear economy to satisfy sustainable development objectives.

Keywords: Capital, Circular Economy, Stocks, Flows

Introduction

The primary function of our cities is to ensure that an adequate level of well-being is provided for all occupants throughout their lifetimes.

As the increase in human population continues, we are simultaneously experiencing a steady shift of the global population towards cities. This concentration of human occupation within the urban environment is increasing the pressure on the ability for cities to meet the needs of their occupants. Cities are increasingly expected to provide adequate housing, workspace, leisure facilities, education programs, transport and infrastructure, in a functional, safe and secure environment.

This urban pressure is manifested in three forms:

- developing the built environment stock to satisfy the growing population needs;
- providing the flow of adequate services including reliable energy, clean water, materials and infrastructure to allow the urban system to function and operate to meet needs and requirements of the population;
- ensuring the built environment is maintained to a level to meet the utility needs of the changing demographic profile.

These three requirements constitute the stock of the urban fabric and the flows of essential services.

Urban Metabolism

The concept of urban metabolism was introduced by Abel Wolman in 1965. In the paper ‘The Metabolism of Cities’, Wolman identifies:

“three metabolic problems that have become more acute as cities have grown larger. These three problems are the provision of an adequate water supply, the effective disposal of sewerage and the control of air pollution (Wolman, 1965 p179).”

Since that time the global population has more than doubled and has transitioned away from rural areas toward urban settlements. The three identified urban metabolic problems are still relevant to today’s society, but many other components may now be added as essential to a functioning city. The provision of reliable energy, information and communication technology, and effective transportation systems may be seen as first world urbanisation issues, but they are becoming increasingly important and demanded by global urban inhabitants.

Urban metabolism is measured as a response to the population pressure on the urban fabric and is calculated as “the magnitude, rate and size of the flows, required to respond to the demands of the urban environment (Roggema, 2019).” The urban metabolic rate increases as a result of a growing population, the increasing and changing demand for resources and processes required to keep a city functioning for the benefit of the community inhabitants.

The Linear Economy

The first sequel to the *Limits to Growth*, ‘Beyond the Limits’ (Meadows *et al*, 1992), stated:

“The earth is finite. Growth of anything physical, including the human population and its cars and buildings and smokestacks, cannot continue forever. But the important limits to growth are not limits to population, cars, buildings, or smokestacks, at least not directly. They are limits to *throughput* – to the flows of energy and materials needed to keep people, cars, buildings and smokestacks functioning.”

“The human population and economy depend upon constant flows of air, water, food, raw materials, and fossil fuels from the earth. The limits to growth are limits to the ability of the planetary *sources* to provide those streams of materials and energy, and limits to the ability of the planetary *sinks* to absorb the pollution and waste.” (Meadows *et al*, 1992)

From the commencement of the industrial revolution and throughout the twentieth century, the global economy has primarily functioned on a linear basis. This process was manageable, although not desirable, as natural capital stocks were seemingly in abundance and the ecosystems were generally capable of servicing, absorbing and regenerating to allow a functioning environment to serve the needs of the expanding human population. When the human population reached 5.5 billion in the 1990’s it was estimated that some of the natural systems operating under a linear approach, were at capacity (Meadows *et al*, 1992). Past this point, the regenerative flow capability of these natural

ecosystems was failing to keep pace with demand and pressures imposed by human occupation and production processes.

The Circular Economy

“The circular economy is an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed as both process and output, to maximize ecosystem functioning and human well-being (Murray *et al*, 2015 p369).”

Creating a circular economy is necessary to meet the growing demand pressures created by the increasing urban metabolic rate. For the circular economy to be effective, a regenerative process that optimises the utility value of inputs, through the efficient distribution of outputs while eradicating negative impacts, is desirable. A balanced approach which optimises resource utilisation within boundaries and limitations is required.

The process modelling behind these concepts date back to the 1970's based on the system dynamics, World3 modelling from the Limits to Growth team of researchers headed by Dennis Meadows (Meadows D H *et al*, 1972). The five key areas central to the *Limits to Growth World3* model were exponential population growth, agricultural production, industrial production, natural resources and pollution. The *Limits to Growth* modelling highlighted the linear and circular flows of human habitation through system dynamic processing of data associated with the five identified areas. The analysis considered feedback loops and predicted time lags, indicating degeneration and the estimated regeneration capacity of natural systems and the ability of these systems to cope with increasing human population pressure (Meadows, 1972).

When *Limits to Growth* was published in 1972, the global human population had grown to an unprecedented 3.7 billion. In the past four decades global human population has now doubled to 7.4 billion. This increasing population level, combined with a shift toward urbanisation compounds the demand for appropriate accommodation and suitable infrastructure to supply services including the adequate provision of energy, clean water, effective transportation methods and supply chains for material goods and food. This compounding effect is manifested in the increasing rate or velocity of urban metabolism. The circular economy is an appropriate method to respond to the increasing rate of urban metabolism.

Asset Based Capital Approach

A consideration of the stocks and flows of capital is necessary for the circular economy to be effective. Environmental economist, David Pearce outlined an asset-based approach that combined capital from four interrelated perspectives (Pearce *et al*, 1993). The four capital stocks outlined were **natural, human, manmade, and social**.

Natural Capital

Natural capital stock covers a wide spectrum of environmental assets, including soil fertility, forests, fisheries, fossil fuels in the form of oil, gas and coal, the ozone layer and biological chemicals. (Pearce *et al*, 1994).”

The flows of natural capital can be further expanded to include ecosystems services: the capacity to assimilate waste, photosynthesis, evapotranspiration, renewable energy, the water, carbon, nitrogen and sulphur cycles and the ecological systems that allow cohabitation of all species.

Human Capital

The stock of human capital includes the human population and the level of education and skills. The flows are the number of births and deaths, the demographic aging profile and the utilisation of knowledge, skills and labour.

Man Made Capital

The stock of man-made capital constitutes the existing built environment and produced goods. The flows of man-made capital are through the manufacturing process. The built environment flows consist of the processing and utilisation of materials through the development process and the use of energy and materials in the operation of premises including repairs and maintenance.

Social Capital

Social capital considers public health, access to education, non-discriminatory employment opportunities, public safety (law and order), privacy, freedom of association, indigenous rights, non-corrupt and equitable systems of governance (Gleeson-White, 2014)

The social capital stock is created as a result of the other capitals. Social capital can evolve from human capital flows. Social capital can improve as a consequence of man-made capital stock. Social capital can be impacted by natural capital stocks. As Jane Jacobs articulated in *'The Death and Life of the Great American Cities'*:

“development for the sake of development can sometimes have negative social consequences, whereas investment in improving the existing social fabric that has positive attributes can produce even greater positive outcomes (Jacobs, 1967).”

As Jacobs highlighted, heritage, culture and community, all are important social capital benefits.

The circular economy from a processing perspective is “virtually silent on the social dimension (Murray *et al*, 2013 p376)”, where the social capital perspective is central to sustainable development outcomes. This can be explained by the circular economy taking a quantitative analytical approach, whereas many social capital outcomes may be considered more qualitative.

Societal well-being is a consequence of the flows of human and man-made capital, which provide inputs to serve social capital, but social capital can only exist within a thriving natural capital environment.

Social capital preservation is the dominant theme in *'Our Common Future'* (Brundtland, 1987), concept for sustainable development: -

“Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without comprising the ability of future generations to meet their own needs.

Sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their aspirations for a better life (Brundtland, 1987 p8).”

The theory behind sustainable development is determined by ensuring social capital stocks are enhanced over time.

“The concept of sustainable development suggests that a development path is sustainable if and only if the stock of overall capital assets remains constant or rises over time. To be on a sustainable development path, then, a nation must be living within its means, which in this context means not decreasing its overall capital assets.” (Pearce *et al*, 1993 p84)

Capital Stocks and Flows

It is essential to understand that natural capital systems operate as a complex arrangement of circular flows that provide eco-system services essential to support all species. The difference between natural capital and the other forms of capital is natural capital does not require human activity to build or maintain its stock. Natural Capital is a fundamental requirement for the development of the other capitals (Costanza et al, 2017) when interacted with human capital and man-made capital.

“These four general types of capital are all required in complex combinations to produce any human benefits. Ecosystem services thus refer to the relative contribution of natural capital to the production of various human benefits, in interaction with the other forms of capital. These services do not simply flow to human well-being without these crucial interactions. (Costanza *et al*, 2017 pp4-5).”

Humanity cannot survive without adequate life supporting natural capital stocks, produced by positive natural capital flows. Essential human life supporting attributes of natural capital stock include the air we breathe, the availability of fresh drinking water, soil and the nutrients required for plant growth. Each of the other forms of capital are reliant to some extent on natural capital stock and the natural systems regenerative flows. Natural capital is exploited by the other capitals to a position whereby the regenerative capacity of natural capital through ecosystems services is insufficient to keep pace with human production demands and urban metabolism.

Both urban metabolism and the circular economy are based around the concept of stocks and flows. Once the stock of the capitals has been identified, it is critical to understand the flows of these capitals.

“The critical aspect is to understand the stock, flows and impacts when incorporating natural capital into the capital equation. Stocks may be both sources and sinks of natural resources, while flows may be both inputs and outputs that increase or decrease stocks (Meadows, 1998).

Moreover, stocks and flows of resources are also characterised by different regeneration rates (Wall, 2002), which determine whether resources are referred to as renewable or non-renewable. (Costanza and Daly, 1992) (Mancini *et al* 2017 p125).”

Each of the capitals cannot be treated in isolation, but rather a cross capital approach is required to ensure that optimal performance or outputs are achieved within the boundary limitations.

The atmospheric cycle is one example of where man-made linear flows, the emission of carbon dioxide into the atmosphere has now reduced the natural stock holding capacity, by exceeding the flow rate capability of the atmosphere to absorb carbon emissions. The concentration of carbon dioxide in the atmosphere has already surpassed 410 parts per million (ppm), (Mauna Loa Observatory, 2019)¹ where 350ppm is the recommended position to avoid global warming and the effects of climate change.

- Fossil fuels remain the primary fuel source to provide energy for transport, the operation of building services, heating and cooling systems and the energy for the production process of materials for construction.
- Carbon dioxide is emitted by the burning of fossil fuels.
- Carbon dioxide accumulates in the atmosphere.
- The absorption rate of carbon dioxide out of the atmosphere is slow, with the lag or processing time estimated to be up to 100 years.
- The atmosphere and oceans act as sinks, but as they have reached their optimal processing capacity, the outcome of this oversupply of carbon dioxide manifests into the predicted consequences of global warming, resulting in increased frequency of drastic weather events, increased ocean warming, ocean acidification and rising sea levels.

These outcomes have potential severe existential consequences to humanity, but we continue to emit into a system that has passed its effective processing capacity.

From an urban metabolism approach, we should ensure that development and occupation of cities limit the output of carbon emissions to decrease the impacts and consequences of climate change and associated risks. This requires a shift to renewable energy as a substitute to carbon emitting fossil fuels, to a level that meets the energy demand of the population and reduces carbon emissions to levels that can be effectively absorbed into the atmosphere and oceans without negative consequences.

An effective circular economy should be designed to ensure that the projected outcomes contribute to the replenishment of the stock of capital and meet the rate of urban metabolism. From a circular economy perspective, systems should be developed and integrated to ensure that carbon dioxide emissions are reprocessed prior to entering the atmosphere.

¹ According to <https://www.co2.earth> , The Mauna Loa Observatory, Hawaii, recorded atmospheric concentrations of carbon dioxide in April 2019 at 413.52 ppm.

Boundaries

How can we be sustainable if the human population is already using 1.7 planets worth of resources and waste absorption capacity (Global Footprint Network, 2019) and depleting the stock of natural capital to a position where the ecosystems services are incapable of providing adequate regenerative flows?

Linear processes primarily utilise stock(s) as inputs, create waste during the production process and dump the residue. This approach fails to provide the feedback loops to allow systems to regenerate effectively. As we have now reached capacity in some systems and deteriorated natural capital stockholdings, a linear approach is no longer a satisfactory approach.

If we have passed the regenerative capacity limits of natural capital and are now depleting natural capital stock, a virtuous circle response must be adopted with the aim toward preserving and enhancing natural capital to provide positive social outcomes.

For the circular economy to be effective, the process must provide positive benefits across all the capitals and therefore be considered to operate in a virtuous manner. If all the flows are positive, adding to the stock holding of all the capitals without diminishing or exploiting one for the benefit of the other, then it could be said that this is a sustainable approach.

One problem with the circular economy is that some approaches may plan for virtuous outcomes, but when all the capitals are considered there may be vicious circles embedded within the system resulting in a negative flow from a capital. For this situation to be sustainable, it is a matter of quantifying the positive and negative responses within the system to determine the true value proposition, ensuring that a gross positive outcome is achieved over the long term.

Urban Metabolism - Sydney Urban Planning

Sydney is the most populous city in Australia, with a current population of approximately 5 million. The commercial business district of the city is located alongside the banks of Sydney Harbour near the coastline of the Pacific Ocean. The geographical boundaries of the metropolitan area are largely contained by the natural geography of the Pacific Ocean to the east, national parks to the north and south coastal regions and Blue Mountains to the west. The urban expansion of the city therefore spreads from the city centre predominately west outwards 50kms to the base of the Blue Mountains escarpment.

The Sydney basin is 12,367square kilometres, including the national parks. The urban area is currently 4,064 square kilometres with an urban density of 1,237 persons per square km. (City of Sydney 2019).

The climate of the City of Sydney is classified as subtropical. As the city is located alongside the harbour and situated near the coast, the city itself does not suffer from the characteristics of the urban heat island effect to a level detrimental to human habitation. The air temperature along the densely populated coastal suburbs and inland to approximately 8kms remain mild within the subtropical/temperate zone throughout the year. These suburbs are cooled by circulating sea breezes and coastal weather systems.



Figure 1 Greater Sydney Metropolitan area

Post-World War II urban expansion has generally been to the west of the city with the population geographically centred around the western Sydney centre of Parramatta, approximately 20kms from the coast. Residential expansion continues to spread further inland into the Sydney basin to the north

west, west and south west. The climate and temperature in these areas is significantly different to the coastal areas, as cooling sea breezes don't penetrate this far inland.

Most of the recent urban population growth has spread further west with the provision of available land, allowing the development of large suburban homes on small allotments. These sprawling suburbs lack appropriate infrastructure in the form of public transport. Motorways have been developed throughout this area to cope with the increased motor vehicle use. This area of western Sydney accommodates over half the metropolitan residential population of Sydney, in-excess of 2million people and has been planned for a further 3million over the forthcoming decades.

To accommodate this population growth, Sydney has experienced the continued clearing of native bush and agricultural land for suburban settlement within the western Sydney basin. Major city centres have been developed in Parramatta and Blacktown in the west, Liverpool and Campbelltown in the south west.

The New South Wales State Government Planning Department has undertaken numerous detailed urban planning strategies to accommodate growth for Sydney over the forthcoming decades. The latest urban expansion masterplan 'A Metropolis of Three Cities - The Greater Sydney Region Plan (Greater Sydney Commission, 2019)' considers a planning strategy for Greater Western Sydney to provide upgraded and investment in new infrastructure including a second airport, new employment centres and the provision of new residential accommodation. It is a detailed urban development plan providing a strategy for growth and development for the western Sydney urban area, based on the economic grounds of consolidated urban development with proposed employment centres.

The Vicious Circle

Western Sydney Urban Planning

- Increased urbanisation of this metropolitan region results in a reduction of the rural landscape, resulting in a reduction of low-level vegetation and the tree canopy.
- New suburbs are created through subdividing broadacre land.
- Roads are constructed with black asphalt bitumen.
- Homes have been built on small allotments with predominately black or dark roof tiles with narrow eaves and poor shading.
- Little residual space for landscaping and any established tree canopy.

The existing suburbs are now suffering from the suburban heat island effects, due to the reduction of green space replaced with black or dark fabricated surfaces. As these suburbs are located inland, they do not benefit from any coastal sea breezes.

- Average annual temperatures continue to rise and remain hotter for longer periods.
- The further inland, the higher the temperature increases.

- Dwellings are ineffectively designed to benefit from passive solar shading and natural breezes and therefore require cooling from air conditioning systems.
- There has been a slow take up of photo voltaic electricity cells, requiring electricity generated predominately from coal fired power stations.
- Where these dwellings are poorly orientated and are constructed with inappropriate materials for the environment, they require increasingly more energy for cooling.
- The cost per unit of energy continues to increase.
- Lower land values and low-cost building materials indicate that houses are “more affordable” but unsuited to a changing climate.
- Increasing building operating expenses and additional transportation costs equates to increasingly unaffordable living expenses.

Future residential subdivision will further reduce the green space within these suburbs.

- With increasing temperatures, tree leaf canopy transpiration and plant photosynthesis are negatively impacted.
- Increasing heat events with temperatures consistently over 35degree Celsius days are experienced throughout an extended summer period.
- This region is getting hotter and it is staying hotter for longer.
- The heat is being trapped overnight, therefore these suburbs don’t experience adequate heat relief.
- Artificial cooling through air conditioning is required for longer periods.
- Increased energy use requires more burning of fossil fuels creating higher levels of green-house gas emissions, resulting in increased warming.
- High temperatures reduce green space growing ability along with a lack of available water for irrigation, creates heat stress on plants.
- More people require more cars, alongside a lack of appropriate public transport infrastructure. This creates traffic congestion and continuous demand for transport infrastructure improvements.
- More vehicles on the roads for longer periods creates more carbon emissions leading to global warming.
- Changing climatic conditions affects the supply of water. As the population increases the provision of water per person is diminished.

The City of Parramatta are conscious of this warming phenomenon and are installing heat monitors and sensors throughout the city as part of a smart city initiative, but this action does not mitigate the problem, it only identifies it. (City of Parramatta, 2018)

This development cycle has now reached a stage where the continued residential expansion of this region is now negatively impacting the natural capital stock and flows to a detrimental level of social well-being. The heat stress impact on this area is worsening.

The proposed urban development plan effectively ignores this issue and does not offer any solutions to this worsening situation. The problem is that the metabolic rate of the existing urban population is creating a compounding affect with urban heat retention and has broader global warming implications. This affect will be further compounded as the metabolic rate increases to meet the demands proposed population expansion.

The plan proports to consider a sustainable development approach but fundamentally it considers development from a linear economic approach. The plan fails to consider a holistic approach considering the four capitals, urban metabolism and the circular economy. Being based primarily on job creation and economic considerations, the plan fails to recognise the importance of natural capital and the environment being the critical capital component determining the consequential social outcomes.

We have available land, but do we have suitable or appropriate land for residential expansion? The impact of urbanisation is affecting the climatic conditions in this region to a position that is becoming unsuitable for human habitation.

This region is experiencing the effects of global warming now, which is impacting social well-being, health and safety, resource use and furthering the depletion of natural capital stocks. We have created a vicious circle though a linear urban planning approach, but little consideration has been had for the urban metabolism. This urban planning strategy fails, as it fails to meet the needs of society and negatively impacts natural capital stock holdings. The plan proposes to increase economic performance. When the capitals are taken into consideration, this plan does not enhance well-being, it negates it. It does not create wealth, it depletes it.

Conclusion

When we consider that the stock of natural capital is now a non-negotiable asset, the endowment of natural capital stock must be protected. The operating paradigm for sustainable development must be within the functional ability of natural capital regenerative flows. We can no longer allow natural capital stocks to be used as a sink if the regenerative process fails to meet the absorption capacity as this will further deteriorate the stock of natural capital.

A linear economic approach is now redundant as a linear approach cannot satisfy the objectives of sustainable development and meet the needs of urban metabolism in a balanced and secure manner. A circular economy is necessary to enhance natural capital systems and provide appropriate social capital outcomes. We must transition to a circular economy to ensure continuous improvement and to increase our overall stock of capital assets. This will provide the opportunity for a sustainable outcome.

We still require an adequate resource base and systems to satisfy social needs through the supply of manmade products. A circular economy can assist in meeting the demands of urban metabolism, but

the rate of renewal and regeneration and use of critical resources must provide an overall virtuous response to the key limited areas.

With an increasing global population, changing demographic patterns and a shift toward urbanization, the urban metabolic rate continues to increase. The primary priority is to provide a process whereby we can continue to operate within natural capital limits to protect environmental reserves (stock) and renewal by ecological systems (flows), while satisfying social needs to enhance equitable prosperity. This needs to be achieved in addition to ensuring that the expanding human population needs are met through the provision of new capital works and the repair and maintenance of existing systems. If all these outcomes can be achieved through a virtuous circular economy approach, then we have satisfied the demands of urban metabolism in a sustainable manner.

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Urban metabolism and circular economy

Local manufacturing systems in the piedmont area.

New scenarios for an inland metabolism.

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Abstract:

The Italian alpine foothills territory (IAFT) has gone through various "seasons of manufacturing" that determined different representations of it. Today, in the context of an exceptional transition phase, foothills local manufacturing systems (FLMS) need an overall reinterpretation. Even if we can still recognize the IAFT as one of the most economically relevant areas of Italy, we are unable to understand its complex transformation, due to the large amount of investments, their transience, and their multifaceted implications on the territory as well as on the environment as a whole. After the economic crisis of 2008, interesting possibilities for coexistence and collaboration were vexed by a set of important and hardly controllable forces, mostly due to the imposed combination of divergent local clusters' FLMS evolving levels and their relation to different types of economies. Apart from the traditional type of FLMS, some types are constantly growing, taking in consideration the proximity between diversified and specific industrial basis that allows for new complex products to be invented and for the economy to grow in the long run. Conversely, other FLMS have suffered a setback, which is related, firstly, to the exhaustion of resources that drew on the adjacent mountain environment, and, secondly, to the lack of local adequate competences and skills. Finally, a third type of FLMS follows a "third road", based on an innovative approach to handicraft and to the cultural industry, which favors new forms of experiential tourism. My research aims to elaborate on a set of efficient modalities, combining the existing knowledge of the biophysical flows together with an informed insight into the socio-economic transitions of the different FLMS, which are understood as part of an unique system, oriented towards a circular metabolic perspective.

Keywords: manufacturing; transition; territorial metabolism

Introduction

This paper is based on a set of considerations that have been developed as part of a PhD research in progress, at the PhD school “Architecture, city and design”, University IUAV of Venice, within the specialization of urbanism [1]. The thesis focuses on the investigation and representation of an Italian specific area, which has been called “Italian alpine foothills territory” (IAFT). This territory can be identified as a strip of land extending longitudinally from the foothills of the Alps towards the district of the springs (which generally overlaps with the A4 highway route), and, transversally, from Biella (Piedmont) to Manzano (Friuli Venezia Giulia).

Roles and scenarios of the IAFT

In this essay, IAFT is identified as a territorial typology, broadly discussed – over the course of the last century – in a number of prospective projects and political hypotheses regarding the Italian territory.

The aim of this paper is not that of analyzing the whole of the definitions – and, accordingly, of the divergent functions – that have been attributed to this territory, but instead, that of considering some relevant case studies.

In 1965, in the study promoted for the inter-municipal plan of Milan, Bacigalupo, Corna, Pellegrini e Mazzocchi argue that “the goal of the development process is not to be understood as that of realizing a physical urban continuity, but, instead, that of residing in constructing roads and public transport routes as well as in distributing them around residential areas and production sites [...] the development structure under discussion is, accordingly, able to do away with the centralized model of the polarizing metropolis, and to effectively solve the issues of the relations between transportation infrastructures and settlements.” (Bacigalupo, Corna, Pellegrini e Mazzocchi, 1965). In this proposal, which approached the subject through geographical and historical lenses, the authors sharpened the focus on the significant discontinuity that historically characterized the piedmont area. In 1967, in the context of the research undertaken by Centro Studi and of the economic studies concerning the first state plan for the regional development of Italy, scholars proposed a “linear model resulting from the combination and arrangement of three different kinds of territorial typologies” (Moroni e Marcialis, 1967). The entirety of the concept of the piedmont area is comprehended within this image, as each space “has its own name and function, as part of a mechanism that grinds, perforates and connects” (Mazza, 1992). Finally, in 1992, a study, commissioned by the Agnelli Foundation, combined a number of reflections on the 1990’s Italian economic and social geography with the very themes scrutinized in the undergoing reform of the republican state, which was considered necessary, not only in the context of the political crisis, but also in that of the future economic potentialities (Marcelo Pacini, 1992).

In this paper, the piedmont territory is contextualized within the debate regarding the new definition of the Regione Padana, which is understood as “the sum of relatively mutually autonomous sub-systems” (Marcelo Pacini, 1992) [2].

Manufacturing in the IAF. A pervasive trend. The different seasons of manufacturing

Taking into consideration several studies that, within the context of the future development of Northern Italy, built a set of implicit scenarios of the IAF, it appears that IAF begun to be acknowledged and taken into account almost exclusively with regard to its evident contribution to the economic production of the country. Indeed, it must be noted that this territory was increasingly and progressively being understood as a significant area, mainly because of its prevailing role in the Italian manufacturing sector. Before that, there was nearly no mention of the IAF in the studies of the other elaborate scenarios for the project (Mazza, 1992). Throughout the first decades of the twentieth century, the IAF was understood as fundamental in the axis composed by the valley floor and the railway/highway system connecting Turin, Milan, Venice, and Trieste. At that point, the idea of a linear territory connecting medium-small cities, new centers of expansions, and open land emerges. Namely, this very territory is understood as “a great axis for the development and balancing of the process of centralization in few big-size poles”. Thus, in the context of the analysis of the piedmont area, we cannot ignore the manufacturing drive around which it is structured. Indeed, the IAF lived through a various series of “seasons of manufacturing”, which, most of all, determined its different representations.

Up until the nineteenth century, the most representative image of this area was that of “the proto-industrial nebula” (Lanzani, 1993).

After, the IAF was referred to as a “territory of widespread industrialization” (Bagnasco, 1977 and Fuà, 1983), or a “territory governed by the traditional model of the manufacturing district” (Boeri, Lanzani, Marini, 1993). As a matter of fact, this is a representation that corresponded with the period of the peak influence and relevance of the model of the local manufacturing district (LC), which was widely considered as “the foundational cell of the Italian economic system of the second half of the twentieth century” (Cerruti But, 2018). LC is a concept that G. Becattini borrowed from the theories of Marschall, and which was postulated as a result of the collaboration between many scholars, both Italian and international [3]. Around the same time, several urban planners introduced a visual understanding of the piedmont areas as “reticular” (De Matteis), constituted of a collection of economic-territorial systems, embedded in different contexts.

Specifically, this mosaic-like representation is able to highlight the interdependency between different systems of diverse nature – not necessarily hierarchically – and prove the fallacy of the traditional distinction between the city and the countryside, as well as between the inland and external characteristics of the very territory under discussion (Lanzani, 1993).

It followed a season that coincided with the establishment of the European economic union, as well as with the increasingly open attitude towards the new model of global interconnections. IAF production system, while maintaining its position as the “Backbone of the Made in Italy” (Gurisatti, 2001), “leaked” outside of its territorial borders, thereby subverting the grounds of the traditional concept of industrial district, and redesigning the language and the site of production (Gurisatti, 2017). In this framework, wherein the territorial representation becomes profoundly unhinged from the local territory it refers to, the image of the territorial grid seems to fall apart, favoring, conversely, global-scale network dynamics over the local-scale processes it traditionally sustained (Pasquato, 2016).

More recently, the IAFI has been afflicted by the consequences of the 2008 economic crisis. This structural crisis marked the very end of a once-prevailing social and economic model, due to a set of different processes, that will be investigated later in this paper. Over the course of the last years, scholars have predominantly constructed scenarios elaborating on the concept of land abandonment, as well as on the subject of “local development”. Furthermore, the processes of landscape homologation, investigated by a number of studies on the widespread regional industrialization, have acquired new relevance (Boeri, Lanzani, Marini 1993; Turri 2000).

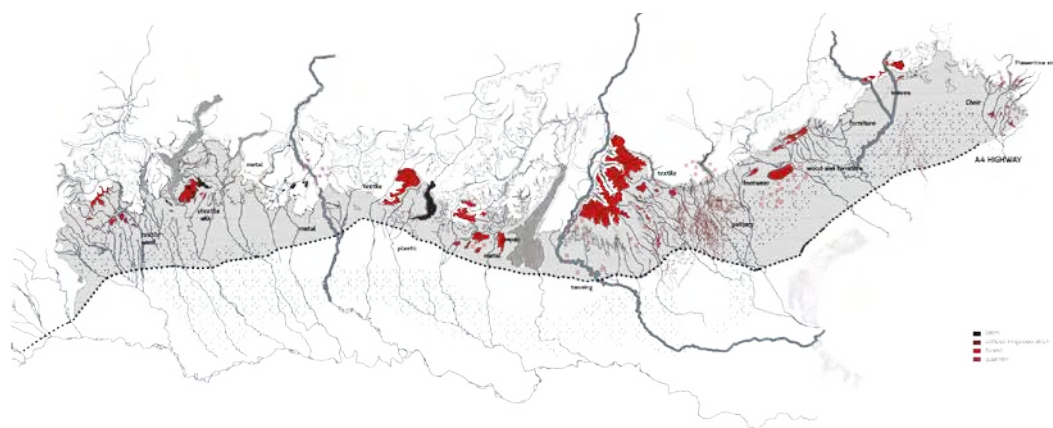


Figure 1. IAFI as “territory of widespread industrialization”

FLMS and the concept of “Designing territorial metabolism (TM)”

Today we are in an exceptional transition phase, wherein the IAFI needs an overall reinterpretation of its manufacturing spaces. As a matter of fact, although we can still recognize the IAFI as one of the most economically relevant areas in the country, we are unable to understand the complex set of its transformations and, specifically, to grasp those related to the evolution of the foothills local manufacturing systems (FLMS). The FLMS are strongly affected by the mechanisms of metamorphosis and redefinition. It is, therefore, crucial to observe this metamorphosis on the basis of different evolutionary actions that question, support, or subvert the district model. In order to understand and address these complex and diverse changes that strongly influence the relation between the city and the environmental resources, I propose to apply the concept of urban metabolism. Thanks to this concept, the shift from linear to circular modalities of production/consumption becomes imperative in order to reduce the external influences on our territories and to meet stricter environmental targets.

Urban metabolism is generally defined as the processing of inflows and outflows of resources and energy within the city fabric (Giezen, Reho, McCarthy, 2019). It is important to underline that this paper, in dealing with the concept of urban metabolism, specifically focuses on the recently conceived notion of “Designing territorial metabolism”(TM) [4]. This notion lays the ground for a paradigmatic shift in connection to three fundamental aspects:

- First of all, the idea of going beyond the boundaries of the consolidated city, in order to further understand the dynamics of the production process and the modalities whereby resources are deployed and allocated (Kampellman, 2018). Thus, as the

question of scale becomes relevant, overcoming the city/countryside dichotomy means equally considering FLMS as a unique system, where different material and immaterial flows interweave, as part of a circular structure [5]. This understanding is not opposed to the idea of simultaneously reinforcing the key roles of the local sector. At the local level, the role of diverse, complex and fragile types of urban economies becomes fundamental in the process of fostering small interventions and urban innovation (Casabella, 2018).

- Second of all, in order provide an operative input for the current practices of policy-making, the intricate and mostly idiosyncratic nature of circular TM must combine the (mostly quantitative) research on biophysical flows with (predominantly qualitative) insights into the socio-economic process of transition. Since the vast number of the socio-ecological factors cannot be expressed in commensurate metrics, the design of a circular socio-ecological system cannot be separated from a qualitative exercise that needs to construct new social, economic, and political institutions. Seizing this opportunity requires a characterization of TM that demands a transition to the circularity of the sole energy and materials flows. It also needs to question its intensity, the spaces, and the agents that underpin the metabolic exchanges. (Kampelmann, 2018).
- Finally, although the notion of TM has mostly been featured in traditional urban studies (for instance, Renzoni and Tosi discussed the idea of “città diffusa” in the region of Veneto in 2018), today we can still posit a novel understanding of it, which is useful in combining urbanism and ecology in addressing a new kind of circular urbanism, and to serve as a new tool for urban planners interested in the TM. In other words, we have to find a new formal language, as well as a set of efficient means through which the spatial/physical elements and socio-political elements of metabolism can be conjointly redesigned; we need new instruments to “reimagine relations between social, technical, economic, and ecological forces in urban areas” (Broto et al., 2012).

My research aims to identify a new set of useful modalities in order to combine the existing knowledge of biophysical flows with a meaningful perspective on the socio-economic transitions of the different FLMS, taking them as a unique system, oriented towards a circular metabolic scenario. This is especially useful in the context of the current Italian political landscape, which lacks both a clear understanding of the circularity related issues, and a fruitful perception of urban metabolism as a way to challenge the current theoretical and practical views of urbanism, promoted by national and local administrations. The first step in this process would be providing a clear overview of the transition phases that affected the different FLMS within the IAF.

The redefinition of space in the FLMS

During the past few years, the district model has been strongly criticized and discussed. For instance, Cerruti But identified three phases in the evolution of the concept of the district, namely (i) the construction of the model, (ii) “the hybridization and the development of the

model”, (iii) the “critique of the model” which, temporally at least, coincides with the crisis of the notion of the district, as noted by Fabio Bracci (2016).

Indeed, it was precisely during this third phase that, following the 2008 economic crisis, the traditional manufacturing-dependent model of district development seemed to reach its endpoint. The causes are multifaceted. Some of them are external, such as the crisis of the global economy, the physical limits to the expansion of the construction industry within the territory, the scarcity of resources caused by the environmental crisis, and a set of social obstacles (e.g. the decreasing interest paid by youngsters to crafts and manufacture). On the other hand, several of them are intrinsic to the very comprehension of the district, which is no longer understood as the site of a one-sector production system relying on physical continuity. Namely, the district territory is no longer delimited by a geographical context defined by the market, but rather defined by a transition to a variable geometry characterized by economic and relational contexts [6]. Thus, the period of the traditional districts today seems over, and replaced by a new one, wherein a diverse set of the development processes of the FLMS coexist in a non-homogeneous manner.

As of today, it is extremely difficult to understand the FLMS changeability. Neither “the modalities of zenithal perspective” (adopted by scholars in urban planning in the study of the case of the widespread industrialization in the nineties), nor the closer analysis via photographic means (which focuses on the sole exterior aspects of the production sites) are sufficiently apt (Basilico, Boeri 1996, Aimini 2017). As most of the novelties reside inside the very sites of production, it is necessary, in order to grasp them fully, not to limit ourselves to an outside view regarding them (Lanzani, 2014). For this reason, it was decided to undertake this research – a “new journey” – in the IAFI, focusing on interviews with the main stakeholders and the direct field survey of some area of FLMS.

While exploring the IAFI, it is necessary to return to the observation of the constellation of the manufacturing production sites, often considered “ordinary”, that for decades were the backbone of the economy of the one of the most dynamic territories in Italy.

First of all, it is critical to identify the various generative processes involved in the systems of production, which imply a set of differences, not only in terms of the foundational aspects of economy, but also with regard to their own geographical organization, thereby questioning the very concept of “designing territorial metabolism”.

Although this paper is part of a research still in progress, the choice of the FLMS under discussion is purposely inconsistent with what is today defined by the regulations concerning the industrial policies [7]. As discussed by Viesti, the currently classifications employed show inherent limitations and merely analytical potentialities that, most of all, are exclusively normative and non-exhaustive [8].

With full awareness, it was considered that, while conducting the operation of selection, these modalities would not be apt to relate to the final target, which is that of observing FLMS’s differences and anomalies, current limitations, and potentialities, with specific attention paid to the spatial and territorial features.

Thus, it was chosen not to focus on the “district” per se, as much as on the territories that still show the marks – sometimes more visible than others – of what is left of the productive system, as well as on the transformations exerting their influence on the physical capital, thereby purposely overlooking the analysis of the economic/production features of the district, which have been already brilliantly described by numerous renowned scholars.

First Hypothesis of rereading and classification of the FLMS

In the following paragraphs, a first attempt at classifying different kinds of FLMS will be presented, which is based on a direct in-field observation. It must be stressed that the four classes of elements presented here are not distinctly ideal types, and that they can be preexistent in a given territory. Thus, the dynamics defining them can be easily juxtaposed and interwoven. This classification is, therefore, necessary in defining a shared representation of the phenomena of metamorphosis of the FLMS.

1. Dwindling local districts (DLC). Exhausted and fragmented territories

DLC are particular districts that have suffered a setback. DLC might comprise both the traditional districts, based on the processes of mining and extraction of natural resources, and the districts relying on the supply chain of the textile industry.

The setback is, firstly, related to the exhaustion of the resources drawn from the adjacent mountainous environment. Mountains have always superficially been considered merely a “reservoir of resources”, thereby overlooking their limitations. Many of the resources that were crucial in the founding of and development of these districts, in the first place, were already being exhausted in the last century. Some others, instead, are still in the process of being exhausted, thereby forcing the sectors of production relying on them to question their own future [9]. Another example of DLC is the “Verona stone district”, located in the foothills of the Lessini mounts, where high-hill and medium-mountain environments blend. The district is the epicenter for the Italian production of marble and granite, and, additionally, is the most important in the global production of agglomerates. The territories of this district are today sites where economic activities, tourism, repurposing and safeguard of the environment struggles to meet. In this forgotten landscape, due to the inadequacy of regulations concerning the process of excavation, slabs as tall as 100 meters have been produced, regardless of the delicate environmental balance that is, today, thoroughly subverted, and which cannot be reestablished.

Some quarries still lay in the open air, despite the fact that their function as mining sites is exhausted, others are still in use, and some others are under evaluation, in order to find a right compromise between what has been removed from the landscape and what should be given back to it.

The main issues concerning these FLMS, as well as similar others, emerge on two different levels. The first is caused by the inequalities in the supply chain as well as by the employment of the resources. Indeed, marble is today mostly imported, as the preexistent quarries are no longer sufficient to match the internal demand. Thus, marble is only refined in this territory, mainly by important companies relying on a dense network of tertiary contractors, and, then, exported back again, thereby causing an enormous environmental impact. Moreover, in the last years, much of the backfilling material defined as “cappellaccio”, which is necessary for an adequate reinstatement process, has been taken away from the original extraction site, and, in the light of profit-maximization, moved to construction site located outside the district.

As a matter of fact, there are very few cases of natural reactivation of the abandoned and exhausted quarries [10]. Indeed, as noted in “Rapporto Cave 2014”, the absence of a real plan regarding this sector caused a widespread and irregular development of the mining activities. The actual necessities required by the process of production, as well as those related to the safeguard of the environment, were ignored. Today, in a period characterized by the crisis of the extraction sector, this negligence manifests itself as nearly a hundred inactive sites. For these reasons, these territories are subjected to growing environmental issues, which point to the disconnection between economy, society and territory (Savinio, 2005). The decisions influencing the future of these quarries expose clashes in the attribution of the jurisdiction between the different administrative hierarchies involved (Regione, Provincia e Comuni).

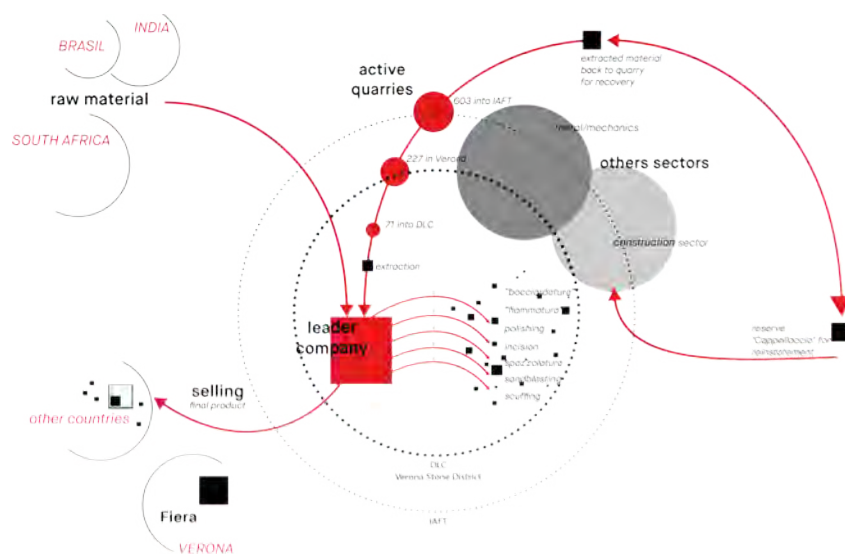


Figure 2. Personal interpretation “Verona stone district”

Secondly the setback of this second type of DLC is related to the lack of an adequate body of local competences and skills. This is one of the effects of the process of internationalization, whose consequences impacting on this class of FLMS are easily identifiable in the process of deterioration of the production chains.

From an historical perspective, the internationalization of the production processes concerning the piedmont companies can be broken down into three different periods. (i) The first phase, which spanned the last two decades of the past century, led companies – specifically those part of the fashion industry – to delocalize production, in order significantly reduce the manufacturing costs; (ii) during the second period, which stretched from the beginning the twenty-first century to beginning of the 2008 financial crisis, the companies involved in the stage famously labeled as “quarto capitalismo” have become the main actors in the process of internationalization: investor pools has widened, thereby including small and medium size companies. During this phase, the number of the investments in the foreign markets decreased, and yet the process of internationalization reached its peak in spread and intensity. (iii) The third one, beginning in 2008, has been characterized by a slowing down of the foreign investments in the territory: the repercussions of the financial crisis on funds and prospective revenues have forced companies to slim down the undergoing initiatives as well as to postpone a great number of pending projects (Fedreghini and Perugini 2015).

In some of territories under discussion, the constellation of small-size and medium-size companies, once the core of the supply chain of the district, fell apart. Thus, we are left with nothing more than “the crumbles of important and renowned historical producers” [11]. Moreover, many of the intermediary actors facilitating the sustainability of the process of production, such as consortiums, citizens led communities, and sectorial associations, were forced to merge, as the result of the economic crisis and of the cuts in the public funding. This led to the current absence of institutional benchmarks – with strong ties in the territory [12] – that had been previously critical to development of both the economical aspects and the social actors operating in the territory.

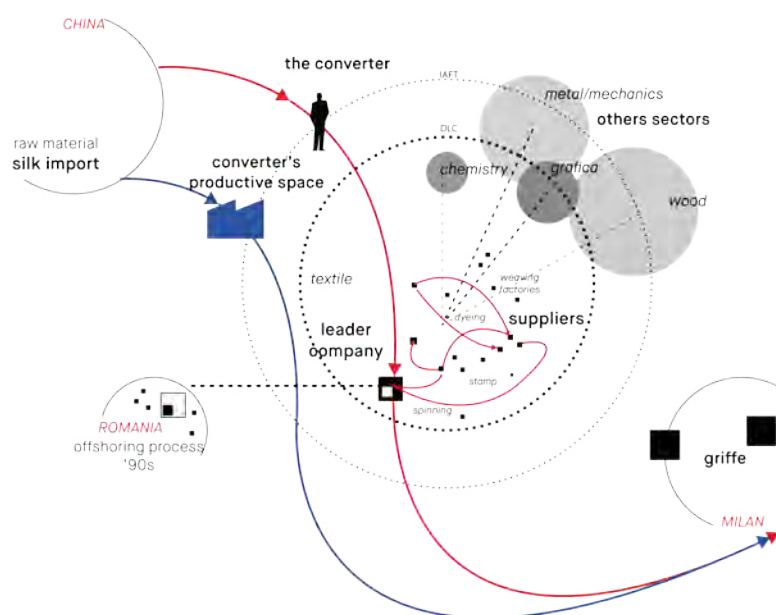


Figure 3. Personal interpretation silk district in the area called Comasco

2. Traditional districts (TLPC)

TLPC is a class of FLMS that, while maintaining the traditional economic/production structure, are still capable of achieving good results in terms of growth, revenues and profitability. In this framework, the presence of both competent human capital and a set of developed services (design, consultation, research) is vital. In this case, the manufacturing district is still economically relevant as a dense “fabric” of micro companies (many of which are still family-managed), which are still considered complementary to the process of construction of “actual medium-size companies, distinctively specialized in both the design and commercialization of products” (Becattini and Dei Ottati, 2006).

Specifically in the context of these FLMS, the companies standing out are those investing in the territory and presenting themselves as firmly environmentally aware. Thus, the reduced impact on the environment becomes a competitive factor for companies, which are keen to invest for the safeguard of the very sites and ecosystems their own production is depended upon.

However, this tendency is still today very much rhetorical. Indeed, useful and actual territorial implementations – to be focused on concepts such as *circular economy* and *sustainability* – are not yet fully comprehended, as these concepts are currently addressed from the sole standpoint of productivity.

New tools are needed, which are able to design fruitful relations between the social, technical, economic, and ecological forces operating in the territories of TLPC, as well as to trigger a set of virtuous synergies in the operations of waste reduction and recycling – with specific focus put on the large amount of polluting waste that is often disposed directly in the territory.

A new virtuous environmental approach has been showed, for instance, by the TLPC of Concia in the Agno valley (Veneto), whose dynamism is best epitomized by a collection of institutionally-supported artistic projects [13].

In this area the country's largest amount of water supplies can be found, thanks to the presence of both subterranean reservoirs and perennial springs.

This abundance favored, firstly, the development of the craft of leather tanning, and, secondly, the construction of the tanning industry, which was highly impactful at the environmental level. Indeed, factories used to dispose waste and leftovers – rich in lime and sulfides – directly into the rivers, which, consequently, would turn red, brown and grey according to the polluting agents involved. [14]

In the 1978, with the installation of a purification plant, a virtuous set of initiatives was started, which is still oriented towards sustainability, and which has progressively co-involved the whole of the companies operating in the area – thereby allowing for an appropriate process of water treatment for Chiampo (Boriello, 2019).

However, several environmental issues are still embedded in this territory, mainly due to a greater degree of pollution in both air and water.

3. Adaptive local clusters (ALC). Their new roles within the territory

ALPC is the class of FLMS allowing for a “third road [...] related to the creative craftsmanship and to the cultural industries focused on the development of different economic models inclined towards forms of experimental tourism” (Ostanel, Panozzo, Tosi, 2018). In this case, in order to adapt to the new economic configurations, the concept of FLMS hybridizes with a set of tertiary and immaterial functions. It is thereby “extended to other sectors and new combinations: agricultural, rural, touristic, cultural” (Dematteis, 2005: 12).

Thus, ALPS, in this way, lay down on the territories a dense network of new sites and equipment.

These ones originate from the repurposing of abandoned buildings, whose historical role was that of possessing important functions within the supply chain.

They are fundamental sites promoting the knowledge and the understanding of a specific industrial sector. They can assume the form of factory museums [15], as well as of different types of craftsman workshops that valorize an attentive and sustainable process of repurposing that combines traditional know-how and innovation. In this context, a renewed focus on recycling and on the employment of sustainable energy is effectively brought about.

A useful instance might be found in the ceramics district in Nove and Bassano. In this territory, several abandoned and anonymous industrial buildings were turned into sites of research and experimentation, in order to find innovative waste-minimizing solutions.

The findings of this study showed that the piedmont districts are still benefiting from a proximity-based network of production, which allows local companies to peer-review the process of innovation, mutually share a diverse set of know-hows, and reshape the supply chain according to a locally incremented distribution system.

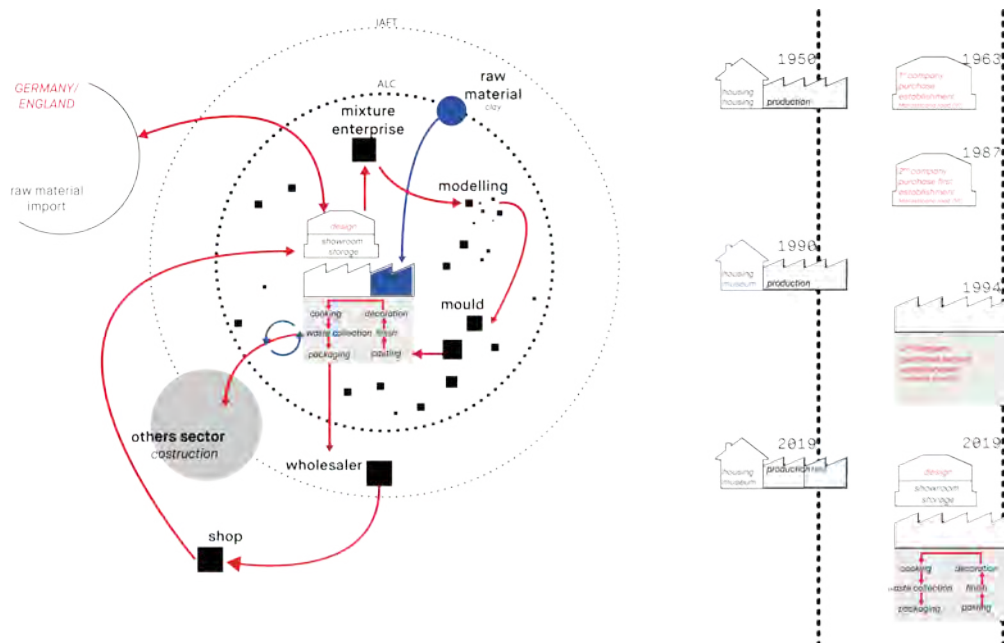


Figure 4. Personal interpretation Ceramics district of Nove e Bassano

4. Beyond the district: clusters. An extended and redesigned territory of production

These types of FLMS are continuing to grow and they are, most of the time, identified as “productive clusters” [16] (PC).

In the PC territories the SMEs understood that the proximity between diversified and specific industrial base inside a metropolitan space allows for the invention of complex products and the growth of the economy in the long run (Hausmann, Hidalgo et al. 2011).

Thus, the frame of reference is broadened, and a new set of new links is established, which connect the piedmont territories to the nearby urban poles hosting important tertiary services. Clusters allow for a novel perception of the territories they are located in, as well as for the construction of a new vocabulary redefining the territorial scenario [17].

Thus, newly introduced terms are useful in positing that the “boarders exceed the simple geographical edges as well as the administrative limits: PC is a complex industrial system, abundant with top-notch producers in many industrial fields [...] PC fosters an understanding which is complementary to, not opposed to, the orthodox one (which considers only the industrial activities located in the province), which offer a more comprehensive perception of the actual dimension of manufacturing” (Fedreghini, Perugini, 2015). Companies are today able, thanks to this superstructure connecting them, to merge into a unique system that is beneficial to all.

Clusters propose a more complex, and yet more unifying, representation of the system of production, which, additionally, makes companies more interesting for potential foreign investors.

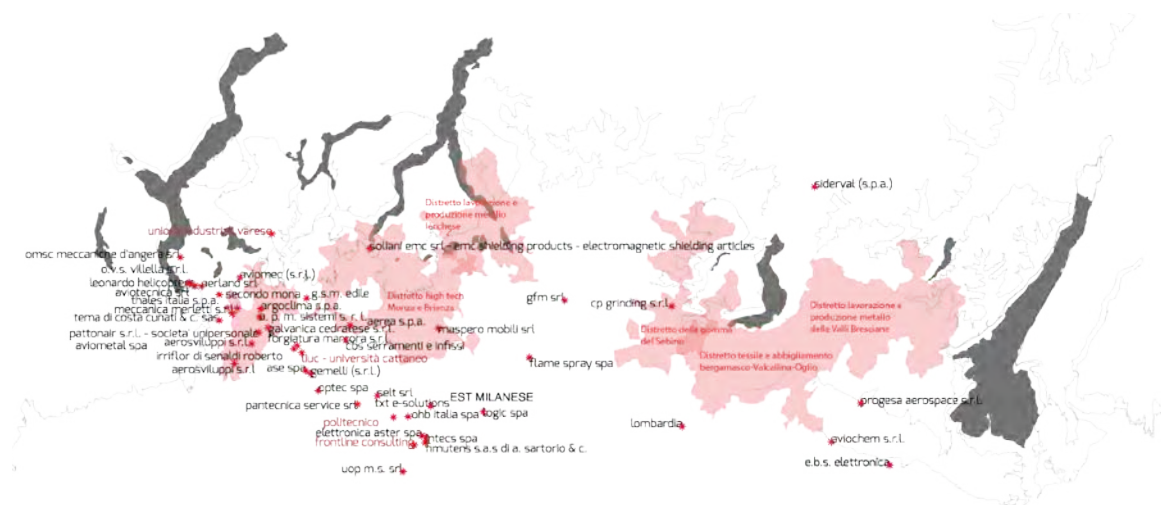


Figure 5. Personal interpretation Cluster aerospace

PCs can be considered, from a metabolic standpoint, the first attempt at creating strong links between the different flows of production, be they material or immaterial.

As far as immaterial flows are concerned, the will to collaborate, heterogeneous set of production sectors, is transposed within the urban contexts as the profitable trend of transforming formerly decommissioned sites into multifunctional spaces. This collaboration originated, in the first place, in tackling the issues related to the significant expenses involved in the process of innovation, as well as to systemize comprehensive programs of training and knowledge sharing.

Thus, these very spaces become sites for the “social innovation”, where different actors, such as entrepreneurs themselves, reutilize physical structures (most of the times decommissioned warehouses), which previously held no purpose whatsoever [18].

The cluster is conceived of as “fluid urban agglomeration”, able to establish a set of new connections between different innovative forms of production.

However, what is still lacking in these territories is a clear and shared vision, necessary to address a circular process, based on productively balancing inflows and outflows of both energy and resources within the cluster.

Considering the strength with which the local supply chain still operates within these territories, despite the massive implications of the process of internationalization, it might not be inconsiderate to promote a solid interfacing between local companies, in order to favor this very circular approach.

The aim would be that of reducing waste generally speaking – not only energy waste and industrial waste – thereby adopting a set of resolutions that cross over the limits of the single-sector system.

Indeed, cooperation between the different sectors would also imply a greater degree of systematization of the different flows, which, in turn, could be reutilized and, therefore, minimized within an open bigger-scale system. This very system should be able not only to coordinate the aforementioned material flows, but also the immaterial ones. However, this

aspect is still at very early stage of development, inasmuch as companies still operate according to an individual, rather than synergic, logic.

Conclusion

In conclusion, IAFIT is today living through a hybrid existence. It is a territory whose core is built by a “mix of companies running at different speeds”. It is no longer a homogeneous unitary site of widespread industrialization, but rather a territory where big-size, medium-size, and small-size companies locally coexist. Generally speaking, the heterogeneous combination of these different companies triggers new favorable mechanisms of centralization, hierarchization, and polarization, thereby remodeling the territories of the widespread production.

Analyzing the IAFIT and its complexities, as well as classifying the different evolutionary processes of the FLMS, are useful tools in the systemization of these important forms of production, which, nowadays, are no longer attributable to a unique and unitary evolutionary process. Today, each of them is observed to undertake a different development path, thereby defining its own trajectories and its own relations with the specific territory it is inscribed in.

Thus, the classification proposed above is intended to serve as a support for the construction of a platform that, crossing the traditional boundaries, is able to show a variably geometrical landscape, where new relations can be fostered and established. These very relations, that might be economic, spatial, or social, must be considered in conjunction with a set of both material and immaterial flows, in order to meet shared targets such as waste minimization and resource enhancement.

This is a useful platform for questioning, planning and formulating a synergic and unifying model, as well as to test and systematize a set of actions required in the development of a fundamental metabolic territorial system, which is today still missing in the spectrum of the Italian politics.

Acknowledgements

[1] The research is still in progress. The field research will be concluded in October 2019. The results will be featured in the PhD thesis, which will be concluded by November 2020.

[2] In this study the focus is sharpened on the two ramifications composing the notorious “triangolo Milano, Bologna, Padova”, which, in turn, can be divided a Northern segment “the old industrial triangle in Lombardy (Milano, Varese, Como)” and an Eastern part, namely “the new vector connecting Vicenza and Pordenone” which complete the “pulsating heart of the Padano system”.

[3] S. Brusco, A. Bagnasco, and G. Fuà also took part in the process formulation of the concept of LC. All the scholars acknowledge the “social embeddedness” of the economic processes (Granovetter, 1985), that is “a series of historically alimented socio-institutional infrastructures, such as networks, regulations, conventions and interactions, based on trust and mutual horizontally mutual relationships” (MacLeod 2001).

[4] This concept has been introduced in the book by G. Grulois, M. C. Tosi, C. Crosas (eds.) *Designing Territorial Metabolism*. JOVIS, 2018.

[5] Today, the main line of reasoning – elaborated in favor of economic forms sustaining the concept of urban metabolism – is, conversely, centered on the small-scale of the individual district, thereby overlooking a systemic view of the problem.

[6] An ever more complex vocabulary regarding the identification of the various FLMS emerges, which originates in the continuous alternation of different regulations at the level of regional industrial politics (“production district”, “meta-district”, “conglomerates” “cluster”, “multi-located supply chain”). In the context of this new complexity, it is worth mentioning the discordant attention paid to the territory. In Lombardy (Legge n.29 del 23 novembre 2016) and in Friuli Venezia Giulia (Legge regionale 20 febbraio 2015, n. 3, art. 15) the concept of *Productive Cluster* (PC) is employed. There is no longer mention of a specific district, but the Region as a whole is taken into account. Conversely, the Veneto Region proposed to update the notion of the district by substituting it with that of the RIR (Rete innovativa regionale). RIRs are the result of the regional Smart Specialization Strategy, which defines strategic thematic areas on a regional scale. The notion of traditional production systems endures within the context of a limited territory.

[7] The local production systems of the territory here analyzed are to be found in Veneto, in the Ceramics district of Nove e Bassano, the Sportsystem district in Asolo and Montebelluna, the Verona Stone District, the engineering in the area called Alto Vicentino, the stainless steel district. Others are in Friuli Venezia Giulia, such as the Arredo Casa Cluster, the COMET (cluster della meccanica regionale) Cluster, the former “knife district” and the DITEDI (distretto industriale delle tecnologie digitali) Cluster. Others are in Lombardy, such as the aerospace cluster, the silk district in the area called Comasco, the engineering district in the area called Lecchese, the automotive cluster, the former water fittings and cutlery district, and the district of the area around the Arno valley.

[8] In the past years, in Italy, we witnessed a significant proliferation of mappings and classifications, each of them bearing its own different approach, according to the different purposes underpinning these operations. Specifically, we can identify two main tendencies in the description of the Italian districts: a statistical approach and one that, conversely, focuses on the potentialities of the local districts.

[9] Reference is made, for instance, to the Piasentina stone district in Friuli Venezia Giulia.

[10] An example is that of the quarry on the Loffa Mount in Sant’Anna d’Alfaedo, where a gigantic, 20 meters cut has been replenished with backfilling material and then converted to a grass field.

[11] The supply chain of the textile industry is that suffering the most. For instance, the former textile district in the area called Alto Vicentino is, since 2017, no longer officially acknowledged by the Regione Veneto, due to the lack of a shared project for the area (LR8/2003), via a development agreement (see note number 6). Moreover the silk district in Como, Lombardy. There it remain a collection of big-size companies, which still are the beacon of a their own sector, and yet, most of the times they show no interest in the development of the territory.

[12] In Veneto, companies always had, and still have, a strong organizational structure based on consortiums, which, in turn, used to hold a significant influence over the regional government.

[13] Among them “Tanneries” (M. Power) and “Water”. In this photographic reportage the main elements are the frantic activity of the river Chiampo, the territories that are brushed by it, and the essential interventions needed in the water purification, which aims to preserve its vibrant colors of the water – despite the industrial processes the river is involved in.

[14] A fictional investigation portraying the water pollution in the Chiampo valley is featured in the novel “Il fiume sono io” (A. Tasinato).

[15] For instance, the paper mill Museum in the paper mill Valley, located nearby Brescia.

[16] The traditional production districts are widely acknowledged entities, thanks to their ability to aggregate and promote “development agreements”, a to represent a diverse set of shared and communal targets.

[17] For instance, “Grande Brescia Manifatturiera” (Fedreghini and Perugini, 2015).

[18] With reference to LEF, namely the training school focused on the topics such as the lean production and the concept of 4.0 industries. Moreover, LAMA, a shared workshop pivoting around the technological skills transfer from universities to Regione (institution). Both of these programs are hosted in formerly decommissioned warehouses.

[19] For instance, in the context of a structural analysis, commissioned by the Comet cluster, it appears to be clear that, nowadays, companies are able to find the efficiency, the competences and project-related skills they need at the local level. In this scenario, the main factor underpinning important logistic decisions is – as it used to be during the season of the traditional industrial districts – proximity.

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Research on the theoretical Framework of Integrated Urban Water System Planning Based on Water Cycle Theory

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Abstract: The city is a complex system, and the relationship between the city and the natural environment is very close, especially the interaction and relationship between water resources and water environment becomes more complicated in the city system. In recent years, there have been more and more researches on metabolism and recycling economy. This paper will use the concept of water cycle to carry out water system planning research. The study believes that the urban water system is an important part of the complex large-scale system of the city. It is the system of the natural circulation of water and the coupling of social circulation and urban space. According to the theory of water cycle, the final study divides the urban water system into rainfall, river system, water supply and water distribution system, urban water usage system, sewage treatment, water reuse, and rainwater discharge system. Based on the study of the relationship between traditional urban water-related planning and Integrated Urban Water System Planning(IUWSP), the theoretical framework structure of IUWSP(Integrated Urban Water System Planning[IUWSP]) is proposed. The planning system consists of the following modules: planning target determination method, standardized investigation content and method, and demand forecasting method, supply and demand analysis, comprehensive evaluation.

Keywords: water resources management, water cycle, water system planning method, theoretical system

1 What is the water cycle?

(1) Natural water circulation

The natural water cycle is the rainwater phase transition and the recurring process in the form of water vapor evaporation, water vapor transport, rainfall, runoff, and infiltration in the natural world, which Under the action of solar radiation and gravity.

As early as 1931, Horton studied the process mechanism of evaporation, condensation, sedimentation, runoff in natural water circulation (Horton, 1931).

The natural water cycle follows the law of conservation of mass, the change of water storage S_0 = annual precipitation P_0 - annual runoff R_0 - annual evaporation F_0

$$S_0 = S_{10} + S_{20} + S_{30} + S_{40}$$

In this equation, S_{10} —changes in soil water storage capacity; S_{20} —changes in water storage in Tanggu; S_{30} —changes in water storage capacity in rivers and lakes; S_{40} —change in water storage capacity in wetlands

$$\text{Runoff coefficient } \alpha_0 = \frac{R_0}{P_0}$$

(2) Social water cycle

The social water cycle has emerged along with the development and utilization of water resources by human beings. It is a process of human “water intake – water supply – water drainage”, and it is in the continuous flow of space and the process of recurrence.

In 1997, Merrett first introduced the concept of hydrosocial cycle, which was attached to the natural water cycle due to engineering activities and incorporated urban water and wastewater treatment services into the social water cycle (Merrett, 1997). Compared with evaporation, condensation, sedimentation, runoff and other processes in the natural water cycle (Horton, 1931), the process of social water cycle is represented by seven major engineering activities: water intake, storage, water treatment, water distribution, wastewater collection, wastewater treatment and wastewater discharge (Merrett, 1997).

Wang Hao divides the social water cycle into water intake, water usage, water drainage, backwater. The water intake system is the beginning of the social water cycle, the water usage system is the core, and the drainage system is the sink end (Wang Hao, 2011). Wang Hao also proposed that the social water cycle is a composite water cycle with a “natural-artificial” binary driving force and structure (Wang Hao, 2003).

(3) Urban water cycle

The urban water cycle is a complex cycle body formed by the natural water cycle and the social water cycle highly coupled in the urban area.

The discipline that studies urban water cycles is urban hydrology, which is developed on the basis of hydrology. Due to the more complex hydrological cycle and more external influences and interventions in urban areas, the urban water cycle should be studied separately. The main research contents include the impact of urbanization on hydrological processes, urban water supply and drainage, urban water environment, urban flood control, urban water resources, urban hydrological models and hydrological prediction, and urban water conservancy engineering.

The urban water cycle is a cyclical process that takes place in urban areas and is based on the natural water cycle and dominated by the social water cycle (Shao Yisheng, 2014).

UNESCO has studied the various components of the urban water cycle (UWC) and the main pathways of water flow, as shown in Figure 1 (UNESCO, 2006). In the urban water cycle, the natural water cycle has changed due to the influence of urbanization.

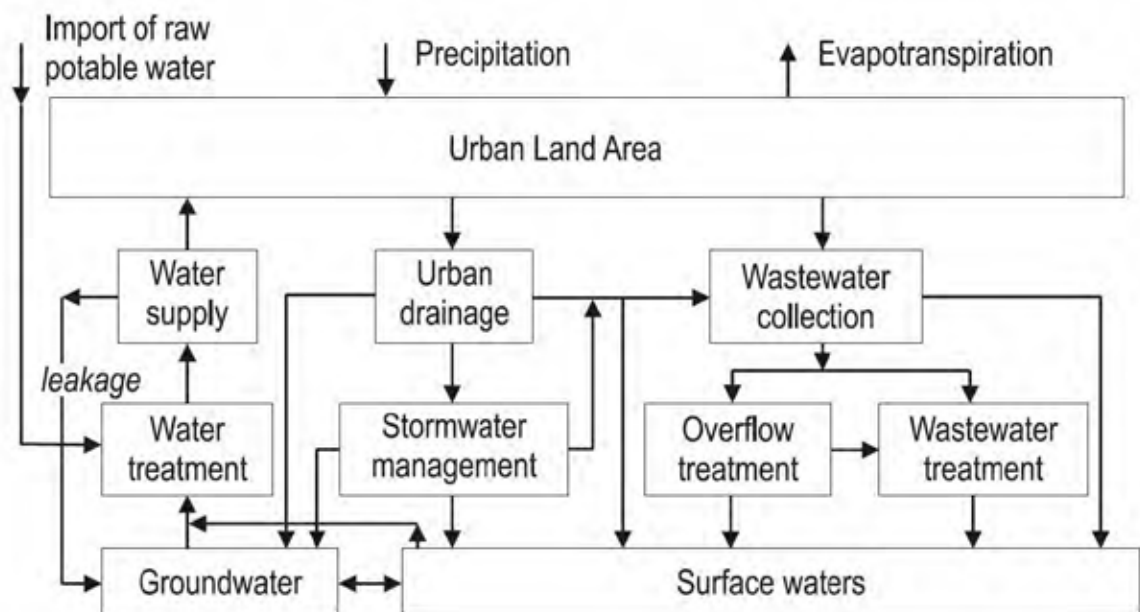


Figure 1 Urban Water Cycle - Major Composition and Water Flow Path (UNESCO, 2006)

2 What is the relationship between urban water systems and the water cycle?

(1) System overview

System science is a science that specializes in the evolution of complex systems and studies system composition, structure, feedback, and control. The purpose of systematic research is how to understand and control the system.

(2) Urban water system concept

The urban water system is based on the water cycle. The water system infrastructure is the carrier, and the comprehensive system is aiming at ensuring urban water security and improving the water environment. The urban water system is an important part of the urban complex system. The general term for systems in the urbanization area contain flood control, water source development, water supply, water transport, water use, drainage, sewage treatment and reuse, and trans-regional water transfer, using, governance, configuration, conservation and protection. The urban water system involves the whole process of urban water resources development and utilization, protection and management (Chen Jining, 2014, Li Shuping, 2015, Shao Yisheng, 2004, Shao Yisheng, 2014). Urban water circulation system, including water source subsystem, water supply subsystem, water usage subsystem, drainage subsystem, recycling subsystem and rainwater subsystem.

(3) Urban water system problems

The development of urban water system from the solution of water, sewage, rainwater discharge to ecological civilization development process, most of China's cities have basically built a complete water supply and drainage system network and the corresponding water system supporting facilities. However, because the traditional urban water-related planning method is a single plan for their respective functions and services, and does not consider the overall water system service demand, therefore, the water system construction process in many cities in China does not conform to the development law of the water cycle, and the city lacks water. The problems of water scarcity and water pollution still exist, water resources are not fully utilized, water environment quality

is deteriorating, and urban water problems are still the limiting factors affecting urban economic development and people's living standards.

From 1978 to 2016, the urban water use population increased from 62.67 million to 450 million people, and the urban water supply scale increased from 7.875 billion m³ to 58.069 billion m³. The traditional urban water system has brought about a series of complex urban water problems in the process of adapting to the development trend of large cities and urban agglomerations, resulting in urban water disasters (Wang Guangtao, 2012, Cheng Xiaotao, 2009). The 2016 State of the Environment Bulletin shows that the quality of the national water environment is not optimistic. The lack of urban water resources has always been a major problem that has plagued most cities in China. Among more than 600 cities in China, there are currently more than 400 cities with insufficient water supply, including 110 cities with severe water shortages. The annual water shortage in the city is 6 billion cubic meters. Tianjin, Hebei, Shanxi, Inner Mongolia, Gansu and Qinghai The water resources of eight provinces, autonomous regions and municipalities directly under the Central Government, such as Ningxia and Xinjiang, are in short supply. On the other hand, in many cities in the Yangtze River Delta and Pearl River Delta regions where China's economy is developed, due to water pollution, some cities with rich water resources are also facing water shortage problems, and have to transfer water from remote areas with good water quality. But the treatment rate of sewage and the reuse of water resources are also low. The ecological crisis of the basin is largely due to the irrational development and utilization of urban water resources (Cheng Xiaotao, 2002).

There are also many severely water-deficient cities in coastal open cities such as Shanghai. The city can only rely on regional water transfer to solve urban water problems. Over-exploitation of water resources and trans-basin water transfer are the main means of solving most of the current water-deficient cities.

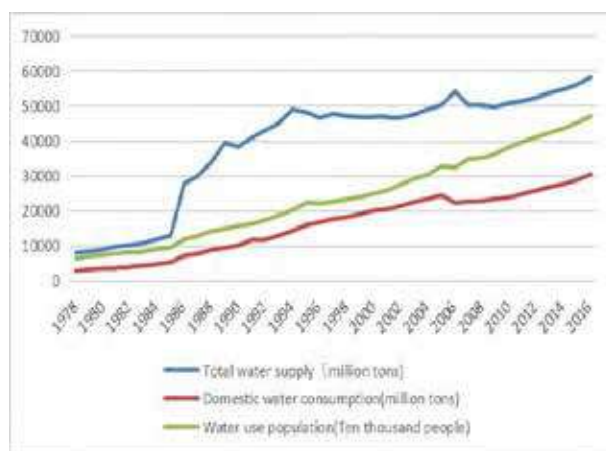


Figure 2 China's urban water supply over the years (sources: 1978-2016 China Urban Construction Statistical Yearbook)

In addition, the situation in China is also quite severe. According to the statistics of the National Flood Control and Drought Relief Headquarters Office, in 2010, 258 cities in China were in flood, most of which were torrential rains. From the distribution of the water retention points on June 1, June 19, and July 6 in Wuhan city (Seen in Figure 3), there is an increasing trend of change. The water retention points on July 6 is the most extensive, with as many water retention points and water retention road sections as more than 100 places, almost all three towns in Wuhan were flooded.



Figure 3 Schematic diagram of the city flood in wuhan city

In Hebei (North China), Zhejiang (East China), Harbin(Northeast), Guangzhou (South China), Wuhan (Central China), Northwest, Southwest(Wei Jun, et al,2018, Li Xuesong,et al,2018, Lin Changchun,et al, 2018, Zhai Jianming, et al,2017, Xie Zhiqiang, et al, 2017, Gao Feng, 2015), there have appeared varying degrees of urban flood, and urban flood has become a universal phenomenon throughout the country, not just the unique phenomenon of rainy cities in the south china.



Figure 3 Schematic diagram of urban water system problems (left: flood; medium:drought;right:Black stinky water body)

In the process of urban flood, the urban sponge system was occupied by urban construction land, resulting in water nowhere to go, resulting in urban flood. The water surface rate of rivers and lakes and the density of river networks have decreased, and there has been a situation in which people compete with water. For example, in the history of Wuhan, famous as“Yunmengze”,the area of sand lake was nearly 666.7 ha , but now it is less than 8 ha; Donghu lake has reduced 73 ha. The surrounding of Nanhu and Tangxun Lake are high-rise buildings, and Fanhu disappears.

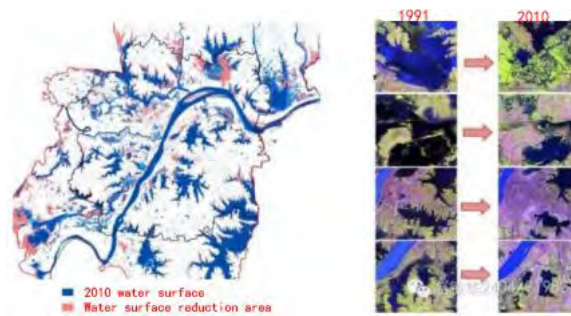


Figure 4 water area change situation in wuhan city (1991-2010)

(4) Analysis of the causes of urban water system problems based on water cycle theory

The causes of urban water system problems is, from the perspective of natural water cycle and social water cycle, urban development has brought the following effects to the urban water cycle:

1) Changes in the structure of the rainwater cycle

Most of the literatures believe that urbanization has brought about an increase in ground water impermeability. The traditional urban rainwater rapid discharge mode has led to an increase in rainwater runoff, a decrease in the rate of rainwater Infiltration, a change in the path of rainwater circulation, and a change in the structure of the rainwater circulation. These changes(Seen in Figure 5) arde prone to urban flood. At the same time, with the development of urbanized areas, natural channels and riverbeds were replaced by artificial channels and sewage pipe networks, resulting in profound changes in the way of runoff. Overall, these changes increase the rate of runoff propagation.

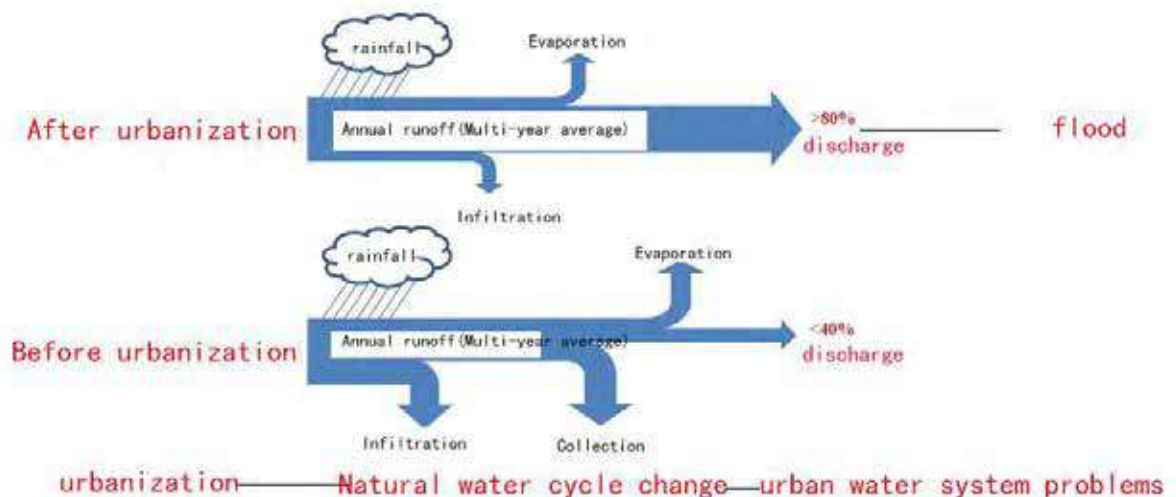


Figure 5 Schematic diagram of the impact of urbanization on the natural water cycle

In order to avoid changes in the natural water cycle caused by urban development and rapid urbanization, China proposed to build a sponge city and return to the hydrological state before urban development. Sponge City is to build a low-impact development rainwater system, that is, to follow the low-impact development concept in urban planning, implement low-impact development control objectives, and set up some low-impact development facilities to achieve the purpose of runoff control, runoff peak control, and rainwater resource utilization. Low-impact development facilities mainly include infiltration technology, storage technology, conditioning technology, transfer technology, and sewage purification technology, such as permeable paving,

green roof, sunken green space, penetrating pond, etc. Storage technology includes rainwater wetlands, rainwater tanks, etc. The adjustment technology includes regulating ponds, etc. The transfer technology includes planting ditch, infiltration pipe, etc., and the sewage interception and purification technology includes vegetation buffer zone and initial rainwater abandonment facilities. These technologies can be applied to various land types. Because they are different from traditional rainwater treatment measures, it is necessary to implement rainwater control schemes in various land types through the transformation of planning and construction, so as to make the path of rainwater circulation can be slower and shorter through microcirculation.

2) The social water cycle needs improvement

In the traditional water mode of one-way water cycle(Seen in Figure 6), the development of the city brings about an increase in water consumption, thereby reducing the reduction of groundwater recharge, while the increase in water consumption will lead to an increase in urban wastewater, resulting in pollutants in urban water bodies. The increase has thus aggravated the shortage of urban water resources, and the social water cycle lacks a closed link.

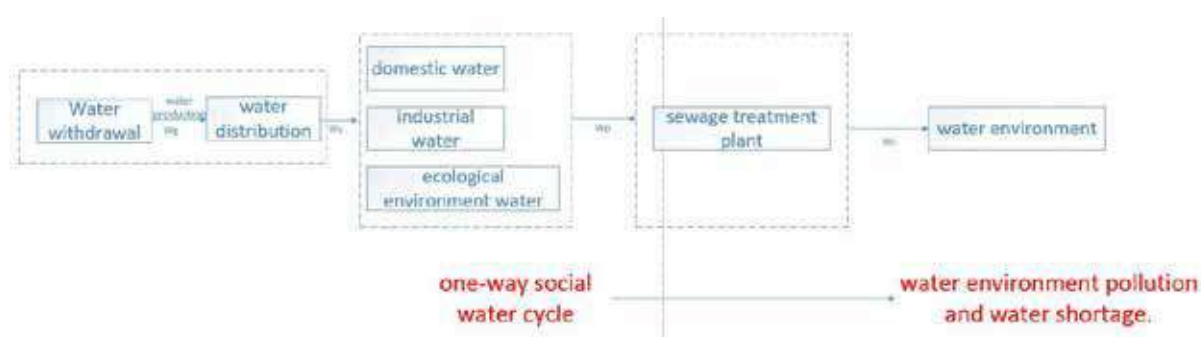


Figure 6 Schematic diagram of urban water pollution and water shortage caused by one-way social water cycle

Therefore, a benign circulation system for water resources should be constructed through the management of the urban water circulation system, composed with urban water intake, water supply and water distribution and drainage(Seen in Figure 7). Specifically, the following social water cycle improvement measures can be adopted:

- Improve sewage treatment rate and sewage treatment level, and reuse sewage,
- After the advanced treatment of wastewater, wastewater reaches the water quality of the corresponding water category, which will make wastewater re-enter the water supply system to reduce the water intake of fresh water in the city.
- Two major urban water systems, domestic water and industrial water systems, promote water reuse and establishment of micro-circulation of urban water systems.
- In industrial water, the industrial system is divided into industries that can recycle water internally, such as electricity and heat. The system consumes less water and has a high recycling rate. The amount of fresh water should be reduced.
- Centralized treatment of polluting industries: construction of industrial sewage treatment plants in industrial areas and centralized treatment of wastewater, including textile printing and dyeing industry, chemical industry, petroleum, papermaking, food processing, etc., can avoid environmental pollution.

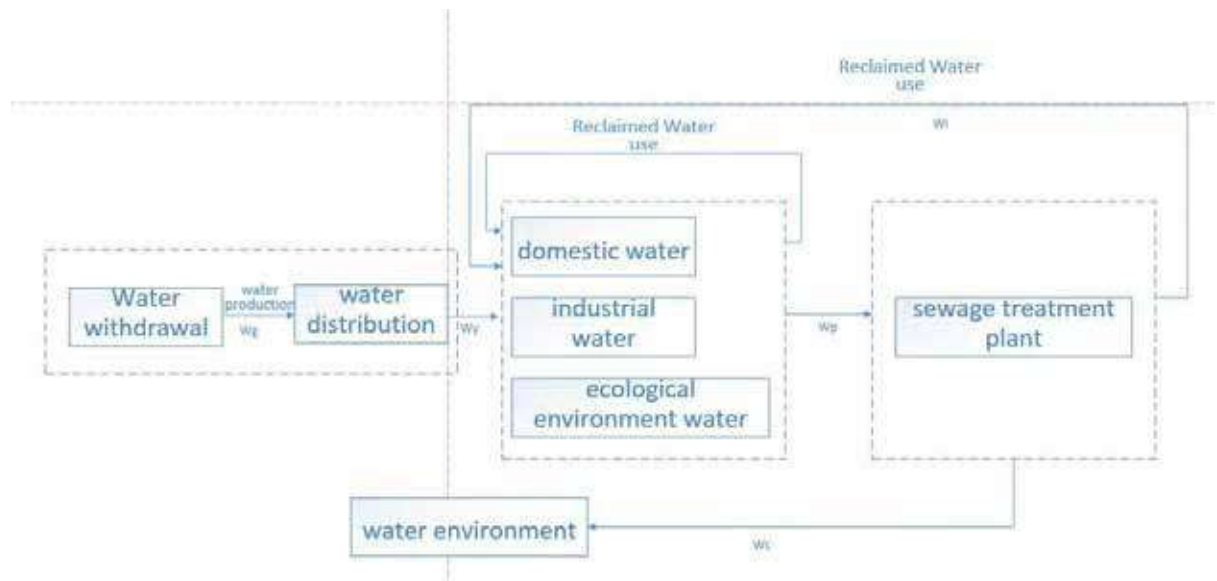


Figure 7 Schematic diagram of the construction of social water cycle system

- Control urban water consumption and reduce urban social water circulation flux:

The city is a densely populated area with a high intensity of water usage. The water consumption per capita and the water consumption per unit land are large. The surrounding agricultural land will decrease with the expansion of the city. Compared with agricultural and rural water use, urban water use mainly relies on centralized water supply system to provide urban residents with water for living, public services, municipal environment, etc., to ensure the basic domestic water demand of urban residents.

Urban water consumption is mainly related to urban development factors and urban water use indicators. It can be expressed by the following formula:

$$Q = D \times E$$

In the formula, Q represents the total amount of urban water; D represents the factors related to urban development, including population size, industrial development, land scale, environmental level, etc.; E represents indicators related to urban water use efficiency, including living water consumption per capita, the water consumption of the unit industry GDP, the water consumption per unit land, and the leakage rate. The system dynamics relationship among urban water consumption, urban development factors and urban water use efficiency indicators is as following Figure 8:

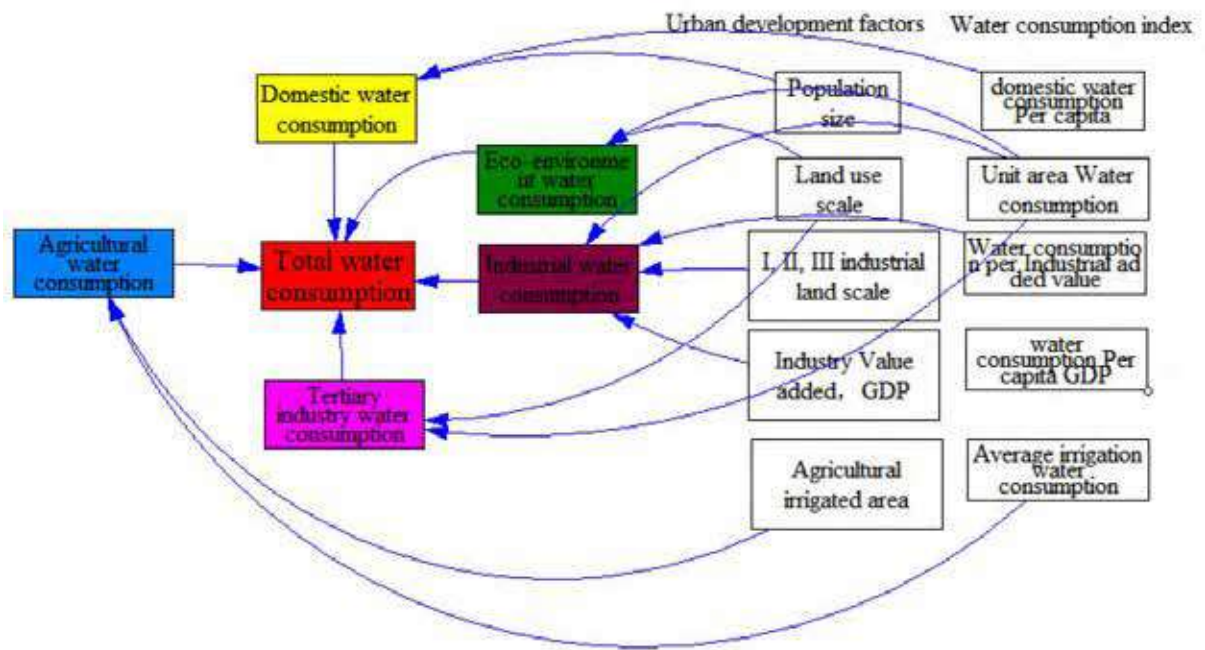


Figure 8 Conceptual diagram of system dynamics of urban development factors and water consumption (conceptual model)

Therefore, according to the city's own water resources, we should plan a reasonable population size and industrial structure, and reduce the social water circulation flux by improving water use efficiency. It can also effectively solve urban water environmental pollution and water shortage problems.

In short, in the case of meeting the the same amount demand for water in cities, the social water cycle process of urban water systems that directly serve the daily activities of the city (including urban water intake and water supply, water distribution, water usage, water treatment systems), by optimizing the system structure and operation Management measures (such as closing the circulating water, improving the sewage treatment level and reuse rate, reducing the leakage of water supply and drainage pipe network and facilities) can reduce the amount of water collected by the city from the natural water cycle system and the amount of water discharge after use. The water quality of wastewater has a negative impact on the water quality of the natural water cycle system. Conversely, the use of inappropriate and unscientific system structures and operational management measures will increase the burden on urban water distribution and water treatment systems, worsen the environmental quality of urban and regional water systems, and reduce the availability of urban and regional water resources.

3 Why should we prepare IUWSP?

Shao Yisheng (Shao Yisheng, 2004, Shao Yisheng, 2014) believes that China's current urban water-related planning is very diverse, the content is very rich, the professional foundation is relatively solid, the distinctive features of professional labor division, departmental management and system division is shown, and more subjects are planned and implemented. However, the current urban water-related planning lacks overall consideration based on the law of water circulation. There are obvious limitations. The systemic, hierarchical and coordination of planning is insufficient. The preparation and implementation of the planning is not satisfactory. Systematically solving the urban water problems is not working well.

At present, the urban water-related planning carried out in China mainly includes special plans for sponge cities, special planning for drainage projects, comprehensive planning for drainage (rainwater) and flood control, special planning for urban flood control, urban water system planning, urban water supply engineering planning, urban reclaimed water utilization planning, and comprehensive planning of urban water resources, comprehensive planning of water pollution prevention, etc. The content of urban water-related planning is very rich, and there are many main bodies in planning, and the planning scope and planning level are not uniform. The main targets and planning main objectives are different. The management and implementation departments are different, the time of planning appearance is different, the planning effect is not uniform, and it is difficult to coordinate effectively.

4 What is the IUWSP?

(1) The concept of IUWSP

IUWSP takes the urban water system as the research object, comprehensively solves the urban water problem, constructs a benign urban water cycle, and creates an effective planning means for urban space such as urban water resources, water security, water ecology and water environment.

Shao Yisheng(shao yisheng,2014) believes that urban water system planning is a framework system based on the principle of urban water cycle. It consists of IUWSP and urban water system special planning. The main goal of IUWSP is to optimize water system structure, improve water system function and promote the water system circulation, to ensure the safety of the water system; the main tasks of the comprehensive planning of the water system are to determine the water resources carrying capacity, water environment carrying capacity, water system facilities support capacity, water safety emergency rescue capability, and balance the water demand of the “three generations(living, production, ecology)”.

Kong Yanhong(Kong Yanhong,*et al.* 2013) also studied the preparation of urban water system planning, and proposed that the water system planning includes water environment system investigation and analysis, water resources optimization allocation, water system layout and space management, water environment protection, water environmental system security, planning and coordination, etc. Based on the overall urban planning, the plan integrates urban water resources, water systems, water supply, reclaimed water, sewage, rainwater and flood control systems, and urban blue line space control, which is a comprehensive plan for the organic integration of water-related special planning in urban and rural planning sequences. From the perspective of planning, Kong believes that the urban system planning is too macroscopic, the control detailed planning is too micro to accurately grasp the city's water problems, while the engineering facilities planning in the urban master planning focuses on the system layout and engineering facilities. So positioning the plan as: An important part of the urban master plan and the strategic plan for comprehensively solving urban water environment problems at the macro level, and the upper plan for each water-related special plan.

(2) Main objectives of IUWSP

According to the characteristics of different cities, the main objectives of IUWSP research are different. The major problems of water system should be identified based on the characteristics of each city. On this basis, different planning objectives and planning strategies are formulated.

According to literature research, the city is divided into water resource utilization cities, flood disaster prevention cities, and comprehensive coordination cities from the perspective of the water system. In various types of cities, the focus of IUWSP is different. The main problem of water resource utilization cities is how to improve the carrying capacity of water resources, to set cities by water, to set people by water, and to set production by water.

The main problem of flood disaster prevention cities is how to adapt to urban flooding through the optimization of urban space, and to prevent floods from occurring through engineering and non-engineering measures.

Comprehensive coordinated cities generally have various types of water problems, and the focus is on how to coordinate various water issues.

As a city with quantities of big river, Wuhan is rich in water resources. In mega-cities, its water consumption and sewage treatment capacity are huge, which leads to the demand for improved water supply quality and water supply safety and reliability in Wuhan. In the aspect of flood control and drainage, serious urban flood occurred in recent years. The situation requires that the comprehensive planning of Wuhan Water System focuses on how to improve the level of flood control and drainage in Wuhan; the water-rich cities as Wuhan city are also facing the problem of water environment management.

(3) The relationship between IUWSP and water-related planning

“The Law on Prevention and Control of Water Pollution” is a fundamental law for preventing and controlling water pollution, aiming at protecting and improving the water environment and ensuring the safety of drinking water in China. This Law has clarified the water pollution prevention and control planning system in China and has also clarified the construction plan for sewage treatment facilities. According to “the Law on Prevention and Control of Water Pollution”, the coordination parts of IUWSP, water pollution prevention planning and construction scale of sewage treatment facilities includes:(Chen Liqun,2013) ①Water environment functional division;②pollutant discharge standard;③Total pollutant discharges;④Urban sewage treatment facilities and pipe network planning;⑤sewage outlets setting. The relationship between the water pollution prevention planning system and IUWSP is as following Figure 9:

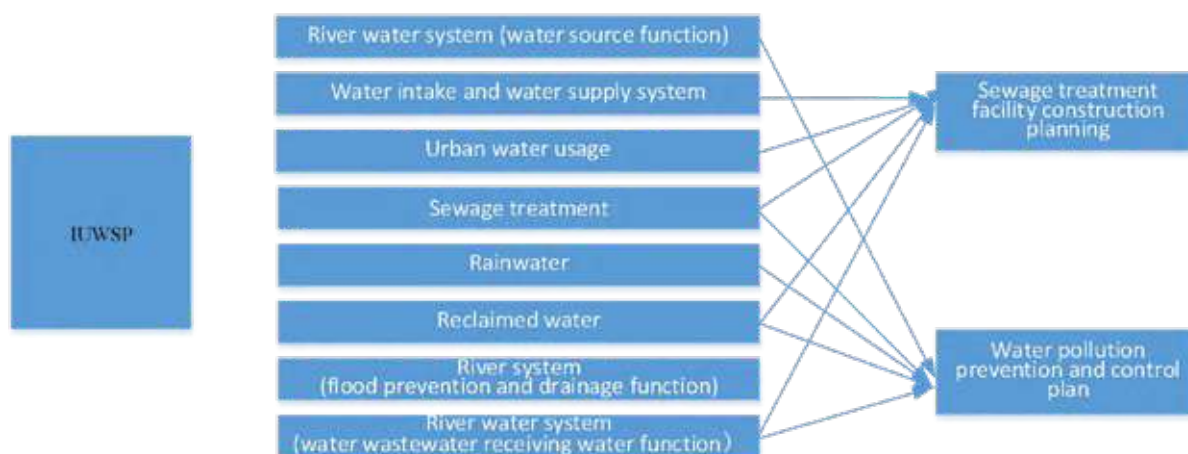


Figure 9 Relationship among IUWSP, water pollution prevention planning and sewage treatment facility construction

“The Water Law” has established a relatively complete water resources planning system, including flood control, drainage, irrigation, shipping, water supply, hydropower, fisheries, water resources protection, soil erosion, sand control and water conservation. The relationship between the water resources planning system and IUWSP is as follows Figure 10:

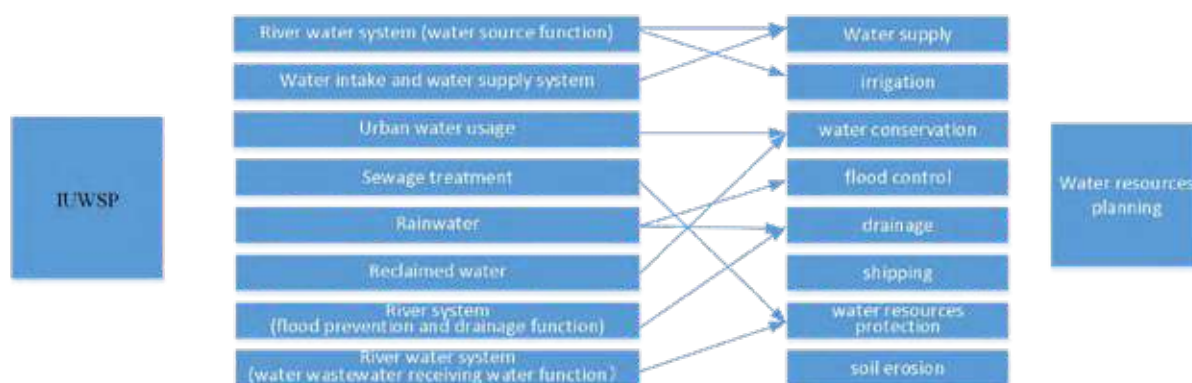


Figure 10 The relationship between the water resources planning system and IUWSP

(4) Planning and management mechanism for IUWSP

According to the functions of the Ministry of Natural Resources in china, IUWSP will be compiled by the Ministry of Natural Resources and its subordinate departments, emphasizing the overall management of the water resources system and avoiding unreasonable and uncoordinated individual plans.

Department of Water Ecology and Environment in Ministry of Ecology and Environmental Protection can: integrate the water function zoning and sewage outlets of the water conservancy department, the non-point source pollution control of the Ministry of Agriculture, and the groundwater pollution control responsibility of the national land department.

The organizational unit model for urban water-related special planning mainly consists of: planning bureau model, planning bureau and industry competent department model, and industry competent department model. To sum up, the urban water-related plan is the guiding document for the industry authorities to carry out water system infrastructure construction and management (Chen Liqun,2013).

From the above, the tasks of the Environmental Protection Bureau, the Planning Bureau and the Water Resources Bureau are relatively clear. The Environmental Protection Agency manages the water environment, sewage and reclaimed water, and the Water Resources Bureau manages water resources and flood control. The Planning Bureau conducts space control, including blue line control. The rest of the special projects such as rainwater, sewage, reclaimed water, water supply, flood control, drainage, etc. are all responsible for the construction department, some are managed by construction department in the Construction Bureau, some are managed by construction department in the Water Affairs Bureau, and some are managed by construction department in the Urban Management Bureau or the State-owned Assets Supervision and Administration Commission. Under various departments, there are also more companies to operate specifically, such as the Water Supply Group, the City Investment company in Water service, and the Reclaimed Water Company. These departments are franchised for water supply, sewage treatment and reuse of recycled water. However, traditional tasks such as flood control or drainage are generally handled by the drainage department(Chen Liqun,2013).

From the above analysis, urban water-related planning belongs to the scope of the city government. However, in order to facilitate the construction of urban water affairs, all relevant functional departments carry out construction and management, but Coordination and integration from the planning level is the current planning reform trends, like energy integrated planning(Huang Zishuo,*et al.*,2018), Comprehensive Transportation Planning, Communication planning.

(5) Implementation path of IUWSP

According to Chen Liquan's research on the implementation path of water system planning (Chen Liquan, 2013), implementation mechanism and management research of IUWSP, IUWSP belongs to the non-statutory planning at the macro level. There are two implementation paths: ① thematic form, relying on the urban development strategy. The planning or master plan is carried out in the form of IUWSP research, and its main results are incorporated into the urban development strategic planning or overall planning, and the implementation of IUWSP is guaranteed by the implementation of urban development strategic planning or overall planning. ② Prepared separately. IUWSP guides subordinate planning - control detailed planning and water-related special planning.

(6) New IUWSP types have emerged

In the current practice, there are few types of projects for IUWSP, including “Wuhan City World Waterfront City and Water Special Project Planning”, “Water System Special Plan in Shenhai Qianhai Cooperation Zone” and “Water System Special Plan in Zhongxin Tianjin Ecology city”. The planning projects such as the Urban Water System Special Plan are dedicated to integrating water supply, rainwater, sewage, reclaimed water and all water-related systems, controlling and regulating the rainwater, utilizing water resources, water pollution management, and improving the water environment, building a safe, healthy and efficient water environment system.

5 How to prepare IUWSP

(1) construction process of the overall framework system

This paper takes the whole theory of urban water circulation as the most important goal and principle to guide the reform of IUWSP. Urban water systems are interconnected and mutually constrained to provide infrastructure for urban development.

This paper takes water source system, water supply system, sewage discharge system, water reuse system and rainwater discharge system in urban water system as the research object, and studies the urban water system planning method from the perspective of urban systematics. IUWSP that satisfies the urban water cycle theory is a good plan to guide the construction of the full text. The specific construction steps of theoretical framework system are:

① Through the analysis of the development history of urban water system planning theory, the characteristics of traditional urban water system planning theory are found. Under the new situation of urban water system development, the traditional urban water-related planning theory and method have a single planning target and urban water system demand. There are drawbacks in the shortcomings of the forecasting method, the lack of information feedback, the evaluation index system is not comprehensive, and the theory that does not reflect the water cycle.

② Based on the theory of water cycle, the concept and planning principles of urban water system circulation are proposed.

③ Under the guidance of the water cycle theory, a set of theoretical system framework for urban water system sustainable development planning that considers China's national conditions is proposed and designed, to meet water supply needs, optimize water resources utilization, improve water environment quality, and ensure urban flood safety. The function of each module in the theoretical system is actually designed.

④ Finally, the level of IUWSP and the general planning process are studied.

(2) The composition of the theoretical system of IUWSP

Introducing environmental protection, service level, resource utilization optimization, and safety assurance into the urban water system planning process, completely changing the traditional single planning method, which is just to solve their respective needs as the sole planning goal. Establishing total water consumption control, water efficiency control, and environment quality control and the number of floods control as controlling indicators. Establishing the theoretical framework structure of IUWSP and designing each functional module in the framework structure.

IUWSP consists of the following modules in Figure 11:

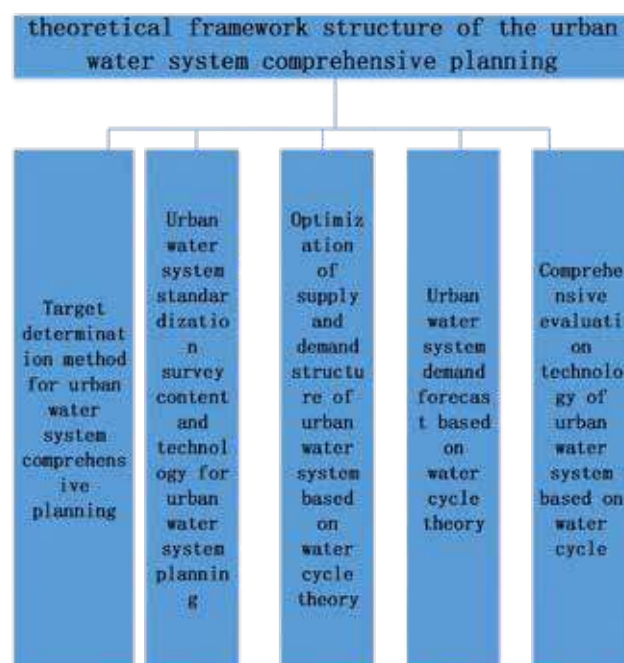


Figure 11 Theoretical framework structure of IUWSP

1) Target determination method for IUWSP

The urban water system planning under the guidance of traditional targets will not only lead to the emergence of “water shortage, water environment pollution, internal security”, but also destroy the urban water environment and waste urban water resources. Under the urban water cycle theory, it is proposed to establish an urban water system planning target system consisting of four aspects: meeting urban water supply demand, optimizing water resources utilization structure, improving water environment quality, and ensuring urban safety.

In view of the lack of research on the implementation and guarantee system for the traditional urban water system planning, it is considered that the establishment of the urban water system planning implementation and guarantee system is also one of the objectives of the plan.

IUWSP target system is composed of the service level index system, the environmental protection index system, the urban security guarantee system, and the resource structure optimization system. The quantitative methods for the specific indicators are studied. The secondary indicators for improving service levels include: resource supply and pipeline network construction. Secondary indicators for improving the environment include rehabilitating the environment, protecting the environment, and saving water to protect groundwater. The

secondary indicators for urban security include security, redundancy, and emergency protection. The secondary indicators for resource structure optimization include: improving efficiency, energy saving and emission reduction.

2) Urban water system standardization survey content and technology for IUWSP

In the IUWSP, the principles of investigation design and implementation should be clearly defined, and the investigation methods should be clearly defined to comply with the principle of water cycle. The purpose of the survey is not only to establish a database of water system information, but more importantly, to investigate the current water system and to discover the problems of the current urban water system that does not meet the principle of water cycle development.

The urban water system standardization survey according to water circulation includes the various components of the water system: water resources, water plants and other infrastructure, water use indicators, water pollution and flood disasters, pipe network construction, flood control standards, and the establishment foundation of the water system (urban population, economy, industry, natural environment).

The survey methods are divided into two categories: data collection surveys and field surveys.

Studying the establishment method of GIS database for urban water system standardization survey according to water cycle, and on this basis, proposing the current urban water system analysis and diagnosis method.

According to the water cycle and metabolism theory, a standardized survey of urban water systems is organized. The content of the standardized survey will include the following: survey methods; survey departments and information lists; survey content; form a database.

3) Optimization of supply and demand structure of urban water system based on water cycle theory

Guided by the above framework, the optimization of water supply and demand structure, the optimization of rainwater supply and demand structure, and the optimization of water and pollutants supply and demand structure are the key to IUWSP. Guided to propose planning responses to key tasks in the supply of urban water system infrastructure. The above three parts are used as a new countermeasure analysis framework to form a complete planning response model. A series of water problems appearing in the future urban water system planning reform can be analyzed according to this new framework and model.

The urban water supply and demand structure is the key to study the urban water resources carrying capacity, and it is the main aspect of supporting the development factors of the city. The water resources carrying capacity is mainly composed of the urban water supply capacity and demand capacity, and the two are mutually constrained. The study of urban water resources is a primary part and a key part of comprehensive urban water resources planning.

The drainage structure of urban water supply and drainage system in China must be established on the basis of China's national conditions. The per capita water resources are small, the infrastructure is weak, and the rainfall is concentrated. This is the basic situation of China, which determines that China must take water-saving measure. The development model of social, environmentally friendly society and intrinsic safety protection focuses on urban connotative development.

According to the characteristics of urban development in China, on the basis of water usage feature, natural conditions and urban scale, population density, urban form, topography and geomorphology in studying urban,

with reference to the experience and lessons of the development process of foreign water systems, IUWSP priorities of different cities should be proposed.

4) Urban water system demand forecast based on water cycle theory

In the IUWSP, the water supply and demand forecast mainly includes various urban water demand. The sewage treatment demand is mainly determined by the water supply demand, and the urban rainwater discharge demand is mainly determined by the urban drainage standard.

In the formulation of planning schemes and strategies, the urban water system construction needs are first defined, and the demand forecasting methods are studied. The most important is to identify the various demand impact factors and construct the systematic dynamics equation of demand.

Urban water system demand forecasting technology is one of the key technologies for IUWSP. Its specific contents include the following: urban water demand forecast; urban water environment governance demand forecast; urban rainwater discharge demand forecast.

5) Comprehensive evaluation technology of urban water system based on water cycle

In the traditional urban water-related planning, the evaluation content focuses on the ability and level of urban water system to solve water problems, water supply planning to solve water supply security, sewage planning to solve sewage treatment, water system planning to solve water system layout, and sponge city planning to solve stormwater runoff control and Rainwater resource utilization, flood control planning to solve urban flooding caused by internal flooding problems, urban flood control planning to solve flood safety problems. While in the IUWSP under the water cycle theory, the evaluation content includes the efficiency of urban water system infrastructure, urban flood control standards, the connection between drainage pipe network standards, the supply capacity of urban water supply facilities, the quality of urban water environment, the perfection of urban sewage treatment facilities, and the efficiency of urban water usage.

Evaluation plays a three-pronged role in urban planning for water cycles. First, the evaluation determines the value of each option and the advantages and disadvantages between the programs. Second, the evaluation provides decision-making information for decision makers. Third, the evaluation provides planners with ideas and directions for the development of water systems.

Evaluate the status and level of the current urban water system development, identify the phenomenon that does not meet the development principles of the water cycle theory, and define the direction of urban water system development; the focus of the planning is to investigate the plan to meet the the water system needs, at the same time whether it meets the requirements of ecological environment and resource consumption.

It puts forward an evaluation index system composed of indicators such as flood control and drainage standard suitability, green infrastructure development rate, water environment quality, urban water supply service level, urban water system development coordination degree, etc. The comprehensive evaluation technology of urban water system network oriented to water cycle is studied.

6 Conclusion

This paper takes water source system, water supply system, sewage discharge system, water reuse system and rainwater discharge system in urban water system as the research object, and studies IUWSP method from the perspective of urban systematics. IUWSP that satisfies the urban water cycle theory is a good plan to guide the construction of the full text. On this basis, Establishing the theoretical framework structure of IUWSP and designing each functional module in the framework structure.

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The governance of the circular economy: insights from the Veneto Region

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Abstract

Over the last decade, the notion of circular economy progressively emerged all over Europe. It can be defined as “the reducing, reusing and recycling activities conducted in the process of production, circulation and consumption” (Ghisellini, Cialani, & Ulgiati, 2016), but also as “a system that is designed to be restorative and regenerative” (Charonis, 2012). It is a popular approach towards green economy and sustainability (Geissdoerfer, Savaget, Bocken, & Hultink, 2017). Circular economy systems are being developed in many countries and contexts, particularly China. There is a growing literature on the various dimensions of the circular economy from many disciplinary perspectives, including planning (Murray, Skene, & Haynes, 2017). However, little attention has been paid to its governance. What is the impact of some variables related to governance, such as actors, actor configurations, collective action, policy instruments, compliance processes, as well as institutional levels and policy sectors, on the development of the circular economy? Are some of these variables more important than others? Through which causal mechanisms do they intervene? To answer these questions, we analyze four cases from the Veneto Region in the materials, building, food and textile sectors. Unlike most of the literature, instead of focusing on the peculiarities of each case, we chose to focus on what they have in common and the interaction of these key variables with the planning and institutional system. The insights were collected through participant observation in the framework of a transdisciplinary collaborative research project.

Keywords

circular economy, governance, region, comparative, Veneto

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The challenge of the circular economy

Images of islands of plastic in the middle of the ocean or mountains of waste on the outskirts of many large cities remind us of the limits of today's production and consumption systems. Phenomena such as the so-called “triangle of death” in Campania, or debates such as those on the use of incinerators to dispose of waste, remind us that these problems are not confined to developing countries, but also concern the so-called developed countries. These problems also affect Italy and the Veneto (ENEA, 2019), whose production and consumption system, while possessing many specificities, is intrinsically connected with the rest of the world. The concept of “circular economy”, emerged in the 1990s as an operational version for companies of the broader concept of sustainable development (Carroll, 1999; Clark & Munn, 1986), aims at transforming production systems so as to tend towards waste reduction, recycling and reuse; the circular economy also intervenes on consumption in a way that moderates the generation of waste, as well as encourages recycling or recovery and reuse (Ghisellini et al., 2016). The circular economy is considered as a fundamental element of the green economy and a transformation necessary for greater sustainability (Geissdoerfer et al., 2017).

But the biggest challenge of the circular economy is not only the reduction, recycling and reuse of waste, but the tendency to minimize waste, which is often summarized in the probably utopian formula of “zero waste”. This requires not only technical innovations, as pointed out by Prieto-Sandoval et al. (2018), but also cultural changes. For example, the transformation of wastewater into a resource requires not only significant progress compared to current urban and industrial wastewater treatment plants, but also the overcoming of the wastewater taboo among the population and the increase in citizens' confidence in the drinking water distribution system (UN-Water, 2017). The need to combine the reduction, recycling and reuse of waste and systemic changes has clearly emerged from the analysis carried out by Kirchherr et al. (2017) of a hundred definitions of the circular economy found in the scientific literature.

The development of the circular economy often involves the reduction of distances to avoid the decoupling of production sites and places of consumption (Leduc & Van Kann, 2013; Liu et al., 2013) and therefore the excessive distancing of waste from production centers and its accumulation in landfills and in the environment, such as in the case of cattle-bred products, the fertilizers used in the production of feed and the ensuing perturbation of the nitrogen cycle (Brunner & Rechberger, 2017; Morseletto, 2019). This however is not systematic, as there are also more or less long value chains, such as the use of mineral resources, which can often be found only in remote areas, sometimes on the other side of the world, which should not be excluded from the logic of the circular economy and from the process of reduction, recycling and re-use of resources.

The concept of circular economy, if only in a general sense, is widely shared. An analysis of the positions of the five main candidates in the last French presidential elections on environmental and climate issues has shown how the development of the circular economy and short supply chains is with the promotion of renewable energies among the few issues that gather support across the political spectrum from the extreme right to the left passing through the center (Church, 2017). This phenomenon can be explained by the territorial dimension of the circular economy, especially where this coincides with short supply chains. The circular economy in fact transforms potential waste into resources and contributes to local development, also in terms of jobs, and in some cases to the re-industrialization of entire areas (Ratti, 2002).

The political dimension of the economy is therefore important. Korhonen et al (2018) note that research on the circular economy has mainly been focused on practical and technical questions concerning the flow of materials and energy in production and consumption systems. The values, the social structures, the cultures, the visions of the world and the paradigmatic potential of the circular economy remain largely unexplored. The phenomenon of governance, which will be

explored further, includes and goes beyond these concepts. This paper contributes to fill this gap by looking into the governance of the circular economy and particularly the role of some characteristics. The study of the governance of the circular economy is important because it is, for example, through governance systems that the knowledge needed to make the economy more circular is co-produced and circulated by and between various actors, including both experts and decisionmakers. For example, thanks to the results of scientific research and the pressures of a group of economic actors, a public body can realize that the rules in force hinder the re-use of certain resources in a production process.

This paper will therefore identify the actors that currently participate in the development of the circular economy, as well as the configurations of actors that facilitate this type of development. For two sectors of activity, the institutional and spatial levels on which the transformation process is structured will be explored. On this basis, the type of collective action will be characterized on a gradient ranging from cooperation to conflict. Finally, the tools used to promote the circular economy will be identified, as well as the eventual mechanisms for verifying the implementation of these policies. The methodological approach to explore these dimensions is presented first, followed by a conceptual framework that allows identifying the main features of a system of governance from the point of view of the circular economy. These characteristics will then be analyzed in four cases in two different business sectors. The characteristics that emerge from the analysis of these cases will finally be discussed to see how far they can be generalized (Gerring, 2004; Magliocca et al., 2018). The main objective of this text is indeed to identify the main features of a governance system that promote the development of the circular economy.

Pattern recognition of features

The four case studies presented and analyzed in this text have been identified as part of a research and training project that was funded by the European Union with the participation of the Veneto Region. This choice results from many factors including opportunity, proximity and, above all, interest on the part of the European Union, the Veneto Region, the universities and companies involved in the circular economy. These are therefore positive cases that allow us to identify the forces that drive companies to contribute to the development of a circular economy. The cases concern four of the main sectors of activity that are protagonists of the emergence of the circular economy, namely materials, building, food and textile. The four cases are not identical and are placed along a gradient that goes from the large to the small and medium-size enterprise.

Each company simultaneously received a trainee in the framework of the project for a duration of twelve months between May 2018 and April 2019. The trainees have a post-graduate level of education and, in the period considered, were trained on the topics of circular economy. The trainees were therefore able to make a participant observation of the processes of transformation of the respective companies towards the circular economy, including regarding the systems of governance. During four months between January and April 2019, the trainees participated in a special program on governance systems. This allowed them to acquire a common language and common conceptual frameworks regarding governance and therefore the ability to structure the observations that they had been able to carry out in the previous months in a relatively uniform manner. They then presented and discussed their observations on two occasions, individually and collectively. This process made it possible to build a relatively homogeneous and therefore comparable narrative corpus.

The corpus thus obtained was then analyzed in an iterative way to identify features common to the four case studies according to the recurrence method (Young et al., 2006). This approach has also allowed for the emergence of differences that are specific to each case. The following paragraphs present the conceptual framework that has been adopted, the case studies, the common features,

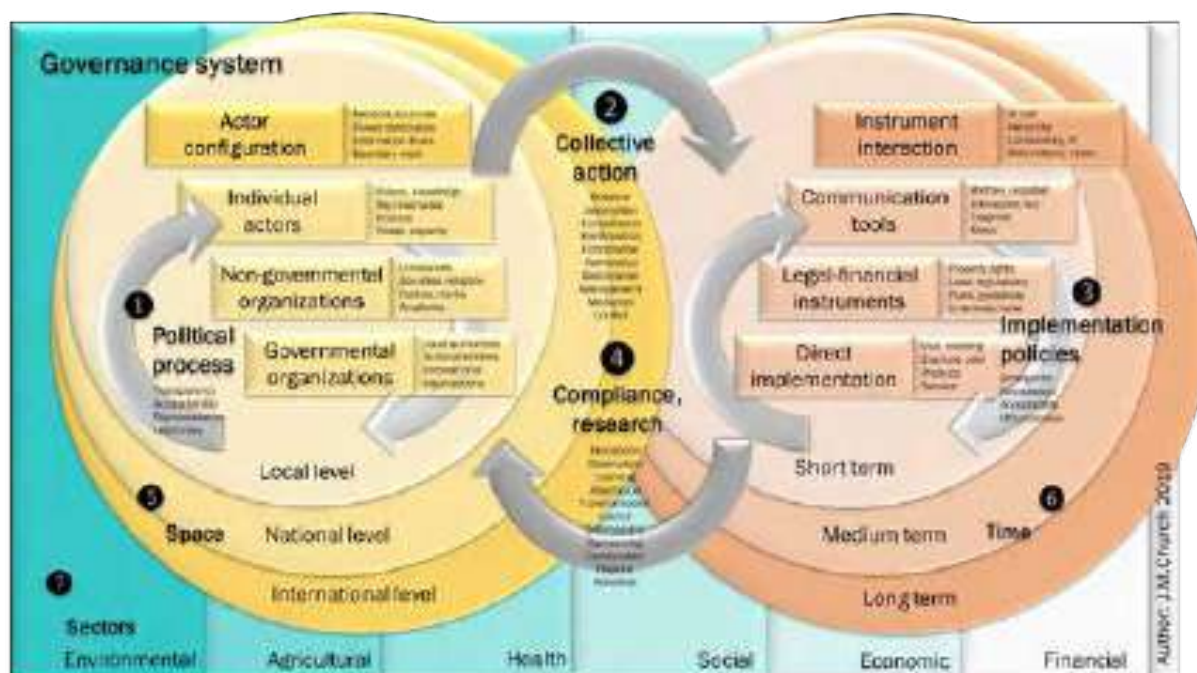
as well as the differences. A synoptic summary of the narratives is included among the supplementary materials.

Governance systems

“Governance” is a concept that emerged between the 1970s and 2000s in contrast with the concept of “government”. As early as the 1960s, authors such as Dahl (1961) showed that government action was complex and difficult to analyze. Even in the case of circumscribed examples like that of the small city of New Haven, Connecticut, it is difficult to understand who exactly is at the origin of a policy and how this policy was decided. If the concept of government refers to a sovereign entity in the sense of the decision-maker of last resort on a well-defined population and on a territory delimited by relatively clear boundaries, the concept of governance reflects the complexity of the act of governing that is exercised by different actors in a context complex characterized by a multitude of governmental, non-governmental actors, including companies and individuals, and by a territoriality with overlapping perimeters and that is articulated along several nested levels (Agnew, 1994; Ruggie, 1993).

We also propose a systemic and cyclical approach to governance, which is not limited to the analysis of the configurations of actors on different levels and spatiality, nor is it reduced to considering the collective action that is exercised by the various actors as a black box generating implementation policies, in this case in favor of the circular economy. The systemic approach used in the case in question is represented schematically in Figure 2. This framework is dynamic, articulated over time as well as in space, does not provide a teleological view of implementation policies, foreseeing their retroaction in the political process, thus leading to new cycles of collective action.

Figure 1: Conceptual scheme of a governance system



The systemic and cyclical approach adopted starts from the **1 political process** intended as an iterative interaction between different types of actors, particularly individuals, and governmental and non-governmental organizations. This political process has its own characteristics, such as transparency and accountability, but also the representativeness of the actors and their legitimacy, only to mention a few of the main features. At the same time, the interaction between the various actors is conditioned by their configuration in terms of network structure, power distribution, information flows and boundary work between one type of actor and another.

The political process allows the transition from the individual action of each actor to **② collective action** that can take different forms. Again, in the aforementioned hypothetical example, the public body can decide independently or in a coordinated manner with other bodies to change the rule in question. In this case, there are two actions: change (not the norm but the act of changing) and the eventual coordination with other actors. The most spontaneous type of action is behavior that can be influenced by the political process. Then, following the scale of Kerkhoff and Lebel (2006), it is possible to proceed to levels of increasing participation ranging from the lowest levels, i.e. information and consultation, to the highest ones, namely cooperation and partnership. If management refers to relatively de-politicized decision-making processes, deliberation is an important form of collective action as it allows choices to be stabilized in a way that will be perceived as more or less legitimate, depending on the type of interaction, and can therefore be disputed. In some cases, mediation can take place between opposing parties, but in others the collective action can lead to a more or less open conflict between parties disagreeing not only on what to do but also on the political process itself.

Collective action can therefore lead to the consolidation of **③ implementation policies** that are essentially a form of crystallization of political processes and collective action, which are naturally fluid. Policies can take various forms ranging from communication tools to legal and financial tools, such as laws, regulations, plans, guidelines, but also subsidies and taxes, up to direct implementation by the actors who participate in the political process. These policies interact with each other depending on the perimeters of implementation and any hierarchy that may exist between them. It goes without saying that they can be more or less consistent and adequate and that it is therefore possible to observe a certain amount of redundancy and a certain level of disturbance between one policy and another. Of implementation policies, we normally go to study not only the emergence and formulation, but also the acceptability and effectiveness towards the specific objectives of the policy itself but also of general objectives such as sustainability (Church, 2015).

A systemic vision of governance allows us to conceive the processes of **④ verification** of the implementation of policies as a feedback that returns them to the political process. Research is a fundamental form of verification, especially vis-à-vis face of complex phenomena. The verification of implementation practices passes through various processes such as perception, which can be more or less distorted, and the observation of phenomena and situations. This process can lead to the learning of the limits of existing policies but also of previously unknown phenomena and concepts and this can lead to the emergence of the need to adapt and possibly transform not only the implementation policies but also the underlying processes. The perception and observation of the failure to implement policies can also lead to attempts to control and execute by certain actors such as law enforcement, which can lead not only to sanctioning deviant behavior but also to contesting policies and their implementation. In some cases, this dispute can lead to disputes between parties with contrasting visions of the policies and the stakes, but also in phenomena of rebellion against the policies and processes that have led to them.

Governance is articulated in **⑤ space** on various levels that may correspond to the main administrative structures and therefore may be distinguished between local, national and international, but which can also either overlap horizontally, for example in the case of economic and environmental regions, or nest vertically, like in the cases of multilevel governance (Hooghe & Marks, 2003), depending on the functional logic. Governance is then a dynamic process that is articulated across **⑥ time**. In the governance cycle, it is therefore possible to distinguish short, medium and long-term processes, but also observe accelerations and rhythms dictated for example by political processes such as the duration of electoral mandates, but also phenomena such as natural disasters. A third dimension or scale, using the terminology of Cash and colleagues (2006), of governance is constituted by the **⑦ sectors** of activity linked to the specialization of collective action and knowledge, which include, for example, the environment, agriculture, health, welfare, as well as the

economic-financial sector. Distinct spatial, temporal and sectorial logics often lead to the compartmentalization of political processes, collective action, implementation policies, as well as verification and research processes, compartmentalization which is however recomposed in various locations, above all in the processes of verification and by certain actors that are transversal to the sectors.

The “Opportunity” project

The “Opportunity” project (ID: 2122-1-1267-2017) is funded by the European Social Fund (ESF) of the Veneto Region. Through a dual approach integrated both vertically (research, training and action) and horizontally (inclusion, economy and environment), has established a network of companies and organizations that, based on their logic on the circular economy, are able to generate social, economic and labor innovation. The project, which ends in the coming months, lasts 18 months and involves numerous partners, including the Università IUAV di Venezia, the Municipality of Padua, the Chamber of Commerce of Padua, three high schools, five companies, the Ecosystems Foundation, the Fenice Foundation, SIVE Training and three partner universities (Université de Reims Champagne-Ardenne; Technische Universiteit Delft; Universitat Autònoma de Barcelona) that supported the project through the participation of some visiting professors. The project has spread the concepts of “reduction, reuse and recycling” among a wide and diverse public, starting from schools, demonstrating its potential both in terms of sustainability and job opportunities. The project has supported companies and institutions in recognizing potentials that are not yet manifest in the production and labor systems, in educating for sharing and collaboration, in training for the creation of value and new work spaces and in creating synergies and industrial symbioses that are relevant for strategic sectors at municipal, regional and national level. Furthermore, the project was able to count on a partnership formed by research, training and education entities, companies supplying products and services, public and coordination bodies that have been able to cover the needs and requirements of a vast project with ambitious objectives.

One of the objectives of the “Opportunity” project was to start a process that would allow the development of a network of public and private actors capable to innovate, through the logic of the circular economy, the labor market in the Veneto region to increase competitiveness and territorial cohesion, reviving the local economy, reducing unemployment and particularly youth unemployment, as well as improving waste prevention and management. To achieve this ambitious goal, the project stimulated the spread of the culture of “reduction, reuse and recycling” through the involvement of private companies, public entities, students, workers and consumers in seminars, network meetings and workshops; it identified the industrial synergies and symbioses that can be developed in the territory in the sectors of materials, building, food, textile and gardening; it supported the development of a network of companies able to work synergistically on the logic of “reduction, reuse and recycling”; it built a specific training course for companies on the circular economy and on possible productive and working innovations; it created a specific teaching package for middle schools and high schools, capable to prepare students for new jobs in the field of sustainable development and the circular economy; it provided a facilitation service to launch innovative start-ups that follow the principles and logic of the circular economy.

Five companies were directly involved in the interventions envisaged by the project. Five research grants of eighteen months were allocated to unemployed graduates, one for each company involved. These fellows, under the coordination of the Università IUAV di Venezia, were each assigned to a company, in which they carried out research on the production system of the company and on the concrete impact of products. This led to work on identifying potential cooperation and synergies with companies in the sector or related sectors with the aim of making the best use of the resources present in the area. The fellows were therefore able to suggest and support companies in the introduction of circular economy principles; they also carried out a careful search for good practices in the specific field of the company to which they were associated. As part of the research grant,

company visits and periods of study were provided, as well as training mobility both at regional, interregional and transnational level. The presence of the fellows at the companies engaged in circular economy processes allowed them to carry out the participant observation of the practices of the specific company and of their sector, as well as of the related governance processes.

Action-research interventions were then conducted in each company participating in the project. These interventions allowed us to discuss and introduce in the various companies, each according to its specific needs, the new logic of the circular economy both in terms of production and business management. Furthermore, this has made it possible to deal with complementary and broader topics such as sustainability, resilience and inclusion. The companies then took part in meetings, seminars and workshops to discuss their respective development plans and to contribute to the creation of a network among companies not only in each sector, but also in a regional circular economy network. The need for this network has been studied within the project. Its realization depends on the assessments that will be made and on the will stimulated by the project. It will in any case follow the project.

Case studies from the Veneto Region

This analysis of the governance of the circular economy is based on the case studies of four companies, all based in Padua and involved in the “Opportunity” project and therefore in circular economy processes. These companies belong to the construction sector, particularly construction materials in one case and buildings in the other, while one is in the food sector and the other in the social sector with aspects related to both textiles and food.

Stiferite s.p.a.

The company operates in the construction sector and more specifically in the production of insulation material for construction and for the refrigeration industry. The insulating product is rigid polyurethane foam, a material deriving from the chemical industry, but capable of meeting energy and environmental requirements. Although the product already reduces the need for winter and summer air conditioning in buildings and despite the company's attention to energy efficiency, the future objectives are to develop an internal process linked to the circular economy, especially for the reuse of waste material in the production and recycling phase and re-use of the material at the end of its life. Currently there are already processes of chemical and mechanical reuse and recycling carried out by external bodies. The main objective of the company is the realization of an internal plant to produce panels from recycled material, also destined for other sectors.

The position of the fellow within the company was to carry out research activities related to the sustainability of the products, carrying out a life cycle assessment and subsequent publication of the environmental product declarations, from the extraction of raw materials, to the production and subsequent disposal of the product. This analysis made it possible to carry out some in-depth studies on the end-of-life scenarios of the product, assessing its impact on the surrounding environment.

Cazzaro Costruzioni s.r.l.

The company has been active in the building sector for over fifty years and is based in Trebaseleghe near Padua. It is a family business that, after the crisis of 2008, decided to specialize in the construction of high-value buildings, paying attention to the quality of living and comfort, devoting itself to fewer interventions in the surrounding area, but in a detail-oriented manner. The company has been collaborating for years with the Università IUAV di Venezia as part of research and development projects. The “Opportunity” project provided the starting point to apply the principles of circular economy in the production process, understood as the entire life cycle of a building, from construction to demolition. The goal of the company is to make the management of the materials used

in the construction more efficient, paying attention to the use of materials with recycled content and the management of any construction site waste. Furthermore, it becomes a prerequisite to digitize projects with the aim of creating a real database of materials, hypothesizing, already in the design phase, the possibilities of recovery, reuse or recycling. The continuous comparison with professionals, sector operators and building materials suppliers has favored the development of innovative strategies to optimize the design and construction processes.

The research fellow worked at the company's technical office where she was able to carry out research and analysis of a project under construction in Treviso. The latter was analyzed and digitized with BIM (Building Information Modeling) methodology to estimate the quantities of materials used in the construction. Strategies were first developed aimed at optimizing the construction process and then aimed at the recovery or recycling of materials used at the end of the building's life.

Ca' Sana (PI.TA.PU. s.a.s.)

The company Ca' Sana Food, Art, Culture, active in Padua since 2014, is a restaurant specialized in vegetarian and vegan cuisine that uses local and organic products from small businesses in the area, but also from fair trade, from lands confiscated from the mafia and from social cooperatives. The company is also active in the catering business and is an active player in the social and cultural life of the city, linking its main activity to the diffusion of a new development model and to the exchange of good practices in terms of sustainable development. Ca' Sana is also a reference point for the ability to develop projects related to agricultural production and the enhancement of the territory, creating new relationships between producers and consumers. The company is strongly interested in the development of circular processes: from the reduction of food surpluses, through careful planning linked to seasonality, to menu planning. The reuse of advanced raw materials after the food preparation phase could be further developed. The optimization of all the parts of the product would lead to minimizing material losses, taking maximum advantage in terms of environmental benefits and economic savings.

The researcher, starting from the actions developed by the company in relation to the circular economy, carried out a first survey to understand how catering in the city of Padua is approaching this theme, with particular attention to the reduction of food waste. Furthermore, it supported the creation of a local network of farms, providing a document that can strengthen local and suburban agriculture at the Veneto level.

Città So.La.Re soc.coop.soc.

Città So.La.Re Solidarity, Labor and Responsibility is a social services cooperative created in Padua in 1997 on the basis of a project by Caritas, ACLI (Associazioni Cristiane Lavoratori Italiani) and Nuovo Villaggio soc.coop.soc. for collecting used clothing, in partnership with APS (Azienda Padova Servizi). The company offers reception, environmental, mechanical and electromechanical assembly services for third parties, job placement and coworking. The company is therefore engaged among other things in the collection of used products, in their reconditioning, in the reuse by people in need and in the resale on the used market in collaboration with other similar entities. Regarding environmental services, collection functions for Caritas-branded containers, collection center management, city decoration, cardboard collection, special waste, exhausted food oil, door-to-door services are proposed to public bodies, commercial users and private individuals for plastic and metal packaging, paper and cardboard, greens and twigs, biodegradable damp, mowing, evacuation and removals, as well as transport for third parties at the national level. Città So.La.Re. intervenes above all in favor of disadvantaged people with problems of job and social insertion or with impairments and temporary difficulties, in conditions of socio-rehabilitative treatment, to have more job opportunities and to improve their quality of life. The company promotes the value of the human person, the protection of health and the social integration of local and foreign citizens.

The research fellow has produced in particular a technical report on the transformation of waste into a resource and on the supply chain and, in particular, on the potential of large-scale distribution for the collection and resale of used clothing, the role of social cooperatives in this sector and their relaunch and on a possible partnership with the large textile districts, such as around the city of Prato. The approach used was that of action-research about reporting, geo-referencing and communication of results and benefits.

Common features and divergences

To better understand the role of governance in the development of the circular economy in the case studies, seven themes were selected from those identified by the conceptual framework based on their relevance. The political process has been separated into analysis of actors and configurations of actors as the circular economy remains relatively confined to the technical sphere. In Italy, the political level has not yet fully adopted this concept, which is still emerging. Also, the time scale has not been the object of specific analysis as the phenomenon is relatively recent. For each of the case studies, the following topics were then analyzed, searching not only for common features of the governance system, but also for divergences:

- ① Governmental, non-governmental organizations and individuals
- ② Actor configurations
- ③ Collective action
- ④ Implementation policies
- ⑤ Verification, research
- ⑥ Levels
- ⑦ Sectors

The following paragraphs summarize the points in common and the differences observed in the four case studies. The selected themes, the analysis of each case study, as well as the synthesis of common characteristics and differences were discussed in internal and external seminars between February and April 2019. In the economy of this text, see Annex 1 for a synoptic table that presents more details.

The fact of analyzing the characteristics of a multiplicity of case studies on the same territory, allows a better understanding of the local governance system thanks to the multiplication of perspectives (Young et al., 2006). However, the external validity of the conclusions outside the Veneto Region remains to be demonstrated. The use of the conceptual framework lends itself to the production of case studies from other areas and other contexts, articulated both in time and in the various sectors of interest for the circular economy, to be compared and analyzed together with the conclusions concerning the Veneto case.

① Organizations and individuals

The protagonists of the development of the circular economy are in the first place the companies interested in the transformation of waste into a production factor and a management level that is sensitive to these issues. In each case there are the producers of raw materials, the distributors and finally the users, which can be different in the different sectors, especially at this level of detail. All the actors observed tend towards the principles of the circular economy diffused by the European Union, thanks also to the use of certified products, special bodies and research activities carried out by universities and research centers, which are always among the actors included in the process. At the end of the life process of the single product, there are companies that deal with reusing waste materials to transform them into secondary raw materials, through different types of companies depending on the sector but with similar purposes. Both in the building sector and in the food and social sectors, there are national or international bodies, particularly the European

Union, which deal with the regulation and definition of the sector rules, providing funding for the sector development and publicizing the results thus obtained.

② Actor configurations

The circular economy develops above all from the bottom through the companies, but the institutions and the networks play an important role for the circulation of information. The relationships between the actors take place both vertically, especially between administrative-legislative-financial actors, and horizontally, mainly between actors who work on the same level and who collaborate with each other, especially companies. The dissemination of information is important for the creation of circular networks among companies that cooperate with each other, but often the circulation of knowledge is difficult, as there is competition and not all actors are ready to immediately accept the guidelines provided by the administrations, with consequent complications in reaching a large user base. In general, in the circular economy process, advantages can be created for some actors, who manage to enter the production process in a given sector for the first time but disadvantage other types of actors.

③ Collective action

Cooperation among companies is minimal, while partnerships are being established among companies, research institutions and public entities. The point in common among all companies can be considered an interest in issues concerning the circular economy. The collaboration between the different realities operating in the same sector is certainly indispensable, but when the economic and strategic factor comes into play the collaboration is interrupted. All companies ask for more effective actions by public entities to favor the application of circular economy principles, find a lack of incentives and ask for regulatory simplification. For some companies, at the economic level, it is not convenient to apply the principles of circular economy because of the time necessary for the return of the investment, which can often be very long.

④ Implementation policies

European objectives and national legislation are important for managers, but company initiatives fall within the scope of pilot actions. In the implementation of the circular economy, the importance of European legislation is noted in all the sectors studied (End-of-life Vehicles, Waste Batteries and Accumulators and Waste Electrical and Electronic Equipment Directive 2018/849; Landfill Directive 2018/850; Waste Framework Directive 2018/851; Packaging Directive 2018/852) which focuses on the prevention of waste production, introducing important objectives that can contribute to achieving objectives of sustainable development. Furthermore, the new legislation, requiring the member states to adopt specific measures, acts as a push for the concrete implementation of the principles of circularity. Italy, like other member states, has already embarked on a path that aims at the progressive improvement of waste management, in line with European standards. This has led to important results, such as the “anti-waste” law (Gadda Law) and the application of minimum environmental criteria (CAM), i.e. the environmental requirements defined for the various phases of the purchasing process, aimed at identifying the best product, service or design solution from an environmental point of view along the life cycle, also in the context of what is established by the plan for the sustainability of consumption in the public administration. The procurement code makes the application of CAM mandatory, while in the food sector the “anti-waste” law encourages actions developed by private individuals and simplifies the procedures for the donation of unsold products for the public and private sector but does not make it compulsory. In these instruments which, despite their specificity, are united by shared objectives, there is no assessment of their adequacy and a unified vision of the actions to be developed, especially in the food sector, where the municipal level, prompted on the basis of practices such as the strategic plans of some cities, can become decisive for giving substance to the regulatory system.

⑤ Compliance, research

Controls vary by sector, but they are rare, while it is the internal improvement of companies that supports the development of the circular economy, together with scientific research. In the building sector, sanctions can be multiple in the case of use of non-certified recycled materials or in the event of illegal disposal of construction and demolition waste, but their application has not been observed. The control bodies are public entities at municipal level (e.g. ETRA), regional level bodies (ARPAV) and ministerial bodies, dealing with environmental and sampling investigations and may issue sanctions in case of illegal disposal or use of non-certified material and material that is dangerous for the environment and for people. The food sector, on the other hand, is not currently subject to sanctions for the circular economy. The impact of local, national and European initiatives for the inclusion of circular processes within the sector cannot be observed at company level. Companies decide to lean towards sustainability based on internal motivations, rather than external factors. The processes are looked at by the actors involved and the role of research and development is fundamental because it allows the creation of the materials and techniques necessary for their implementation and to increase circularity. There is no network of research institutions working on the circular economy at the regional level.

⑥ Levels

The governance of the circular economy is multilevel but varies according to the sector. The levels involved, common for all companies, can be considered nested and each company must comply with the norms and indications of its sector provided by the state (e.g. “anti-waste” law), the region and the municipality (e.g. building regulations). Above all this is the European Union, which establishes guidelines and objectives to be respected and implemented. There are no substantial differences and every company must comply with the legislation that is specific for each sector.

⑦ Sectors

Although the case studies refer to specific sectors, the governance of the circular economy also involves other sectors, particularly the environment, health, social issues and the economy. Despite the difference between the issue area to which the four companies belong, it is clear that some sectors, including related policies, are involved in a transversal manner in the development of actions linked to the circular economy for those operating in the materials and building sector, as well for those in the food and textile sector. Out of all, the environmental sector comes out on top, indicated as being the most relevant in business activities and therefore the one towards which companies tend to operate to intervene in favor of the protection of resources, the reduction and recycling of waste materials, as well as energy consumption. Alongside this, the other transversal sector is that of health, paying attention to the final consumer. Finally, the sector linked to social issues, in which specific aspects related to the figure of the worker emerge, not only with regards to health and its protection, but also to combat exclusion, facilitating return to work and illegal employment.

It goes without saying that the food sector needs to be considered jointly with the agricultural sector, closely linked to objectives such as local production, through forms of suburban agriculture, quality and soil management. Linked more to textiles, the fashion sector must also be considered, once again for the possibility of developing new materials deriving from recycling and as a driver of potential change. A last sector that emerges from the analysis is that of economics and finance: although it is not highlighted in the construction sector, it is likely decisive for actions to be developed at company level. This sector, in fact, can make it possible to overcome the lack of stable incentives, relating to the circular economy, which producers complain about.

Discussion

The aim of this paper was the analysis of the governance of the circular economy. Our goal was to explore not only the values, social structures, cultures, visions of the world and the paradigmatic potential of the circular economy identified by Korhonen et al. (2018) as gaps in the scientific literature on the circular economy, but to do so in a systematic manner, placing these issues within a systemic approach to the governance of the circular economy. Following the reading of Elias (1969) and Tilly (1973), social structures are considered here through the concept of configuration of actors which includes that of the structure of the network of interdependencies between individual and collective actors and which also takes into consideration elements such as the distribution of power, information flows and boundary work.

The systemic approach adopted for this analysis of governance tends instead to link the values, cultures and visions of the world to individual actors, since within a collective actor these elements can vary, as we consider organizations as a common means to pursue different ends (Rawls, 1971). The commonality of values, cultures and visions of the world among individual actors within the same organization, as well as the role of so-called corporate and organizational values and cultures are elements that have been observed but mostly among company managers and not necessarily among the staff. This could be linked to external factors such as the sharing of values, cultures and visions of the world linked to belonging to structures outside our target companies, such as education background, belonging to political movements or other ties that however could not be detected through participant observation within the company.

The question of the paradigmatic and therefore ideological role of the circular economy can also be traced back to the individual actor and to collective actors such as political parties and certain associations. The circular economy as a paradigm is in fact a form of value and a vision of the world that can be more or less shared through information flows within different configurations of individual and collective actors. This can therefore be integrated directly into the communication tools and indirectly into the other types of implementation policies and influence, through the feedback process, on the transformation of production and consumption systems and the political process. The circular economy as a paradigm emerged only indirectly, having analyzed the governance system starting from the companies' point of view. This element would probably have emerged in a more pronounced way by including the point of view of other types of actors such as administrations and associations.

Furthermore, the circular economy is a phenomenon that has always existed, since economic actors and individuals have always tried to exploit all the factors of production. Traditional societies produce very limited waste. It is the collapse of the prices of raw materials and their transport plus the stigmatization of refusal with the spread of the hygienist movement and of the concept of public health that led to the exponential increase in waste from the end of the nineteenth century. The emergence of industrial approaches to waste disposal then allowed to keep costs relatively low. It is the awareness of the explosion of the amount of waste in landfills and oceans that has occurred in recent decades that has brought up the issue and led to the definition of the concept of circular economy, which is therefore itself a tool for implementing a transformation of the production and consumption system.

The selected cases are not representative of all circular economy cases in Veneto. They were identified based on the partnership established due to a commonality of interests within the “Opportunity” project. However, they are representative of the main sectors involved in the development of the circular economy: construction, materials, food and clothing. In this sense, they constitute a gradient that allows to go beyond the individual case study and to extract knowledge with greater external validity (Gerring, 2004). However, negative case studies are not included (Dimitrov, Sprinz, DiGiusto, & Kelle, 2007). This may limit the possibility of identifying the elements that prevent the

development of the circular economy at the company level. The inclusion of companies in the same geographical area involved in the same project also allows the control of the possible influence of external variables and therefore facilitates comparison and generalization. Furthermore, the use of a common conceptual framework and the multiplication of case studies makes it possible to compensate for the intrinsic subjectivity of the method of participant observation and, by objectifying the approach, to reinforce the general validity of the conclusions.

Conclusion

The analysis of the governance system of four case studies of the Veneto Region involved in the circular economy has revealed seven common characteristics:

- ① **Companies, managers** The protagonists of the development of the circular economy are first and foremost the companies interested in transforming waste in a production factor and the presence of a management level that is sensitive to these issues.

The four case studies that were observed are, however, examples in which it is precisely the companies and particularly their managers that autonomously adopt the concept of circular economy for reasons internal to the companies themselves or for the conviction of the managers. In fact, the four companies complain about the absence of more favorable legislation and stimuli, particularly in terms of tax incentives, while employees do not necessarily share the managers' point of view.

- ② **Development from below** The circular economy develops mostly in a bottom-up manner through companies, but institutions and networks play an important role for the circulation of information.

This does not mean that the role of other actors and particularly of local authorities, national entities, European structures, as well as of associations and research bodies, are irrelevant. On the contrary, they play an important role in spreading the concept of circular economy (Finnemore & Sikkink, 1998), encouraging companies to participate in its development.

- ③ **Minimum cooperation, partnerships** Cooperation among companies is minimal while partnerships are established among companies, research institutions and administrations.

In terms of collective action, the target companies have shown a propensity for internalizing production, which can limit the development of recycling and re-use value chains with the participation of other companies. At the same time, we observe the search for partnerships especially in the domain of research and administrations to assist companies in finding technical solutions and to support the development of the regulatory framework and obtain incentives.

- ④ **European targets, piloting** European targets and national legislation are important for managers but company initiatives fall within the scope of pilot actions.

With regards to policies and implementation tools, the European targets for waste reduction by 2025 have emerged as a common concern in all case studies. The national legislation was more present in the construction sector than in the food sector. In any case, the development of the circular economy in the companies studied is more linked to pilot actions conducted directly by the companies, regardless of the policies in place.

- ⑤ **Internal improvement, research** Controls vary according to the sector but are rare, while it is the internal improvement of companies that supports the development of the circular economy, together with research.

The verification of the implementation of policies related to the circular economy varies according to the sector. Certification bodies play an important role in the construction sector. Above all, it is the internal improvement of companies that supports the development of the circular economy.

The research and development processes, also in collaboration with research institutions such as universities and foundations, therefore, play a fundamental role.

- ⑥ **Multilevel phenomenon** The governance of the circular economy is multilevel but varies according to the sector.

If the company level is predominant in this analysis, various levels of action appear clearly, from the most macro (global market, European Union, national government) to the most micro (municipalities, companies, individuals). The gradient tends to be more macro in the building sector with value chains that can be global and more micro in the food sector, with a “zero kilometer” trend.

- ⑦ **Multisectoral phenomenon** Although the case studies refer to specific sectors, the governance of the circular economy also involves other sectors, in particular the environment, health, the social sector, as well as the economy.

The main sectors of reference of the individual companies are obviously the most involved. However, the development of the circular economy requires the involvement of other sectors, particularly the environmental and health sectors for waste management, including pollution, and for limiting health and hygiene risks. The circular economy then intersects with the social economy especially in the food and textile sectors with important social implications. The financial aspects are never to be ignored because of the huge investments sometimes necessary for the development of the circular economy. If in some cases companies manage to finance these investments with their own resources or with the support of banks and investment funds, in other cases they depend on public funding, especially for interventions with a long return on investment.

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Supplementary materials

Annex 1: Comparative table (in Italian)

Caratteristiche	Settore edilizio	Settore alimentare-sociale
① Attori	<ul style="list-style-type: none"> Enti di normazione ed associazioni nazionali/internazionali che elaborano linee guida nel settore Ministeri per elaborazione di finanziamenti Fornitori di materie prime per la realizzazione del prodotto finito utilizzato in cantiere Aziende produttrici di materiale da costruzione finito: si occupano della scelta delle strategie più adatte a raggiungere gli obiettivi previsti dalle normative e linee guida, mediante la regolazione di aspetti tecnico-amministrativi-finanziari Enti di certificazione di prodotto di tipo obbligatorio o volontario Enti di ricerca e università che svolgono prove di laboratorio per analizzare la veridicità dei dati riportati dalle aziende e sviluppare nuove tecnologie costruttive Progettisti per l'elaborazione di edifici in linea con certificazioni ambientali, mediante la scelta delle tecnologie costruttive più adatte da applicare Imprese di costruzione: si occupano della scelta e dell'utilizzo dei materiali più adatti, secondo le linee guida dei progettisti, con una continua supervisione dei lavori in cantiere Aziende di demolizione/smaltimento: si occupano della gestione del materiale a fine della vita utile, in seguito alla demolizione di un artefatto 	<ul style="list-style-type: none"> Ministeri per l'elaborazione di linee guida nel settore e gestione di finanziamenti Amministrazioni regionali/comunali per la gestione delle risorse ambientali e la regolazione dei rifiuti Agricoltori che producono e distribuiscono la materia prima (ristoranti, mercati, supermercati) Aziende certificatrici del rispetto requisiti ambientali da parte degli agricoltori e dei prodotti da loro ottenuti Università/Scuole, per la ricerca di metodi innovativi e sicuri per il rispetto dell'ambiente Gruppi d'acquisto delle materie prime mediante organizzazioni in comunità (organizzazioni non governative, comunità locali e/o cooperative sociali) Ristoratori, che elaborano la materia prima per la distribuzione al cliente finale Clienti Aziende che riutilizzano le materie prime seconde, per la produzione di nuovi materiali (non necessariamente del settore agricolo)
② Configurazioni	<ul style="list-style-type: none"> Relazioni di tipo verticale tra attori che lavorano su diversi piani (ministeri, enti certificatori, aziende produttrici) e relazioni di tipo orizzontale, biunivoche, tra attori nel medesimo processo di costruzione (aziende produttrici dei materiali finiti, progettisti, imprese edili) 	<ul style="list-style-type: none"> Relazioni di tipo verticale tra attori di tipo amministrativo (ministero, regione, comune, aziende produttrici) e relazioni di tipo orizzontale tra aziende che detengono servizi di tipo ambientale

Caratteristiche	Settore edilizio	Settore alimentare-sociale
	<ul style="list-style-type: none"> • Circolazione delle informazioni difficoltosa in alcuni casi, per la grande competitività tra le aziende e la difficoltà di aderenza alle linee guida non obbligatorie, in altri casi facilitata per la libera circolazione dei prodotti grazie a enti certificatori (Green Building Council e Forest Stewardship Council) • Diffusione informazioni e obiettivi del settore mediante seminari e riunioni, a livello locale/nazionale/internazionale • Prezzi finali determinati dai produttori delle materie prime (a monte del processo di produzione/costruzione) • Utilizzo di materie riciclate e introduzione del recupero nel processo di costruzione, favorendo alcuni attori e svantaggiandone altri 	<ul style="list-style-type: none"> • Gli attori produttori di materie prime si impegnano per la diffusione delle informazioni relative allo sviluppo sostenibile e l'utilizzo corretto delle risorse locali, mediante la creazione di piccole catene di approvvigionamento; in altri casi la diffusione delle informazioni risulta difficoltosa (tra i clienti finali), con complicazioni nel raggiungimento di una base di utenti più ampia
③ Azione collettiva	<ul style="list-style-type: none"> • C'è interesse nei confronti dei principi di economia circolare nelle aziende operanti nello stesso settore ma la collaborazione tra le diverse realtà molto spesso si interrompe perché entra in gioco il fattore economico/strategico • L'applicazione dei principi di economia circolare può avvenire solo attraverso la cooperazione tra i vari attori coinvolti nel processo di costruzione dalla fornitura alla costruzione e demolizione. Per fare un esempio pratico, un produttore di serramenti, al termine della vita utile del prodotto, deve essere in grado di recuperarlo facilmente dal cantiere per poi riprocessarlo e reinserirlo nel ciclo di produzione o recuperarne i componenti (<i>upcycling</i>) • L'applicazione dei principi di economia circolare è facilitata in aziende di grandi dimensioni, che possono investire capitali e risolvere più facilmente problemi di organizzazione, di spazio e di logistica • Attualmente c'è tensione tra i vari attori e i livelli amministrativi e l'imprenditore non è incentivato 	<ul style="list-style-type: none"> • Non ci sono veri e propri conflitti tra le aziende che si occupano di trasformazione e distribuzione di cibo ma non c'è neanche collaborazione per favorire l'applicazione dei principi di economia circolare • C'è invece una concreta collaborazione tra aziende nel settore agricolo • Attualmente non ci sono conflitti con le amministrazioni locali ma le aziende chiedono azioni più efficaci per favorire l'economia circolare • Tra le varie aziende coinvolte nella gestione ambientale/urbana si può riscontrare sia un irragionevole conflitto sia un tentativo di collaborazione per favorire l'economia circolare

Caratteristiche	Settore edilizio	Settore alimentare-sociale
	nell'applicare principi di economia circolare e spesso "il gioco non vale la candela"	
④ Strumenti	<ul style="list-style-type: none"> L'Unione Europea ha emanato leggi e norme per lo sviluppo dell'economia circolare La Regione del Veneto dal 2014 sta recependo tali norme, applicandole ai settori di riferimento con progetti specifici (fondi FSE) e con la collaborazione del mondo universitario Il Ministero dell'Ambiente ha adottato i Criteri Minimi Ambientali, imponendo l'utilizzo di materiali con una parte di riciclato Le aziende che producono materiale da costruzione inseriscono all'interno dei materiali una percentuale di riciclato Non esistono incentivi e strumenti finanziari per l'edilizia privata che influiscano nella scelta di utilizzare materiali riciclati L'economia circolare è un tema che necessita una maggiore diffusione e comprensione da parte dei soggetti coinvolti, che potrebbero portare all'attuazione di nuovi strumenti di sviluppo 	<ul style="list-style-type: none"> L'Unione Europea ha adottato un Pacchetto sull'Economia Circolare che sottolinea l'importanza della prevenzione nella produzione di rifiuti, con l'obbligo a partire dal 2025 della raccolta differenziata di rifiuti da materiali organici Il pacchetto interviene inoltre contro gli sprechi alimentari Il governo Italiano ha approvato una legge sullo spreco alimentare Alcune pubbliche amministrazioni hanno attivato politiche alimentari e previsto strumenti finanziari, come premialità per quanti riducono lo spreco alimentare (diminuzione della TARI) ma lo scenario è diversificato, pertanto la scelta di introdurre determinate azioni nella propria attività è ancora spesso legata a motivazioni personali La comunicazione potrebbe giocare un ruolo fondamentale per la richiesta e l'attuazione di nuovi strumenti di sviluppo
⑤ Verifica	<ul style="list-style-type: none"> Le sanzioni possono essere molteplici in caso di utilizzo di materiali riciclati non certificati o in caso di smaltimento illegale di rifiuti da costruzione e demolizione, ma la loro applicazione non è stata osservata Gli organismi di controllo sono organismi pubblici a livello comunale (ad es. ETRA), organismi di livello regionale (ARPAV) e organismi ministeriali, si occupano di indagini ambientali, campionamento e possono sanzionare in caso di smaltimento illegale o uso di materiale non certificato e pericoloso per l'ambiente e le persone Ogni azienda promuove un'economia circolare al suo interno o con una società affiliata 	<ul style="list-style-type: none"> Il settore dei servizi alimentari non è attualmente sottoposto a sanzioni in merito all'economia circolare e le regole sono quelle della legislazione vigente I programmi ufficiali per l'inclusione di processi circolari all'interno del settore non sono osservabili a livello aziendale Le aziende decidono di essere caratterizzate dalla sostenibilità sulla base di motivazioni personali, piuttosto che influenze esterne Funziona per il continuo miglioramento interno sui temi della circolarità I processi sono osservati soprattutto dal punto di vista della produzione, dell'appalto pubblico e del marketing

Caratteristiche	Settore edilizio	Settore alimentare-sociale
	<ul style="list-style-type: none"> La ricerca sta facendo passi da gigante nello studio dell'economia circolare, ma a livello regionale non esiste una vera rete I processi sono guardati dagli attori interessati e il ruolo della ricerca e dello sviluppo è fondamentale perché permette di creare i materiali e le tecniche necessarie per la loro applicazione per aumentare la circolarità di un settore responsabile per ⅓ dei rifiuti mondiali 	
⑥ Livelli	<ul style="list-style-type: none"> I livelli coinvolti, molto spesso sono annidati e sono il Comune e la provincia di Padova e, più in generale la Regione Veneto L'unione Europea detta le linee guida, stabilisce alcuni parametri da rispettare e fissa alcuni obiettivi da raggiungere, si veda ad esempio l'agenda globale 2030 per lo sviluppo sostenibile Ogni regione ha propri regolamenti che fanno comunque riferimento alla legislazione statale e ha numerosi organismi di controllo e verifica Ogni comune ha il proprio regolamento edilizio e la propria pianificazione, che però fa sempre riferimento alla legislazione statale, anche se in alcuni casi è possibile derogare alla normativa statale/regionale Le attività delle aziende si rivolgono a livelli nazionali e internazionali 	<ul style="list-style-type: none"> I livelli istituzionali coinvolti nella gestione ambientale/urbana sono il Ministero, le Regioni e i Comuni Il governo nazionale stabilisce politiche, obiettivi da raggiungere e fornisce strumenti per attuarli La regione si occupa di pianificazione e coordinazione degli interventi Le autorità e le associazioni locali si occupano della pianificazione del sistema di gestione alimentare, ma anche di rendere partecipe la comunità locale e di mettere in relazione i vari soggetti privati
⑦ Settori	<ul style="list-style-type: none"> Ambiente: tutela risorse, riduzione/eliminazione di emissioni volatili, riuso/riciclo dei materiali di scarto, limitato consumo di energia Salute: comfort all'interno delle abitazioni Etica: tutela e salute dei lavoratori all'interno dell'azienda. 	<ul style="list-style-type: none"> Ambiente: difesa del suolo e del paesaggio, tutela delle risorse, riuso/riciclo dei materiali di scarto Agricoltura: valorizzazione produzione locale, biologica, urbana Solidarietà/ etica: contrasto a emarginazione e a lavoro irregolare Salute: impatti produzione industriale cibo Moda: individuazione risorse e riconoscimento componenti dei materiali per utilizzarle al meglio delle possibilità

Caratteristiche	Settore edilizio	Settore alimentare-sociale
		<ul style="list-style-type: none">• Economia: sostegno del sistema bancario• Politiche trasversali ai vari settori

Bringing waste to the foreground of cities. Towards sustainable transition management in the urban region of Naples (Italy)*

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Abstract: Circular economy suggests new visions of how the urban space should be lived and managed. These visions depend on metaphors such as urban metabolism, that implies a completely rethinking of the governance model. Achieving such a transition will demand deep changes in dominant practices and ways of thinking, which will in turn call for new knowledge on the part of ordinary people and different responsibilities on the part of institutions. In this perspective, while the production of waste is being reduced through innovative practices, former industrial, rural or infrastructural areas are more difficult to include in a closed loop production cycle. Such wastelands, often merging into wastescapes, need to be completely re-imaged as a precondition for their sustainable transition. Assuming the metaphor of urban metabolism as a device to address the transition, turning the definition of “neglected area” into “wasteland” becomes a tactic for generating alternative policies and practices in urban regions. In exploring how the transition is affecting social actors, decision models, formal and informal practices in the urban region of Naples, the paper focuses on how turning wastelands into resources has the double potential of rehabilitating urban spaces and challenging the governance model in use.

Keywords: wastescape regeneration, multilevel governance, waste circularity, transition management

1. Introduction

Circular economy, one of the pillars of sustainable transitions promoted by the EU, suggests new visions of how the urban space should be lived and, as a consequence, managed. The roots of such rather conceptual visions are strongly dependent on the successful working of the powerful metaphor of urban metabolism. The latter helps not only imaging and organizing strategies for the transition process, but also situating them and completely rethinking the governance model consistent with the urban metabolism itself. Metabolizing such transitions demands deep changes in dominant practices, policies and ways of thinking, which will in turn call for new knowledge on the

* This article is the result of a joint effort by the authors. In particular, sections 1-2 are attributed to Palestino, section 3-4 are attributed to Berruti, while 5 to both the authors.

part of ordinary people and different research frameworks and responsibilities on the part of scholars and institutions respectively.

The Horizon 2020 research REPAiR, “Resource Management in Peri-urban Areas: Going Beyond Urban Metabolism” promotes the reuse of waste as a resource. In this framework peri-urban areas have to be reinterpreted as those “transition spaces with some degree of intermingling of urban and rural uses” which characterize urban regions of European cities (Wandl and Magoni, 2017, 1).

As for the methodology, the transition management has been adopted in order to experiment how to reduce waste flows in peri-urban areas, beginning from the pilot cases of Naples and Amsterdam¹.

According to the metaphor of urban metabolism, considered as a device to address the transition, urban regions have been interpreted as complex ecosystems. Consistent with this conceptual framework, one of the first steps of the REPAiR strategy consisted of deliberately turning a definition like “neglected area” into “wasteland”, in order to emphasize the shift from the socio-technical regime of the linear economy, where the adjective “neglected” refers to the end of the Fordist domain, to the socio-technical regime of the circular economy, where how regulating the metabolism of waste is crucial. Since this shift has been generating alternative narratives and different public discourses and images, REPAiR researchers have been exploring policy instruments and practices that fit the new vision.

According to the new narrative, waste flows in peri-urban areas have to be tightly related to the entanglement between solid waste and wastelands. The latter to be considered as ruins germinated from the shrinkage or even death of past land uses such as industrial, rural, infrastructural and so on, with the consequent degradation into wasteland.

In the urban region of Naples, Caserta and Salerno waste has often been stock-piled or even concealed in peri-urban areas with the effect of transforming abandoned or soon to be abandoned open spaces and land into wasteland. A few years ago, following the socio-ecological disaster nicknamed as “the Land of Fires”, the plan of the Province of Caserta defined this phenomenon as “negated land”, referring to an amount of about 5000 ha of critical areas, a part of which had informal and managed accumulations of waste (Provincia di Caserta, 2012).

In the same region, due to a previous long lasting, unresolved regional waste emergency, different patterns of wastelands still exist, and in addition there are spaces and surfaces where toxic waste, pollutants, and other dangerous materials are illegally stored and hidden, temporarily or persistently. These wastelands include: stretches of agricultural land housing unauthorized buildings; portions of abandoned historical heritage; polluted sites under designated state tutorship; housing or productive facilities confiscated by the state from the criminal organizations and so on (Berruti and Palestino, 2018).

¹ The academic partners of REPAiR (Grant Agreement n. 688920), together with the *Joint Research Center* by EU, and several public institutions and public/private companies in the field of waste management, are universities and research institutes from Delft (the Netherlands), Naples (Italy), Hamburg (Germany), Lodz (Poland), Pécs (Hungary), Ghent (Belgium). The Naples REPAiR team is composed by researchers from the Department of Architecture of the Federico II University and officials from the Campania Regional Authority, while the mayor of Naples is in the user board. See <http://h2020repair.eu/>.

As a consequence, the quality of life is very low and inhabitants do not trust institutions and even struggle against them in order to defend their rights to urban environments (Berruti and Palestino, 2019).

Moreover, what happens when many wastelands compound the effect of bringing waste to the foreground of cities is the proliferation of wastescapes (REPAiR 2017, Amenta and Van Tjimmeren 2018). Such wastescapes even overspill the administrative borders of each municipality, thus involving different communities and institutions and requiring complex multilevel governance. They need, therefore, to be completely re-imaged, re-framed and re-organized as a precondition for their sustainable transition.

This is why, one of the most important challenges for REPAiR-Naples is the promotion of shared understanding of how to include not only waste and waste flows, but also wastelands, in a closed loop production cycle.

Exploring how the transition toward sustainability is affecting social actors, decision models, formal and informal practices in the urban region of Naples, the paper focuses on how turning wastelands into resources has the double potential of rehabilitating urban spaces and challenging the governance model in use. In so doing the framework of transition management offers an inspiring methodology to collaboratively plan how to reduce, recycle and regenerate waste and wastelands in peri-urban Naples.

2. The theory of transition management at work

The framing of environmental problems triggers complex societal challenges that require socio-technical transitions and modify the working of territorial systems. Contemporary transitions towards sustainability can be considered as those specific processes of long-term, multilevel and multiphase change that happen in complex and adaptive systems such as cities and urban regions. As a consequence, sustainable transitions work as multi-actor processes involving firms, industries, policy makers and politicians, but also consumers, civil society and researchers. It is important to underline that, being focused on the environment, transitions towards sustainability are closely related to collective goods (Geels, 2011).

Being an open-ended process aimed at reframing problems through social learning and experimenting, the transition management approach can be successfully adapted both for supporting policies, and engaging actors, in order to find innovative solutions. As a matter of fact, its recent “urban turn” (Wittmayer and Loorbach, 2016) has provided site-specific applications in domains such as energy, water, mobility or climate change, since the challenges to applying circular economy are frequently localized in cities, towns and neighbourhoods. Furthermore, these applications of transition management describe governance processes where frontrunners from policy, science, business and society are asked to share their understanding of complex challenges. In doing so, they help researchers to deeply analyse urban sustainability, supporting shared visions and strategies and experimenting social innovations (Loorbach, 2010, Wittmayer and Loorbach, 2016).

It is important to add that the transition management is conceived as a kind of selective participative setting that works as an iterative cycle of mutual learning. Thanks to *ad hoc* networks of pivot stakeholders coming from different backgrounds, it develops a plural discourse which is aimed at guiding sustainable transitions. Given the cyclical nature of the transition management framework, strategic level activities are followed by tactical and operational phases, while the cycle itself is closed by means of the resulting appropriate reflexive measures.

The aim of the strategic activities is “orienting” the public discourse and the related narrative through long-term visions. An arena of frontrunners with different backgrounds has to be formed during this stage in order to imagine a future perspective, together with transition pathways.

The tactical activities have to be built in the mid and the long term, dividing the public discourse into steps, preparing the transition agenda and analysing gaps between different scenarios. Consistent with this “agenda

setting” stage, tactics to explore and specific pathways can be further developed by means of negotiation and collaboration among actors.

The operational activities, working in the short term, are oriented towards sharing those specific needs coming from practice, projects and experiments. This stage is based on “activating” communities and anchoring ideas from below.

The reflexive activities offer the basis for monitoring the previous three levels, where the focus is on how to support and enable societal learning processes.

When all four levels are embedded in urban contexts, the related actions are carried out through experimentation at the so-called Urban Transition Labs which are inspired by the Living Labs approach. Living Labs are defined as “user-centered, open innovation ecosystems based on a systematic user co-creation approach in public-private-people partnership, integrating research and innovation processes in real life communities and settings” (ENoLL 2013; Concilio, 2016). With the aim of accelerating the transition, enough time is provided to produce mutual learning and develop solutions far beyond the existing regime contexts.

3. Promoting the waste circularity in peri-urban Naples

As seen in Figure 1, the focus area of REPAiR Naples includes eleven municipalities, going from the eastern city to the town of Acerra, making up a peri-urban area of 519.425 inhabitants and 164,6 square kilometers where different wastelands and waste flows intersect. This vast area, and a smaller sample area were selected, mainly due to the following reasons: its being an area strongly affected by the fifteen-year-old regional waste emergency and socio-ecological disaster known as the Land of Fires (Armiero, 2014; Palestino, 2015), the high percentage and variety of wastelands, and its location within the administrative boundaries of the regional waste management system.

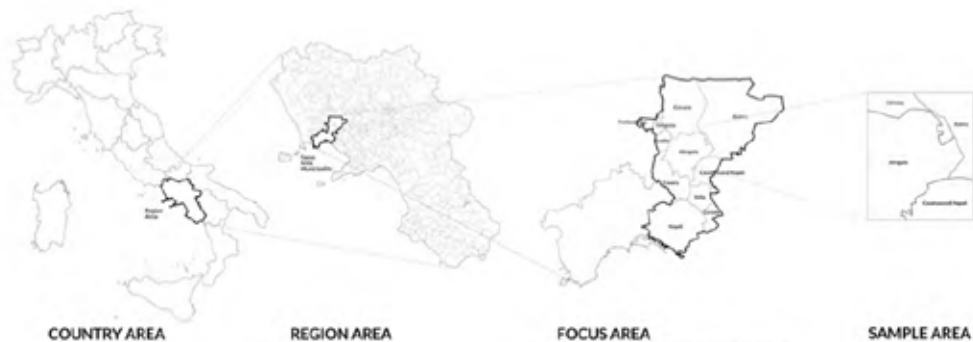


Figure 1 Naples' Focus and sample area in the REPAiR Project

In line with the transition management model, the research was organized by means of an “orienting phase” where the strategy of looking at waste as a resource was defined. In this perspective, redefining the abandonment of places provided the agenda for regenerating them with a new perspective, and using the provided funding. Thus, focusing on wastescapes has supported a vision strong enough to allow putting into practice circular economy principles both through designing new measures and policies, and involving distrustful citizens in taking care of peri-urban spaces. At the beginning, the arena of frontrunners was composed by the research team from the Department of Architecture of Federico II University of Naples, several officials of the Campania Region belonging to the Departments of Environment, Planning and Agriculture and selected user-board members from the City of Naples. Citizens as representatives of local associations and movements were added later.

The “agenda setting” was supported by interviews with politicians and officials aimed at analyzing the governance of waste in the focus area and by institutional meetings where shared knowledge on the working of

the waste management system and the related challenges was collected. Representatives of regional, metropolitan and municipal governments and policy makers, waste management administrators, local company representatives all joined these meetings. In directing them, the research team worked hard to set the agenda, starting from the outcomes of this stage. Later on, with the organization of peri-urban living labs (PULLs) the “*activating stage*” started. Besides institutional actors and companies, social organizations and active citizens were also involved in the experiments of innovation.

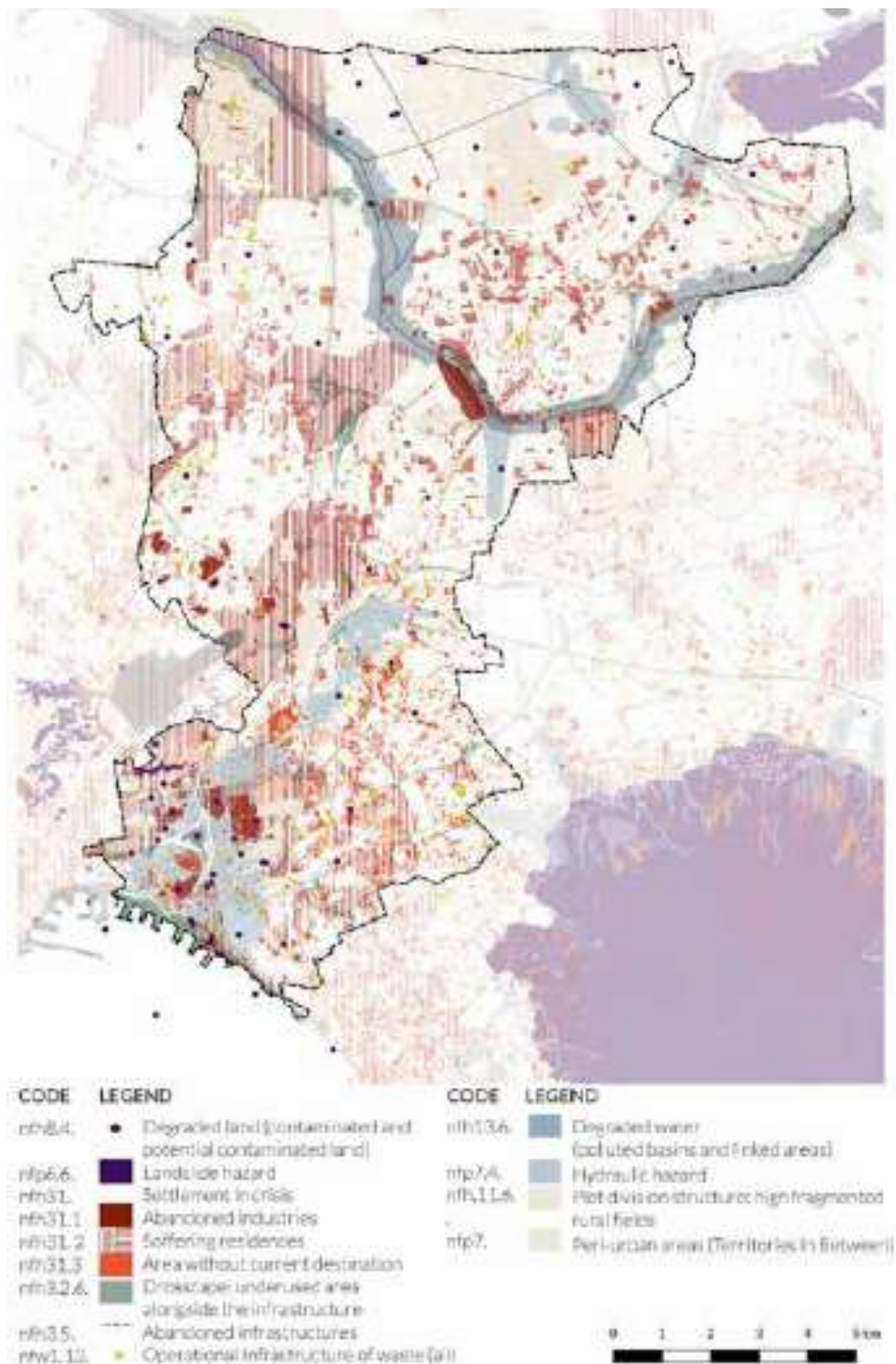


Figure 2 Wastescapes in the focus area: analytical description (Source: REPAiR 2018)

PULLs have mainly focused on wastescapes and eco-innovative solutions. First, participants identified critical wastescapes in the focus area, located them on the map and collectively updated the map and its legend (see Figure 2). Then, they framed solutions for wastescapes. Participants were organized into three worktables, each one focused on a territorial project to carry out together, with the aim of discovering the proper eco-innovative solutions to the investigated wastescapes. Later, proposals coming from previous workshops were analyzed and each territorial project was transformed into action. The current possibility of funding the proposed actions has been explored, as well as actors' commitment to support them.

The “operational activities” included the co-design of actions aimed at solving problems of abandonment related to wastescapes and the attribution of specific responsibilities to the actors involved in Living Labs. At this stage, some negotiations between public administrators and inhabitants were carried out by the REPAiR team in order to reveal previous conflicts or solve those produced during interactions.

Actions proposed during living labs provided the base for drawing eco-innovative solutions, also by means of improvements made by the research team, through the involvement of public sector officials and companies, carrying out part of the reflexive activities. This step aimed mainly at transforming them from site-specific to generally transferable and pointing on aspects of innovation.

The activating phase has been planned as the result of a further learning process in which collaborative decisions shall be taken by means of a geo-design planning support system that is currently under investigation by the research team.

4. Discussion

As shown by the transition management process applied to the metabolism of waste in Naples, the first important step towards transition consists of overcoming the current provisional nature of the waste management system, due to partial enforcement of the regional law on waste management (R.L. n. 14/2016).

On the one hand, though the Campania Region makes circular economy a leading principle in the regional law on the waste management, it seems to be neglected in calibrating laws and plans to local contexts; on the other hand, municipalities are interested in maintaining the benefits coming from the previous waste system, often accruing to companies selected through political nepotism. In so doing, some decision-makers appear to share the same interests as organized crime in maintaining the waste management status quo ante developed during the two previous environmental emergencies affecting the Campania Region. Moreover, the Metropolitan City of Naples which might exert a connective role in the transition stage, has been erroneously excluded from the waste management.

Intra-institutional difficulties in overcoming sectorial policies, together with the lack of shared knowledge about waste management among institutions and for citizens also contribute to hindering the application of circular economy principles. In addition, social attitudes also play their role, through suspicion of the waste quality, and the consequent stigmatization and distrust that prevent the innovation of policies and the development of new economies. For instance, companies managing composting plants do not use organic waste coming from Campania because of its supposed (and often real) bad quality; local communities fight against any proposal

concerning waste coming from above, even if concerned with the location of a new composting plant, that could be effective in resolving the organic waste management system at a local scale².

As for wastescapes, there are some interesting experiences of recovery and re-appropriation in the metropolitan area of Naples that require but do not get the appropriate support from institutions. In addition to governance aspects, the capability of including wastescapes regeneration in an overall vision covering peri-urban areas and defining their potentialities has to be enhanced.

5. Conclusions

In short, the conclusion we can draw from applying the transition management approach to the metropolitan area of Naples, is that circular economy currently works mainly as a rhetorical argument that is still hard to apply through policies, mainly due to ineffective sectorial planning and to difficulties in making urban metabolism work. Therefore, clear suggestions appear for how to enhance circular policies and regenerate circular landscapes.

First, PULLs function as useful environments for driving all the actors involved in the process to co-design site specific policies, while unravelling conflicts and issues coming from the past. Second, people and companies are a reliable source of creative actions and entrepreneurial initiatives on wastelands and waste flows. Third, public officials have to overcome sectorial and departmental barriers within the bureaucratic apparatus in order to apply their theoretical arguments on circular economy to real and effective policies, while at the same time catching the innovations coming from local contexts. As a consequence, we suggest the adoption of a multilevel and cross-sectorial governance as the right way for designing and implementing circular policies.

As for wastelands, the transition management approach revealed itself useful for designing eco-innovative strategies and solutions and for rethinking new uses and practices for their regeneration. Such regeneration implies, on the one hand, that wastelands have to be treated as complex groupings of people and places, and on the other hand that, since landscapes do not follow administrative borders, a synergy between institutions is needed able to create bridges between different actors and centers of responsibility. Innovations always require the courage to change, in multiple sectors (legal, political, economic, social, environmental, technological) and overcoming barriers. Among these innovations we would stress the need for governance of wastescapes regeneration, that has to be designed and implemented in order to effectively re-introduce wastescapes into urban metabolism.

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Data center and the city: A potential for urban synergies.

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Abstract: The investment landscape for the data center (DC) industry in Europe is currently under transformation, as more DC companies are getting established in the Scandinavian countries; but still the DC surface and power capacity (m² and MW) in these regions has not yet capitalized in the same way as DC traditional locations in central Europe. Nevertheless, the renewable energy as hydropower and a favorable climate for free air cooling that are provided in the North, particularly northern Sweden, among other reasons, are increasingly attracting DC companies seeking to meet their environmental goals at the lowest cost. However, this raises questions on how the land (m²) and energy (MW) demand for new DCs can be met with equity in the local context. While some governments facilitate land management procedures to build new DC facilities and lower the energy tax in order to attract more investors, there has been little attention on how these strategies could support or hinder potential energy synergies with potential social value within the local community (e.g. reuse of DC waste-heat for urban farming). The potential transition that Sweden is facing, due to the DC-phenomenon, becomes a relevant context to investigate alternatives of how to improve urban metabolism's efficiency, in relation with an emerging energy intensive industry; The Data Center industry. The purpose of this research is to investigate how urban planning theory can assist the DC-phenomenon in transitioning towards a circular approach.

Keywords: Circular cities; Multifunctional data center district; Sustainable urban metabolism; Urban planning strategies.

Introduction

Since the establishment of Facebook in Luleå in the north of Sweden, back in 2011, the region's focus in developing strategies to attract Data center companies has increased. These strategies are among others: reduced energy tax, accessibility of cheap land, low time-to-market (Christensen *et al.*, 2018). Some reports state that Facebook has been perceived as a trigger for structural change and economic growth in these northern regions, having had positive effects as: e.g. regional co-location benefits, shared quality workforce, job creation etc. (Ylinenpää, 2014).

However, Sweden and particularly its northern regions are not a traditional location for the data center industry in comparison with the FLAP-D regions in central Europe (Frankfurt, London, Amsterdam, Paris and Dublin). These northern regions have had another industrial tradition based on mainly mining, metallurgy, and forestry (pulp and paper) activities. Despite this tradition, the Nordics and particularly Northern Sweden is facing an industrial transition from a dominant resource extractive strategy to a diversified resource investment strategy (Reffell, 2018). This is partly due to the emerging industry of data centers in the last decade, which has been attracted by tailored economic incentives and environmental assets; in order to balance their high-energy demand with high efficiency standards and greener footprint at the lowest cost (Kontzer T., 2013). However, the Data center industry remains inefficient, as only a small part of the energy is used to store and process data, and the rest of the energy becomes waste-heat. Consequently, there is a recognized need to make data centers more energy-efficient (Summers, 2018).

The described transitional phase that the Swedish industrial system is facing, can be suitable to introduce new paradigms as; *Circular cities*. Introducing possible synergies through a circular approach in the

current industrial linear system can contribute to the DC's need and responsibility to be highly efficient; not only by designing efficient DC facilities but also by defining strategies to locate the DC close to users interested in reusing the high amount of waste-heat they produce. This, since the waste-heat is low grade and airborne and therefore inefficient to transport (Sandberg *et al.*, 2017).

The “city” can be defined as a “platform” enabling material and energy exchange between industries (Rosales Carreón and Worrell, 2018). Urban metabolism theory (Ferrão and Fernandez, 2013) describes how materials and energy flow in a city. The DC sector gives high attention to the energy flows, as energy efficiency is one of their main concerns when establishing a new DC. To achieve maximum efficiency it is essential to measure the amount of energy flowing through the system and the quality of these energy flows (Rosales Carreón and Worrell, 2018). In fact, higher efficiency can be achieved not only with the “right” design of the DC building, but also by choosing the “right” location.

Problem framing

Sweden has had several turning points that led the country into industrial transition periods, as for example the one in the beginning of the twentieth century with the invention of the electricity networks by Edison in 1879 and three-phase technology by Jonas Wenström in 1890; solving the distribution of electricity in long distances (Vattenfall, 2019). This enabled industries, which initially were powered by waterwheels and local small hydropower stations to settle closer to cities, far from the energy source (watercourse), where users and other services were located. Nowadays, Sweden would face a similar challenge within the context of the emerging DC industry transitioning towards a circular approach, where the DC's are energy (waste-heat) producers and have issues to transport the energy (heat) over long distances efficiently to be used by other sectors/ industries. The current situation of inefficient energy use in the DC sector leads to reconsider, from the sustainable urban metabolism perspective, the location of local industries/activities closer to the heat producer (DC), and vice versa, in order to be able to use the energy (electricity) in a more efficient way minimizing waste (waste-heat).

The DC sector need to consider a more efficient energy management (e.g. minimizing waste-heat), in order to tackle efficiency with a more holistic perspective (including social, environmental and economic factors). This would mean changing the perception of DCs from only energy consumers to partly energy producers of waste-heat (prosumers). There are several examples of waste-heat reuse from DC for other activities integrated in the DC building as: swimming pool (Brodkin, 2008), greenhouse (Miller, 2008), housing and non-housing buildings (Miller, 2009), desalination plant (Sverdlik, 2014) and fish farm (Verge, 2015). Nevertheless, these are exceptional cases, which are not the rule; still the concept of “waste-heat reuse” has not yet been introduced as a routine when establishing new DCs. This paper does not focus on analyzing the technological development of this possible integration between the DC and other activities, but does focus on describing and analyzing the events and factors that are currently enabling or disabling, this integration, taking as a case study northern Sweden (the counties of Norrbotten and Västerbotten).

Research approach

Case study methodology was the one chosen for this study as it allows highlighting the details on the DC phenomenon, from the stakeholder's perspective, by using multiple sources of data as evidence (Tellis, 1997). A major strength of having chosen case study's data collection methods is the opportunity to use different sources of evidence, allowing addressing a range of historical, attitudinal and behavioral issues. Most importantly, it allowed the development of a converging line of investigation, “any finding is likely to be more accurate and convincing if based on several sources of information”, (Yin, 2013). Two data collection methods were chosen in this qualitative research approach: unstructured/open-ended interviews and literature review. Unstructured interviews, as an inductive method of data gathering, enabled to discover experiences and knowledge from the interviewees, which had not been taken in consideration before; “When researchers are more interested in knowing greater details about a phenomenon, unstructured questions may aptly accomplish those aims”, (Firmin, 2012). These interviews followed the two simultaneous levels of operation required: the need to follow the line of investigation while at the same time asking questions as open as possible, in a friendly and non-threatening manner (Yin, 2013).

The research was approached: firstly, as an *Exploratory framework*; finding which stakeholders are involved in the DC phenomenon events (who) and in what part of the process (Yin, 2013). Secondly, as an *Explanatory case study*; focusing on the why and how these stakeholders were involved in each event (Yin, 2013) (e.g. tailored strategies, site-selection criteria, establishment process, research and development...etc.), in the context of northern Sweden.

The interviewees are national, regional and municipal key actors involved directly or indirectly in the DC-industry development (Table 1). Interviewees were selected after doing a literature review and identifying key actors inside private/public bodies involved in DC-establishment in the region. Some of the conducted interviews led to the contact of other key actors for following interviews (e.g. interview with stakeholder A, led to interview with stakeholder C). All the interviews were done face to face in arranged meetings.

*	Interviewee	date	stakeholder type	interview type
	stakeholder A	18/03/2019	Regional actor	unstructured/ open-ended
	stakeholder B	26/03/2019	Data Center company	unstructured/ open-ended
	stakeholder C	05/04/2019	Regional actor	unstructured/ open-ended
	stakeholder D	24/04/2019	National actor	unstructured/ open-ended
	stakeholder E	29/04/2019	Data center company	unstructured/ open-ended
	stakeholder F	22/05/2019	Data Center company	unstructured/ open-ended
	stakeholder G	29/05/2019	Regional actor	unstructured/ open-ended

Table 1: Table of interviews conducted in the case study

Literature review is used as a qualitative research method in this study; as it serves as a tool for data collection and data analysis (Onwuegbuzie and Frels, 2017). As the purpose of this research was to see how urban planning theory can assist the DC-phenomenon in transitioning towards a circular approach, the two main topics selected to search upon were “Urban planning” and “Data center”; identifying subcategories that support the circular approach, as an inclusion criteria. These subcategories were used as key words in the retrieval process of the documents analyzed.

Table 2 shows the main topics relevant for the research divided up in three groups, with subcategories: Urban planning (Circular cities, Urban metabolism system, Urban sustainability); Data center (DC Waste-heat reuse, DC Business trend, DC Energy, DC Sustainability) and a third group where Data center and Urban planning topics are related.

Main topics	Topic subcategories	Scientific Articles	Reports	Books	News Articles	Websites	References
Urban Planning [UP]	Circular cities	2	1				(Kirchherr, 2017); (Williams, 2018); (Kalmykova et al., 2016)
	Urban metabolism system	5	1	1		1	(Kennedy et al., 2011); (Prenderville, 2018); (Jackson et al., 2010); (Business Index North, 2017); (Barles, 2010); (Vattenfall, 2018); (Dijet, 2018) (Ferrão & Fernandez, 2013)
	Urban sustainability	6			2		(Brits and Burke, 2008); (Rosales-Carreón, 2018); (Andrén, 2009); (Gonzalez-Garcia, 2018); (Heinz-Hebert, 2002); (Cinelli et al., 2014); (Grova and Reith, 2013); (Sala et al., 2015)
	Urban Sustainability						(Wahlroos et al., 2018); (Brodin, 2008); (Miller, 2008); (Miller, 2009); (Sverdlik, 2014); (Verge, 2015); (Patterson, 2010); (Tschudi, 2010); (Siba, 2017)
Data Center [DC]	DC Waste-heat reuse	1	2		6		(Warrestein et al., 2016); (Christensen et al., 2018); (Digiplex, 2018); (Reffell, 2018)
	DC Business trend		1		3		(Nelson, 2017); (Avgerinou et al., 2017); (tyg, 2007); (Danilak, 2017); (Summers, 2018); (Avelar et al., 2012); (Garrie, 2018)
	DC Energy		5		1	1	(Henriksson, 2017); (Lykou et al., 2018); (Cowi, 2018); (Ylinenpää, 2014); (Cremer, 2018)
	DC Sustainability	1	3		1		(Sergejev, 2015); (Juvalainen, 2016); (Siba, 2017)
	UP + DC		1		1	1	

Table 2: Documents analyzed in the literature review method

Results

As a consequence of the interviews and literature review methods, a timeline (Figure 1) was created with the aim to understand historical (national/ regional/ municipal) chain of events that contributed to the DC establishment in Swedish northern regions and find traces of strategies, initiatives or attempts that impacted DC synergies within the local context. The timeline shown in Figure 1 was drawn by information retrieved mainly from literature review and the conducted interviews.

The result is a composition of relevant highlights in the DC-phenomenon's history, that enables a longitudinal analysis between different events along a timeline. (e.g. energy tax reduction, successful and unsuccessful synergy attempts, national renewable energy history, business trends, industrial transition...)

The timeline structure was built through Lefebvre's lens, describing a phenomenon divided up in three different periods; construction period, consolidation period and decline period (Lefebvre, 1975). The scope of the study focuses in the description and analysis of the construction and consolidation period of the DC-phenomenon as the decline period has not occurred in northern Sweden context at the time.

Discussion of the results

The DC sector has an interest in establishing in the North, as strategies are tailored to fit their needs in relation to their economic and environmental challenges. As shown in Figure 1 in 2017 there was an unsuccessful attempt in doing synergies; a data center company and a greenhouse vegetable producer built a consortium to reuse the DC waste-heat, but the plan was not realized, as the lack of available electrical power in the location chosen would increase the time-to-market, carrying an investment risk. “Most European data center owners/managers don’t want to commit capital funds to an energy-reduction tactic if the full return on investment isn’t realized in less than two year”, (Garris, 2018). This initiative could have had the potential of being successful if other priorities than economic factors would have been taken into account, by analyzing the value of waste-heat through different cost-opportunity scenario giving special attention to some social and environmental questions: How many jobs would this create? Would this improve the DC company’s Corporate Social Responsibility? How would this contribute to the development of other vulnerable sectors in these regions (e.g. horticulture)?

Regional development strategies should be designed with a more holistic perspective, including not only how the DC sector could contribute economically to the regions development but how could it contribute socially as well. DC-phenomenon is a global economic activity gathering in regional clusters (Sassen, 2002) as in the case of the traditional DC clusters in central Europe and as well as in the case of the emerging DC cluster in the Nordics, where the government has a high risk in losing the holistic perspective when creating new policies (e.g. energy tax reduction) pressured by the urge to become competitive in the global DC market. The county council (e.g. Region Norrbotten) in collaboration with the county administration could be given a higher responsibility in serving the local community by enhancing measures that contribute to both social and economic development. Hence, research on how the DC-sector can be better integrated through synergic models inside the national and regional economic system is of high interest for the national and regional governments. There is a need to do more investigations on the possible different synergic scenarios and display the cost-opportunity in relation with the three sustainability aspects; economic, environmental and especially social.

Nowadays, the majority of DCs in the north do not gain any benefit with the waste-heat, therefore it is valuable to consider the opportunities to gain economic benefit while at the same time fulfilling their responsibility of giving back the benefit to the local community (e.g. food self-sufficiency), as this is not done through the energy tax currently. Since 2017, the state subsidized the DC sector with a tax reduction of 97% (Henriksson *et al.*, 2017), playing an important role in the DC-phenomenon attracting DC not just by the renewable and reliable power supply but by the low energy cost. However, this strategy can make the DC investment vulnerable in the long run, for example, future droughts in these regions due to climate change can question the legitimacy of these incentives in the case of future energy shortage. This arises questions as; Is it legitimate to give subsidies to a highly inefficient DC-industry, as more than half of the energy consumed is converted in waste-heat? Should the state give subsidies instead to DC that want to make use of the waste-heat? How can urban planning strategies support then the national/regional strategies in this endeavor?

Meanwhile, some initiatives of DC waste-heat reuse have been successfully implemented, among other countries (US, Canada, Finland), in Sweden, specifically in the South in the city of Stockholm, by planning Data Parks inside the city where the waste-heat is collected, directed inside a PowerStation and plugged into the district heating network, however, this model is not infinitely scalable (Biba, 2017). In fact, there could be challenges to implement this model in Northern Sweden nowadays, as there is already energy surplus due to the waste-heat from the traditional energy intensive industry (metallurgy, pulp and paper) which the district heating network would not need to absorb. Therefore, there is a need to investigate how these “Data Parks” can be not just a cluster of DCs but instead DC integrated with other local sectors/activities in need of the DC waste-heat. Creating multifunctional-DC districts that can reuse the waste-heat directly in a more efficient way could be an alternative, instead of plugging it into the district heating network, which is a process that is currently inefficient, as it requires additional energy to do it (Biba, 2017).

Despite, the effort of some municipalities in Sweden to reuse the DC waste-heat there is a mismatch with some strategies taken in some institutions working at the national level. A “green” label was created in 2019, as shown in Figure 1, in order to encourage the DC companies to have environmental friendly and energy efficient facilities.

This label measures efficiency through the Power Usage Effectiveness (PUE) metrics, which considers the efficient design of the DC building but does not include the Energy Reuse Effectiveness factor (ERE metrics), which measures the amount of waste heat reuse. Another example of mismatch is the development in 2018 of, potentially, the most efficient DC-prototype in the world, located in northern Sweden, Boden, which did not include reuse of waste heat. Even, the development process of the most efficient datacenter in the world could be improved by not only focusing in just PUE metrics, but as well considering ERE metrics (energy reuse metrics) in order to give a more complete view of DC-efficiency and utilizing its full potential. Hence, there is a need to synchronize the top-bottom national strategies with the bottom-up initiatives from municipalities, as in the case of Stockholm being a reference of good practice, in order to encourage municipalities to integrate the DCs in a more efficient and sustainable way inside the city.

Conclusions

Many other countries in the world, like Sweden, are facing changes in its urban metabolism as a consequence of the emerging data center industry. There is a competition for resource investment within each country, among the emerging DC-industry and the already existing industries/sectors. Tailored initiatives as energy tax reduction for the DC industry should be reconsidered, as future scenarios of energy shortage (NordBER, 2015) could question the legitimacy of these economic incentives. The DC industry still has technical challenges on how to reuse the waste-heat since the waste-heat, which is low grade, airborne and therefore hard to transport (Sandberg et al., 2017). There is a need to improve the way efficiency is tackled inside the urban metabolism energy system in regards to the DC sector. These improvements could be done at two levels: first, at a technical level; by considering ERE metrics (Energy Reuse metrics) instead of solely PUE metrics when creating “green labels” as a national strategy to attract DC investors in Sweden as this circular approach contributes to having a complete view of efficiency. This way DC companies have the possibility to design efficient buildings but as well elect a better location in order to minimize energy waste. And secondly, at a policy level: in the case of northern Sweden, the emerging energy intensive sector as DC could support vulnerable sectors, as for example horticulture, in need of heat for greenhouse vegetable production, in order to cope with the cold climate. It is worth considering local community benefits rather than just the national weight gain on global market, by prioritizing synergies with local activities/ sectors that have the highest need in reusing the DC waste-heat. This can contribute to solve sustainable urban development issues (Barles, 2010), as for example, risk of food scarcity, especially in Northern regions where the subarctic climate makes agriculture become energy demanding (need of light and heat). Creating multifunctional-DC districts inside the city, where diverse activities in need of DC waste-heat can be integrated together with the DC building, in order to re-use the waste-heat directly, could be an alternative to current inefficient strategies.

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Rethinking organic waste streams as metabolic drivers for improving urban sustainability and agroecological practices

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Abstract: Restoring the nutrient cycles, and assuming their centrality for sustainable management of agro-environmental resources at local level, are key aspects for amending the metabolic rift that has been historically triggered by the emergence of capitalistic socio-spatial organization, and that is currently reproduced and further deepened under neoliberal urbanization processes. This paper aims to explore how organic waste streams can be reorganized and reconnected with urban and periurban agriculture, enabling the proactive role of farmers and food growers in soil nutrient cycling, and reshaping urban metabolism towards more regenerative and resourceful models. In particular, we look at composting practices as meaningful entry points for inquiring the relations between urban metabolism and agroecological practices. The paper builds on some initial insights offered by the case studies of London and Venice, bringing to light which kind of soil nutrition and land management practices are currently prevailing among food growers in these contexts, which connections are established between food production and food waste, to which extent compost from organic waste is valued (and eventually claimed) as an essential asset for nutrient cycling, how access and control on resources can be facilitated and empowered, and finally how the pattern of urban waste streams can be rethought for enabling place-based metabolic ecologies, considering environmental and social justice issues. Unpacking these aspects allows to understand better how metabolic processes are related to (and embedded into) specific practices of labor located in time and place, and to expand the urban metabolism analytical framework in order to move beyond the ‘black box’ effects from which suffer many quantitative approaches strictly focused on material flows.

Keywords: organic waste, nutrient cycling, resource management, urban metabolism, urban agroecology

Introduction

In this paper we look at ways in which organic waste management, soil keeping, and food production interplay in nutrient cycles, as an entry point to understand and rethink urban metabolism. The inherent unsustainability of the current resource-intensive, exploitative and disposable socio-economic model requires a structural transformation of the ways we provide our basic (and superfluous) needs. The most urgent imperatives we must face are 1) to disrupt the reliance on fossil fuels, and 2) to dismantle the dominant linear paradigm that has been shaping the economic and spatial organization production systems, together with the related urbanization models and the underpinning metabolic processes in the last two centuries, shifting towards circular and

regenerative models where i) resource depletion, pollution, waste and greenhouse gas emissions are minimized, and ii) more equitable access and control over resources are provided.

We assert that an emancipatory and progressive change, able to bring forward both environmental health and social justice, can only be achieved by coupling circular thinking with a wider agroecological and resourceful perspective. This means that it is necessary not only to seek for innovative organizational or technical solutions in order to create integrated circular economies, but also to problematize resource-management issues that are often depoliticized under the dominance of technical argumentations. We must recognize that ways in which (urban) metabolic processes are organized and reproduced, underpinning and shaping the functioning of the cities, are structured by the existing political ecologies of power (Swyngedouw, 2004). Thus, for understanding the very political nature of the metabolic models, we should reposition our analyses into a broader discourse on power relations, that use to play at two levels: the power of man over nature (which is turned into a deeply social process through its perpetual metabolic transformation), and the uneven power relationships within society (resources access and distribution, degree of democratic participation in decision-making processes).

In this paper we try to address the burning necessity of redesigning the linear metabolic structure ruling the agri-food system: conventionally, foodstuffs and nutrients extracted from the rural and periurban environments flow unidirectionally into the urban areas, with a continuous loss of nutrients that are never returned back to the land, but rather end up in solid waste and sewage that tend to be disposed, instead of recycled. In this scheme, urban waste and sewage unceasing accumulation constitutes a problem to be solved, that generates high economic and social costs (the need of organizing a municipal collecting and dumping service, of building infrastructures, of charging the related fees to citizens, and so on). At the same time, the constant nutrients removal is tackled by employing energy-intensive, industrially-produced synthetic fertilizers and other agro-chemicals, that from one side do not compensate the loss of organic matter, and from the other side are contribute to the soil degradation and erosion, as well as to polluting (directly and indirectly) other vital environmental matrixes, such as water and air. This vicious and wasteful pattern not only increases the dependency from fossil fuel-reliant external inputs, but also deepens the divide between agricultural and environmental processes, depriving the material conditions and the located knowledges for keeping the essential ecologies upon which even social reproduction relies. In this sense, the costs of the current metabolic system are broad, wide-ranged, and not only monetarily computable. Instead, we look at urban organic waste as a possible driver for building regenerative, closing-loops metabolic processes, by transforming it in compost (and/or anaerobic digestate) to be used as a soil conditioner or plant fertilizer, restoring the nutrients cycling, while reducing the use of destructive external inputs. Composting and reusing in agriculture the organic fraction of municipal waste is widely recognized as «a sustainable practice for FW recycling» which could be very beneficial for the soil (Cerdeira et al., 2017; Sax et al., 2017).

In our vision, organic waste should be seen not only as a valuable resource to be converted into a re-useful form, but also as a common resource to be mobilized upon the needs, visions and priorities of the local actors directly involved in managing the nutrient cycles. In other words, bringing forward resourcefulness (MacKinnon and Derickson, 2012). Therefore, the reorganization of urban organic waste streams should be consistent with the aspirations and the requirements of farmers and food growers, and should create the conditions for enabling their proactive role in implementing circular metabolism under sustainable and fair conditions. This perspective would also require to decolonize the sphere of urban waste management not only from neoliberal approaches, but also from strictly engineering and technocratic discourses.

Problems and limits in the current soil, nutrients and biowaste management system

There are a number of problematic issues linked to the current linear, industrialized and fossil fuel-dependent management of soil and nutrients: phosphorous peak, soil degradation and erosion, nitrous oxide released from fertilizers. High levels of energy consumption, due to the use of fuels (directly) for powering machineries in the

context of a highly industrialized farming, and (indirectly) for producing the artificially synthesized fertilizers and other agro-chemicals that are largely employed in replacement of agro-ecological internal inputs («industrialized farming consumes 50 times the energy input of traditional agriculture; [...] it has been estimated that 95% of all food products in European countries require the use of oil», Jones et al., 2012); as the crises of 2007-2008 bears witness, this reliance also exposes the whole food system to energy price volatility, further questioning food security. Besides, the massive consumption of energetic sources in agriculture entails a large amount of carbon emissions; the rise in carbon emissions is also connected to the decrease of carbon capture and storage (CCS) linked to the depletion of the organic matter into the soil. According to Montanarella (2002) «the welfare of a population can be linked to fertility and land productivity», and «these health indicators are directly related to the organic matter content of the soils». Not only nutrients, but also organic matter and living organisms are essential components of the soil, from which depends to its health and fertility. The increasing process of soil degradation that is occurring worldwide, and that has been identified as a serious problem to be tackled both at global and European level, depends *inter alia* from the loss of organic matter.

«In the linear food system, a very high proportion of food flows into cities where it is processed or consumed, creating organic waste in the form of discarded food, by-products or sewage. According to Ellen MacArthur Foundation (2019), globally, every year 2,9 billions of tonnes of food are destined for cities, that overall produce 2,8 billions of tonnes of organic waste; only less than 2% of «the valuable nutrients present in these organic resources gets looped back to productive use».

Large-scale, industrialized and centralised systems requires high investments in terms of space, infrastructures, costs of establishment, management and transport (plus associated social hidden costs in terms of environmental externalities). This create a certain rigidity of the system, and a path-dependency. Out-of-town: high waste miles. Besides, even when the recycling processes are highly efficient, they could still be disconnected from the local system, and from ecological processes. Thus, to enable the creation of truly regenerative, virtuous cycles that can maximise social and environmental benefits at local level, circular economy needs to be reframed into a deep metabolic perspective.

Re-cycling organic waste streams: an opportunity for amending the metabolic rift and shifting to regenerative metabolic models

The marginalization of agricultural spaces and practices by neo-liberal urban development (Tornaghi, 2017) is at the base of the reproduction of the metabolic rift occurred with the emergence of the capitalistic economic, social and spatial organization. The metabolic rift has been originally theorized to describe «a rupture in nutrient cycling between town and country», alongside «a rupture in the metabolic relation between humans and nature under capitalism» (Scheider and McMichael, 2012). While acknowledging the wide-ranging and multifaced nature of the ‘rifts’ (Schneider and McMichael, 2010), we believe that restoring the soil nutrient cycles (and recycles) is a crucial and necessary starting point to amend them, and to build new regenerative and resourceful metabolisms.

Considering barely the most common and used biowaste recycling methods, among the numerous existing (a systemic review is shown in LOUISE, 2016 and), composting is the only one that permits to mix and transform both the two main kinds of UBW streams (food and green waste), while vermicomposting and biomethanization

(or anaerobic digestion) fits only for food waste, and mulching¹. it is no more a significant Uonly composting fits for recycling jointly, in the same process, food and green waste; vermicomposting, dehydration. Mulching

The recycling methods that maximise environmental benefits are natural composting, vermicomposting, and mulching with chopped green waste (LOUISE, 2016). In terms of treating capacity and scale, natural composting allows to process up to 2.500 kg of bio-waste annually, while (electro-) mechanized composting techniques are more appropriate for more important amounts: from 10.000 to more than 100.000 kg/y.

Exploring the potential of closing the loops between food waste and food growing: initial insights from London, Brussels and Venice

In the city of London, the is very differentiated and fragmentated. Most of . Since the market of waste management is clearly liberalised, besides the municipal companies, there is a number of big, medium or small operators that work mainly with the commercial businesses, offering collection services that are wide-ranged in terms of sorting schemes, pricing systems (including ‘per bag’ option), provided bins sizes, collection frequency, contract flexibility.

London’s city farms seem to be self-sufficient, relying on their own organic resources without requiring external inputs. Both the farms we have visited and interviewed (Stepney and Spitalfields) consider compost as an essential asset for improving soil quality and supply use to compost important amounts of manure from the many animal they host, piled into a number of traditional aerated composting bays. In Stepney City Farm has also been installed a compost tumbler for food waste, which is

Discussion

The explored case studies shows that choice of the most appropriated method, scale, logistic and arrangements for developing alternative models of UBW recycling depend from the local specificities, varying on the base of the physical, technical, organizational, socio-economical, and cultural environments. Analysis and design should consider those aspects, and place the nutrient cycling within urban contexts, as well as into specific labour practices, situated in time and place.

bringing to light which kind of soil nutrition and land management practices are currently prevailing among food growers in these contexts, which connections are established between food production and food waste, to which extent compost from organic waste is valued (and eventually claimed) as an essential asset for nutrient cycling, how access and control on resources can be facilitated and empowered, and finally how the pattern of urban waste streams can be rethought for enabling place-based metabolic ecologies, considering environmental and social justice issues. Unpacking these aspects allows to understand better how metabolic processes are related to (and embedded into) specific practices of labor located in time and place, and to expand the urban metabolism analytical framework in order to move beyond the ‘black box’ effects from which suffer many quantitative approaches strictly focused on material flows

In the case of Brussels, the presence of bridging organizations who are playing a strong advocacy role, and are mutually engaged in a wide action-research process working on many levels (project experimenting, actor

¹ Here we don’t consider manure (a very rich organic resource, much valued in the past centuries), because it does not represent an available UBW stream nowadays, if not in very negligible part, after the building of the modern sanitary sewer system, from the one side, and the ouster of animals from the city, on the other side.

mobilising and policy lobbying), is proving to be essential not only for building alternative, more ecological and socially-driven ways of managing biowaste, but also for strategizing them. At the same time, they seem to meet an apparently open and fertile policy context, with a public administration that is interested in developing new approaches to waste management, also pushed by a changing external regulative framework (the European package for circular economy, and the limitation to landfill). This may suggest that the attitude and the capacity of acting for change locally are conditioned by the context-specific enabling or disabling conditions (spatial organisation, infrastructures, social capital, economic opportunities, etc.), but also by multilevel political, regulative and cultural settings.

The Italian case study reveals that the legislation, both nationally and locally, is more restrictive, and particularly disabling for alternative, decentralized, socially-innovative models of bio-waste management. Changes at normative level, with special regard to biowaste transportation rules, would simplify Moving food waste on long distances before processing it represents a waste of energy, considering that more than 70% of it is water, and that the solid matter gets considerably shrieked during recycling processes. In the case of Venice, it is particularly inconvenient, due to the logistical constrains and to the transportation costs (linked to the high price of the fuel used for ships): hence processing at least part of the UBW on site would be strategic. Besides, for a low-input, closed-loop agriculture.

In order to the amend the ‘knowledge rift’, recovering knowledges and skills is paramount. In this sense, community composting has a great relevance. In both the cases of London and Bruxelles emerged the role that a programme of ‘master composters’ can have in enhancing knowledges and skills.

Conclusion. Reframing organic waste streams management: from to *nutrient sovereignty*?

- taking care of soil health and productivity;
- contribute to food security;
- re-claiming control over nutrients.

In order to reshape infrastructural systems and social practices around urban waste and composting towards a regenerative, circular model enable metabolic agency, also the metanarratives should be renewed. Brenner and Schmid (2015) point out that contemporary debates on (urban sustainability) are dominated by a «city-centric techno-environmentalism», based on neo-naturalist and neo-positives approaches that advocates for engineering solutions, naturalising (and thus depoliticising) socio-spatial organizations and forms, normalizing also territorial control through «sound management» and «market-oriented governance» of urban life and functioning.

Acknowledgements

Any acknowledgements authors wish to make should be included in a separate headed section at the end of the manuscript but before the list of references.

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Housing, gentrification and
socio-spatial dynamics

Housing policies beyond numbers: a comparative study in Portugal and Italy

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Abstract: The paper analyses how housing is structured in Portugal and Italy, focusing in particular on the recent housing policies. The objectives are: a) discuss the legislative solutions adopted in the last years to solve the housing needs; b) show the epistemological difference for the concept of social housing; c) compare the institutional variations, namely, the relevance of the local, regional and central levels. Despite Portugal and Italy having the same percentage of social housing and common characteristics of Southern Europe countries, we find differences comparing housing policies and how the countries deal with social housing. The methodology is organized into: i) bibliographic review; ii) analysis of the principal statistic data; iii) analysis of the legislation; iv) interviews with public decision-makers. Notwithstanding a wide literature about housing studies in Northern countries and comparing North and South housing policies approaches, few studies focus on the comparison between Southern European countries. For this reason, the research seeks to increase the knowledge about the singularities of the South and thus contributing to the construction of a theoretical approach South-inspired.

Keywords: housing policies, social housing, comparative housing studies, Southern Europe

1. Introduction

The literature about comparative housing studies highlights the existence of a clear difference among Northern and Southern countries in the way they cope with social housing, how is the model of tenure, the welfare regime, the rental system adopted and so on.

The comparison among Northern and Southern European countries is a well-known thread of housing studies, with the intention to display the positive aspects of the Northern model and identify the methodologies that South should follow in order to improve the housing situation in their countries.

Nevertheless, comparative housing studies among Southern European countries are less studied in depth, as seen as “*a semi-peripheral region and not at the fore-front of international interest and discussion*” (Bargelli and Heitkamp, 2017).

Hence the purpose of this research is to increase the scientific debate about Southern European countries and the comparison between them, considering the presence of some relevant examples about the correlation of the fascist-dictatorial regimes with the current neoliberal housing policies (Di Felicianantonio and Aalbers, 2017).

Starting from these reflections, the paper wants to present a study that follows an innovative method to study Southern European countries and which can be resumed in three points:

1. Housing in Southern European countries is examined with a comparative and interdisciplinary approach that does not take in consideration only quantitative aspects but also qualitative ones, combining a mixed methodology among geography, sociology and urban planning;
2. Given the scarcity of international publications about Southern Europe, housing is investigated in-depth in Portugal and Italy instead of comparing with Northern Europe, in order to find out opportunities within for the production of new housing policies;
3. After a deep understanding of housing policies in these countries, we concurred on an approach that we called '*Learning from the South*'¹ which aims to find peculiarities from which started to build innovative approaches for housing in Southern Europe.

According to Kemeny (1992), even if two countries have similar size about housing issues, they could differ from each other for many aspects, detectable if we look deeply inside the country.

In fact, if we only look at the numbers, the countries look very similar because Portugal has 2% and Italy 3% of social housing among all the entire housing stock (Housing Europe, 2017), but if we look beyond the numbers we will find out several differences, and mostly we will understand small emerging characteristics that are not appearing in the big numbers.

Despite the similar numbers of home ownership and social housing, these countries have been following different paths, mostly shaped as a consequence from the socio-historical events and the political decisions. The paper thus discusses how the two countries diverge in the concepts used for housing, the age of housing stock, the topics in discussion nowadays, in order to build a critical and constructive discourse of housing situation in these two countries.

The structure of the paper is organized in:

1. The next section includes the theoretical framework and the methodological issues in housing comparative studies that permit to frame our empirical work in the literature review about Southern Europe and the “schools” of comparative housing studies;

¹ Boaventura de Sousa Santos (2016) used the expression '*learning from the South*' to justify the building of a general theoretical literature which permits to extrapolate patterns recognized within countries in exam and to start from them.

2. The third and fourth chapters are the parts related to the study of the single countries, Italy and Portugal, which explain the concepts used for social housing, a brief summary of housing policies with a focus on the contemporary issues at national level.
3. The last chapter is dedicated to the comparison of the countries especially showing the differences on the two countries, using international and national statistical data, literature review and interviews. Therefore, here we stress the link among political levels to understand the various actors and different forms of access present in both countries.

2. Theoretical framework and methodological issues in housing comparative studies

Housing studies are common linked with welfare studies, because in the industrialized societies the State principally supports (or should support) who is in precarious and disadvantaged conditions. This kind of approach is called Welfare State and it aims to reduce social inequalities and to guarantee social rights and services, such as health care, public education, retirement pensions and housing.

If on one hand housing should be identified by welfare state, on the other hand it is a mechanism affected by unstable market rules making it the *“fourth wobbly pillar of welfare”* (Torgesen, 1987). As opposed to other areas of welfare (education, health, work, retirement pensions), social housing is not supposed on the universalistic system of public provision but is addressed for a minority and after selection controls, determining his shaky role in public policies (Kemeny, 1992).

Before displaying our empirical work about the comparison of the two countries, it is necessary to frame the topic in the political studies as well as in housing studies.

According to Landman (2003), comparing many countries would lead to a high level of abstraction for focusing on general dimension of macro-social variations. On the contrary, single-country studies permit to distinguish characteristics in depth rather than an analytic relation among the variables. In fact, what we expect from this study is more than a mere reading of graphs and tables, but a profound understanding of the principal features and the current housing situation in the two countries.

According to Kemeny and Lowe (1998), different approaches of comparative housing studies have become relevant from the last decades of twentieth century and still remaining applicable: the first one is the universalistic approach that sees countries submitted to global imperatives of the neo-liberal transformation of cities such as capitalistic logics, market failures, structural privatization and so on; the second one is the particularistic approach that sees each country as unique one, giving thus more strength to the empirically evidence in exchange of a theoretical part less developed; the last one is part of middle range theory that identifies a middle way between particular and universal ones and it

seems the most reasonable to understand all the factors that influence both countries, placing them in the European housing studies as well as finding peculiarities of the single country.²

According to Allen *et al.* (2004) the principal traits of the Southern European countries that allow them to be combined in a cluster are:

- High levels of home ownership and low percentage of social housing;
- High levels of second homes and holiday homes;
- The important role of the '*extended family*' for the supply of housing for the relatives;
- Largeness of self-promotion and self-production as crucial factors of home ownership.

The concepts of the 'extended family' (also defined with the Italian term *parentela*) is expressed in preserving the property at all costs and in providing autonomously housing to its members through the self-promotion or self-construction. This expresses how strong is the role of the family in these countries, not as a passive beneficiary of welfare policies but with an active role for the well-being of the households, representing one of the providers for the access to housing.

The State tends to take advantage of this configuration, encouraging policies of tax reliefs for the access to home ownership and supporting a model of '*public action*' (less state intervention on social housing sector, large private rented sector, weakness on land use control systems and so on).

The southern welfare system is influenced by others factors, as the link between formal and informal labour market, in which the over-protected workers have plenty of benefits (the virtually impossibility of losing their jobs, good retirement pensions, etc.), being able to easily access to home loans and the under-protected are precarious workers with very small or no social guarantees at all.

On this line, other studies explain the relation between residential property and the social security system, called as a '*real big trade*' (Castles and Ferrera, 1996), because homeowners prefer to guarantee their safety in old age buying a house since low pensions do not propitiate the payment of renting.

Nevertheless, nowadays the Mediterranean model is gradually moving in other direction due to the consequences of crisis (job precariousness, geographical mobility, the scarcity of public resources and so on). Each country is developing different approaches to cope with these issues, sometimes displaying successful results on small and local experiments. However, the general root seems to offer

² The idea of Southern Europe or Mediterranean countries gathers the cluster including Portugal, Spain, Italy and Greece, or else the countries analysed in the literature about comparative housing studies in Southern Countries.

resources to families instead of providing a product, to enlarge the public-private partnerships of public assets or public functions and strengthen the privatization of public housing stock.

The analysis of the literature review helped to build a ‘South-inspired’ theoretical approach, additionally supported by the bibliographic review about the study in-depth of the two countries. The methodology used also adds the analysis of the principal statistic data (e.g. dimension and age of the public housing stock, owner occupied houses and unoccupied houses etc.) and the recent legislation as well as interviews with public decision-makers.³

About the methodological issues on housing studies, it is also important to stress the possible ‘*conceptual and methodological traps*’. According to Baptista (2001), the analysis of housing policies is dependent on data produced by public bodies, which can create propagandistic interpretations to legitimize the options taken. Critical analysis, multidisciplinary, cross-referencing and multiple validation of data could help to support adequately any work about it.

Other methodological issue that comes up in housing studies is the definition of social housing, which it becomes crucially especially when we are comparing two or more countries. According to Hansson and Lundgren (2018), the term social housing is a “*a term with no agreed-upon meaning*” and “*the lack of a definition leads to misunderstandings, rather than constructive dialogue on the advantages and disadvantages of such a system*”. In order to achieve a general definition of social housing, the authors established a set of criteria. The first key criterion analyses to whom is social housing addressed (i.e. a target group), identified in “*low-income households*” or “*households with difficulties in finding housing*” with limited financial resources and/or a fragile position. The second criterion mentions the form of tenure of social housing, which it is mostly the rental systems, even if sometimes appears the accession to ownership. The type of providers embodies the third criterion, which is commonly the State but sometimes we find other actors (non-profit and private for-profit), publicly subsidized on three forms: regulation, subsidies and direct provision.

Even though the text gives a clarification of what social housing is, the lack of defining a unique term of social housing across Europe remains. Each country makes own definition referring to funding arrangement, providers and beneficiaries, as well as the housing regime adopted and the political and cultural circumstances (Braga and Palvarini, 2013; Housing Europe, 2017).

³ All translations of documents, texts and interviews from Italian or Portuguese to English are ours.

Therefore, given the absence of a single, uniformed and standardized definition of ‘social housing’, it becomes necessary to create a convenient sort of ‘vocabulary for housing’, focused on the two analysed countries, which will be presented at the beginning of each chapter about the country.

3. Social housing in Portugal

In Portugal it is common to use the concept of ‘social housing’ (*habitação social*) to refer to housing built with the support of the public administration. This situation stems from the conceptual legitimacy given by the legislation in 1983 when we find the definition of social housing⁴:

"Social housing shall be deemed to be the controlled cost housings (habitações de custos controlados) promoted by the City Councils, housing cooperatives, Private Institutions of Social Solidarity (Instituições Particulares de Solidariedade Social) and private initiative with the support of the State and intended for sale or rent under the conditions established in this diploma".

Until 1983, in Portugal there was no legal definition of ‘social housing’, since up to this date social housing assumed various designations, such as “casas económicas”, “casas de renda económica”, “casas de renda limitada”, among others. In addition to this, up to the beginning of the 1980s, public bodies with responsibilities in the construction of social housing did not always have consensual understandings about the cost, dimension and the quality of this kind of houses.

In 1988,⁵ the concept of ‘social housing’ (*habitação social*) was replaced in the legislation by the concept of ‘controlled cost housing’ (*habitação de custos controlados*), a decision that was maintained later in 1997⁶ and also recently in 2019⁷. Several factors contributed to this alteration, including the creation of a housing program designated ‘controlled cost housing’, destined to private companies and housing cooperative (*i.e.* non-profit and private for-profit). Additionally, it contributed to overcoming the stigmatization that the concept of ‘social housing’ had gained within the Portuguese society as usually associated with disqualified urban spaces. At the same time, the change from ‘social housing’ to ‘controlled cost housing’ was intended to disassociate the idea of social

⁴ Ordinance (*Portaria*) n. 580/83 of 17 May.

⁵ Ordinance n. 828/88 of 29 December.

⁶ Ordinance n. 500/97 of 21 July.

⁷ Ordinance n. 65/2019 of 2 February.

housing from only public ownership and to approach other concepts such as affordable housing, in line with the European common trend.⁸

Nowadays, the term ‘social housing’ is usually used in the scientific, political and popular discourse to refer to the only public housing, and the term ‘controlled cost housings’ to refer to housing built with public support from private companies, private institutions of social solidarity and housing cooperatives (*i.e.* non-profit and private for-profit).

The first social housing policy in Portugal dates back to 1918. The development of social housing policies in Portugal was recently studied, namely by Antunes (2018), which analyses the policies of social housing, rent and urban rehabilitation since 1820, and Agarez (2018), which analyzes social housing policies published since 1918. Based on the Antunes (1918) study, the *history of housing policies* in Portugal is briefly established:

- *1910-1926*: period of the First Portuguese Republic, in which the first social housing policies were created. The housing policies created at 1918⁹ and 1919¹⁰ were extremely unsuccessful and did nothing to alleviate the problem of housing.
- *1926-1974*: period of the Portuguese dictatorship (*Estado Novo*), in which a coherent housing strategy was created. It was in this period that was created the first social housing policy with impact in urban spaces (*casas económicas*, at 1933¹¹ – ownership model), and also the first housing policies related simultaneously with housing and urban planning (*casas de renda económica*, at 1945¹², and *casas de renda limitada*, at 1947¹³ – rent model).

Despite many housing policies enacted by *Estado Novo*, the housing construction with public support was always insufficient and answered particularly to the social segment that the corporatist regime intended to satisfy. In general, the housing policies were marked by the traditionalist view of the dictatorship, especially in the first half of the regime, so social housing policies served to support the dictatorship itself.

- *1974-present*: period of democracy characterised by several phases. The first period (1974-1976) happened during the process of post-revolution¹⁴, where the Provisional Governments

⁸ Remember that Portugal joined the European Economic Community at 1986.

⁹ Decree n. 4137, of 25 April 1918.

¹⁰ Decree n. 5397 and Decree n. 5397 of April 1919.

¹¹ Decree-Law n. 23052, of 23 September 1933.

¹² Law n. 2007, of 7 May 1945.

¹³ Decree-Law n. 36 212, of 7 April 1947.

¹⁴ The dictatorship ended with the *Carnation Revolution* on 25th of April 1974.

chose progressive and left-wing policies, usually associated with direct and participatory democracy, as the case of *Serviço de Apoio Ambulatório Local* (mainly know as SAAL)¹⁵.

In the following decades (1976-2000), the Portuguese Governments improved the initiative of private companies, housing cooperatives and public housing under a joint of housing policies promulgated without strategy, continuity and systematization. On one hand the housing cooperatives and the private companies (programme called ‘*habitação de custos controlados*’) were only successful during the 1980s and 1990s, especially aimed to the middle class. On the other hand, the public promotion was only visible at 1990s, after the creation of the Special Programme for Rehousing (*Programa Especial de Realojamento* [PER]) in 1993, that has built about 35.000 public housing dwellings in Lisbon and Porto metropolitan areas to rehousing the population who lived in slums.

Table 1 shows how much the Portuguese State spent for all the housing programs between 1987 and 2011. As we can see, the social housing programs only used 22,4% of the total amount, namely 22,1% to public housing programs and 0,3% to controlled cost housings program (supporting housing cooperatives and private companies – non-profit and private for-profit). Furthermore, we can stress the most important housing policy as the ‘mortgage interest rate subsidy’, which allowed the acquisition of home ownership by the middle class. That means that in this period the State preferred support directly the Portuguese families than invest in social housing.

Programs	Budgeted		Used	
	(€)	%	(€)	%
Mortgage interest rate subsidy	6.672.508.894	65,9	7.046.685.145	73,3
Special Programme for Rehousing ^{1,3}	1.814.981.359	17,9	1.353.426.012	14,1
Rent programs	739.632.917	7,3	803.874.566	8,4
Urban Rehabilitation	392.242.730	3,9	166.594.609	1,7
Social Security	37.558.163	0,4	29.223.491	0,3
Other rehousing programs ^{1,3}	426.216.498	4,2	193.944.373	2
Controlled cost housing ^{2,3}	35.205.155	0,3	13.868.736	0,1
TOTAL	10.118.345.719		9.607.616.934	

¹ Support to public / municipal housing.

² Support to housing cooperatives, private companies, etc.

³ Social housing.

Table 1 – National budget to housing policies between 1987-2011. IHRU (2015), Resolution of the Council of Ministers n. 48/2015.

It’s also important to stress that a substantial part of the social housing stock was sold right after the construction, mainly in the 1980s and 1990s by the housing cooperatives and private companies that

¹⁵ Created in August 1974.

built social housing with financial / public support. In Portugal there are almost no housing cooperatives using the renting model and that means they sold the houses right after the construction, embracing in this way the ownership model.

Today almost the entire stock of social housing in Portugal is public housing and the public bodies own approximately 120.000 dwellings, most of them localized in Lisbon and Porto metropolitan areas. This situation displays why in Portugal ‘social housing’ (*habitação social*), ‘controlled cost housing’ (*habitações de custos controlados*) and public housing (*habitação pública*) cause so many misunderstandings and can be treated in practise almost as synonymous.

Nowadays, housing in Portugal is under pressure, especially in urban areas, such as Lisbon and Porto. On this line, the central housing institution (*Instituto da Habitação e da Reabilitação Urbana* [IHRU]), conducted a national study presented in 2018, which identified 25.000 families urgently needing new housing. In order to cope with this situation, the current Government has recently prepared a housing programs reform package, usually referred to as the New Generation of Housing Policies (*Nova Geração de Política de Habitação*), which is currently taking the first steps.

Principal actors and distribution of competences of the public housing in Portugal			
	State	Municipality	IHRU (central body)
Assignment	<ul style="list-style-type: none"> - Guarantee the uniformity of the legislation. - Can create social housing policies. 	<ul style="list-style-type: none"> - Can use the social housing policies created by central government. - Can create social housing programs. - Fix rules to public / municipal housing (incomes, priority criteria); - Buildings and public / municipal dwellings maintenance; - Manage the lists to public housing. 	<ul style="list-style-type: none"> - Can use the social housing policies created by central government. - Buildings and public dwellings maintenance;
Rents		<ul style="list-style-type: none"> - Definition criteria to public / municipal housing (standard regulations) 	
Management		<ul style="list-style-type: none"> - Management regulations and rent contracts of public / municipal housing. 	<ul style="list-style-type: none"> - Management regulations and rent contracts of public housing.
Users monitoring		<ul style="list-style-type: none"> - Regular verification of incomes. 	<ul style="list-style-type: none"> - Regular verification of incomes.
Decay and revocation		<ul style="list-style-type: none"> - Verify the housing situation. 	
Sales	<ul style="list-style-type: none"> - Define requirements to sell public housing. 	<ul style="list-style-type: none"> - Can sale public / municipal housing. 	<ul style="list-style-type: none"> - Can sale public housing.

Table 2 – Table of actors and their competences about the social housing in Portugal.

In the Portuguese case, social housing policies have been dominated by the central power. The most important policies were created by the Governments, which later proceeded to the construction of social housing with the collaboration of the local power, housing cooperatives or private initiative (Table 2).

In the absence of autonomous regions in Portugal (with the exception of Madeira and Azores), the political articulation is made directly between the central government and the local authorities (308 municipalities). At the same time, the local authorities have recently begun to create housing programs, especially in Lisbon and Porto municipalities, making use of the municipal budget.

4. Social housing in Italy

In Italy the common and currently used concept is '*edilizia residenziale pubblica*', which can be the translation of '*public housing*'. This represents the largest part of the current social housing stock, owned and managed by the former *Istituti Autonomi per le Case Popolari*¹⁶ (IACP), public bodies that provide housing for low-income families registered in municipal lists.

The term comes from Law n. 865 of 1971, which has supplanted the previous one (*Edilizia Economica e Popolare*) and has determined the State intervention in three areas which are identified by the types of subsidies financed for the provision of housing: subsidized, agreed and assisted.

On the other hand, the term 'social housing' has been recently defined with the Italian concept '*alloggio sociale*'. It appears for the first time in the National Law of 2008¹⁷ which defines:

“Social Housing [Alloggio Sociale] is the real estate unit used for residential use in a permanent lease that carries out the function of general interest, in safeguarding social cohesion, to reduce the housing problems of disadvantaged individuals and households, who are not able to access the rental of housing in the free market”.

The dwellings built under this concept are mainly promoted by private or third sector companies through public contributions¹⁸ with the goal of being rented or sold at affordable prices and achieving a social mix as well as 'financial mix', among promoters, funding, tools and practices.

¹⁶ We indicated 'former' because the Italian public housing agencies, created in 1903 with the name of IACP, have now different nomenclatures based on regional autonomy. This is the result of a long process of decentralization since the 1970s but only concluded with the Constitutional Reform in 2001.

¹⁷ Decree 22 April 2008 of the Ministry of Infrastructure and then Law n. 133/2008.

¹⁸ According to Lungarella (2010), the ERS does not exist without a direct or indirect public contribution.

The target is the ‘gray band’, namely the lower-middle class in economic difficulty for the loss of work, marital separation and so on. In this sense, the provided solutions are set to fight temporary problems under provisional conditions¹⁹. Nevertheless, the examples of this new concept are intended as the unique ‘social housing’ presented in Italy, although it is formally incorrect because we should also consider the public housing examples as part of the entire social housing stock.

According to FEDERCASA²⁰ (2015), the Italian public housing companies own about 750.000 dwellings, distributed differently between North and South, since the majority is owned in the North.

- *1903-1949*: the beginning of social housing can be traced back to the early years of the XX century, when in 1903 was created the IACP²¹ as a public institution to build and manage the public housing stock at a municipal level, even though managed by the central government. During the fascist dictatorship, an important legislative text²² was created about indications for the construction of public or economic houses and for the public actors involved.
- *1949-1980*: after the end of dictatorship and the Second World War, in 1949 a relevant political instrument for housing demand was created (the INA-CASA Plan²³) to respond to massive migratory processes and the strong demand for homes and also the employment growth to revive the economy. The state’s total investment in public housing was considerable while encouraging indirect public intervention to support home ownership²⁴. In 1963 the INA-CASA Plan ended and a new instrument was created (GESCAL fund²⁵) that guaranteed a continuous cash flow to housing, generated by the contributions from both

¹⁹ Some of these, as temporary residences in Turin, are predicted for a time even up 18 months.

²⁰ FEDERCASA (*Federazione Italiana per le Case Popolari e l’Edilizia Sociale*) is an association that represents the public agencies entitled to manage public dwellings. It was interviewed for this study in the last February 2019.

²¹ IACP is the acronym of *Istituto Autonomo per le Case Popolari*, as explained above.

²² *Testo unico sull’edilizia economica e popolare*, R.D. n.1165, of 28 April 1938

²³ Law n. 43/1949, of 28 February, which takes its name to the Minister of Labor and Social Security (*Amintore Fanfani*).

²⁴ According to Balchin (1996) a total of 800.000 social-rented dwellings were built between 1951 and 1970 and 850.000 dwellings were privatised in the same period.

²⁵ GESCAL was the acronym of *GESione CAse per i Lavoratori* (Management Houses for Workers) and was a fund destined to the construction and the assignment of houses to workers, disciplined by the law n. 60 of 14 February 1963.

workers and employers. In the 70s started the decentralization process from the State to the Regions²⁶.

- *1980-2008*: 1980 marked a turning point (Padovani *apud* Balchin, 1996:198) for the decline, in opposition of the three previous decades, in the number of new houses built; the drop of withdrawals from the housing stocks; the statistical increase of second homes. The 90s was the period of regeneration policies (called Complex Programs or Integrated Programmes) that seek to co-ordinate initiatives and investments, both public and private in urban regeneration projects. In 1993 the law of privatisation of public housing was approved to cope with the deterioration of the public stock. At the beginning of 2000s the IACPs were transformed into public agencies with independent legal status, finally concluding the decentralization process started in the 70s. In 1998 the GESCAL fund was abolished, and rents were liberalized to revitalize the market, even if the reform did not produce specific results, on the contrary, the number of families living in rent reduced.
- *2008-2019*: after years of silence, a revival for housing policies comes out for many reasons: firstly, in this period the disposable incomes of Italian families have never grown so slowly over the last 60 years; secondly, the housing prices have reached levels never seen before (Baldini, 2010:166-167). With a new regulatory package approved in 2008²⁷, new operators (private and non-profit) were added in the social housing scene, along with the creation of an integrated real estate fund, set up for a national fund²⁸ and a network of funds for financing social housing (Integrated Fund System - SIF)²⁹ (Poggio and Boreiko, 2017).

Italy is an example of multi-level housing policies (Bianchi, 2017:74); the competence of ERP is indeed distributed between State, Regions and Municipalities, as shown in Table 3.

²⁶ The law n. 865 of 1971 (*Norme per l'edilizia residenziale pubblica* or *Legge per la casa*) establishes the transfer of many competencies from State to Regions, legislating about the discipline for assignments and the organization of public entities in the sector of public housing. Lately the Decree of President of Republic n. 616 of 1977, especially with the art. 93 comma 3, and law 457/1978 transferring the functions related to IACP from State to Regions. Nevertheless, the transfer will become effective only with the constitution reform, Constitutional law n. 3 of 2001 within the modify of the Title V of the Italian Constitution.

²⁷ Decree-Law 112/2008 – Law 133/2008.

²⁸ The main shareholder is *Cassa Depositi e Prestiti S.p.A. (CDP)* which is an Italian financial institution, controlled about 83% by the Ministry of the Economy and Finance and about 16% by various banking foundations.

²⁹ The SIF is based on public-private funding, with the main shareholder is *Cassa Depositi e Prestiti*, aiming at developing the affordable housing for lower-middle families, resulting from the National Housing Plan of Berlusconi government.

Principal actors and distribution of competences of the public housing in Italy				
	State	Region	Municipality	IACP (or how called locally)
Assignment	Guarantee the uniformity of the assignment criteria	Fix rules with regional law (incomes, priority criteria)	Issue the announcement and manage the lists	Receive of those entitled and priority. Assign the fees
Rents		Regional law (definition criteria)		Apply the fees
Management		Regional law (standard regulations)		Management regulations and rent contracts
Users monitoring		Regional law	Verification at the moment to assign	Biennial verification of incomes
Decay and revocation		Fix criteria (e.g. incomes.)	Provide for the decay/revocation	Report to the municipality the illegal situations. Provide for the evictions if required from municipality
Sales	Define prices and requirements of those entitled (L. 560/1993)	Eventual regional law for sales housing. Approve the sales plans		Draw up the sales plans. Apply the normative. Stipulate the purchase acts

Table 3 – Table of actors and their competences about the public housing in Italy. Source: Federcasa, 2015.

Due to the transfer of jurisdiction from the Central State to the Regions, the boundaries between exclusive and competing competences are subtle and often object of controversy. According to Baldini (2010:162) the Constitutional Court has expressed several times and has articulated public housing on three levels³⁰:

- The State has the responsibility of the determination of the minimum housing offer destined to satisfy the needs of the most disadvantaged classes;
- The competence of planning ERP settlements is belonging to the concurrent matter “territorial government”, which is shared between the State and the Regions;
- The management of the public stock refers to the Regions through the public housing agencies. With the decentralization, the nomenclatures of the agencies have changed: in some Regions they are still called IACP, in others they changed names as non-economic public bodies or economic public bodies with the obligation of balance, and only in few cases they are a sort of joint stock company³¹.

³⁰ With the ruling 94/2007.

³¹ As the General Director of FEDERCASA reported in the interview.

5. Comparative analysis and final reflections

About the vocabulary of housing

As we have seen previously, in Italy the concept of social housing created in 2008 has added new characteristics to the public housing, but has concurrently generated a confusion and different interpretations throughout the country. According to Tosi (2016:92), in addition to '*edilizia residenziale pubblica*', some people use '*alloggio sociale*', others '*social housing*' or '*housing sociale*', few say '*edilizia residenziale sociale*' (ERS) or '*edilizia privata sociale*' (EPS).

However, these terms are part of the Italian social housing scenario that is actually divided into two parts: one older, public and larger, and the other recent, private (profit or non-profit) and residual.

Regarding to the vocabulary of housing, we can stress the shift of the notion from the “negative definition of public housing”³² towards another positive, “*like a catharsis process*” (Lungarella, 2010). This shift could be also understood as an extension of the meaning, an “*extensive social*” as Tosi (2016: 87) states, which broadens the issue to a wider catchment area, while supplying practices and financing models already consolidated in the European context.

On the contrary in Portugal the concept of the ‘social housing’ (*habitação social*) is older (from 1983) and it was changed at 1988 into one similar to the affordable housing (‘controlled cost housing’ [*habitação de custos controlados*]), even if it has generated some misunderstandings – even between the experts.

Although in Portugal ‘social housing’ is formally called ‘controlled cost housing’, the expression ‘social housing’ is still used to refer to housing built with public support by housing cooperatives, private companies and by public bodies as the municipalities. However, the social housing built with public support by the third sector and private companies (profit and non-profit) is usually referred as ‘controlled cost housings’; while public housing is termed as ‘social housing’. At the same time, wide public housing ensembles are usually known as social neighbourhoods (*bairros sociais*), facing issues of stigma and prejudice.

Recently, the New Generation of Housing Policies package proposed several housing policies more closer to the affordable housing. This was especially visible recently in 2019 with the last legal

³² Over the decades, public housing has had a higher stigmatized perception and a prejudiced definition of the targeted model of the inhabitants who use them, leading to phenomena of social as well as territorial segregation.

change to the concept of *habitação de custos controlados*, with a more flexible understanding and action.

To conclude, Portugal seems to be more in step with times considering the use of the concept of affordable housing which instead has not yet entered in the Italian vocabulary of housing. Even though, both Portugal and Italy's concepts of social housing seek to be in line with the European and global trends (flexibility, new governance, access to non-public resources, empowerment of civil society, etc.), there are still misunderstandings about which concept to use in the political, academic and common language.

The Constitution

The inclusion of the 'right to housing' in the Constitution represents a relevant difference among the two countries because Portugal has an article entirely dedicated to "*Housing and urbanism*", as opposed to Italy. In Portugal, the 'right to housing' is enshrined in the Constitution of the Portuguese Republic (1976) in the article 65, referring:

"Everyone has the right for himself and his family to have an adequately sized dwelling that provides hygienic and comfortable conditions and preserves personal and family privacy".

The Portuguese Constitution not only enshrines the 'right to housing' in the Art. 65 as it directly refers to the support to "*housing cooperatives*", "*local communities*", and "*self-construction*", between other ideas. This Constitutional consecration is usually taken as progressive and avant-garde in the political perspective (Farha, 2017), even if several authors bring forward a very critical view of how the right to housing has not been respected by governments.

In Italy the 'right to housing' is not explicitly considered in the Constitution of the Italian Republic (1948³³) but the article 47 refers to the encouragement of the home ownership:

"The Republic promotes the access of the popular savings to the home ownership, to the direct cultivating ownership and to the direct and indirect investment of stock in the great productive complexes of the country".

Therefore, we can see a distinction on the value given to the 'right to housing': while in Portugal the right to the adequate housing for families is defined regardless of the providers, in Italy it would seem the access to housing is only considered within the home ownership as a form promoted by the State.

³³ Promulgated on 27th December of 1947 and became effective on the 1st January of 1948.

Governance and the management

The framework of actors and competencies is truly different among the two countries because in Portugal the governance is between State (Government and central public body - IHRU) and municipalities and in Italy among State, Regions, Municipalities and public agencies.

If in Italy the State has very limited competencies on housing due to the decentralization to Regions, in Portugal the State has the principle role for housing policies while municipalities simply perform. Nevertheless, the multi-level governance in Italy doesn't work since creating inequalities and territorial differences in terms of social performances and answers to the housing problems.

The Italian model does not work for: i) the scarce management, ii) the lack of economic resources, iii) to satisfy a very marginal set of families leaving out lots of people in growing waiting lists. Furthermore, the ex-IACPs are victims of a continuous replacement of directors, put by political bodies, which is not favourable to the long-term growth perspectives of the public bodies. Additionally, they have to maintain and manage an old stock, mostly build 40 or 50 years ago, basically without financial instruments³⁴. Moreover, the reduction of public resources in the 90s and the alienations of the stock led to the paralysis of the offer of social housing.

On the other hand, in Portugal there is 2% of social housing, almost all public. Of these 2%, 1,8% is municipal housing and 0,2% public housing owned by IHRU (central public agency). The management and maintenance of these 120,000 public dwellings faces a diverse scenario, depending on the effort of each municipality. For example, IHRU it's generally not known for making good maintenance of the buildings and the same happens with several municipalities. In the biggest municipalities with more municipal housing, it's common the management be ensured by municipal companies and not by the municipality directly, like happens in Lisbon, Porto, Cascais, etc.

About the dwellings

According to ISTAT (2011) the Italian housing stock was principally built in the decades 1960-1980, in the 90s the percentage of dwellings built was less than half. In Portugal we see a different trend because in the 80s and 90s Portugal had been built more than in other European countries.

³⁴ To explain this situation, the General Director of FEDERCASA reported in the interview: “*we fry the fish with water*”. This is a typical expression that comes from Naples (*friggere il pesce con l'acqua*), which means to get good results even in difficult situations and without proper tools.

	Period of construction			
	Before 1946	1946-1980	1981-2000	2001 onwards
EU-28	22,3	44,1	22,1	9,8
Italy	20,7	51,4	19,8	7,9
Portugal	10,7	37,1	36	16,3

Table 4 – Period of construction – national and EU average.

Another difference concerns the unoccupied dwellings. As happens in many Southern European countries, the presence of second home for tourist reasons is very common along the coast. The unoccupied dwellings in Portugal are considerably higher than Italy, especially because many families living in Porto and Lisbon metropolitan areas keep the home ownership in the countryside to go in the holidays. As the Eurostat data shows³⁵ (2011), the majority of the Portuguese NUTS3 as more than 30% of unoccupied dwellings, while in Italy the average does not exceed the 30%.

After the comparison analysis of some data, we can state that our initial hypothesis is confirmed. Beyond the similar percentage of low social rental housing, high home ownership and the similarities of the Mediterranean model explained in the theoretical chapter, we have demonstrated that an in-dept study of the single countries can show a different scenario. In fact, we have found some visible dissimilarities in the vocabulary of housing, in the framework of actors and competencies, in the value given to the right to housing in the Constitution as well as quantitative data about the age of dwelling, the empty dwellings and the resident home owners.

We are certainly aware that this study represents a first effort to compare social housing policies in Italy and Portugal, that is still in progress in our researches.

Nevertheless, our purpose was to stress the importance of this kind of studies that help to develop a “South-inspired” theoretical approach in opposition to the only “North-inspired” one. This means to look beyond the numbers and discover features that we actually did not expect to find in a general framework and with which it is possible to make a critical discourse on existed housing policies as well as proactive one to propose innovative trajectories or to develop emerging practices.

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³⁵ <https://bit.ly/2QxpYL7>, accessed at 30 May 2019.

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High-density Living in Hong Kong from the Perspective of Teenagers

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Abstract: Being one of the world's densest cities and the most expensive to buy a home, Hong Kong is infamous for inadequate housing and small living spaces. Living under such crowded conditions is often accused of aggravating stress and social problems. However, the effect of high living density on juveniles remain ambiguous. Using a 2017 survey of secondary school students in Hong Kong, this paper examines residential crowding and satisfaction experienced by juveniles with respect to objective densities of their homes measured by number of persons per room. The results suggest for juveniles in Hong Kong high living densities do not necessarily lead to the perception of crowding. Moreover, residential crowding, if perceived by the juveniles, is not directly translated into dissatisfaction. The variables which explain the residential (dis)satisfaction of juveniles are the composition and ethnic and socioeconomic backgrounds of their families. The paper argues that family composition and ethnic and socioeconomic backgrounds contribute to juveniles' varying degrees of tolerance to high living density, which lead to different levels of perceived crowding. The effect of perceived crowding on residential satisfaction is further mediated by the interactions of family members and the overall quality of family life.

Keywords: residential satisfaction, juveniles, housing crowding, family background

Introduction

The high-density living environment in Hong Kong caught the attention of American statistician and planner Robert C. Schmitt half a century ago. "The Colony of Hong Kong is one of the most densely populated territories in the world. Over-all density is 13 persons per gross acre, and individual neighborhoods exceed 2,800. Residential floor space averages 155 square feet per household or 32 square feet per occupant. Unlike congested areas in the United States, however, Hong Kong has relatively low death, disease, and social disorganization rates. These data suggest that density standards recommended by American planners may be unrealistic as requirements for public health and social welfare." (Schmitt, 1963: 210). Today, both the dark and bright sides of the situation in Hong Kong are still present. Schmitt's question on whether high density is harmful to health remains unraveled. Despite Hong Kong's extremely high density, if we look at social order, life expectancy, and mental health, the city is doing much better than many other places. Hong Kong's suicide rate is lower than the United States, the European Union average and certainly Japan where socioeconomic development levels are comparable to Hong Kong, but living densities are considerably lower. Given all this evidence, how can we make sense of Hong Kong's situation? This is a question puzzled Schmitt half a century ago. It is still puzzling us today.

At the same time, Hong Kong is also one of the most expensive cities to live in. For eight years in a row, an international survey of nearly 300 cities has named Hong Kong the world's least affordable housing market. Many Hong Kong citizens have been priced out of the housing market, including young people forced to live with their parents. Their discontent is said to have contributed to recent street protests like the 2014 Umbrella Movement. Young people in Hong Kong are increasingly dissatisfied with inadequate housing and small spaces. With housing prices rising even higher, it is extremely difficult for the young people to obtain a basic living space, let alone developing their housing career. The government of Hong Kong has recognized the housing problem as the most important on both the political and urban development agendas.

Ample space is not always experienced as spaciousness, and high density does not necessarily mean crowding (Tuan, 1977). While the two concepts are related, density is directly measurable and unambiguous, but crowding is intangible and should be understood under specific conditions. Home is the most stable and secure place for humans. Under what conditions density is translated into crowding at home is of great interest and importance. Based on a recent survey, the paper tries to understand how young people in Hong Kong perceive and experience the density of their living environments and how such perceptions contribute to residential (dis)satisfaction.

Conceptualizing density and crowding

Density influences people's behavior, mood, and consequently mental health. We all experience it. Research around the world has found high-density living is harmful to people's mental health, especially that of the children, because their physical and mental states are taking shape. For instance, research in Austria finds there is significant impact of crowding and housing type on children's mental health. Three housing types are examined, detached house, townhouse, and apartment units. Denser housing types are found to be more harmful to children's mental health. For each type, higher density also causes poorer mental health, especially for apartment units (Evans et al., 2002).

By Hong Kong standard, even the type of multi-story apartments in Austria is considered low-density housing. Hong Kong's density is way much higher. While public housing and private housing roughly accommodate 50% of the population respectively, both types of housing are in the form of high-density apartment buildings (Figure 1).



Figure 1. Public (left) and private (right) housing estates in Hong Kong

This level of density is rare in other places. In literature, the condition that is comparable is the density in prison. Research done in prisons in the US found more inmates per cell increases perceived crowding, and consequently increases illness complaints (Cox et al., 1984). In those prisons under investigation, the density is 1 to 6 inmates per cell. Corresponding figures for ordinary families in Hong Kong can be even worse, which will be demonstrated later.

Essentially, there is a distinction between density and the experience of crowding. Density is the physical condition purely in terms of spatial parameters, and crowding is a motivational state aroused through the interaction of spatial, social, and personal factors. Density does not necessarily lead to the experience of crowding. The experience of crowding is also subject to the relationship between people. People with good relationship often find a higher density setting create a more intimate environment that is pleasurable, while for people without social ties or affections, a high-density environment can be unpleasant or even unbearable. On a more general level, how density is perceived also has to do with culture. People with certain cultural backgrounds or in certain cultural contexts perceive density differently.

For the situation at home which is a rather enclosed and stable environment, people's experience of the environment is highly dependent on the relationship between family members. Although higher density is usually perceived as more crowded. Family relationship can moderate the effect of density on perceived crowding. In other words, when one enjoys the intimate relationship with family members, density does not or to a less extent translate into perceived crowding. When family relationship is dreadful, one may feel crowding even when a big house is shared by few people. This is especially the case for children, because they are in a rather passive position in the family and do not command the power to make a change.

Methodology

The first question is how juveniles in Hong Kong perceive their dense living environment and what is the role of family relationship. The hypothesis is density generally predicts perceived crowding, but good family relationship weakens the effect of density on crowding. When family relationship is less gratifying, density will more directly translate into the perception of crowding. To implement the conceptual model statistically, an interaction term is included in the model. If the interaction is significant, the moderation effect of family relationship is detected (Figure 2). The data distinguishes three types of family backgrounds: Hong Kong local families, immigrants from Mainland China, and immigrants from other countries. It is expected the specific cultural background and situation will play a role in these mechanisms.

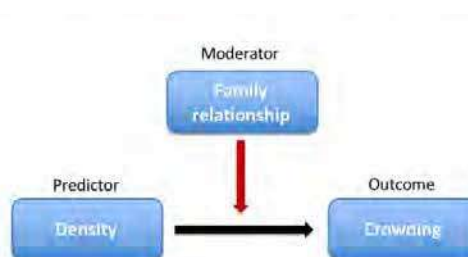


Figure 2. Conceptual moderation model

The second question is in the condition of extremely high density, what factors contribute to residential satisfaction. To identify those factors, a hedonic modelling structure is used to break down residential satisfaction into its constituent characteristics, and then estimate the contributory value of each characteristic. These factors include location, facilities in the neighborhood, size of residence, whether having own space at home, whether like your family and whether like your neighbor, which are aspects that are expected to have effects on the overall housing satisfaction.

To collect data for the proposed analyses, a questionnaire survey was carried out in 9 local middle schools in 2017. A variety of schools were included in terms of their ranking to obtain a representative sample of students of different backgrounds. The age of respondents is about 16 to 17. More than 1000 questionnaires were distributed in class. The response rate was more than 90%, because the teachers set aside time in class and obliged the students to fill in the questionnaires. English questionnaires were provided for non-Chinese students. The final valid sample includes 1213 observations.

Table 1 presents the profile of the sample. The respondents are balanced in gender. Local-born children account for 67%, while 24% were born in mainland China, and 9% were born in other places. Family size varies from 2 to 12 people. The median size is 4. The size of residence varies from 49 sq. ft. to 3000 sq. ft. with a median size of 500 sq. ft. On average, there are two rooms in a home, but many families live in one room and few wealthy families have as many as 8 rooms at home.

Table 1. Profile of the sample

Attribute	Statistics	
Gender	Male	50.7%
	Female	49.3%
Place of birth	Hong Kong	66.8%
	Mainland China	24.4%
	Others	8.8%
Family size	Min	2
	Max	12
	Mean	4.15
	Median	4
Size of residence (sq. ft.)	Min	49
	Max	3000
	Mean	587
	Median	500
Number of rooms	Min	1
	Max	8
	Mean	2.49
	Median	2
Sample size		1213

Considering the students know more accurately about the number of rooms they have at home rather than how many sq. ft there are, the number of persons per room is a more accurate measure of housing density. It is also more widely used in behavioral research. In terms of the types of housing, roughly half of the respondents live in public housing including public rental housing and subsidized

homeownership housing (Figure 3: right). The other half live in private housing. In the most recent census, a smaller percentage of people live in public housing (Figure 3: left), which is understandable because if a family has dependent children, it is prioritized in getting public housing. Consequently, tenants of public housing are overrepresented in the sample, but for families with children, the sample offers a more representative picture.

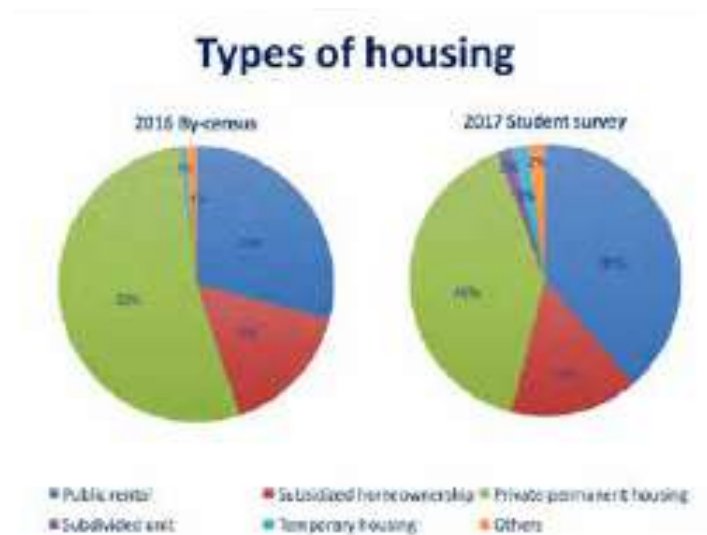
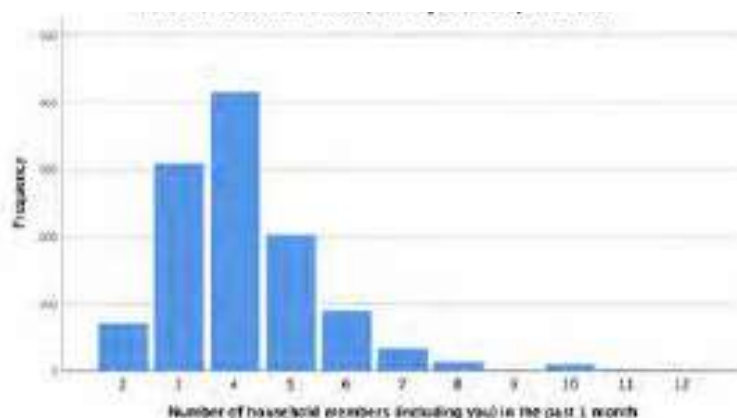


Figure 3. Residential density in Hong Kong

Living density and residential crowding

Family sizes vary from 2 people to as many as 12 people. Most families have 3 to 5 members (Figure 4: top). Numbers of rooms vary from 1 to 8. Most residences have 2 to 3 rooms (Figure 4: middle). Based on the statistics, residential density is calculated (Figure 4: bottom).



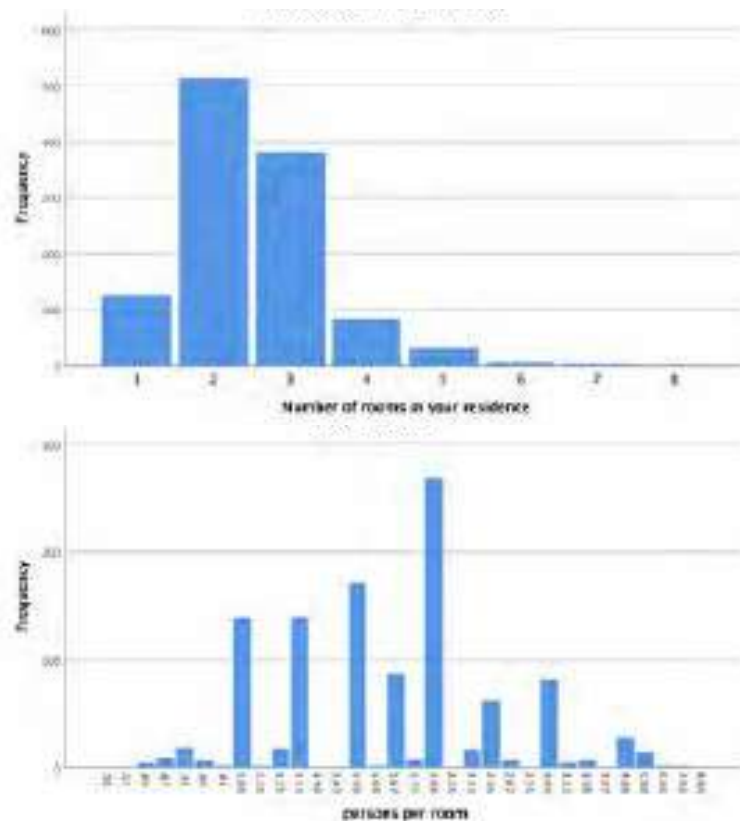


Figure 4. Frequency distributions of family size (top); housing size measured by number of rooms (middle), and residential density measured by number of persons per room (bottom)

In ordinary homes in Hong Kong, residential density ranges from half people per room to 8 people per room. The great majority has to share a room with one or more family members (Figure 4: bottom). Given that the density of prison in the US varies from 1 to 6 inmates per cell, housing in Hong Kong is definitely comparable.

Four statistical models are built to explore whether density is perceived as crowding and whether family relationship mediates the effect. The dependent variable is perceived crowding. Table 2 presents the result for the overall sample regardless of family background, and Table 2-4 present the results for the sub-samples of respondents who were born in Hong Kong, mainland China and other places respectively. For the overall sample, the effect of density is positive and significant; and the effect of family relationship is negative and significant. But there is not mediation effect by family relationship. The results suggest if family relationship is bad, density is perceived as crowding. When family relationship is median and good, density is still perceived as crowding.

Table 2. All respondents

	B	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Family relationship	-.1801***	.0367	-4.9081	.0000	-.2521	-.1081
Density	.3156***	.0433	7.2961	.0000	.2307	.4004
Interaction	-.0304	.0403	-.7536	.4513	-.1095	.0487
Constant	2.8703***	.0312	92.1144	.0000	2.8091	2.9314
<i>R</i> ²	0.0840					

<i>F</i>	26.7824***				.0000	
Number of cases	1097					
Conditional effect of X on Y at values of the moderator:						
Family relationship	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
-.9009	.3429***	.0513	6.6893	.0000	.2424	.4435
.0000	.3156***	.0433	7.2961	.0000	.2307	.4004
.9009	.2882***	.0612	4.7059	.0000	.1680	.4084

Note: Significance *** <0.0001

For Hong Kong local families (Table 3), no mediation effect was detected. For immigrants from mainland China (Table 4), we see some different effects. Density causes perceived crowding, but family relationship has no effect. In addition, family relationship does not mediate the effect of density on crowding. For immigrants from other countries (Table 5), interestingly, no effect was given by density nor family relationship.

Table 3. Hong Kong born

	B	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Family relationship	-.1776**	.0459	-3.8650	.0001	-.2678	-.0874
Density	.2984***	.0629	4.7430	.0000	.1749	.4219
Interaction	-.0485	.0620	-.7835	.4336	-.1702	.0731
Constant	2.7294***	.0380	71.8118	.0000	2.6548	2.8040
<i>R</i> ²	0.0681					
<i>F</i>	13.9661***			.0000		
Number of cases	743					
Conditional effect of X on Y at values of the moderator:						
Family relationship	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
-.8776	.3410***	.0716	4.7646	.0000	.2005	.4815
.0000	.2984***	.0629	4.7430	.0000	.1749	.4219
.8776	.2558*	.0933	2.7415	.0063	.0726	.4390

Note: Significance * <0.01; ** <0.001; *** <0.0001

Table 4. Mainland

	B	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Family relationship	-.0762	.0724	-1.0526	.2935	-.2189	.0664
Density	.3336***	.0726	4.5969	.0000	.1907	.4765
Interaction	.0008	.0638	.0121	.9903	-.1248	.1264
Constant	3.2584***	.0603	54.0244	.0000	3.1396	3.3771
<i>R</i> ²	.1022					
<i>F</i>	7.4000**			.0001		
Number of cases	267					
Conditional effect of X on Y at values of the moderator:						
Family relationship	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
-.9392	.3329**	.0876	3.7984	.0002	.1603	.5055
.0000	.3336***	.0726	4.5969	.0000	.1907	.4765
.9392	.3344*	.1002	3.3382	.0010	.1371	.5316

Note: Significance * <0.01; ** <0.001; *** <0.0001

Table 5. Other countries

	B	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Family relationship	-.1133	.1412	-.8026	.4245	-.3942	.1675
Density	.1395	.1502	.9285	.3558	-.1593	.4382
Interaction	-.0503	.1861	-.2704	.7875	-.4205	.3199
Constant	2.8820***	.1208	23.8672	.0000	2.6419	3.1222
<i>R</i> ²	.0231					
<i>F</i>	.3622			.7804		
Number of cases	87					

Conditional effect of X on Y at values of the moderator:						
Family relationship	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
	-.8140	.1804	.2477	.7285	-.3122	.6731
	.0000	.1395	.1502	.9285	-.1593	.4382
	.8140	.0985	.1723	.5717	-.2442	.4412

Note: Significance *** <0.0001

Figure 5 summarizes the causal mechanisms between density and perceived crowding as well as the effect of family relationship for families with different cultural backgrounds. In the usual situation found in other contexts, density leads to perceived crowding, and family relationship mediates the effect.

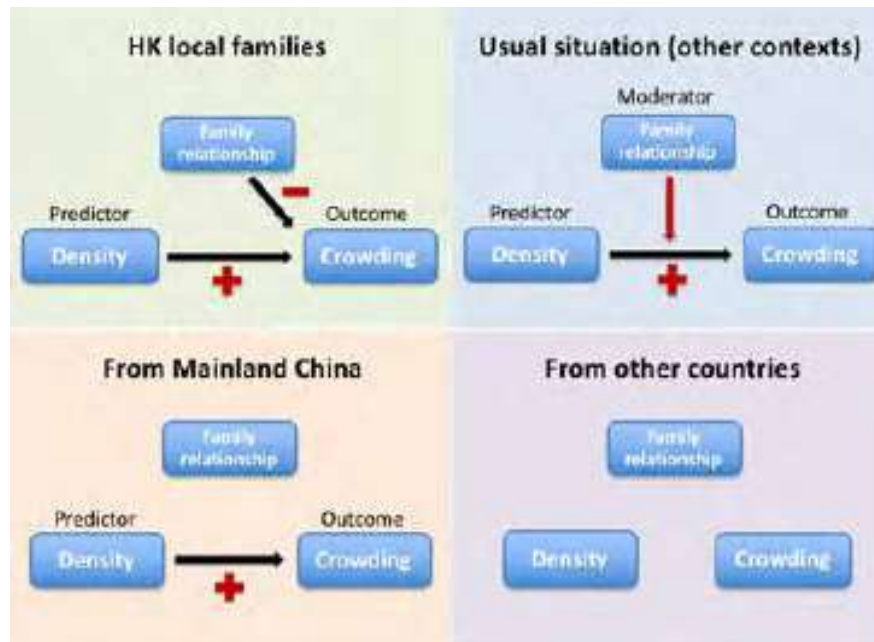


Figure 5. The causal mechanisms between density and perceived crowding for families with different cultural backgrounds (Note: arrow indicates the direction of effect; + and - indicates positive and negative effect respectively.)

For Hong Kong local families, density leads to crowding, but family relationship does not mediate the effect. Instead, it has a direct negative effect on crowding. A plausible explanation is that different from the situation in other contexts where a child can easily find a place to stay alone, in Hong Kong, there is no such luxury. The family is not escapable from at home. One has to literally face his/her family members no matter the relationship with them.

For immigrants from mainland China, density leads to perceived crowding. But family relationship has no effect. For immigrants from other countries, even density does not have an effect on crowding. A plausible explanation is that children in immigrant families are more tolerant of family problems. Moreover, in immigrant families from less developed countries, especially as refugees, children as well as their families are more likely to feel satisfied with their tinier but safer abode. Their high expectations for a brighter future also tend to diminish their discontent with the current situation.

Residential satisfaction

In the context of extremely high density, what leads to residential satisfaction? The results of the multiple regression are reported in Table 6. Location is not significant, because unlike working adults, activities of school children are carried out in a relatively fixed and bounded space whose location in the city is almost irrelevant. Facilities, which enable more diverse activities, have a positive effect. The size of home is very important, because as previous discussed extremely high residential density directly translates into crowding regardless of family relationship. In addition, having own space is important because it guarantees privacy and autonomy. Family relationship is important, but relationship with neighbor is not significant.

Table 6. Residential satisfaction

	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>t</i>	<i>Sig.</i>
Location	0.037	0.028	0.040	1.331	0.184
Facilities	0.074*	0.030	0.075	2.449	0.014
Home is spacious	0.216**	0.020	0.260	10.601	0.000
Have own space	0.117**	0.019	0.151	6.304	0.000
Like to live with family	0.416**	0.022	0.447	18.964	0.000
Like neighbors	0.035	0.023	0.036	1.547	0.122
Constant	0.685**	0.110		6.221	0.000
<i>R</i> ²	.493				
<i>F</i>	189**				
Number of cases	1213				

Note: Significance * $p < 0.05$; ** $p < 0.001$.

Conclusions

The most interesting finding is the moderating effect of family relationship does not exist in the condition of extremely high density. Maybe it is because the extreme condition forces people to develop a different way to get along with the living environment and with each other. What is evident, though, is the conditional effect of density on crowding varies with culture and situation.

As for residential satisfaction, home size, privacy, family relationship and neighborhood facilities are important determinants for children in Hong Kong. Location and neighbor are non-significant. The results manifest differences from adults in Hong Kong and from children in other places. For adult in Hong Kong, location is of critical importance, because it increases both the practical value and transaction value of a housing unit. For children in other contexts, having friends in the neighborhood to play with is highly desirable. But in Hong Kong, a combination of the high-density built environment, Chinese culture and the pressure of study prevents such behavior and preference.

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Reach Homes - A Critical Extension of Dwelling

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Abstract: This paper formalises a nine month engagement with REACH Homes, a small startup that is testing decommodified modes of construction, non-monetary forms of tenure, reusing construction waste, and alternative methods of land acquisition to critique and ultimately overcome the housing problem in the UK - from within. The purpose of this paper is twofold, firstly I will situate REACH within the housing crisis through a brief history of UK policies, whilst setting REACH apart from other solutions that call for a rejuvenation of public housing. Secondly I will demonstrate REACH's praxis through a selection of working examples that I have either been actively involved in or visited. These points allow me to argue that REACH reveals a holistic method for combatting the housing crisis which stops profit being extracted further up, or down, the supply chain; this holistic method is rarely being explored within housing activism.

Keywords: Decommodification; Affordable Housing; Alternative Modes of Construction

Introduction

Although autonomous spaces that occur simultaneously within and against capitalism were studied prior to 2008 (see Chatterton & Pickerill, 2006; Gibson-Graham, 2006), the 2008 crisis has been understood as a tipping point for these radical spaces, which have multiplied since in the global north (Berlant, 2016). On the one hand, austerity programmes decimated what was left of the social contract and, on the other, solidarity networks and living alternatives to austerity have manifested to fill this gap (Thompson, 2015; Arampatzi, 2016; Dalakoglou, 2016).

Despite the emergence of these experiments, a resistance to the financialisation of housing - the cause of the market crash (Marcuse in Brenner *et al.*, 2012; Harvey, 2013) - has been largely absent in the UK. Although there are examples, such as cooperative housing and eco-housing, these occur on a small scale and are generally considered one off projects. Although they still have a tendency to connect to other autonomous spaces and communicate their ideas to a wider society (Chatterton & Pickerill, 2006) they don't challenge the wider structures of housing. Also gaining traction in the UK is the community land trust movement (CLT) they strive for community ownership to fight against speculation and gentrification (Thompson, 2015). Powerful though they may be in their respective struggles, these movements rarely engage in a resistance to the financialisation of housing holistically; this means profit can simply be extracted further up, or down, the supply chain.

REACH Homes is a start-up Community Interest Company (CIC) on the outskirts of Sheffield. REACH aims to create the future in the present; from first glance it is clear that REACH is aiming to use new construction methods to provide affordable housing, but to see REACH as only a not-for-profit housing provider is to miss the wider point. For REACH, the construction of houses is a means to an end of undermining the whole system of housing provision. Construction should be seen as one action (albeit made of many others), it is the everyday reality that leads to a wider change.

Working from a one bedroomed house-cum-prototype (to date REACH's only built structure), REACH's existence provides a working example for alternative forms of land acquisition, design, construction, and dwelling; and we have ideas for ownership, dwelling past first occupancy, and end of life that we are keen to

make reality.

My research supports and explores REACH's critique to the financialisation of housing by understanding their actions as a critical extension of dwelling, in other words to critique housing in its current state we must explore not just how it is consumed but produced and reproduced as well. The purpose of this paper is twofold, firstly I will situate REACH within the housing crisis through a brief history of UK policies, whilst setting REACH apart from other solutions that call for a rejuvenation of public housing. Secondly I will demonstrate REACH's praxis through a selection of working examples. This paper will allow for a deeper understanding into how a grassroots solution to the housing crisis emerges, survives, adapts, and negotiates between market and non-market forces through trial and error, whilst advocating for a holistic approach to solutions to the housing crisis. Housing is a critical fighting ground, the site of social reproduction (Madden & Marcuse, 2016), a housing producer therefore plays a critical role in the production and reproduction of values. Removing the profit motive from this role enables new visions of the urban to emerge.

Dwelling on the UK

REACH's vision for housing echoes those of Turner (2017) and Ward's (1987) that evolved from their critiques of the 1970's onwards - alternatives to a dependency on capitalism and the state, in housing and society, must be sought. Autonomous housing enables dwellers to establish social connections, have control over their built environment, and undermine fundamental values in both state and privately owned housing (Ward in Turner, 2017).

In the late 1960s to the early 1970s there was a growing discontent with modernism within architecture (Aureli, 2013). Day (2010:219) believes that social housing was the key battleground that revealed the broken promise "*between the initial visions and the progeny of cheap developments that followed*" which "*provided a powerful image for a wider crisis in social confidence*". Above all it was a critique within the left of those who sought to reform capitalism by those who opposed capitalism altogether (Aureli, 2008; Deamer, 2015; Kaminer, 2016). Central to this argument was the notion of the plan, which was denounced by the radicals who opposed capitalism as embodying the alienation and social-control of the urban environment - which served only to create a hegemony of capitalist growth (Stickells, 2011; Kaminer, 2016). Accompanying this critique of modernism was a neoliberal market driven attack that appropriated the critique of the plan to call for a "*freeing of urban development from the constraints of planned society and a return to land and property speculation.*" (Kaminer, 2016:50). This attack succeeded in the destruction of the reformist; modernist middle ground, however the left critique was short of popular momentum, leading to a neoliberal hegemony of deregulated markets, and the reclus of the left to knowledge production (Aureli, 2008; Kaminer, 2016). The shift towards neoliberalism was accompanied by a fundamental change of logic towards the welfare system, the once progressive calls for 'autonomy' and 'self-reliance' which were originally used to critique the Keynesian welfare state from becoming too authoritarian were co-opted by neoliberalism to justify privatisation and competition (Brenner, Marcuse & Mayer, 2012). This enabled a succession of Thatcherite housing policies, including diminishing public housing stock, abolishing rent controls, deregulating the private rented sector, introducing buy to let, and giving housing benefits to subsidise private rented tenants (Bowie, 2017; Minton 2017).

Since then a series of subsequent UK governments have, either through neglect or by design, continued this trend. Housing policy since the 1980s has been focussed on public services being provided by the private sector and a retreat of government through an austerity agenda (Bowie, 2017). this trend can be demonstrated by comparing the years leading up to the Thatcher government which witnessed roughly 100,000 houses built by the state and 150,000 built by the private sector, and the years post the 1979 election in which although the private sector has remained largely the same, the state has barely built any (Minton, 2017).

Reflective housing policy

Turner (2017) argues against the notion that housing is an outcome of political assumption, housing policy including and succeeding the Thatcher government has been a vehicle to justify an austerity agenda (Bowie, 2017), demonstrating a far more Reflective relationship. The Housing Act of 1980 forced councils to diminish their stock by selling to tenants at a reduced rate; this policy was used not only for the state to gain support from the working class but also to cut a main funding stream from city councils - many of which were in open revolt (Holden, 2016).

The policies of the Thatcher and Major governments were supported through the Blair government (Bowie, 2017). The decent homes programme enabled the transfer of 200,000 council homes a year to housing associations which cut direct public investments into the social housing stock, causing commodification (Minton, 2017) as housing associations do not receive tax income.

The 2012 Localism act of Cameron's coalition created uneven geographical development by forcing families to accept the housing offered to them, often miles away from their social networks; If they refused the council was discharged of their duty to house them (Minton, 2017). The government also introduced the growth and infrastructure Act 2013 which allowed house builders to oppose planning obligations for affordable housing. The government's position was that deregulating the planning system was the best way to stimulate the housing market after the housing crisis (Bowie, 2017), which had seen a drop in construction of 68% in 2012 (Dorling, 2014). Instead this led to underhand ways for house builders to bypass most affordable housing production through viability assessments which have stipulations that for a development to be viable it must make a return of 20%. Even when affordable housing is constructed the definition for affordable housing was, and is, 80% of market rate, meaning an affordable house in London would cost £450,000 and £250,000 outside of London (Bowie, 2017; Minton, 2017).

These outcomes demonstrate housing has legitimised neoliberal policies where private businesses and landlords flourish in a climate of speculation and land banking whilst tenant's wellbeing is placed second to profit (Dorling, 2014) and this is legitimised through councils who have such little budget that they are competing against each other to woo private capital (Brenner, 2016). In the present, the linking of housing benefit to private rent simply means landlords can put prices up as the government has to pay, 40% of former council homes are now owned by private landlords, and between 2010 and 2015 the 5 biggest house builder companies saw a 480% rise in profit but they are still using viability assessments to claim that affordable housing isn't viable (Minton, 2017). Yet for tenants, due to the lack of social housing the current government's Housing and Planning Act 2016 marked the end of lifetime tenancies, meaning that social housing renters have to move to private accommodation within 2 to 5 years (Dorling, 2014; Minton, 2017).

Proposals

The Free market answer to this is for the further deregulation of the planning system - the argument being that loosening regulations allows developers to build smaller homes which will bring prices down, unfortunately this is stupidly simple. The UK housing market is primarily an Investor market which is different to a user market - investors attracted to the Extra supply which feeds inflation and speculation and excludes users (Minton, 2017), the extent to which it is an investor market is staggering, with Dorling (2014) noting that housing equity represents 61% of the UK's net worth. Reformists, such as Bowie (2017:39), call for:

“Expanding the programme of social housing, building houses as well as flats, and building in mixed tenure and mixed-income areas would enable access to social housing to be widened again to include more working households and reduce the stigmatisation of both the tenure and its occupants.”

But how is this different from what came before which was critiqued for being too centralised, alienating, and controlling rather than liberating (Ward, 1983; Turner, 2017)? This solution is not realisable in the UK at present which is still under increasing pressures from austerity measures. To cut this Gordian knot is to

acknowledge both the state's and private sector's failings, REACH Homes provides one proposal to this - constructing not-for-profit housing that is locally owned and managed; in this way critiquing both the private and public sector of housing delivery. This does not entail self-build communes that are cut off from society at large, Ward (in Turner, 2017) states that in order for social wellbeing within communities to flourish they require a degree of self-control, whether that be in management, construction or otherwise - autonomy is a way to stimulate social network development outside the project.

What I have learnt from REACH, and REACH has developed since my engagement, is that the key to undermining private development is to stop any attempts at commodification within the housing delivery system. If REACH was to just produce not-for-profit houses and sell them at a much lower price (owing to no profit being derived from the sale) the consumers could simply put them on the market at many times the price they paid. Conversely, if REACH was a decommodified home ownership scheme, akin to a CLT, then the people who built the houses would derive a profit from the buyers, and so REACH would have to charge more to residents to make up for the high price of construction. This is not to say that all of these functions need to be contained within REACH itself; engaging with groups such as CLT's can be a valuable way to build solidarity networks, enable reflective debate, and safeguard against any link of the chain from becoming dominant.

Within this paper I will explain how REACH undermines both state and private sector housing delivery through working examples as opposed to ideological statements; this praxis is key because it responds to a critique from reformists who claim that people who use slogans such as the right to the city don't provide working solutions (see Bowie, 2017). In the next section however I will briefly explain my engagement within REACH to differentiate the research undertaken in the PhD from the goals of REACH.

Methodologies

Since August 2018 I have been collaborating with REACH on a journey to at once understand and further their mission through an action research (AR) methodology that has seen me integrate into the team. My research is no less valid because I am a dedicated member of the team, it creates a different layer of legitimacy. I hold no notions of objectivity and am confident in vocalising my critiques of REACH precisely because I want them to succeed and it is only through a reflective praxis that this can happen. This section exists as a reflexive piece on my work with REACH, and to differentiate the future aims of REACH from the outcome of the research.

What we have collectively discovered through our actions is that solutions to the housing crisis need to be created holistically from proof of concept experiments that build into larger schemes. Although this is not something we intended to do, it is something that members of REACH have helped each other to understand. For example, Jon made it clear to me that maximising the use of recycled or upcycled materials in the construction allows us to undercut for-profit construction and critique waste in the industry, and I have raised the necessity of exploring protective covenants on the housing to stop it being sold for profit post first occupancy.

This discovery was not my specific aim when heading into the fieldwork, nor was it an agreed upon idea with REACH, it was something that emerged naturally. As Fals Borda (in McTaggart, 1997:109) explains, this research belongs to a different type of science "that of the common people's knowledge (popular or folk science) based on practical reason and communicative sociability"; I contend that it is difficult for 'popular science' to fit within the framework of a three year PhD (even then it was only possible through me being a, relatively, familiar face within the Sheffield activist scene). In order to make the fieldwork more productive therefore, I entered the field having loosely identified which groups I would be engaged with but without a defined research design. Action researchers could argue that as the research design was not co-produced then the project is not true AR (see Gaffney, 2008), however I have joined REACH in their struggle, designed a building, led meetings, created social connections, and much more. Rather than following a traditional AR approach - undertaking a proscribed intervention, measuring the outcomes, and implementing improvements (see McTaggart, 1997; Gaffney, 2008), I have applied my experience in design and architecture firstly to create a

less exploitative research project, then to become a part of REACH (an externality which has given me greater access into REACH), and finally to collectively critique REACH in order to ultimately improve it.

As such, although I may call it my research I am merely one collaborator, the person writing it up and connecting it to wider theories. I use the singular therefore to differentiate the outcome of the research from the future goals of reach, which I will refer to in the plural (for instance: I am revealing how REACH critiques housing production holistically, whereas REACH, or we, are attempting to provide non-profit construction methods to critique current housing provision).

REACH Homes

“What I’m proposing is something that’s just not happening at the moment. Everybody’s just throwing their hands up and saying ‘we need a solution to affordable housing’. The government’s best efforts are just not... y’know, there’s a lot of rhetoric and then I think there’s a lot of actual wanting to do something about it or acknowledging that they’ve got to do something about it. But they just don’t know how to do it. And because of the pound signs they’re just completely focussed on the money. The whole industry is unfortunately...”

- Jon, founder and resident of REACH Homes, 18/08/2018.

It is 2015. Jon, a retired police officer of 30 years, is sitting at the kitchen table with his partner assessing a model LEGO home, of their own design. They had been looking to move but couldn’t afford anything on the housing market when, watching an episode of Grand Designs on shipping containers, Jon decided to build his own.

“I costed this idea up with containers and was like ‘that’s less than ‘undred grand [£] for a 3,500 square foot house with atriiums and a garage for Barry’s Ferrari’ he was 12 at the time, he still wants a Ferrari, he knows it’s got to be an electric one though.”

Realising his exclusion from the housing market was not isolated, Jon used the principles of the project as a method to critique traditional modes of production and residence. Thus REACH Homes was born. Operating out of Jon’s house-cum-prototype REACH ground’s its work through everyday praxis. Housing and austerity policies are why REACH started, not as an idealistic goal but because Jon, a retired police officer of 30 years, couldn’t afford a home on his pension. This section will explore two projects that REACH undertake and how these are representative of how they understand the future, namely:

1. The material supply chains for the prototype and how they critique waste in the construction industry.
2. The land agreement between REACH and Heeley City Farm as an example of non-monetary tenure.

Materials

“This is 84% [upcycled] were not gonna be able to do that at scale, well not to start with at least, ‘cos those logistic supply chains and getting all those kinds of stuff sorted out... it’s not gonna happen straight away. So we’ve costed up buying new and as environmentally friendly as possible, I wanna get away from using - ‘cos there’s a lot of recovered Kingspan sheeting on this - but anything petrochemical I want to try and stay away from; so we’re looking at developing a straw bale panel system that bolts onto the wall”

We look round the room and Jon speaks candidly about different objects and their origins, salvaged from the excess of consumer society. All the wood is reclaimed, the bedheads are old pianos, the panelling in the shower is from the counter of an Indian takeaway, and the Kingspan came from the roof of the Madina Masjid when they were redoing the dome.

- Jon and I discussing the prototype, 18/08/2018.

Materiality for REACH is a key issue, we have to use materials that are simultaneously cheap or free, recycled/upcycled or as environmentally friendly as possible, and easy to work with - all whilst looking as aesthetically pleasing as possible to legitimise our work. All this allows us to critique waste in the construction industry, question who has the right and knowledge to build, and undercut commercial builders.

- **Who's right?** - Once inside, the house - through its act of simply being - raises the absurdity of professionalised and abstracted labour in the construction industry. Small though it is, it is perfectly homely and designed to a far higher, and infinitely more personalised, standard than houses found on the glossy pages of estate agent brochures. The space resembles a studio apartment, I am greeted by a stylish kitchen of what look like reclaimed wood cupboards, with a lounge over to my right - laying claim to the glass facade, and a copper curtain rail with desk and raised bed behind. An alcove behind the kitchen hints at a bathroom. The high ceilings, large windows, and hardwood floor erases from my mind visions of dank shipping containers and is more reminiscent of a Nordic chalet.
- first visit, REACH Homes, 18/08/2018.

At base principles, REACH's prototype is a shipping container insulated with kingspan sheeting and rendered on the outside, spray foam and board on the inside - it is worth noting that spray foam is being ruled out from future builds and we will instead be using a blown wood cellulose product. Although the use of shipping containers may illicit condescension from the architectural community, Jon's lack of exposure to this snobbery has served him well in finding a material that works. For him shipping containers do not represent uncomfortable memories of first year projects, but instead are a cheap; upcycled building material, that require minimal techno-popular knowledge to work with, and that are not labour intensive to convert. All these points make the construction process easier for builders with no previous experience and REACH is one of those, having constructed the prototype with the closest relevant qualification being an NVQ level 2 in carpentry. The future of REACH, which is currently being tested through our first external project, is offsite production. Working with several modular factory partners the offsite construction technique means we can estimate a 2-3 week lead time on the houses. This is not as a method to flood the market with cheap housing that can simply be commodified but to build housing to a high standard, for minimal cost, that can remain affordable through working with CLT's; this method was only able to be explored through our simple construction method that proved the concept.

- **Waste** - The UK sends 100m tonnes of building waste to landfill every year - 25% of all materials on a building site - REACH wants to cut down on this through an environmentally conscious lifecycle. In the prototype we achieved 84% upcycled or recycled materials with panelling coming from a local restaurant and Kingspan insulation coming from the local mosque. Although insulation from the rooves of mosques is not a long term supply chain, we have reliable sources for upcycled wood, containers, and window frames and we believe many more streams will be discovered. For example, with the UPVC windows Jon told me how end of life recycling is an energy intensive process; as such manufacturers recycle the glass and keep the frames in their yards. REACH paid a nominal fee to acquire the frames, which are perfectly usable but second hand, and it has freed up space in the manufacturer's yard. This critique extends to not just waste in the construction industry but also regulations such as Passivhaus, which only measures the environmental benefits of a building from the moment of residence, not from construction meaning, for example, that although a

house may be environmentally friendly to live in it still could be using petrochemical insulation.

This critique of waste initially emerged from Jon's other business, the social enterprise, Strip the Willow which is a wood upcycling workshop and handily provides us with donated wood from myriad sources. From Strip's initial materials REACH's prototype was able to be created and now from the prototype REACH is looking to expand at scale. With a long term vision to undercut other waste management companies as a way to gain both materials and income. The issue we may face is the use of potentially variable environmentally friendly and upcycled materials needs to be reconciled with a standardised; modular construction process.

- **Undercutting** - The construction process, through upcycled materials and not-for-profit delivery, means that REACH has costed, not including the price of land, a one bedroom house for ~£35,000 and a two bed for ~£65,000 - a fraction of the market rate. The not-for-profit model means REACH's costs are the sum of labour + materials, with a contingency fund and any surplus being used to subsidise people who wouldn't be able to afford a home under REACH's scheme. As Jon bemoans, the big house builders have used their lobbying powers to remove both the Zero Carbon Hub in 2015 and the Code for Sustainable Homes, but REACH demonstrates that these goals can be achieved for a fraction of the price. Affordable housing doesn't, and shouldn't, be an excuse for bad design and construction, nor should it be only for people who are excluded from the housing market.

When I first visited the prototype I saw its quaint charm but was blinded by my own visions of architecture faux pa's and assumed that because REACH used shipping containers that it wasn't about the glorification of the aesthetics of the material, but about a good material that will do its job. This idea has changed within me Jon has made it explicit that creating these beautiful communities with resident control instils a sense of ownership and pride that is currently missing from most UK housing projects - unless you include the jealous pride and gloating over the newest; unnecessary extension.

By looking at the role of materiality within REACH holistically a series of critiques emerge around construction waste, cost, and knowledge. Externalities that we did not expect include a critique of fuel poverty - the prototype has not paid a fuel bill due to its solar panels and insulation. We have also provided a critique of a series of policy decisions on housing and, as Jon reminds me, the prototype would be Passivhaus rated if only REACH could have afforded triple glazing in the initial build.

Land

Jon's proposal, to consider the social value of land over its financial value is simple enough, but we are so weighed down in the existing system of profit that it will take a big leap to get there. He puts the crisis of land ownership into clear terms, it's not just the "undeserving poor" anymore:

"35% of people, that the New Resolution Foundation Report the other month said, are never going to aspire to home ownership. Which is good if you're a landlord, cos you've got an income forever" Jon laments. "it's basically 12th century feudalism dressed up in 21st century clothing, with the veneer of democracy to make people think they've got a say, which they then don't listen to anyway, and even if, y'know, even if another government does get elected it still has to work on the same civil service and the same investors and the same lobbying groups, the petrochemical industry, the big builders."

- Jon and I discussing land ownership, 18/08/2018.

With little start-up capital, lack of access to developable land has been the key barrier for REACH. A Catch-22 has emerged whereby major funding that has been granted to REACH has been contingent on a piece of land to work on and certain local authority's will not allow a transfer of their land without the funding being in REACH's bank account. This section will explore REACH's non-monetary tenure at Heeley City Farm and the barriers we are currently facing in our search for the site of our first housing project.

- **Heeley City Farm** - The prototype is located at Heeley City Farm, the farm was started in 1981 and was born out of the community's fight against a proposed bypass that would split the neighbourhood. It is a not-for-profit charity and community centre specialising in energy and environmental efficiency, and health and wellbeing. Being a not-for-profit start-up, REACH had little financial capital to rent or buy land in the traditional way. Instead they approached Heeley City Farm and made an agreement that rather than paying for the land in money they would provide energy through their roof-mounted solar panels. This tenure model has been well received as the prototype uses only 10% of the energy of a traditional house, meaning it hasn't paid a fuel bill and has produced a considerable surplus for the farm. Jon also mentioned his presence in the prototype has reduced anti-social behaviour on site, including drug consumption and graffiti - these externalities were unimagined by REACH when the prototype was constructed but because the land transaction is decommodified neither party is losing out - the farm is not having to pay reach extra for the security benefits and we wouldn't expect them to.

This transaction is leading to many different decommodified land acquisition strategies for REACH, from opening up further discussions with local interest groups (who have land but no capacity to build), to explorations into formalising alternative tenure models. This is something I steered REACH's decision on, originally they were not concerned if their houses were sold on for profit as they believed that their job was to provide immediate housing. I explained that if an investor could buy a house and then immediately either rent it or sell it on the market they would gain a profit many times higher than our cost of production and therefore would increase speculation. This would mean rather than us combatting the housing crisis we would be simply exacerbating it without gaining the profit. To combat this, REACH are researching different tenancy models and contracts, such as LILAC Co-operative's model which is a Mutual Home Ownership Scheme which allows democratic control of the housing community and fixes the land value. This discussion was enabled through the decommodified transaction between Heeley City Farm and REACH; it forms the foundations to REACH's goal of undermining existing land ownership.

- **Barriers** - whilst the construction of the prototype has been a tool for legitimising REACH, wading through the quagmire that is the bureaucracy of the state to acquire land has been, and continues to be, arduous. A key example was a meeting that had been cancelled 3 times over a 3 month period. The meeting was for a small site in an estate that would allow REACH to build around twelve houses; positive discussions had been going on for around 18 months. Despite the delays we felt sure the council was going to allow us to develop the land. Here is an extract from their email post 20 minute meeting (19/12/2018):

"the Council does not feel that this site is the best location for your proposal given the proposed mix. The site is located in an area of low cost, low value and therefore there are a range of affordable and low cost housing options in this area which people can access. The Council is keen to promote more mixed communities and therefore it is felt

that this site is better suited to more traditional housing.”

Unfortunately, as one REACH member pointed out, this Council’s policy for ‘mixed communities’ appears to be building luxury five beds in poorer areas to increase land value whilst keeping affordable housing options away *“from’ posh end ‘v town”*.

Whilst we understand the council is under immense pressure from austerity cuts and has been put in competition with other councils for private capital we are also aware that much of the current affordable housing stock is severely dilapidated and not meeting environmental targets. We also found out, through sympathetic dissidents in the council, that Jon’s vocal support of the Sheffield Tree Action Group had been a factor in their decision to not grant us development.

This is one example but highlights a continued problem we have been facing, the private sector is profit oriented and trying to avoid building affordable housing, the state is unwilling to provide the land and is looking to entice private capital. For REACH to infiltrate these institutions we need to provide credible alternatives and become a legitimising force for change.

Heading back to first principles we realised that, apart from providing the basis for alternative ownership models, the primary actors in the prototype land deal, REACH and Heeley City Farm, were both community projects. Since then, although we have been continuing engagement with local state actors, we are focussing on the community sector, specifically groups that have land granted from previous councils and state actors. We find they have a tendency of wanting to do ‘something’ but don’t have the capacity (either in knowledge, time, or confidence) to build. We propose a shared vision for their land to be productive, for community benefit, and without profit being derived. This land development proposal critiques not only the private sector’s ‘race to the bottom’ bids for land development, resulting in poor design, but also stands against state bureaucracy which is impeding sustainable, truly affordable housing. This direction for REACH, borne out of the prototype tenure, provides a workable alternative for infiltration into the market system.

The Critical Extension of Dwelling

Through my time at REACH I have discovered alternative material supply chains, decommodified tenures, the difficulties of land acquisition, participatory methods of construction, and the series of barriers that need to be broken to allow these processes to be reproduced. Yet although we have grand ideas being tested on the ground, REACH is still in its infancy - carving our niche in the housing construction industry that is monopolised by a small cartel of companies, who use their hegemony to artificially keep demand for houses high in order to bypass any notion of sustainability or truly affordable goals (see the forced the closure of the Zero Carbon Hub in 2015 and the demise of the Code for Sustainable Homes). As such, we are having to reflexively consider our position on taking jobs. Our first external project, rather than being a house, is a meeting room for an environmentally driven building society. The phrase we are accustomed to saying is *“it’s not a house, but”* followed by several differing explanations of how this next project will allow us to refine our offsite building technique, secure new supply chains, and build a relationship with the building society who have potential capital at their disposal. Perhaps more importantly it is a method of legitimising our work because, although it has been a catalyst for our next project, Jon is forever explaining *“This is just the badly torn up sheets version”*, when referring to our prototype. This build is critical as many actors are waiting to see our outcome, we have attracted interest extending to both the House of Commons and Lords, a series of charities, and leading offsite production companies. Although REACH doesn’t have a housing project yet, we are influencing other parts of the sector. REACH launched the National Federation of Affordable Builders (NFAB) in July 2018 to provide a voice to SME’s in the construction industry so we can work collaboratively to promote the building of homes that are financially, environmentally, and ethically sustainable. The founding of and work on defining NFAB’s terms of reference, has meant we are engaged with national policy in several meaningful ways; Jon has recently contributed to the government White Paper ‘Neighbourhoods of the Future’.



These activities, that may appear strange to traditional activists, are necessary for a change in the UK housing situation. Instead of waiting for full blown revolution to topple the government creating the change to housing requires negotiations between REACH and diverse actors. For instance we want to demonstrate to developers that we can build the affordable housing stipulated to them by the Planning Department for cheaper than paying a contribution to Section 106 would be. This isn't watering down our values but a means to an end, a method to produce within, and against, the housing market. These homes could have protective covenants to stop them being objects of market speculation and this would require a negotiation with Council's to create new policy. Thus by looking holistically at the problem we consider modes of production, consumption, and reproduction that critique the current housing model whilst working within it - creating workable alternatives and demonstrating to a range of actors that change is possible. Though perhaps Jon has always known that the housing problem must be looked at holistically, 18/08/2018:

"That's why it's so important that this works, because we can show a completely different model and a completely different way of making a success out of building houses that people actually want, where they want them, so community led, involving people in the design and the place where they're gonna be living. That gets round some of your more outside the box things your builders don't normally take account of like mental health and wellbeing, crime, antisocial behaviour. If you're building the right houses in the right places with the right things around them... you can do all sorts."

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Identifying the Impacts of Union Stations on Housing Price in Kaohsiung City, Taiwan

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Abstract:

The aim of this study is to investigate the impacts of proximity to different mass rapid transit (MRT) stations on housing price in Kaohsiung City, Taiwan, in terms of the number of their transit lines. Kaohsiung is the only city in Taiwan where more than four different transit services were developed and built jointly in/around MRT stations as union stations, i.e. High-speed Rail (HSR), Light Rail Transit (LRT) and Commuter Rail Transit (CRT). Constructing such union stations is a way of implementing Transit-oriented Development (TOD) to synergize land use and transportation for promoting accessibility and sustainability in cities. This could lead to an increase in land value and housing price around the TOD project due to the increased proximity to the transit station. The uplift for housing price has been well studied by analyzing single stations or comparing stations across cities; however, little attention was paid to different types of transit union stations, where multiple transit rail lines converge. This study proposes that a union station project, in particular, could lead to a greater increase in the housing price due to its greater connectivity. This study hypothesized that if more types of transit lines are jointly constructed in a union station, it will bring about a larger effect on lifting housing price. The study collected housing transaction data from a real estate information system published by the Department of Land Administration, Taiwan, and built four regression models to test the hypotheses. The results show that union stations generally have larger impacts on lifting housing price, but rejected the hypothesis that three-modal union stations can exert a larger impact on housing price than two-modal union stations. The discussions and limitations are noted in the conclusion for further study.

Keywords: transit-oriented development; union station; housing price

Introduction

Transit-oriented Development (TOD) aims at synergizing land use and transportation to guide city development, by providing various benefits — reduced cost, time, congestion, clean air, walkable neighborhoods. The land around TOD projects thus could be valuable, uplifting neighboring housing price due to the increased proximity to transit stations.

The literature has cited accessibility provided by different types of transit stations as a factor positively influencing housing price significantly. The most common way of assessing how housing price is affected by the accessibility is to include the proximity factor in the analysis (Higgins and Kanaroglou, 2016, Duncan, 2011a). Some assessed the influence of single transit station, e.g. CRT station (Shi and Guo, 2009, Zhang *et al.*, 2016), MRT station (Grass, 1992), LRT station (Hess and Almeida, 2007, Duncan, 2011b), and Bus Rapid Transit (BRT) station (Dubé *et al.*, 2018).

The impacts of different transit services on land-value can be uneven (Cervero and Duncan, 2002), e.g. rail stations have a higher positive impact on the housing price compared to LRT and MRT stations (Debrezion *et al.*, 2007). By comparing more than 130 analyses across 60 studies over 40 years, Higgins and Kanaroglou (2016) also found significant differences in changes to land value across transit modes, and concluded that MRT and CRT have larger impact on land value compared to LRT and BRT.

However, little attention was paid to different types of transit union stations in terms of what joint rail types are built in the stations. Although the uplift for housing price has been well studied by analyzing single stations and comparing these stations across cities. Station construction guided by TOD could take form in union stations, where different types of rail lines converge and share the facilities, in order to provide higher connectivity between among various rail line services, allowing the passengers conveniently transit.

This study proposed that union station projects, in particular, have a larger impact on the increase of housing price in the neighboring communities. That is, more types of transit services jointly constructed in a union station could bring about a larger effect on lifting housing price. Thus, it was hypothesized that union stations have a more powerful impact on housing price compared to single stations. Another hypothesis is that union stations constructed by three-modal union stations have more impacts on housing price than two-modal union stations. This study employed official housing transaction data and regression models to test the hypotheses.

This paper is structured as follows. First, the study area, data sources and methods used in this study are discussed. Second, research results are presented. Third, the results were discussed by comparing previous research, and suggestions are noted for further study in the conclusion.

Data and methods

The empirical analysis in this study utilized multiple regression models to investigate the influence of proximity to stations on housing price. Prior to the model building, official housing transaction data in Kaohsiung were collected, and processed using ArcGIS. A model was then built for analyzing the transaction data within 1km to MRT stations in Kaohsiung, followed by three models being built for investigating the difference in influences of three types of stations, namely three-modal union station, two-modal union station and one-modal station.

Data collection and processing

Kaohsiung provides a particularly rich setting for studying how the housing price is impacted by different transit stations. It has four different modes of public transportation, i.e. MRT, LRT, HSR, and CRT, which is a trait other cities in Taiwan do not share.

The study employed housing transaction data for the empirical analyses, which consist of houses, apartments, and condominiums. The core data were drawn from the official website, a real estate information system published by the Department of Land Administration, Ministry of Interior, Taiwan, covering the information about real estate transactions from 2011 to 2015. In total, 174,913 housing transaction data were obtained, as shown in Figure 1(a).

According to the number of transit lines jointly built in an MRT station, this study specified three types of MRT stations as representatives, i.e. New Zuoying Station as a representative for three-modal union stations (MRT, HSR and CRT), Kaohsiung MRT Station for two-modal union stations (MRT and CRT) and Judan Station for one-modal stations (MRT only), as shown in Figure 1(b). The study used only those transaction data within 1km from the stations because people generally are willing to have a 10 minute walk to MRT station (Dwess, 1975; Anas and Duann, 1985), and particularly around 1km in Taiwan (Chen, 2016, Lin and Hwang, 2003, Tai *et al.*, 2011).

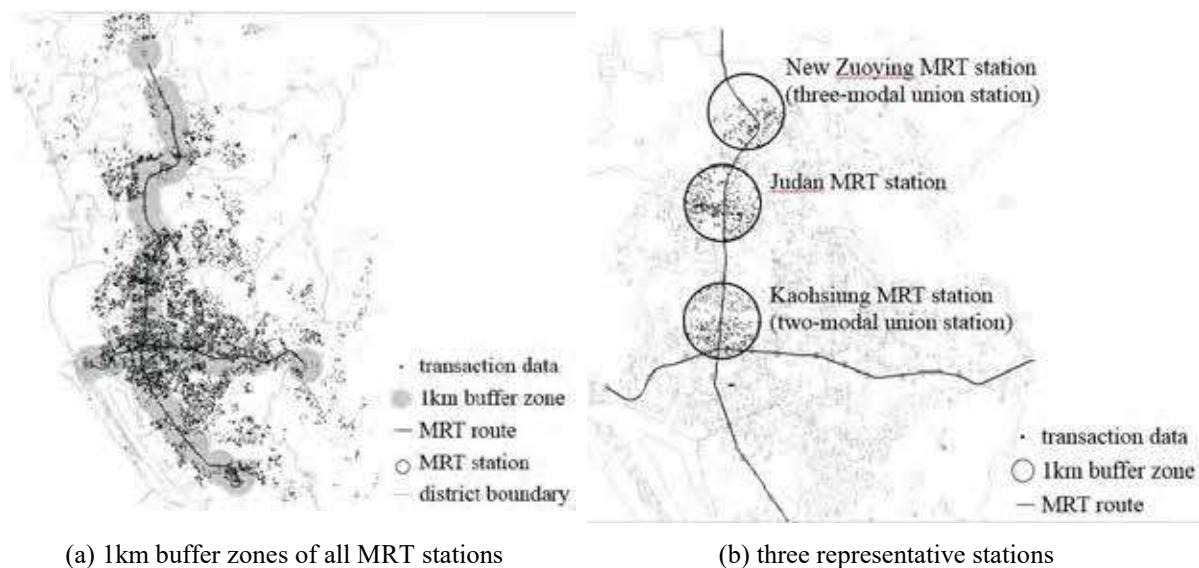


Figure 1 Transaction data in 1 km buffer zones of MRT stations in Kaohsiung

The data contain detailed records of transactions which include the transaction price, transaction site and transaction date, and various attributes, including property type, floor area, and floor level. This study used Geographic Information System (GIS) tools to extract the transactions within a 1km radius to the closest stations; 14,825 housing transactions were specified as those near the MRT stations out of 174,913 housing transactions. Among 14,825 transactions, 839 of them are within 1km proximity to New Zuoying Station, 1,231 to Kaohsiung Station, and 2,086 to Judan Station, as shown in Figure 1(b).

Table 1 presents the descriptive statistics of the data. Within 1km buffer zone of MRT stations in Kaohsiung City, the housing price is ranged from TWD 10,000 to 104,413,300, with an average price

of TWD 7,859,500. The average floor area is 151 m². Around 18% of the housing sold are terraces, and about 37% of the housing sold are located in the commercial zone.

Table 1 Descriptive statistics of housing transaction data

Vector	Variable	Code	Min.	Max.	Mean	Std.
Structural	Housing price (TWD 1,000)	PRC	10.00	10441.33	785.95	1416.07
	Floor area (m ²)	HSAR	5.91	4752.09	151.23	147.10
	Fourth floor (1: yes)	STOR	0	1	0.08	0.28
	Building type (Terrace or not) (1: yes)	TYPE	0	1	0.18	0.38
Neighborhood	Commercial zone (1: yes)	COM	0	1	0.37	0.48
Proximity	Distance to station (meter)	ST_DIS	21.98	999.19	559.34	232.89

Source: Ministry of Interior, Taiwan
The exchange rate is USD 1 to TWD 33

Due to the fluctuation of GDP, the data before 2015 were adjusted by the consumer price index (CPI) and GDP deflator, as listed in Table 2.

Table 2 GDP deflator in Taiwan (2015 as base year)

Year	2011	2012	2013	2014	2015
CPI	100	101.93	102.74	103.97	103.65
GDP deflator	1.036	1.016	1.008	0.996	1

Source: Directorate General of Budget, Accounting and Statistics, Taiwan

Model specification

Empirical studies mainly employ four model specifications for housing price estimation, namely linear, semi logarithmic, double logarithmic, and log-linear (Debrezion *et al.*, 2007), which were all employed in this study. The basic linear regression model for estimating the housing price is given by Eq.1 below.

$$P_i = f(X_i, Y_i, Z_i) \quad (1)$$

The dependent variable P_i is the estimated price of housing i , X the vector of structural characteristics (e.g. floor area), Y the neighborhood characteristics, and Z the vector that measures proximity to the transit station. As shown in Table 1, the vector X includes housing price, floor area, floor level (fourth floor or not), and building type (terrace or not). The neighborhood vector attribute is property location (whether it is located in a commercial zone). The vector Z includes distance to the nearest station. Six variables were included to explain the housing price. Accordingly, the above model was refined as the following model given by Eq.2.

$$PRC_i = \beta_0 + \beta_1 (HSAR)_i + \beta_2 (COM)_i + \beta_3 (STOR)_i + \beta_4 (TYPE)_i + \beta_5 (ST_DIS)_i \quad (2)$$

HSAR represents housing area; TYPE is whether the housing sold is located in a commercial zone; COM shows if the housing sold is a terrace. STOR means whether a transaction involves the fourth floor, as people tend not to buy a housing on the fourth floor, which shares a same pronunciation of

death in Taiwanese (Lin *et al.*, 2012). Since variables COM, STOR and TYPE are dummy variables, this study adjusted the double logarithmic model accordingly as follows.

$$\ln \text{PRC} = \beta_0 + \ln \beta_1 (\text{HSAR}) + \beta_2 (\text{COM}) + \beta_3 (\text{STOR}) + \beta_4 (\text{TYPE}) + \ln \beta_5 (\text{ST}_{\text{DIS}}) \quad (3)$$

Results

This section explains the result of each model. Prior to investigating influences of different union stations using three local models, a global model was built to fit the data within 1km buffer zones of all MRT stations in Kaohsiung.

The global models for all MRT stations in Kaohsiung

This study first confirmed that the correlations among variables are low enough to not cause the collinearity effect. Table 3 shows the highest correlation among the five variables is less than 0.3, suggesting all variables are not considered highly correlated.

Table 3 Result of the correlation analysis

	HSAR	COM	STOR	TYPE	ST_DIS
HSAR	1				
COM	.044	1			
STOR	-.050	-.030	1		
TYPE	.028	-.222	-.142	1	
ST_DIS	.003	-.243	.005	.090	1

The results of the four regression models are listed in Table 4. Each variable in the four models has a high explanatory power at the 99% confidence level, as shown in Table 4. This means all independent variables could help explain the housing price within the 1km buffer zone of all MRT stations in the study area. Among the four models, the double logarithmic model has the highest explanatory power with an R² of 0.718, followed by the linear, log-linear, and semi logarithmic models.

Table 4 Effects of the independent variables on housing price in four regression models

	Linear		Double logarithmic		Log-linear		Semi logarithmic	
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
Const.	139.285	***.000	0.586	***.000	5.663	***.000	-3865.11	***.000
HSAR	6.646	***.000	1.234	***.000	.004	***.000	1159.237	***.000
COM	88.636	***.000	.190	***.000	.084	***.000	217.382	***.000
STOR	-92.533	**.002	-.194	***.000	-.283	***.000	-111.472	**.002
TYPE	221.926	***.000	.285	***.000	.368	***.000	227.307	***.000
ST_DIS	-.258	***.000	-.067	***.000	-.001	***.000	-167.543	***.000
Adjusted R ²	0.493		0.718		0.388		0.270	

*p<0.05 **p<0.01 ***<0.001

The signs of coefficients for HSAR, COM and TYPE are all positive, showing that housing price tends to be higher due to greater floor area, neighboring commercial area and building type (terrace). The

signs of STOR and ST_DIS are both negative, suggesting the presence of the fourth floor and a greater distance to station would lead to a lower housing price.

In the linear model, it suggests when an increase of 100m in distance to station, a drop in housing price of TWD 258,000 could be expected. In the double logarithmic model, when the distance increase by 0.1%, the housing price would drop by 0.07% at 95% confidence level.

The local models for New Zuoying, Kaohsiung, and Judan MRT stations

To test the hypothesis proposed in this study, three representative stations were chosen for their different mode types in the union station. The New Zuoying Station has three railways, i.e. HSR, CRT, and MRT; the Kaohsiung Station has two railways, i.e. commuter rail and MRT; the Judan Station has only MRT. Since the double logarithmic model has a higher explanatory power among global models. It is used to test the hypotheses. The results are shown in Table 5.

Table 5 Results of the local model

	New Zuoying		Kaohsiung		Judan	
	coefficient	p-value	coefficient	p-value	coefficient	p-value
Const.	1.267	***.000	1.387	***.000	.631	***.000
HSAR	1.181	***.000	1.229	***.000	1.255	***.000
COM	.120	***.000	.077	***.000	.112	***.000
STOR	-.029	.440	-.145	*.010	-.112	***.000
TYPE	.466	***.000	.545	***.000	.178	***.000
ST_DIS	-.123	***.004	-.182	***.000	-.045	** .004
Adjusted R ²	0.770		0.798		0.757	

*p<0.05 **p<0.01 ***<0.001

It was initially hypothesized that more modals in a union station would have a greater influence on housing price and thus have a larger elasticity. Thus, three null hypotheses are proposed, i.e. $\beta_{ST_DIS}^{ZUO} = \beta_{ST_DIS}^{JU}$, $\beta_{ST_DIS}^{KAO} = \beta_{ST_DIS}^{JU}$ and $\beta_{ST_DIS}^{ZUO} = \beta_{ST_DIS}^{KAO}$.

The first two hypotheses are rejected as the F-values are 160.3 and 130.58, compared to the critical value of 3.12 (df=5, ∞). Hence the reduction in the elasticity is therefore significant at the 95% level, indicating that the union stations generally have larger impacts on housing price than single-modal stations. However, comparing the coefficients of ST_DIS in the New Zuoying model, and Kaohsiung model shows that the influence of Kaohsiung MRT Station as a two-modal station is larger than that of New Zuoying MRT station.

Conclusions

The impact of transit station proximity on housing price has received wide attention in the transport and land economic literature. Several studies investigated the impact by analyzing a certain mode of transit station or comparing different modes of a transit station. This study further introduced a new factor, the number of transit mode in station, to explore the difference in the impacts on housing price. This study confirmed that union transit stations have larger impacts on housing price as the elasticity of proximity with respect to housing price is greater. However, the results show that the impact of three-modal stations is not greater than that of two-modal stations.

The Kaohsiung MRT station is built before the New Zuoying Station and its influence on the housing market might inherently be larger. The study found that the housing price fluctuation is significantly higher between 2010 and 2015, compared to Wu (2010) that employed data from 1997 to 1999 and suggested an increase of TWD 38,000 when a drop of 100m in proximity to the MRT station. This indicates that further study should take temporal factor into account.

Moreover, a bus transit hub is located near the Kaohsiung MRT station, which is considered in the study as it is not physically constructed in the station. Nevertheless, further study could attempt to include other transit services near the union stations.

On the other hand, HSR in the New Zuoying station provides regional transit instead of intra-city transit service, which possibly reduce the impact on local housing price. Further study could expand the research scope to include different cities that also have HSR to confirm that inter-city transit rail has less impact on the local housing market. Different combinations of modes in union stations could also be explored, e.g. MRT station combined with LRT, or that with HSR, for a deeper understanding of their influences on housing price.

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The possibilities and limitations of the state and local authorities' activities in resisting financialisation of the housing sectors in Central and Eastern European Countries

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Abstract: The liberalisation of the housing sectors in Central and European Countries since the beginning of this century, given the macroeconomic stabilisation of these countries, influenced the development of housing loans as a primary instrument of satisfying housing needs and wants, with large growth dynamics of the household debt. The main aim of this paper is to evaluate the possibilities and limitations of the state and local authorities' activities in providing adequate and affordable housing and resisting financialisation in the years 2000-2018. A growth in financialisation resulted partly from the fact that newly established households preferred in particular the ownership right, especially due to its limited scope in the period of the centrally planned economy. Furthermore, this growth came as a result of the fact that the segment of dwellings for rent – both private and social – did not work well. Significant commodification of dwellings, mass privatisation of the housing stock and the accompanying process of decentralisation in some countries, with a residual character of social housing and marginal private rental, as well as higher social stratification are the features of the contemporary system of provision for housing in CEEC.

Keywords: housing, liberalisation, housing policy, state intervention, Central and European Countries

Introduction

The main aim of this work is to assess the capabilities and limitations of conducting housing policy in Central and Eastern European Countries. When it comes to the capabilities of housing policy, there are arguments justifying state intervention in the economy, transferred to the area of housing. On the other hand, as for the housing policy limitations, there are arguments against state intervention. The author makes two theses: firstly, what should be the priority in housing policy is the creation of institutional bases and stimuli in order to increase the participation of dwellings for rent in the housing stock, while the state should not take over the exclusive rights in this respect, and secondly, there must be principles in the social housing stock which create credibility of this segment and enable its efficient functioning.

Housing policy is one of the sector policies conducted both by central and local governments, engaging public and private entities as well as social organizations to attain its main, long-term goals within the housing area. These goals include: a) creating conditions for all citizens to purchase or rent housing stock, b) ensuring the availability of dwellings, and c) ensuring an appropriate quality of the housing stock throughout the period of usufruct (Cf. Lis 2008). Housing policy is also understood, in a broader

depiction, as major directions and methods of functioning of the state and other public institutions, as well as political and social organisations, which have an influence on housing and satisfying the housing needs (Cf. Andrzejewski 1978, Lis, 2011, Zubrzycka-Czarnecka 2016). From the macro perspective, housing policy is partly convergent with economic policy in terms of the functioning of housing, financial and capital markets. From the meso and micro perspectives, housing policy is an element of urban policies (Cf. Zubrzycka-Czarnecka 2011, 2012).

Detailed specification of the main aims of housing policy should refer to the housing needs of the citizens and the housing demand reported at a given time and place, whereas the manner of realising the “right to reside” has an influence on the social model functioning in a particular country (Cf. Lis 2005, 2017). The shape of the housing needs and their change in time and place is a key determinant of defining the main aims of housing policy. Determining the scale and character of the housing needs of a given community requires at least specifying the housing standard, including the minimum requirements in this respect, the structure and features of households. It shall be noted that assessing the housing needs from the perspective of housing policy is made externally, in an aggregated manner, and not by particular, individual households. Consequently, there may occur a discrepancy between the expectations of individual households and the housing needs of a society, identified at a local, regional, national or international scale. The expectations are individualised and refer to the perception of oneself, one’s own aspirations and social status which people want to gain (more in Levine 1995, King 2009). Levine (1995) stresses that expectations may and should be realised with the use of market mechanisms, whereas unsatisfied basic housing needs should become an area of state intervention. That is why the expectations should be closely connected with the possibility of choice, while satisfying the housing needs may include certain limitations of choice, depending on the wealth of particular economies or regions.

Taking into consideration the experiences of the CEEC countries, the common forms of realising social housing include above all housing for rent, and especially municipal housing realised by local authorities, social housing for rent, which is completely or partially dependent on local authorities, as well as social ownership housing realised by private investors with the use of public funds. Municipal housing is interventional or social in its character, most frequently understood as satisfying the housing needs of households with the lowest income. Dwellings created within municipal housing are identified, especially in the countries which have undergone economic transformations, as the low-standard stock, placed either in central or peripheral spheres of cities and inhabited almost exclusively by low income households. Making such low-standard districts inhabited by a certain group of people may cause social tensions in a given town, social exclusion, increase in the crime rate and degradation of urban districts. The above solutions serve as a strong argument for expending the influence of social housing policy to other forms of housing and aiming at the complementarity of housing programmes with intervention conducted within economic, social and spatial policies. Social housing for rent may be realised by non-profit organisations, which many a time belong to local authorities, with the use of public subsidies. The access to the social stock for rent is most frequently limited to a certain target group. State intervention within social housing policy may also apply to collaborative housing, such as co-housing, housing co-operatives and other forms of collective self-organised housing (Czischke 2018). Housing intended for rent or sale is realised with an aim to obtain a profit by different investors. Without possessing adequate financial resources for realising a bundle of aims, the state looks for ways to include the private sector more and more broadly in providing and co-financing the social housing. In this

respect, of key importance is the issue of the scope and conditions (rules) for investors' participation in social investments and the phenomenon of information asymmetry, as well as negative selection, which occurs within this kind of partnership. The scope of indirect intervention of local authorities depends of the size of public funds assigned for social housing, but also on the ability to utilise market mechanisms for financing housing investments in order to realise the social aims. Taking into consideration the housing sphere in the CEEC countries, we may observe growing involvement of private investors as we move upwards the income segmentation of households, i.e. towards wealthier residents. As a result, it is necessary to exercise caution in housing policy while financing housing investments for wealthier members of the society with public funds.

Justifying the state's active policy within the housing sphere. Determining the capabilities to act

Attaining the main goals of housing policy in contemporary market economy requires some activities undertaken by the state. The state's main roles are: ensuring proper functioning of the housing market in the areas where it is economically efficient, correcting market failures, ensuring social justice and aiming at social, financial and political stability.

Contemporary state activity in correcting housing market failures should regard providing complete information about the functioning of housing markets, shaping the prices of particular segments of the real estate market in the long run, the number of transactions made, geographical placement of transactions, potential for development of particular housing markets. The state's actions should lead to reducing the expectations concerning further growth in real estate prices, especially at the ascending phase of housing cycles. Given such a high level of financialisation of the housing sector, it is yet another accelerator for further growths in real estate prices and separation of housing markets from their foundation of a long-term and stable growth.

Another premise of state intervention is an increase in social justice, which determines the allocation and redistribution of the housing stock. Social justice may be interpreted either from the perspective of the equality of chances and their compensation from the very beginning (horizontal justice) or from the perspective of the redistribution needs (vertical justice). One of the key aspects of the former approach is an equal access of all citizens to 'market gambling', even though 'the game' may bring different results to the participants, depending on their capacity and the amount of work they have done. The latter approach emphasizes the necessity of compensating the results (income), irrespective of the capacity or the amount of work performed by the citizens. In market economies, both depictions of social justice may be found, yet they function to a different extent and in different configurations. This serves as a crucial criterion for determining the welfare state models, including the housing system models.

The concept of social justice (horizontal and partially vertical) within the housing area concerns above all two aspects: aiming at social cohesion and shaping conditions to fulfil housing needs of young people who enter the labour market for the first time. Creating the conditions for shaping social cohesion by the state follows the assumption that one's surroundings and housing conditions serve as one of the elements which determine the citizens' chances for success in their lives.

The concept of vertical justice in the housing area is closely connected with the realization of the so-called social housing policy set apart from housing policy. The realisation of the main housing policy goals requires specifying particular instruments with reference to the homeless and housing-excluded,

people with a low-economic status, particular social groups (including the disabled, long-term unemployed, single aged people, families with many children, single-parent families, emigrants and refugees, ethnic minorities, people threatened with eviction onto the street, people living in dangerous neighbourhoods, young married couples, students). However, it has to be highlighted that the criteria allowing for the identification of sensitive groups vary considerably according to the country and tend to change with time. The basic criteria included among all income, age, marital status, health condition, social class, race, place of residence. The main aim of social housing policy is to fight against homelessness and housing-exclusion.

What shall be highlighted while realising the conception of horizontal justice is the fact that the state's actions are concentrated within the social housing stock (Przymeński and Oliwa – Ciesielska 2014; Suszyńska and Rataj, 2017, Szelągowska 2011). Proper functioning of this stock requires specifying and following by the state both the principles of accessing the stock and the conditions determining the necessity to leave the stock, estimating the households' capability to rent or purchase dwellings in the social stock, as well as defining the scope of legal protections of the tenants and owners of the social housing stock. At the same time, it shall be noted that the principle of allocating the social housing stock on the basis of the income criterion will not always reflect the most "urgent" housing needs (Lis 2011). Such a situation may lead to omitting those individuals who have serious housing problems at an income which is temporarily above the criterion of accepting into the stock or choosing (by the administrators or owners of the social stock) those persons from the waiting list who are characterised by the lowest risk of failing to fulfil one's duties as a tenant. What shall be highlighted at the same time is the fact that implementing the criterion housing needs as a supplement to the income criterion should entail imposing the principles of inhabiting the social stock (including the conditions, limitations and requirements) on the beneficiaries of state support, together with the possibility of excluding those individuals who fail to comply with the principles or relocate such individuals to lower-standard dwellings.

The last highlighted premise for state intervention in housing concerns ensuring sustainable development of the economy. Housing crises may extend and deepen the impending economic recession. They may also lead to banking crises. Ensuring sustainable development of the housing sphere makes it possible to overcome economic recessions in a less drastic way, taking much less time. Thus, contemporary housing policy becomes one of the important areas of economic stabilisation (Lis 2015). It seems justified to describe this premise in more detail.

The process of marketisation of the housing sphere developed incredibly dynamically since the 1980s in Western European countries, and since the 1990s in the CEEC countries. The state (government and local authorities) began to withdraw from direct intervention in the housing sphere, limiting themselves to satisfying the housing needs of the poorest or identified sensitive groups, and especially families with many children or first-time buyers. The institutional surroundings, including the actions of the Directorate-General for Competition in the European Union, were greatly unfavourable of wide state support in the housing sphere in the first decade of the 21st century. An example of this were, among others, explanatory proceedings concerning the Netherlands and Sweden for with regard to their overly developed system of social dwellings (Lis 2018). The global financial crisis of 2008, which subsequently turned into an economic crisis, and in some EU countries also into a debt crisis, exerted an incredibly strong impact on the changes in the assessment of the state's actions within the housing sphere. Social housing is becoming an increasingly important part of European economies, more and

more accepted by EU institutions. A strong connection between the global financial system and local housing markets, which has been created over the last decades, resulted in the fact that social stability in particular countries is closely related to balanced development of the housing sphere (Lis 2015b, 2015c). It has been proven that the greater the participation of ownership dwellings in the housing stock, the greater the instability of the housing sphere of a given economy (Lis 2015a). An explanation for this kind of interdependence occurring in 1990-2014 in the CEEC states was an extremely strong connection between the real sphere and the financial sphere at that time. The financial system strengthened the force of its influence alongside its development. Thus, the financial depth increased considerable, which may be corroborated by the fact that the higher the level of granted loans was compared to the GDP in a given country, the higher the participation of less wealthy persons in the credit structure was (Lis 2012). Another issue concerns the available and relatively cheap money in the housing sector, and the threats which it entails. The influence of cheap housing loans, which is very dangerous yet positively assessed from the perspective of an individual household, accelerated the growth dynamics of housing prices extremely fast. It results primarily from the fact that an increase in the real estate value becomes an additional benefit for those who had a chance to take out a mortgage loan to purchase a dwelling. Obviously, only these benefits are generated together with growing transactional prices for housing real estate. Increasing the participation of dwellings for rent (applies to rent based on market principles) in the housing stock breaks this dependence. The condition is to change the structure of the housing stock, and not just new housing institutions functioning within the housing surplus.

The state's weaknesses within the housing sphere. Determining the limitations to act

Research on housing systems often omits such limitations of the normative ('classical') theory of housing policy as the nature of entities and the behaviour of politicians (Acocella 2002). The housing system does not consist of uniform entities, i.e. the owners and tenants, and the politicians and officials who take housing-related decisions are not anonymous. Particular entities form groups based on similar interests, needs or opinions, and they operate through their organizations – interest groups, lobbies, political parties, in order to ensure the realization of their own preferences, irrespective of and even at the cost of other groups. Politicians, on the other hand, express their own preferences and interests, and their main aim is reelection for another term of office (Nordhaus 1975).

On the basis of the above limitations concerning the normative housing policy, one may articulate the guidelines for limiting state intervention, especially in the area of direct interaction, i.e. the social housing stock. The major accusations concern the process of planning, designing, financing and realizing social housing investments, as well as managing the social housing stock that has emerged. Duncan MacLennan and Alison More (1997) discuss four main problems resulting from the state's engagement in the housing area as: preferential unadjustedness, excessive costs of realizing an investment, inefficient exploitation of the stock and politicising the process of allocation and management of the social housing stock.

In the CEEC countries, it is noticed that social housing is becoming unadjusted to the housing needs of future tenants (for example, social dwellings are located on the outskirts of towns). Furthermore, the social housing stock, in which the basic principles of admission and departure have not been specified, becomes unadjusted to the changing structure of tenants over their course of life. On the other hand, lack of market mechanisms in terms of the investment process in social housing resulted in obtaining the costs of producing 1m² of residential usable area which are higher than their market value. A non-

market price for the housing stock and non-market rent rates do not lead to an optimal use of social dwellings.

In relation to CEEC, the weakness of housing policy is also the creation of an imbalance between the ownership and rental of the housing stock. The subsidy regime and privatisation led rational households to prefer homeownership over municipal and private rental housing (Csizmady *et al* 2017). Of course, an excellent factor strengthening this imbalance is the financing of the housing sphere so typical for CEEC countries.

Conclusions and discussion

The main aim of the work has been to assess the capabilities and limitations of conducting active housing policy in contemporary CEEC countries. What should be the priority in housing policy is the creation of institutional bases and stimuli in order to increase the participation of dwellings for rent in the housing stock, while the state should not take over the exclusive rights in this respect. In general, housing policy should be incorporated into market mechanisms, and not supersede or replace them. Of crucial importance in housing policy, especially in the face of cheap money available to a part of society, excluding the other part of the inhabitants, is to provide information to market participants about the development of housing markets, market cycles, shape of prices and rent rates, possibility of renting dwellings and consequences of purchasing dwellings.

The state's actions should be arranged depending on a segment of influence reflecting the urgency of objectivised housing needs, with limitations to public funds necessary to finance the needs, from primary instruments supporting the homeless, to secondary instruments supporting those who have a court ruling on eviction awaiting a social dwelling, to third-rate instruments supporting persons with low income, to fourth-rate instruments supporting selected sensitive groups. Within the primary instruments, the key aim should be eliminating the phenomenon of long-term homelessness (Cf. Przymeński 2001,¹ Rataj 2018). This elimination may take place via realising the process of bringing people out of homelessness. The state's actions cannot be limited to ensuring an adequate number of places in lodgings and shelters for the homeless. Within the secondary instruments supporting those who face court-ruled eviction, awaiting a social dwelling, the state should act in a very determined way and on a large scale. Unblocking the queue for social dwellings is a fundamental condition for the functioning of a mass market of private rent. Within the third-rate instruments supporting poor persons, it is of key importance to define the principles of leaving the housing stock, after specifying the criteria for its residence as well as the solutions in order to reduce rent arrears. The social stock is not allocated for the rest of the tenant's life; it is supposed to play a motivational role. It is necessary in the social stock to implement and execute the principles of reducing troublesome neighbours, as well as a firm and restrictive action against the asocial tenants. The direction of increasing the patency of moving from social dwellings to municipal dwellings (changes in regulations from the social stock to social rent), which gives social tenants a possibility of social advancement and increasing the standard of dwellings (see more in Rataj 2013, 2014, 2018). It is important to resolve the issue of those who are in a difficult housing and living situation, without their own fault, those who should not be degraded by being placed in extremely sub-standard dwellings, worse than other social dwellings (Przymeński and Oliwa – Ciesielska 2014). It is of vital importance to improve the quality of the local space and public services, the environment in the immediate vicinity of residential buildings and to build a community, create a system which would involve the tenants in decision-making within this stock (Tobiasz-Lis *et al* 2019).

Particularly urgent become the actions for increasing the quality of the gmina's housing stock, bringing the social and municipal dwellings to contemporary norms concerning the housing culture. Furthermore, it seems justified to resolve the technical problem of maintaining the municipal stock within the area of implementing in housing stocks the solutions concerning the adaptation to climate changes, including low-emissions and intelligent management. Within the fourth-rate instruments supporting vulnerable groups, a comprehensive approach to social groups with special needs should be developed, in particular: people ending their stay in child care homes, large families, seniors (Hrastet *et al* 2019), disabled, immigrants, refugees. There is also a lack of complex solutions for students and graduates.

Finally, it should be emphasized that housing investments do not change the long-term trend of economic growth, but may increase the amplitudes of fluctuations in cyclical economic variables. The period of housing deficits in many housing markets in the CEEC countries has come to the end and there is no longer a unique "security buffer" (Cf. Lis 2018). The housing cycles will have more and more amplitudes, which may lead to deepening economic crises if the housing sphere is not offset by the functioning of an efficient segment of rental housing.

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Track:

Housing, gentrification and socio-spatial dynamics

Suburbs and Subsidized Housing in the United States: What Makes Some Suburbs More Receptive to Low-Income Housing Tax Credit Housing Than Others?

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Suburbs and Subsidized Housing in the United States: What Makes Some Suburbs More Receptive to Low-Income Housing Tax Credit Housing Than Others?

Abstract: The Low-Income Housing Tax Credit (LIHTC) is the largest affordable housing production program in the United States. The program has been the subject of some criticism because it has done an unimpressive job of placing low-income renter households in high-opportunity neighborhoods, especially in suburban jurisdictions. This research will examine, at the municipal level, what kinds of communities tend to include LIHTC properties and which do not. The receptive communities will be compared to the exclusionary communities in terms of many measures of opportunity offered including school quality, access to gainful employment, and access to transportation. The analysis will also examine the effect of population size, socioeconomic and demographic characteristics, housing stock characteristics, and willingness to accept multi-family development. The contribution of this research will be that it will be among few efforts to analyze the LIHTC at the municipal level, adding to the knowledge needed to guide the LIHTC toward better placement of housing in the future.

Keywords: Low-Income Housing Tax Credit, Suburbs, Location of Affordable Housing, Fair Housing

Introduction

The Low-Income Housing Tax Credit (LIHTC) program is, by far, the nation's largest affordable housing production program. Since its inception in 1987, the program has produced 2.8 million housing units for low-income renter occupancy. Of these units, 2.3 million are still in service (U.S. Department of Housing and Urban Development, 2018). Created as part of the Tax Reform Act of 1986, the program has become a relatively efficient mechanism to create units for occupancy by renter households with income no higher than 60 percent of the metropolitan area's or non-metropolitan county's Area Median family Income (AMI).

Government influences where LIHTC properties are located, but the influence is indirect. Private for-profit and non-profit developers select sites for the affordable housing. The developers then apply for an allocation of tax credits from the state's pool of tax credits. If allocated, the developer uses these credits to assist in financing the development by exchanging the tax credits for equity funds from investors. The allocation of tax credits to a project is not automatic but is generally highly competitive. Developers compete with each other for a limited supply of tax credits. Each state awards its tax credits to developers based upon the merits of the proposals. The merits of the proposals are determined by scoring each against a set of so-called preferences detailed in the state's Qualified Allocation Plan (QAP). Some of these preferences are federally mandated. For example, developers receive extra credits for location properties in Qualified Census Tracts (QCTs) which are areas with concentrations of poverty. Others preferences are chosen by the state so as to direct the allocation of tax credits toward housing developments that can best serve the affordable housing needs of the state. For example, if a state has a soft market and does not need additional units, it can award preferential treatment to development proposals that rehabilitate existing housing rather than proposals that add new housing to the market.

The LIHTC program is capable of entering virtually any housing market in the nation. The program can add new units to a market, or it can rehabilitate existing units. The program can serve families that are in the work force, or it can serve populations are elderly or have special needs. Despite this flexibility, there is concern among policy analysts that the program is concentrating in some municipalities and not in others. The fear is that this concentration is causing the program's units to be located in municipalities that do not offer high quality opportunities to the assisted renter households and denying these households access to municipalities that do.

When allocating tax credits to a development proposal, the community where the proposal is to be located will be consulted. Knowing that communities will often attempt to exclude housing for low-income households, the states are not required to obtain approval from the community. However, many states require some level of local support of any proposed LIHTC development in order to award it tax credits. If communities withhold their support for a development, the lack of support can block the development from going forward. Low-poverty communities are more likely to block development of affordable housing (Scalli 2012). Ellen et al (2015) found that states were giving increased preference to projects with community approval over the period 2002 to 2010.

The research presented here determines the extent to which communities exclude LIHTC proposals. It compares receptive communities to exclusionary communities in terms of many measures of opportunity offered including school quality, access to gainful employment, and access to transportation. The analysis also examines the effect of population size, socioeconomic and demographic characteristics, housing stock characteristics, and willingness to accept multi-family development. The contribution of this research is that it is among few efforts to analyze the LIHTC at the municipal level, adding to the knowledge needed to guide the LIHTC toward better placement of housing in the future.

Literature Review

Policy analysts have hoped that the LIHTC program would accomplish more than the provision of affordable shelter. The hopes have been that LIHTC properties would be located so as to provide assisted low-income households to access to neighborhoods offering the opportunity to live safe and successful lives in economically, racially and ethnically integrated neighborhoods. These hopes mean that LIHTC properties should locate so as to serve the twin goals of, first, movement to high-opportunity communities, and second, fostering racial and ethnic integration.

Several research efforts examined the extent to which the LIHTC program located properties in high-opportunity, especially suburban neighborhoods. The expectation was that the program would not perform as the tenant-based Housing Choice Voucher (HCV) because of the mobility offered with the voucher approach and because the project-based LIHTC would confront political opposition to locating in desirable neighborhoods (McClure, 2008). Research found that, in the early years of the LIHTC program, properties were disproportionately located in distressed central city census tracts. However, as the price for tax credits

rose over time, the program became increasingly popular with developers who helped the program enter low-poverty suburban communities. The LIHTC performed as well as the Housing Choice Voucher Program in helping low-income households reside in high-opportunity suburban areas (McClure, 2006). Later, McClure and Johnson (2015) reinforced this result, arguing that the LIHTC program developers were finding ways to overcome the barriers preventing entry of affordable housing into the suburbs. Despite the improvements in LIHTC property placement, the authors found that LIHTC units were located in low-poverty tracts in smaller proportions than found in the rental market as a whole and that the share of LIHTC units located in high-poverty tracts continued to be in greater proportions than the rental market as a whole. These location metrics for the LIHTC program were found to be better than public housing and very comparable to the tenant-based Housing Choice Voucher program.

The LIHTC program is both making entry into high-opportunity communities, but it is also disproportionately placing units in high-poverty tracts. Oakley (2008) finds that the LIHTC works at crossed purposes. Looking at four metropolitan areas, she found that the added incentives given to developers to place LIHTC units in QCTs cause developers to disproportionately locate units in these areas of concentrated poverty. This pattern of clustering does not serve the goal of spatial dispersal of the poor, but it may not make matters worse. Ellen, Horn and O'Regan (2016) found no evidence of increased poverty concentration because of LIHTC locations, and they found some evidence that the program may reduce poverty rates in high-poverty neighborhoods over time. The research seems to suggest that the locations of LIHTC developments do little harm and have the potential to reduce concentrations of poverty but, overall, do little to reduce overall poverty concentration on a large scale (Freedman & McGavock, 2015; Ellen, O'Regan, & Voicu, 2009).

The concentration of poverty is an important metric to assess neighborhood quality, but it is not the only possible metric. Ellen, Horn and Kuai (2018) examine the neighborhoods where LIHTC developments are placed across a range of additional measures of neighborhood quality. These authors used a unique dataset describing the households in the LIHTC units for 12 states. This dataset permits research comparing the racial composition of the LIHTC property to the racial composition of the neighborhood to see how neighborhood outcomes vary across subsets of households. They find that, compared to all renters, LIHTC units are in neighborhoods with higher poverty rates, weaker labor markets, more polluted environments, and lower performing schools, but better transit access. Compared to other poor and minority households, LIHTC households live in neighborhoods that are significantly more disadvantaged.

Horn, Ellen, and Schwartz (2014) find that schools nearest to HCV households have higher math and reading proficiency than those schools near public housing but lower proficiency scores than those schools in close proximity to LIHTC properties and other poor renter households with children. Thus, LIHTC developments are better located in terms of proximity to higher performing schools than are households with vouchers.

Lens, Ellen, and O'Regan (2011) examined crime levels as a measure of neighborhood health. They developed a crime index for the 91 U.S. municipalities for which consistently measured crime data were available. They found that LIHTC properties tend to be located in high-crime neighborhoods at a greater rate (11.3 percent) than is true for all households (3.1 percent) or for all low-income renter households (6.0 percent). Thus, there seems to be a disproportionately high concentration of LIHTC properties in high-crime areas. Freedman and Owens (2011) looked at crime as well. They noted that the topic is poorly researched due to the lack of data at the neighborhood level across municipal boundaries. They overcome this problem by aggregating crime reports up to the county level. They found that when LIHTC properties are developed in the poorest neighborhoods, they result in significant reductions in violent crime at the county level, but they found no detectable effects on property crime.

Access to gainful employment is another metric used to assess the quality of neighborhood for low-income households. Lens (2014) created an index for the number of jobs in a neighborhood. He used this index to assess the proximity to jobs for assisted households in public housing, LIHTC properties, Section 8 New Construction developments, and the HCV program. He found that public housing households live in census tracts with the greatest proximity to jobs, especially jobs for the low-skilled workforce. He found that LIHTC developments were located less well but did locate in tracts with greater job access than did households in the HCV program.

Thus, the record of the LIHTC in poverty deconcentration and movement of low-income households to high-opportunity neighborhoods is mixed. The program is making entry into desirable neighborhoods, especially in the suburbs, but the potential for greater success remains.

The second issue surrounding the placement of LIHTC units deals with the level of minority concentration in the receiving community. Dawkins (2013) found that LIHTC properties cluster into census tracts with predominantly black populations. He suggests that the program be revised to eliminate incentives to cluster housing in QCTs with inherently higher poverty levels and often greater minority concentrations. Similarly,

Rohe and Freeman (2007) model the location of LIHTC units by census tract. They found that the percentage of black population in a neighborhood was a strong predictor that LIHTC properties would be located there. Horn and O'Regan (2011) addressed the same issue with a different approach. They examined the channels through which the LIHTC program could influence racial segregation. They found that LIHTC properties do not contribute to increased overall segregation, even those in high-poverty neighborhoods. Rather, they found that the LIHTC program contributes to small declines in the level of racial segregation found at the metropolitan level.

The possible contribution of the LIHTC program to racial integration has become increasingly important given a recent decision by the U.S. Supreme Court. In 2015, the Court heard a case on the locations of LIHTC properties and racial segregation. The case was the *Texas Department of Community Affairs v. Inclusive Communities Project, Inc.* (ICP). The plaintiffs, ICP, argued that the Texas Housing Finance Agency violated the federal Fair Housing Act by disproportionately allocating tax credits in a manner that furthered existing patterns of racial segregation. Trial evidence showed that over 90 percent of Texas LIHTC units were in majority minority census tracts. The plaintiffs brought the claim under a disparate impact theory of liability, by which plaintiffs need not show evidence of intentional discrimination, rather, they only need to demonstrate that the action had a disproportionately negative impact on a protected class of households as identified in the Fair Housing Act. The Court endorsed the disparate impact theory. This decision has caused Texas to rework its QAP to affirmatively further fair housing which will likely cause other states to follow (Walter, Wang, & Jones, 2017).

The LIHTC program's is demonstrating a capacity to overcome the resistance to affordable housing so often found in suburban low-poverty neighborhoods. Further, the program may be contributing to racial integration. With the adoption of the Affirmatively Furthering Fair Housing process by HUD, greater attention is being placed on fair housing, dispersal of affordable housing, and helping the poor locate in high-opportunity neighborhoods through assisted housing programs including the LIHTC program.

Dispersal of the poor to areas of high-opportunity and promotion of racial and ethnic integration remain only part of the goals for the LIHTC program. Many developers of LIHTC housing, especially non-profit community-based development organizations endorse the LIHTC program as a tool for neighborhood revitalization. They see the program as a means to generate spillover effects that will help to revitalize a neighborhood. These effects are typically measured in terms of increases in the values of properties near to LIHTC developments. The research results on this topic are mixed, and context matters. Lee, Culhane

and Wachter (1999) modeled changes in the values in Philadelphia for properties in close proximity to LIHTC properties. They found that the LIHTC properties had slightly negative effect upon the value of nearby properties. Ellen et al. (2007) modeled change in values in New York City for properties in close proximity to LIHTC properties and found a significant positive effect in some, but not all, cases. For a sample of LIHTC properties in New York City, these LIHTC developments replaced deteriorated properties. Thus, wherever one of these LIHTC properties was developed, it removed a property that was harming the values of adjacent properties. In this context, the LIHTC development transformed the deteriorated property into a stable, new asset enhancing the value of the surrounding properties. Ellen, O'Regan and Voicu (2009) extended this analysis, suggesting that there may be a trade-off in building LIHTC units in low-income areas. Although building subsidized housing in high-poverty neighborhoods may further the concentration of the poor, it may also contribute to improvements in these neighborhoods and thereby lessen poverty concentration in the long run. They found little evidence that the program is exacerbating poverty concentration and found that the program can encourage community redevelopment when the LIHTC property is part of a well-designed community revitalization plan.

Recent work by Diamond and McQuade (2016) came to very different conclusions on the likely spillover effects of LIHTC properties. They estimated the spillover effects of LIHTC developments on surrounding neighborhoods. Using parcel level data from 129 counties joined with data from many public and private sources, they found the spillover effects to be dramatically different depending upon whether the location is rich or poor. They found that, in low-income neighborhoods, LIHTC properties tend to revitalize the neighborhoods, increasing house prices by about 6.5 percent. They LIHTC properties also lowering crime rates and attract populations that are more racially and economically diverse. These benefits can generate significant aggregate welfare gains for the affected communities. In high-income neighborhoods with majority white populations, they found that LIHTC developments cause house price declines of 2.5 percent and attracted low-income households.

The spillover effects of LITHC developments can be positive but finding the right context can be hard. Edsall (2015) criticized affordable housing development as a strategy for community development. He contends that an alliance of nonprofit housing companies, local politicians, state and local housing agencies justify the placement of affordable housing in the poorest sectors by arguing that it will encourage neighborhood revitalization and economic growth. Rather, this practice “serves only to further concentrate disadvantage.” Mallach (2011) agrees suggesting that, “Instead of focusing on buildings, we should be thinking about the needs of low-income renters as a whole.”

The literature on LIHTC property location is mixed. Some communities seek out LIHTC properties to help revitalize distressed areas. Some developers seek out high-opportunity suburban location to provide affordable housing in desirable neighborhoods. Some communities fear loss of property value and the influx of poor people, especially poor people of different racial or ethnic characteristics (Bratt, 2012). This research will explore which communities seem to attract LIHTC properties and which communities seem to exclude these properties.

Data and Methods

This research looks at characteristics of the housing stock as of 2017, as well as changes in the housing stock during the years 2009 through 2017. This time period was a period of economic recovery from the turbulence found over the housing bubble of 2000 to 2007 followed by the crash of the mortgage market which lead to the great recession. There is an advantage of examining the growth and change in the LIHTC program during this time; it is a period of steady growth without the confounding conditions of recession.

The U.S. Department of Housing and Urban Development (HUD) provides data on all properties placed in service between 1987 through 2017 for which location information is reported. These data describe 33,784 properties with 2,168,247 units. The lack of complete location information affects about one-fourth of all LIHTC properties. The complete records cover 73 percent of the LIHTC properties and 76 percent of the units, and there is no reason to assume that the LIHTC properties that are not reported properly have any different location characteristics than those for which complete information is available.

The LIHTC data are paired with data on the approximately 29,000 municipalities in the United States. These data are supplied by the American Community Survey using its five-year summaries. The counts for 2017 are the combined survey results from 2013 through and the 2009 results combine data from 2005 through 2009.

Table 1 describes theses data.

Municipalities range in size from only a few people to New York City with 8.5 million people. Growing municipalities, defined here as those municipalities with any population expansion from 2009 to 2013, make up only about one-half of all municipalities. The remaining one-half experienced either stable or declining population during this time period. Growing municipalities are of interest to this research because

the LIHTC is a production program designed to augment the stock of housing. The program can also rehabilitate existing units, thus, the program can enhance the quality of the existing stock of housing without increasing the scale of the stock. In addition, even newly constructed units do not necessarily increase the stock. Newly

Table 1. **Low-Income Housing Tax Credit Properties
Total and Percent for Family Occupancy
Placed in Service All Years and 2009-2017**

<i>Year Placed in Service</i>	<i>All Cities</i>	<i>Cities with Growth 2009 to 2017</i>
<i>Number of cities</i>	29,092	13,955
<i>Average population 2017</i>	8,237	13,292
<i>Average housing units 2017</i>	3,431	5,391
<i>Average percent rental 2017</i>	28.8%	30.5%
<i>Average percent multi-family 2017</i>	7.5%	9.4%
<i>Cities with LIHTC projects</i>	8,240	4,942
<i>Average LIHTC projects</i>	4.1	5.1
<i>Average LIHTC units</i>	263	340
<i>Cities with LIHTC family projects</i>	8,233	4,430
<i>Average LIHTC family projects</i>	1.9	2.4
<i>Average LIHTC family units</i>	120	160

constructed units can be built on a site cleared for construction by demolishing existing units. However, the program tends to favor new construction and is associated with adding units to the stock. For this reason, the research pays particular attention to the municipalities where the population and the housing stock is growing as the LIHTC program can be a tool these municipalities use to ensure that a share of the new growth is priced to serve low-income households.

The average municipality has a population of only 8,200 people housed in 3,400 units of which just under 30 percent are rental. Growing municipalities tend to be somewhat larger with an average population of 13,300 and a commensurately larger housing stock of 5,400 units.

Of concern for this research are the municipalities that do not permit LIHTC properties into their jurisdiction. Some municipalities are not absorbing LIHTC properties. This exclusion becomes especially

concerning when there is growth in the housing stock and even growth in the multi-family stock, but little or no absorption of LIHTC properties.

The typical municipality with any LIHTC properties has about 4.1 properties for a total of 260 units. The LIHTC program is not distributed thinly across all municipalities. Rather, they are concentrated in a few municipalities. Note that LIHTC properties are found in only 8,240 municipalities, only 28 percent of all municipalities. Among the 13,955 municipalities with growing populations, LIHTC properties are found in 4,942 municipalities or a slightly higher 35 percent of these municipalities.

Our concern is with exclusion of LIHTC properties. Nearly all LIHTC properties are multi-family developments. The typical LIHTC development contains about 60 units, typically in multifamily buildings. Multifamily properties, defined in this research as properties with 5 or more units per structure, do not make up an especially large share of the nation's housing stock. The typical U.S. city has only 7.5 percent of its housing stock in multifamily properties. In growing municipalities, the share rises to only 9.4 percent. The willingness of a community to absorb multifamily properties into its housing stock is an indicator of the community's acceptance of housing for households in the lower end of the income spectrum. Note that renter household income in the United States is \$36,700, almost exactly one-half of the median income of owner-occupied households at \$73,300 (American Community Survey, 2019). The willingness of a community to absorb LIHTC properties into its housing stock is an indicator of the community's acceptance of housing for low-income households, those confronting the greatest difficulty in finding affordable housing.

LIHTC properties for family occupancy are harder to locate than are properties designed for the elderly or for special needs populations. Family occupancy means household who are not elderly, disabled or suffering from any special needs. Despite the difficulty in finding sites for family properties, they seem to be distributed in the same number of municipalities as all LIHTC properties (8,233 of the 8240 municipalities with LIHTC properties).

This research examines the trends in the development of housing within the LIHTC program, especially housing designed for family occupancy. It finds that there is a tendency away from development of LIHTC housing for family occupancy and a shift toward housing for the elderly and special needs populations. The analysis then turns to the role the metropolitan location plays in the ability of LIHTC housing to enter the market. The analysis then examines the share of housing that is found in municipalities based upon their

status as central cities, suburbs, or other communities. It finds, unsurprisingly, that multifamily housing holds a larger share of the housing market in larger central cities. Finally, the analysis models the variation in the acceptance of LIHTC units in communities as a function of exclusionary practices which are proxied by the share of multifamily housing found in the market controlling for a variety of factors that assess the need for affordable housing as well as the other measures of the opportunity levels on the community.

Analysis

Table 2 examines the production of LIHTC units over time and the proportion of LIHTC units that are designed for family occupancy.

The program took a few years to get going in earnest. By 1992, it reached a level of productivity that added over 1,000 properties each year until 2013. After 2013, the program experienced a lower rate of production.

The percentage of all properties produced that are designed for family occupancy has followed a very clear trend. In the early years of the program, 1987 through 1992, over 60 percent of all LIHTC properties were designed for family occupancy. In the “middle years” of the program, 1994 through 2004, family occupancy fell, ranging from 50 to 60 percent. After 2004, the percentage of properties for family occupancy fell to below half. During 2013 and 2014, the production of family properties reached a low of 37 to 39 percent.

Table 3 distinguishes municipalities by their metropolitan location and their absorption of LIHTC properties. All central cities in large metropolitan areas have LIHTC properties within their jurisdiction. Among suburban municipalities in large metropolitan areas, only 45 percent have LIHTC properties. The share is smaller still in municipalities in small metropolitan areas and in non-metropolitan areas, with only 23 percent containing any LIHTC properties.

There is nothing inherent in the LIHTC program that drives developers to select large central cities as the locations of the LIHTC properties that they produce. The need for affordable rental housing is

**Table 2. Low-Income Housing Tax Credit Developments
By Year Placed in Service
Total and Percent for Family Occupancy**

<i>Year Placed in Service</i>	<i>Number of Projects</i>	<i>Percent for Families (non-elderly, non-disabled)</i>
1987	473	70.2%
1988	1,011	68.7%
1989	949	63.5%
1990	814	65.2%
1991	979	60.1%
1992	970	60.5%
1993	1,030	57.5%
1994	1,098	57.5%
1995	1,417	62.5%
1996	1,331	64.2%
1997	1,249	59.3%
1998	1,207	57.6%
1999	1,478	55.7%
2000	1,287	54.8%
2001	1,384	57.2%
2002	1,231	53.1%
2003	1,402	51.3%
2004	1,426	52.9%
2005	1,484	48.6%
2006	1,546	48.5%
2007	1,598	47.9%
2008	1,263	44.7%
2009	1,057	40.8%
2010	1,034	44.1%
2011	1,361	40.1%
2012	1,125	42.3%
2013	1,016	38.7%
2014	782	37.0%
2015	834	43.6%
2016	671	43.7%
2017	65	29.2%

widespread. Suburban municipalities and communities in small metropolitan and non-metropolitan areas offer high levels of opportunity which should make the good candidates for the development of LIHTC properties. It is difficult to believe the developers of LIHTC properties have not pursued development opportunities in one-half of all suburban communities and over three-quarters of all municipalities in small

markets. It seems much more likely that developers are being prevented from making entry into these markets.

Table 3. Municipalities by Metropolitan Location and the Presence of LIHC Properties

	<i>Cities without LIHTC units</i>	<i>Cities with LIHTC units</i>	<i>Total</i>
<i>Central city in large metropolitan area</i>	0 0%	49 100%	49 100%
<i>Suburb in large metropolitan area</i>	2,998 55%	2,453 45%	5,451 100%
<i>City not in large metropolitan area</i>	18,043 77%	5,536 23%	23,579 100%
<i>Total</i>	21,041 72%	8,038 28%	29,079 100%

Table 4 examines the contribution that the LIHTC makes to the housing stocks of the nation's municipalities. The data include all municipalities in the American Community Survey, a total of 29,092. About 5,500 of these municipalities are located in metropolitan areas where populations of greater than 1 million. A population of 1 million is used as a threshold to identify where the distinction between a central city and its suburbs becomes meaningful. Below this threshold, metropolitan areas tend to have fewer communities at the periphery of the central city and the central cities tend to be a very dominant share of the total area.

A total of 5,501 municipalities are in these large metropolitan areas. A total of 23,591 municipalities (cities and suburbs) exist in small metropolitan areas and non-metropolitan areas. As would be expected, the central cities in the larger metros are themselves very much larger with an average size greater than 830,000. The suburbs for these larger metropolitan areas are much smaller at about 18,000 population on average.

The remaining 24,000 municipalities are much smaller with an average population of about 4,000 people. The average number of housing units in each category of city are proportionate to population size.

Table 4. **Municipalities by Metropolitan Location**
Population, Housing Units, Multifamily and LIHTC Share of Units

	<i>All cities</i>	<i>Central city in large metro</i>	<i>Suburban city in large metro</i>	<i>City in small metro of non-metro</i>
<i>Number of cities</i>	29,092	59	5,442	23,591
<i>Average population 2017</i>	8,237	834,493	17,550	4,022
<i>Average percent growth population 2009-2017</i>	9.9%	5.5%	12.3%	9.4%
<i>Average housing units 2017</i>	3,431	352,874	6,861	1,766
<i>Average percent growth in housing 2009-2017</i>	8.0%	3.9%	11.0%	34.7%
<i>Average percent housing in 5+ unit structures 2017</i>	7.5%	31.3%	13.6%	6.1%
<i>Average change in percent housing 5+ unit structures</i>	0.4	1.5	0.5	0.3
<i>Average LIHTC as percent of units</i>	2.5%	4.1%	2.6%	2.5%
<i>Average LIHTC units developed as percent growth of all units</i>	7.6%	30.4%	2.5%	9.6%

The percent of the housing stock that is multifamily is much larger in the larger central cities averaging over 30 percent compared to 14 percent in the suburbs. Only 6 percent of the housing stock is multifamily in the smaller metropolitan and non-metropolitan areas.

Table 5 addresses the differences between growing and non-growing municipalities. The conclusions that can be drawn from this comparison is that growing municipalities are much more like non-growing municipalities than different. The only areas where growing municipalities are different are few. Growing municipalities are larger. Their typical owner-occupant households tend to have higher incomes and have higher value homes, and typical renter household has higher income as well. Many other comparisons find no significant differences between growing municipalities and all municipalities. They have similar shares of housing that is rental, have similar rental vacancy rates, median rents, and shares of the renter households who pay more than 30 percent

Table 5. **Demographic and Housing Characteristics of Municipalities 2017 by Metropolitan Location and by Growth 2009 to 2017**

	Average for: All Cities	Cities in large metropolitan areas		Growing cities in large metropolitan areas	
		Central cities	Suburbs	Central cities	Suburbs
Number of cities	29,092	49	5,452	37	3,244
<i>Average of cities:</i>					
Population 2017	8,237	863,764	18,785	940,639	25,267
Percent growth population 2009-2017	9.9%	4.5%	12.3%	8.5%	24.0%
Housing units 2017	3,431	365,703	7,380	386,933	9,794
Percent growth in housing 2009-2017	8.0%	3.2%	11.0%	5.8%	18.6%
Percent of occupied units rental 2017	28.8%	53.8%	30.3%	53.2%	31.5%
Percent of rental housing vacant 2017	6.6%	6.0%	5.2%	5.7%	5.1%
Median housing costs 2017	\$ 875	\$ 1,083	\$ 1,345	\$ 1,152	\$ 1,368
Percent of renter households with high cost burden 2017	44.3%	52.1%	48.1%	51.6%	47.9%
Median gross rent 2017	\$ 857	\$ 1,014	\$ 1,187	\$ 1,071	\$ 1,203
Percent growth in median gross rent 2009-2017	23.8%	22.0%	21.7%	23.6%	22.2%
Median value of owner-occupied units	\$ 171,207	\$ 236,910	\$ 290,023	\$ 274,070	\$ 296,967
Percent growth in median value 2009-2017	11.8%	2.0%	0.1%	4.2%	0.9%
Percent housing in 5+ unit structures 2017	7.5%	31.3%	13.6%	32.6%	15.6%
Change in percent housing 5+ unit structures 2009-2017	0.4	1.5	0.5	1.4	0.7
LIHTC as percent of units 2017	2.5%	4.3%	2.6%	4.3%	2.5%
LIHTC units developed as percent of unit growth 2009-2017	7.6%	33.5%	2.6%	5.7%	3.9%
Percent minority population 2017	23.7%	57.4%	30.5%	55.1%	33.1%
Percent growth in minority population 2009-2017	2.3	3.6	4.1	3.6	5.3
Percent poverty 2017	15.8%	21.4%	11.2%	19.5%	10.9%
Percent growth in poverty population 2009-2017	1.1	1.5	1.4	1.2	1.5
Percent households who are married couple families 2017	49.3%	32.7%	51.9%	35.1%	52.3%
Median income owner-occupant household 2017	\$ 64,046	\$ 74,663	\$ 88,204	\$ 79,355	\$ 89,945
Percent growth in owner income 2009-2017	19.3%	15.1%	15.1%	16.4%	16.3%
Median income renter household 2017	\$ 37,085	\$ 35,393	\$ 47,720	\$ 38,027	\$ 48,613
Percent growth in renter household income 2009-2017	34.8%	19.8%	27.0%	21.2%	26.8%
Percent of workers unemployed 2017	5.9%	7.0%	5.2%	6.2%	5.0%
Percent of workers without high school education 2017	13.5%	14.6%	10.5%	14.4%	10.7%
Percent of workers who commute out of city 2017	78.3%	36.0%	83.2%	35.4%	82.3%
Percent of workers who commute by car alone 2017	80.0%	68.7%	79.2%	68.7%	78.9%
Percent of workers who use public transit 2017	1.3%	10.1%	3.8%	9.8%	3.9%

of income on housing, a commonly accepted standard for identification of a high housing cost burden. The housing stocks have comparable shares that are multi-family. The populations are similar as well in terms of the incidence of poverty, high school dropouts, unemployed workers, and worker commuting patterns. With all of these similarities, it is unsurprising that the LIHTC program is making entry into both growing and non-growing municipalities at comparable rates.

Table 6 explores the differences between those municipalities with and without LIHTC units. Municipalities with LIHTC units are fewer in number. They comprise only 28 percent of all municipalities. Municipalities with LIHTC units are:

- Larger in terms of population and the size of the housing stock,
- The share of rentals in the stock is greater,
- The percentage of renter households suffering from a high housing cost burden is higher (48 percent to 43 percent), and
- The share of the housing stock that is in multifamily buildings is much greater (14 percent to 5 percent).

Municipalities with LIHTC properties and those without have populations with:

- Comparable unemployment rates, workers with complete high school educations, and worker commuting patterns, as well as
- Median gross rents and rental vacancy rates that are similar.

The populations in municipalities with LIHTC properties and those without differ in some respects. Municipalities with LIHTC properties have:

- Greater minority presence (30 percent to 21 percent), which is growing faster (3.4 percent to 1.9 percent),
- Slightly greater poverty (17 percent to 15 percent), and
- Lower median income for renter households by over \$5,000 and is growing more slowly (24 percent to 41 percent).

It is difficult to come away from this preliminary analysis without noticing that municipalities with LIHTC properties have renter populations that are poorer and contain more minorities, while municipalities without LIHTC properties have fewer renters, fewer poor households, and do not allow as much housing to be developed in a multifamily format.

Table 6. **Demographic and Housing Characteristics of Municipalities by Presence of LIHTC Units**

	Average for: All Cities	Cities with LIHTC units	Cities without LIHTC units
<i>Number of cities</i>	29,079	8,038	21,041
<i>Average of cities:</i>			
<i>Population 2017</i>	8,240	23,514	2,405
<i>Percent growth population 2009-2017</i>	10.0%	8.6%	10.6%
<i>Housing units 2017</i>	3,433	9,725	1,029
<i>Percent growth in housing 2009-2017</i>	8.0%	7.5%	8.2%
<i>Percent of occupied units rental 2017</i>	28.8%	37.2%	25.6%
<i>Percent of rental housing vacant 2017</i>	6.6%	6.4%	6.6%
<i>Median housing costs 2017</i>	\$ 875	\$ 905	\$ 864
<i>Percent of renter households with high cost burden 2017</i>	44.3%	48.0%	42.7%
<i>Median gross rent 2017</i>	\$ 857	\$ 853	\$ 859
<i>Percent growth in median gross rent 2009-2017</i>	23.8%	21.7%	25.0%
<i>Median value of owner-occupied units</i>	\$ 171,207	\$ 172,521	\$ 170,667
<i>Percent growth in median value 2009-2017</i>	11.8%	6.7%	14.2%
<i>Percent housing in 5+ unit structures 2017</i>	7.5%	13.7%	5.2%
<i>Change in percent housing 5+ unit structures 2009-2017</i>	0.38	0.70	0.23
<i>LIHTC as percent of units 2017</i>	2.5%	2.6%	0.0%
<i>LIHTC units developed as percent of unit growth 2009-2017</i>	7.62	7.79	0.00
<i>Percent minority population 2017</i>	23.7%	29.5%	21.4%
<i>Percent growth in minority population 2009-2017</i>	2.34	3.37	1.94
<i>Percent poverty 2017</i>	15.8%	17.4%	15.2%
<i>Percent growth in poverty population 2009-2017</i>	1.1	1.2	1.0
<i>Percent households who are married couple families 2017</i>	49.3%	45.3%	50.8%
<i>Median income owner-occupant household 2017</i>	\$ 64,046	\$ 64,910	\$ 63,686
<i>Percent growth in owner income 2009-2017</i>	19.3%	15.5%	21.1%
<i>Median income renter household 2017</i>	\$ 37,085	\$ 33,546	\$ 38,936
<i>Percent growth in renter household income 2009-2017</i>	34.8%	24.4%	40.8%
<i>Percent of workers unemployed 2017</i>	5.9%	5.9%	5.8%
<i>Percent of workers without high school education 2017</i>	13.5%	14.0%	13.3%
<i>Percent of workers who commute out of city 2017</i>	78.4%	69.6%	81.7%
<i>Percent of workers who commute by car alone 2017</i>	80.0%	80.1%	79.9%
<i>Percent of workers who use public transit 2017</i>	1.3%	1.8%	1.1%

Table 7 provides the details of a regression model that explains variation in the percent of a city's housing stock that is made up of LIHTC units. The first model looks at variation in all LIHTC units; the second model looks at variation in only LIHTC units designed for family occupancy.

The typical city's housing stock is only 1 percent LIHTC units, but the variation is wide. The maximum is 39 percent and the minimum is zero. Recall that over 70 percent of the municipalities have no LIHTC units.

The model explaining variation in any LIHTC units is unimpressive. Nearly all of the coefficients are significant and generally of the correct sign, but the R Square statistic is only .15. The model is, however, sufficiently strong to indicate the contribution of various variables in explaining why some municipalities absorb LIHTC units into their housing stock and some do not. The single strongest variable explaining the presence of LIHTC housing in a city is the percent of housing that is multifamily. This variable indicates the willingness of a community to permit multifamily structures as most multi-family structures are rental properties and most LIHTC properties are multifamily properties. The extent to which a city's share of the housing stock is multifamily is inversely related to the presence of LIHTC housing. This suggests that municipalities with strong growth in multifamily housing is squeezing out the LIHTC housing.

Among the control variables there are few surprises. LIHTC units are found more commonly in large central cities and less in suburbs whether the units are all units or just units for family occupancy. LIHTC units are more common in municipalities with greater poverty and greater incidence of racial or ethnic minorities. The share of LIHTC housing is greater in municipalities with lower rental vacancy rates, suggesting that developers seek to enter tight markets rather than soft markets.

The model that explains variation in family LIHTC units is even less impressive with an R Square statistic of only .09. Again however, among the strongest variables at explaining variation in the absorption of family LIHTC units is the percent of housing that is multifamily. This reinforces the notion that the willingness of a community to permit multifamily structures signals the ability of LIHTC developers to enter those markets.

Table 7. **Models Explaining Variation in LIHTC Units as a Percent of the Housing Stock In Municipalities in the United States**

Dependent variable	All LIHTC Units as a Percent of the Housing Stock Standard			Family LIHTC Units as a Percent of the Housing Stock Standard		
	Coefficient	Error	Signif.	Coefficient	Error	Signif.
Independent Variables						
Zoning						
Percent of housing that is multifamily	0.040	0.002	**	0.020	0.001	**
Change in percent units 5+ units per structure from 2009 to 2017	-0.014	0.003	**	-0.007	0.002	**
Demographics						
Percent of population below poverty 2017	0.013	0.002	**	0.005	0.001	**
Percent of population minority 2017	0.012	0.001	**	0.006	0.000	**
Median renter household income 2017	-1.136E-05	0.000	**	-3.725E-06	0.000	**
Change in percent of population minority 2009-2017	-0.009	0.002	**	-0.004	0.001	**
Percent of adults without high school education 2017	0.014	0.002	**	0.009	0.001	**
Percent of households that are married couple families 2017	-0.009	0.002	**	0.002	0.001	*
Percent of workers drive to work in car alone 2017	0.008	0.002	**	0.004	0.001	**
Metropolitan Location						
City is within a large metropolitan area	1.945	0.273	**	0.645	0.160	**
City is a suburb within a large metropolitan area	-1.751	0.273	**	-0.601	0.160	**
Housing Stock						
Percent of rental housing vacant 2017	-0.008	0.002	**	-0.003	0.001	**
Median housing costs 2017	0.001	0.000	**	0.00023	0.00006	**
Median gross rent 2017	-0.00044	0.00010	**	-0.00010	0.00006	
Median value of owner-occupied units 2017	-7.093E-07	0.000	**	-2.380E-07	0.000	*
Median owner-occupied household income 2017	5.693E-06	0.000	**	-1.421E-07	0.000	
Percent change in median owner income 2009-2017	-0.002	0.001	**	-0.001	0.000	
Percent change in median value 2009-2017	-0.001	0.000	*	-0.001	0.000	**
Percent change in median renter income 2009-2017	0.000	0.000	*	9.091E-05	0.000	
Constant	-0.241			-0.505		
Number of cities	18,403			18,403		
R Square	0.149			0.09		
* Significant at the .05 level						
** Significant at the .01 level						

Conclusion and Policy Implications

The willingness of a community provide space for multifamily housing drives the presence of LIHTC properties. Suburban communities permit much smaller percentages of the housing stock to be in the form of multifamily housing. This probably drives the smaller share of communities that participate in the LIHTC program and the smaller share of their housing stock absorbed in the program. Yet, these suburban municipalities offer higher levels of opportunity. They have lower poverty exposure, more highly educated populations, and lower unemployment.

Zoning is a planning exercise controlled almost entirely at the municipal level. Each city can decide the extent to which it will designate land for multifamily housing. Where communities fail to accommodate this type of housing, the LIHTC program is less able to enter these communities offering higher opportunity levels.

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Gentrification and Community-led design: Renegotiation and limitation of the rent gap in the UK

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Abstract: Socio-spatial issues are a consequence of underlying social relations - in the case of gentrification delineated by the rent gap theory. Community-led initiatives work to renegotiate and limit the impact of this relation, making understanding the capacity of these initiatives to provide alternative models of development crucial when austerity weakens government's ability to intervene. This paper offers the Fountainbridge Canalside Initiative (FCI) as an example case, gathering data as an interview with a steering group member and capturing the socio-spatial context, the participant's theories, and any actions they have taken. FCI attempt to enable their community to tackle gentrification in three senses; through the renegotiation of the socio-spatial relations that facilitate gentrification, through limitation of the socio-spatial issues associated with it, and through symbolic acts of design activism. These findings may demonstrate the generalisable capabilities of community-led practise to tackle problems around land value and cuts to services, potentially informing best practise and approaches to planning, placing an emphasis on not only planning environments but infrastructuring the socio-spatial relationships that produce them.

Keywords: Gentrification, community-led, housing, activism

1. Introduction

'Since money, materials, land and authority to act were necessary and since the ruling power was the only force capable of furnishing him with these means, the architect had to identify himself with it, even transforming himself into its operative appendage' – from Giancarlo De Carlo's lecture 'Architecture's Public'

(Jones, Petrescu, & Till, 2013)

Housebuilding in the UK has been steadily rising since around 2014, following a six-year slump after the 2007/8 financial crisis. New development has been so sustained that the number of additional dwellings has almost returned to its pre-crash peak (see figure 1), yet the country is still struggling with housing shortage. In 2016/17 net additional dwellings were up 0.92% on the previous year, with the vast majority of gains resulting from new builds (HCLG, 2018). These additional homes failed to have any impact on the rates of statutory homelessness, with households in temporary accommodation rising over the same period by 8% (DCLG, 2017). This rise in statutory homelessness cannot be explained away as population growth, with average rate of annual change sitting far lower at 0.6% (World Bank, 2019). Part of the explanation is that the stock of *vacant* dwellings rose faster than houses were being built - a 2.7% increase – creating the situation in which the number of vacant properties (605,891 dwellings) vastly surpasses the number of statutory homeless (82,310 households) (HCLG, 2018). In short, we are building new developments, but they are not developments that are designed with the purpose of housing those who need it.

If it is not housing need that has fuelled the sustained growth in housing stock, then what? As figure 1 shows, since the late 1980's additions to the housing stock have come largely from the private sector, with new developments of social housing by local authorities all but disappearing. This transition is to what David Harvey terms the 'speculative city' (2013), where housing development acts as part of the machinery of capital accumulation. In fact, the UK's *National Planning Policy Framework* (HCLG, 2019) places 'significant weight' on new developments supporting economic growth. This attention to growth shifts the emphasis away from housing and on to the land it is built on, with the speculation of investors driven by the differential existing between the current value of land's use and its potential value under a different use/improvement. This is known

as the ‘rent gap’ theory of gentrification (Smith, 2002), a process which leads, in its worst cases, to the displacement of a land’s use and/or its inhabitants.

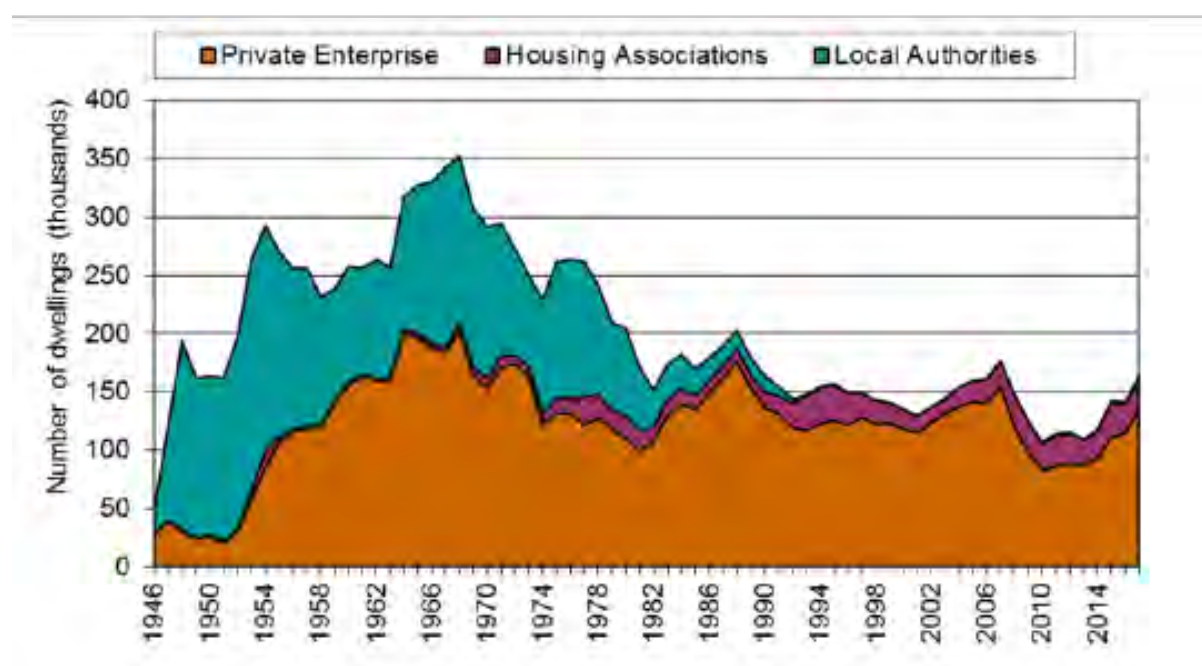


Figure 1. Permanent new build dwellings completed, by tenure, England 1946 to 2017. Source: Ministry of Housing Communities and Local Government 2018

So, the explanation for the continued housing crisis is (at least in part) the heavily financialised housing market. However, each one of these new developments has been produced by architects, planners and designers. Acting as De Carlo’s ‘operative appendage’ to the ubiquitous power of financialisation, urban development is *designed* to maximise the highest return on investment. In these contexts, community-led design (CLD) initiatives offer alternative models of development, initiated and steered by grass roots community organisations who, as non-profits, foreground the use value of urban environments to the communities who live in them. Unlike government sponsored planning programs in the UK such as the Localism Act (Bevan, 2014; Brownill & Bradley, 2017; Gallent, 2013) these initiatives make non-statutory interventions into their built environment fundamentally challenging the politics of planning practise with their own radical interpretations of urban planning and the socio-spatial issues they associate with development. If exchange value driven planning has - at least in part - produced the gentrification of our urban environments, this paper seeks to understand what we can learn from planning practises unmotivated by profit.

2. The case study

This paper offers a case study of a CLD initiative working within the context of gentrification and with the ambition - amongst other aims - of providing accessible housing for the locality. FCI is an ongoing CLD project based in Edinburgh. The location of interest to the initiative is a brownfield development on a former brewery site, a post-industrial area very near to the centre of the city. The 11-acre site had been cleared having changed ownership a number of times, but the impetus to form FCI came when the council brought the land into public ownership to build a school in one corner of the site, with initial plans to build offices on the rest. FCI’s objection to the proposed development of additional office buildings was that it would extend Edinburgh’s business sector into the socially mixed and fragmented communities surrounding the canal, an area that was already experiencing recent high-end development including office space, student accommodation, and hotels. For the purpose of this research FCI steering group representative and founding member Joan was interviewed (participant name anonymised).

The aim of the case study was three-fold, to gather data relating to the context in which the initiative undertakes their work, to distil from the case study the participant’s theories about the work that they do, and finally to analyse how both context and theory inform any actions they have taken in the form of practise and process. To investigate these lines of enquiry, Joan took part in a face-to-face interview. It was first necessary to understand her basic assumptions about the socio-spatial issues affecting the community, but in turn the interview aimed to gather FCI’s assumptions about what the solution to these problems might look like. These lines of inquiry covered both how they perceived the solutions to the problem of gentrification, as well as how the social relations between stakeholders and their relations to the sites of redevelopment could be structured differently.

This paper will argue that these basic assumptions about gentrification and the social relations underlying it form elements of FCI's approach to CLD, offering alternative models of planning and the production of housing.

2.2. Case selection

For the purpose of this research it was necessary to adopt a stringent definition of CLD in order to filter potential cases. It was decided that for a case to meet the criteria of being genuinely community-led, the project must be a self-initiated act. In practise this relates to grass-roots projects based in beliefs and desires or projects that are reactions to contextual changes in the socio-spatial landscape (Zamenopoulos et al., 2016). This understanding of CLD excludes responsive acts that are supported or initiated by state sponsored programs such as the Localism Act in the UK. Secondly the cases needed to be undertaking work within the context of gentrification. This paper shares a materialist understanding of gentrification with Smith's rent gap theory as described above. However, in many of the cases interviewed the conception of gentrification also included post-Fordist understandings of gentrification as the transition from industrial/productive economies to service-based/consumption economies (Hamnett & Whitelegg, 2007; Rousseau, 2012), as well as post-modern revaluations of urban space (Hackworth & Smith, 2001).

Using these criteria potential cases were selected following scoping meetings with third sector organisation the Glass House, a national CLD organisation that supports communities to work collaboratively on the design of places in the UK. From these meetings a number of case CLD initiatives were identified, before using the above criteria to filter these down to six. Of these six case initiatives this paper deals solely with FCI a case that highlights the need to reappraise and offer alternative modes of planning and development.

2.2. Interview Design

Once cases had been selected, members from each initiative's steering group were invited to take part in a face-to-face interview. The interview involved the completion of a resource which consisted of five components (see figure 2), each with the aim of collecting data relating to different aspects of a CLD project. In this section a rationalisation for each component is provided:

1. *Where you were*: This section of the interview gathers data relating to the socio-spatial context in which the CLD project is undertaken. This includes participant's perception of any socio-spatial issues that were problematic at the time of the projects initiation, as well as how they perceive the relevant social relations to be configured.
2. *Where you hope to be*: Here is where data relating to participant's theory is gathered. By outlining an envisaged future, they hope to achieve through their work, participants reveal potential re-configurations of the socio-spatial landscape as well as specific outcomes of development.
3. *The players*: In this section key stakeholders are identified. This includes discussing the relationship of these stakeholders to the development site and how these stakeholders relate to one another.
4. *The project*: Here the actions taken as part of the project are recorded. This in part includes the creation of a timeline of events or a map of a journey, but also how decisions were made/achieved and what has been created towards the project's completion.
5. *The transitional qualities*: Finally, the attributes of the project are discussed in relation to how the work of the CLD initiative will help make the movement from where participants *were*, to where they *hope to be*. These may be material properties of the final outputs of the project, though they may also be characterised by re-configured relationships or symbolic properties.

In short, this resource seeks to understand how context informs participant's theory, a theory which is the basis of an alternative model of planning and in turn how this theory informs their action. The fact that these activities are community-led, means that by their very nature these insights are based in the pragmatic and experiential knowledge of community members affected by developmental issues such as gentrification. These experiential perspectives contain within them potential solutions to developmental crises, based in a lived experience of the phenomena.

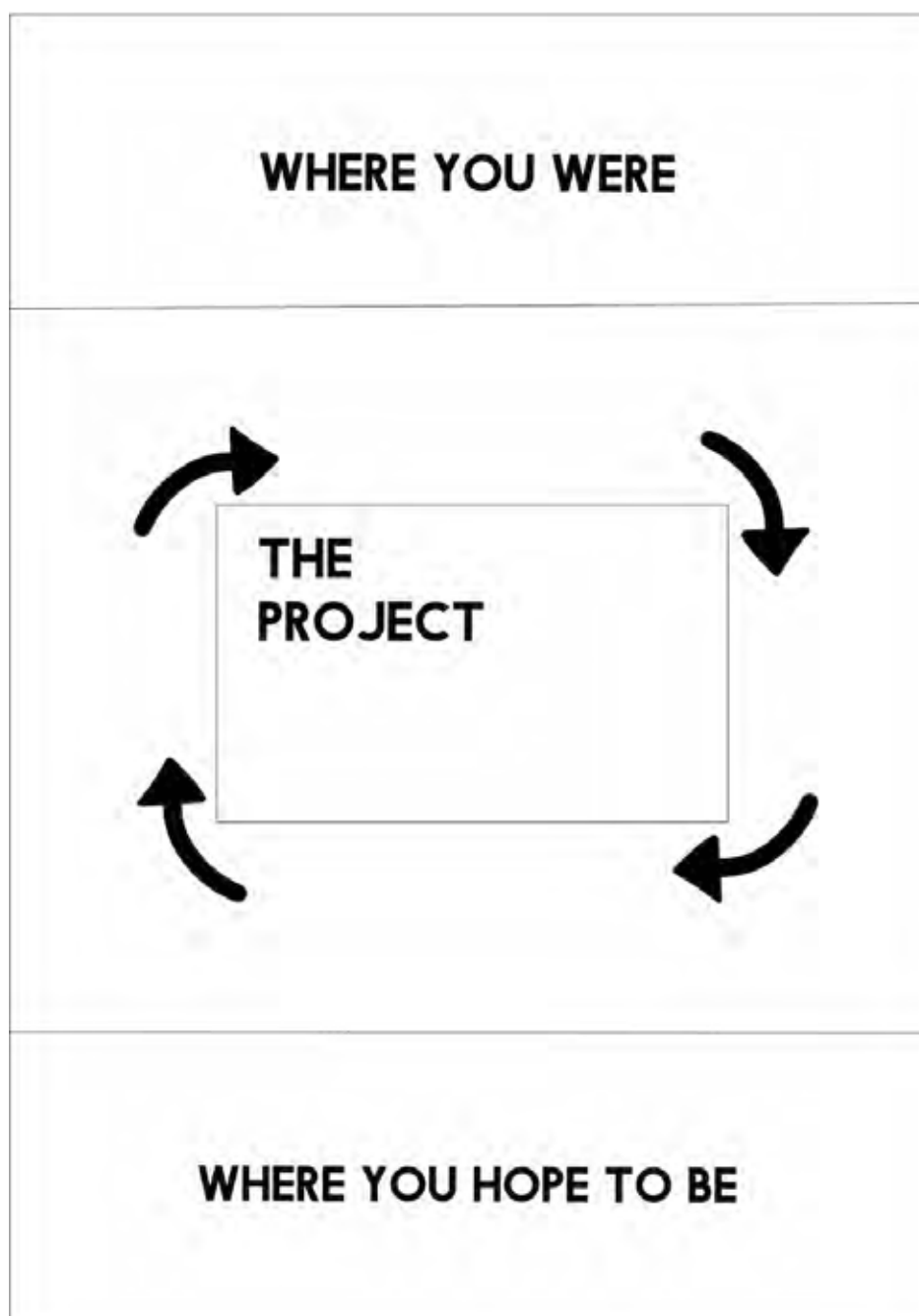


Figure 2. The interview resource to be completed by participant with the researcher

3. Where you were

When gathering data relating to the context in which FCI was initiated, Joan identified austerity cuts as contributing to a general decline in the area, with these cuts to local services resulting in a lack of community-based activity. At the time of the interview the area was still undergoing very recent high-end development. The former brewery offices along the canal-side had been demolished and redeveloped in the previous six months, including hotels and cafes.

I think to be honest it was quite depressed around Tollcross because it had a lot of cuts to the community centre. It's not a very rich area actually and I think it looks a bit grim to be honest round there and the canal certainly was a bit grim. Services hadn't disappeared but they were being cut and now of course more, so it's almost disappeared. There was a lot of anger in Edinburgh about the planning committee letting things through that people didn't want. Big shopping centres and stuff that people thought was pretty poor actually. So, there was a lot of feeling of I suppose alienation about politicians and councillors, and not a big community action project around here.

Fountainbridge is an area experiencing the disinvestment/reinvestment cycle of the rent gap theory. As a publicly owned site, disinvestment in the form of austerity incentivises the council to exercise a policy of municipal entrepreneurialism (Beswick & Penny, 2018), speculating on the exchange value of the site in the hope of ensuring a financial return. In practise this means a change in land use, replacing the industrial buildings with office space and hotels. This economic transition from production economy to consumption economy had in turn created a fragmentation of the surrounding communities formerly connected by the industry in the area. The already socially mixed communities – along lines of class and ethnicity – now had the additional factor of being faced with a gentrification frontier (Smith, 1996) as what Joan describes as the ‘new business sector’ expanded into the former industrial area.



Figure 3. Data relating to context, as captured by participant and researcher.

4. Where you hope to be

FCI envisage a future where instead of office buildings, working class communities can live in the centre of Edinburgh. To this end their primary interest is in the inclusion of social housing in the final development of the site, with an additional desire for homes on the development to be sustainable utilising alternative energy systems like district heating. After the technical priorities of the site, FCI value non-tangibles in their theory of development citing terms like ‘mixed’ and ‘lively’. In the following passage, Joan outlines how the CLD initiative’s theory of development diverges with the local authority’s planning orthodoxy.

We used to laugh when all these master planners and architects talk about vibrancy and we know what they mean is Costa coffee shops and tourist hotels. That's what they see as economically attractive...I don't think they understand what makes it an interesting area for everybody. People like quirky things. They like little workshops. They don't want everything to be all the same, sitting in coffee shops looking at other tourists...So there are a lot of ideas about what we call vibrancy as well. I think that areas that are attractive to most people...are slightly old kind of quaint things or perhaps people working on something...You know you could wander in to kind of locally run businesses or see activity on the canal boats. Just draw more people and ages in...The whole mix of the population being there. You know some of the visuals you get for these master plans, it always amuses me. They show very smart young couples usually or people or individuals...Not usually old people, or kids, or black people. It's very mono-cultural stuff they tend to promote...it doesn't have to be art shows or exhibitions. Just people being busy. When you go to visit places something about people engaging in some kind of purposeful activity, or artistic activity, or something, it's always very enjoyable...because we've become passive consumers in some way I think.

Here Joan expresses an understanding of vibrancy similar to that of the post-modern planners and discussions around ‘exuberant diversity’ (Jacobs, 1961). This approach to planning considers an exuberant diversity to be a mix of land/property use, tenure, age, ownership and takes this diversity to be the ultimate aim of a sustainable and gradually implemented urban plan. FCI appear to share this post-modern theory of development, placing an emphasis in particular on a diversity of enterprise, and craft. This final point is interesting to note in relation to Joan’s framing of their theory of development as against the move to becoming ‘passive consumers’. This situates FCI’s theory of development as against the post-Fordist transition to a consumption economy, a kind of industrial revival.



Figure 4. Data relating to theory as captured by participant and researcher.

5. The players

In the identification of the key stakeholders connected to the site, Joan delineates a triumvirate of interested parties (see figure 5). These are what we can term first the organised community (in this case FCI and its co-opted organisations), an authority (City of Edinburgh council), and a developer (arm's-length developer EDI). The configuration and structure of these social relations is a crucial dimension for CLD initiatives in envisaging future models of development. Here Joan begins to outline FCI's theory of how a CLD project should be infrastructured. The first stakeholder she identifies is the community, however she specifically identifies the politicians as the *key* players, providing the following rationale.

[I]t's owned by the council. If it wasn't, I don't know what I'd be saying. But I do think people underestimate the democratic pull. People often moan, but they don't actually engage the councillors. They just think they are rubbish. But come on they are our elected representatives. So, the councillors, the politicians, not just the officials. On this particular site the elected representatives were the key people on our side and we kind of created that relationship with them deliberately.

Here Joan has identified the local councillors as the 'key' individuals in the project and stated that a conscious effort was made to engage with them. Finally, the third stakeholder is identified as the developers, which in this project includes one arm's length developer engaged by the council and one private developer working on a separate section of the site. Whilst the private developer was identified as a stakeholder the efforts of FCI have been focussed on the council owned section of the site. This presents FCI's theory of CLD infrastructure; an organised community engaging collaboratively with two sets of power brokers (i.e. stakeholders with jurisdiction over money, materials, land, and authority). In the next stage of the interview the aim was to understand how the community became organised, how this engagement with power brokers was infrastructured, and the planning process as it unfolded up and until the present day.

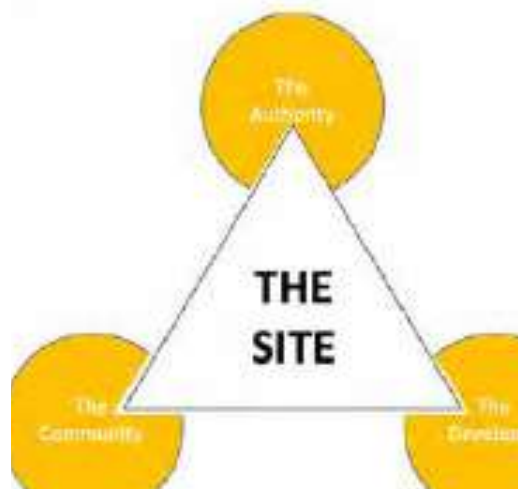


Figure 5. A triumvirate of stakeholders as identified by the participant

6. The Project

When CLD projects are undertaken within the context of gentrification, it is common for them to be a reaction to a contextual change in the socio-spatial environment. Initially FCI was the work of three retired community workers who were engaged with one another through an existing social network. The point at which this initial group were galvanised to take action was when the brewery site was brought into public ownership.

[T]he council bought it to build a school, which they have built now, what they were going to do was sell off the rest of it. Just at that time we were very lucky it was local elections and we made it a whole campaign to push the council to keep hold of it. That was really important to us that they keep hold of it because we felt we'd have a better purchase on them.

This passage is consistent with FCI's theory of development, in which they acknowledge the need to renegotiate the socio-spatial relations of the rent gap theory. For FCI this means that land must be held outside of the private market place if it is to be developed with the needs of the community as its foundation. This renegotiation is a struggle between competing interpretations of value across a socio-spatial landscape, with the council on the one hand seeing the site in terms of its exchange value and the community members fighting to keep the land in public ownership to better realise its use value in their interests. The tension between these competing interpretations of value and how it is mediated and engaged with plays a crucial role in the style of CLD process and how it unfolds.

The campaign to keep the site in public ownership was the first instance of the community taking action in an organised sense and would lead to the formation of FCI. Once the land was brought into public ownership the initial group began outreach in the community, organising the first formal FCI meeting.

I think our original aims that we bashed out then were a bit the same, it was about the belief that the community should be involved in every stage of the design process. We had people volunteer to be part of [the steering group] which had about 12 members in the beginning. We also co-opted a lot of local organisations...So, we had like local housing associations, the nursery and all the other people that were kind of like co-opted reps. So that group met for the first time, elected a chair and a secretary. Set up a constitution and a bank account to get organised and then we just started having meetings about what can we do next/what needs to happen.

This passage demonstrates that the organisational structure of FCI is the first thing that is created in the project's journey. The creation of this organisation was aided by the communities access to expertise in the form of the retired community workers who lived in the area and who took on the role of enabling community members to infrastructure themselves. The first stage in the planning process for FCI was the creation of a community design brief. By holding an event which they termed a 'visioning day' the aim was to create a space in which community voices could engage in discussion and debate, building a strong mandate within the community for FCI going forward. The event was split into 5 themes:

1. Social;
2. Culture and recreation;
3. Economic;
4. Environment;
5. Napier site and park.

Each of these themes detailed the desired qualities of the development for community members. These included aesthetic qualities such as a rejection of faceless concrete and glass, suggestions for specific form such as colony style housing, and desirable functions for the development such as a mix of tenure and use. The report from the visioning day was then presented to other community groups and organisations as part of an open-ended process of outreach within the area. It is clear that FCI are interested in empowering a multiplicity of voices around the site of contestation and had utilised existing social networks to engage with as broad an audience as possible. This again illustrates FCI's theory in relation to how to infrastructure an organised community, co-opting existing organisations and collaborating with them under the umbrella of FCI. Hereafter it is the interactions between this organised community and the power brokers – both councillors and developers – that becomes the relation of interest.

Whilst FCI place a clear emphasis on collaboration with the City Council, the engagement is not built on deliberative consensus building. The two stakeholders participate with one another agonistically, with the engagement being designed to bring power relations out into the open to be examined and contested (Inch, 2015; Mouffe, 1999, 2000). For instance, FCI's initial engagement with the council was primarily as single-issue lobbyists, using direct activism aimed at communicating the political interests of the council to the wider community. Joan explains some of the kinds of activity FCI were engaged in.

Before the election we did actually have posters around saying, these are the people standing, ask them what they are going to do about Fountainbridge. Do they want it to be all these things we said it should be? And we actually sent questions to all the candidates. It was a survey saying what do you think about this? And we published that.

However, an adversarial relationship does not alone make for agonistic planning. It was not until FCI sought to engage design expertise from the Glass House, that an agonistic planning *process* was undertaken. FCI managed to secure a free 'planning-for-real' workshop from the Glass House in which participants would model potential developments with plasticine. The participants at the workshop were divided along the lines of 50% Councillors, council officers, and developers, and 50% community representatives. Dividing participants in this way begins the construction of an agonistic pairing, as opposed to the two groups occupying adversarial positions. By grouping council and developers together we begin to see the creation of an 'us' – an organised community - by the definition of a 'them' – power brokers (Mouffe, 1999). Creating this agonistic dynamic is touched on by Joan in her reflections on the workshop.

At that point there was people in the council who thought we were trouble and didn't want anything to do with us. So, when we actually wrote to them and the leader of the council had agreed to this day, we asked him to chair it because we knew it would bring the people [council officials and developers] along, and he was supportive. But his officials, some of them were awful. One of them when I wrote to him saying we were going to have this planning day, he actually wrote back to me, saying 'you have no right to organise this planning day. The council is going to decide what to do and there will be consultation in the future'. So, I sent a copy of that to one of the councillors and said, 'Is this the councils reaction?' There was another department, that were a bit reluctant. So, I was sending out emails saying that 'I think the leader of the council will be quite disappointed if you don't come, because so and so is coming'. You have to try and persuade them all that it's an important event and of course they don't think that community events are. Or they think they are going to be got at. So, there was a lot of reluctance and we had to do a lot of work to get them all out. Of course, the beauty was that they all did come and because it was playing with plasticine, modelling stuff, it wasn't like a confrontational public meeting. But I think the thing that was really important that the officials and the politicians realised they could have a meeting with the community that wasn't antagonistic. It wasn't getting at them, it was constructive, and I think that then enabled the sounding board to be developed.

The Sounding Board that Joan refers to is the main agonistic mechanism utilised in the planning process. A forum constituted in the same manner as the planning-for-real workshop - 50% community representatives and 50% council and developers - it was suggested as a mechanism by FCI and the council agreed to take part. The sounding board members – both community and power brokers - have equal power to submit papers for discussion in the forum, and it is chaired by the head of the council in an effort to lend the forum authority and legitimacy. Unlike the neighbourhood forums that exist under the Localism Act, the sounding board has no formal decision-making ability. However, Joan rationalises this fact in saying that the real purpose of the sounding board is as a mechanism to 'hold the ring' when the economics and the politics of the socio-spatial landscape changes. This makes the purpose of the sounding board two-fold, not only does it enable FCI to be active participants in the planning process but also to hold power-brokers accountable for any deviation from the decisions made in the forum. This open acknowledgement of power relations in the design process is similar in nature to the Scandinavian participatory designers, particularly in its utilisation of assemblies around objects of contention (Bjerknes, Ehn, Kyng, & Nygaard, 1987; Björgvinsson, Ehn, & Hillgren, 2012; Ehn, Nilsson, & Topgaard, 2014). As well as the agonistic model, FCI shares with the Scandinavian designers an open-ended process of infrastructuring in which community participants are capable of setting up their own separate forums, actions, and lines of enquiry. Joan details an example of this open-ended infrastructuring process in relation to the struggle to include a district heating system as part of the development.

[W]e raised it [district heating] at some meeting at the sounding board, but we could feel they weren't going to go for it. So, we organised a meeting about district heating and we invited all the experts. So, in Aberdeen for example, the council has actually done a district heating scheme on some of its council housing and it was really successful. The other side of it was the legal side, because nowadays when you can choose your own energy supplier it's a bit tricky if everyone has to have the same one. So, I got in touch with...a big law company here and got this chap who knows a lot about this contract stuff who came free because he supported us. We got the technical expertise from the university and then we decided that instead of us chair it we would get the Green councillor to chair it because again we knew they [power-brokers] were more likely to come if he chaired it. [The developer] wanted to influence it, so they came along to the meeting with their architects. They were a bit suspicious with the idea in the beginning asking, 'will it work?' and 'will people want it?' and 'investors won't invest' and as they put forward their worries, all the expertise we had round the table answered their queries and about half way through the meeting [the developer] said, 'Well this could be an eco-site' and suddenly it's their idea and it's all wonderful.

This passage demonstrates that when the agreed mechanism of the sounding board proved unable to further the material aspirations of FCI, the group were able to infrastructure a separate mechanism dealing specifically with the issue of including a district heating system on the site. This open-ended process of infrastructuring would be used repeatedly in FCI's undertaking of future action.

In the visioning day report ‘Brewing New Life’ a desire was expressed to hold so called “Meanwhile” activity on the site as it would be left empty for an extended period of time. This included landscaping activity and using the site as an event space. It was agreed in the sounding board, seemingly without controversy, that the meanwhile activities would be allowed on site. Each of the activities brought on to the site in some way related to elements identified in the community’s visioning report (aside from, for obvious reasons, the provision of housing). This included:

- Temporary community gardens in line with the report’s call for greening of the site.
- Metal, wood, and glass workshops in compliance with the report’s call for artisanal workspace.
- A “Pianodrome”, a 100-seat amphitheatre constructed entirely from reclaimed pianos and in line with the report’s call event space on site.
- A community wiki-house in line with the report’s call for a community hall on the site.

In each instance these activities were facilitated by FCI, sourcing materials and funding either through community donations, sounding board partners, or grant agencies. Again we see the open-ended infrastructuring process at work. For each meanwhile activity, FCI enabled the participants to create separately constituted organisations, Joan offers the following example of the process in relation to the meanwhile garden.

About 40 people came to the first meeting about a community garden. Where they asked do you want a community garden or an allotment and then they developed it. They've got their own constitution, they got their own bit of funding I think initially, they've got their own Facebook page, they're their own organisation. They're separate but we supported them, and they're linked with us. We do things together.

This open-ended process of infrastructuring within the community fulfils the agonistic call to empower a multiplicity of voices in the struggle for hegemony over the site. The previously empty site, surrounded by fragmented and unintegrated communities had been transformed into a hub of activity, providing access to resources, training, and social networks. Suddenly it was not only FCI with a vested interest in the site, but a network of community groups. This aspect of the FCI project features as a central concept in Joan’s discussion of the transitional qualities of their work.



Figure 6. ‘The Grove’ meanwhile community garden (right). The construction of ‘Pianodrome’ seating (left)

7. The transitional qualities

Of the work they have undertaken so far FCI attribute the main transitional qualities to the meanwhile project. We can think of these meanwhile projects as acts of design activism in the sense understood by Markussen (2013), aesthetic disruptions placed into the socio-spatial landscape in an effort to create a conceptual space in which accepted ideas can be re-evaluated and challenged. Joan describes the transitional qualities of the meanwhile projects as follows.

[I]t was actually a living demonstration of what we are talking about. In terms of the social vibrancy and the greening of the site and the pleasure people have in it. It's a living demonstration of what we are talking about when we say social capital or a vibrant neighbourhood. We had a mini-community there if you like that came together and was very welcoming to everybody. To old ladies and to younger kids a very nice inclusive community actually. From the tow path it looked kind of like a hippy camp and I think people weren't really sure what was going on there. Which is why we had all these events like the spring fling and so on, to invite people in and they were very well attended.

Here the aesthetic disruption is the introduction of rustic, handmade, installations often built with reclaimed materials such as shipping containers and wooden pallets (see figure 6). These activities exhibited the style of community that *could* exist in Fountainbridge and the local appetite for a diversity of activity at the site. Specifically, it challenges the post-Fordist transition from production economies and the disinvestment that created the rent gap, to consumption economies and the reinvestment that creates gentrification. This is in keeping with FCI's theory of development and Joan's earlier call for an industrial revival.

However, the transitional qualities of the FCI's model are not solely symbolic. Joan highlighted the capacity of the community-led vision to facilitate wealth building within the locality, through the provision of workspace for local enterprise. This again draws our attention to the competing interpretations of value that exist across the socio-spatial landscape. Joan outlines how the local authority's understanding of wealth building differs from that of FCI.

[A] lot of Local Authority economic development guys are really a bit old fashioned about how they think the local economy works. They still seem to be wedded to the idea of big hotels, tourists, and that that creates jobs. I don't always think it does. I actually think that a small local enterprise, probably brings more to the local economy. The council are now actually moving towards an innovation centre, where the ground floor will be workshops for little businesses etc.

FCI's focus on small local enterprise is an attempt to build reciprocity into the local economy. This is a challenge to the local planning convention which to this point has focussed on high-end development of services and a consumption-based economy. It is these competing interpretations of value that engage with one another in an agonistic planning process in the sounding board. It is through this mechanism that FCI have built the capacity to materially further their aspirations and work collaboratively from within the positions of power that hold jurisdiction over money, materials, land, and authority.

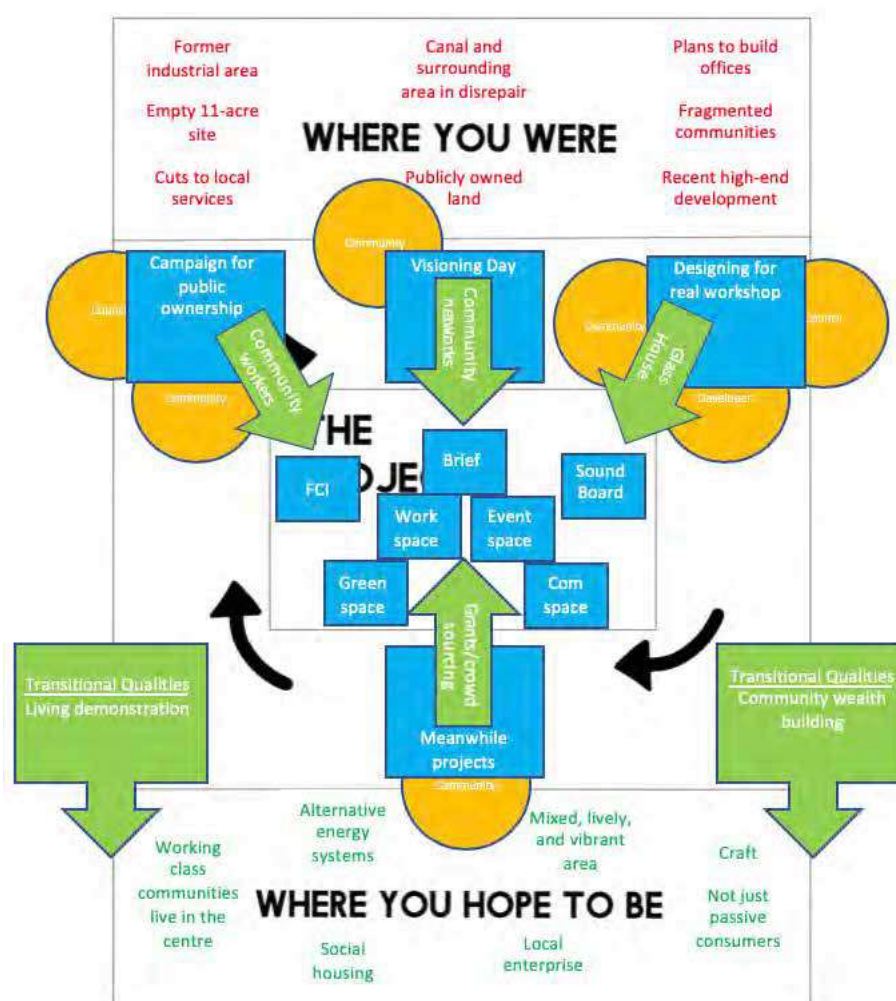


Figure 7. Interview resource as completed by participant and researcher.

8. Conclusion

This research argues that there are three aspects of FCI's practise that can tackle the socio-spatial crises associated with gentrification. First there are acts of renegotiation of the socio-spatial relations described in the rent gap theory. This necessarily entails some reconfiguration of socio-spatial relations or the removal of land and/or property from the market place, a kind of urban re-commoning, enabling the production of buildings and space to be entirely dictated to by the needs, desires, and tastes of the end users. Second there are acts of limitation on the socio-spatial issues associated with gentrification. This includes work undertaken within the confines of the speculative land market, attempting to restrain its excesses and its impact on communities. Finally, there are acts of design activism where aesthetic interventions are made as disruptions to existing systems, creating a space in which ways of living and working can be engaged with critically. This research joins the conversation surrounding new models of public ownership of land such as the so called "People's Land Trust" (Stratford, 2018) and the inclusion of citizen participation in public ownership (We Own It, 2019), attempting to decipher what lessons can be learned from existing community-led models.

The work of FCI can be understood as an attempt to renegotiate the socio-spatial relationships underlying the financialization of urban space. This theory of development begins at the point of land use, believing that such a central location should be used as residential space for local workers. The desire to house a working-class community so centrally necessarily requires a subversion of the market forces driving the rent gap, in short detaching the land in some sense from the market place. FCI centralise public ownership and/or social rent in their proposals for the brewery site, this renegotiation foregrounds the use value of urban space and challenges the "common-sense" of speculative, exchange value driven development, querying its economic arguments and even contesting its understanding of abstract concepts such as vibrancy. The central achievement of FCI's work has been in the development of new spaces and forums in which de-facto community power has been created and in which the socio-spatial manifestations of social power can be brought to the fore and interrogated. They identify a triumvirate of key stakeholders across a socio-spatial landscape, amongst whom the tensions between competing interpretations of value must engage. Working collaboratively within this triumvirate, FCI create an agonistic 'us' (the organised community – FCI and its Co-opts) by the establishment of a 'them' (the power brokers – council and developers) and through an open-ended process of infrastructuring, empower a multiplicity of voices in the struggle for hegemony in the planning process. They utilise a variety of tactics, from formal collaboration to direct action, using design activism to communicate ideas and create the conceptual space in which new ways of living can be engaged with. In practise and despite their vision, the work of FCI and their engagements with power through the sounding board, may in the end only act as a limitation to the socio-spatial issues associated with development. Whilst FCI have developed forums through which the material aims of the organised community can be furthered, they are none the less engaged in a *struggle* for hegemony, with no guarantee their vision will be realised.

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ICD - An Alternative Affordable Housing Initiative

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Abstract

Affordable housing is a key issue in major urban centers of New Zealand with homeownership rates declining particularly in Auckland. Lack of tenure options is creating gaps in the housing continuum. This paper discusses a people-centered approach that addresses affordability by placing users at the center of housing decisions. An Intergenerational Community Development model or ICD is a specific term coined in this research that redefines affordability as per buyers' financial capacity. ICD comprises three essential components. The *organizational* component of cross-sector collaboration ensures optimum utilization of resources, risk minimization through shared responsibilities and funds through ingenious solutions like cross-subsidization. The *financial* component offers alternative procurement models (APM) as income-compatible tenures for households. The *physical* element offers a variety of architecturally-designed multifamily typologies. A multi-case methodology qualitatively examines 16 UK and US ICDs. The findings reveal ICDs can provide effective affordable housing alternatives if well-executed by the consortium. Also, architects effectively contribute through high-quality sustainable design and a tenure-blind strategy to address affordability. In conclusion, a strong collaboration with clear agendas, robust understanding of APMs and early engagement with architects are essential for ICDs' success. The key, however, lies in user engagement and community consultation during early decision-making processes.

Keywords: Affordable housing, Collaborative housing models, Alternative procurement models, People-centered approach to housing.

1. Introduction

Auckland continues to face an unprecedented demand for housing in recent years (NZPC, 2012; Auckland Plan 2012; PWC, 2018) . Significant growth of 8.5% in the last years coupled with high rates of immigration has resulted in an increase in housing demand, escalation of rental prices and declining rates of homeownership (Council, Auckland profile, 2014, p. 2). “Affordability pressures are particularly evident in Auckland, reflecting the city’s high house prices” (NZPC Summary version, 2012, p.4). With a sharp increase in housing demand but limited pathways to homeownership, a lack of choice in tenure options further exacerbates low rates of homeownership. Intermediate renters¹ , in particular, find current pathways to homeownership restrictive in nature. A growing number of intermediate families are unable to transition into homeownership (NZPC Final report, 2012; Goodyear & Fabian, 2014). Such perpetual restrictions in mobility may be due to costs, location or a limited variety of available housing models (Flint-Hartle & Stangl, 2014).

Some suggestions for a long-term approach to developing affordable housing in New Zealand include access to land at below market price through varying degrees of subsidization, and developing financial ingenuity to sustain projects (HSAG, 2015; AC, Nov 2018). Other recommendations to rectify negative housing trends include changes in existing fiscal policies and the addition of new supporting ones (Preston, 2013, p. 59).

Nevertheless, most proposals seem to disregard the buyer’s capacity to purchase property *at the time of purchase* and are positioned from the supply end that expects income to match the available housing stock and not vice versa. As such, income-compatible options for interested households are currently missing from the Auckland housing market.

Some of the less explored options for households unable to meet the standard bank lending criteria for homeownership in Auckland are non-conventional tenures also known as shared equity products or alternative procurement models (APM). International research indicates APMs hold the possibility of expanding choices for intermediate renters (Pinnegar et al. AC, Nov 2018). However, researchers caution, the complex nature of APM contracts and its’ associated risks, must be first fully examined (Monk and Whitehead, 2010) to avoid “misjudged probabilities” by buyers (Belsky 2013).

APMs or hybrid tenures are either are state-sponsored, offered through a third sector such as housing agents in the UK and Community Land Trust in the US or, utilize a collaboration of stakeholders. Some studies indicate such cross-sector partnerships for housing can mitigate risks associated with experimental housing and offer possible affordable housing solutions. The pathway of public-private partnerships in housing promises opportunities to experiment with housing typologies and leverage public funds against private dollars and create sustainable communities through effective placemaking (Carter & Roberts, 2000; Watts et al., 2000; Bohl, C. C., 2007; Austin 2013). However, when compared to overseas examples of partnership-based housing “good quality affordable housing” largely remains under-serviced and unexplored in New Zealand (Austin, 2013 p.75).

This paper focusses on the above mentioned affordable housing initiatives that take into consideration the income capacity of a buyer at the time of property purchase. Thus, *collaborative endeavours* that utilize *APM as hybrid tenures* to create affordable *multifamily housing* solutions by engaging users in the decision-making processes are termed, Intergenerational Community developments or ICDS by this research. ICD, a three-component multifamily residential model promotes intergenerational mix and adds tenure options to expand housing choices. The main purpose of this paper, therefore, is to examine,

¹ The intermediate housing market is a subset of the households who struggle to afford housing. It is defined as working households in the private rental market who are ineligible for social housing but could not buy a lower quartile home without paying more than 30 per cent of their income to service a mortgage. Auckland Council (2018, p. 4): *Affordable housing in Auckland*.

how do ICD processes create affordable alternatives? And, how can Auckland learn from such a people-centered approach to housing?

However, to understand such processes it is vital to discuss the concept of *choice* in housing and examine what the term *affordable* means from the perspective of a buyer. This paper primarily focusses on opportunities of homeownership through affordable tenures. It first establishes a case of missing choices in tenures and models from the Auckland housing market by analyzing several housing market studies. Later, it utilizes Kings' theory of effective choice in housing (2003) as a theoretical framework to establish the significance of 'information' and 'access' to alternatives as necessary means to empower end users so that they may choose effectively.

A qualitative methodology compares 16 cases of affordable housing from the US and the UK to understand the dynamics between the ICD components and ascertain the legitimacy of the proposed alternative. Later, a summary of findings discusses appropriate options that may be suitable for Auckland.

2. The Auckland housing market – tenure, household structure & models

Key trends

A demographic study of Auckland indicates substantial growth in population in the last two decades with shrinking household sizes and a greater number of families with children in need of affordable housing. Between 2011 and 2016, Auckland's population increased by 154,700 (+10.6%). The growth rate doubled from 1.2 to 2.8% (Auckland Growth Monitor, 2017, p. 8).

Housing affordability is far worse in Auckland when compared to other major urban centers (Johnson et al, 2018). The median price of Auckland houses rose by 65% in the last 5 years and over 90% in the last decade (p.16) and "Between 2012 and 2017 population estimated growth outstripped estimated housing stock growth by 2.1%" (p. 16-20).

Similarly, demographical studies observe noticeable shifts in homeownership patterns, changes in household structures, and interest in previously less preferred housing models in the last couple of decades (Goodyear & Fabian, 2014, p. 18-45).

Rents were also found to be highest in Auckland with a majority of households from low-income group. Thus, 83.7% of the total (35%) Auckland renters found concentrated in the open market may have no option except to pay the market rent (Statistics NZ 2014, p15). The homeownership rate in New Zealand decreased to 64.80 % in 2013 from 66.9% percent in 2006 (Census, 2013) and renting was up 18.5% during the same period (Goodyear & Fabian, 2014, p. 45). In addition to an overall drop in homeownership, the largest falls were observed for working adults in 30s and 40s, possibly comprising households with children. However, tenure preferences in Auckland indicate a stronger interest in homeownership in comparison to renting.

As per a focus group survey from Auckland and Wellington, 58.4% indicated a strong desire for homeownership and only 2% indicated renting as a preferred choice. Also, around 50% of the renters stated insufficient deposits as the primary reason for renting and 43% of indicated renting as a negative experience (Flint-Hartle, Stangl, 2014, p 7-12). Thus, 'insufficient deposit' appears as the number one obstacle when it comes to property purchase. 'Perceived difficulty of servicing mortgage repayments based on current income levels', was cited as a second barrier in advancing towards homeownership (p 4).

It emerges, it is not just initial 'setting foot' into the property market that poses a challenge for potential homeowners but a long-term financial commitment in the form of a heavy mortgage thereafter, that also causes sufficient uneasiness among house buyers.

Polarized preferences indicate low-income households concentrated in the private rental market and high-income households have a preference for but unable to acquire homeownership. The scenario confirms challenges faced by households to negotiate the widening gap between the two tenures. Thus, with a clear desire to advance into homeownership but an inability of households to do so, suggests, inflexibility in current pathways to homeownership limiting choices for households.

Besides the above limitations, Auckland is also witnessing a significant shrink in the average family size and changing the household composition. An overall trend witnessed in the household structure indicates a reduction in the average household size with a rapid increase in one-person households as well as couple-only households. A projected family distribution by Statistics NZ 2017 suggests the number of couples without children is projected to increase by 64% in a 25-year period between 2013 to 2038 in Auckland. The average household size is projected to further decline from 2.6 to 2.4 people per household between 2006 and 2038. However, multi-story private joined dwellings have increased 3% between 2006 and 2013 suggesting new trends of larger or extended families residing together. Thus, not only is the traditional definition of a family comprising two adults and two children being replaced by smaller households, a demand for a more complex set up of family units and greater multigenerational living maybe on the rise (Goodyear & Fabian, 2014, p. 34-67).

The above-mentioned changes in family typology are significant and must be catered for in designs of future dwellings. Thus, a need to experiment with housing typologies to match changing household structures is apparent.

Trends in preferences for housing stock also reveal interesting findings. Standalone houses remain the highest consented dwelling type as per latest building consents issued in Auckland suggesting, increasing housing unaffordability has had no impact in the popularity of this land consuming- high priced model. According to the Auckland Monthly Housing Update (Building consents), “46% of new dwellings consented in January 2019 were houses, 30% were apartments and 25% were townhouses, flats, units, retirement units, or other types of attached dwellings” (March 2019). However, another parallel trend indicates a sharp increase in the number of consents lodged (and presumably being built) for apartments. This trend with high rise apartments continues to be on a steady rise but primarily restricted to the CBD and popular with one-member households, such as students (Apartment Dwellers, 2006 Census).

Thus, there seem fewer incentive for private developers to invest in similar multifamily dwellings in residential zones other than CBD for some reason. Multi-family residential dwellings with common amenities remains an underexplored housing typology in Auckland (Flint-Hartle, Stangl, 2014). Therefore, the lack of alternative family housing models may also explain the polarity in preference towards standalone dwellings. In addition, minimal experiments with collaborative housing also reduce the possibility of experimenting with newer housing models that may offer suitable alternatives for families.

Interestingly, a recent study on housing preferences reveals households’ willingness to consider the apartment typology in a non-preferred location, if the apartment models are well-designed, spacious, affordable and well connected. Thus, households are prepared to consider “something other than detached housing”, such as apartments, other than the first preference of standalone dwellings when faced with financial constraints (p.4). However, in spite of such willingness to consider an alternative model the demand for apartments by families, even in well-connected CBD, remained fairly low in the survey, at “just over 1%”, further suggesting the inadequacy of either space or amenities in CBD apartments (Yeoman & Akehurst, 2015, p.12).

Thus, not only are current tenure options a clean split between renting and the conventional bank mortgages but changing household structures and preferences also need newer models to address housing needs. Till alternative options are available for both, from a buyer’s perspective, a choice may be deemed missing from the current Auckland housing market.

How can choice make housing affordable for households? What are the essential components of housing choices that may enable and not encumber households?

The next segment discusses the concept of choice from the perspective of households and what flexibility to choose entails.

3. Theorizing affordable – the role of ‘choice’

Housing choice seems essential for consumers to be able to make suitable housing decisions around tenure, model, location and affordability. For choice to remain legitimate, information and access to resources must be supplied by the stakeholders as essential parameters, such that households can make informed decisions out of the free will. “Choice is an illusion unless there is an actual capability to take decisions” (Brown & King, 2005, p. 73).

King (2003) defines housing choice in the context of “autonomy, liberty, and responsibility”, as the ability to choose or “select from alternatives”. The choice must allow consumers, “make a preference and thus distinguish between entities”, even if, “the alternative is an either/or between two less than perfect solutions” (p. 36). Further adds, choices carry inherent connotations of duty, accountability, and liability by the customer when exercising the preferred option.

Lusk (1997) expresses choice as a bilateral agreement between consumers and suppliers, suggesting, “Suppliers also have a choice over the sector of the marketplace at which they aim and exercise this choice by price and specification”. However, cautions, neither party must dominate the transaction and disrupt the flow, failing which, it may cease to be a “sustainable pattern of exchange” and automatically result in the loss of choice (p. 70).

An understanding of choice offered by King (2003) and Lusk (1997) seems applicable to missing alternatives of homeownership from the Auckland housing market. As per King’s argument, a lack of choice can be viewed as restricted access to homeownership and, based on Lusk’s advocacy for fairness in supply and demand, one may deem the current equation in the Auckland housing market as a disbalanced equation and therefore likely unsustainable in the long term.

Thus, based on the market findings and the theory of choice, the research conjectures missing alternatives in the current homeownership pathways in Auckland. However, the limiting nature of the current pathways disguises opportunities for experimenting with alternative models and multifamily typologies. The missing elements when put together create a distinct possibility of introducing an alternative homeownership pathway to the market.

Termed as, **Intergenerational Community Developments** or **ICD**, a specifically coined term for the research, such alternatives can be described as a collaborative initiative for affordable housing with a three-element intersection. The elements comprise an organizational, financial and physical element in the form of a multi-sector organization that offers alternative procurement models for multifamily housing.

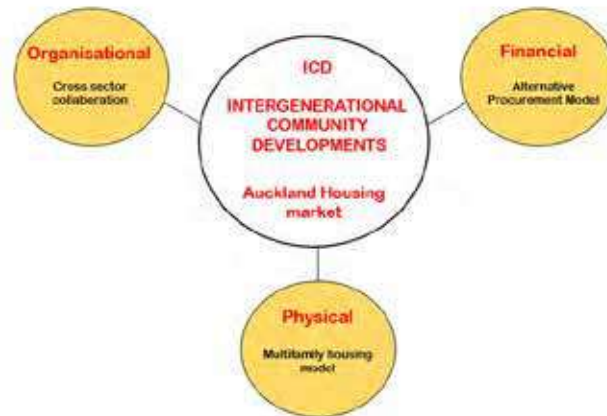


Figure 1 ICD – A proposed affordable housing alternative
Source: Author

Thus, this paper further examines multiple overseas cases to uncover the dynamics between the core elements of an ICD to better understanding of people-centered housing that involves user feedback for solutions.

4. A Note on methodology

The study draws from 16 selected ICDs with diversity in the type of collaboration, size, and nature of development and variety of housing models. Examining multiple cases in different locations allows for an understanding of the unique set of conditions and the processes behind the formation and operation of ICDs. Multiple case study allows researchers to explore differences within, between and across cases with an aim of either literal replication – predict similar results across cases or theoretical replication – to allow contradictory findings to generate theory (Yin, 2003). Similarly, Eckstein argues, multiple case studies are likely to be more effective in confirming hypothesis rather than generating one as they assist in theory testing especially where a minimal value is attached to a conventional theory, such as, in the initial query stages of the researcher, 1975). Also, as per Flyvbjerg, a few selected cases provide deeper insights behind causes and their consequences and establish validity (2006, p. 229).

The study considers several cases to the point of ‘redundancy’ (Lincoln Y & Guba E, 1985, p. 210). Once repetition between case credentials begins to emerge, no more cases are added to the selection. Upon reaching the point of saturation (Yin, 1994) or point of diminishing return (Glaser and Strauss, 1967) the study finalizes a range of ICDs. The final 16 cases are located all across the city from CBD, abandoned inner city location to large suburban sites. Thus, 4 basic categories emerged based on the location and co-relation with the nature of the development, namely,

- urban infill - small inner-city developments on vacant plot
- estate regeneration - demolition, re modification, addition to existing housing
- suburban developments - new city fringe or suburban projects
- neighbourhood renewal - large scale greenfield transit-oriented developments

The decision to assimilate cases from a design perspective emerges from the fact, even though, the organizational element of a collaboration initiates the processes and the financial component propels major decisions, it is the physical element of housing that actualizes the core intention behind any ICD intervention. Thus, from an architectural perspective, a thorough understanding of an ICD may occur only as a consequence of un-layering the design strategies. Thus, it seemed appropriate to create categories that appear to further an architects’ understanding of an ICD. The discussion on findings in this paper is, however, theme-based and generic in nature.

Data collection includes documentary analysis of established housing projects completed in the last 10 years and endorsed by institutes such as the National Housing Institute, USA, Urban Land Institute, USA, U.S. Department of Housing and Urban Development, Community Housing Institute, UK as well as winners of the National Housing Awards, UK, and winners of affordable housing projects of the Royal Institute of British Architects.

5. Discussion on findings

The findings are arranged in three distinct themes corresponding to the core elements of an ICD.

I. Key findings: Collaborative endeavour

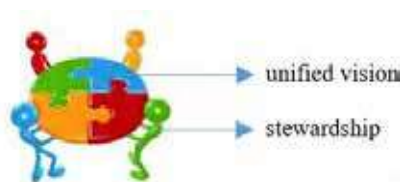


Figure 2 ICD Element 1– Collaborative endeavour
Source: Author

The fundamental step towards creating any ICD originate from the entrepreneurial initiatives of the main housing provider who forms a consortium with other stakeholders. An overall values-based vision then acts as a necessary binding factor. The findings reveal 56% of the initiatives originate from either the state or local councils and 38% of the cases are led by a third sector agent. However, the main purpose of a unified vision is to be able to develop a clear understanding of others' motivations, strengths, limitations, and resources to ascertain the precise nature of housing assistance it may best offer to end users.

The collaboration agenda may range from providing affordable below-market housing for workforce families, creating affordable mixed-income housing for intergenerational living, creating good quality energy-efficient buildings or, in bigger projects, envision complete regeneration of neighbourhoods through housing and infrastructure development.

Also, a unified vision allows clarity to set up early processes of end-user involvement to determine the exact profile, income background and eligibility criteria of prospective households. Such clarity in processes further establishes the necessity of 'stewardship' required to build financial dexterity of households, especially in the low-income category. 'Stewardship' or 'placemaking' refers to guardianship roles that require a housing agent to provide financial mentoring to householders prior to and post-purchase. In 88% of the ICDs, the main housing agent executes extended stewardship roles spanning from pre-sale agreements to active tenancy management and resale.

Most public and third sector housing agents also readily seem to fulfill this obligation owing to their inherent motivation to provide affordable housing to low-income families. The findings reveal 50% of initiatives from public sector agents and 44% from the third sector. The stewardship roles may spread through the entire duration of the property purchasing cycle or may be limited to a single phase.

There also appears a connection between the extent and duration of stewardship with the type of procurement models. However, no direct correlation appears between the sector background of the agent and the duration of stewardship. Also, a likelihood of financial stewardship seems almost unavoidable in ICDs offering 100% affordable homeownership.

II. Key findings: Tenure choices



Figure 3 ICD Element 2 – Tenure choices
Source: Author

- **A holistic view of the housing continuum**

ICDs seem to allow stakeholders the opportunity to serve several segments of the housing continuum through a single intervention by offering multiple APMs simultaneously. Inclusion of a variety of income-compatible tenure options offers choice to the households thereby increasing financial flexibility. A “flexible approach” as per the householders’ requirements of “space, standards, and affordability” within the housing continuum ensures suitable allotment of housing, instead of a random distribution of resources (Thorns, 1989, p. 256). “A successful housing system provides shelter for all while facilitating people moving up the continuum to improve their own socio-economic well-being, which can also contribute improving the socio-economic well-being of an entire nation” (IHA, 2017, P. 1)

- **Balancing agendas**

However, offering the above-mentioned choices, in turn, requires stakeholders to experiment with ingenious strategies for financial autonomy. One such consequence of similar strategies that directly affect the end users is affordability clauses of the APM that preserve long term affordability for future families and offer opportunities of asset accumulation through equity building.

Striving for a balance in opportunities of wealth creation and affordability rather than independently offering opportunities for either one, remains the most challenging aspect of alternative models (Jacobus, 2007). Whereas the Shared equity homeownership (SEHO) models from the US are primarily rooted in preserving affordability their UK counterparts shared ownership (SO) and shared equity (SE) allow relatively quick access to homeownership.

- **Opportunities of homeownership**

Opportunities for homeownership and asset building correspond to the percentage of dwellings available for homeownership through APMs, excluding all rental stock.

The findings confirm ICDs offer a diverse range of asset building opportunities for homeowners through alternative tenures irrespective of the size of the development. The affordable homeownership component in the tenure mix fluctuates from 3% to 100%. Also, 4 types of APM are widely utilized for expanding homeownership opportunities in ICDs in combination with other tenures such as social rental, affordable rental, and open market sales, in varying combination. The options include CLT and below market rate homeownership from the US, and shared ownership (SO) and shared equity (SE) from the UK.

33% of ICDs in the US utilize the CLT model and 83% use below market rate homeownership for key workers. Also, affordable housing projects seem to have much wider access to dedicated funding in the US. To safeguard inbuilt community subsidies, long term deed restrictions ranging between 20-55 years may be enforced every time the property renews owner.

In the UK, 90% of cases utilize SO as an effective alternative pathway for homeownership and 20% of the total ICDs utilize the SE as an alternative for mid-income households. SO promises gradual transitioning into homeownership by initially allowing a certain percentage of ownership corresponding to the financial ability of the homeowner. The remaining portion is purchased gradually from housing

agent in affordable ‘blocks’, with the value of the block based on the current market price of the property. Such a staircasing mechanism undoubtedly introduces initial flexibility but can impose a challenge for households to match continuous escalation in share values usually proportionate to increasing house prices. Similarly, the concept of SE involves a primary mortgage and a silent second mortgage with the housing agent on the reduced portion of the house price. SE poses a tougher lending criterion and a higher expectation from the homeowner to keep up with their financial commitment, a fact that may explain fewer households qualifying for the loan. Nevertheless, with realistic financial goals set by households and financial education both options promise ownership opportunity for households from low-high income ranges.

III) Key findings: Housing outcomes



Figure 4 ICD Element 3 – Housing outcomes

Source: Author

a. Architect's role

Thus, user involvement in early decision-making processes significantly assists an architect in achieving the right balance between economies of scale, optimum resource utilization and quality of housing for which the designers must adopt a broader approach of ‘community development with housing provisions’ in ICDs.

ICD processes eventually rely on design to translate the original intent of the housing agent. The architectural contribution encapsulates the vision of the stakeholders, expectations of the community and spatial requirement of the residents. However, architects must be involved early in the project. Findings reveal, in 75% of the cases, the architects were employed during planning continue to be part of the collaboration till the construction stage.

Earlier inclusion seems to offer two benefits. Firstly, entrepreneurial roles of an architect requiring engagements with the planning authorities have a direct time and costs savings for stakeholders. Efficiently prepared planning applications directly lower costs for the users and/ or establish long-term affordability for the housing providers. Also, architects working in the pre-design planning stage can reduce recurrent costs for affordable housing developers by locking-in long term savings through energy efficient strategies.

Secondly, facilitation roles of architects allow community agenda to become an intrinsic part of the design process from the start. Architects engage users in fundamental decision making in such a bottom-end approach to housing. User engagement again proves beneficial directly in two ways. Firstly, ‘prior approval’ by the client shortens lengthy planning application processes thereby saving development time and costs (by avoiding reapplication and hearing) and speeds up construction processes. Secondly, end-user engagement and information gathering during interactions in workshops, open days and community consultation events result in continuous refinement of design from an early stage. The decisions may comprise neighborhood regeneration through holistic planning, transit-oriented housing development, site-specific master planning, energy efficient dwelling design and; most importantly, an income-neutral design approach.

b. Specific features of ICDs

• Transit-oriented development- TOD

It is noted, 56% of the ICDs are TODs irrespective of the size of the development.

All cases occur either near an existing rail corridor or adopt efficient commuting strategies for an effective linkup with the existing facilities. Therefore, proximity to existing public infrastructure seems one of the fundamental decisive factors for initial master planning that may directly impact vehicular traffic & car parking decisions. Transport plans also act as vital pre-design parameter dictating site planning, massing and open space distribution of the housing development. Well-catered transport provisions also allow the developer to apply for minimal onsite parking in the planning application and in some cases declare the development completely car-free. Overall, councils often seem to review a proposal's 'travel plans' to ensure feasibility studies have been carried out by the developers to cater to a pedestrian-friendly development and access to public transport.

• Street frontage & corner treatment

'Boundaryless' design features as a site response seem essential in community housing developments such as ICDs to allow the neighbouring resident to interact with the new development. Interactive corner features and deliberate setbacks to accommodate street furniture facilitate interaction. However, the degree of interaction can be controlled to safeguard privacy for the residents through design. Street furniture such as seating, landscaped trees, and bicycle racks can balance dual agendas of interaction and intrusion by adding a unique threshold treatment at the street level and offering privacy to the ground floor residents at the same time.

• Pedestrian ways & open spaces

Site planning in ICDs seems to lay a lot of emphasis on pedestrian-friendly design. Nearly 88% of the cases show preference to pedestrians and cyclists over vehicular traffic and cater to features such as landscaped courts, seating, planters, child-friendly play areas and small parks along with the pedestrian ways. Pedestrian pathways in multifamily residential dwellings encourage resident participation and promoting safety through neighbourhood watch.

Similarly, landscaping appears integral to overall design unification. It fosters interaction through carefully planned break out spaces. However, privacy and crime prevention must be balanced through effective landscaping. Too much foliage around open spaces can reduce visibility and hinder vigilance of common spaces. Clear visual access also seems essential for effective adult supervision of children playing outside.

ICDs also seem to offer a variety of open spaces including 75% providing large open greens, 56% incorporating smaller pocket parks, 56% catering to children's playground, 44% offering a communal vegetable garden for the residents and 1 case with an open amphitheatre topographically aligned to the natural slope. Large single open spaces also minimize maintenance work for the management.

However common challenges of a single open space with overlapping functions remain to segregate intergenerational requirements. Therefore, outdoor environments for multi-generational residents may benefit from a hierarchy of open spaces. A combination of open areas can offer privacy with smaller 'quiet zones' for elderly use and large playgrounds for the younger residents.

• Shared facilities

Nearly 63% of the developments offer a community center to its residents for social gathering. Interestingly, 34% of the cases such spaces double up as an indoor child play area or a creche. The provision of shared facilities with regular housing in ICDs lends it the 'plus more' factor, in contrast to, only dwellings offered by regular multi-residential developments. The communal facilities act as a

binding factor to facilitate resident interaction. Some designs encourage intergenerational mix between seniors and children by deliberately placing provisions for the elderly next to a childcare center.

Smaller ICDs with a limited area incorporate either a shared vegetable garden, a small green with some seating or a communal room. Larger ICDs offer a more diverse range of facilities to its residents. Overall, ICDs with a greater market sales component may provide more indoor facilities such as a leisure center and those with a larger affordable component tend to offer shared outdoor spaces. Exceptional cases include a swimming pool, fitness center and an amphitheater.

- **Multiple typologies in the same development**

ICDs seem to offer multiple choices in housing typologies for families. Overall, 63% of the ICDs offer mixed typology catering to multiple sizes and tenures, 31% offer only high rise apartments.

The housing choice ranges from single storey standalone dwellings, detached townhouses, semi-attached duplexes and triplexes, double storey flats and row housing to condominiums with shared areas in multi-story apartments and high-rise apartment blocks.

- **‘Tenure blind’ design**

One of the characteristic features of ICD lies in tenure-neutral design. 81% offer full tenure blind design, 13% offer partial tenure blind and 6% deliberately offer tenure specific typologies.

One of the main objectives of an ICD designer remains to adopt an income-neutral architectural vocabulary to conceal the tenancy background of the residents. This visual architectural homogeneity referred to as a ‘tenure blind’ approach aims at effectively blurring the financial status of the homeowners behind a uniform external treatment. Thus, multifamily residential living can offer a new approach to reduce stigmatization through ‘type’ in housing.

It appears, even though an in-depth knowledge of APMs may not be essential for architects of mixed-income housing, familiarising oneself with the financial background of prospective end users helps to develop a greater understanding of their housing aspirations that ultimately enhances the design quality.

Summing up ICDs

Overall findings reveal, 63% of cases reflect extensive people’s participation from the planning phase. It appears, user involvement as a fundamental approach to housing solution can prove successful with transparent stakeholder interactions that throughout empower end users. Early community engagements mutually benefit both parties. Resident participation helps stakeholders better understand the nature of the housing need, financial capability of the households and integrated concept of housing and community developments. Innovative solutions as a result of public participation also create a sense of pride and belongingness among the residents. Similarly, customized, cost-effective and community-focused solutions created with prior approval of the community not only eases the process of gaining preliminary consents from the regulatory authority but also, saves short- and long-term costs for the stakeholders. Cost savings can occur through reduced proposals for planning and minimal delays in project execution.

Early engagement of architects from the project conception stage seems beneficial to ICD processes. Early architect-stakeholder consultation can address multiple design issues during site feasibility studies. Community consultation allows the final design to reflect diverse needs through various housing typologies. In addition, ICDs seem to provide multiple opportunities for architectural design to integrate dwelling design, income diversity and a sense of community as one experience.

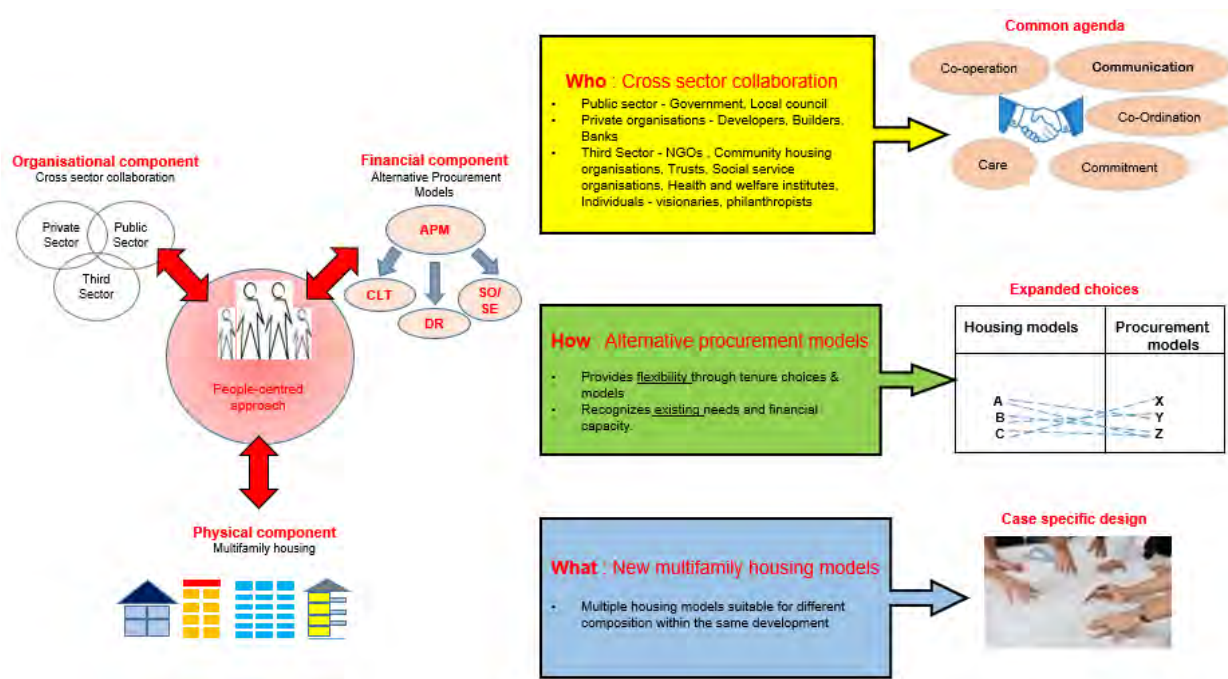


Figure 5 ICD – A people-centered approach to affordable housing
Source: Author

Thus, housing outcomes through ICD comprise a broad, holistic approach to housing that encapsulates a social, financial and physical dimension tailored for the users.

Overall findings reveal ICD can prove effective affordable housing alternatives if well-executed by the consortium. It appears the nature of collaboration has a direct bearing on the financial component of an ICD. The availability of finance, in turn, dictates the choices of APM collaboration may offer in the development. Such parameters further reflect on the density of the housing development, variety of housing models and size of the dwellings. Thus, housing outcomes through ICD comprise a broad, holistic approach to housing that encapsulates a social, financial and physical dimension tailored for the users. However, the processes must be transparent, thorough, mutually beneficial and flexible to accommodate accompanying uncertainties that may arise at any stage of the development.

Learnings for Auckland

An effective housing collaboration requires the involvement of all three sectors, each with clearly defined roles. Participation from private developers allows building the market rate component with sale profits acting as a subsidy for the affordable component. Similarly, third sector agents seem particularly effective financial stewards as they are able to closely monitor the financial performance of the households. Again, the state seems more suited as facilitators providing land and initial capital for investment. Local councils can also assist with expediting planning proposals and granting approval for infrastructural development. Thus, each sector has a distinct role to play in collaboration.

A multisector partnership with pre-defined roles is also likely to create transparency amongst the agents and preserve mutual interests in the overall proceedings. A multi-sector representation ensures a balance between dual agendas of safeguarding affordability and asset building opportunities for homeowners.

Evidence also indicates, the nature of partnerships bears a direct impact on fundraising processes for the development. Raising equity, particularly when subsidies are either non-existent or low, assists the collaboration to overcome financial constraints.

The absence of overarching policies that incentivize private developers and safeguard affordability in new build developments, currently inhibit explorative housing experiments in Auckland. Therefore, an ideal constitution for a potential ICD collaboration in Auckland must consist a private sector agent working, a third sector and a public-sector agent with a mutual stake in the development for all such that, private dollars can be leveraged with public funds effectively. This strategy can be successfully utilized irrespective of the scale of s development as evident in the overseas cases.

After the setup of a cross-sector collaboration with a clear agenda and priorities for different income groups, a spectrum of alternative tenures can be selected for Auckland. This paper recommends a range of homeownership models for the Auckland housing market. However, to fully grasp the merits and risks, develop a relational understanding between all products, and generate an effective cross-subsidization; the models must operative in the context of housing development and not through individual new builds in the open market.

The US-based CLT models seem to offer maximum stability to non-state low-income households who seek stability tenure and experience benefits of homeownership. Individual equity building opportunities may be limited in such models that are primarily focussed on the preservation of community equity. However, the stewardship component remains maximum in CLTs.

Government-funded key workers in the mid-income category who are unable to afford market rate homeownership but succeed in securing a partial deposit for slightly lower house prices and, financially capable of furnishing home loan thereafter, may considerably benefit from the ‘below market rate sale’ model from the US. A rental version of below market rate may work equally well for such income stable workforce households with low homeownership priorities but requiring stability of tenure. Either tenure assigns dedicated number of units as permanently affordable. Also, due to long term affordability covenants, both versions fully justify dedicated state funding for essential housing.

Shared ownership models from the UK act as a hybrid between renting and ownership. Since the model allows a gradual build-up of ownership based on individual financial capacity while rent may or may not be payable on the remaining part, it requires a thorough understanding of ‘how the passive portion is bought back’ on behalf of the household. The seeming flexibility of ‘buy what you can when you can’ can be misleading particularly if the clause requires mandatory purchase of shares based on the market value within a time frame. Such clauses may then prove financially cumbersome for low to mid-income families. Therefore, although an effective alternative to renting, shared ownership may not be suitable for households with either fluctuating or unsteady sources of income. Post-occupancy financial data to ascertain risks of such a model and the financial constraints imposed by the new market is essential prior to its transference to parallel economies.

‘Shared equity’ model from the UK, offering a silent second mortgage with a housing agent suitable for income-stable mid to high-income households. Asset building opportunities may be slightly higher through this model due to the use of minimal or no state subsidies. Although, a restriction on market rate sale is desirable and must be monitored through resale conditions, for the affordability agenda to remain in part. The shared equity model also imposes maximum financial responsibility on the homeowner partly due to reduced financial stewardship from the agent.

Overseas cases also offer insights on how a combination of housing typologies can be utilized within the same development for different household compositions. This includes lifestyle options such as semi-detached townhouses, midrise semi-attached townhouses with common courtyard spaces and, spacious high-rise apartments with family-friendly amenities. Also, effectively collaborating with a multi-sector agent, processes of community consultation and applying tenure blind strategies offers new areas of learning for the architects. Also, ICDs demonstrate, sustainability concepts and affordable dwellings can remain intertwined concepts for affordable housing solutions.

6. Conclusion & Future scope

Successful outcomes through ICD processes rely on deep engagement and positive interactions between multiple sector agents, each independently yet collectively executing their respective pre-defined roles. However, ICDs demand a greater level of co-ordination, co-operation, and co-operation from individual stakeholders of the collaboration as compared to housing projects without alliances.

The approach considers housing and community as fused concepts and thus adds a dimension of community participation as a prerequisite to house design and master planning. It, therefore, encourages designers to not view housing as an isolated response but to develop a holistic view that considers symbiotic associations between new housing, extended neighborhood, and the city. ICD design processes can also prove powerful tools in naturally creating a social mix as an automatic result of a tenure mix.

Understanding and implementing ICDs may require a shift in perspective from the stakeholders in Auckland, a fundamental deviation from the linear equation of demand and supply with which we currently view housing issues.

Meanwhile, an initial impetus for ICDs may require an atmosphere of interest to raise funds through effective stakeholder collaboration and reliant mechanisms like cross-subsidization for financial sustainability of the projects. Thereafter, ICD mechanisms may quickly become robust with increased multi-party interest that allows greater innovation, transparency, and efficiency in the processes. In addition, sophisticated, technologically superior and environmentally efficient design decisions can further enhance housing outcomes. A people-centered approach remains the key to its overall success.

This paper establishes the merits of collaborative housing developments. The research also opens avenues for architects to look into community housing models with tenure blind design as an expansion of their existing knowledge field. It encourages building professionals to research APMs to develop an overall understanding of user-centered affordable housing initiatives. It creates a platform for policy debates about a people-centered approach that utilizes a choice-based theory to develop a deeper understanding of housing and cities as a whole. The scope of the current study is limited to homeownership models. However, further exclusive research on rental ICDs may especially benefit low-income households and vulnerable groups.

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Houses Beyond-the-Threshold. A new paradigm of housing for the third Millennium

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Abstract: 'Houses beyond-the-threshold' is a project that has seen the transformation of public housing 'under threshold' flats in the Calvairate district of Milan into living spaces for unaccompanied foreign minors, guided in a self-recovery path of the apartment they would have lived until becoming of age. The project introduces an idea of welcoming based on reciprocity, within a cultural operation that keeps together the architectural space with site-specific artistic works created for each of the apartments. Beyond the threshold of inhabiting as an answer to the need of a shelter, an unprecedented model of encounter between art, architecture, urban and social disciplines is outlined. At the same time, this initiative acts as an interpreter of a crucial need, which underlies inhabiting conditions in social houses and which finds in a lack of cultural texture the main reason for it to remain marginal. Moreover, by triggering new forms of relationship between migrants and inhabited space, the project suggests to urban planning a perspective to deal with transiency as an issue that increasingly characterizes the contemporary city.

Keywords: housing; temporary living; social inclusion; migrants integration.

Introduction

Housing Beyond-the-Threshold are public apartments renovated after a long period of abandonment, through an innovative architectural and cultural project where a new urban population – the non-accompanied foreign minors – have been included into the building process. The project, realized between 2016 and 2017 in the Calvaire district in Milan, originates from the necessity of this particular historical condition to open the city and the territory to welcome policies able to respond to the contemporary issues. A group of 20 foreign minors was guided in a path of auto-restoration of the apartment they would have lived in until their becoming of age, within a complex program of hosting and working inclusion planned by the architect Simona Riboni of Architettura delle Convivenze¹ in collaboration with Paolo Ferrari of Centro Studi Assenza² who introduced his art and science works.

This intervention has generated a place which is not only a shelter, but which is oriented to create a wider and richer idea of inhabiting. It is a place where people can learn useful professional skills, space of knowledge and encounter with the European culture in its most innovative expressions. The 7 houses so far renovated, restored from a previous ‘under-threshold’ condition, represent the catalyst of an urban regeneration process which is at the same time the result and the trend of an effective citizenship construction.

Beyond the belonging. Living in a different place

The project of Housing Beyond-the-Threshold responds to more than one issues that are nowadays questioning urban policies.

The first issue regards the renovation of the degraded building heritage. In this contest, it assumes a strong social importance, because the apartments are located in a historical district of public social housing in Milan: these suburbs are effected by deep changes of inhabitants’ economic conditions, by the progressive degrading of physical structures, and also by problems deriving from the coexistence of people with different geographical origins (AA.VV., 2005; Di Biagi, 2006). On top of these problems typical of all the peripheral areas of our cities, we can find a local condition where in the last two decades the results of the social texture dissolution became more evident: a district originally inhabited by the working class, which breaking apart produced conflicts and discomfort, mistrust between old and new inhabitants, nucleus of deep poverty, loneliness. A number of fragilities surfaced during the

¹ Architettura delle Convivenze is a social architecture firm that realizes projects for the weak population categories (rome and sinti, homeless, Italians and foreigners at risk of marginalization, unaccompanied foreign minors) through participatory planning, self-recovery and self-construction.

² Centro Studi Assenza is a non-profit scientific-cultural association active in various fields: psychotherapy and psychiatry, philosophy, theater, art, architecture, music and literature. It deals with the relationship between art and science and care in the different variations concerning the territory (artistic-scientific-architectural installations), the species (theater), the individual (psychotherapy).

90s, were faced by the Municipality in 2004 with the «Contratto di quartiere II Molise Calvairate»³. The entrance of a foreign presence in this urban and social context – the newest of the populations arriving on the urban scene, the most fragile – with an active role in space restoration, represents the paradoxical input to a complex, radical reconstruction of that social texture (figure 1).



Figure 1: View from one the apartments in Calvairate district, Milan (Photo by Sara Magni)

The second issue regards the direct involvement of inhabitants in the restoration process, and the contribute they could bring in more general urban regeneration. The project of Housing Beyond-the-Threshold responds directly to the issues of participation through a process of appropriation (and disappropriation, as we will see), of integration and of public space care through different points of view: first, the material intervention on the building renovation, second, the immaterial action concerning the relationships generated by the restoration activity, and last the kind of the involved population.

The third issue concerns urban planning at the heart of contemporary inhabiting, because it opens glimpses on a dimension, transitory living, which is increasingly characterizing the processes of cities transformation, while urban planning tools are still linked to a sedentary perspective. That is to say, the project Housing Beyond-the-Threshold shows how a new paradigm of inhabiting, based on precise ethical issues, could be a model for a discipline which is today confronting itself with temporariness – in space uses and in the permanence of inhabitants in that space – as a distinctive and updated characteristic of its own study matter.

3 Contratti di quartiere (Neighborhood contracts) are urban redevelopment interventions to promote housing and social integration within public housing districts.

There is a fourth question, starting from here and embracing all the previous ones: it is the model of welcoming proposed by this project. An ethical model questioning itself about how to build a culture of hospitality as a condition of mutual enrichment. “What could we give – what is more beautiful, more interesting, more valid – to people arriving from other countries in our culture, in our history, in our landscape? What could we exchange?” This question was posed by Paolo Ferrari, author of the works present in the apartments, on the occasion of the public presentation of the project during the ‘Giornata del Contemporaneo’⁴.

Inside each apartment a site specific work has been inserted as an open window on the landscape, which introduces a new perspective in the architectural space: the sea horizon, the mountains outline, the track around the ricefields, the vine border (figure 2), the far end of a wood path. These are Italian landscapes in black and white taken by the camera, doubled by the painting act of the author, and even more layered with transparent graph paper with pen drawings mostly representing ancient biblical shapes. Each layer composing the work contributes to the formation of a complex system so that the landscape moves from its usual place – with its traditional shapes – to other-place, introducing an horizon where the *otherness* can enter, which is the otherness brought by young people who will inhabit these spaces, and it is the otherness living in all of us.

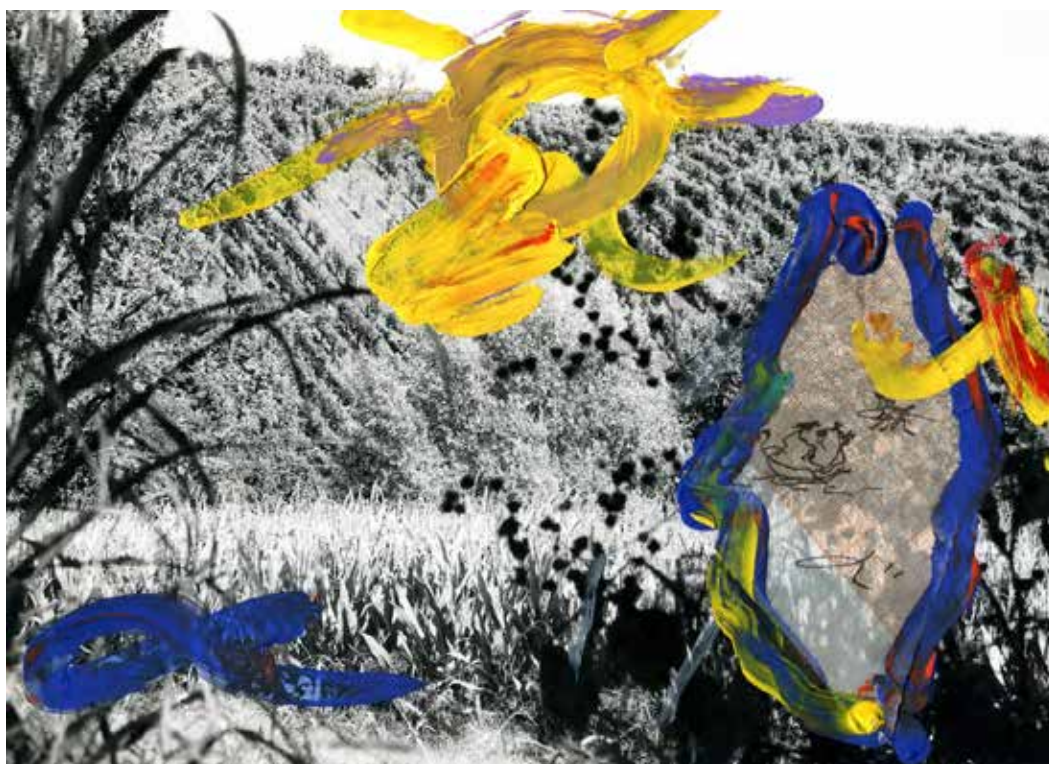


Figure 2: Paolo Ferrari's work inserted in one of the apartments.

⁴ ‘Giornata del Contemporaneo’ (The Day of the Contemporary) is an event that since 2005 AMACI (Friends of Italian Contemporary Art Museums) has dedicated to contemporary art. Every year in October the museums and all the institutions that adhere to the initiative, open their doors for free, accepting exhibitions, events, conferences and workshops (www.amaci.org). The Houses Beyond-the-Threshold have been opened to the public on October 14th 2017, during the XIII Day of the Contemporary, during which the authors explained the conception and contents of the project, with the presence of all the minors involved in self-recovery, in a meeting open to citizenship.

A welcoming policy capable of reciprocity

The Housing Beyond-the-Threshold project is based on a reciprocity idea and it applies this idea thinking of a high cultural exchange. The complex artistic-architectonical, educative and political program, where the auto-restoring process is inserted, aims to satisfy not only the primary needs, but also to create spaces which can be at the same time learning spaces generating new culture. It indicates an alternative, putting in it a radical innovation, to the European solutions which are trying to give answers to the question of immigrants welcoming: by adapting industrial buildings, ex hotels, ex discos, old people homes, as extraordinary welcoming centres.⁵ Recovering barracks, building camps, allocating dismissed areas – even a missile base –⁶ for the permanence of people in need of a place, even if temporary, where to live. Making use of places which are very often the rests of a dismissal of not residential spaces.

The ethical and cultural more than the methodological horizon towards which welcoming policies move – except in few and at the moment isolated exceptions –⁷ seems not to be able to consider the articulated process of access to the city by migrants outside an emergency logic, necessarily connected to the exclusion of those populations from the inhabiting system that the Western world has been using at least since Modern age.

Nevertheless, contemporaneity challenges us right on the field of inclusion policies in relation with an epochal migration movement. Men and women, families and individuals, of all ages, cross the world ready to change not only their existences, but also the consolidated geometries of landing spaces and the paradigms on which the inhabiting project is based.

The history of the new Millennium is the history of a walking humanity: one of the greatest revolutions ever happened, may be of the same importance of when the primates started moving from Africa and started to travel the seas and discover new lands. “It seemed that nothing should happen anymore, that everything was already done. And here is, instead, the new Millennium! Like never before a new Millennium has arrived full of future. All the western world seems to believe in the possibility to continue to breath the same air, to live on the same land, while the world has rolled in an invisible, silent, un-perceptible way in new times, as if the atmosphere of the planet, its oxygen, the burning rhythm and all the watches springs had changed” (Quirico, 2016).

⁵ In Italy, CAS (Centri Accoglienza Straordinaria) are defined by the Ministry of the Interior "temporary structures" and, according to the decree 142/2015, must satisfy the "essential needs" of welcoming. In reality they represent the base of Italian hospitality with around 3,090 structures. “They are imagined in order to make up for the lack of places in the ordinary reception structures or in the services set up by the local authorities, in the case of large and close arrivals of applicants. To date, they are the ordinary mode of reception. These structures are identified by the prefectures, in agreement with cooperatives, associations and hotel structures, according to the procedures for awarding public contracts, having heard the local authority in whose territory the structure is located. The stay should be limited to the time strictly necessary for the transfer of the applicant to the second reception facilities ” (www.openmigration.org).

⁶ The reference is to the former Cona missile base (Vicenza) used as a first reception center, in a completely isolated place.

⁷ The case of the Municipality of Riace remains the only example in Italy of urban regeneration and rebirth of an entire territory through the inclusion and work of migrants and the construction of a new model of coexistence (Cfr. Pezzoni, 2016).

The western culture not only is un-ready to this great transformation, but it opposes defensive walls controlling its borders, walls that the pressure of poverty and war keep on breaking down vigorously. It builds, within itself, surveillance and confinement devices which are not able to contain the entrances nor to territorialize those who don't belong. Trying to maintain as a whole the 'same previous land', barriers exclusions rejections produce, in an effective way, new conceptual categories that inevitably have an impact on those 'welcome measures' that should generate the inhabiting policy of the Third Millennium. In the very short time witnessing the transformation of Europe into a Fortresse – less than 20 years – categories like 'humanity in excess' (Rahola, 2003), or even of 'in-humanity' (Galli, 2005), became popular in the political debate and in the common perception determining the field where to face the complex challenge of coexistence.

It is necessary to change the interpretative paradigms of a fast changing reality, trying to see in the 'other' not an excess, to expel or to limit and reduce to numbers, to dimensions and to impacts, but a foreign presence who is asking to be welcomed on a ground of equality.

Under the Threshold, beyond-the-Threshold

The Housing Beyond-the-Threshold project is directed to young immigrants arrived in Italy unaccompanied, persons who are looking for new resources not only to survive with the satisfaction of primary needs, but also who are looking for knowledge sources of new models of reality, different from their origin ones.

In front of a complex question of welcoming, the project aims to respond with a multilevel program, promoting an inhabiting solution which is not located outside *our* inhabiting space, nor it can be considered a pure shelter from a hostile world to escape. It is a place open to new learning perspectives: a place for the mind, for the body and soul of people looking for dignified spaces where to live.

To introduce young immigrants into one of the historical districts of the city, one of the first examples of rationalist architecture in Milan (the architects Cesare and Maurizio Mazzocchi won in 1932 a contest to host 2250 inhabitants) means to include the new inhabitants in the heart of our architectural and housing culture (figure 3). To renovate dismissed spaces, making the old residential standards applied to plan those apartments functional to the contemporary life, through the work of the migrants themselves, means to engage people arriving from other geographical and cultural contexts in urban regeneration processes. It means also to renew and give a new life to a space originally built to host, almost one century ago, a new urban society who would have found in that environment functional answers to the different needs of modern life.

The apartments destined to the project are classified "under the threshold" as they are under-dimensioned in relation to the actual laws: Regional Lombardy rules n. 1/2004 imposes that an apartment of less than 28.80 square meters cannot be considered available for the public residential building classification and therefore it cannot be stated as inhabitable. Other apartments, with a little bigger surface, are defined "under threshold" because they are degraded, lacking in toilet services and with unfitted structures. These apartments have been empty for years and only recently the Municipality and ALER (Azienda Lombarda Edilizia Residenziale) have extrapolated them from their heritage and given them to associations or cooperatives which are in charge of their renovation. Often the renovation

is carried putting some of them together and later assigning to members with sustainable renting for those who cannot afford the private market (Molinari, Pala, 2014).

Restoring these apartments means to take away from the degrade a relevant part of the public buildings – the unrented apartments in the municipality of Milan are about 3.200 – and to make it inhabitable again by “families or singles, with a strong need of houses”, as the responsible of one of the involved cooperatives says.⁸



Figure 3: View from one the apartments in Calvairate district, Milan (Photo by Paolo Ferrari)

To this incremental and point renewal program, the project Housing Beyond-the-Threshold adds two factors that, in synergy, make it an outpost of the urban regeneration policies and at the same time of the welcoming ones. The first factor concerns the choice by Comunità Progetto – one of the cooperatives indicated by Alers to handle some under-threshold apartments – to start a welcoming path for foreign minors including them directly in the process of renovation. A choice deriving from an educative project of autonomy and from the need of keeping the costs low, so as to include in the new apartments people with specific housing needs: the economical, related to an affordable rent; the social, related to an integration on different levels – housing level, relationships, education, and job creation. The second factor is about the new conceptual language and the method applied by Architettura delle Convivenze and Centro Studi Assenza, to which the cooperative assigned the project, in dealing with this work. A conceptual language deriving from a years long research about a new paradigm of care – of the

⁸ From the description of the DAR = CASA project, one of the cooperatives involved in the processes of recovery and re-allocation of housing.

individual and of the community – as an open, and necessary disposition to the *other from oneself*. A method able to set the conditions to build an effective citizenship route.

The architectural project: hosting *the other from oneself*

“This side of responsibility, there is solidarity. Beyond, there is hospitality” (Jabès, 1991).

Beyond the Threshold is a concept with different degrees of complexity. It springs from the definition of unfeasibility based on the building regulations in respect of the condition of some apartments, and it indicates a consequent requalification project of those apartments.

In this way it answers to the first issue questioning today urban policies: the issue of an urban regeneration characterized by being selective and gradual in facing the contemporary problems (Gabellini, 2014), and that considers public residential districts as a “great opportunity to start social and spatial regeneration processes, as important and with similar impacts as those registered, in the recent past, by the intensive season of projects dedicated to the reuse of industrial abandoned areas” (AA.VV., 2009).

Beyond the Threshold refers to a housing and social inclusion program where the restoration of inhabiting spaces is realized by the users themselves: not the research of an emergency solution, nor the protection in a specific structure for minors, but skills exchange and a common work are set as necessary to build integration. Beyond the threshold of the nowadays welcome policies. According with the method of Architettura delle Convivenze, minors were taught the fundamentals of the job necessary to requalify the space where they would have lived.

A method that twists the ‘asylum seekers’ condition from a *waiting* one (where people cannot work until they are recognized as refugees) into an *active disposal condition* to build a place where to live. This means the migrants can make use of their time and their learning and job skills instead of living in a resentful limbo; whereas this means for the arrival society to use the energies and the industriousness of young people coming here to work, and to offer them a hospitality based on equality rather than charity.

Beyond the Threshold tells also about an exit from home though which the formation acquired during the restoration of their own dwelling becomes technical knowledge to use outside, in the labour world, through a learning process which is not generic but oriented to address each of them towards the individual abilities. Beyond the threshold of the economic dependence and the social services reliance.

Like in any participated intervention, the learning practice where the minors have been included generated an appropriation process of the space they were transforming. A process that allowed an identification with the place to inhabit, and therefore the recognition of a sense of belonging necessary to start a citizenship process; at the same time it has allowed a not permanent belonging, since the apartments are designed for a transitory inhabiting. The work of self-recovering, together with the construction of premises to an effective integration, is conceived as an activity for themselves and for the ones who will come later: the hosted migrants become the welcome creators. Beyond affirming their own presence in the place they took care of, they also take care of a space belonging to all the people

who will inhabit it, in this way opening to that care of the common space which is fundamental in every real plan of co-habitation.



Figure 4: Plan of the apartment in Via degli Etruschi 5, Milan.

This process of appropriation and dis-appropriation of space gives important suggestions to urban planning. In fact, the territorial government can select ordinary residential places to be transformed in a not temporary way, but in a wide perspective, into transitory inhabiting spaces within an articulated and complex program of habitability for those people who become architects of the material and immaterial requalification of the city.

Some indications for a first organic plan of transitory inhabiting have been recently introduced, in Italy, by an urban planning tool as the 'Extraordinary Program for urban regeneration and peripheries security' (ex D.P.C.M 25/5/2016). In the framework of this tool, the Metropolitan City Authority of Milan has proposed a plan called 'Metropolitan welfare and urban regeneration. Overcoming emergencies and planning new spaces of cohesion and welcoming' where the requalification of abandoned spaces is oriented to a transitory inhabiting, together with services concerning integration and formation, so as to allow "the inhabitants to feel involved in a program of renovation regarding different aspects of civil coexistence" (Città metropolitana di Milano, 2016).

This plan can show how it is possible to construct experimental planning tools aimed at contemporary issues, despite the delay of policies in order to re-define social housing as a part of an articulated range of services aimed at guaranteeing the habitability of the city (Guerzoni, 2012; Poggio, 2005; Tosi, 2004, 2016). These experimental planning tools are disposed to govern phenomena with a more rapid dynamic than that faced by ordinary planning tools, and moreover they don't premise a regulatory framework before; but they require a deep reasoning on the sense of inhabiting, so that their projects can be grounded in the processes of transformation under way.

In this perspective, the Housing Beyond-the-Threshold project stresses urban planning on the valence of house as a possible pivot of a social infrastructure for the contemporary city, open to transience. Beyond the house as a place where one can recognize himself, a new paradigm of inhabiting is proposed, where the sense of *habitus* proper of a dwelling that finds its habits in the inhabited space, is replaced by an approach intrinsically open to the other by itself (Pezzoni, 2013).



Figure 5: One inhabitant is studying in front of a landscape (Photo by Matteo Fiorini)

An opening also induced by the artistic gesture, which crosses the apartments expanding the physical space and inviting the observer to widen the gaze beyond the horizon of everyday life – to explore the new landscape that manifests itself in the heart of every home (figure 4). Each work of art replaces almost entirely the central wall, which becomes a membrane permeable to the observation and to the presence of the observer in relation to it (figure 5): placing the ulterior plane of an unknown universe, it welcomes the inhabitant and at the same time it leads him outside – beyond the threshold – unlike his own being estranged, unlike his own simple inhabiting.

A network project for Milan, a city of hospitality

The outcome of an architectural project that places at the centre of its intervention an aesthetic operation with implications on the social level – the extra space with which to “address the unexpressed wishes of the stranger” (Ferrel, McNamara, 2018) – the Housing Beyond-the-Threshold form a network of *doubled* and *dematerialized* apartments, like a writing that overlaps with the history of the Molise-Calvaire district, tracing a new narrative.

In turn, the entire installation is part of a network of interventions in the territory of Milan and beyond Milan, where other public spaces have been previously transformed through the same process: places

for work, culture, sociality, to which these houses intertwine creating a space for living that does not appeal solely to itself, but which recalls a larger project at the urban scale.

The redevelopment interventions carried out over the years through the inclusion of Ferrari's site-specific works have involved a robotized furnace, tòpos of the repetitive work of the factory, in Valenza (1997 and 2007); a Milanese cultural association - *Isolacasateatro* (2003); the interior space and the front of a restaurant - *Il Luogo di Aimo e Nadia* (2000 and 2008); the self-construction social projects *Il Dado* in Settimo Torinese and in the self-managed House in via Morigi, in Milan (2009), as well as the headquarters of the Centro Studi Assenza association (1981) which is the masterly place of all the installations. The specific sign of the works that *double* these different places becomes the presence on the territory of an artistic gesture recognizable in each of the installations, which propose to act as catalysts capable of increasing the quality of life and work in the places with which relate.

The works included in the Houses Beyond-the-Threshold are intertwined with the most recent installations that affect the historical cores and the paths of the agricultural landscape around Milan: the itinerary *A new landscape feeds the traveler*,⁹ and its development along the Navigli canals right on the shores of the Darsena (figure 6), in the heart of the city, they form the articulated weave of a transformative aesthetic project in which art becomes “constructor of world” (Verri, 2010), opening in each place “new ways - in the territories of the eye” (Altman, 1998) generative of values not only aesthetic, propulsive of a different vision of the world.



Figure 6: The façade of the municipal market on the Darsena, Milan (Photo by Paolo Ferrari)

⁹ The project “A new Landscape nurtures the traveller” has been presented at the IX Day of Studies INU (Istituto Nazionale Urbanistica) “Blue and green infrastructures, virtual cultural and social network” on 18/12/2015.

The network formed by these ‘artistic-scientific-architectural’ operations becomes a sign of welcoming for the city, the open weave of an inhabiting condition that leads out of the habitual pattern of a pre-established reality. Marking, for those who already live there, an irreversible gap concerning the processes of identification with their own places, to be defended and preserved from an extraneousness that subverts them. Defining, for those who are new arrivals, the outlines of a new kind of belonging, given by the learning of a language – artistic, architectural, urban policies – capable of reciprocity, although not immediate, as is the project of a hospitality not enslaved to a dynamic of power but aimed at the development of the best skills of those who have to inhabit these places.

An aesthetic and ethical project at the same time, where the relationship between inhabitant and inhabited place is triggered by a reciprocity generated by an architecture that has become the interpreter of the ‘spirit of generosity’ on which its social role is based, as recently affirmed by the curators of the 2018 Architecture Biennale. Where the city takes care of all its inhabitants in leading them to the threshold – beyond the threshold – of a space that opens up to the other, tracing the path of a project through which old and new inhabitants can access what it does not belong (yet), within which it is possible to build a belonging rich in (own) extraneousness.

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Housing deficit and housing opportunities: implementing collective ownership in the centre of São Paulo, Brazil. The case of FICA fund

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Abstract: In the centre of São Paulo, numerous people are excluded from the legal formal housing market, because of too high rent prices in proportion to average salaries. In fact, the speculation on housing prices is widespread, determining unsustainable rent prices for poor and lower-middle classes, who often must live in peripheries while working in the centre, and suffer from long daily commuting. Exclusion from housing market firstly regards the lowest income people, but they need comprehensive social support, and not just an adjustment of the proportion salary/rent, to improve their living conditions. Nevertheless, it is possible to invert this trend thanks to non-profit initiatives of collective ownership. In fact, in 2015, in São Paulo a citizens' formal association created the Community Real Estate Fund for rent. It is legally able to collect donations in cash and in real estate, buy and refurbish an apartment, and rent it to people at risk of exclusion. Throughout further donations and an economically sustainable, but equal financial management, the Fund will be able to buy other apartments and rent them to other people. Assuming a community-based approach to private property, private interests can be replaced by non-profit ownership, providing accessible houses to the members of the community. Rent prices can be defined with respect to the minimum salary, and so, not overcoming a critical threshold, including more people in the housing market.

Keywords: Collective ownership, social rental housing, São Paulo, Brazil

Introduction

In the last ten years, the federal and municipal Brazilian housing policy has shown that limits of the ordinary private property regime are critical, whether the legal attribution of private property titles is the main procedure to ensure adequate housing for people, including the lowest income group.

Although building over 4 million of housing units, in the end, the notorious federal housing Minha Casa Minha Vida (MCMV) programme¹ resulted in the inflation of the land price (Geraldo, 2014), because it paradoxically depended on the availability of low-priced land, to realize the targeted projects (Klintowitz, 2016).

¹ Activated in 2009 by the Lula's federal government, is one the largest national housing programmes worldwide. <http://www.caixa.gov.br/voce/habitacao/minha-casa-minha-vida/urbana/Paginas/default.aspx>

The high prices of buildings realized throughout the MCMV explained why the programme failed in providing accessible housing options in the central regions of Brazilian cities (Rolnik et. al, 2015). The large distance between the localization of the new residential neighbourhoods and the central regions of the targeted cities increased, showing larger and larger barriers to access to central locations for the new settlements (Lima Neto, Krause e Furtado, 2015). However, that was not a new, or surprising effect, but an evident risk, that had already been foreseen by some experts, when the programme was announced (Bonduki, 2009).

In general terms, one of the main housing options in Brazil, defended by progressive political groups, is the housing policy based on rent. In this option, the renting relationships imply the division of the land-use exchange value of a property, avoiding that the new dweller sells the property he has just received with public financial support and goes back to precarious or unhealthy settlements. Policies based on rent do not imply debts or financial interests for the beneficiaries, who pay for housing as a service, and not as building stock. Further, when the property of the rented house is public, there are more chances to control the rent prices.

Numerous academic studies on the social rent have defended this approach as a “principle” and are addressed to illustrate this type of housing initiatives more than properly analyse and assess them. A dossier entitled “housing and social rent in Brazil”, elaborated by Mourad and Baltrusis (2014) contained articles on the national situation of housing rent (Pasternak e Bogus, 2014); on problematizing the absence of a social rent programme in Salvador (Baltrusis e Mourad, 2014); on data regarding housing and tenants in Curitiba, denouncing the absence of social rent programmes (Moreira, 2014); on the need of a programme of social rent in Belem, and the existence of buildings which could be used for this aim (Mercês, Tourinho e Lobo, 2014). Finally, just an article reports some realized experience in São Paulo (D’Ottaviano, 2014).

Another recurrence is the citation of international experiences. Santos, Medeiros & Luft (2016) on a paper regarding the social rent in Rio de Janeiro, on the one side, pointed out the permanent absence of renting housing policy, and on the other, refer to the French case. Balbim (2015) mentions such examples as France and Italy, in order to show the feasibility of housing policies based on rent, to defend a national programme called Social Housing Service, proposed by the Ministry of Cities in 2009, but that has never been regulated and so neither implemented. Paolinelli (2017) discusses the feasibility of rent-based policies, mentioning international examples and São Paulo as the unique advanced case in Brazil, followed by Belo Horizonte, but just for expectations and opportunities.

A single experience on public owned social rental is in course in the country so far, in the Municipality of São Paulo, that since the beginning of the XXI century has promoted social rent, built and preserved more for the effort of some officers than for the municipal political will.

In São Paulo 6 projects are currently managed by the system of social municipal location: Parque do Gato (486 units, 2004), Olarias (137 units, 2004), Vila dos Idosos (145 units, 2007), Asdrubal do Nascimento (40 units, 2009), Senador Feijó (45 units, 2009), Palacete dos Artistas (50 units, 2014). Just a few works present assessments on this issue, based on empirical evidence. The Municipality of São Paulo produced three assessment reports (2005, 2008, 2012, apud Gatti, 2015), Kohara et. al (2012) distributed 28 questionnaires; Gatti (2015) realized a field research in Parque do Gato and Vila dos Idosos and was based on the assessments produced in the town hall. For the settled families involved in the programme and remaining in those units the living conditions improved, but many of them were coming from situations of extreme poverty or using most of their income for paying the rent (Kohara, Comaru, Ferro, 2011).

From the point of view of public power, the situation is quite complex. One year after the beginning of the implementation of the first two projects, the non-compliance was more than 50%. The wider project, the Parque do Gato, presented since the first two years the most critical situation: non-compliance, informal exchange of units, illegal constructions in open lands, lack of realization of the commercial areas initially planned, irregular

occupation, illegal water and electricity connections. In fact, Gatti (2015) underlined the lack of dedicated civil servants for this rent programme, the management difficulties in the block of flats, the absence of a clear division of responsibilities.

Gatti (2015) underlines also a huge contrast between this case and the project in Vila dos Idosos, for elder people and points out the homogeneity of the group, due to a constant income of retired tenants, the need for housing and not the accumulation of building stock, the presence of leaders, organizing the community. All of them contributed to the good physical condition, the low noncompliance and absence of informal transfers of units. A similar situation occurs in the Palacete dos Artistas, another project addressed to elder people in 2014. Good management is always ensured by elder ladies: Olga, Neide, Dóris (Vila dos Idosos), Maitê, Valéria (Palacete dos Artistas). Kohara et. al (2012) reiterate this position, showing that for elder people the rent housing solution is considered as definitive, differently from younger beneficiaries in the programme. Of course, it totally inverts the positions.

In brief, the literature discusses all the expectations from housing rent, also sustained by international examples, but at the local level, the absence of cases and not implemented policies is observed: São Paulo is an isolated exception, but it has been a little assessed so far. When the problems of the municipal programme are discussed, in general, the responsibility is attributed to the lack of state support: management, lack of civil servants, lack of organization before the beneficiaries, failures in the social work.

However, even supporting social rental policies, the empirical evidence shows that in the Brazilian current conditions ordinary public policy does not achieve relevant advancements, public policy critical points should be seriously considered to recognize all the challenges and propose solutions for specific aspects of the functioning of an effective social rent housing programme.

As first, a high level of default emerges. Also, the emission of tickets of rent paid by the municipality is critical because of the difficult monitoring of rent payments, lately ticket deliveries, fine payments. Even if all these challenges were addressed, one major question would remain: what doing with noncompliance? In the relationships of private rents, this risk is calculated and marked by the need of guarantors, by contracts of insurance-bonds, for deposit-caution. When all these tools are not sufficient to regularize payment, there is a tool for the legal eviction. In the case of informal rent, the risk assumed by the owners is accounted as a money amount, converted in illegal values paid by the tenant.

What is trivial for a private person is a huge problem for the state. Constitution assures the right for housing in the Brazilian State. A defaulting tenant can advocate for this right, mobilizing the support of the public defence, or specialized technical advice, as to avoid an eviction. It means a political risk for the public managers, not usually available to assume this kind of risk. Even in the case of evicting a defaulting tenant, a municipality cannot simply put people in the street, it should provide any kind of alternative housing solution, rent aid, etc. This can cost as much as paying for the rent of a dweller in his/her rented house. It is not by chance that so far, in the 15-years-programme, nor a unique family was evicted for not paying the rent in São Paulo. From the point of view of the stability of families this makes sense, but for the financial and administrative health of a housing programme is very problematic.

Beyond the humanitarian dimension, the noncompliance in a programme of social location in public buildings has other difficult dimensions. It is epidemic: if a dweller does not pay the rent for months, or years and no eviction is executed, other tenants will follow and default becomes epidemic. Therefore, projects of social rent in São Paulo show that the noncompliance increased very rapidly, and decreased very slowly in specific moments, even with intense social work on the tenants.

If a dweller does not pay the rent of public property for 5 years without the State's opposition, according to Brazilian law he/she can apply for property rights, in an instrument called "concessão especial de uso para fins de moradia" (special use concession for housing purposes). The building can be in practice privatized through default

of the tenants. A dilemma results from this situation: getting paid for the defaulting tenants affects financial, administrative and political consequence, as well as not getting paid. Assuming that dwellers will pay the rents just out of goodwill is not realistic, low-income people have urgent needs to spend their money on than paying rent, especially if they considered there is no risk of eviction.

In addition to noncompliance, there are other issues: how could buildings and apartments' maintenance be ensured? How would it be possible to involve the dwellers of a block of flats in building management, as to optimise the disbursement? How could the value of rents be calculated? These points can be solved, but the effort and the people to be mobilized are relevant, and there is a permanent lack of staff and resources in the Brazilian housing sector. Political actors assess the risk to orient their actions towards social rent housing, and it appears as too risky. In the electoral perspective, a property title is much better valued than a rent contract. For all these reasons the example of São Paulo is the only one in the country for 15 years approximately. On the one side, activists and researchers have defended and promoted the policies based on rent, thus showing a more theoretical and ideological perspective; on the other hand, public managers are quite sceptical about this kind of program, attempting to the adversities.

A small group in São Paulo is producing an alternative, approaching the social rent from the perspective of the civil society. In 2015, a non-profit association was created to promote low-priced housing rent and this paper aims to illustrate this unique case in Brazil, aware that it is not a new experience worldwide. In a series of countries, this type of organization has been developed for years. The so-called third sector is a structuring element in numerous international experiences, mentioned by Brazilian researchers, in France, Italy and South Africa, among the others. Indeed, in many of these cases, incrementally housing promoted by the third sector have anticipated the public initiative. The third sector produces incrementally experiences, technical knowledge, and tangible results. It has assumed the role of a reliable player in the state's eyes. It is also true that the state has often contributed to the creation, growth and strengthening of the non-profit housing sector. In spite of knowing the cases, Brazilian literature usually proposes an exclusively governmental agenda for this issue.

Building a formal framework for the institution

At the beginning of 2015, in São Paulo a group of people began a collective reflexion on the issues related to the no speculative property, in the *Lanchonete Association*², a cultural platform, created to assess the feasibility of a cultural project, not having gentrification effects. A challenge of this initiative was to buy a space which could be a cultural and leisure centre. In this way, the same space would stay apart from speculative processes. Eventually, that project was successful in buying a place in downtown São Paulo with resources from other sources. The awareness of the need for money and properties was there since the beginning, and since the first meetings funds have been collected. Lanchonete.org promoted the voluntary participation of guest chefs for meetings in the first half of 2015 throughout social events, that were fundamental to strengthen the cohesion of collaborators with different qualifications: architects, sociologists, artists, economists, lawyers, historians.

Since the beginning of the project, it was clear that the organization should be formal and that the group was acting beyond a simple idea. Among the first supporters of the project, there were two lawyers of an office specialized in public law, who elaborated *pro-bono* a proposal of institutionalization. Within the Brazilian legal order, there were two possible alternatives: the creation of an *association*, or a *foundation*. In principle, the model of a foundation was more appropriate to manage building stock, but creating a foundation implied a complex and expensive administrative structure, whose cost was not sustainable for Lanchonete. Therefore, the association option was selected and the "Association for Community Property" was created³.

² www.lanchonete.org

³ Associação pela Propriedade Comunitária

Because of the lack of large financial sources, the association structure was as simple as possible. There is an executive directory board – lasting 3 years - composed of a president, vice-president, a financial manager and two supplementary directors, elected by an assembly, having an annual meeting.⁴ The directory board has civil and juridical responsibilities, runs the association on a daily basis and is accountable to the assembly.

In October 2015, the Statute was approved in a first foundational assembly, the association was thus legally founded. The association's name "Associação pela Propriedade Comunitária" appeared very technical, and after a proposal from a specialist, has adopted the public name Fundo Imobiliário Comunitário para Aluguel (community real estate fund for rent) The acronym FICA means "stay" in Portuguese, evoking the struggle to maintain poor people in central locations.

In the following year, a functioning framework was created: registering the association formally, opening a bank account, and establishing a fundraising campaign through crowdfunding. FICA accepts any kind of cash donation, but campaigns for signatures or monthly donations. The consistency of the donation and the conscience that it is a long-term project with no immediate results are more important than the monthly amount of each donor. At the beginning of 2017, it was all ready for further publicization.

The fieldwork of the initial phase

No large financial resources were available at the beginning, and Brazilian society has not a strong philanthropic tradition. The initial work was almost exclusively voluntary, including professional activities. People are busy, and we were aware that we could not press anyone with goals and deadlines. The project was set up as a long-term one. It was crucial that the fund grew, even if slowly.

Nevertheless, the fundraising got momentum. On top of monthly donations, some larger ones appeared, up to USD 5.000. The most important step happened when a couple of FICA supporters offered as a kickstart to the project to buy an apartment and give it to FICA for 8 years in usufruct. That was an essential step.

The first apartment was bought in the market in July 2017, for R\$ 162.000 (approx. € 37.300), paid by the donors. It has 47 square metres, had been idle for 10 years, and was in bad conditions. This first location was also essential to increase the visibility of the initiative. The association can meet there, invite journalists and bring possible supporters to visit the Project to show that it was not just an idea. A working team was set up among associates to make a collective project for the refurbishment.

Having a formal institution, a crowdfunding campaign, some institutional partners and a flat made people pay attention to the project. First invitations to participate in public debate started to appear, as well as the first articles in the press about the project. FICA was invited to participate in the XI São Paulo Biennial of Architecture, that took place from October to December 2017. For that occasion, the apartment itself was exhibited, with a very simple expography explaining the project. When in December 2017 FICA was invited to participate of a public debate on social rent sitting together with the municipal secretary on housing and a municipal councillor people understood it was definitely accepted as a player in the discussion.

⁴ The Statue of the Associação pela Propriedade Comunitária is available at: www.fundofica.org

The pilot phase: using the first apartment

Having the apartment, we had to calculate our financial model. FICA was never aimed to substitute the state, and it was clear we did not want to subsidize ordinary housing costs. The idea was to calculate what we called the “cost price” of the flat. In several rounds of discussions, the end cost was the following:

So, the following financial scheme was set. Apart from the IPTU and the building costs (R\$ 300, IPTU exempt, i.e. approx. € 70), the value of rent would have been built, as follows:

R\$ 100 (i.e. approx. € 23) for the wear rate of the apartment, in case of breaks and repairs;

R\$ 100 (i.e. approx. € 23) to support the association,

R\$ 100 (i.e. approx. € 23) to support the fund, aimed at buying new apartments,

R\$ 20 (i.e. approx. € 23) for the fee of the building insurance.

On top of it, R\$ 300 is charged as a block of flats or house costs (maintenance of the building, doorman, water) charged by the building to all the housing units.

➤ R\$ 620 (i.e. approx. € 142), as a total per month.

The total value (R\$ 620) was considered too high by some members, who had in mind the price of the municipal social rent, R\$ 300 about. But eventually, it helped FICA to understand its current public. We should not select a dweller in a highly precarious situation, who needs more structured public policies which this association is not able to provide. FICA could have lodge people who have functional lives and work, but simply don't have enough income to live in good conditions in a central regional. At our model, a family earning two minimum salaries would spend less than 30% on the rent, a proportion internationally considered as adequate.

Having the price set up, other criteria were necessary. Tania Christopoulos, a member of the association, realized a workshop in the apartment on November 2017, using the “personification” methodology, in order to collectively build a “character”, starting from personal questions. The resulting criteria are the following:

- a family led by a woman,
- any family composition,
- the presence of a baby, or a child,
- employed dweller working in the central region.

The major dilemma regarded the original location of the new dweller. For some people, she should be currently leaving in the outskirts of the city, so that arriving in the new flat she could avoid long commuting hours. For others, it should be someone already living in the centre of São Paulo but threatened by the high rent costs or by eviction, thus avoiding the gentrification and preserving the neighbourly ties. In December 2017, the assembly decided the ideal tenant would have already lived in the centre of São Paulo and in the outskirt so that she would be able to narrate her different experiences.

After defining the criteria, a selection process should be opened. The first option was a public call throughout social networks, but a social network leader observed that it would have moved several candidates, making all of them frustrated, except the selected one. It could risk the project's image. She proposed a selection done through trusted institutions. In February 2019 a questionnaire was built, in order to highlight the main elements of the

trajectory and current state of candidates. From February to April 2019, 9 partner institutions were contacted, and a group of FICA members and advisors has coordinated the process. The partner institutions have selected 12 candidates, and 6 of them were interviewed. In June 2019 the first family was selected.



Figures 1 and 2. The first apartment was bought in July 2017. In October it was exhibited in the XI São Paulo Biennial of Architecture, an important moment for the exposure of the project. The main character of the exhibition was the flat itself, and it was very important to show that it was real and that civil society had the resources to make such a thing happen. Simple boards in the wall explaining the project and some tape marks on the floor were showing what could be built in the flat.



Figures 3 and 4. The flat has performed quite a lot in 2017 and 2018, strengthening the project. In November 2017 a workshop with a Dutch institute was run in the flat. It was painted green and turned into a studio where a video was shot. In November 2017 a workshop on the criteria took place in the flat to help to define criteria to select the first tenant ((right).



Figures 5 and 6. In 2018 a thorough process of renovation was carried out in the first flat of FICA. The design process was collective and resulted in a non-authorial plan. Flat is long and thin (12x3 m), its original display presented natural lighting and ventilation through space. Most of the material for the renovation was donated.

Conclusion

Starting from scratch, FICA has adopted a pragmatic and incremental approach with remarkable results. The process to acquire the property throughout the crowd-funding seems to be successful. Besides holding the first flat renovated and the having chosen the first tenant, in May 2019 FICA had R\$ 120.000 (i.e. approx. € 27.600) in its account, that is a sufficient amount to buy a second apartment. The members have been improving the knowledge on the property alternative models and have even designed a course in the second semester of 2018, to share its knowledge.

In 2019 FICA is participating to the Chicago Architecture Biennial, with an installation reproducing the first flat, and the campaign “What does an ethical landlord look like?”. In partnership with a lawyer bureau, FICA proposed the mobilization of the protected public building stock to support rent social housing in Villa Itororó, a symbolic place in the centre São Paulo. With the support of a lawyers’ office, it is searching to intervene in tenements and in traditional rent housing where the high rents paid by tenants, contribute to precarious conditions and violation of housing rights.

The promotion of alternative housing policies to private property in Brazil has not several empirical pieces of evidence. One of the main debated challenges are the policies based on social housing throughout the creation of a public housing real estate stock managed by the state. Nevertheless, FICA allows looking at the housing problem from another perspective. As a small-scale experience, without previous clear reference models, it is an interesting lab to re-think the mechanisms regulating social housing.

With this initiative, the project expects to contribute also to the literature on social rental in Brazil, which devotes almost exclusive attention to the state and is silent about civil society’s responsibility and potentials on this issue.

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Chicana Neighborhood Activism: Gender, Race, and Urban Planning

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Abstract: This article weaves the activist narrative stories of three Chicana neighborhood leaders that have transformed redevelopment projects in their barrios to gain more community benefits. Chicanas pressured the city, redevelopment agency staff, politicians, and developers to transform market-based redevelopment housing projects into affordable housing. These projects encouraged links to social and educational services, supported locally owned retail, and built Chicano/a culturally appropriate public spaces. In particular, we analyze how these Chicana neighborhood activists were influenced by the Chicano/a movement; how they became involved in urban planning issues; and finally, how each transit-oriented project changed to encompass more community benefits as these Chicanas pressured the city and developers. The projects include Fruitvale's Transit Village in Oakland, California, the expansion of East LA's Goldline in Los Angeles, California, and the transformation of El Mercado Del Barrio redevelopment in San Diego, California. The narrative stories help to conceptually and empirically ground the larger structural barriers that create inequitable and racially segregated neighborhoods and demonstrate how Chicana activists challenged and pushed back against those structures to protect their barrios.

Keywords: Activism, gentrification, gender, neighborhood revitalization

Introduction

The status of women and the nature of cities have been dramatically altered since Mexican-Americans became part of the United States. However, instead of validating their impacts on cities, the urban planning field has neglected the important role Chicana activists have played in reshaping and protecting their neighborhoods from cities' redevelopment efforts (Cordova 1997). Chicanas have historically fought for issues of environmental justice, against gentrification, and ameliorating neighborhood inequality (Pulido 1996, 2006). Chicanas' historical role as community change agents in protecting their barrios provides a lens into urban struggles over gender, race and politics in the contemporary city (Pardo 1990, 1995, 1998).

Urban history has, since the 1980s expanded its boundaries beyond space and particular behavior of people in that space to include multiple paradigms of city life and urban culture.



During the 1960s and 1970s, the field of “new urban history” focused narrowly on space and behavior without much attention to architecture, politics, gender, or culture. This essay is also in discussion with the broad field of urban history and its wide attention to culture and urban shifts in the late twentieth century.¹

This article weaves the activist narrative stories of three Chicana neighborhood leaders that have transformed redevelopment projects in their barrios to gain more community benefits. Chicanas pressured the city, redevelopment agency staff, politicians, and developers to transform market-based redevelopment housing projects into affordable housing. These projects encouraged links to social and educational services, supported locally owned retail, and built Chicano/a culturally appropriate public spaces. The barrios examined in this study include The Fruitvale in Oakland, Boyle Heights, and Barrio Logan in San Diego. These three barrios are historically important Latino neighborhoods experiencing pressures of gentrification.

We analyze how these Chicana neighborhood activists were influenced by the Chicano/a movement; how they became involved in urban planning issues; and finally, how each transit-oriented project changed to encompass more community benefits as these Chicanas pressured the city and developers. The projects include Fruitvale’s Transit Village, the expansion of East LA’s Goldline, and the transformation of El Mercado Del Barrio redevelopment in San Diego. The narrative stories help to conceptually and empirically ground the larger structural barriers that create inequitable and racially segregated neighborhoods and demonstrate how Chicana activists challenged and pushed back against those structures to protect their barrios.

Chicana Neighborhood Activism and Chicana Feminist Epistemology

Chicanas have played a large political and sociocultural role in reshaping their neighborhoods. They have been at the forefront of the Chicano movement (Ferre and Martin, 1995; Garcia, 1997; Pulido, 1996). Chicanas were even organizing in the foundation of the urban planning field during the progressive era as women organized to bring attention to the tenement housing conditions in New York were also joined by Mexican American women whose legacy has not been adequately acknowledged in urban planning history. Hence, historically, the story of Chicanas politically organizing to defend their communities, especially in the urban planning literature, has not gotten the important recognition it deserves. In fact, it has gotten almost no attention.

The key book that does address this important issue is Mary Pardo’s “Mexican American activist: Identity and resistance in two Los Angeles communities” (Pardo, 1998). Pardo’s book tells the stories of Chicanas involved in neighborhood activism in Los Angeles. Pardo argues that Chicanas transformed everyday problems they confronted in their neighborhoods, such as the building of a prison in East Los Angeles or the building of a parole office in Monterey Park, Los Angeles, into political mobilization. Pardo’s Boyle Heights case tells the story of Mothers of

¹ Gilfoyle, Timothy J. “White Cities, Linguistic Turns, and Disneyland’s: The New Paradigms of Urban History.” *Reviews in American History*, Vol. 26, No. 1, *The Challenge of American History* (Mar., 1998), Pg. 176. (pp. 175-204)

East Los Angeles (MELA), a grassroots group of women who worked via the Catholic Church and mobilized the Chicano community to stop the construction of a state prison in Boyle Heights. Gloria Molina, who was then a California State representative, played a key role in that resistance. MELA, at their height in 1986-1987, was able to create a grassroots movement that forced planners and state officials to stop their plans of creating a prison in that community.

Pardo explains that Chicana activist women had a long history of involvement in neighborhood issues. But they really became politicized in the 1960's social movements that transformed civil rights across the country. Pardo attributes dynamics of women activism in East Los Angeles to three things: 1. Gloria Molina seeking grassroots activist support in Boyle Heights after state officials ignored her arguments. Molina argued that state officials did not provide responsible public participation forums or procedures. 2. The Catholic church legitimized the anti-prison struggle and served as a vehicle for communication and grassroots networking. 3. Women relied on their gendered identities via roles as mothers and protectors of the neighborhoods. MELA defined mothers as a woman who "does for children", so it went beyond a biological connection. Hence, members of MELA were defined as 1. protectors of neighborhoods and 2. those that "do for children". Lastly, Pardo argues that the women of MELA used their ethnic identity as a tool for resistance.

Key themes from Pardo's work are very useful in helping us understand the role gender plays in Chicana neighborhood activism. For example, women formed community identity as resistance. "Women used their life experiences in the neighborhood and the relationship of those experiences to outsiders to build positive collective representations of the community. Constructing community identity became a key element in defending Eastside Los Angeles" (Pardo, 1998: 81). She also describes how social networks played a key role in collective community concerns. "As women became activist, they reflected on their experiences as mothers and working-class Mexican Americans, converting long-established social networks into political networks. In transforming their social networks, they expressed what were formerly individual concerns as collective community concerns" (Pardo, 1998: 106-107). These networks that Chicana activist developed and maintained were extremely important to securing the resistance to the prison. These networks originated through impacts on their families and then evolved to larger community issues. "In both communities, women's activism originated in family concerns and community networks, then generated broader political involvements. This pattern is similar to that found in other studies of woman's activism" (Pardo, 1998: 228). Their gender identity was very closely linked to their cultural identity and directly materialized into political opposition. Pardo writes about a MELA participant, Juana Gutierrez, who identified family, community and ethnic identity as the impetus for her involvement. "I say "my community" because I am part of it. I love my Raza, my people, as part of my family". She clearly uses motherhood and family as a metaphor for civic responsibility and action. She has expanded her responsibilities and legitimized militant opposition to projects she assesses as detrimental to the community" (Pardo, 1998: 115).

Pardo's important study provides a clear linkage between the gender Chicana literature (Pardo, 1990; Pardo, 1995) Esquire and Segura, 1997; Platt, 1997; Pulido, 2006) and urban planning justice scholarship (references). One study that does provide this link is Teresa Cordova's study of the Southwest Organizing Project (SWOP) (Cordova, 1997). SWOP is a

social justice organization fighting for environmental and economic justice in New Mexico. Cordova argues that the Chicana movement literature is dispelling Chicanas as passive political actors. But Chicanas have a long history of community activism originating in the Chicano movement. Cordova points out that research on Chicanas makes four key points: “1) Chicanas are not passive but instead have a long history of action for social justice; 2) mobilizations by Chicanas reflect an identity tied to class; race, and gender; 3) consciousness and mobilizations by Chicanas are reflective of ties among family, household, and workplace; 4) Chicana’s organizing skills and strategies stem from their experiences and conditions” (Cordova, 1997: 32). Cordova builds on Pardo’s study by pointing out the important role of gender networks and how they were transformed politically. “The Mothers of East LA accomplished this by turning their preexisting gender-based networks, e.g. those related to church and school, into political benefits, bringing forward previously “invisible” women into leadership positions” (Cordova, 1997: 34). Cordova calls on urban scholars to further research these gendered dynamics as Chicanas social movements directly relate to urban planning issues. “Armed with knowledge, oppositional consciousness, and principled strategies, Chicana grassroots activists are inserting themselves into questions of international economic integration, local economic development, neighborhood change including issues of gentrification, infrastructure, tax abatements, natural resource management, zoning, and an array of other development issues” (Cordova, 1997: 49).

We engage the role of gendered activism to understand how these Chicana leaders were able to transform large scale transportation infrastructural projects. We do this by engaging a form of gendered epistemology within an urban planning praxis. We view urban planning as an epistemology of intervening in the urban environment. Epistemology involves the nature, status, and production of knowledge (Harding, 1987). Hence, we engage the concept of Chicana feminist epistemology within the education field and apply it to issues of Chicana neighborhood activism (Bernal, 1998). As Dolores Bernal argues, Chicana feminist epistemology educational research thus becomes a means to resist epistemological racism and to recover untold histories” (Bernal, 1998: 556). Highlighting untold stories of Chicanas struggling and ultimately reshaping large scale planning projects reflects a turn in planning scholarship that advances the contributions Chicana activist are making to the field. This epistemological turn directly challenges past racist and sexist scholarship that silenced the voices of Chicanas. This type of gendered centered epistemological planning praxis demands a methodological transition to one that directly asks questions of gender. As Bernal challenges the educational methodology, we challenge planning. “A Chicana (centered) methodology encompasses both the position from which distinctively Chicana research questions might be asked and the political and ethical issues involved in the research process.” (Bernal, 1998: 559).

Historical Context

During the 1970s and 1980s, Chicana feminists in California demanded their role in the city would be focusing on community revitalization, non-profit development, and transit communities that would connect affordable housing, social services, retail development, and public transportation in poor Latino communities.

Almost one hundred years earlier, in the 1860s, Mexican-American women developed new approaches to city life by creating religious charity groups. Elite and middle-class Mexican-

American women sought a role in urban life largely through their historical remembrances, Catholic charity organizations, and Latino immigrant support groups. Women reformers began to push in the 1890s for environmental issues by acting as “municipal housekeepers” extending their role from the home to the urban environment.²

Californio-Mexican women such as Antónia Perez de Woodworth, Francesca Sepúlveda, Ysabel del Valle, and Refugio Bandini all were involved in the Los Angeles based *Daughters of Charity* organization, a Roman Catholic organization dedicated to fundraising for their orphanage and school beginning in the 1850s.³ By the late 1880s, women around the United States had begun to develop a concept of “organized womanhood” that emphasized the power they could create by working in solidarity across numerous organizations in the United States.(136) Many Mexican-American women belonged to Catholic organizations, Spanish-language groups, and were involved in the social life and charitable work of the major cities of California.(137) One of the most visible organizations that in the beginning of the twentieth century in Los Angeles was the organization that developed the public celebration of the Fiesta de las Flores, a celebration that drew heavily on the regions Californio-Mexican past.(138)

After numerous clashes between the American and Californio women in the early club movement, Californio women created a space for themselves beginning in the 1920s by focusing on two specific areas within the larger club movement, Spanish language and Californio cultural instruction and the historic preservation of the Californio past.⁴(141) By the 1920s and 1930s, the descendants of the early Californio-Mexican women had become a part of the Los Angeles women’s club scene that work to remake the California cities to reflect historical events and preserve(or reenact) old homes, family histories, family artifacts, and family historical clothing.(141) In terms of language and cultural preservation, the Californio women gathered in the Friday Morning Club beginning in the 1910s to meet and discuss Spanish-language texts and read the Los Angeles Spanish-language newspaper, *La Opinion*.(143) These Californio women and newer Mexican immigrations to California created organizations to raise their visibility in California public life in the cities. In organizations like the Friday Morning Club, Californio-Mexican women worked to rebuild, shape, and protect buildings, history and memories of public space in Los Angeles and around the state.

The women’s movement of the 1970s, known in American society as the Second Wave was a continuance of the fight for women’s rights. As part of a broader feminist movement and the Chicano Movement, continued the fight for women’s rights and civil rights.

This article illustrates how women in three metropolitan California cities established their place in the city during the height of the contemporary women’s movement and in the wake of the Chicano Movement. Like their white contemporaries, Chicanas focused on spaces created

² Gilfoyle 181.

³ Gunnell, Kristine Ashton. “Women's Work: The Daughters of Charity Orphans' Fairs and the Formation of the Los Angeles Community, 1858-1880.” *Southern California Quarterly*, Vol. 93, No. 4 (Winter 2011-2012), pp. 373-406

⁴ Wallis, Eileen V. "Keeping Alive the Old Tradition": Spanish-Mexican Club Women in Southern California, 1880- 1940.” *Southern California Quarterly*, Vol. 91, No. 2 (Summer 2009), pp. 133-154.

for their communities. They were also involved in broader issues of the entire Latino community such as job training, adult education, social services, retail development, childcare centers, and financing services for low-income community members. (see Arabella Martinez interview)

Chicanas and The Post War City: The 1950s

The women's movement and the Chicano Movement desegregated the previously gendered spaces of the 1950s which had seen the separation of men and women to the urban workforce and the non-working suburban world. Although this segregation was particularly sharp among white men and women, Chicanos in the 1950s, especially the upwardly mobile had moved out of the urban core and faced similar gender patterns. (Spain 155) Among the poor and urban, the Chicano population stayed in place as the city was systematically ignored or slated for urban renewal and left in a state of blight with many losing their homes.

Narratives of Chicana activists

Gloria Molina became involved in the Chicano Student Movement at East LA College despite being a night student who worked during the day as a legal secretary while most of those involved were young students. She was introduced to various organizations during her time at East LA College and she described how it was difficult to avoid what she calls, the "so-called "student movement" at the Chicano Moratorium, the antiwar movement, and everything else." (Session 1, May 25, 1990, pg. 30-Carlos Vasquez interview of Gloria Molina). She was part of the East Los Angeles high school walkouts of 1969 and was involved with the organization, MASA, the Mexican-American Students Association while a student at East LA College but explained that she was largely involved as a follower rather than a leader.

Molina began her involvement as a self-described follower because while she agreed broadly with the ideas of the Chicano student organizations she did have some reservations about particular attitudes which she found, "almost too radical." (pg. 31) She found herself agreeing with the ideas of the Chicano student movement about "how we were constantly being discriminated against how we had to stand up and challenge all of that." (pg. 32) But, Molina did not agree with two other ideas that circulated in the Chicano student movement. First, she disagreed with the idea that "somebody owed us something," because she felt that it was "more of a socialist [idea]." (pg. 31) Secondly, she did not agree with the Chicano Student Movement perspective of racism in a way that she viewed as conspiratorial, "that it's all planned and staged, and we're just all little puppets in this process." (pg. 32) Instead she suggested that racism could be challenged directly through action.

Gloria Molina suggested in her interviews with Carlos Vasquez, an oral history interviewer at UCLA, that there was widespread hypocrisy among the male Chicano activists who spoke against discrimination and pushed Chicanos to speak out against white racism while "they would oppress me as a Chicana." (pg. 32) Molina's frustrations the male sexism of the Chicano student movement, led to her increasing desire to work with Chicana women who shared a more Chicana feminist ideology that she found lacking in the white feminist movement

of the time period. This was the impetus to her involvement in Chicana female centered groups and she found common ground with the women of the Chicana Service Action group, where she found a space to push for the voice of Chicanas and to find a way to help them gain autonomy in the workforce. (pg. 38)

Gloria Molina

Gloria Molina became a very powerful politician in Los Angeles. She was first elected to State Assembly in (?) and then the Los Angeles City Council in (?) to represent the newly founded District 1. District 1 represented a mostly Latino district and was formed from MALDEF's redistricting civil rights efforts. Molina represented this district from (? To?). In this capacity, she fought for more resources to be invested in her impoverished district. She then went on to run and win a seat on the Los Angeles County Board of Supervisors. She served in that capacity (from?) until she retired in (?). The Board of Supervisors is a powerful board as they control the county's resources and have seats on powerful county agencies such as the Metropolitan Transportation Commission (METRO), who sets public transportation policies and control the agency's resources. But Molina's political start was not in formal city politics but instead in grassroots efforts and community struggles.

In Molina's time as a state assembly member representing Eastern Los Angeles, she began to reshape the political and spatial struggles in Boyle Heights. She played a central role in opposing the construction of a new state prison in Boyle Heights. The state board of prisons had planned the construction of a new prison facility without any participation or involvement from the public. Molina opposed the prison plan and advocated to build the prison elsewhere as her district was already overrepresented by prisons. But the prison board ignored her advocacy. Hence, she let her community know about the prison plans and that unleashed a grassroots oppositional movement to the prison that ultimately led to the stoppage of the prison construction.

Mary Pardo's book describes Gloria Molina's initial involvement in the prison fight:

Assemblywoman Gloria Molina, familiar with uphill battles, vehemently opposed the Eastside site. Considered an aggressive community advocate and an outspoken feminist, she had opposed a male-dominated Latino political network to win election to the Eastside Fifty-Sixth Assembly District in 1982. Later she became the first Latina elected to the Los Angeles City Council (1987-91) and the first woman and the first Mexican American elected to the five-member Los Angeles Board of Supervisors, which oversees an annual budget of \$13 billion. Molina did not object to the construction of a prison in Los Angeles County; instead, she argued that the chosen site was too close to the long-established Boyle Heights neighborhood, and she pointed out that it was also within two miles of thirty-four schools. She pointed out that 75 percent of the county's prison population was already housed in her district; thus, another prison would add to the over-concentration of penal facilities in the East Los Angeles area. Downtown Los Angeles houses twenty-five thousand prisoners, the largest inmate population of any city in the

nation. Five inmate facilities, including a county jail, a federal prison, the men's city jail, and a juvenile detention center, also lay within a six-mile radius of the site.

When the DOC brushed aside Molina's objections, she explored the possibility of grassroots mobilization” (Pardo, 1998: 54–55).

The Mothers of East Los Angeles (MELA) grassroots organization originated from these struggles. This was a women’s organization that came out of the local Catholic church and fought against the construction of the prison as well as other environmental justice neighborhood concerns. MELA was led by Chicanas who had been politicized during the Chicano movement and were activist’s women who had a long history in Boyle Heights. The community was angered at the lack of public outreach and opposed the prison which led to the formation of the group. The local Catholic priest helped organize the women and they also worked with Representative Molina, and a progressive urban planner who provided the planning technical expertise, as MELA gathered enough support to stop the construction of the prison. MELA participated in many marches, political rally's, they outreached to media, and traveled to Sacramento to lobby against the prison construction. Gloria Molina would herself translate the prison hearings at the state capital into Spanish since there were no interpreters. Mothers of East LA also connected with universities in LA, like UCLA, to gain support for their fight. They were ultimately able to stop the state's plans to construct the prison. Hence, MELA members used their life experiences in the neighborhood and the relationship of those experiences to outsiders to build positive collective representations of the community. Constructing community identity became a key element in defending Eastside Los Angeles” (Pardo, 1998: 81).

Pardo attributes dynamics of women activism in ELA to four things:

1. Gloria Molina seeking grassroots activist support in Boyle Heights after state officials ignored her arguments. Officials did not provide responsible public participation forums or procedures.
 2. Catholic church legitimized the anti-prison struggle and served as a vehicle for communication and grassroots networking.
 3. Women relied on their gendered identities via roles as mothers and protectors of the neighborhoods. They defined mothers as a woman who "does for children". So MELA were defined as 1. protectors of neighborhoods and 2. those that "do for children".
 4. Used their ethnic identity as tool for resistance.
- The concept of resistance has been at the core of Chicano Studies and Ethnic Studies as a means to explore the responses of the oppressed to their mistreatment.⁵

Molina’s Role in shaping transit’s light rail Gold Line extension to East LA.

⁵ Ramirez, Catherine. “Saying “Nothin”: Pachucas and the Language of Resistance.” *Frontiers: A Journal of Women Studies*, Vol. 27, No. 3 (2006). Pg. 2.

Gloria Molina also reshaped Boyle Heights with her efforts as a County Supervisor as she advocated to bring the Gold Line subway into Eastern Los Angeles. The battles over Los Angeles rail have been intense, filled with political conflict and racial undertones. The Metropolitan Transit Agency (MTA) began their investments into rail by building the Redline which was a subway that ran from downtown Los Angeles and stopped at MacArthur Park. The plan was to extend the subway along Wilshire BLVD into West Los Angeles but that was not completed due to lawsuits, residential opposition, and environmental lawsuits. Los Angeles was also investing in a commuter rail system that took away funds from bus services. Hence, MTA was subsequently sued by the Bus Riders Union on racial discrimination grounds. The Bus Riders Union argued that MTA was discriminating against public transit dependent communities who were mainly communities of color and favoring suburban and higher income rail riders by investing their resources on commuter rail (Elkind, 2014).

Gloria Molinas' role in these transit conflicts was to advocate for a subway line extension into East Los Angeles. She argued that most of the population in her district was transit dependent and would greatly benefit from more regional transit connectivity. But most of the transit capital investments were planned for the West of Los Angeles. Hence, Molina relied on her political networks to press the MTA, the County Board of Supervisors, and the state of California to invest in a subway that would run into Boyle Heights. Molina served on the Board of MTA and in 1998 led a charge within the board to reaffirm their commitment to Eastside subway investment (Elkind, 2014). But the political fights continued as the West side and East side fought for transportation investments. These fights culminated over Measure R (R stood for relief as in traffic congestion relief) that would increase county sales taxes to raise \$30-\$40 billion for 30 years for rail investment in Los Angeles. Molina opposed the measure as East LA was only allocated to get light rail instead of a subway but the measure still passed and Boyle Heights got their light rail. If it was not for Gloria Molina's championing of a subway into Boyle Heights when most of the attention was on the West side, Boyle Heights would probably not have seen as much public transit investment and the current light-rail would most likely not exist.

Arabella Martinez

Arabella Martinez was the director of the Spanish Speaking Unity Council a non-profit community organization in Oakland's Fruitvale district. The organization started during the Chicano movement as a coalition of service and community-based organizations in the neighborhood. Arabella Martinez was their leader until she left to Washington DC to serve in President Carter's administration as the first Chicana sub secretary in the US. She was sub secretary of the Human Services Administration. The Unity Council's work needs to be understood from a broader context of community revitalization and history of non-profits in the area. The Council worked on providing job training, adult education, a childcare center, and financing services for the low-income Latino community. But their main project is now the Fruitvale Transit Village, which is composed of low and market rate housing, social services, and retail development that is adjacent to the BART Fruitvale station. The Fruitvale Transit Village has now become a model for conducting equity-based TOD's in a low-income community.

The Fruitvale Transit Village was conceptualized, its funding secured, built, and now managed by the Unity Council. Hence, the Transit Village would have not happened without the leadership coming from the Unity Council. The Unity Council's approach to making the TOD project happen was a combination of gaining community input and participation, collaborating with local government officials, and using its federal connections to help secure funding and support. Arabella Martinez was the president of the Unity Council, and through her strong leadership style she was relentless in developing a vision of the transit village. Her initial community services work in the Council helped her to get appointed in President Carter's administration which subsequently provided her with the important federal contacts she later relied on to gain funding for the Transit Village.

The original idea for the transit village actually emerged from a retail leakage study that UC Berkeley Professor Ed Blakely of the City and Regional Planning Department conducted with his students. Arabella Martinez and Ed Blakely had met during their War on Poverty work and through their social movement experience. Their study revealed that a lot of the residents were shopping outside of the neighborhood, and his idea was to create a connection through street design from International to the BART station to encourage more people riding BART to shop on International. This gave Arabella Martinez the initial idea of creating a paseo between both spaces.

Through Mrs. Martinez's strong leadership style, the Unity Council used a more top-down community driven approach because the organization not only stopped BART from building its initial parking structure (which was to cut off the main street running through the neighborhood to the BART station), but it then created an alternative vision in the establishment of a community-led TOD project in the neighborhood. Arabella Martinez framed the stewardship role the Unity Council played in establishing the TOD, and made facilitated venues for the community's voice a priority in the process. "We were stewards of the community. This wasn't an outside developer [building a TOD]. It wasn't the government coming in. We, in fact, opposed BART in terms of what they wanted to do. We led that fight. We led the fight in terms of community policing too. We led the fight in terms of better recreational facilities and programs. So, I think partly it has to do with that sort of *stewards of the community* mindset." This mindset gave the Unity Council a lot of power to influence the process of developing the TOD. Since they had been working in the community since the 1960s, they had established a great deal of trust and legitimacy in the area.

Arabella Martinez said that community members really got involved when there were grant applications and the Council needed to demonstrate community support for the project. She was adamant in explaining that it was always, from the visioning to the ground-breaking, a Unity Council project. Another former staff member explains how Mrs. Martinez's leadership shaped the project and how the project depended on her connections: "The Transit Village would not have happened without Arabella Martinez's will. She would say, 'You are with me or not with me.' She promoted it and had a lot of say. She brought powerful people from DC to fund it, the Clinton Administration gave lots of funding. It came from community development block grants. But the process was not organic, bottom up. It's not a blueprint for other communities unless they also have all the [political and financial] connections."

Arabella Martinez' networks played a crucial role in supporting the large project. After taking over the Unity Council for the second time, she was also appointed to the board of directors of the National Council of the Raza. During a fundraising celebration event for the National Council of the Raza, she connected with Secretary of Transportation Pena, who was interested in her work in linking affordable housing to public transportation and other social services. That same week, Mr. Pena flew out to Oakland and provided the Unity Council with a check of around \$500,000 for an environmental impact study focused on TOD. That was the initial funding that helped the planning and initial fundraising drive for the Transit Village. Hence, Arabella not only possess the necessary networks but a belief in gaining the urban planning technical skills to embark on a multi-million-dollar TOD effort. Her reputation was key to the success of the project. She possessed two important characteristics: 1) the trust of the community because she had worked for decades in the Fruitvale working on War on Poverty and social service and community development efforts. 2) She was the first Latina sub secretary in US history and that gave her "clout" to link she community and government networks together. She describes the Unity Council's efforts as not top-down or bottom-up but actually being in the middle. "We were the ones that were doing all the planning for it but had the community in mind".

These community connections helped Arabella Martinez secure their key tenant in the development, La Clinica, an important Latino focused health clinic that brings thousands of clients to the village each year. The Unity Council's strategy was to build social services by targeting La Clinica as the development's anchor. La Clinica is a well-established and well-respected community health center that has been in Oakland since the 1970s. La Clinica has 32 sites, and in 2012 served over 80,000 patients and handled approximately 370,000 patient visits. It is the largest community health clinic in the state of California. Hence, it was critical for Arabella Martinez to convince La Clinica's leadership to relocate into the Fruitvale Transit Village to serve as the anchor tenant and add credibility to the TOD project. BART was also very interested in having La Clinica as part of the project. At 40,000 square feet, La Clinica's space in the transit village is the largest facility in its system, which provides medical, pharmaceutical, laboratory, behavioral health treatment, and dental services. The TOD has also helped increase the number of clients for La Clinica in the Fruitvale neighborhood.

The Unity Council demonstrates how women leaders were able to transform this large transportation project. In Fruitvale, Arabella Martinez called most of the shots when it came to making direct decisions on the Fruitvale Transit Village's development. Mrs. Martinez had access and connections to federal and local politicians and staff members. A male staff person who worked on the design of Fruitvale Transit Village called her "La Coronela" and thinks a large-scale project like the village needs someone like her to get things done. "A project like that needs a Godmother." Another key leader within the Unity Council commented on the gendered relationships and sometimes the conflicts that emerged with the male Latino business owners on International Boulevard.

Between Arabella and me, Latinas, and most of the businesses along International Boulevard are Mexicanos. So, you have the big mouth Latina leading the organization and you have the Mexicanos [accentuating the "os," for males]."

Ha, ha, ha, ha, capital OS, right, so there was quite a bit of tension there. I didn't have time to play the subordinate Latina. Right away they wanted to criticize.

In an interview, a UC Berkeley professor, who had been involved in the project from a distance, commented that she believed the project was successful because of Arabella Martinez and her strong leadership style and connections. The participation of strong women and their access to decision-making processes affecting different parts of the TOD projects was also a factor that we believe contributed to the equitable outcomes of both projects. But it wasn't just the Latina leadership through the council where Latina participation was present. From the very beginning, the community participation for revitalizing the Fruitvale was led by women. Before the Fruitvale project, the Council was tackling issues of crime in the neighborhood as a form of community improvement. Women were the ones doing community outreach to form safety committees. As Arabella Martinez explains, "Many of them were women. They took the date down, they wrote when the drug deals were being made and where. That is real bravery". And that also happened when we were organizing in terms of open spaces and recreation because we were talking about their children, and having a safe place for their children to play". The Unity Council specifically organized around women's issues. Arabella Martinez explains, "We were organizing around things that were really local, that they could see, could make a difference and did make a difference in their lives. And the lives of their children".

Community-based organizations in the area also played a key role in developing the necessary political capital to ensure the TOD projects had community benefits. Without the Unity Council in Oakland, the Fruitvale Transit Village would most likely not have been envisioned, funded, or built. The TOD project was the Unity Council's key project for almost a decade, and Arabella Martinez's key leadership helped sustain its process. The Unity Council's role was critical because it served an intermediary role between the government's efforts to build a TOD and the community's needs. Mrs. Martinez had strong connections with federal, regional, and local funding agencies that were able to provide the necessary resources to finish the project. The Unity Council also had strong community-based connections because of its 20-year history of providing important social services in the neighborhood. Hence, they were able collaborate with local businesses that initially opposed the TOD (because they viewed increased competition as a barrier to their continued success). The Unity Council was extremely effective in getting key community leaders on board to create a community vision for the TOD. They also had the needed political capital to oppose BART's initial plans to build a parking structure that would have cut International Boulevard off from the BART station. As Arabella Martinez explains, "you have to have strong Latino institutions to pull something like this off".

Rachel Ortiz

"The movement is everything. Like I told you, the movement is everything". – Rachel Ortiz
Interview

Barrio Logan is an important historically Chicano neighborhood in San Diego. This is the site of Chicano Park, a space under a freeway that was taken over by Chicanos and made into a vibrant public space with dozens of murals painted on the freeway pillars depicting Chicano

history, culture and political struggle. Scholarship has focused on Chicano Park as a space of cultural resistance and self-determination (references). But the community revitalization efforts that in many ways sustained the Latino neighborhood has not been the focus. And even less focused on has been the role that women activist has played in that struggle. Most of the scholarship focus on male muralist that transformed the cultural milieu of the park. However, many of those women activists were involved in the Chicano movement of the 1960's and 70's. They also organized during the takeover of Chicano Park in the late 1970's. One key activists, Rachel Ortiz, the head of Barrio Station community center in Barrio Logan had worked with Caesar Chavez organizing farmworkers. She grew up in the neighborhood and started Barrio Station, a youth community organization that has been in the neighborhood for 20 years. She is probably the most influential activist who was behind the urban revitalization efforts and the construction of the TOD as she fought to maintain its affordability and also fought to gain community benefits from the project.

Rachel Ortiz had spent time in prison as a youth due to her drug addictions but recovered from those addictions and became politicized once she entered the Chicano movement. She had been working in the Mission District in San Francisco when she became involved in the movement. "I just fell in love with the farmworkers. Yeah, Filipinos and Mexicans, some nuns...from the Bay Area who were helping [the United Farm Workers] with their grapes boycott. And Dolores Huerta...she would say, "Rachael...I want you to do this and that...we need an apartment, a refrigerator, we got to get a phone...here's the projector...I want you to..." It was during Rachel Ortiz' organizing work with farmworkers in the Bay Area where she met Arabella Martinez. "That's where I met Arabella...we called her Marty. I don't know why we called her Marty? Marty...she was involved in everything". Ortiz also joined the Chicano national militants group Brown Berets, worked on a prison justice campaign for Los Siete de la Raza (who had been falsely imprisoned) and also took part in the Third World Liberation Front (which was mostly made up of Latinos and Blacks).

She explains how the Chicano movement influenced her generation of women, "Well, I think that the Chicano Movement had a lot to do with...it spurred academia to demand Chicano Studies and you know, farmworkers, and women...I think it spurred us to be vocal, you know. I mean once you're vocal, you're in it. You're in it. I think that it was empowering for us. But the good thing I think was that the empowerment was for the neighborhood, not just for themselves. I think seeing Dolores Huertas...for me...wow, man...the first time I saw her, when those kids put me in that huelga office in San Francisco, she right away started talking to me like I was a regular...she didn't know me...she thought I was a regular in the area".

Rachel Ortiz became involved in urban planning work via environmental justice concerns regarding the concentration of junkyard recycling businesses in the neighborhood. Barrio Logan had the highest concentration of junkyards in the city and Ortiz started a community organizing campaign to rid the neighborhood of those business. This captured the attention of a progressive urban planner who encouraged her to use urban redevelopment as a tool for community improvements. This redevelopment effort lasted 22 years and encompassed the creating of a community plan for Barrio Logan and the construction of the El Mercado Del Barrio commercial development and affordable housing complex.

In the late 1970's, Barrio Logan was the only neighborhood in San Diego that did not have a community plan. Hence, in her efforts to kick out the junkyards in the neighborhood, Ortiz set off a historical undertaking in the community. She pressured then mayor (Pete Wilson), the planning department, and city council to change the codes, land use and zoning in the neighborhood to make it more difficult for junkyard business to locate or remain in the community. Much of her political capital came from Barrio Logan residents who testified at the city council meeting and attended planning meetings in a show of unity and community support for the plan. Her efforts culminated with the creation of a community plan for Barrio Logan neighborhood in 1978.

Rachel started to use redevelopment power to fight for the neighborhood. She took over the planning mechanism in Barrio Logan and even supported the city in their use of eminent domain to kick out corrugated metal junkyards and auto painting dealers where the current site of El Mercado Del Barrio stands.

GS: You actually used a lot of planning tools to push for change?

RO: You have to. You have to get out there. And you got to network...not for yourself, you know? You got to network for the neighborhood. Everything you run into...write it down. Phone number. Now it's email. Yeah, so Rich Juarez, he liked me a lot. He was with Model Cities...that's before Community Development Block Grant money. Model Cities came from the War on Poverty.

RO: They used eminent domain against us with the freeways, and didn't give us notice. So, we reversed it and used it for ourselves.

The revitalization project culminated with the construction of El Mercado Del Barrio development. That development encompasses 200 units of affordable housing, which were initially market based but changed to affordable via the community opposition to market-based projects that emerged. The development also has a Latino themed grocery store. The first grocery store in the neighborhood in 25 years. The project's other commercial developments include locally owned businesses like restaurants, a barber shop, a CrossFit fitness club, a brewery, and Latino art painted on the building's facades. It is also to the construction of a new community college, Cesar Chavez community college, and is a short walking distance to the light rail system. Rachel Ortiz played a key role in ensuring the project moved forward with the community's interest in mind. As one planner explained, "Rachel has a lot of power in Barrio and if you don't get her approval, your project will not go forward". Rachel Ortiz grew up in Logan Heights and has been organizing in the neighborhood for the past 30 years. Her youth organization maintains a lot of legitimacy in the neighborhood as they do a lot of anti-gang work with youth and played a key role in creating a safer neighborhood. Rachel Ortiz has also been a key community voice in the transformation of Barrio Logan in particular. She was on the neighborhood planning group that gave input to the city council and tirelessly worked to help push through and gain community support for the Mercado Del Barrio project. Planners see her contribution, as one explained, "Rachel Ortiz and her pack head the effort for all those affordable housing projects. In any redevelopment project you had to have an arts component and it was important to use local artist to display the art". In many ways, Rachel Ortiz was the person

spearheading the equity components of these projects and making sure local residents benefited from the affordable housing developments in the neighborhood.

Rachel Ortiz also worked with The Environmental Health Coalition who have been organizing around environmental justice work in the neighborhood and has done this by incorporating city planning tools. The coalition were a key group in pushing the update of the community plan in the area that had not been updated since the 1978 plan. The update of the community plan became a very heated political debate between neighborhood interest and industry who catered to the Navy industry. The conflict came down to a small buffer zone that changed the zoning from allowing industry to discouraging it. The community update was approved by the city council but then a referendum was put to vote city wide and the plan was shot down. One former social service worker in the neighborhood observed that, “The city council approved the updated community plan, twice, and then came measure B and C and it was defeated. That was put out into a vote for the entire city of San Diego. And people could care less about communities of color. Nowhere in SD is there a community that has been waiting 37 years for a community plan update. That is criminal. By not having an update with all these incompatible land uses, they are responsible for the health and cancer rates in the community”. The Environmental Health Coalition and Rachel Ortiz’ organization helped lead the way in this community plan which is tied to the TOD because the original vision of the Mercado development came out of the original community plan in 1978.

Activist played important roles in the revitalization of Barrio Logan and the construction of the transit-oriented development project: El Mercado. Rachel Ortiz’ specific role is important to understand because she was there from the beginning and working upfront to gain community support and reshape the revitalization efforts.

Discussion

The stories of these powerful Chicanas demonstrate the key role they played in reshaping socially, culturally, and physically these barrios. Gloria Molina, Arabella Martinez, and Rachel Ortiz were all activist that were influenced by the Chicano movement, began as neighborhood activists, and became involved politically to reshape urban planning interventions in these neighborhoods. Their political activism led to specific community benefits, such as increased affordable housing, access to regional public transportation systems, increased local businesses and social and health care services in these barrios.

Certain themes emerged through these women activist narratives. The important roles their networks served to secure financial resources and political support for their projects. They were linked to developers, non-profits, social service providers, urban planners, politicians and government staff at the local, state, and federal levels. Arabella Martinez had those federal government and philanthropic connections that supported the Fruitvale Transit Village. Gloria Molina had the grassroots support in Boyle Heights as well as her state, county, and city connections. Plus, she was a powerful Los Angeles politician who served on important boards that controlled transportation funding in Los Angeles. Rachel Ortiz had a long history of neighborhood activism and grassroots connections. But she had also supported local Barrio

Logan politicians that later went on to serve important political roles at the state level. Hence, all these Chicanas were well connected and relied on those networks to influence these Barrios. They were all situated in very important positions within these networks. They were the “middle-women” between the state, capital, and these barrios. These projects would not have been built without their support. Hence, this middle position between government planning interventions and the communities’ interest provided them with power.

There was also a gender element in their advocacy work. The women were inspired by their time during the Chicano Movement and had uniquely gendered experiences depending upon the groups they were involved with. For example, Gloria Molina was involved in the student youth part of the Chicano Movement and heard the group rhetoric of speaking against racism while also feeling silenced as a woman. Working with the United Farm Workers, Rachel Ortiz had a different experience as a woman and she highlighted her interactions with Dolores Huerta as a pivotal experience for her political activism. It was these types of experiences that structured the ways that each of the women moved forward as gendered subjects with Gloria Molina becoming more involved in women’s spaces and then moving towards urban politics while Rachel Ortiz became involved in organizations that were not solely focused on women.

Drawing from the research of Mary Pardo’s work on the Mothers of East LA, she argues that the women who were politically involved suggested that their participation was an extension of their role as mothers. She found women who drew an extended metaphor that viewed their own local communities as an extension of their own families and that as mother’s their role was to take care of their communities. In contrast, the women who worked in these political settings to change their urban spaces did not actively highlight the relationship between their own motherhood and their role as community leaders. While Arabella Martinez did mention that some of the women working for the Unity Council in the Fruitvale neighborhood of Oakland did aim to improve their neighborhoods for the sake of their children, she did not highlight her own role as a mother in the work that she did as an activist nor did she extend metaphors of motherhood to her larger community.

Yet what did stand out in the interviews was the comments by a man involved in the process of the creation of the Fruitvale Transit Village’s development. He highlighted Arabella Martinez’s tenacity in the long process of the development and suggested that the project needed a “godmother”, extending a familial metaphor into the realm of the small Oakland community. All their work related to maintaining the community health of their neighborhoods and in a sense they were the protectors of those communities. The women’s advocacy work they engaged included: issue of safety, health care and women’s health, affordable housing, access to daycare, youth development, improving public spaces, and women’s leadership development and empowerment.

Finally, they all learned and engaged the tools of urban planning for revitalizing their community. Such planning tools as urban redevelopment, zoning, land use, linking to public transportation systems, spatially linking social services and education to their plans, and they all advocated for affordable housing. In a real way, these Chicanas transformed urban planning to better represent the cultural identity of their neighborhoods and bring more government investments into those barrios.

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Mass housing, relocation, and mothers' and children's residential satisfaction: Evidence from Ankara

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Abstract: This study investigates the effects of relocation on 9-12 year-old children's and their mothers' satisfaction with mass housing built in the context of squatter housing regeneration. The results are based on a survey of 235 nine-to-twelve-year-old children and their mothers living in three recently built inner- and outer-city mass housing developments in Ankara, Turkey. Results show the importance of prior place of residence, location of the mass housing estate, and dwelling and neighborhood characteristics in children's and their mothers' residential satisfaction. In general, compared to their mothers, children reported higher satisfaction scores for all the features of the current home and neighborhood. However, there were some differences in what children and their mothers liked and disliked about these places. The implications of these findings are important for designing communities for all ages.

Keywords: urban regeneration, residential satisfaction, children, mothers

Introduction

The restructuring of the global economy in the last quarter century has given rise to new kinds of places (Shatkin, 2007). Cities, which aspire to be 'global' or regional centers of activity, are forced compete with others by replacing what threaten the flows of trade, tourists and highly qualified labor with large-scale housing projects, state-of-the-art office and museum buildings and luxury hotels (Sassen, 2001). In Turkey, the replacement of squatter housing developments by mass housing projects has been an outcome of such an aspiration. A government report highlighted that between 2003 and 2016, the housing and development administration of Turkey built approximately 740,000 mass housing units across the nation, 110,000 of which were constructed in the context of squatter housing regeneration (TOKI, 2016). This report announced that the number of mass housing units in Turkey is projected to increase to 1.2 million by the year 2023. These trends led the author to question whether such large-scale housing developments are designed in a way to promote the residential satisfaction of low-income women and children – two groups that are highly dependent on

near home environments because of their restricted mobility (Johnson, 1997; Fyhri et al., 2011).

There are a growing number of studies discussing the impact of mass housing developments on the lives of adult mass housing tenants (e.g. Berkoz et al., 2009; Herfert et al., 2013; Dinç et al., 2014). More recently, the urban regeneration literature has been extended to cover the impact of such developments on disadvantaged groups like women (e.g. Erman and Hatiboğlu, 2017) and children (Severcan, 2019a, 2019b). However, no study has ever investigated the effects of relocation on children's and their mother's satisfaction with mass housing from a comparative perspective. This paper aims to contribute to the existing literature by addressing this gap.

The paper starts with a review of the concept of residential satisfaction and the literature on the factors that influence this construct among children and women. Then, the paper describes an empirical study conducted in Ankara, Turkey, which aimed to understand the effects of relocation on 9-12 year old children's and their mothers' satisfaction with mass housing built in the context of squatter housing regeneration. In a previous paper (Severcan 2019b), the author presented the results obtained from children. In this paper, the author aims to contribute to literature by reporting the findings obtained from these children's mothers and compare these findings with the ones reported by Severcan (2019b). It asks whether, how and why children and their mothers' residential satisfaction changed (or did not change) after moving to mass housing developments. It questions the role of various dwelling and neighborhood characteristics in this change and which characteristics are mentioned both by children and their mothers as factors affecting their residential satisfaction. Data were obtained using a residential satisfaction survey. The paper ends with the implications of the study results.

Residential Satisfaction and its Explanatory Characteristics: Findings from Children, Women and the Urban Environment and Behavior Literature

Residential satisfaction refers to individuals' appraisal of the actual conditions of their residential environment in relation to their desired (or aspired) needs (Morris and Winter, 1978; Galster and Hesser, 1981; Mohit et al., 2010). A greater degree of congruence between actual and desired conditions reflects a higher residential satisfaction; incongruence leads to residential dissatisfaction (Li and Wu, 2013).

The concept of residential satisfaction is often employed to evaluate one's satisfaction with home and neighborhood (Kaitilla, 1993; Ogu, 2002). When individuals evaluate their residential satisfaction, the characteristics of both home and neighborhood are assessed.

Since human needs vary from one person to another and that the needs of one person change over time, many studies have shown that being young or adult, or male or female affects individuals' residential satisfaction (Lu, 1999; Iben and Amole, 2013). In a comparative study conducted in Beijing (China), Zhang and Lu (2016) found that younger and female

people are more likely to report higher levels of residential satisfaction. Nevertheless, little is known about how children's residential satisfaction differs from women's residential satisfaction in different housing environments.

A review of children's residential satisfaction and women's residential satisfaction literature shows that there are some dwelling and neighborhood features that affect both groups' residential satisfaction. At the dwelling level, these factors are: perceived housing opportunities like size of the house and the presence of a garden and high-quality furniture and appliances (Cook, 1988; Baillie and Peart, 1992; Hadjiyanni, 2000; Darab et al., 2018); architectural style of the dwelling and its interior design (Ladd, 1972; Baillie, 1990; Devlin 1994); views from windows (Kearney, 2006; Severcan, 2019a, 2019b); building infrastructure and construction quality (Erman 1997; Severcan, 2012); presence/absence of a safe and social home environment with family and peers (Darab et al., 2018; Severcan, 2018); and maintenance of building interiors like halls or elevators (Ladd, 1972; Cooper Marcus, 1975). Cook (1988) and Severcan (2019a) have shown the importance of location of the dwelling in children and women's satisfaction with home. Darab et al. (2018) found that stability and security of tenure is influential in affecting women's satisfaction with home, but this factor is not mentioned in children's residential satisfaction literature as an explanatory variable.

At the neighborhood level, among the factors which affect both children's and women's residential satisfaction, the role of the presence of friends and relatives and lack of undesirable people (e.g., gangs, vandals) in the home range are one of the most frequently mentioned (Bruin and Cook, 1997; Severcan, 2019a). Some other highly mentioned neighborhood characteristics are the accessibility, safety and maintenance of neighborhood public spaces and the land uses that support the public realm (e.g. presence of shopping areas, cultural facilities, child-care services) (Cooper Marcus and Sarkissian, 1986; Cook, 1988; Day, 2000; Freeman, 2010).

Research from Canada and United States shows that when poor families move from substandard dwellings to public housing, they show satisfaction with the infrastructure of their new dwellings, but dissatisfaction with the social composition of their neighborhoods since these apartments are occupied by families with a variety of social and health problems (Yancey, 1971; Michelson, 1977). Similarly, in a study conducted in the mass housing estates built in the context of squatter housing regeneration in Turkey, Severcan (2019b) found that because of the high crime rate in the neighborhood, children were afraid of using public spaces alone and that the most negatively affected children were those who moved from non-squatter neighborhoods. This study also showed that while children's satisfaction with the quantity of playgrounds and green open spaces increased, their satisfaction with the accessibility to commercial and cultural facilities decreased after relocation. Various scholars discuss the negative effects of relocation on children's and women's social capital; after relocation, these groups tend to show dissatisfaction with their new residential environment, especially in the short-term, due to the loss of friends and neighbors (van Vliet, 1986; Ryff and Essex, 1992; Gifford, 2007). To sum up, depending on how individuals comparatively assess the characteristics of their prior and current place of residence, relocation may influence individuals' residential satisfaction positively or negatively.

Individual factors, such as education, income and length of stay in residence, may also affect individuals' residential satisfaction (see Lu, 1999; Chapman and Lombard, 2006; Zhang and Lu, 2016). Such factors may either directly or indirectly influence individuals' residential satisfaction by shaping their place perception.

Context of the Study

This article focuses on a study conducted in Ankara – a city where until the 1990s, the percentage of the squatters in Ankara's total population was approximately 58% (Keles, 1993). Ankara's squatter dwellings (*gecekondus*) are usually located on illegally subdivided land. There are no building codes, and originally, had no infrastructure. They have grown spontaneously, without any plan. According to Mahmud and Duyar-Kienast (2001) such developments were originally compact, composed of physically similar housing units. They had small gardens or courtyards. Over time, many of these informal developments were associated with poverty, poor infrastructure, lack of public amenities (like parks and playgrounds), crime and drugs, but also with a number of positive features, such as a strong sense of community and public life.

Especially after 2000, with the influence of neoliberal economic policies such as the loosening of controls on capital flows and attraction of foreign investment, the Turkish government started putting greater emphasis on the regeneration of squatter neighborhoods (Karaman, 2013). Between 2004 and 2007, a series of laws were passed, granting local municipalities rights to execute squatter housing transformation projects in collaboration with the Prime Ministry's Mass Housing Administration of Turkey (TOKI).

TOKI's squatter housing regeneration projects starts with the evacuation of residents. Thereafter, TOKI replaces the squatter houses with high-rise standardized apartments constructed on the same site at a higher density (Karaman, 2013). This is often done without consulting the residents, neither adults nor children. The mass housing units are then made available to displaced residents for purchase via mortgage loans and to the public at market prices.

Method

Site and Participant Selection

The author selected the project participants in five steps. First, four mass housing estates recently built (2008 and later) in Ankara were selected. Two of these estates were located in the inner-city (Altindag Gultepe TOKI and Mamak Yatikmusluk TOKI), while the other two were located in the outer-city (Altindag Karacaoren TOKI and Mamak Kusunlar TOKI). Later, to minimize threats to the accuracy of the findings, only the data obtained from Altindag Gultepe TOKI, Mamak Yatikmusluk TOKI and Mamak Kusunlar TOKI were used

for the purpose of this study (for the details of this site selection process, please see Severcan, 2019b).

The selected inner-city mass housing estates were located within walking distance (300-350 meters) of each other and were still surrounded by squatter housing areas. They were near important functions of the city (e.g. hospitals, manufactories). The number of mass housing units in Altindag Gultepe TOKI and Mamak Yatikmusluk TOKI were 1448 and 528 respectively, making these two inner-city sites larger than the other inner-city mass housing estates built in Ankara within the context of squatter housing regeneration. Being one of the two outer outer-city mass housing estates in Ankara built in the context of squatter housing regeneration, Mamak Kusunlar TOKI was surrounded by open lands. The number of mass housing units in this project area was 1374.

The selected sites had physical characteristics similar to many other TOKI's mass housing estates across the country. Buildings had the same physical characteristics, and were designed only for residential purposes. High-rise apartment buildings were clustered around small parks and playgrounds or large parking lots. Wide roads separated the clusters. Parks and playgrounds were places with few standard play equipment and sitting furniture. They rarely contained outdoor gym equipment and none had sports fields. Supermarkets existed only in the outer-city mass housing developments. Although there were no supermarkets in the chosen inner-city estates, they were available in the vicinity of these developments along with some other land uses like traditional commercial establishments (e.g. greengrocers, grocers). Child-oriented cultural establishments were lacking in all selected sites: Altindag Gultepe TOKI, Mamak Yatikmusluk TOKI and Mamak Kusunlar TOKI. Vast lawns surrounded the apartment buildings in all project areas. The buildings consisted of 2-3 bedroom apartment units in the chosen inner-city mass housing estates, and 2 bedroom apartment units in Mamak Kusunlar TOKI. All buildings included a number of interior design elements provided by TOKI: a kitchen cabinet, laminated floors, wooden doors and painted walls.

In the second step, the author chose all the public schools in the selected neighborhoods. Third, the author gave a presentation describing the project in each classroom of third, fourth, fifth and sixth graders in the chosen schools. Fourth, the author asked the children who wanted to take part in the project to sign an assent form; parents approved their child's participation by signing a consent form. With the same consent form, children's mothers indicated their willingness to participate in the project. Lastly, the author selected all the children and mothers who wanted to participate in the study.

Data Collection

This study is based on the results of a residential satisfaction survey administered to children and their mothers. The survey was anonymous and separated into five main parts. The first and second parts were about the respondents' satisfaction with their previous home and neighborhood. All respondents were asked to rate their overall satisfaction with their former residential setting on a five-point Likert scale ranging from one (not at all satisfied) to five

(very satisfied). A ‘don’t remember’ response option was included. Additionally, they were asked to describe (in close-ended question format) the type of their previous dwelling (i.e. squatter house, multi-story apartment, single family housing, other), and (in open-ended question format) why they felt satisfied/dissatisfied with their previous home and neighborhood. Mothers were asked to rate their level of satisfaction with a range of pre-defined characteristics associated with previous home and neighborhood on a five-point Likert scale (10 home level features and 26 neighborhood level features). In defining these characteristics, the author drew on the available literature related to both children’s and adults’ residential satisfaction. These Likert scale questions about the previous residential environment were not asked to children due to a possible memory bias in the recall of early childhood experiences.

The third and fourth parts of the survey focused on children’s and their mothers’ assessment of their level of satisfaction with a range of current home and neighborhood characteristics (for children: 9 home level features and 25 neighborhood level features; and for mothers: 10 home level features and 26 neighborhood level features) and also their overall satisfaction with these places. Again, these questions were asked using a five-point Likert scale ranging from one (not at all satisfied) to five (very satisfied). Questions related to home and neighborhood characteristics were same as those found in the previous parts of the survey (for a list of these characteristics please see Severcan, 2019a or Severcan, 2019b). These parts also included questions about respondents’ years of residency (YOR) in the current home, neighborhood and city, and open-ended questions about any other things that made them feel satisfied/dissatisfied with their environment.

The final part of the survey asked respondents to describe their socio-demographic characteristics. Children and their mothers were asked the same questions in the same order and with the same wording. Exceptions to this include questions that were asked to mothers but not to children like the questions asking mothers to rate their satisfaction with the maintenance cost of their dwelling, location of their workplace (if applicable) or asking them to provide their home-ownership status in the previous and current home. All Likert scale questions were presented in a visual analogue scale to facilitate the comprehension of the response options and open a window for the use of parametric tests.

Analysis

The analysis presented here is based on the survey responses of 137 children aged 9-12 and 98 mothers aged 25-55 living in three mass housing estates in Ankara. The imbalance in the number of participants between the two groups was a result of some mothers’ unwillingness to participate in the survey. The number of children from inner- and outer-city mass housing estates was 63 and 74 respectively. For women, these numbers were 59 and 39 respectively.

Table 1 shows the socio-demographic composition of the survey participants by location. Of the 137 child respondents, 60 were male and 77 were female; 58 (42.3%) said that they had previously lived in squatter housing, while 79 (57.7%) were in a non-squatter housing area

(hereafter formal neighborhood). Of the 98 mother participants, 41 (41.8%) had previously lived in squatter housing, while 57 (58.2%) were in a formal neighborhood. Most mother participants were not working (77.6%). There were more working women in the selected inner-city estates perhaps because of the availability of job opportunities in the vicinity. Accordingly, in the inner-city and outer-city, the monthly average household income of the residents were between US\$300-\$450 and US\$150-\$300 respectively. These amounts are way below the country's poverty level for a family with two children, which was approximately US\$750 in 2016 (TURK-IS Haber Bulteni, 2016).

Table 1. Socio-demographic characteristics of research participants.

	Children ¹ (N=137)						Mothers (N=98)					
	Inner-city			Outer-city			Inner-city			Outer-city		
	n	%	M	n	%	M	n	%	M	n	%	M
<i>Age</i>												
9-12	63		10.52	74		9.62						
<i>Gender</i>												
Male	26	41.2%		34	45.9%							
Female	37	58.8%		40	54.1%							
18 and above							59		36.6	39		34.7
<i>Education</i>												
No degree							-	0		1	2.5%	
Elementary school							19	32.2%		14	35.9%	
High school							28	47.5%		21	53.8%	
College							12	20.3%		3	7.8%	
<i>Working</i>												
Yes							15	25.4%		7	17.9%	
No							44	74.6%		32	82.1%	
<i>Household income</i>									\$300-\$450			\$150-\$300
<i>Home-ownership in</i>												
Prev. home												
Renter							42	71.1%		22	56.4%	
Owner – with title							10	16.9%		3	7.7%	
Owner – without title							3	5.1%		9	23.1%	
Other							4	6.9%		5	12.8%	
Current home												
Renter							23	39.0%		6	15.4%	
Owner							32	54.2%		32	82.1%	
Other							4	6.8%		1	2.5%	
<i>Mean YOR in</i>												
Current home			3.2			2.64			2.82			2.70
Current neigh.			5.11			2.74			11.03			2.99

	Children ¹ (N=137)						Mothers (N=98)					
	Inner-city			Outer-city			Inner-city			Outer-city		
	n	%	M	n	%	M	n	%	M	n	%	M
Current city			9.06			8.59			22.48			18.80
<i>Type of the previous place of residence</i>												
Squatter housing	21	33.3%		37	50%		16	%		25	%	
Multi-story apartment	37	58.7%		33	44.6%		40	%		13	%	
Single family dwelling	5	8%		4	5.4%		3	%		1	%	

¹ Retrieved from Severcan (2019b)

Children's and their mothers' mean YOR in current home was 2.9 ($SD=1.32$) and 2.77 ($SD=1.45$) years respectively. This indicates that response inaccuracy and bias associated with remembering the previous place of residence were not significant given the findings of Quas et al. (1999), who reported that children interviewed within 3 years of an event provide more correct information about it compared to those who were interviewed 3 or more years after the event.

The effects of relocation on children's and mother's overall satisfaction with home and neighborhood were examined using a t-test (paired t-test for comparing respondents' residential satisfaction for the prior and current place of residence and unpaired t-test for investigating the difference between children's and their mothers' and inner- and outer-city children's/mothers' residential satisfaction). To understand why children and their mother's satisfaction changed (or did not change) after relocation, the responses to the open-ended questions were content analyzed. To this end, the author began by reviewing the data closely. Segments of text were coded and then grouped into similar themes, which were later grouped into larger categories. Finally, the author compared the themes associated with the previous and current place of residence.

Results

Effects of Relocation on Children's and Mothers' Satisfaction with Home

Compared to their mothers, children reported higher satisfaction scores for their home (Table 2). For the current home, this difference was statistically significant between the two groups ($M_1=3.90$, $M_2=3.16$, $t=4.26$, $p<.05$). While children's satisfaction with home increased (Severcan, 2019b), mothers' satisfaction with home decreased after relocation. However, the overall mean pre- and post- satisfaction scores were not significantly different for both children and their mothers ($p>.05$). Severcan (2019b) showed that no change was observed

in the residential satisfaction of children who moved from squatter housing. However, this paper shows that moving from squatter housing had a significant affect on mothers' satisfaction with home ($t=2.09$, $p<.05$). After relocation, satisfaction with the home increased among mothers who were once living in squatter settlements. Similar to their children's responses, moving from non-squatter housing had no significant affect on mothers' satisfaction with home. While no statistically significant change was observed in the residential satisfaction scores of mothers who moved to the inner- or outer-city, Severcan (2019b) found that moving to the inner-city positively and significantly affects children's satisfaction with home ($t=3.12$, $p<.05$).

Table 2. Mean residential satisfaction scores of children before (pre) and after (post) relocation.

	Home				Neighborhood			
	Pre	Post	t	p	Pre	Post	t	p
Children ¹								
Overall satisfaction	3.68	3.90	1.53	.12	3.74	3.45	1.52	.13
Moved from squatter housing	3.48	3.88	1.70	.09	3.51	3.38	.41	.67
Moved from non-squatter housing	3.80	3.89	.68	.49	3.89	3.48	2.09	.03*
Moved to inner-city mass housing	3.18	4.10	3.12	.00*	3.41	3.27	.60	.54
Moved to suburban mass housing	3.92	3.73	.76	.44	4.01	3.59	1.65	.10
Mothers								
Overall satisfaction	3.13	3.16	.05	.95	3.54	2.74	4.38	.00*
Moved from squatter housing	2.83	3.45	2.09	.04*	3.32	3.00	1.15	.25
Moved from non-squatter housing	3.35	2.96	1.54	.13	3.71	2.56	5.30	.00*
Moved to inner-city mass housing	3.11	3.31	.95	.34	3.40	2.72	2.70	.01*
Moved to suburban mass housing	3.15	2.94	.66	.51	3.77	2.77	3.73	.00*

Note. * Statistically significant difference between the mean pre- and post-mean residential satisfaction scores ($p<.05$).

¹ Retrieved from Severcan (2019b)

Residential Relocation and Factors Affecting Children's and Mothers' Satisfaction with Home

Results obtained from children show that, before relocation, children liked hanging out in their yards and the location of their dwelling in terms of convenience to city center and desired amenities (like cultural areas, bakeries and groceries) (Severcan, 2019b). Relocation affected children's satisfaction with mass housing negatively with respect to these dwelling features because of the lack of private yards and cultural and commercial areas in the mass housing estates. It was also found that after relocation, children did not complain about the infrastructure problems of their dwellings – e.g. children did not mention any leaking pipe issues in their current home, a problem that was frequently mentioned by children who moved from squatter settlements (Severcan, 2019b). Nevertheless, the construction quality of the apartments was still a problem for children after relocation (Severcan, 2019a, 2019b). Additionally, many children expressed their dissatisfaction with the efficiency of the housing

management and administration because of the malfunctioning elevators and poorly maintained apartment buildings in mass housing (Severcan, 2019b).

This paper shows that the way mothers assess their prior and current dwellings is not significantly different than those of their children. After relocation, mothers expressed greater, but not statistically significantly different, level of dissatisfaction with the type of their dwellings (e.g. living in a house with a yard versus living in a high-rise apartments), construction quality and efficiency of the housing management and administration. Additionally, in their responses to open-ended questions, many mothers expressed how their satisfaction with the location of their home decreased after relocation:

Our previous house was in the middle of the city. It was close to everywhere. We never had a transportation problem. Shopping areas are too far away now. We can hardly meet our needs. (A mother from an inner-city estate)

We do not have shopping and leisure areas nearby. Transportation to the city is a huge problem. (A mother from an outer-city estate)

Like children, mothers who moved from squatter settlements, mentioned the infrastructure problems of their previous home (e.g., “the roof was leaking,” “there was no toilet infrastructure in the house”), but they did not mention such problems for their current home.

Both children and their mothers rated the brightness of their dwelling as the most satisfying, and the efficiency of the housing management and administration as the most dissatisfying features of their current home. Compared to their previous dwelling, mothers were more happy with the climatic comfort of their dwelling ($t=4.05$, $p<.05$). Especially mothers coming from squatter settlements seemed satisfied with not using coal stoves in their current dwellings. Severcan (2019b) found that climatic comfort inside the home ($M=3.97$, $SD=1.29$) was one of the top three most liked features of the current home by children.

In general, like their children, mothers were satisfied with the views from windows, especially the views of nature, but some mothers indicated that because all the buildings in the neighborhood are too high, they block the view.

Children who moved to the outer-city were less satisfied than the children who moved to the inner-city estates with respect to the size of their dwelling (Severcan, 2019b). This was perhaps because, as mentioned earlier, some inner-city children were living in apartment buildings with more rooms. Although mothers’ overall satisfaction with the size of their home decreased after relocation, similar to the findings obtained from children, this change was statistically significant only for the mothers who moved to the outer-city estate ($t=2.51$, $p<.05$). Additionally, housing type ($t=2.66$, $p<.05$) and efficiency of the housing management and administration ($t=2.52$, $p<.05$) were the two other dwelling characteristics that were rated statistically significantly different by the mothers living in inner- and outer-city estates.

In general, mothers who moved from the squatter settlements expressed their satisfaction with the physical qualities of their current dwellings. Typical problems mentioned by these mothers were related with the lack of yards, where (like their children) they stated that they miss hanging out in these areas with their families and friends, poor workmanship of their new buildings and the lack or small size of the balconies in their new residential environment. Compared to mothers coming from squatter settlements, more mothers coming from formal neighborhoods complained about the size, appearance, construction quality and management issues of their current dwellings:

We live in gated, high-rise apartment buildings. They don't look very beautiful from outside. The buildings are too high. Our kitchen is very small. The doors are like papers! You can clearly see the bulges in the wooden door frames. The window frames are also very poor in quality. The windows are streaked with dirt. I assume that they used second hand windows. I don't think that they are conducting inspection and maintenance of the elevators. We are sick and tired of paying for the mistakes done by our housing managers. (A mother from an inner-city estate who moved from a non-squatter settlement)

Effects of Relocation on Children's and Mothers' Satisfaction with Neighborhood

As Table 2 illustrates, compared to their mothers, children reported higher satisfaction scores for their neighborhood. For the current neighborhood, this difference was statistically significant between the two groups ($M_1=3.45$, $M_2=2.74$, $t=4.09$, $p< .05$). While children's satisfaction with neighborhood increased ($p> .05$), mothers' satisfaction with neighborhood significantly decreased after relocation ($t=4.38$, $p< .05$).

Severcan (2019b) showed that no change was observed in the residential satisfaction of children who moved from non-squatter housing, or who moved to an inner- or outer-city estate. He also found that, at the neighborhood level, the only statistical change was observed among the residential satisfaction of children who moved from a squatter housing to a mass housing development. From the data obtained from children's mothers, the author found totally opposite results. Moving from a squatter housing had no impact on mothers' satisfaction with neighborhood. However, after relocation, satisfaction with neighborhood significantly decreased among mothers who moved from a formal neighborhood, or who moved to an inner- or outer-city mass housing estate.

Residential Relocation and Factors Affecting Children's and Mothers' Satisfaction with Neighborhood

Severcan (2019b) found that, after relocation, significantly fewer children mentioned that they had many friends in their neighborhood. Compared to other pre-defined neighborhood characteristics, children gave higher satisfaction scores for the level of social ties and number of trusted people (other than parents) in their current neighborhood (Severcan, 2019b).

Additionally, sense of safety was one of the most influential factors negatively affecting children's satisfaction with current neighborhood. Accordingly, the most disliked characteristic of the current neighborhood by children was the inadequacy of measures taken to mitigate safety concerns (Severcan, 2019b). Inaccessibility of cultural places (like theatres and culture centers), informal play areas (like yards and streets) and commercial establishments (such as grocers, restaurants and coffee shops) were mentioned as some other important factors negatively affecting children's neighborhood satisfaction (Severcan, 2019b). For some neighborhood characteristics, there was a statistically significant difference between the inner- and outer-city children's mean neighborhood satisfaction scores. These characteristics were: proximity to school from home, safety of street crossings, speed and number of cars using the local streets, proximity of public transportation stops to the home, frequency of public transportation vehicles passing through the neighborhood, number of public transportation routes servicing the neighborhood, strength of social ties in the neighborhood (e.g. whether neighbors greet and visit each other), and level of sense of community (i.e. whether people act together or help each other when they face common problems) ($p < .05$ for all) (Severcan, 2019b).

We see both similarities and differences across the responses obtained from children and their mothers. Like their children, after relocation, significantly fewer mothers mentioned that they had many friends in their neighborhood ($t=5.27$, $p < .05$). This problem was seen especially among mothers who moved from non-squatter housing areas since mothers coming from squatter settlements were mostly seeing their old friends as their neighbors.

As the author has observed from the data obtained from children (Severcan, 2019b), the level of sense of safety in the neighborhood significantly declined among mothers after relocation ($t=7.37$, $p < .05$). In their responses to open-ended questions, many mothers mentioned the drug selling and vandalism activities in their neighborhood and wrote about their concern for their children's safety.

I was living in a safe neighborhood. It was a good place to raise my kids. People were affluent. In my current neighborhood, I am not satisfied from the quality of the neighbors. They are selling drugs in front of us. We hear the gunshots around. I don't want to live here! (A mother who moved from a formal neighborhood to an inner-city estate)

I worry when my children go to school or grocery alone. There are gangs everywhere. (A mother from an outer-city estate)

Additionally, mothers thought that in terms of several neighborhood characteristics, the previous neighborhood environment was a much better place to live than the mass housing estates: adequacy of the measures taken for mitigating safety issues in the neighborhood; the traffic volume and speed of the cars in the local streets; safety of street crossings; and care taken by neighbors to protect the environment and keep it clean ($p < .05$ for all). For mothers, the most disliked characteristic of the current neighborhood was same with what their children indicated: the inadequacy of measures taken to mitigate safety concerns ($M=1.70$,

$SD=1.07$). Hence, in their responses to open-ended questions, like their children, many parents stated that they aspire to live in safer neighborhoods.

Similar to the responses obtained from children, inaccessibility of cultural places, informal play areas (like yards and streets), parks with a variety of furniture and play equipment, and commercial establishments (such as grocers and restaurants) were mentioned as some other important factors negatively affecting mothers' neighborhood satisfaction. After relocation, satisfaction with proximity, quality and quantity of shopping places, cultural places and public open spaces declined significantly among mothers ($p < .05$ for all).

Compared to their previous neighborhoods, mothers assessed their current neighborhood significantly more negatively in terms of the following neighborhood features: the quality of their children's school ($t=7.52, p < .05$), the quantity of greenery ($t=2.66, p < .05$), frequency of public transportation vehicles passing through the neighborhood ($t=3.74, p < .05$), number of public transportation routes servicing the neighborhood ($t=3.65, p < .05$), number of people using the open spaces ($t=3.56, p < .05$), and noise level in the neighborhood ($t=3.44, p < .05$).

Like their children, compared to those living in the outer-city estate, significantly more mothers living in the inner-city were satisfied with the location of the school ($t=2.80, p < .05$), frequency of public transportation vehicles passing through the neighborhood ($t=2.82, p < .05$), and number of public transportation routes servicing the neighborhood ($t=2.47, p < .05$). As mentioned in Severcan (2019), in interviews, children living in outer-city estates explained that since their school is located on a steep slope, access to it requires great effort. The author assumes that in the outer-city, children's mothers were dissatisfied with the location of the school for a similar reason.

Differences between children's and their mothers' responses were observed a number of neighborhood characteristics. While children were highly satisfied with the presence and number of trusted people (except parents) in the neighborhood who can help or protect them ($M=3.94, SD=1.16$), mothers were highly dissatisfied with this aspect of their neighborhood ($M=2.99, SD=1.14$). Finally, Severcan (2019) found that inner-city children were significantly more satisfied with the safety of street crossings, speed and number of cars using the local streets, proximity of bus stops to the home, strength of social ties and level of sense of community in the neighborhood than to outer-city children. However, this study does not show any statistically significant difference between inner-and outer-city mothers' satisfaction with respect to these neighborhood characteristics.

Conclusion

Creating neighborhoods that are loved by different generations requires urban designers to understand the common characteristics of child- and adult-friendly neighborhoods. With this goal in mind, by focusing on the mass housing estates that were built in the context of squatter housing regeneration, this study questioned whether, how and why mothers' residential satisfaction changed after relocation, and compared these results to those of

children reported in Severcan (2019b). To the best of the author's knowledge, no study has ever compared children's and mothers' satisfaction with mass housing.

Results showed that moving from a squatter or non-squatter housing or moving to an inner- or outer-city estate does not affect children's and their mothers' residential satisfaction levels equally. At the neighborhood level, mothers are more negatively affected from relocation than children. However, moving to mass housing affects children's and mothers' residential satisfaction in the same direction; for example, at the dwelling level, moving from a squatter housing to an inner-city mass housing estate affects both children's and mother's residential satisfaction positively.

In line with the findings reported by Zhang and Lu (2016), compared to their mothers, children reported higher satisfaction scores for all the features of the current home and neighborhood. However, there were differences and similarities in what children and their mothers liked and disliked about these places. In general, children and their mothers liked the following characteristics of their environment: brightness and climatic comfort of their dwelling, building infrastructure, views from windows and presence of parks and playgrounds. Both groups were unsatisfied with the following features of their environment: construction quality of the buildings, efficiency of the housing management and administration, proximity of commercial and cultural places, quality of parks and playgrounds, presence of sports areas, speed and number of cars using the local streets, safety of street crossings, neighborhood safety, care taken by the neighbors to protect the environment and keep it clean, and adequacy of the measures taken for mitigating safety issues in the neighborhood.

Because the numbers of mass housing developments is rising in Turkey, the results of this study could guide urban planners and designers in their efforts to build communities that are loved by different age groups. First, results suggest that to increase children's and their mothers' residential satisfaction in mass housing, planners and designers need to integrate the existing land use system with retail, cultural and recreational services. These areas should attract the attention of not only adults but also children. Some strategies to achieve this include: converting the lawns into sports areas, using the ground floor of the apartment buildings for commercial and cultural purposes (e.g., bookstores, cafes, grocers) and providing cultural centers for women and young people in the neighborhood.

Second, planners and designers should put greater focus on increasing residents' sense of safety. There is voluminous literature discussing ways to design safer neighborhoods (see, e.g., Loukaitou-Sideris, 2006). Strategies may include increasing the land-use mix, providing more sitting spaces in outdoors, improving crosswalks and putting territorial symbols such as neighborhood watch signs. Such environmental design strategies should be complemented by other strategies, which may include policing and/or surveillance by neighborhood watch groups.

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Rethinking Partnerships for Affordable Housing: Planning Policy + Design Nexus

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Abstract: A growing affordability problem in Canadian cities has prompted a renewed commitment of the federal government, complemented with provincial and municipal programs, to increase the supply of affordable rental housing. Consensus has been building across Canada that an effective response requires multi-sectoral partnerships to meet growing local needs within limited resources and capacity. Recently large Canadian cities have joined their efforts with non-profit and private organisations to provide affordable rental housing in mixed-income experimental projects.

In this context, the research addresses a significant gap in the evaluation of partnerships, focusing on the nature of multi-agency collaborations in the provision process (design, build, finance, operate). Partnerships capitalise on the effective role of the public sector in the mobilization of resources, the efficiencies of private agencies in the development process (design, build) and the hybridity of the non-profit institutions (management, service delivery). The research develops a conceptual framework, based on the political market model to explain adoption of planning and housing policies by municipalities. The alignment of policy instruments—regulatory, fiscal and financial—is an important determinant of the ability of partnerships to deliver adequate, affordable and sustainable housing. The framework presents a typology of affordable housing partnerships using highlights from case studies in the large Canadian cities—Toronto, Vancouver and Montreal. The methodology is based on review of the literature and analysis of innovative developments of mixed-income affordable rental housing projects.

Findings suggest that economies of scale and sustained funding are critical for efficient partnerships (design, build and operate). However, their effectiveness often depends on institutional capacity, coalition building/inclusive governance and neighbourhood integration. We argue that a shift from the traditional ‘public-private’ model to multi-sectoral partnerships is required to address the housing crisis in Canadian cities.

Keywords: partnerships, affordable housing, evaluation, cities

Introduction

A growing affordability problem affecting over 5 million people in Canada (1.7 million households in core housing need) has prompted a renewed commitment of the federal government, complemented with provincial and municipal programs, to end homelessness and increase the supply of affordable rental housing (Government of Canada, 2018; Statistics Canada, 2017). Nearly a quarter of all Canadians are experiencing housing insecurity, defined as spending more than 30% of their income

on shelter costs. In Calgary, around 17,000 households are at risk of homelessness because they earn less than \$30,000 and spend more than half on rent. Housing affordability is under further threat due to skyrocketing home prices and rising interest rates. Finding solutions to increase the share of affordable/social housing (6% on average) is important in Canada's big cities. Given the devolution of government involvement in housing (CMHC, 1998), consensus has been building across Canada that an effective response requires a multi-sectoral approach, including all levels of government, the private for-profit and non-profit sectors, as well as local communities (Moore and Skaburski, 2004; Wolfe, 1998). This is perceived as the most effective way of producing affordable housing to meet growing local needs within limited resources and capacity (Angel, 2000; Scanlon, Whitehead & Arrigoitia, 2014). The last few years have seen large Canadian cities join their efforts with non-profit and private organisations to provide affordable rental housing in mixed-income, mixed-tenure projects (CMHC, 2014). While these projects are experimental, they have demonstrated a viable alternative to address vulnerabilities in the housing market as well as make Canadian cities more inclusive and competitive (Conference Board of Canada, 2010). In this context, empirical studies show that despite the significance of partnerships for affordable rental housing, important gaps remain in the capacity to implement them in practice (Moore and Skaburski, 2004; Tsenkova and Witwer, 2011).

Conceptual Framework and Approach

The 'market failure' in affordable housing has been typified by Berry (2014) as lack of stable and consistent policies, absence of planning mechanisms that regulate affordable housing and provide infrastructure funding, and a failure in governance to coordinate and strategize. The theoretical framework for evaluation of housing partnerships is based on collaborative planning (Healey, 1997; Booher and Innes, 2002; Forester, 2013) and institutional interaction, communication and empowerment (Boase, 2000). Multi-sectoral partnerships have mainly been studied as 'public-private' partnerships advantageous for economies of scale and scope (Brown, 1999). The conceptual approach taken in this research is to understand how partnerships can be effective in planning, building and delivery (Bovaird 2004; Innes and Booher, 2010). Brinkerhoff and Brinkerhoff (2011) articulate such partnerships as those that maximize democratic processes to ensure sustainability through jointly determined goals, collaborative and consensus-based decision making, non-hierarchical and horizontal structures and processes, informal, as well as formalized relationships, synergistic interactions among partners, and shared accountability for outcomes and results. Partnerships address the impasse in the delivery of affordable, adequate and secure housing focusing on solutions—policy alternatives, planning and design strategies (Kemeny, Kersloot and Thalmann, 2005; Tsenkova, 2019).

A central question in the literature refers to implementation of new partnership models in the development process. Over time, the compositions of actors and agencies involved have shifted drastically from public provision towards multi-actor/ agency collaboration (Berry, 2014). What are the models of these collaborations? While there is a common mandate to provide housing that is affordable, the definitions and criteria for allocation and eligibility of recipients, governance and management policies, and typologies of housing forms vary widely (Carmona, Carmona and Gallent 2003). Socially owned housing managed by non-profit, private and community-based organizations in 'hybrid' forms, has replaced public housing to address the needs of targeted groups (i.e., the

homeless; seniors; vulnerable households), but is under threat of funding cuts, despite a well-documented increasing affordability gap in many cities (Hoard, 2012; Oxley, 2000).

A second question relates to the design of adequate policy to develop partnerships for affordable rental housing. Public authorities employ various policy instruments to implement transformation (Gilbert, 2016; Tsenkova, 2009). Public expenditure cutbacks have contributed to the decline in federal and provincial provision of socially-owned housing in Canadian cities (Dalton, 2009; Schembri, 2014). In its place has come a wide range of innovations in public/private approaches to funding and planning instruments with varying capacities to address the affordability gap (Allan, 2001; Tsenkova and Witwer, 2011). Further, the need to mobilize the network of public, private and non-profit organizations, as well as the local communities, to support reforms for affordable housing partnerships is essential as is the capacity to effectively manage the interdependence between organizations (Tsenkova, 2014) and adapt to risks (Gilbert, 2016). Practitioners identify this as a challenging area, with municipalities often taking a strategic leadership role, particularly in large Canadian cities. Finally, the outcome of such partnerships is often mixed-income affordable housing (Whitehead, 2007; Tsenkova, 2019). Research highlights that historically public housing has played a significant role in shaping communities, but in the era of neo-liberal reforms, its future is challenged by declining investment, aging infrastructure and design that is less conducive to social integration (Bacher, 1993; Oxley, 2000). The built form and spatial patterns of new affordable housing use planning and design strategies to facilitate social mix and integration of projects in communities.

Defining a Partnership

According to the Canadian Council on Private Public Partnerships (CCPPP), a PPP is “a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through appropriate allocation of resources, risks, and rewards” (2017). Although this can be considered the standard, several other definitions exist throughout the literature which allude to the complexity of the partnership (Kernaghan, 1993, Armstrong, 1997, Rodal & Mudler, 1992). The overall sentiment defines a cooperative pursuit that is predicated on shared, compatible objectives. In return for the need of shared mutual benefits is a shared risk and therefore authority on the project. The definitions tend to outline the idealised form of partnership amongst private and public entities, but in different forms.

Figure 1 situates the variety of partnership types on a continuum, depicting the transfer of liability and therefore risk from the public to the private sector (IPSASB, 2008). A project can be defined as any combination of the following operational elements; Design, Build, Finance, Operate, Maintain, Own, Transfer, Lease, Develop, Buy (Allan, 1999). The location of a project on the spectrum is dictated by the nature of the project in conjunction with the entity performing key tasks. The following definitions of partnership types have been adapted from the International Public Sector Accounting Standards Board’s (IPSASB) consultation paper on concession arrangements (2008).

1. **Service and Management Contracts** – services that would otherwise be performed by a public sector entity are contracted out to a private sector entity, but risk and responsibility for the delivery of the service remains with the public entity. Contract arrangements are short term, renewed only if the private sector entity delivers the service in accordance with requirements set by the public sector.

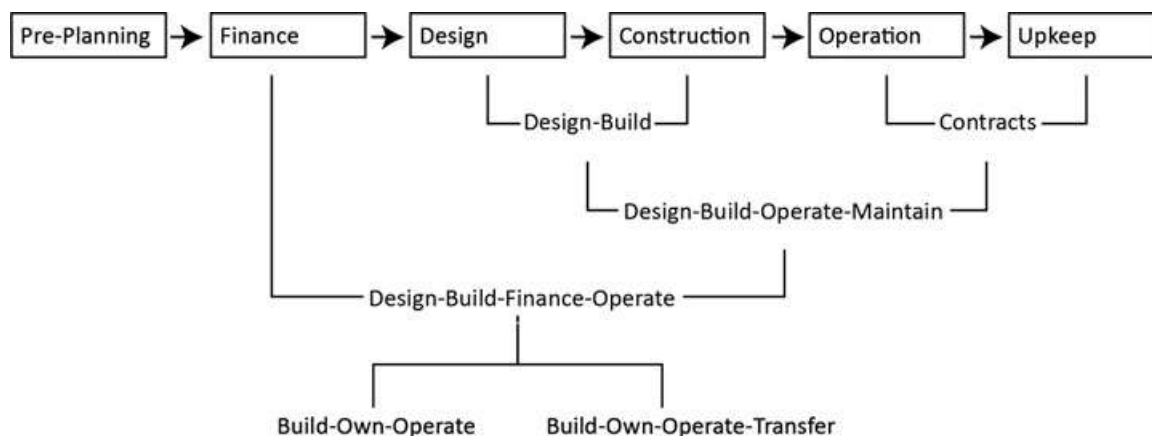


Figure 1: Partnership Typologies & the Housing Provision Process

2. Design-Build – private sector entity assumes full construction risk and is responsible for the liability associated with the construction process. Upon completion, the public sector entity assumes responsibility for both the operation and maintenance of the project, leaving the private sector with little to no residual project risks.
3. Design-Build-Operate-Maintain – construction, operation, and maintenance risks are assumed by the private sector entity. Public sector involvement is typically limited to financing, characterising the typology of the project, oversight of operations/outcomes.
4. Design-Build-Finance-Operate – private sector entity designs, builds, and finances associated construction costs. In addition to being heavily involved in the construction of the project, the private sector is also responsible for the delivery of services through long term concession agreements.

Affordable Housing Partnerships

The designing, building, financing, and operation of affordable housing through public private partnerships (PPPs) is further complicated with the inclusion of a third entity; the non-profit sector. The above definition is rendered incomplete when viewing affordable housing partnerships because of the strong role non-profits have in catalysing investment (Moskalyk, 2008). To compensate for the lack of non-profit inclusion in the CCPPP definition cited above, CMHC offers the following adapted definition: PPPs are defined to included agreements where development is undertaken with a combination of not-for-profit, private, and public participants of programs, however, PPPs are not undertaken within the context of a single mainstream program. They represent a more dynamic involvement of public sector, and not-for-profit interests in which each contributes and shares some sort of the risk (Wallace et. al., 1998:2).

This research proposes a new term that will capture the essence of such collaborations, particularly in the development process of new affordable housing. A PPNP (*public private and non-profit partnership*) does have a strong involvement and leadership of non-profit organisations that often Operate-Own affordable housing. They can also act as developers with the goal of engaging private companies in the Design-Build phase, while mobilising public sector financial and fiscal support to

ensure financial viability. The construction and operation of affordable rental housing is typically dependent on the inclusion of the three sectors listed above (public, private, and non-profit). The following will detail the different types of agencies that represent the three sectors and the responsibilities that they may have in the partnership.

Public Sector

No level of government accepts full responsibility for developing affordable housing. Certain aspects are federally regulated (CMHC and the National Housing Act), but provincial governments have key responsibilities. This creates a diversity of partnership types, with fundamental characteristics differing from province to province, and in cases between municipalities.

Federal Government – The Federal government’s involvement in affordable housing is through national funding strategies. Historically, these have fluctuated in value and are heavily dependent on the political party in power. Since 2011, funding for affordable housing has been provided through the Investment in Affordable Housing (IAH) (CMHC, 2017). The IAH is the most recent national funding strategy, with 2016 marking the end of a 5 year, \$1.9 billion plan. The 2017 federal budget announced the first National Housing Strategy with \$11.2 billion investment in affordable housing over the next 11 years (Young, 2017). Direct federal involvement is limited to capital investment targeted almost exclusively at the supply side of the housing equation. Funds are allocated to encourage the construction of more rental units.

Provincial Government – Under bilateral agreements with CMHC, provinces and territories match their respective federal funds and are responsible for allocating money to specifically designed provincial programs (CMHC, 2017). Although the programs vary province to province, an average of roughly half of the total IAH fund was spent on increasing supply of affordable housing through new construction. The rest of the funds were allocated to improve the quality of existing housing stock and to foster safe, independent living (CMHC, 2017). In addition to investment, provincial governments can influence affordable housing feasibility through regulatory means (e.g. provincial policy statements define the context for inclusionary housing policies and plans).

Municipal Government – The responsibility of municipal governments varies across the country, however a generalised overview of their role in the affordable housing spectrum includes research-oriented, policy, regulatory, financial, and administrative approaches (Starr, 2001). Since policy devolution, municipalities have resorted to incentives to stimulate the construction of housing. These can include, but are not limited to waiving development charges, selling municipal lands at discounted rates, lower property taxes, or start-up grants/loans. In addition, municipalities can expedite the planning process through planning approvals and encouraging private developers to join partnerships to construct new developments.

Private Sector

The private sector represents the agency typically tasked with the design and construction of affordable housing developments. Private developers bring the skills, labour force, an expertise in the construction process into the partnership and have proven to be an effective means of getting projects built. In addition to construction, private capital investment firms/banks can be involved in the project to assist with the funding of large scale projects, but public support is required to incentivize the

investment made by a private equity firm or developer to reduce the risk and help to guarantee a suitable return on investment.

Affordable Housing Partnerships in Action

A successful affordable housing development addresses and closes the ‘affordability gap’. The gap is characterised by the difference between the break-even cost of the development and the income generated through affordable rent levels. As argued above, in order for a project to be both affordable and sustainable, the traditional construction process (private capital finance, developer, purchaser) needs to be offset. Traditionally, this was done through public subsidy typically in the form of capital investment and/or land holdings. The introduction of PPNPs as an alternative for fiscally constrained governments has resulted in a more complex framework of financing, construction, and operation of affordable rental developments. The case studies below illustrate different ways of approaching affordable housing and the important role of the non-profit sector.

Toronto Community Housing Corporation (TCHC) – Ontario

TCHC is a city-owned corporation that operates in a non-profit manner. It is the largest social housing provider in Canada, and the second largest in North America, managing 2100 buildings and 110,000 residents. 55 per cent of operating funding comes from rent, 39 per cent from subsidies provided by the City of Toronto, and the remaining 6 per cent from the rental of commercial spaces, parking, laundry, cable fees, and investments (TCHC, 2017).

Figure 2: Toronto Regent Park Redevelopment



Regent Park Community Redevelopment in Figure 2 is synonymous with public housing. It is the largest, and oldest publicly funded housing development in Canada, representing the postwar strategy of slum clearance and the application of Garden City design principles. In 2003, Regent Park joined other infamous post-war social housing projects, when a redevelopment plan was approved to demolish and replace existing public housing Rent Geared to Income (RGI) units. In addition to modernising the housing stock, the 12-to-15 year, six phase redevelopment includes an overall masterplan (new roads, amenities, park space, public buildings) to integrate the once physically segregated site back into the city (Moskalyk, 2012). The budget for the redevelopment stands at \$1 billion, boasting a multilayered funding structure constituting of government funds (federal, provincial, and municipal), private sector, savings generated on site, and TCHC equity contributions and loans.

The completion of the project is predicated on a three-sector partnership between the public, non-profit, and private sectors (PPNP). In addition to approving the project, the City of Toronto waived development and realty taxes on all new RGI units for the duration of the development, and absorbed the infrastructure costs with assistance from senior level of governments (Landau, 2016). Under the Canada-Ontario Affordable Housing Agreement, \$1.61 million funding from the federal and provincial governments was allocated to stimulate construction. The TCHC owned and operated the 2,087 RGI units at Regent Park and conducted several feasibility studies to determine how to best accomplish the 69 acre revitalization. The Daniels Corporation represents the private sector aspect of the partnership, and will oversee the design and construction of the entire project. In addition to the physical infrastructure, the Daniels Corporation is also offering qualified purchasers of the market and below-market housing options an additional 5 per cent loan under its Downpayment Assistance Program (Moskalyk, 2012).

Both the risks and rewards of the project are shared between the TCHC and the Daniels Corporation. The scale of the project helped to mitigate the risks associated with the rollout of the development, making Regent Park a unique case study in the theorised benefits of mixed-market housing (Rowe & Dunn, 2015). For example, in an effort to erase the stigma associated with Regent Park, the partnership decided to front-load phase 1 with the financing and construction of market units, holding off on the RGI units. The influx of higher income tenants is expected to have a higher, positive impact on the social and economic fabric of the community (Moskalyk, 2008). Ensuring the market units will be desirable, and attracting commercial activity are both means to bolstering the overall economic status of the partnership and offer continual funding for the RGI units that have a much lower return on investment.

Societe D'Habitation Et De Developmet De Montreal (SDHM) – Quebec

SDHM was created in 1988 as a municipal non-profit corporation and a social housing provider with the capacity to undertake independent land acquisition and development roles on behalf of the municipal government (HPC, 2015). Understanding the spectrum of housing types and users, SDHM openly establishes itself as a provider of 'gap' housing, leaving very low income social housing to the public housing agency and luxury housing to the private market. 2,082 units are currently owned by SDHM, but throughout the corporation's history, they have assumed a variety of roles within the design-build-maintain matrix of affordable housing. This has materialised in the form of buying, renovating, and selling properties to co-operatives or non-profits, entrusting the management of

properties to organizations once they are constructed, or acquiring and rehabilitating existing rental housing units (HPC, 2015). As of 2015, SDHM became one of the only affordable housing agencies in the country to be able to maintain a significant (4,700 units) with no ongoing operational subsidies. This is partly due to the fact that nearly all of the units (except for roughly 230) are rented at 80% of market value which enables operating costs to be covered by tenants (HPC, 2015). Innovative business strategies have also given SDHM the ability to thrive independently of government subsidies, best characterised by their initiative Access Condos. The program partners directly with private sector developers, offering prospective homeowners a 10% purchase credit to lower the down payment to as low as \$1,000. The SDHM holds a second mortgage for their share of the equity, recovering this through a share of appreciation on future resales (HPC, 2015).

City-Led Partnership in the Olympic Village – Vancouver, British Columbia



Figure 3: Olympic Village

The Olympic Village (Figure 3) was built to house athletes during Vancouver’s 2010 Olympics under the ambitious planning goal of creating a model of a sustainable community. Bidding for city owned land, the Millennium Development Group—a Vancouver-based private company—paid 193-million-dollars the highest price per square foot of land in Canadian history (Taylor & Callihoo, 2011) and set to achieve LEED Platinum status and make this one of the greenest developments in the world. The vision included new water management tools, green roofs and Neighbourhood Energy Utility (drawing heat from sewage system) and access to a new rapid transit station built for the Olympics. The initial plan for the Olympic Village was to have “one-third social housing, one-third below market housing and one-third market housing” (Taylor & Callihoo, 2011, pg.34). The 570 units would be a huge push forward in Vancouver’s plan to tackle the housing crisis. As the developer was caught up in the global financial crisis and went bankrupt, the city had to assume the costs (costing taxpayers

over \$100 million), so the share of social housing was reduced to 20% and market-modest rentals were replaced by luxury condominiums.

Following the 2010 Games, the Olympic Village retained 252 units of social housing and 119 units of “modest market housing” (City of Vancouver, 2014, p.3), built at an average cost of \$436,500 per unit (not including land value), which would likely make these the most expensive social housing units ever constructed (McCarthy, 2012). The framework implemented by the City to help ensure the success of the project is based on a revenue sharing model, where land is leased to non-profit organizations for 60 years at “nominal prepaid rent” to provide social housing.

Concluding Comments

A growing affordability problem affecting over 5 million people in Canada (1.7 million households in core housing need) has prompted a renewed commitment of the federal government, complemented with provincial and municipal programs, to end homelessness and increase the supply of affordable rental housing. Given the devolution of government involvement in housing, consensus has been building across Canada that an effective response requires a multi-sectoral approach, including all levels of government, the private for-profit and non-profit sectors, as well as local communities. This is perceived as the most effective way of producing affordable housing to meet growing local needs within limited resources and capacity. The last decade has seen large Canadian cities join their efforts with non-profit and private organisations to provide affordable rental housing in mixed-income, mixed-tenure projects. While these projects are experimental, they have demonstrated a viable alternative to address vulnerabilities in the housing market as well as make Canadian cities more inclusive and competitive.

This paper profiled some of the key characteristics of such partnerships and delineated risks and opportunities associated with effective implementation. Notwithstanding the diversity of such arrangements in Canadian cities, it is important that they are nurtured by stable and consistent housing policies, robust planning mechanisms that regulate affordable housing and provide infrastructure funding, and a coherent system of governance to coordinate and strategize.

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Dispossession of the Poor through an Urban Renewal Project in Narlıdere İzmir, Turkey

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Abstract: In this paper, the dispossession process of the people living in a squatter housing area is explored in Turkey's third largest metropolis, İzmir. In the case of İzmir-Narlıdere, the İkinci İnönü Neighbourhood was declared as a disaster risk area and an urban renewal project was proposed by the municipality. The proposed housing project addresses to the luxury, exclusive and to a different lifestyle than that of the existing squatter housing inhabitants. Although the declared aim of the project is the redevelopment of the area with its existing inhabitants, it has a one dimensional spatial and market-driven feature and is insensitive to the economic, social and cultural characteristics of the inhabitants. The project will be undertaken and carried on by the Municipality and private real estate partnership drawing on of 50% shares for each. More crucially, despite the renewal project was submitted by the Municipality to the approval of the Ministry of Environment and Urbanism, there is no contract defining the framework for the inhabitants' right to title deeds. As the findings of the research conducted within the scope of this study indicate, this renewal process will work as slum clearance and will end with dispossession and displacement of the squatter housing inhabitants.

Keywords: housing question, financialization, slum clearance, dispossession

Introduction

The aim of this study is to examine the housing question of the poor in the process of neoliberal housing production through an urban renewal project in Narlıdere, İzmir. Neoliberal policies and speculative urbanization affected housing production types. Housing was encompassed in the circuit of capital through commodification and financialization turning housing to a market tool. Under neoliberal urbanism, urban renewal and urban transformation projects were instrumentalized to produce housing where the urban rent is high. With the urban renewal policies, the squatter housing areas that were encircled by the areas with higher urban rent were included in the housing market. The problem of the research is the dispossession of the poor, with the pressure of the instrumentalization of the urban renewal projects under the neoliberal housing production. Within this context, this study inquires how and in what ways neoliberal housing production contributes to the housing question of the poor.

The study is mainly composed of two sections as literature research and field study. Concepts related to urbanization process are examined in the literature review. This research is based on a pluralist, qualitative and quantitative field study. The financialization of the housing, housing production under neoliberal policies and the situation of the squatter housing residents against the housing production and the dispossession process are examined based on the case of the urban renewal project in İkinci İnönü Neighborhood in Narlıdere, İzmir. The urban renewal project directly addresses to the squatter housing residents and the squatter housing area which has been encircled by a rapidly increasing luxury housing production in recent years. During the fieldwork, the spatial development data, institutional data, municipal and neighborhood unit data, the data about socioeconomic

characteristics of the squatter housing residents and squatter housing characteristics were collected; and they were supported by interviews, focus group and face-to-face deep interviews and questionnaires. Also, the housing affordability index for the inhabitants is calculated in order to predict the situation of the residents of the squatters against the urban renewal project. As it is to be seen in the following pages, almost none of the squatter housing residents would have housing from the renewal project, hence what waits for them is dispossession.

Urbanization under Capitalism

Lefebvre and Harvey theorize the relationship between space and capitalism with respect to the movements and crises of capital accumulation. They emphasize how the capital creates spaces of its own production and reproduction relations in the urban built environment (Harvey, 2006; Lefebvre, 1991). Urbanization and capital accumulation are integral to each other in capitalism. The capital accumulation has been immanent to the changes that have affected the relationship between capital and urbanization (Coq-Huelva, 2013).

Lefebvre argues that capital is shifted to the secondary circuit by anchoring on the urban land to overcome the economic crisis in the primary circuit. David Harvey develops Lefebvre's concept of "the secondary circuit of capital" as "urbanization of capital." He explores the relationships between capitalism and built environment in cities in terms of the changes in society through production, consumption, and reproduction (Merrifield, 2011). According to David Harvey, city is a complex phenomenon with its spatial, economic, political and social aspects. The urban process creates a physical infrastructure that the capital needs for production, reproduction and consumption. The formation of this infrastructure is through the production of the structured area, which is the source to produce value and surplus value. Thus, capital is involved in the urban spaces, as it shifts to the secondary circuit of capital operating on production and consumption of the built environment and reproduction of labor (Harvey, 1985).

Harvey explains the urban rent with the dynamics of capital accumulation. He links the emergence of rent capital and crisis of accumulation. The capitalist system depends on the maximizing profits, otherwise, it falls into a crisis from time to time. The competition among the capitalists leads to an excessive accumulation. This accumulation problem leads to crisis; the way of ensuring stability is to direct capital to the built environment, hence urban spaces become "spatial fixes" (Harvey, 2006).

As capital shifted into the secondary circuit, the change in cities became important to stabilize the capitalist production. As different areas develop and investments increase in specific areas for the sake of capital accumulation, other urban areas decline. Thus occurring unevennesses between urban areas and the differences between the use value and the exchange value of the urban land result in the rent gap (Smith, 1979, 1987; Morales, 2009).

Neoliberal Urbanism and Housing Production

Neoliberalism is an economic, political, institutional and ideological structuring which has ruled the period after the 1970s. Its defining characteristics are privatization, deregulation by decreasing the dominance of the state in public services and market-led regulatory system in the economy (Brenner and Theodore, 2002; Jessop, 2002; Peck and Tickell, 2002; McCarthy, 2004; Harvey, 2005; Brenner, *et al.*, 2010). According to Harvey (2006), four basic elements of neoliberalism are privatization, financialization, management and manipulation of crises and state redistribution policies. Neoliberalism emphasizes the effectiveness of market competition, the role individuals play in determining economic outcomes, and the disruptions of government intervention in the markets. Neoliberalism involves a profit and market-oriented accumulation logic that culminates in "accumulation by dispossession" (Harvey, 2006).

With the dominance of neoliberal policies on economic and urban restructuring processes, housing is harnessed to privatization, financialization, and commodification, as well. The dominance of the private sector and capital-

oriented housing production at the expense of social housing production by the state has led the housing production turned into a real estate sector (Çelik and Gough, 2014; Marcuse and Madden, 2016). Housing as an accumulation tool has always been undergoing financialization. With financialization, housing has become a commodity which is managed by the real estate market. Managers, bankers, and rentiers produce profits from housing through buying, selling, financing, owning, and speculating. This indicates the rising importance and power of actors and firms against the poor for whom housing is of importance because of its use value (Marcuse and Madden, 2016).

Real estate investments constitute a large part of the recent global financial system. In addition, the commodification of housing today became a key engine of urban capital accumulation and the privatized housing sector became having a greater impact on the global economy with a direct relationship with global processes (Forrest, 2008; Lamarca and Kaika, 2016). Financialisation and commodification of housing exclude the poor from the housing market by increasing housing prices (Uzun, 2017). As a result, the living space is shared depending on the ability to pay and provided to the extent that it produces a profit (Marcuse and Madden, 2016).

Urban renewal and redevelopment projects were instrumentalized to obtain the maximum rent from the urban spaces. These projects create space for real estate investments to generate rent for urban growth by working as slum clearance. The fact that housing policies do not cover the rights of the poor cause the poor to face such problems as displacement, exclusion, dispossession, segregation and gentrification (Doshi, 2013; Fraser and Kick, 2014).

Urban Renewal and the Poor in Turkey

Urban renewal projects emerged as the most important urban development strategies in Turkey in the 1990s where productivity, profit, and privatizations are at the forefront (Demirtaş-Milz, 2013). The 1990s were the years of significant transformations in the urban space. In the city centers, large business centers in the form of skyscrapers, luxury housings, and mass housing areas that responded to the demand of the upper-income group have been built. To meet the housing needs of the middle-income group, mass housings have been produced in the areas obtained by the transformation of the squatter housing areas in the peripheries. Therefore, the residents of the squatter housings which were displaced and excluded through dispossession continued to build new squatter housings in new areas (Özdemir, *et al.*, 2005).

In the 2000s and onwards, the urban transformation projects have been the main mechanisms of the neoliberal urbanism. Urban governance and housing markets have also undergone significant changes in Turkey (Kuyucu and Ünsal, 2010). The housing production sector is dominated by private investors and it became market-driven. The main tool of the 2010s regarding the urban process is the law on Redevelopment of Areas under Disaster Risk (no. 6306). The aim of this law is to determine the principles and procedures for improvement and renewal in the areas that are at the risk of disaster (Official Journal, 31 May 2012; Genç, 2014; Waite, 2016). The law redefined the concepts of reserve building, risky area, and risky building in a way of creating a real estate stock that is to be redeveloped according to market logic. The Ministry of Environment and Urbanization and Housing Development Administration (HDA) are endowed with the authorities for the implementation of the law. According to the law, the priority is to make an agreement with the existing residents and title holders of the project area. Temporary housing or rent assistance can be made to the owners, tenants, and residents of the apartments or buildings that have been evacuated through the agreement. For the destruction of the buildings in the risk area, notification is sent to the owners. The buildings that are not destroyed within the given time period are to be demolished by the project executives. The Ministry can also carry out the detection, evacuation and demolition works of the buildings. The Ministry has also the authority to consolidate with all kinds of maps, plans, zoning, projects, and land arrangement procedures related to risky structures and reserve structure areas; to convert the immovable property related to the risky area into a security value upon agreement; to determine the value of the lands and make public-private partnerships; to determine the standards and plan decisions, to prepare plans and urban design projects. With the law number 6306, The Ministry of Environment and Urbanization can delegate HDA or private

companies for urban transformation projects (Genç, 2014). Within this institutional and regulatory context, urban transformation projects turned into the tool of privatisation and marketisation of the urban or non-urban areas.

Housing production based on this law uses urban transformation as a tool to transfer the lands of the squatter housing to the state and to transform informal urban residential areas into formally governed commodities. Private and public actors also use legal ambiguities and tactical maneuverings for fast and efficient transfer of squatter lands (Atasoy, 2017). Squatter-housing areas where the residents mostly benefited from the unregulated land market and incompletely commodified housing rights are the main target of these transformation projects. These areas are important for the real estate investments as they are encircled by the high-rent areas and have rent-gaps. With the neoliberal housing production through the urban transformation projects that result in slum clearance, high-incomes began to have higher living standards with luxury housing, however, on the other side, poor had to move into mass housings constructed by HDA on the peripheries or had to live in squatter areas surrounded by the luxury housings (Genç, 2014). This situation deepens socio-spatial unevennesses, and intensifies social, economic and spatial pressure on the poor.

Case Study: İkinci İnönü Neighborhood in Narlıdere, İzmir

Within the neoliberal urbanisation, the poor have been faced with the dispossession problem in İzmir. To understand the housing question of the poor in İzmir, the squatter housing area in İkinci İnönü Neighborhood was chosen as the case study. This squatter housing area is surrounded by the luxury housing development, and was declared as urban transformation area according to the Redevelopment of Areas Under Disaster Risk Law (no. 6306).

The most significant characteristics of the squatter housing area is that it is localised within Narlıdere District revealing a deep uneven development. Having been surrounded by the luxury housing projects, the squatter housing units and their inhabitants are exposed to an increasing pressure of the urban rent. Figure 1 shows the housing types around the case study area. There are four types of housing: multi-storey housing sites which include the mass housing of the previous transformation project on the area that located on the southernmost of the image, luxury housing which refers to the housing produced under the neoliberal policies, multi-storey detached apartments and squatter housing units.

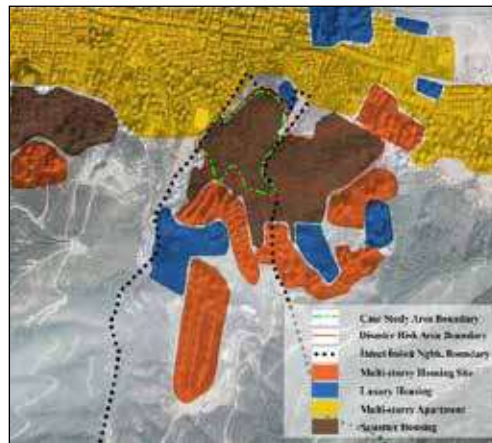


Figure 1. Housing types around the case study area (prepared by the authors based on the fieldwork data)

There are 1710 squatter houses under the scope of the urban renewal project developed on the basis of the Redevelopment of Areas Under Disaster Risk Law on 25th June 2013. The field research was restricted to 14.74 hectares in İkinci İnönü Neighborhood that covers the 622 of the squatter housing units.

Structural Characteristics of the Buildings

The study area covers 622 buildings on 14.74 hectares. 0,64% of these buildings are licensed buildings, 35,20% of these buildings are the structures having benefited from the development amnesty in 1984, 63,8% of the buildings have the characteristics of squatter housing, and the last % 0,32 of the buildings is derelicted ones. Among the “illegal” structures defined as a squatter, there are institutional structures like a mosque, 3 school buildings, 1 community clinic, and 1 head office building. The distribution of property ownership is as follows: private ownership is 36,90%; the State Treasury and Narlıdere Municipality ownership rates are 16,96% and 11,53%, respectively. 93,56% of the buildings in the area are used as housing. 4,98% of the buildings in the area for commercial purpose; and, 1,125% of the buildings are institutional ones.

According to the structural quality analysis, 55,62% of the buildings are in medium condition. Although the rate of buildings in poor condition is 31,02%, the rate of the structures in good condition is 13,02%. In this case, the structural quality of the buildings in the area is ranged from bad to medium degree. Most buildings in the area are illegal structures with low quality.

The average housing size is 90 m2 and the average plot size is 115 m2. The average room number for a housing unit is 2 and there are basic facilities but mostly in poor conditions in the units. All units in the area have the technical infrastructure. 58.33% of the squatter housings have courtyards.

Socio-Economic Characteristics

In the study area, 60 questionnaires were applied to the residents of the squatter housing. The data on income, ownership and preferences is based on the fieldwork. Total population of the area is 2839. The average household size in a squatter housing area in İkinci İnönü Neighborhood is 3,6. While the maximum household size is 8, the minimum is 1.

The rate of people with regular wage is 14%, while 26,0% of people work in low-waged and irregular jobs such as construction works, of which annual average is below the minimum wage. 46,8% is retired; and 3,8% of people own a workplace. The rate of unemployed people is 11,6%. In 75% of households, more than one person work.

In the squatter housing area, 73,33% of the residents have social security. The rate of the residents having no social security is 20%. The main reasons for not having social security is unemployment and precarious works. And, 6,66% of households live depending on government aids.

Table 1. Average household income range (Source: The data is based on the fieldwork)

Household income (TL)	Number	Percentile
0-1000	5	8,33%
1001-2000	38	63,33%
2001-5000	14	23,33%
5001- over	3	5%
Total	60	100%

As it is seen in Table 1, 63,33% of the households have an income between TL1001-2000. In the households whose income is between TL2001-5000, there are more than one worker in the household. Most of such households are traditional extended families composed of different generations living in the same house. The

families whose monthly income is above TL5000 have an additional income like rent of an house or workplace. Considering the table 1 and comparing the hunger and poverty limit in March 2019, about 72% of households have an income below the hunger limit. According to the data calculated by Türk-İş for March, 2019, the hunger limit of the four-people family is TL 2.014 and poverty limit is TL 6.561. This means that almost all the squatter housing area residents of İkinci İnönü Neighborhood live below the poverty limit (Türk-İş, 2019, date of access: 17/04/2019).

Table 2. The reasons for preferring İkinci İnönü Neighborhood (Source: The data is based on the fieldwork)

The reasons for preferring İkinci İnönü Neighborhood	Number	Percentile
Job opportunities	24	40%
Closeness to the city center	4	6,66%
Cheap land	11	18,33%
Education	3	5%
Relatives living in İkinci İnönü Neighb	12	20%
Born in İkinci İnönü Neighb	6	10%
Total	60	100%

As Table 2 demonstrates, the primary reasons why people prefer to live in the İkinci İnönü Neighborhood are the closeness of the neighborhood to the job opportunities, the existence of cheap land when they firstly came to the neighbourhood, and having relatives who already live in this neighborhood.

Table 3. Existing ownership status (Source: The data is based on the fieldwork)

Ownership status	Number	Percentile
Owner	46	76,66%
Live without paying (relative's house)	8	13,33%
Rent	6	10%
Other (public housing vs.)	-	-
Total	60	100%

Table 3 indicates that 76,66% of residents are the owners of their houses. Squatter housing owners are the ones who built their dwelling when they moved to İkinci İnönü Neighborhood. The residents who live without paying rent are those who live in the dwellings that their families have built when they moved to İkinci İnönü Neighborhood. Extended families are included in this group. Tenants who are 10% of the total residents of the squatter housing area stated that they live in İkinci İnönü Neighborhood because the rent was cheap and they cannot afford the rent elsewhere.

All inhabitants living in the squatter housing area desire and have an expectation to be a homeowner through the urban renewal project. Those who saw the project state that they may have serious difficulties in paying the

installments and even if they can able to pay the installments, they cannot afford the monthly dues of the projected houses. On the other hand, the tenants in the squatter housing declare that they cannot afford to live in Narlıdere after the transformation project and have to move to another neighbourhood where rents are cheaper than here. Table 4 summarizes the relevant responses to the questionnaire.

Table 4. The living place preferences after the renewal project (Source: The data is based on the fieldwork)

Willing to live in İkinci İnönü Neighb. after the urban transformation	Number	Percentile
Not able to afford; migrate to hometown	6	10%
Not able to afford; willing to live in Narlıdere	13	21,66%
Not able to afford; willing to live in İzmir	11	18,33%
Stay in İkinci İnönü and pay the monthly payments	26	43,33%
Sell the share and move	4	6,66%
Total	60	100%

The data in the table can be interpreted that 43,33% of the residents prefer to stay in İkinci İnönü Neighborhood, and pay the monthly installments to become an owner. However, when not able to afford groups were summed, 50% of the residents do not have the ability to afford the houses of the urban transformation project. In addition, 16,66% of the residents consider moving because of the monthly payment of the house from the transformation project. In the following section, before going well into the Housing Affordability Index calculations, the urban renewal project that is to be carried out in the Neighbourhood is examined based on the available but restricted data.

The Urban Renewal Project

The prepared urban renewal project was submitted to the approval of the Ministry of Environment and Urbanism by the Narlıdere Municipality. The financial and approval procedures have not been completed, and the negotiations between the Ministry and the Municipality still continue. What is striking here is that the squatter housing inhabitants have no information about the financial structure of the project or about their rights or losses arising from the project. Our information about the transformation project is based on face-to-face meetings and interviews with the officers of Narlıdere Municipality because of the restrictions on data sharing.

As it is implied by the officers, the project is to be undertaken and carried out by the Municipality and private real estate partnership based on of 50% shares for each. It is also declared that the Municipality would accept squatter housing inhabitants, including tenants, as “title holders” within the framework of the project. However, there is no contract defining the inhabitants’ right to title deeds yet, and the repayment plan is uncertain. Following the approval of the transformation project by the Ministry of Environment and Urbanism, the process of reconciliation with the squatter housing owners shall be initiated and the agreement defining their rights shall be signed. Besides, the intended owners of this transformation project are defined as the middle- and upper-income groups by Narlıdere Municipality (Face to face interview on 26.11.2018 in Narlıdere Municipality).

The Narlıdere Municipality promoted the urban transformation project on the squatter housing area based on the following statements: “title holder citizen”, “peaceful and reconciliation based urban transformation”, “healthy living area integrated to the city”, “modern social infrastructure”, “a housing complying with the disaster

regulations”, “100% compromising with the inhabitants” (The Brochure published by the Municipality before the Local Government Elections on 31th March, 2019).



Figure 2. Urban Transformation Project covering the squatter housing area in İkinci İnönü and Atatürk Neighborhoods according to Redevelopment of Areas Under Disaster Risk Law no. 6306 (Source: Narlıdere Municipality)



Figure 3. 3D visuals of the Urban Transformation Project covering the squatter housing area in İkinci İnönü and Atatürk Neighborhoods according to Redevelopment of Areas Under Disaster Risk Law no. 6306 (Source: Narlıdere Municipality)

Figure 3 shows the top view and figure 4 is the visuals of the project on the squatter area. The project is designed as the complex area with residential units, commercial area and social infrastructure, including green areas. As it is seen in the figures, the housing units consist of high-rise, massive blocks that are not compatible with the socio-spatial and natural characteristics of the area. The data about the details of the area size and land distribution, number of the units was not shared during the interviews due to restrictions arising from the project approval procedures in the Ministry.

Besides, some residents state that this urban transformation project is for creating rent, and that residents of the squatter housing would have no benefit of it. In the face-to-face deep interviews and focus group interviews, it was observed that most of the residents had an expectation to become a house owner through the urban transformation project, but they preferred detached housing instead of apartment blocks.

The apartment form is small for the average family size of the squatter housing area and not address their lifestyle. However, they support the urban transformation project. What firstly makes them willing to the project is their desire to have a decent house. They also state their hope to have a whealtier life and to provide their children of a more secure and comfortable future. Thus, instead of this transformation project consisting luxury housing, they are willing to cheaper mass housing project that may be affordable for them.

Housing Affordability Index (HAI)

Housing affordability is defined as the ability to afford a house that is suitable with the household's financial situation (Suhaida, *et al.*, 2011). Housing Affordability Index (HAI) is a metric to calculate whether or not housing

is affordable for the households. Household income, housing prices, interest rates and loaning terms are taken as primary factors affecting housing affordability (Aşıcı, *et al.*, 2011).

To predict whether the squatter housing residents can afford a house after the renewal project, HAI was calculated based on two different scenarios by using the average household income data and average housing price of the İkinci İnönü Neighborhood. The average housing unit area is fixed as 80 m² for both scenarios according to the housing unit size of the previous urban transformation projects implemented for similar neighbourhoods with similar socio-spatial and economic characteristics in İzmir. The outputs of HAI calculations are interpreted depending on the loan repayment capacity.

The first scenario depends on the advance payment which also has four cases that the advance payment changes as 20%, 30%, 40%, and 50%, because the details of the repayments of the project is not defined yet. It was declared that the Narlıdere Municipality planned to subtract the land cost from the housing price in the calculation of the payback of the loans. In this type of scenario, the share of the credit repayment in the household income is fixed as 25%.

In the second scenario, the shares of the credit repayment in household income change as 20%, 30%, 40%, and 50%. The reason why we create this alternative scenario is the social and cultural characteristics of the squatter housing inhabitants and our observations about their desire to own a proper and new home.

The data required for calculations are the average housing price, mortgage payment plan, household income. Average housing price of İkinci İnönü Neighborhood was calculated based on the data obtained from online data sources in March 2019. In İkinci İnönü Neighborhood, an average housing price in March 2019, is 4.726 TL per m². (Sahibinden Emlak Endeksi, 2019, Date of access: 17/03/2019).

Based on the housing price in March 2019, the mortgage payment was calculated with the help of the online mortgage calculator. Ziraat Bank was selected as an example because it was the public sector bank that offered the most favorable interest rate when the calculations were done (Ziraat Bank, Date of access: 20/04/2019). Necessary mortgage loan repayment plan was assumed to have a maturity of 120 months.

Monthly qualifying income refers to the income required to pay the loan easily after subtracting the amount of money for the basic needs and other primary expenses. To calculate the housing affordability index, household incomes are fixed at the average value of the income ranges in the field work findings. There are four groups of household income as TL500, TL1.500, TL3.500, TL7.500.

To calculate housing affordability, the equation is;

$$\text{HAI} = \text{Median Family Income} / \text{Qualifying Income} * 100$$

The HAI has a value of 100 when the median family income is sufficient to purchase an existing median-priced home. A higher index number indicates that more households can afford to purchase a home.

Scenario 1-a

In this scenario, it was assumed that 20% of the price of the house would be paid in advance, and the remaining 80% would be paid with housing loan. Qualifying income of households was calculated depending on the monthly repayment plan of these loans. Table 5 shows the price of the house and the amounts of the housing loan repayment.

Table 5. Calculated data of scenario 1-a

Typical housing units (m ²)	80 m ²
m ² price	TL 4.726
The sale price of a typical house	TL 378.080
Advance payment	TL 75.616
120-month maturity loan	TL 302.464
Monthly repayment	TL 5.333
Monthly qualifying income	TL 21.332

Table 6. HAI calculation in scenario 1-a

Income group	Equation	Result
TL 500	$HAI = TL500 / TL21.332 * 100$	TL 2,34
TL 1.500	$HAI = TL1.500 / TL21.332 * 100$	TL 7,03
TL 3.500	$HAI = TL3.500 / TL21.332 * 100$	TL 16,40
TL 7.500	$HAI = TL7.500 / TL21.332 * 100$	TL 35,15

Table 6 indicates if the housing price in the urban renewal project is TL100, the income groups have TL 2,34, TL7,03, TL16,40, TL35,15 in order. In this scenario, there is no family which can afford the price of house produced through the urban transformation project.

Scenario 1-b

In this scenario, it was assumed that 30% of the price of the house would be paid in advance, and the remaining 70% would be bought with housing loan. Table 7 shows the calculation results about the qualifying income of households depending the monthly repayment plan of these loans.

Table 7. Calculated data of scenario 1-b

Typical housing units (m ²)	80 m ²
m ² price	TL 4.726
The sale price of a typical house	TL 378.080
Advance payment	TL 113.424
120-month maturity loan	TL 264.656
Monthly repayment	TL 4.666
Monthly qualifying income	TL 18.664

Table 8. HAI calculation in scenario 1-b

Income group	Equation	Result
TL 500	$HAI = TL500 / TL18.664 * 100$	TL 2,67
TL 1.500	$HAI = TL1.500 / TL18.664 * 100$	TL 8,03
TL 3.500	$HAI = TL3.500 / TL18.664 * 100$	TL 18,75
TL 7.500	$HAI = TL7.500 / TL18.664 * 100$	TL 40,18

As Table 8 demonstrates, if the housing price of the renewal project is TL100, each income group will have TL 2,67, TL8,03, TL18,75, TL40,18, respectively. In this scenario, too, no family can afford the house from the project.

Scenario 1-c

In this scenario, it was assumed that 40% of the price of the house would be paid in advance, and the remaining 60% of the price would be met with housing loan. Table 9 sets the typical house sale price and qualifying income depending on the monthly repayment plan of these loans.

Table 9. Calculated data of scenario 1-c

Typical housing units (m ²)	80 m ²
m ² price	TL 4.726
The sale price of a typical house	TL 378.080
Advance payment	TL 151.232
120-month maturity loan	TL 226.848
Monthly repayment	TL 4.000
Monthly qualifying income	TL 16.000

Table 10. HAI calculation in scenario 1-c

Income group	Equation	Result
TL 500	$HAI = TL500 / TL16.000 * 100$	TL 3,12
TL 1.500	$HAI = TL1.500 / TL16.000 * 100$	TL 9,37
TL 3.500	$HAI = TL3.500 / TL16.000 * 100$	TL 21,87
TL 7.500	$HAI = TL7.500 / TL16.000 * 100$	TL 46,87

Table 10 shows if the housing price in the urban transformation is TL100, the income groups have TL 3,12, TL9,37, TL21,87, TL46,87, respectively. In this scenario, there is no family which is able to afford the house after the renewal project.

Scenario 1-d

In this scenario, it was assumed that 50% of the price of the house would be paid in advance, and the remaining 50% of the house price would be paid by retiring the housing loan. Table 11 indicates the data of qualifying income of households and monthly repayment plan of the loan.

Table 11. Calculated data of scenario 1-d

Typical housing units (m ²)	80 m ²
m ² price	TL 4.726
The sale price of a typical house	TL 378.080
Advance payment	TL 189.040
120-month maturity loan	TL 189.040
Monthly repayment	TL 3.333
Monthly qualifying income	TL 13.332

Table 12. HAI calculation in scenario 1-d

Income group	Equation	Result
TL 500	$HAI = TL500 / TL13.332 * 100$	TL 3,75
TL 1.500	$HAI = TL1.500 / TL13.332 * 100$	TL 11,25
TL 3.500	$HAI = TL3.500 / TL13.332 * 100$	TL 26,25
TL 7.500	$HAI = TL7.500 / TL13.332 * 100$	TL 56,25

Table 12 shows if the housing price of the urban renewal project is TL100, each income group would have TL3,75, TL11,25, TL26,25, TL56,25, respectively. In this scenario, too, no family can afford the house from the urban transformation project.

Scenario 2

In case of scenario 2, the loan payment shares in the household income changes in the range of 20%, 30%, 40% and 50%, and the advance payment is fixed at 25%. Table 13 shows the qualifying income of households and monthly repayment plan of the mortgage loan.

Table 13. Calculated data of scenario 2 (Source: prepared by the authors)

Typical housing units (m ²)	80 m ²
m ² price	TL 4.726
The sale price of a typical house	TL 378.080
Advance payment	TL 94.520
120-month maturity loan	TL 283.560
Monthly repayment	TL 5.000

To calculate the loan repayment share, household incomes are fixed at the average value of the income ranges in the survey results. There are four groups of household income as TL500, TL1.500, TL3.500, TL7.500. Consequently, the repayment amounts of the households' share change in different percentages, as it can be shown in Table 14 below.

Table 14. Payback money in changing shares of the income according to the scenario 2 (Source: prepared by the authors)

Household income	Share (%)	Payback (TL)
TL0-1.000 -500-	20%	TL 100
	30%	TL 150
	40%	TL 200
	50%	TL 250
TL1.001-2.000 -1.500-	20%	TL 300
	30%	TL 450
	40%	TL 600
	50%	TL 750
TL2.001-5.000 -3.500-	20%	TL 700
	30%	TL 1.050
	40%	TL 1.400
	50%	TL 1.750
TL5.000- and over -7.500-	20%	TL 1.500
	30%	TL 2.250
	40%	TL 3.000
	50%	TL 3.750

In this scenario, there is no family who can afford the monthly repayment of the loans, even if they set the half of their monthly income aside for the repayments.

On the other hand, as an alternative case, it is presupposed that the land cost for the advance payment and the share of payback installments is 50%, and the households can use 50% of their monthly income. Among the respondents of field work, only one household's the income is "TL5.000- and over", and it may afford the monthly paybacks of the renewal project. This means that only 5% of the squatter housing residents in İkinci İnönü Neighborhood have the payback capacity to buy a house.

Conclusion

Under the neoliberal policies and speculative urbanism, housing production is defined by the dominance of exchange value over the use value of housing. For the sake of capital accumulation from housing, urban renewal projects are instrumentalized to create land in squatter housing areas where the urban rent potential is high. As the urban transformation projects became a tool of producing luxury housing, the housing question of the poor turned to be a dispossession with no reservation. The renewal project concerning the squatter housing area in the İkinci İnönü Neighborhood aims to redevelop the area with its inhabitants. However, due to economic imperatives, the residents are condemned to live in the squatters rather than alternative housing. Considering the economic conditions of the target population of the renewal project and the increasing house and land prices under the

pressure of surrounding luxury housing development in the İkinci İnönü Neighborhood, it is obvious that the renewal project will result in a radical exclusion of the poor by dispossession.

It is stated that the Narlıdere Municipality would accept all inhabitants of the squatter housing area as title-holder. However, the process of reconciliation with the squatter housing owners was not initiated and there was no agreement or contract defining their rights to housing. Let alone being informed about their rights or losses arising from the renewal project or its financial structure, the squatter housing residents were completely excluded from the project desing phase. Such information was kept secret from the squatter residents, whereas the Municipality submitted the project to the approval of the Ministry of Environment and Urbanisation.

All informants have an expectation to have a home after the transformation project. However, almost all the households live below the poverty limit. Because of precarious works with low wages and unemployment, it is not possible for them to afford the housing price range defined under the pressure of the surrounding luxury housing development.

According to the scenarios, under these economic circumstances, only 5% of the households in the squatter housing area can afford the price of a house after the transformation project. The advance payment is counted as 50% share, and the household can use 50% of their monthly income to buy a house. They can pay the installments after the land cost is counted as 50% of total house price and substracted from the total price. But it is possible only on the condition that are the squatter housing owners accepted as having already owned their building plot. It is an extremely optimistic assumption that they could regularly pay the installments and monthly dues.

As a result, the housing production does not address the socio-economic conditions of the squatter housing inhabitants. The housing projects do not meet the need and demand of squatter housing residents. The inhabitants of the squatter housings are under pressure of their economic circumstances. Since their income will not be enough, they will have to find new jobs until they are dismissed from their homes because they cannot pay the installments and dues on time. Besides, considering the characteristics of the renewal project designed and submitted to approval of the Ministry, it will be carried out as slum clearance and result in the exclusion and displacement of the poor through dispossession.

As to what is to be done, housing must be produced within the framework of the right to housing. The use value of housing must be defended against exchange value by emphasizing the priority of the needs and demands of the poor. The state should increase its efficiency in housing production, the dominance of the private sector should be reduced. The aims and priorities should be defined in terms of the socioeconomic context and affordable housing production.

The urban transformation and renewal projects must be planned and implemented by taking into consideration the social, spatial and economic needs of the poor. The process of transformation should be open to the participation and the area must be designed with the squatter housing inhabitants. For housing payments to be sustainable, full employment should be provided to those who live in squatters and do not have a regular income.

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The potential of alternative housing initiatives to ‘transform’ the housing sector: Examples from New York City and Berlin

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Abstract: *Most major cities around the world are faced with a housing crisis, as real estate has become the dominant sector of the economy. The purpose of this paper-in-progress is to review selected affordable and integrated housing initiatives from New York City and Berlin to consider how they can be supported, scaled up, and sustained to resist the financialization of the housing sector, and potentially, lead to a transition toward de-commodification of housing. Despite the differences between the two cities in terms of scale, history and socio-economic context, the majority of residents in both cities are renters, unlike the rest of the country, and both have a legacy of working-class activism that led to the establishment of successful collaborative affordable housing development and programs in the second half of the twentieth century. After a brief review of the current affordable housing crisis, we provide an overview of some past and recently proposed low income and integrated housing models. We consider their potential and limitations in terms of sustainability and scaling up. The methodology is based on a review of previous studies, newspaper and agency reports, and interviews with housing experts, activists, and local government representatives.*

Introduction:

Most major cities around the world are faced with a housing crisis, as real estate has become the engine of the capitalist economy. Madden and Marcuse argue that housing policy is based on the *myth of the benevolent state* since housing programs have always facilitated the goals of the real estate capital rather than meeting the needs of those who need support the most: “Historically the state has used the housing system to preserve political stability and support the accumulation of private profit”(Madden and Marcuse 2016, 120). In his recent book, Sam Stein goes a step further to point out that as “[r]eal estate developer Donald Trump becomes first a celebrity and ultimately a president,” we now live in a “real estate state, a political formation in which real estate capital has inordinate influence over the shape of our cities, the parameters of our politics and the lives we lead” (Stein 2019, 5).

Local government policies and planning interventions facilitate the gentrification process. With the relative decline of the manufacturing sector, municipalities have become dependent on real-estate tax revenues to provide the urban services they are responsible for. Stein (2019) argues that even though city planners play a key role in developing schemes to meet the demands of and create investment opportunities for real estate capital, they also have the capacity to devise strategies to dismantle and weaken the control of real estate capital over cities. Yet, “[n]aming alternatives ... is much easier than enacting them, as the political conditions in New York and elsewhere make such actions difficult at best” (Stein 5/28/2019).

The purpose of this study is to review selected affordable and integrated housing initiatives from New York City and Berlin that serve the needs of very low-income residents who are faced with displacement. We explore how they can be supported, scaled-up, and sustained to resist the *financialization* of the housing sector, and potentially, lead to a transition toward de-commodification of housing. After a short review of de-commodification of housing and the gentrification processes, we first provide an overview of some past and current proposals for low-income and integrated housing provision. We then consider their potential and limitations in terms of sustainability and scaling up. The qualitative analysis is based on information gathered through a review of previous studies, newspaper articles, and agency reports, as well as interviews with housing activists, planners, and staff from both municipalities. This paper, however, reflects only the first phase of this study and, for logistical reasons, is focused mainly on New York City. Since we are still in the process of conducting interviews and research on the case of Berlin, a more in-depth analysis of the selected experiments and their potential to make an impact on the housing conditions in these cities will be the next phase of our study.

NYC and Berlin are both faced with an affordable housing crisis. Despite the differences between the two cities in terms of scale, history and socio-economic context, the majority of residents in both cities are renters, unlike the rest of the country, and both have a legacy of working-class activism that led to the establishment of successful collaborative affordable housing development and programs. And recently, Berlin has been successful in pushing for more radical measures to address these issues.

In Berlin and other German cities, citizens have begun large protests against rising housing costs. Berlin, a city in which 85% of people rent their homes - has been at the center of this fight. After 2008, for-profit corporate landlords started buying up hundreds of apartment buildings in Berlin, and since then, housing costs have doubled. On April 6, 2019 - 40,000 people marched through the center of Berlin in support of a referendum for nationalizing large landlords that own more than 3,000 units and to demand the expropriation of approximately 200,000 rental units. If the protesters are able to gather 190,000 signatures by next February, the referendum could take place in mid-2020. If successful, it could set a legal precedent for housing as a human right.

Background: Commodification of Housing

David Madden, the co-author of “In Defense of Housing: The Politics of Crisis” argues that homes have become commodities – which is a key driver of inequality in the City. Madden defines housing commodification as the moment when “all possible uses of residential space are subordinated to economic exchange, i.e. when housing’s existence as real estate comes to dominate its ability to function as home” (2019, 1). Specifically, Madden describes three related dimensions of residential commodification:

Starting in the 1970's, commodification was set into motion with the de/re regulation of housing - particularly the weakening of rent regulations and the privatization of social housing by municipal governments. A few decades later, commodification was aggravated by the aggressive financialization of the housing sector by private equity firms and real estate investment trusts (REITS) for whom luxury real estate became a new investment vehicle. Indeed, housing was redefined as a means to generate financial returns rather than providing for a person's home or shelter. Finally, the globalization of the housing market and the exponential increase in foreign real-estate ownership in large cities has been mired in corrupt practices - including tax evasion, money laundering, and the consolidation of illegal assets. Since 1990, the EB-5 Immigrant Investor Visa Program has allowed globally mobile elites to purchase US visas with real estate investments in the United States. This program has been plagued with fraud, corruption and cronyism.

As a result, luxury housing has become a tool for speculation which is more sensitive to global financial trends than to local housing needs. Indeed, at a time when affordable housing is increasingly hard to find – much of this “investment housing” remains vacant.

It is important to note that the luxury housing trend is accompanied by the simultaneous disinvestment and exploitation of existing affordable housing stock for working class and low-income residents by corporate landlords. In many global metropolitan centers, including New York, London, and Berlin, housing investors purchase existing affordable housing – and then push for exponential rent increases. New landlords often seek to displace low-income tenants with aggressive tactics including lack of building maintenance and other harassments – in order to increase their profits. Most often, the victims of housing commodification are low-income people of color who end up being displaced from their neighborhoods and/or forced into overcrowded housing.

Madden (2019) concludes, like Stein (2019) and others, that housing commodification is much more than a neoliberal economic instrument, and that its impact on cities is deeply political - exacerbating racial and class tensions. Indeed, commodification has caused increasing housing precarity, insecurity, and unaffordability - especially for working class and low-income households.

Affordable Housing Initiatives in New York City (NYC)

Alex Schwartz (2006) argues that housing for the lowest income households must be heavily subsidized; it is not possible without support from the State. There is a myriad of affordable rental or homeownership programs in New York City. Some of these are remnants of past programs that were created in response to demands of strong working class movements, and account for the majority of current affordable housing stock in New York City. Summary Table 1 groups some of these strategies and programs under five categories. These range from measures to regulate the market by building the capacity of housing advocates, legal protection of tenants and prevention from landlord harassment, as well as rent controls. The city has been losing not only unregulated low-rent units in low-density neighborhoods, but also thousands of rent regulated units through the loopholes in the current rent law. As the state's rent stabilization law is up for renewal in June, currently there are nine rent-regulation reform bills that are being considered at the state level to stop this trend. The bills aim to prevent landlords from raising rents after improvements to the apartment or building, to end vacancy decontrol and the vacancy bonus, to make preferential rents permanent until vacancy, to extend time for tenants to file rent overcharge

complaints, to ensure rent control and rent stabilization parity, and to expand the emergency tenant protection Act to all settlements across New York State (Brown 2019).

More radical measures to prevent speculation and preserve long-term affordability and access to land and housing involve de-commodification or taking properties out of the market. These include public housing, community land trusts, mutual housing associations, limited equity cooperatives. New York City Housing Authority (NYCHA) is the largest and most successful in the country where residents pay 30 percent of their income for rent. There are 326 NYCHA developments around the city, accommodating more than 400,000 people, and an additional 235,000 people receive rental assistance through NYCHA's Section 8 Leased Housing Program (<https://www1.nyc.gov/site/nycha/about/about-nycha.page>).

Income-restricted limited-equity cooperatives are a type of affordable housing where members buy shares at below-market rates and receive tax abatements and other public subsidies but there are restrictions on resale prices. Through limiting the resale price to the cost of initial investment plus interest and a small profit, affordability of the unit can be preserved in the longer term. While New York city can be considered the cooperative capital of the country, not all cooperatives serve low or even middle- income households. In fact, the first cooperative in the city was built on Fifth Avenue for elites. The first generation of low- and moderate-income housing cooperatives were built during the first half of the twentieth century by trade unions and from the 1950s to 1970 through the United Housing Foundation and the state's Limited Profit Housing Companies Law, or Mitchell-Lama program.

The second wave of low-income housing cooperative development started in the 1970s, when New York City inherited more than 11,000 abandoned, foreclosed properties. Urban Homesteading Assistance Board (UHAB) was established then to help the tenants of those buildings stay in their homes through their conversion into limited-equity cooperatives. The first ones were created through "sweat equity" with tenants contributing their time and labor as down payment. Later, Tenant Interim Lease (TIL) Program transferred properties to tenants once they demonstrated their capacity to manage it. In the 1990s, through the Third Party Transfer Program of such properties, Housing Development Fund Corporation (HDFC) cooperatives were created. Despite some building based restrictions and flip sale tax to control speculative sales, gentrification related market pressures have led a lot of HDFC coop units to be sold, leading to increasing the purchase price of such units despite the income limitations.

A number of alternative pilot projects the City has created in response to persistent demands of housing advocates have not received adequate resources or support. Community Land Trust program is one of these. A community land trust (CLT) is community-governed nonprofit organization that holds ownership of the land to ensure permanent affordability of housing units on it. Housing or other (commercial, etc.) buildings on the property can be sold or rented to low-income residents. A CLT with a Mutual Housing Association on it would provide tenants affordable housing without equity but with long term security of tenure, and ability for democratic governance and control of their building. In 2017, the City, with funding from Enterprise Community Partners, created the CLT Capacity Building Program. In addition to the two existing CLTs, Cooper Square CLT that was established in 1994, and the East Harlem El Barrio CLT that is in formation, eight community based organizations were selected to participate in peer-learning exchange and explore strategies for developing a CLT.

Another strategy to preserve existing low income housing is to regularize and incorporate illegal basement conversions into the market. The challenge is to preserve their affordability while

improving their safety and quality. The citywide BASE Campaign and the East New York Community Plan (that was prepared in response to the city's rezoning of the district) finally led to a pilot program in East New York last year.

Given the targeted number of units in Mayor De Blasio's Housing Plan, creation of new affordable units, rather than the preservation of existing subsidized low-income apartments, has been the major focus of New York City (Elmedni 2018). In fact, the legal definition of what is 'affordable', as it is used in the development of new housing is highly controversial. The calculation of 'area median income' is based on the median household income of the New York metropolitan region, which is not only higher than that of the City, but is often double or triple the median household income in the district it is located in.

Every mayor of New York City since the 1980s came up with an ambitious affordable housing plan, following Mayor Koch's model. His success was based on the fact that NYC already owned 100,000 units of *in rem* housing and foreclosed properties that the city had inherited. Working with nonprofit and for-profit developers, his plan succeeded in producing 180,000 units of affordable housing. Without the same amount of publicly owned property, later mayors focused on rezoning to increase density allowances and give away development bonuses as well as substantial tax breaks to attract developers. For instance, former Mayor Bloomberg rezoned 40 percent of the city. The justification for partnership with and significant giveaways to private developers has always been to achieve scale. Even the 'progressive' Mayor de Blasio administration relies mainly on market-based solutions to reach its goal of creating 300,000 affordable units by 2026, and has already rezoned about half of the 15 targeted neighborhoods, the majority of which are low-income communities of color.

Moreover, a number of innovative strategies and capacity building programs provide tools to support existing and create new affordable housing, as well as organizing for that purpose. Non-profit housing research and advocacy organizations, such as the Furman Center and the Association of Neighborhood Housing Development (ANHD) have taken advantage of the City's Open Access Data System to develop databases, inventories and interactive maps working in partnership with housing activists. These tools help local organizers identify landlords' holdings, location, and status of subsidized housing, alert them to vulnerable properties, etc. in their neighborhoods. Such sources of information build capacity and level the playing field. Another example is ANHD's *Anti Displacement Toolkit* that provides a comprehensive inventory of programs and policies that housing and community activists can use to fight residential displacement.

Innovative strategies are also critical in financing, reducing the costs of developing new and preserving affordable housing. For instance, the cost-effective building technologies used by large design/construction/development companies can be adopted. Efficiently manufactured and prefabricated building components and/or new construction materials would lower costs, and lower the carbon footprint.

Land prices significantly contribute to the cost of new housing - and vacant lots are especially scarce and expensive in rapidly densifying cities. In response to this lack of affordable land, developers have recently started to build large additions on top of existing buildings and to creatively adapt and enlarge older structures. Advances in high-rise construction technology and prefabrication have supported this trend.

This trend of building large additions or adaptations of older buildings is especially promising for publicly-owned properties - since the public sector may sell or lease their land/or air rights at prices that favor the production of deeply affordable housing. For example, housing advocates have identified huge unused airspaces above municipal firehouses - which could potentially be developed as deeply affordable housing in every neighborhood. Similarly, these advances in building technology and lightweight prefabricated building components may make it possible to create large additions to currently existing public housing.

Some community based organizations and environmental justice organizations have started initiating climate change related strategies, such as weatherization of existing affordable units, to reduce maintenance costs. UPROSE has recently up a community-owned energy cooperative.

Summary Table 1.	NYC	NOTES
I. REGULATION OF THE MARKET – to even out the playing field through tenant protection & landlord control		
Rent control	NY State rent stabilization law protects about a million tenants	State rent stabilization law up for renewal in June - 9 reform bills proposed to expand it and close loopholes
Taxation and Land Value Capture	To get public or community benefits from private development	Inadequate example: Hudson Yards Project on the West Side of Manhattan
Tenant protection measures	Those targeting tenants: Right to legal council, etc. Those targeting landlords: Certificate of No Harassment, etc.	Some measures passed during De Blasio administration
Capacity building and information access to level market inequalities	ANHD, Furman Center, Displacement Alert Project, etc.- provision of inventories, interactive databases and maps for housing advocates and community activists	Nonprofits took advantage of the city's open data system to create tools for advocates
II. TAKING LAND/PROPERTY OUT OF THE MARKET – to preserve affordability and prevent speculation		
Public Housing and Section 8 programs	New York City Housing Authority (NYCHA) best/largest in the US - administers NYCHA developments and Section 8 program	Administration in deep financial trouble; serious maintenance problems
Subsidized housing with term limits (Mitchell Lama, etc),	Flip taxes to prevent sales and privatization of coop units	Expiring term limits
Limited Equity Cooperatives and HDFC units (Housing Development Fund Corporation)	Income limits and resale restrictions preserve it for low income households; flip-taxes and building based regulations to prevent speculative price increases of HDFC units	Management and financing issues need technical and management support; HDFC resale price increases
Community Land Trust (CLT)	Only 2 in NYC; 8 community based organizations received support for peer learning technical learning to create CLTs	High land prices and limited public land requires consideration of other options for access to land/property
III. LEGALIZING INFORMAL HOUSING – to improve safety and quality of existing low income housing.		
Squatters	Allocation of occupied <i>in rem</i> housing to squatters in East NY -Self-help finishes; 99 year lease	One shot, not continued Mutual Housing Association of NY created
Illegal basement conversions	East NY pilot program & citywide BASE campaign to improve safety & supply of legal affordable units	Risk of price increase as a result of regularization
IV. DEVELOPING NEW AFFORDABLE HOUSING – to increase the supply of affordable housing		

Market based strategies - incentives to private or non profit developers (rental or private ownership)	Mayor's 10 year Housing Plan: Rezonings (8nghds) & Mandatory Inclusionary Housing (MIH) (options for different levels of affordability) Goal: 300,000 affordable units by 2026	MIH only in upzoned areas; insufficient quantity of units and/or sufficiently affordable units
Non Profit Organizations (rental)	Created with city and/or private foundation funding; often on public land	Often insufficient maintenance \$
Faith-based organizations' initiatives (private ownership)	Nehemiah Housing program (revolving housing fund of East Brooklyn Congregations and South Bronx Churches) on public land in partnership w/ HPD	Nehemiah Housing was allocated land and infrastructure subsidy- one-shot
V. APPLICATION OF INNOVATIVE COST REDUCTION/FINANCING STRATEGIES		
Financial tools	Proposed Public Bank (ongoing campaign); Socially responsible investments by faith based organizations and trade unions (retirement funds); proposed "Robin Hood Tax", etc.	Proposed strategies
Innovative use of architectural and planning techniques	Density/ air space techniques to reduce construction costs	Strategies used by private sector but can be adopted by public or non-profit sector
Other (greening) strategies	Lower utility and maintenance costs; creation of weatherization programs; Community-owned energy coops; etc.	Limited innovative examples

Conclusion:

Clearly, affordable housing crisis cannot be solved simply by increasing the number of residential units, as New York City's rezoning and Mandatory Inclusionary Housing Program attempts to do. Nor are a few technical tools or innovations sufficient to address this complex and political issue in isolation from all the interrelated issues. Affordability is very much related to access to living wage jobs, transportation, and community services, and in short how it is integrated into the city. Gentrification is not limited to residential areas, but commercial strips are also gentrified. Displacement of businesses that cater to low-income residents further makes it difficult for low income households to afford to remain in their communities. In contrast, luxury housing such services are often integrated into the development. In fact, improved City services generally follow such developments, improving the quality of life in the neighborhood whereas low-income communities fear that such improvements will be followed by gentrification and displace them. And finally, given that New York City is among the top 10 cities vulnerable climate change sea level rise, innovative and collaborative approaches are necessary to build community resilience and equitable ways to adapt to impacts of climate change. Therefore, even if planners may have the technical capacity to devise ways to dismantle to control of real estate capital, building coalitions and linking to social change movements are necessary for a more systemic transition to de-commodification of housing and to "remake our cities from the ground up, and gain control over our homes and lives" (Shiffman 2007; Stein 2019, 12).

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The Spatial Characteristics and Supply of Urban Affordable Housing -- An International Comparative Study

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Abstract: It is an emerging issue for the supply of urban affordable housing that the spatial distribution marginalization and the separation of workplace and residence lead to socio-spatial problems. This study takes an international comparative approach and analysis the different of spatial distribution characteristics in urban area and the formation mechanism of affordable housing, focusing on cities in developed countries, e.g. Amsterdam, London and Singapore, as juxtaposition to Shanghai, China. Before conducting a transnational comparison, this research reveals the socio-economic characteristics of policy takers under the state context by analyzing the policy objectives of affordable housing in various countries, because of the significant differences in definition of beneficiary and supply mode between countries. Based on that result, this research maps the spatial distribution pattern of affordable housing clusters where the comparable resident groups living at the four case cities, and analysis the socio-economic mechanism behind spatial characteristics. It points out the implicit meanings of affordable housing policy connotation are reflected by urban residents' willingness and proportion to own housing. And, government and market-led intervention also have a profound impact on affordable housing's spatial distribution in the city. Finally, this research argues that the classification standards of the citizen groups are different due to diversity in state institution and cultural context, which further leads to the difference in social justice represented by spatial pattern, comparing these four cities. European cities may be more concerned about the equity of human development opportunities, while cities in East Asia may be more concerned with the equality of household wealth. And these different are presented in terms of spatial features.

Keywords: Affordable housing; spatial characteristics, supply mechanism, international comparative

Introduction

Decent dwellings are one of the most fundamental human rights that guarantee the well-being of people (Tusting *et al.*, 2019), and urban housing usually features the pattern of certain social group in the city (Zhang *et al.*, 2017, Dawkins, 2013), which provide a significant insight into the research of city structure (Zhang *et al.* 2019). Affordable housing plays a special role in urban housing, with the effect of city orientation and policies. Besides, the beneficiary group is mostly the disadvantage in the city, thus underlining the question of social justice in spatial pattern analysis of it.

After a length development took 70 years, contemporary Chinese cities established a dual-housing supply system, with support from both the market and government (Li *et al.*, 2015). While affordable housing is mainly provided by government with dwellings and rent subsidies (Qu and Xiao, 2015). Under the effect of land-based finance and straining land supply, major Chinese cities failed to match the demand for affordable housing (Hu and Qian, 2017), with the existing ones showing problems like distant location, dwellings clustering and spatial

mismatch (Zheng and Zhang, 2010, Song, 2011, Liu and Xing, 2013, Dong and Zhang, 2014, Fang *et al.*, 2015), which is defined as the “typical problematic feature” of Chinese affordable housing (Shi and Meng, 2013). By comparing the spatial pattern of affordable housing in the city, this research tries to understand the location choice of affordable housing in global context, and find out how the differentiated definition of affordable housing and beneficiary group could lead to various spatial pattern.

There has been an extensive research on the spatial pattern of affordable housing, but current essay focus on counties or regions with similar context, and they mainly research on the spatial effect that single policy has on affordable housing. By establishing the perspective of spatial pattern analysis, we run a comparison between Shanghai and other global cities in Europe and Asia, such as Amsterdam, London and Singapore. At first, we stress the diversity of policy context between every country, and by developing the concept of advantage location in the city, we can evaluate the location choice of affordable housing in every country, and we find that spatial pattern of affordable housing between China and other countries show a significant difference. Affordable housing in Chinese context strengthen the idea of basic dwelling for disadvantage groups, while other countries stress opportunities and variety in the city, and difference in definition affect their location choice.

Research on the Spatial Pattern of Affordable Housing

Current literature points out the problematic location of affordable housing in cities, then adapts analytic methodology to examine it. In Chinese context, scholars pay more attention to distant location and large-scale construction (Chen *et al.*, 2015), while spatial clustering of disadvantage groups features more in global context.

The effects policy has on affordable housing is a common motive in literature, while both nationwide orientation in urban development and specific housing policy will affect the spatial pattern of affordable housing (Alawadi *et al.*, 2018). Under the scheme that housing is market commodify, developers tend to take a conservative attitude towards affordable housing (Ryan and Enderle, 2012), which could lead to problem in project financing. Some policies aimed at encouraging the construction of affordable housing resulted badly in spatial problems like clustering (Ryan and Enderle, 2012, Dawkins, 2013). However, as some literature point out, policies aren't the only aspect affecting the spatial choice of affordable housing, the amount of available stock in urban housing markets, location of occupation and historic district, some, if not all, played a part in the spatial pattern of affordable housing (Park, 2013, Fan *et al.*, 2014, Fang *et al.*, 2015).

Location of affordable housing has effect on the benefit for residents. Compared with the original dwellings, residents in affordable housing acquired improved housing condition (Park, 2013), however the spatial mismatch between occupation and residency in distant located housing could lead to an overall loss of social benefits. Besides, large-scale affordable housing construction, displayed as the clustering of disadvantage groups, marginalizes and segregates residents inside. (Oakley and Burchfield, 2009, Allen and Goetz, 2010, Kontokosta, 2015)

Scholars have responded to these problems: Chen *et al.* (2015) adopted spatial analytic model and proposed a research framework for the spatial pattern of affordable housing; Ding (2012) taking transportation, land price and infrastructure into consideration, propose a guideline for the location choice of affordable housing. Aside from that, emphasizing the mix between job and dwellings instead of simply mixing social group, Transit oriented development (TOD), higher density of street could partially soothe the wounds (Kostourou and Karimi, 2017, Palm and Niemeier, 2017).

After a thorough review of the literature, we find that researches on spatial pattern of affordable housing has two distinct frameworks in Chinese and global context. Foreign scholars tend to treat location as the spatial presentation of policy effects, and their researches are usually based on certain policies, while most Chinese scholars propose the spatial problem of affordable housing first, with policies as their background.

Data and Methodology

In this research, authors adopted a global comparison perspective, and proposed a research framework for spatial pattern of affordable housing in global context. The methodology consists of three progressive parts.

Because of diversity among countries, there is no standardized definition of affordable housing, which is subdivided into several policies and housing types in different countries, thus in the research, identification of affordable housing in global context is needed. Urban housing subsidy is usually realized in two forms: dwelling and rent, and this research mainly focuses on the dwelling aspect, which could be further categorized into rental and sold affordable housing. After establishing research subject, we build up a database for affordable housing in each city with open data, then apply GIS into analysis procedure.

The mere spatial pattern of affordable housing in the city could not provide sufficient result in global context, however by comparing it with location dominance within the city, the characteristics of affordable housing is revealed. Therefore, the authors define “advantage area” in the city, which is district with denser population and richer infrastructure, knowns as CAZ (Central Activities Zone) in some countries. Because of the special policy background of affordable housing, its residents are usually disadvantage groups in the city, the location choice of affordable housing relate to their ability to obtain opportunities (Oakley and Burchfield, 2009, Li *et al.*, 2013), there is need for affordable housing to be located inside advantage area. By mapping affordable housing in the city, one can find its relationship to the city, paving the road for spatial comparison.

When defining advantage area in each city, different strategies must be applied to identify the specific area. For Shanghai and London, the research area extend to the whole metropolitan boundary, thus showing a significant core in the city, both recognized as CAZ, while in Amsterdam and Singapore, considering the relatively smaller land area, property price acts as market tool to assess supply and demand, in this research we used it to identify advantage area in both country.

Existing literatures recognize spatial clustering of affordable housing as the cause of some negative social effects, such as segregation of minor social groups. Therefore, we adopted a tract-level analysis to identify the clustering of affordable housing clustering in the city. Anselin (1995) suggest that the value of certain attribute is not only significant in itself, but also related to the same attribute of nearby areas. This theory works as an extension of Tobler’s “first rule of geometry” (Tobler, 1970), and is extended to the Explorative Spatial Research Analysis (ESRA), in which LISA model and Local Moran’s I is used to identify the high and low value clustering(Oakley and Burchfield, 2009).

Spatial Pattern of Affordable Housing in Global Context

Global metropolis is faced with housing problems, normally in the form of declining social housing, rising price for urban housing and shortage for affordable housing, therefore most megacities pay special attention to housing affordability in the city.

Variety in global housing policy attached importance to the introduction of every city’s housing policy and advantage area. Based on introduction, the mapping of affordable housing is overlapped with advantage area. Moreover, we used spatial clustering model to examine whether there is congregation of affordable housing in tract-level.

Shanghai

Before 1990s, housing in Shanghai has not yet been commodified, citizens resided in government-owned or subsidized dwellings (Huang, 2013). Reform of urban housing scheme in 1990s posed severe impact on the role of affordable housing in China. During this period, Cheap Rental Housing was first announced. As the

commodification of urban housing intensifies, the status of affordable housing was lowered and did not returning to urban housing scheme until 2007 (Qu and Xiao, 2015) In China, central government issued the guideline of affordable housing, and local governments are in charge of construction and management.

Affordable housing in Shanghai started in the 1980s (Li,2011), while almost 40 years of development brought us to the result of diverse in housing types. According to Shanghai (2017), there are currently four types of affordable housing in Shanghai: Cheap Rental Housing (CRH), Public Rental Housing (PRH), Shared-ownership Housing (SOH) and Relocation Housing (RH). The former two types are for rentals, while the latter for sold, which is mainly aimed at residents with *hukou* (residency register status).

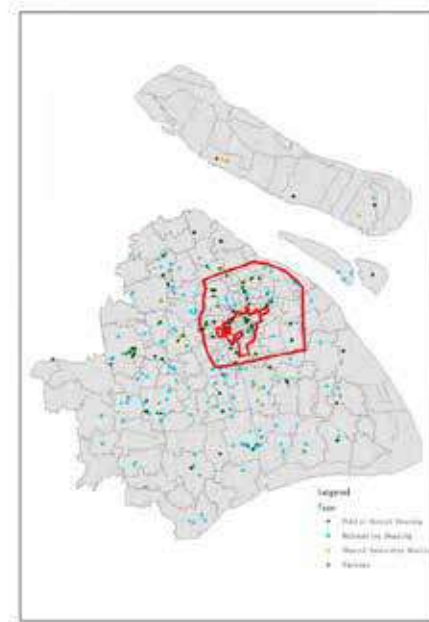


Figure 1 Spatial Pattern of Affordable Housing Points in Shanghai

The structure of Metropolitan Shanghai can be divided into three parts with central core area. The most inner part consists mostly historic district and is defined as CAZ, while between CAZ and the outer ring there is inner city of Shanghai, and the large peri-urban outer Shanghai. Metropolitan Shanghai is rather centralized, with the intensity of land use and infrastructure decay as the distance to city center increases.

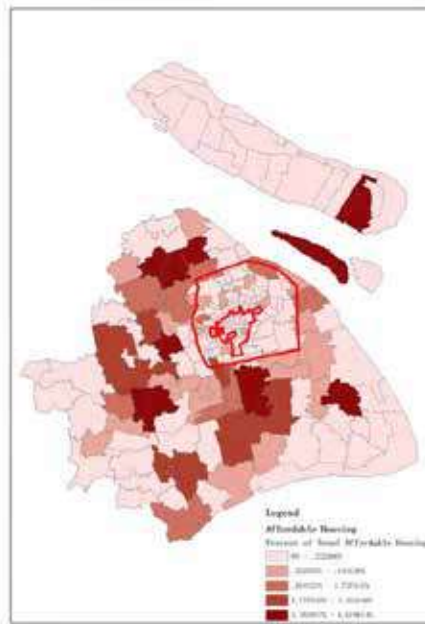


Figure 2 Affordable Housing Ratio in Census Level

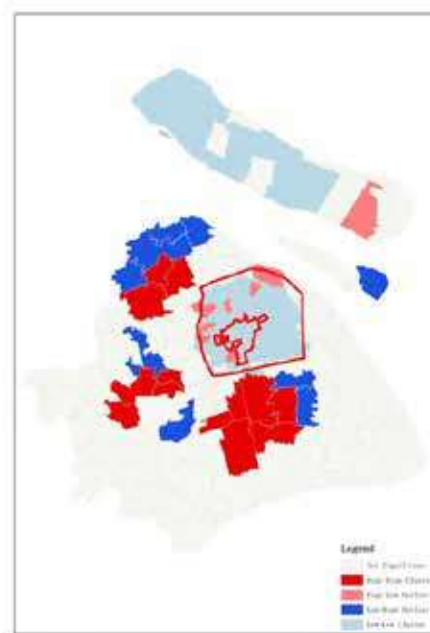


Figure 3 Spatial Clustering of Affordable Housing in Shanghai

Currently, there are 402431 affordable housing units in Shanghai, with Relocation Housing taking up the most part, who are mainly located in peri-urban area. By spatially joining to census level, its spatial pattern significantly marginalized, with almost no affordable housing units in CAZ. Few affordable housing units are situated in the inner city, most of which are Public Rental Housing, taking up 9.8% of total units, as much as single large-scale community distantly located takes. In spatial correlation, affordable housing in Shanghai shows low-low cluster in inner city and high-high cluster besides several large-scale communities like Pujiang, South Songjiang and North Jiading. The result show that affordable housing in Shanghai doesn't located in advantage area in the city, with construction focused on peri-urban area surrounding the outer ring.

London

London is faced with severe shortage of housing supply, with housing privatization leading to rising property price, urban housing become less affordable for citizen, the price of market-oriented rental housing is hard to control, it is in dire need for affordable housing (Mayor of London, 2018).

Aside from some minor projects, affordable housing in Greater London is supervised by Great London Authority (GLA). As London recognize variety as the fundamental aspect behind economy booming, there are no restriction on affordable housing applicants, open to London, Great Britain and other part of the world.

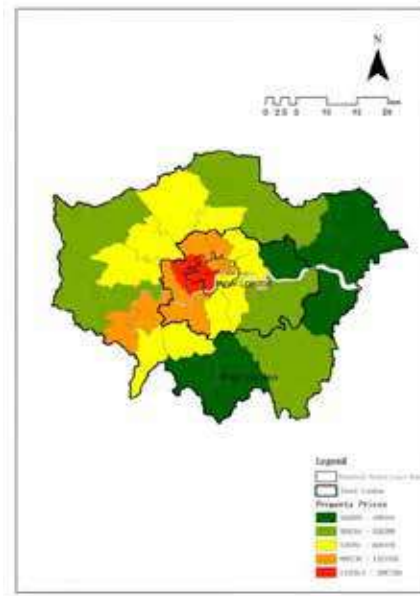


Figure 4 Spatial Structure and Property Price in London

Mayor of London (2018) suggest that the housing crisis could be solved by providing more housing for Londoners, therefore three types of affordable housing come up: homes based on social rent levels (which includes London Affordable Rent); homes for London Living Rent ; homes for London Shared Ownership, and is open to other affordable housing types. According to Ministry of Housing, Communities & Local Government (DCLG), as of 2018, Great London area possesses 310029 units of affordable housing, taking up 8.9% of all dwelling units.

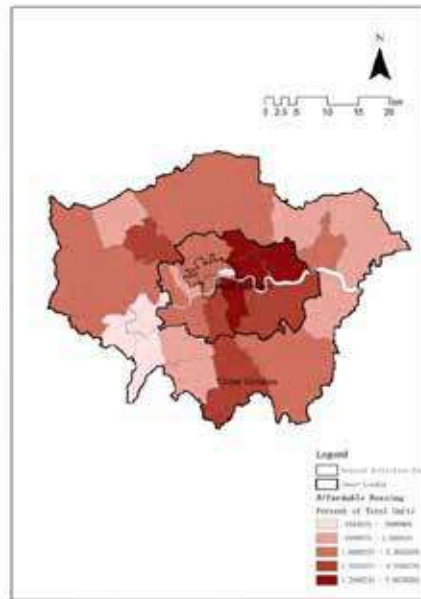


Figure 5 Affordable Housing Ratio in Borough Level

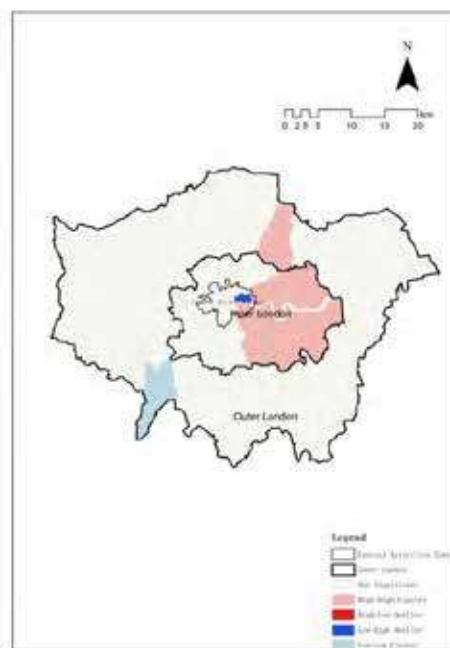


Figure 6 Spatial Clustering of Affordable Housing in London

Affordable housing in London show its consideration with advantage area in the city, but failed to deliver fair amount of affordable housing in the highest priced borough in the city like Westminster. The spatial structure of London is similar to that of Shanghai, with CAZ in core area, ringed by inner and outer London. The concentration of housing price shows similar result, though slightly offset western in the core area. Spatially joined in borough level, we find that most affordable housing located in Inner London, the concentration pattern resembles property prices. In clustering aspects, Boroughs eastwards CAZ, such as Southwark, Tower Hamlets and Hackney shows high-high cluster, affordable housing units in these Boroughs take up much as 29.1% of total units.

Amsterdam

Affordable housing scheme in Amsterdam is different from any other country in our research. The supply of affordable housing construction stopped since 1990s, and since 2015, affordable housing units in Amsterdam are totally managed by Housing Association, without the intervention from government. Housing Associations are non-profit group that stress the importance of public rental housing in urban housing scheme, and is governed by AFWC (Amsterdamse Federatie van Woningcorporaties), housing units under their management mounting to 43% of all dwellings in the city. There is no solid affordable housing in Amsterdam, the price of rental housing is limited through a “threshold price”.

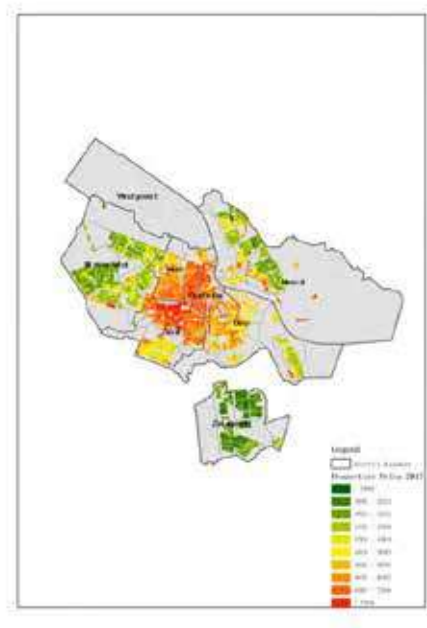


Figure 7 Figure 7 Property Price in Amsterdam

In 2017, there are 52% of total population in Amsterdam that is not Netherland background, with 53% of which are single-dwelled, and non-European residents shows clustering outside the core area (AFWC, 2017). Therefore, Amsterdam stress the importance of diversity in its affordable housing scheme.

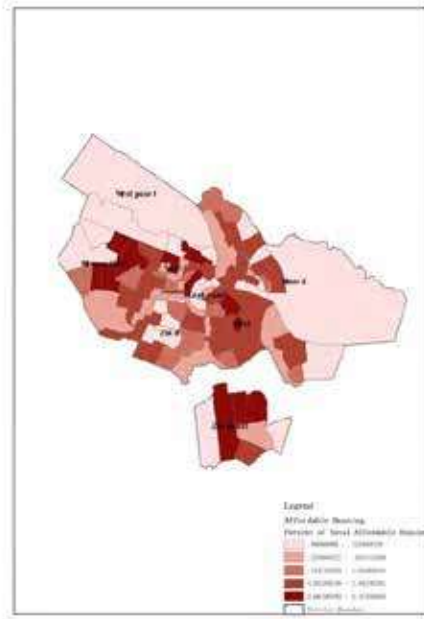


Figure 8 Affordable Housing in Quarter Level

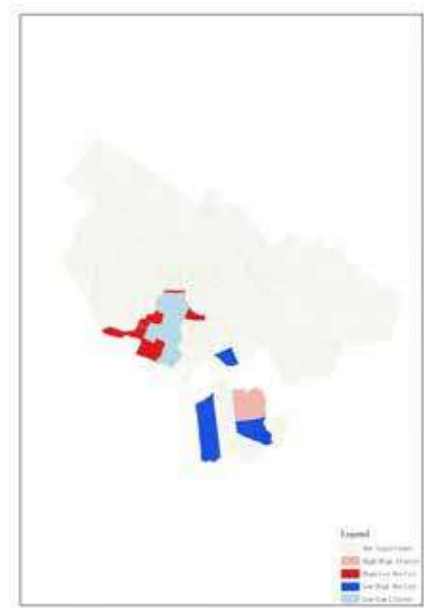


Figure 9 Spatial Clustering of Affordable Housing in London

Amsterdam provides denser amount of affordable housing in the city, while maintain a decent number of affordable housing in advantage area, though not the highest-valued ones. With an area of 219 km², the city of Amsterdam is centralized in form of advantage area, as shown in the property price mapping, the highest priced properties located in central area. There are 192120 units of affordable housing as of 2017 in Amsterdam, the number of units in each area are inversely related, and a significant drop is detected in the highest-priced area, showed as low-low cluster.

Singapore

The reaction Singapore has to urban housing problems in a highly dense urban area is well-known. Faced with huge demand for urban housing and scarce land supply, Singapore's provision of HDB flats suggest an ideal way of government-oriented development of affordable housing (Jia *et al.*, 2019). According to HDB, as of 2018 there are 81% citizens of Singapore live in HDB flats, making it the affordable housing for the majority groups.

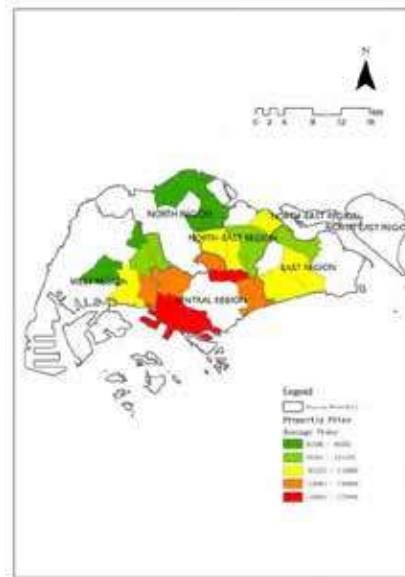


Figure 10 Property Price in Singapore

Housing and Development Board (HDB) is in charge of the planning, construction and management of all affordable housing in Singapore, with the help of land use control from government. HDB flats are constructed in towns, mainly aimed for sell, while a certain amount goes to rental market.

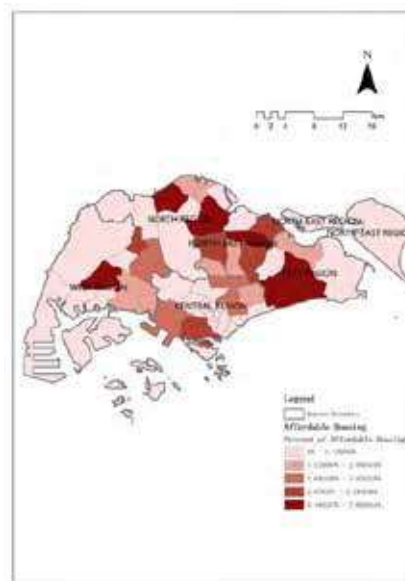


Figure 11 Affordable Housing Ratio in Town Level

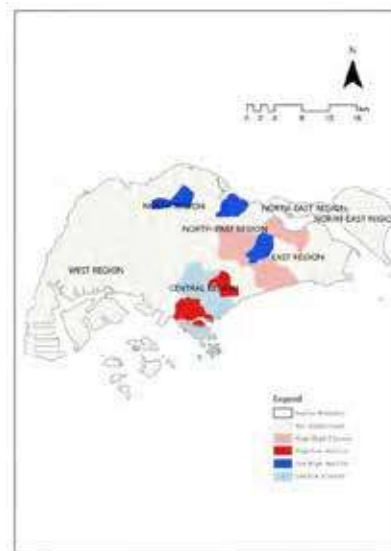


Figure 12 Spatial Clustering of Affordable Housing in Singapore

The amount of HDB flat in 2018 Singapore is, 1047695 and the largest researched countries. Due to the large scale of single HDB flat program, spatial pattern of affordable housing in Singapore is dense and clustered. Taking advantage area into consideration presented by resale price in each town, we find that the number of affordable housing units is usually higher where resale price is lower, though there has been an exclusion in Bukit Merah and Toa Payoh, where resale price is higher with greater number of HDB flats.

Result and Discussion

Table 1 Summary of Affordable Housing in Four Countries

Location	Shanghai	Amsterdam	London	Singapore
Municipal Area	6,340 km ²	219 km ²	1572 km ²	782 km ²
Population	26.32 million	1.6 million	8.83 million	5.80 million
Involvement of Government	Y	N	Y	Y
Affordable Housing Types	Sold & Rental	Rental	Sold & Rental	Sold & Rental
Affordable Housing Units	402431	192120	310029	1047695
Unit per km ²	63	877	197	1340
People Share One Unit (Average)	65.4	8.3	28.5	5.5

Table 1 shows an overall comparison of affordable housing in four researched countries. Judging only from the numbers, Singapore provides its citizens with most affordable housing units in a compact area, while Shanghai's supply of affordable housing is severely lacking compared with other countries.

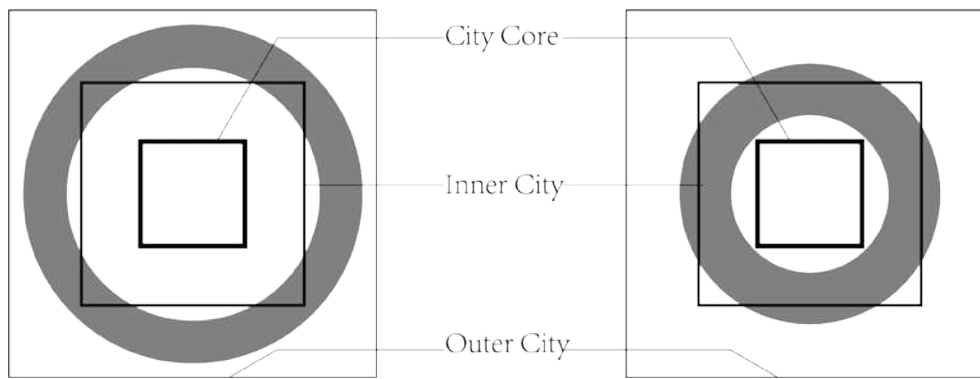


Figure 13 Location of Affordable Housing and City Structure (Left: Shanghai, Right: Other Researched Area)

The spatial pattern of affordable housing shows a distinct picture in Shanghai and other researched cities, as most of Shanghai's affordable housing is located outside the inner city, into the peri-urban area, and away from advantage area in the city. However, there is no clear distinction between other three cities while London, Amsterdam and Singapore all located decent amount of affordable housing in advantage area. Furthermore, we find that all four cities failed to provide many affordable housing units in the most advantage area, such as the city core, as the historic city center is now compact and densely dwelled.

The distinction of affordable housing spatial pattern in the city is likely the results from difference in definition of affordable housing in China and global context. Global metropolis like London, Amsterdam and Singapore argue that a variety of social groups is fundamental to a vital urban development, by providing affordable housing with high quality and subsidized through policy-making process, they guarantee the opportunities for citizens less advantage in the city (Mayor of London, 2018, HDB, 2018). Therefore, affordable housing in cities of these countries provide fair amount of affordable housing open to various social group. However, the strict definition of affordable housing in Shanghai and China suggest that affordable housing aimed at disadvantage groups in the city, and the standards of affordable housing is lower than commodified ones (Shanghai, 2010). Poor location choice of affordable housing under the background of land-based finance could lead to the segregation and marginalization of certain social group.

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PA13

Healthy City Planning: Food, Physical Activity and Social Justice

Emerging Places of Social Innovation (POSI).

The co-production of space between multilevel stakeholders: the case of productive urban green infrastructure

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Abstract: Social innovation is recurrently positioned as an important collaborative element in helping cities to transition and address human needs and societal challenges for the health, wellbeing and welfare of citizens. To address a call for more sector-specific research on the spatiality of social innovation and further understanding of the process dimension of social innovation, this article presents a conceptual framework of the process of socio-spatial innovation. By combining social innovation insight from process theories and urban spaces discourse the article indicates that socio-spatial innovation in the co-production of space can be grouped into four major processes: 1) Identification of human need or societal challenges to sustainable development; 2) Development of social relations in systems or structures; 3) Provision of opportunity for social empowerment; 4) Reflection of socio-spatial development practice. Applying this framework, the article examines how the case of productive green infrastructure emerges in the urban landscape as a Place of Social Innovation (POSI). The framework draws attention to the significance of partnership working and intermediation activities to improve access to urban spaces to contribute to socio-spatial justice and healthy orientated urban environments.

Keywords: healthy city, social innovation, co-production of space, productive green infrastructure

Introduction

Contemporary cities need to find more effective and efficient solutions to societal challenges of climate change, inequality and healthcare (BEPA, 2011, European Commission, 2013). The field of innovation studies is well-placed to contribute to debates on urban transitions to tackle such challenges, but only when it considers the role of human agency in transforming the built environment towards sustainable development (Geels and Schot, 2016). Consequently, there has been a renewed attention on the role of social innovation to sustainable development, especially around cooperation and participatory approaches to spatial development to develop new capacities (Ardill and Lemes de Oliveira, 2018).

Participatory forms of urban growing have been emphasised in the search for socially innovative solutions to social, economic, and environmental challenges of changing cities whilst civil society and institution instigated growing projects have multiplied in recent times (Cunk et al., 2017). This socio-spatial process is reshaping urban landscapes, experimenting with alternatives to capitalist formations of urban environment (Harvey, 2012) and co-producing public spaces as productive green infrastructure (Rosol, 2012). As a consequence, Places of Social Innovation (POSI) are emerging in the urban landscape in the co-production of space between multilevel stakeholders. The term is defined here as the place-based process of urban change in the collaborative planning, design and delivery of public infrastructure; physical and social, between bottom-up citizens, intermediate non-governmental organisations, and top-down government institutions.

The process of social innovation is argued to perform a significant role in helping to integrate participatory mechanisms into urban decision-making processes, increasing the social inclusion of disadvantaged groups, and enhancing the resilience of urban areas and communities (Moulaert et al., 2005, 2010, Mehmood, 2016). Nevertheless, there have been few studies on the process dimension of social innovation that investigate common patterns or aggregated learning (Mulgan, 2006), especially how it is 'designed, diffused and supported' (Caulier-Grice, Davies, Patrick, and Norman, 2012, p.33) with further research on social innovation spatiality required to comprehend dynamics in social and urban change (Moulaert and Mehmood, 2011). Therefore, this article seeks to contribute to the understanding of social innovation process in the co-production of urban spaces. The focus for the article is to consider the topic of social innovation, and how participatory and collaborative processes may support the development of planning principles linked to healthier, more equitable built environments.

The article now proceeds to review current knowledge on social innovation process. Then, it develops a process framework for understanding socio-spatial innovation in the co-production of space, considering the various cooperative inputs which are necessary or possible from innovation participants. Afterwards, the article presents an overview of an emerging POSI in order to illustrate the main characteristics of the proposed framework in the case of productive urban green infrastructure. Finally, the article ends with a summary and concluding remarks.

The process of social innovation

In this section a framework to investigate the social innovation processes in the co-production of urban space is proposed after reviewing three social innovation models found in the literature. Mulgan (2006) proposed a framework for the process of social innovation, later advanced with other collaborators from the Young Foundation and NESTA UK (e.g., Mulgan *et al.*, 2007, Bacon *et al.*, 2008, Murray *et al.*, 2010, SIX, 2010, Caulier-Grice *et al.*, 2012), identifying six stages: 1) Prompts, inspirations and diagnoses (which involves identifying and defining a need to be met); 2) Proposals and ideas (the stage of idea generation and designing ways to deal with the identified need); 3) Prototyping and pilots (where ideas get tested in practice through pilot projects with feedback from users and experts); 4) Sustaining (when the idea becomes everyday practice); 5) Scaling and diffusion (which involves developing a range of strategies for growing and spreading an innovation to a larger group or to other communities); and 6) Systemic change (so that it works on a broader scale by introducing entire systems). Sustainable

systemic change in redesigning society through changes in relations between institutions and stakeholders is positioned by policy advisors as being the principal focus of social innovation (Murray *et al.*, 2010, SIX, 2010, BEPA, 2011, Baturina and Bežovan, 2015). Caulier-Grice *et al.* (2012) highlight that the innovation process proposed is iterative rather than linear and the model be considered more like multiple spirals than straight lines. Therefore, it should not be assumed that initiatives will transcend all six stages as many will jump between or skip entire stages altogether. Some cases of social innovation ‘remain small in scale and locally based, rather than attempting growth and scale, and very few social innovations effect or reach the stage of systemic change’ (Caulier-Grice *et al.*, 2012, p.34). Social innovation is understood broadly as the production of societal value in meeting social needs and creating new social relationships or collaborations to enhance society’s capacity to act (Mulgan, 2006, Mulgan *et al.*, 2007, Murray *et al.*, 2010)

Another framework is the Alternative Model of Local Innovation advocated by Moulaert *et al.* (2005, 2010) to counter social exclusion dynamics experienced at various socio-spatial scales. The model conceptualises social innovation dynamics occurring in interaction with each other over time, beginning with the deprivation of human needs across four areas: economic or material basic needs, such as food, clothing, shelter and employment; social needs of health and education; cultural needs of self-expression, identity and recognition; and political needs of equal opportunity and active citizenship (Moulaert *et al.*, 2005, 2010). The deprivation of needs causes a reaction and the mobilisation of resources; recognised as human, social and institutional, organisational, and financial with mediation between stakeholders (e.g., civil society and state) in order to develop social initiatives to satisfy human needs that are currently not being satisfied. This agency fosters processes of ‘social changes in existing social and power relations’ towards inclusive and democratic urban governance systems to ‘increase the level of participation of all but especially deprived groups in society’ (Moulaert *et al.*, 2005, p.1976). Consequently, previously excluded social groups are empowered through ‘increasing the socio-political capability and access to resources’ needed to improve rights to satisfaction of human needs and participation (Moulaert *et al.*, 2005, 2010). Thus, social innovation is understood in a radical perspective as social and urban change that achieves conditions of empowerment, favouring bottom-linked governance initiatives and inclusive infrastructure development, and ‘therefore explicitly refers to an ethical position of social justice’ (Moulaert *et al.*, 2005, p.1978).

The third model reviewed in this article is the one drawn by Ayob, Teasdale, and Fagan (2016). Examining how the concept has developed over time they argue that the social innovation process has ‘five plausible routes through some or all of this process, all of which can be conceived of as social innovation. First, new forms of social relations lead to innovation; second, innovation leads to a restructuring of social and or power relations; third, innovation leads to utilitarian social value; fourth, new forms of social relations lead to innovation which results in the restructuring of power relations (and thus societal impact); and fifth, new forms of social relations lead to innovation, which creates utilitarian social value (and thus societal impact)’ (Ayob *et al.*, 2016, p.648). In doing so, the authors distinguish between two social innovation traditions and outcomes in social change. The first, seen as utilitarian, emphasises changes in aggregate individual utility. The second, considered more radical, ‘sees social (and political) change occurring as a consequence of innovations in social relations’ (Ayob *et al.*, 2016, p.648). The authors proceed to draw similarities between co-production and the five social innovation pathways outlined due to common themes of: 1) collaboration (new forms of social relations); 2) the generation of new ideas (innovation); 3-4) empowerment (utilitarian social value and/or new forms of power relations); and 5) societal change (societal impact). To conclude, the radical

approach, termed ‘strong social innovation’, is suggested in this model as strongly linked to co-production due to shared emphasis on shifting power influences as a key component of this approach, notably through the engagement and empowerment of previously disadvantaged individuals and groups (Ayob *et al.*, 2016).

The models outlined attempt to address different questions and develop their own viewpoint on social innovation process. Mulgan *et al.* is interested by how innovations in the social field progress, identifying six stages ‘that take ideas from inception to impact’ (Murray *et al.*, 2010, p.12). Whereas, Moulaert *et al.* (2005, 2010) examines what structural changes in social relations are happening, making the connection between urban governance, empowerment and socio-spatial justice. Finally, Ayob *et al.* (2016) explores how social innovation has evolved, linking pathways to co-production and shared actions in developing collaborative forms of social relations, leading to changes and societal impact. This article attempts to integrate these three models into a socio-spatial innovation framework that encompasses all three of these components: the progress of the innovation, changes in social relations, and collaborative agency. The article does this by defining a model of the social innovation process in the co-production of space involving four cyclical stages. Table 1 indicates how the stages of this model relate to the elements in the Mulgan *et al.*, Moulaert *et al.* (2005, 2010), and Ayob *et al.* (2016) models.

Table 1: Relationship between different stages of the social innovation process in models

Murray <i>et al.</i> (2010) <i>How innovation progresses?</i>	Moulaert <i>et al.</i> (2005, 2010) <i>What innovation in social relations is taking place?</i>	Ayob <i>et al.</i> (2016) <i>How do collaborative actions cause change?</i>	Ardill and Lemes de Oliveira, <i>What is the stage of the particular process?</i>
Prompts, inspirations and diagnoses	Deprivation of human needs	New forms of social relations	Identification of human need or societal challenges to sustainable development
Proposals and ideas		Innovation	
	Mobilisation of resources		Development of social relations in systems or structures
	Changes in social relations (and political relations)		
Prototyping and pilots	Empowerment	Utilitarian social value	Provision of opportunity for social empowerment
Sustaining		New forms of power relations	Reflection of socio-spatial development practice
Scaling and diffusion	Satisfaction of human needs and participation	Societal impact	
Systemic change			

Socio-spatial innovation framework

The traditional linear process of technological innovation postulated innovation always starts with research (Godin, 2006, Balconi *et al.*, 2010), then followed by development, and ends with production and diffusion (Balconi *et al.*, 2010). This model has been much criticised (Godin, 2006, Balconi *et al.*,

2010). It fails to recognise that ‘knowledge does not flow smoothly among different stages of the innovative process and among different organizations and institutions. Nor does it flow freely among geographical areas’ (Balconi *et al.*, 2010, p.7). Following Murray *et al.* (2010) this article therefore proposes a framework for social innovation process based on iterative innovation processes, allowing for overlap, interaction and nonlinearity, as ‘change needs to be understood through the iterative action of the processes and dynamics’ (Van de Ven and Poole, 2004, p.317). While stages are not necessarily linear or sequential, this article can identify four key stages based on theoretical knowledge to provide an analytical framework with which to think through all the activities taking place (Ardill and Lemes de Oliveira, 2018), the various agents involved, and patterns in the context of such innovation journeys (Rip, 2012). The proposed framework is illustrated in Figure 1 as a circular process with the implication that socio-spatial change is a constant activity. Key stages are described in following paragraphs and process dynamics and factors categorised at the end of this section in Table 2.

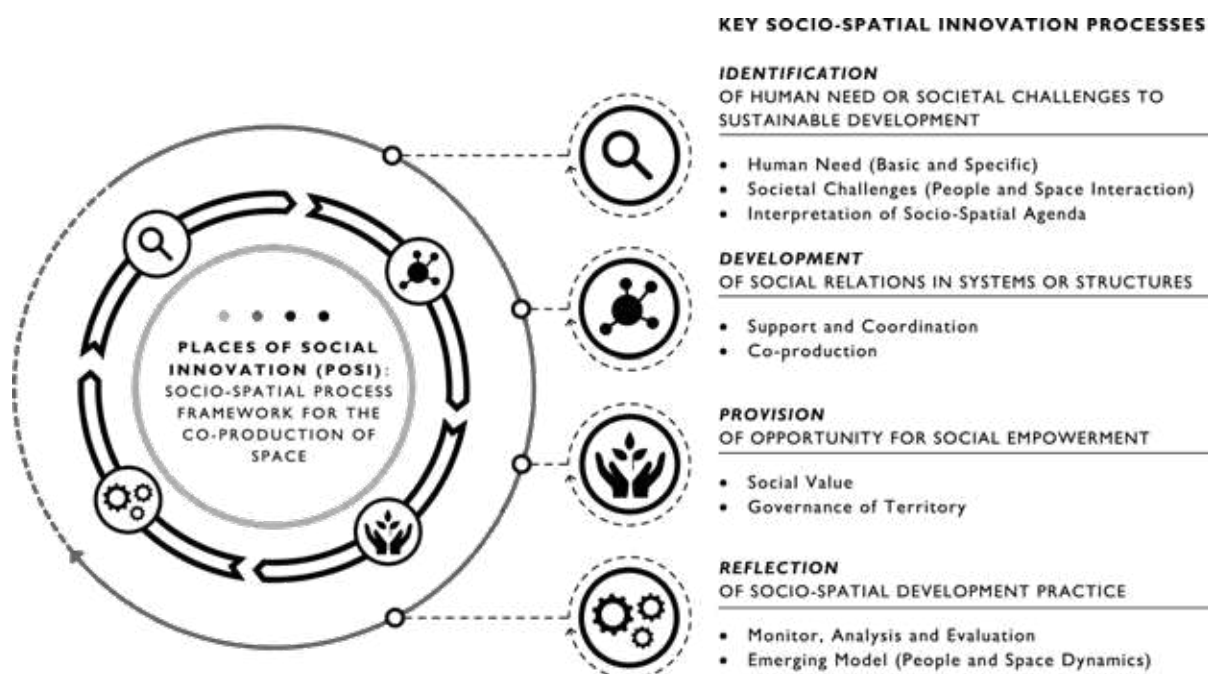


Figure 1: Proposed socio-spatial innovation process framework

The first stage: *identification of human need or societal challenges to sustainable development* involves prompts that highlight the need for innovation to address human need or societal challenges (Murray *et al.*, 2010, SIX, 2010). Human need may include the basic or specific needs of individuals and groups. Maslow (1954) characterises basic needs as physiological needs (e.g., food, clothing, and shelter), and safety needs of health and wellbeing, employment, and security. Whereas, societal challenges in a sustainable development perspective (BEPA, 2011, Baturina and Bežovan, 2015) are directed towards society as a whole and recognised as major concerns shared by all citizens, especially uneven development, health, and climate action (Grimm *et al.*, 2013). They are highlighted by people and space interactions (Smith, 1984). Long-standing and emerging urban problems are brought into focus by an experience or event or research and interpretation of socio-spatial agenda takes place (Murray *et al.*,

2010). This process involves diagnosing unmet need or challenges by understanding contextual dynamics affecting the situation in order to frame opportunities and constraints (SIX, 2010). From the identification of need an idea for a solution is generated to activate an initiative. Data gathered is synthesised as findings and made into a persuasive argument to immediate stakeholders that the solution proposed can be effective, and a defined brief with strategic objectives and directions is set out (Torres, 2017).

The second stage is the *development of social relations in systems or structures*. A multitude of stakeholders will be typically engaged on this stage (e.g., the stakeholder that has identified the need or challenge and other stakeholders that are interested in or might directly benefit from addressing the socio-spatial agenda). In this regard, generating cross-sectorial support and coordination will be valuable here to mobilise resources to work on the social innovation solution and the co-production approach presents a way of collaborative working (Boyle and Harris, 2009, Voorberg *et al.*, 2014, Ayob *et al.*, 2016). The setup of a coalition and supportive structures further develop the innovative solution (Murray *et al.*, 2010), and creation of a protected space for experiment are significant features of this process (Rip, 2012). This stage is aided by innovation intermediaries, such as agents and organisations (TEPSIE, 2014). Intermediaries create opportunities and spaces (e.g., social, economic, and physical) through facilitation, configuring, and brokering activities to create relationships to support innovation (Stewart and Hyysalo, 2008). Furthermore, the contribution of civil society through social entrepreneurship and social enterprise (Mulgan *et al.*, 2007, Phills *et al.*, 2008, Howaldt *et al.*, 2018) aligned with state steering to coordinate processes of social innovation creates the condition for hybrid partnerships to emerge (Baker and Mehmood, 2015, Nicholls *et al.*, 2015). New coalitions are comprised of public, private and social participants in the organisation of development (Noworól, 2013). These coalitions contribute to the rearrangement and restructuring of existing social relationships (Mumford, 2002, Moulaert *et al.*, 2005). As such, the use of embedded resources and assets is a way of engaging a range of stakeholders in the co-design and development of solutions (SIX, 2010, Caulier-Grice *et al.*, 2012, Manzini, 2014), and design-based approaches fusing design-thinking can progress and shape the idea (Brown and Wyatt, 2010, Manzini, 2015). To help ensure needs are met, collaboration amongst the stakeholders that contribute to the development of the social innovation solution through co-production activities, such as their planning, design and delivery with the active participation of citizens and beneficiaries is significant (Voorberg *et al.*, 2014).

The third stage: *provision of opportunity for social empowerment* is where a socio-spatial initiative is implemented and is about creating openings to enhance society's capacity to act in a changing environment (Murray *et al.*, 2010, BEPA, 2011, Grimm *et al.*, 2013). This involves generating social value, both to disadvantaged groups and society as a whole (Phills *et al.*, 2008, Ayob *et al.*, 2016), and through increasing participation in multilevel urban governance structures to increase access to resources (Gerometta *et al.*, 2005, Moulaert *et al.*, 2005, Evers *et al.*, 2014, Ayob *et al.*, 2016, Brandsen *et al.*, 2016). In this stage, opportunities for community development are enabled through inclusive practices and social engagement to encourage active citizenship to help meet needs (Davies and Simon, 2013, Mehmood and Parra, 2013, García *et al.*, 2015). In this regard, social learning activities, where people can learn from each other collectively rather than through the isolated activity of an individual (Reed *et al.*, 2010), increases community capacity through development of new skills to construct more resilient communities (Pol and Ville, 2009, Manzini, 2015). Moreover, building resilience will contribute to sustainable place making and the promotion of sustainable development (Mehmood and

Parra, 2013, Baker and Mehmood, 2015). In this process, improving access to urban resources helps to build capacities (TEPSIE, 2014), and changes in group-decision making and power relations creates new socio-political capabilities, enhancing peoples control over their own lives to support socio-spatial inclusion and justice (Moulaert *et al.*, 2005, 2010, MacCallum *et al.*, 2009).

The fourth stage connecting the process cycle is *reflection of socio-spatial development practice*. It involves consideration of measures of success of the initiative (SIX, 2010, Bund *et al.*, 2015), and the process of selecting, developing and prescribing a model of standardisation. The activity of demonstrating, refining and testing ideas to obtain feedback from users and specialists in order to evolve solutions and maximise impact is important to learning (SIX, 2010, Torresa, 2017). Through iteration, conflicts can be resolved and coalitions gather strength (Murray *et al.*, 2010), supporting ongoing infrastructuring and embedding of stakeholder relations, networks and resources (Hillgren *et al.*, 2011, Bjögvinnsson *et al.*, 2012). Here the adaption of the idea and the sustaining of the initiative through use of evidence and identifying further resources is necessary to carry the innovation forward (Murray *et al.*, 2010, SIX, 2010). In this stage, the spreading and sharing of the solution through diffusion and emulation of an idea or practice occurs (Murray *et al.*, 2010, SIX, 2010, Caulier-Grice *et al.*, 2012). As such, the provision of support and know-how from one organisation or place to another (Murray *et al.*, 2010) is significant to open knowledge advancement (Chesbrough *et al.*, 2014, TEPSIE, 2014). This is necessary to move innovation from a community level to a widespread solution (Torresa, 2017). It is important here to identify how an initiative can be imitated from a highly localised context to other contexts and will involve other agents adopting and implementing that solution in new situations and places (Windrum *et al.*, 2016).

Table 2: Key socio-spatial innovation processes, dynamics and factors

Key process	Process dynamics and factors
<i>Identification of human need or societal challenges to sustainable development</i>	<p>Human Need</p> <ul style="list-style-type: none"> • Basic Need (individual and collective): Physiological; Safety and Security in Environment (for Health and Wellbeing) • Specific Need of groups: Deprivation of Community and Locality; Disadvantaged Group and Vulnerability <p>Societal Challenges (People and Space Interaction)</p> <ul style="list-style-type: none"> • Built Environment (Physical and Social Dimensions): Access to Public Spaces and Equitable Environment; Urbanisation • Climate Action: Human Activity and 'the Environment' (Land Use and Resources); Ecological Resistance <p>Interpretation of Socio-Spatial Agenda</p> <ul style="list-style-type: none"> • Frame Opportunity or Constraint: Diagnosis of (Unmet) Need or Challenge; Context Dynamics (Locality, Politics, Economy) • Strategy and Brief Preparation (of Initiative): Idea for a Solution; Inception and Activation
<i>Development of social relations in systems or structures</i>	<p>Support and Coordination</p> <ul style="list-style-type: none"> • Social Economy: Civil Society Contribution (Citizens, Organisations and Institutions); Networking (Social and Geographical); Social Entrepreneurship and Enterprise • Intermediation Activity (People and Locality): Agent (Facilitation, Configuring and Brokerage); Spaces (Creation of Physical and Social) • Hybrid Arrangements and Cross-Sector Partnerships: Use of Embedded Resources and Assets; Local Authority and State Steering <p>Co-production</p> <ul style="list-style-type: none"> • Co-design and Ideation: Participation in Planning; Design-thinking (Empathy and Understanding) • Public Services and Infrastructure Delivery (Physical and Social): Citizen and End User Participation; Collaboration and Cooperation Between Groups
<i>Provision of opportunity for social empowerment</i>	<p>Social Value</p> <ul style="list-style-type: none"> • Community Development and Capacity (to act): Engagement and (Active) Citizenship; Education, Skill and Social Learning; Socio-economic • Change and Transformation (Reciprocal Influence of People and Space): Placemaking (Culture and History Identity); Spatial Quality and Character (of Space); Socio-Spatial Cohesion, Integration and Inclusion <p>Governance of Territory</p> <ul style="list-style-type: none"> • Restructure Existing Power Relations: Civic Participation and Multilevel Influence; Group Decision-making; Infrastructure and Common(s) Management • Spatial Justice (Social Justice and Space): Access to Resources; Emergence of Public Space
<i>Reflection of socio-spatial development practice</i>	<p>Monitor, Analysis and Evaluation</p> <ul style="list-style-type: none"> • Consideration of Idea Testing and Visibility: Prototype Generation(Experimentation); Demonstration of Initiative (Communication) • Action Plan for Development: Feedback Systems; Stakeholder Relations, Networks and Resources (Infrastructuring Systems) <p>Emerging Model (People and Space Dynamics)</p> <ul style="list-style-type: none"> • Adapting and Sustaining: Iteration and Adjustment (Refining Ideas); Embedded Socio-Spatial Practice • Emulation and Diffusion: Open Knowledge Advancement; Adoption and Spreading of Idea

Socio-spatial innovation: towards emerging Places of Social Innovation (POSI)

This section presents an overview of a case of emerging POSI in order to illustrate the main characteristics of the proposed framework. The section starts by introducing the organisation involved in the development of socio-spatial innovation presented. Then, key processes are distinguished through employing the analytical framework outlined in this article. Finally, a graphic visualisation of the analytical framework as applied to the case is presented at the end of the section in Figure 2.

Case background

The Brighton & Hove Food Partnership (henceforth the Food Partnership) formed in 2003 due to the identified need for a partnership approach to integrate sustainable urban policy, agency and change. It emerged as an umbrella non-governmental organisation within the local system connecting cross-sectorial stakeholders to form a participatory and strategic approach to developing a holistic food system. The organisation is embedded in the city with over 4000 members and links food policy with initiatives within public health, education, community development, land use, urban planning and sustainable development.

‘Harvest Brighton & Hove’ was an innovative citywide programme instigated by the Food Partnership from 2009 to 2013 to develop local food projects. Altogether, Harvest supported the development of 54 new growing projects across the city, transforming 1.19 hectares of urban land into productive green infrastructure. As a Harvest exemplar, the Racehill Community Orchard (henceforth Racehill Orchard) was the most significant community growing space to be developed with permission to grow to 1.30 hectares and is the largest orchard in the city. Contextually, the Whitehawk estate bordering Racehill Orchard in 2015 was the most deprived area in the city and the 331st most deprived area in the UK out of 32,844, placing it just outside the national bottom one percent (NHS Brighton & Hove, 2015).

Identification of human need or societal challenges to sustainable development

At the national level, the Cabinet Office Strategy Unit (2008) review into UK food policy emphasised societal challenges to meeting needs concerning economics and equity, health, safety, and environment. Previously, the Department of Health ‘Choosing Health’ (2004) report had identified local community food initiatives as an instrument to support behavioural changes and reduce health inequalities. The Food Partnership likewise recognised the social utility of community food initiatives to meet specific local needs whilst helping to address wider societal challenges. Within Brighton & Hove, there was a contextual need to reduce inequalities to help realise a more just city (Fainstein, 2010), especially in relation to health. The Annual Report of the city’s Director of Public Health (2006) highlighted challenges of growing health inequalities and deprived wards having a life expectancy of up to five years below more affluent wards in the city (Brighton and Hove City Primary Care Trust, 2006). Furthermore, geospatial data exposed a social equity divide between rich and poor within Brighton & Hove (OCSI, 2007); bringing to light a social injustice and prompting social innovation (Murray et al., 2010).

The Food Partnership interpreted the opportunity presented by the Local Food Fund (2007 to 2013) to develop an integrated citywide approach to make locally grown food more accessible and build material, personal, and cultural capacity to develop the overall capacity and resilience of communities involved (Local Food, 2012). In preparing their bid document, the Food Partnership organised meetings with

members and partners, including the City Council and Primary Care Trust, to jointly develop the aims, outcomes and delivery of initiatives. The specific need for community growing spaces was demonstrated by a strong interest in local food, and its impact on the environment and health. The collaborative project development, between the Food Partnership and Harvest partners within the local system representing the identified beneficiaries demonstrated a strategic approach to addressing needs. Here, consultations with those affected by development were significant to identifying a cohesive strategy to satisfy needs (Fainstein, 2010). Although Harvest aimed to benefit citywide residents the programme targeted areas of socio-economic disadvantage that would especially gain from interventions to address poor access to fresh food, high incidence of poor health or lack of access to urban resources (Harvey, 2009). As such, the Racehill Orchard Harvest exemplar was developed within the deprived Whitehawk neighbourhood of East Brighton because the high-density estate was identified as a location experiencing social need and would enable more residents to participate in urban growing (Murray *et al.*, 2010).

Development of social relations in systems or structures

Collaboration with other Brighton & Hove stakeholders through partnership working was central to the case, helping to strengthen and develop new or existing relationships within the local system, and aided by multilevel intermediation to network groups and people across issues and communities (Stewart and Hyysalo, 2008). For instance, a cross-sectorial advisory committee for the Racehill Orchard aided project partners in organising the co-production of space, ensuring interested parties were democratically represented (Fainstein, 2010). The participatory framework enabled a co-design process to promote a sense of community ownership and collectively develop a spatial and programmatic brief (Marcuse, 2009). To undertake linking, the Food Partnership operated across levels to broker top-down support from the City Council to access resources and develop strategies to ensure long-term support for Harvest's aims. They configured and multiplied their agency with other non-profit organisations through sharing resources and expertise in developing green infrastructure to realise more effective production than working independently, whilst engaging bottom-up residents with neighbourhood growing projects to embed social practices and behavioural changes.

As a Harvest partner, the City Council provided organisational support by facilitating land access and recognising the social value of citywide development (Baker and Mehmood, 2015), especially to deprived areas whilst adhering to strategic urban policy as part of its commitment to sustainable development. For example: The Sustainable Community Strategy (2006) aimed to increase land available for food growing; the City Food Strategy (2006) sought to increase growing opportunities (Brighton & Hove Food Partnership, 2006); and the updated Food Strategy Spade to Spoon: Digging Deeper (2012) targeted 'more food consumed in the city is grown, produced and processed locally using methods that protect biodiversity and respect environmental limits' (Brighton & Hove Food Partnership, 2012b, p.14). A 15-year land agreement for Racehill Orchard was also significant to the case. The implications were reflected in the agreement serving as informal governance model between the City Council and community groups for other Harvest growing spaces on public land later developed. As such, learning generated by Harvest enabled the Food Partnership to create a template for future community agreements with the City Council that outline roles and responsibilities for each partner, maintenance arrangements, and conditions for governing areas of public green spaces.

Provision of opportunity for social empowerment

Harvest increased the amount of food grown in the city by developing more community growing spaces and increasing the number of people involved, supporting community development to meet urban needs and address inequalities (Moulaert *et al.*, 2005; Murray *et al.*, 2010; TEPSIE, 2014). Material capacity was increased by developing physical infrastructure, improving public access to green space and complemented by educational opportunities to build personal capacity. Here, Harvest facilitated community development through training workshops, skills-sharing and open days delivered citywide to residents, often in community growing spaces, supporting engagement. Consequently, confidence was built in food growing and developing abilities in running growing projects to help embed productive green infrastructure.

The Racehill Orchard demonstrates how opportunities were provided to residents within deprived areas of East Brighton to contribute to personal development and social empowerment. Brighton Permaculture Trust, an organisation which promote sustainable development through design, trains residents in traditional agricultural techniques, including scything, tree and hedgerow planting, pruning and caring for fruit trees. The social value of these opportunities is demonstrated through enhancing capabilities (Fainstein, 2010). Volunteers can be trained in leadership skills through a session leaders' course, helping to devolve organisation and diffuse knowledge. This approach to social behavioural change supports community empowerment through enhancing the neighbourhood capacity to act (Bacon *et al.*, 2008). It improves resident access to skills and resources whilst helping growing projects become self-sustaining (Moulaert *et al.*, 2005, TEPSIE, 2014). The importance of increasing urban participation, especially amongst groups excluded from the built environment in some form was central to meeting Harvest aims (Madanipour, 1998). At Racehill Orchard, free activities and events target people living on the deprived estate. Regular 'Healthy Activity Days' involve health walks, foraging events, pick and cook sessions, and other activities promoting healthy lifestyles and behaviour. The production of green infrastructure in bringing new land into food production, providing community events to build capacity, and improving the access to resources of specific target groups is reinforced by enabling public access to urban space (Lefebvre, 1968, Mitchell, 2003, Harvey, 2012, Low and Iveson, 2016). Cultural capacity was developed through engagement and territorial appropriation to give residents a sense of connection with their urban landscape and is significant to the social production of space, where space operates as both a product and a producer of changes in the urban environment (Lefebvre, 1991, Soja, 2010).

Reflection of socio-spatial development practice

The citywide development was an archetype for practitioner based social innovation and the integrated approach across multiple levels helped diffused socio-spatial innovation, generating a territorial infrastructure in relations, networks and resources. The measure of social innovation success (Murray *et al.*, 2010) in terms of developing capacity (Fainstein, 2010) in Brighton & Hove was evidenced by community growing spaces tripling from 25 to 79, helping to diffuse ideas and behaviours and amplify the visibility of social practices. By undertaking Harvest, the Food Partnership helped to improve distributional justice by accessing new land for urban growing (Fainstein, 2010, Soja, 2010, Low and Iveson, 2016), with many projects located in housing estates, public parks, churchyards and railway stations to increase the visibility of community growing practices.

A central objective of the Harvest experiment for the Local Food programme was to share experience and knowledge of the project's approach to increasing food production to disseminate learning that could be replicated in other cities, both within the UK and internationally. This was undertaken in several ways: establishing a Reference Group to enable parties to learn from the experiences of nationwide projects; visits from other Local Food Fund Beacon Projects to demonstrate Harvest activities; attending international conferences on planning and food systems to exchange thinking; the Local Food 'Share and Learn' networking events and the national evaluation event 'More than just the veg' in 2012; and distributing reports on Harvest to influence policymakers by demonstrating outputs.

Locally, dissemination was supported by the innovativeness (Bund *et al.*, 2015) of the Food Partnership's intermediation between bottom-up to top-down levels of urban stakeholders (Stewart and Hyysalo, 2008). Grassroots working helped to mobilise an urban social movement of community growers and develop a network of growing spaces (Castells, 1983). Engaging local decision-makers helped to influence planning and development policy whilst attracting attention of national policy makers (Baker and Mehmood, 2015). To embed good practice into local planning, Harvest insight supported lobbying to include references within the Brighton & Hove City Plan Submission Part 1 for the City Council 'to support and promote local food growing', expressly in city wide policies: SA6 Sustainable Neighbourhoods, CP8 Sustainable Buildings, and CP16 Open Space (Brighton & Hove City Council, 2013), later developed in the City Sustainability Action Plan (2015) setting key actions to develop productive green infrastructure and support sustainable development.

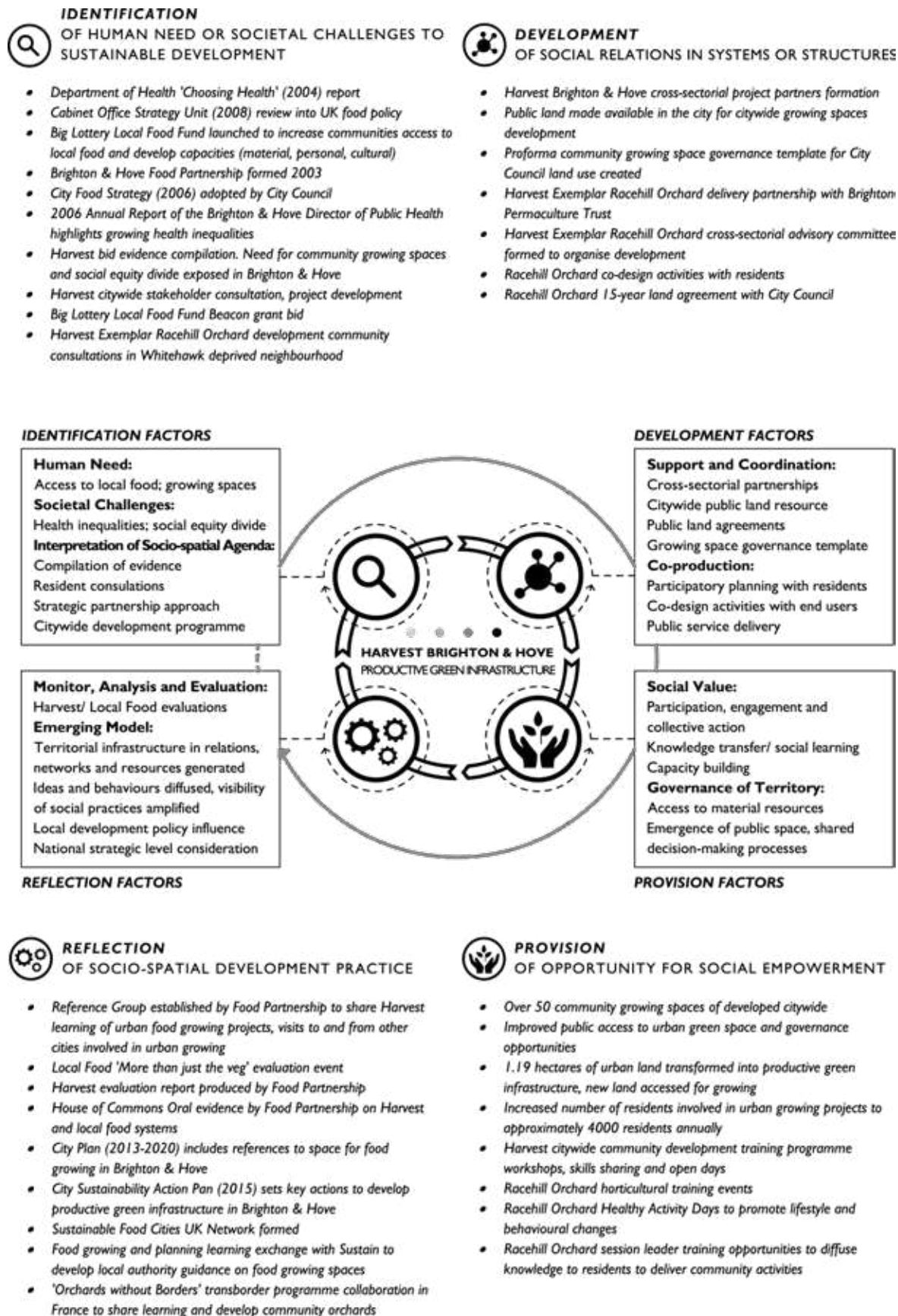


Figure 2: Application of socio-spatial innovation framework. Populated with Harvest Brighton & Hove urban growing programme. Key socio-spatial process factors highlighted in boxes and case dynamics bulleted.

Conclusion

This article was concerned with the role of social innovation as a way of contributing to a healthy orientated built environment and has taken the perspective of how socio-spatial innovation can contribute to the process of creating capacity to meet human needs and respond to societal challenges. Social innovation has gained attention in the promotion of active citizenship in sustainable development policy and practice, especially around collaborative service delivery and novel approaches to welfare (BEPA, 2011). The socially innovative development of productive green infrastructure is of interest as a participatory concept that can meet needs, create social relationships and form new collaborations. However, as a process this innovative approach does not end with the development of a growing space. Like cities, it needs to continuously evolve in order to meet the challenge of affecting changes in social structures and systems regarding the participation in decision-making processes, social inclusion, and sustainable urban development (Cunk *et al.*, 2017).

To understand social innovation dynamics in the co-production of urban space a conceptual framework of the process of socio-spatial innovation was proposed in this article. An advantage of proposing this framework is that it provides a basis for understanding how a change process occurred. Especially, in analysing how urban space is collaboratively produced by social interactions between multilevel participants throughout the social innovation process in a more just way to promote health and reduce built environment inequities.

To provide some insight on the role of socio-spatial innovation in the process of an emerging POSI an overview of a case study of productive green infrastructure was presented: Harvest Brighton & Hove. This comprised the collaborative planning, design and delivery of a socially innovative development programme in the city of Brighton & Hove, UK to deal with challenges of health inequalities and equity divisions. The problem found was a lack of urban growing projects to meet needs, training to build capacities and lack of coordination of community projects as networked infrastructure. The solution proposed was a citywide food growing project that would be co-produced through a partnership approach linking stakeholders. This would develop new community growing initiatives to improve access to local food, especially within deprived areas. The aim was to support communities to grow and eat more local food, by developing skills and confidence, and helping to find more land for food growing. As such, the integrated development model presented an approach that improved access to local food, increasing both the land available and the number of people involved in urban growing.

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Healthy neighborhoods along an urban to rural gradient

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Abstract: Neighborhoods are fundamental units of planning. Over the past century, planners have presented theories on designing the ideal neighborhood. Many of these theories include recommendations for size, population, and orientation to community health needs like food stores and healthcare facilities. Neighborhood level research pays little attention to the contexts (urban, suburban, and rural) that neighborhoods are situated in. This research aims to explore the differences in neighborhood forms, characteristics, and access to community health needs (food and healthcare) in varying contexts along an urban to rural gradient. Specifically, this study (1) explores patterns in accessing community health needs and (2) identifies patterns in people's perceived neighborhood center and boundaries in neighborhoods along an urban to rural gradient in the Wichita, Kansas, metropolitan area. This study collects data using surveys and cognitive mapping and the data is evaluated using descriptive statistics, cross tabulations, Analysis of Variance and geo-spatial analysis. Results indicate that distances to food stores are generally smaller than distances to healthcare facilities. Variations in neighborhood access and perceptions exist. Neighborhoods along the urban to rural gradient are distinct, but suburban and rural neighborhoods appear to be more alike than suburban and urban.

Keywords: urban-rural, gradient, neighborhood

Introduction

Neighborhoods are fundamental units of planning (Keller 1968, Hester 1975, Park and Rogers 2015). Many planners have developed theories that attempt to define the ideal characteristics of a neighborhood. In America, neighborhoods occur in most any setting or context including urban, suburban and rural areas (Chaskin 1997, Park and Rogers 2015). Generally, a gradient of urban form has emerged where neighborhoods are more dense in urban areas and steadily less dense as distance increases from the urban core. Often this gradient follows a major arterial road that allows for easy access by car to a range of neighborhoods (Nelson 1992). This trend has been documented as a result of a multitude of policy decisions in the United States that encourage development outside of the urban core (Schwartz 2014).

An important component of neighborhood planning is siting services like food and healthcare to ensure access to basic needs (Stewart 1985). In particular, research on this topic reveals that sufficient access to basic needs, or lack thereof, directly impacts ones' quality of life (Davis 1991, The Reinvestment Fund and Opportunity Finance Network 2012, Widener *et al.* 2013, Schwartz 2014). As important as neighborhood level planning is for the planning profession, there are gaps in understanding how neighborhoods behave in varying urban contexts and, in turn, how the provision of basic community health needs differs among these varying contexts.

Background

Neighborhood Planning

Neighborhoods abound, but can be hard to define (Chaskin 1997, Park and Rogers 2015). They signify a subset of a larger area with a unique social fabric. Many agree that neighborhoods are comprised of two components; its physical and social dimensions (Hester, 1975; Keller, 1968; Morris & Hess, 1975; Rohe, 2009). Its physical characteristics are what distinguish a neighborhood from a community. Neighborhoods are inherently place-based. The boundary of a neighborhood is used to determine the geographic location of the neighborhood. Boundaries can be made up of natural or man-made features (Keller 1968, Chaskin 1997, Park and Rogers 2015). Social characteristics of neighborhoods are based on the behaviors and characteristics of its residents. Planners tend to focus on the physical elements of a neighborhood rather than its social characteristics (Hester 1975). This research aims to explore both.

Neighborhoods have often been studied within an urban context, but it is known that they exist within many contexts (Warren 1978, Chow 1998). A critical aspect of planning includes the provision of amenities and services (McLeod 1970, American Planning Association 2018). Planned neighborhood strategies attempt to guide neighborhood design in order to accommodate basic needs.

Neighborhood Planning for Basic Needs

One of the most notable planned neighborhood theories is Clarence Perry's Neighborhood Unit Concept. The Neighborhood Unit Concept prescribed 160 acres of land, no more than 5,000 people, an elementary school at the center no more than a 5 minute walk or ¼ mile from every residence (Perry 1929). In contrast, Jane Jacobs argued that a neighborhood in a large city could be up to 100,000 people (Jacobs 1961, Park and Rogers 2015). Other neighborhood planning theories have focused instead on retail or healthcare facilities at the neighborhood center rather than a school (Engelhardt 1940, Stein 1949, Calthorpe 1993, Spreiregen and De Paz 2005, Gibbs 2012). Most planning theories consider walking distance as an important measure of access, but Spreiregan and DePaz (2005) based their neighborhood on driving distance. While the planned neighborhood theories have their critics, the legacy of guidance that planned neighborhood theories provide regarding access to basic needs is a fundamental contribution to the planning profession.

Neighborhood planning theories begin to address the importance of planning for basic needs by discussing where basic needs should be located within a neighborhood. McLeod claims that, "the purpose of a community is to satisfy the needs of people" (McLeod 1970). Accordingly, one responsibility that falls under the purview of the planning profession is providing for access to basic needs (American Planning Association 2016). Basic needs can encompass many things and many scholars have attempted to define basic needs. From the infamous Maslow's Hierarchy of basic needs to more contemporary perspectives, most proposed definitions include some reference to food and healthcare (Corning 2000). Since the 1920s, the public health field has defined its profession with a focus on the provision of basic needs (Koplan *et al.* 2009).

The urban to rural gradient as an analytical tool

In 2002, Duany and Talen proposed the concept of transect planning as a method to eliminate urban sprawl. Duany and Talen's transect planning approach offered an alternative to Euclidean Zoning, zoning based on the separation of uses, which they felt was the crux of urban sprawl (Duany and Talen 2002). Since its introduction, rather than being used primarily as a planning and development tool, the transect planning approach has been modified to serve as an analytical tool by a range of professionals (Bell 1992, Sallis *et al.* 2006, Long *et al.* 2007, Yu and Ng 2007, Hahs and McDonnell 2008). For this research, the transect presents a methodology for evaluating differences in neighborhoods along the urban to rural gradient.

Development patterns happen on a continuum of urban to suburban to rural. In the United States, definitions of urban, suburban, and rural are not consistent or sufficient. The United States Census Bureau defines rural as, “what is not urban.” This simplified definition overlooks many variations within urban form, the most glaring omission being suburbia. As such, the census bureau, and other federal agencies have attempted to identify additional indicators to help paint a more accurate picture. The Census Bureau categorizes urban places into urbanized areas (population > 50,000) and urban clusters (population between 2,500- 50,000). The United States Department of Agriculture (USDA) Economic Research Service (ERS) uses their Urban-Rural Continuum which categorizes places based on population and metropolitan status (Quinterno 2014). Even still there is not a specific definition of suburban places. Public agencies and researchers have proposed alternative definitions for variations in urban form (Nelson 1992, Zhou *et al.* 2004, Kolko 2015). A sample of these naming protocols is shown in Figure 1.

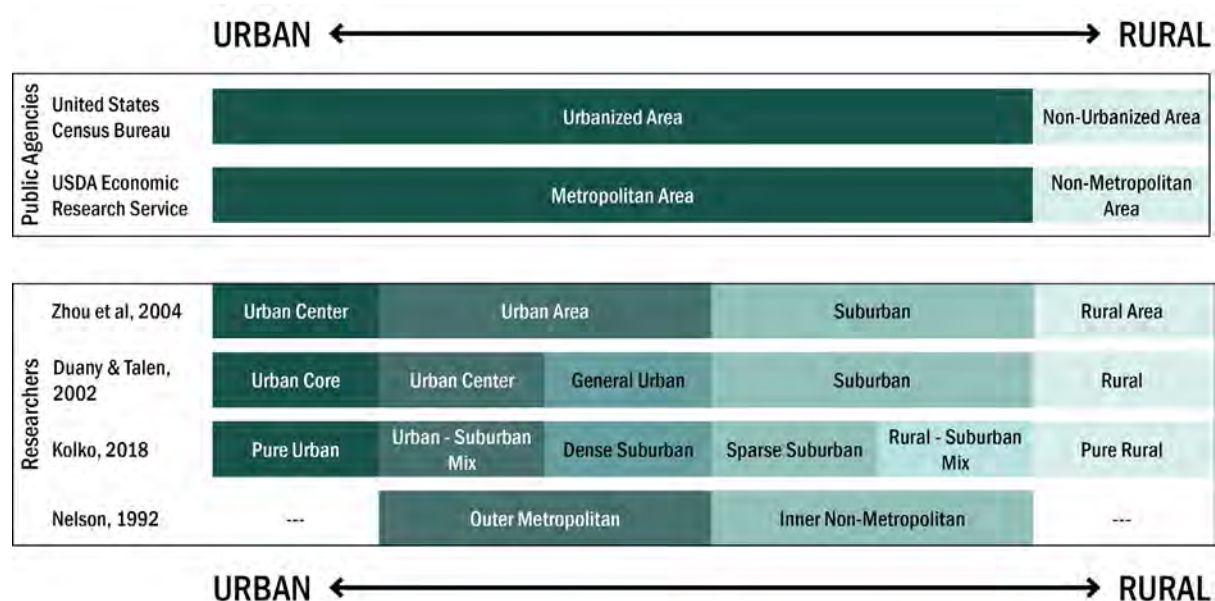


Figure 1. Examples of nomenclature of urban contexts

Methods

This research explores the differences in perceived neighborhood forms, characteristics, and access to basic needs (food and healthcare) in six neighborhoods along an urban to rural gradient outside of a representative metropolitan midwestern city (Wichita, Kansas). This study uses a mixed methods including geo-spatial data analysis. Cognitive mapping and mailed survey questionnaires were used to collect data regarding this study’s research questions and aims.

The study area was located in a representative midwestern United States city and spanned approximately 15 miles from the downtown core of the city. The selected transect was comprised of six zip codes, United States Postal Service (USPS) defined geographic units, which were used as proxies for neighborhoods and were situated in varying contexts. One mail route in each zip code was randomly selected to receive the questionnaire (Figure 2). This resulted in a stratified clustered sample. The questionnaire included two map-base questions. These questions asked respondents to identify their neighborhood boundary and center and also identify the locations where they access food and healthcare most frequently. The questionnaire also include questions about neighborhood characteristics and travel patterns to basic needs. Surveys were distributed and returned by mail. An incentive was provided for completed surveys in an effort to increase response rate.

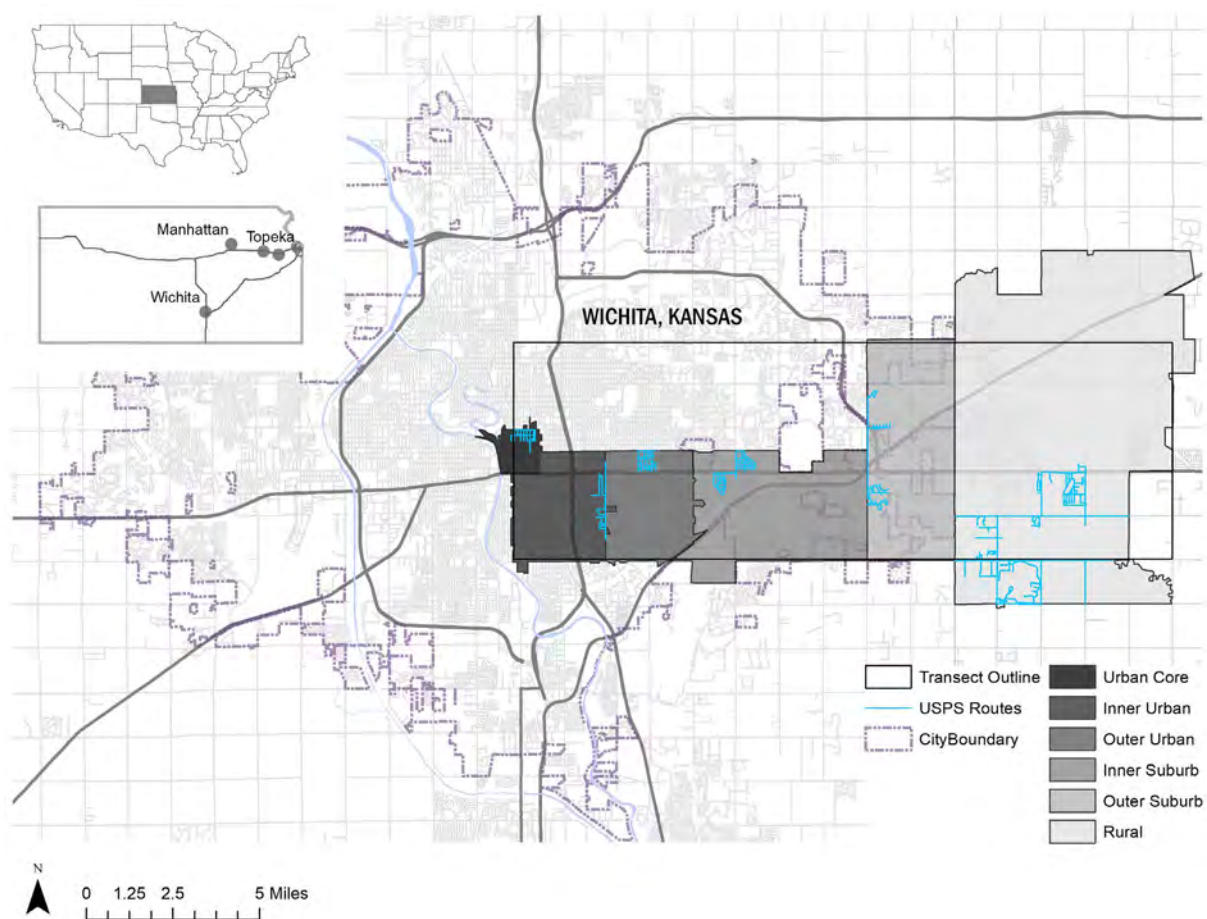


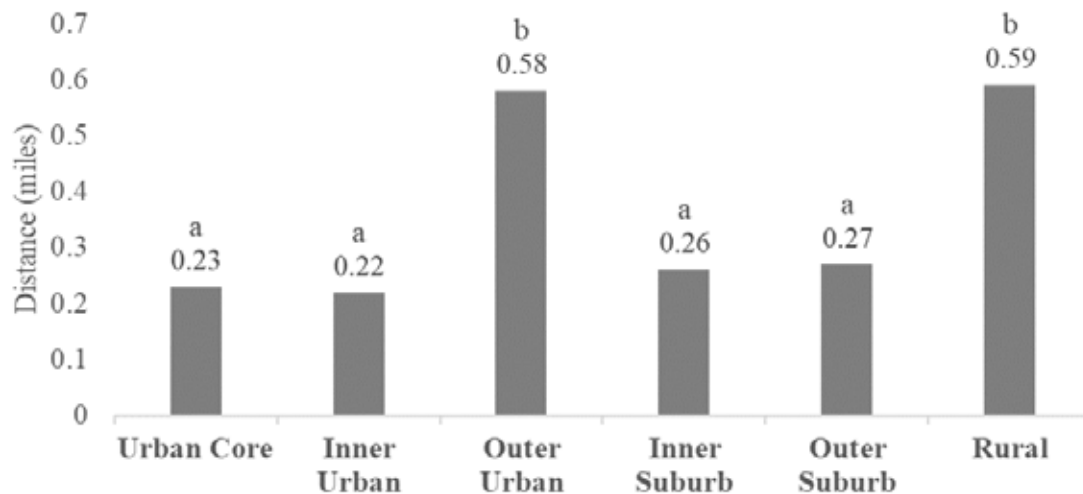
Figure 2. Map of Study Area showing neighborhoods, zip codes and mail routes

Results

Neighborhood Characteristics

The average size of neighborhoods identified by respondents was just under 1 square mile (0.95 mi²). The smallest neighborhood (0.05 mi²) was identified in the Urban Core neighborhood and the largest neighborhood (12.62 mi²) was identified in the Rural neighborhood, however, neighborhood size was not determined to be significantly different among neighborhoods.

Overall, neighborhood centers were identified as less than half a mile away from home (0.39 mi). The Rural and Outer Urban neighborhoods had the longest mean distance from home to neighborhood center (Figure 3). All other neighborhoods had a mean distance from home to neighborhood center that was about 0.25 miles.



Letters indicate significant differences at $p < 0.05$.

Figure 3. Neighborhood Characteristics by Neighborhood

In the Urban Core and Inner Urban neighborhoods, respondents were more likely to identify a neighborhood institution like a church as their neighborhood center. Few respondents identified a school as their neighborhood center (1.3%). Few overall residents identified shopping centers as their neighborhood center (7.7%), however, 1 in 5 respondents in the Outer Urban neighborhood identified a shopping center as their neighborhood center (Figure 4). In suburban and rural areas, residents primarily identified their home as their neighborhood center, but some also identified a recreation center or country club.

In terms of characterizing their own neighborhoods, generally, respondents identified their neighborhood along with its urban context. All the respondents in the Urban Core neighborhood characterized their neighborhood as “inner city or downtown.” Suburban residents tended to identify their neighborhood as “suburban.” In the Rural neighborhood, the majority of respondents identified their neighborhood as either “suburban” or “rural” (Figure 4).

A majority of overall respondents (77.3%) indicated that roads were a factor in determining their neighborhood boundary. In urban neighborhoods, one-third of respondents cited the use of buildings or commercial centers to delineate their neighborhood boundary. Natural features or parks were more likely to be used to draw neighborhood boundaries in urban and suburban neighborhoods. Residents in the Outer Suburb and Rural neighborhood identified neighborhood subdivisions or developments as their neighborhood boundary (Figure 4).

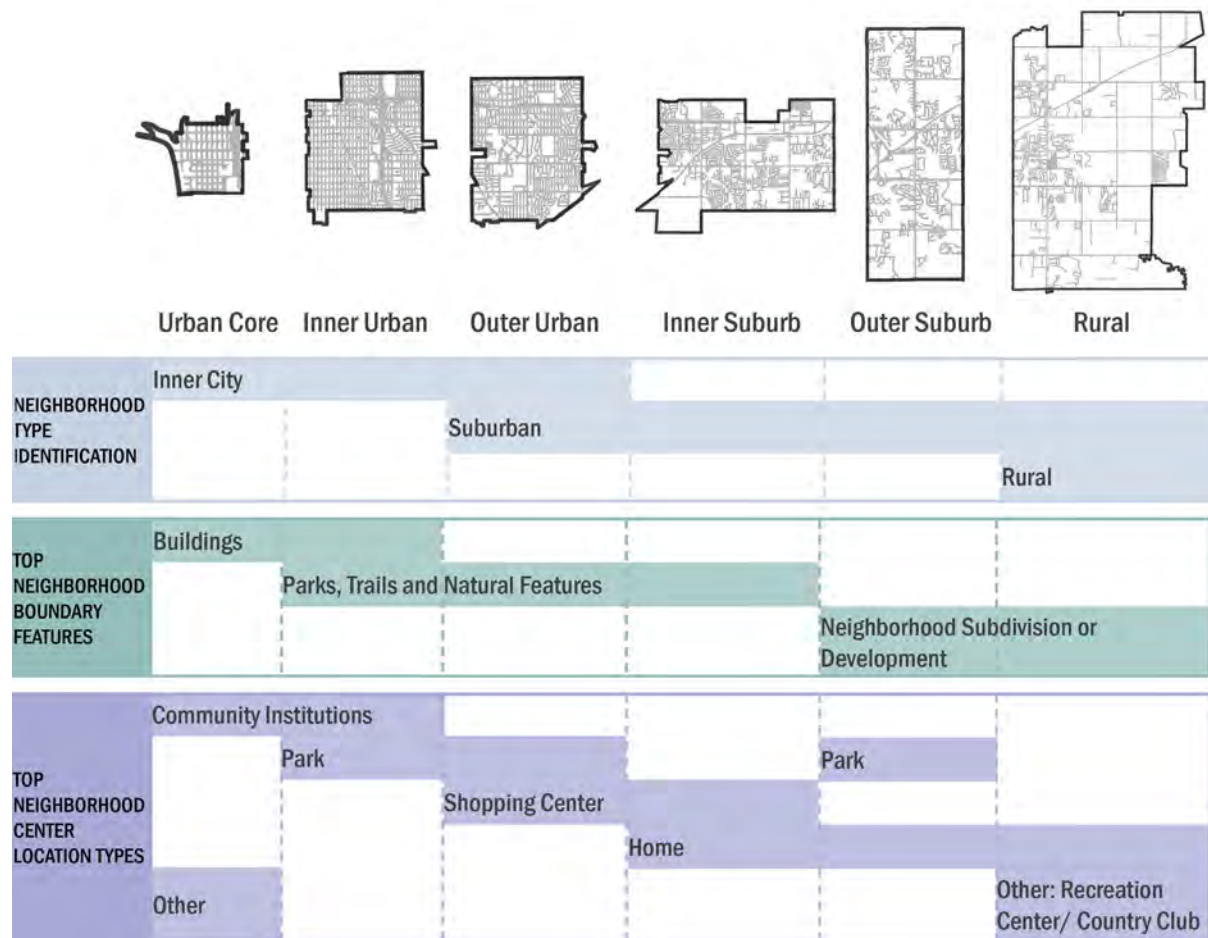


Figure 4. Neighborhood Characteristics by Neighborhood

Access to Basic Community Health Needs

Overall, a majority of respondents (87%) identified the food store that they visit most frequently. Fewer identified their healthcare facility (74%). Overall patterns of travelling to food and healthcare were similar in origin point, and satisfaction, but differed in mode, frequency of travel, travel companions, time, and distance. The most common type of food stores visited were supermarkets and the most common type of healthcare facilities visited were general practitioners. Generally, respondents travel to food stores and healthcare facilities from home, by themselves and by vehicle. Respondents were generally satisfied with their level of access to these community health needs. The majority of respondents travel to a food store at least once per week and travel to a healthcare facility a few times per year (Table 1).

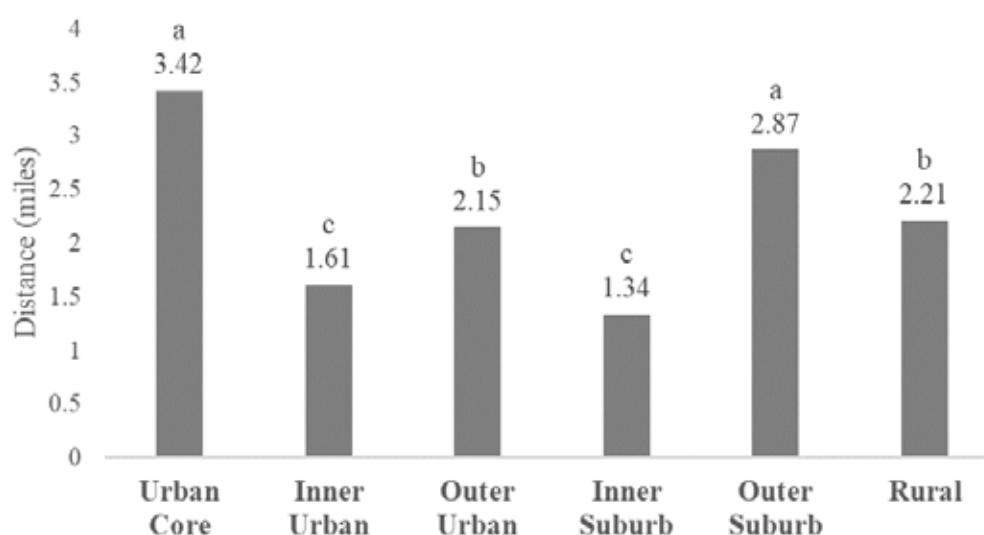
Table 1. Travel Patterns by Type of Need

	Food	Healthcare
Type	Supermarket	General Practitioner
Origin Point	From home (88.2%)	From home (71.1%)
Satisfaction	Satisfied (87.5%)	Satisfied (83.3%)
Mode	Drive/ride in vehicle (96.3%)	Drive/ride in vehicle (96.6%)
Frequency	At least once per week (82.8%)	A few times a year (83.9%)
Travel Companion	Alone (75.1%)	Alone (74.4%)
Mean Network Distance	2.16 miles	3.33 miles

Access to Food by Neighborhood

Overall, the majority of respondents visit a supermarket or grocery store most frequently (92.4%), however, those in the Urban Core neighborhood were less likely to go to a supermarket or grocery store. Respondents generally use a vehicle to get to food stores, however in the Urban Core, respondents were more likely to bike, bus or walk (25.0%). Overall, travel time to a food store takes an average of 9 minutes, but in the Urban Core, the mean travel time to a food store was 20 minutes. Generally, respondents travel to food stores at least once per week (82.8%). Respondents in the Urban Core neighborhood were most likely to be dissatisfied with their food stores (50.0%).

The mean network distance to a food store was 2.11 miles. The Outer Suburb and Urban Core neighborhoods had the longest mean distances to food stores. The Inner Suburb and Inner Urban neighborhoods had the shortest mean distances to food stores (Figure 5). The longest individual distance to a food store was found in the Urban Core (7.69 miles) and the shortest individual distance was found in the Inner Urban (0.18 miles) neighborhood.



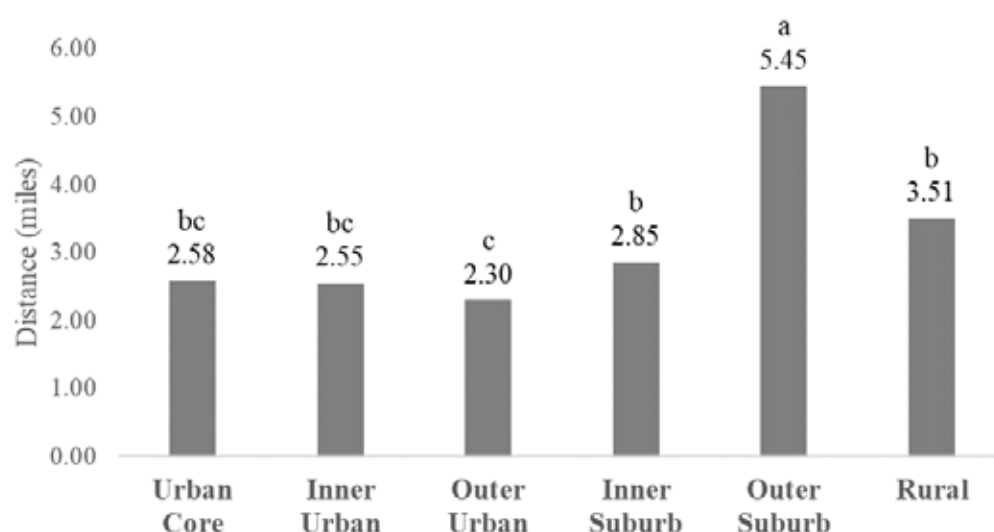
Letters indicate significant differences at $p < 0.05$.

Figure 5. Mean Network Distance to Food Store by Neighborhood

Access to Healthcare by Neighborhood

Overall, respondents indicated that they visit a general practitioner or family doctor (81.3%) most frequently. Respondents were most likely to have an ongoing or serious health problem in Urban Core (34.8%) and Inner Urban (40.6%) neighborhoods. Respondents in the Urban Core were more likely to bus, walk or bike to their healthcare facility than all other neighborhoods. Respondents were generally satisfied with their healthcare facility. Respondents in urban areas were more likely to travel to healthcare alone than respondents in rural areas.

The mean network distance to a healthcare facility was 3.33 miles. The Outer Suburb had the longest mean distance to a healthcare facility. The Urban neighborhoods had the shortest mean distance to a healthcare facility (Figure 6). Both the longest (12.56 miles) and shortest (0.35 miles) individual distances to healthcare were located in the Inner Suburban neighborhood.



Letters indicate significant differences at $p < 0.05$.

Figure 6. Mean Network Distance to Healthcare by Neighborhood

Patterns begin to emerge regarding overall neighborhood access to community health needs (Table 2). The longest distances to community health needs are located in the Outer Suburb and in the Urban Core (for food only). The shortest distances to community health needs are located in the Inner Urban and Inner Suburb (for food) and the Outer Urban neighborhood (for healthcare).

Table 2. Mean Network Distances to Community health needs by Neighborhood

Mean Network Distance (miles)	Urban Core	Inner Urban	Outer Urban	Inner Suburb	Outer Suburb	Rural
From Home to Food	3.42 ^a	1.61 ^c	2.15 ^b	1.34 ^c	2.87 ^a	2.21 ^b
From Home to Healthcare	2.58 ^{bc}	2.55 ^{bc}	2.30 ^c	3.85 ^b	5.45 ^a	3.51 ^b

Note: Superscript letters indicate significant differences at $p < 0.05$.

Discussion

Research on neighborhood perceptions show that residents in urban areas tend to identify their neighborhood as smaller than suburban areas (Haney and Knowles 1978, Haeberle 1988, Chaskin 1997). Additionally, certain demographics (minorities, older adults, long-term residents) have been known to perceive their neighborhood as smaller than others (Pebbley and Sastry 2009). In this study, however, the perceived size of each neighborhood did not vary significantly. Overall, little variation in racial and minority demographics were seen in this study, so little effects could be attributed to racial or ethnic makeup in the neighborhoods. While some neighborhoods showed higher percentages of older adults and longer tenure in their neighborhood, a relationship to neighborhood size was not found. This could be because the neighborhoods were being compared between urban, suburban, and rural instead of just urban to suburban as was the case in some studies (Haney and Knowles 1978). It could also be related to the type of cognitive mapping used in this study. Many studies that include neighborhood mapping provide residents with a blank canvas (Orleans 1973, Coulton *et al.* 2001), whereas this study provided a base map containing the information of street and location of community health needs for respondents to draw and identify what they perceive and use.

While the perception of size did not vary among neighborhoods, the distances from home to neighborhood center did vary significantly between neighborhoods. The distances to the neighborhood center in the Outer Urban and Rural neighborhoods were more than twice as long as the distance to neighborhood center for all other neighborhoods. This could mean that neighborhood size may actually vary, but not in a way that is perceived by residents. Still, in all six neighborhoods, the mean distance to neighborhood centers generally aligned with the recommendations of neighborhood planning theories of $\frac{1}{4}$ mile to $\frac{1}{2}$ mile distance to the neighborhood center (Perry 1929, Calthorpe 1993).

Neighborhood planning theories identify the types of community institutions that should be at the center of a neighborhood. These recommendations primarily include schools (Perry 1929) and shopping centers (Stein 1949, Spreiregen and De Paz 2005). Few residents in this study identified schools as their neighborhood center. In fact, the mean distance to school overall was nearly 3 miles. However, residents in the Urban Core and Inner Urban neighborhoods exhibited tendencies of a structural or institutional perspective, one that orients community institutions at the center. Whereas suburban and rural residents were most likely to exhibit tendencies of an egocentric perspective, one that situates home at the center of a neighborhood (Guest and Lee 1984, Lee and Campbell 1997). Demographic characteristics of these types of perspectives identified in Lee & Campbell's study (1997) were also seen in this study. For instance, in both studies, the residents with structural/institutional neighborhood perspectives were more likely to be male, single, and have shorter housing tenure (Lee and Campbell 1997).

Neighborhood boundaries are thought to be made up of visible or invisible features (Park and Rogers 2015). In Lynch's foundational work regarding elements of a city, an "edge" relates most closely to the idea of the neighborhood boundary. Lynch's work acknowledges that edges, or boundaries, can be composed of different elements (Lynch 1960). In all neighborhoods, a majority of residents noted roads as components of their neighborhood boundary. Residents in urban and areas also used buildings or parks/trails as references for drawing their neighborhood boundary. The use of buildings or landmarks to delineate neighborhoods is not uncommon. Buildings can represent a contrast in land use from residential areas, and can allow buildings to serve as effective borders (Alexander *et al.* 1977). In the outer suburban and rural areas, buildings were not often used to create neighborhood boundaries, rather residents identified their particular subdivision or residential development's boundaries. Residents in the rural neighborhood were more likely to draw their neighborhood irrespective of the elements on the map. Interestingly, residents in planned neighborhoods are typically found to have a clear understanding of their neighborhood boundaries (Park and Rogers 2015). Perhaps, in suburban and rural areas, boundaries are known, but residents have little say in the creation of them.

Residents generally categorized their neighborhood as its appropriate urban context (urban, suburban, rural). Respondents in the Urban Core were resolute in their characterization of their neighborhood as inner city or downtown, but all other neighborhoods were less unanimous. While the rural neighborhood studied in this sample included some subdivisions that could be considered suburban, residents in this neighborhood still identified as living in a rural area. The lack of clarity in defining urban contexts on a national level underscores the increased variation seen in neighborhood characterization in non-urban areas along this transect.

Generally, travel patterns to community health needs did not vary by neighborhood or urban context. However, the urban core was most likely to bike, bus, or walk to all three community health needs. The Urban Core also had the fewest mean number of vehicles per household. Residents in urban centers are known to make more trips on public transit than those that live a further distance from the urban core (Millward and Spinney 2011). Additionally, research shows that people living in urban areas are more likely to walk while residents in rural areas are less likely to walk (Frank *et al.* 2008, Kegler *et al.* 2015).

Distances to community health needs among neighborhoods varied. Overall, the Outer Suburb had the longest distance to community health needs. Generally, the distances to community health needs were longer in the suburbs and rural neighborhoods, but not always. Conversely, the urban neighborhoods generally had shorter distances to community health needs, but not always. The Urban Core had the longest mean distance to food stores, but some of the lowest distances to healthcare. Generally, the neighborhoods that had longer mean distances to community health needs also had fewer locations of community health needs identified in their neighborhood. Compact built environments, low residential population density in urban core due to concentration of businesses, and lower socioeconomic status of residents have been cited as challenges for sustaining retail food stores in downtown urban areas (Walker *et al.* 2010). Access to healthcare facilities, as measured in distance, has been shown to decrease as one moves further from the center of a city (Bissonnette *et al.* 2012).

This research finds that there are differences in ways that residents perceive their neighborhood boundaries and centers among neighborhoods along the urban to rural gradient. Connections to the recommendations of planned neighborhood theories exist in all urban contexts. Travel patterns along the urban to rural gradient did not differ among neighborhoods even though the distances did. This research found that more differences occurred along neighborhoods regarding neighborhood characteristics than access to community health needs. The imperative to access food and healthcare could imply that distance is not always the most important concern.

Future Research

Further research needs to be done to understand the underlying contexts that affect the patterns seen in this study. Additional external factors likely had an impact on the differences in neighborhood patterns and characteristics that were not explored in this study. Information related to household workplaces in relation to accessing community health needs would likely provide deeper context into the reasons that some drive further to access community health needs.

This study applied the transect methodology to understand differences among neighborhoods along a 15-mile transect. This methodology could be applied to an urban to rural gradient that spans a larger area, potentially 30-60 miles long which could confirm the patterns seen within neighborhoods in this study and illuminate patterns evident in neighborhoods of starker contrast.

Conclusion

Two main research questions were posed in this study:

Do urban, suburban, and rural residents classify their neighborhood centers and boundaries similarly?

This research identified patterns in perceived neighborhood characteristics like boundaries and neighborhood centers. Residents identified their neighborhood centers and boundaries differently among urban, suburban, and rural areas. Urban areas were more likely to identify landmarks outside of their home as the neighborhood center or as part of their neighborhood boundary, while suburban and rural residents were more likely to identify their home as the neighborhood center and use subdivision boundaries as neighborhood boundaries. Patterns found in suburban and rural neighborhoods resembled each other more than patterns in urban and suburban neighborhoods. This is important to note because of the way that suburban areas are typically considered part of urban areas.

Do neighborhood residents' patterns vary in accessing community health needs of food and healthcare?

This research identified patterns in accessing community health needs like food, healthcare, and education along the urban to rural gradient. Travel patterns in access community health needs were not shown to vary significantly except for in mode of travel in the Urban Core where residents were more likely to bike, bus, or walk to community health needs. Significant variation occurred regarding the network distance to community health needs. The Outer Suburb neighborhood had the furthest mean distance from all three community health needs while the Inner and Outer Urban neighborhoods has the shortest mean distance to community health needs.

The transect methodology approach was useful in identifying patterns and differences among neighborhoods along an urban to rural gradient. In some cases, differences were not seen; the perception of neighborhood size did not vary among urban contexts as was anticipated. Variation in density and urban form are evident along the transect, but neighborhood size perceptions are not. In other areas, differences occurred where expected; the differing characteristics of neighborhood centers in urban, suburban, and rural areas.

Perceived neighborhood characteristics were more likely to vary among neighborhoods than travel patterns to community health needs. While accessing basic need is an important component of day-to-day life, the community health needs appear to have less linkage to a residents' perception of a neighborhood.

Many of the identified neighborhood characteristics in this study relate to neighborhood planning theories and their range of possibilities for neighborhood characteristics. The lack of schools being cited as neighborhood centers, a foundational component of Perry's Neighborhood Unit Concept, raises the question of whether Perry's ideal neighborhood is as relevant as it used to be to the planning profession. However, programs like "Safe Routes to Schools" that encourage children and their parents to walk or bike to school could reinforce some of Perry's ideas moving forward.

Suburban and rural neighborhoods tended to behave similarly more so than suburban and urban neighborhoods. This demonstrates that the current definition of urban and rural are not sufficient. Planners are known to use established administrative boundaries when conducting neighborhood level plans. If planners are using the urban/rural designation to determine neighborhoods, this could lead to inappropriate planning recommendations. Instead of comparing strictly urban to rural, this study provides a framework for planners to understand and assess differences along a gradient that is relevant for future planning projects.

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Healthy city planning: food, physical activity and social justice

The importance of built environment: Characteristics of the built environment and spatial patterning of type 2 diabetes in pudong district, shanghai.

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Abstract: The built environment encompasses the major physical spaces, including buildings, streets, homes, schools, parks, playgrounds and other infrastructure in which we live, work and play. In an ideal world, the built environment should support and promote physical activity across the lifespan. However, with increased mechanization and urbanization, physical inactivity and higher levels of chronic diseases such as obesity become common among urban residents. Pudong District covers an area of 1,210 square kilometers with 12 streets and 24 towns. With urbanization in China, it formed unique built environment that high levels of residential density and low-density township environment both exist in this District. Physical inactivity increases risk of chronic disease, this study examine relationships between built environment and chronic diseases using spatial models. We use gis-data to explore whether mixed land-use, high levels of street connectivity, and accessible facilities can reduce the incidence of urban residents' chronic diseases. The survey consists two parts: First, the public service facilities poi and road data are used to calculate the built environment feature in Pudong District. Second, the sample address information is re-encoded, and the spatial distribution characteristics of chronic disease patients are obtained through point density analysis of gis. We conduct follow analysis : 1) overlay analysis of high-density residential areas and high chronic disease incidence, to figure out whether supportive built environment may have lower prevalence of chronic disease. 2) Comparative analysis of the built environment characteristics between urban streets and township streets in Pudong District and the spatial distribution characteristics of chronic disease patients. Our analysis suggests there is an association between built environment and chronic disease.

Keywords: health city; built environment; type 2 diabetes; gis; linear regression analysis

1. Introduction

This study is based on the theoretical and empirical contributions of the health literature. The research data is based on the 2016 Diabetes Community Hospital credit card data of Shanghai Pudong District, with 26,687 records. The elderly patients with type 2 diabetes who were older than 60 years old were selected as the final study samples, and a total of 8246 samples were obtained. Since the impact of the built environment on physical health should be a long-term continuous effect, the household registration population of Shanghai Pudong district is selected as the research object to reduce the impact of environmental changes on its health. The samples are mainly distributed in 12 streets and 24 towns except. The address information is spatially encoded using gis to obtain the spatial distribution map of the research samples (Fig. 1). The calculation data of the built environmental factors in the study are the POI data of various facilities in Shanghai in 2016 and the GIS files of Shanghai Road Network. The data population used for calculating density in each street is the sixth census data in 2016.

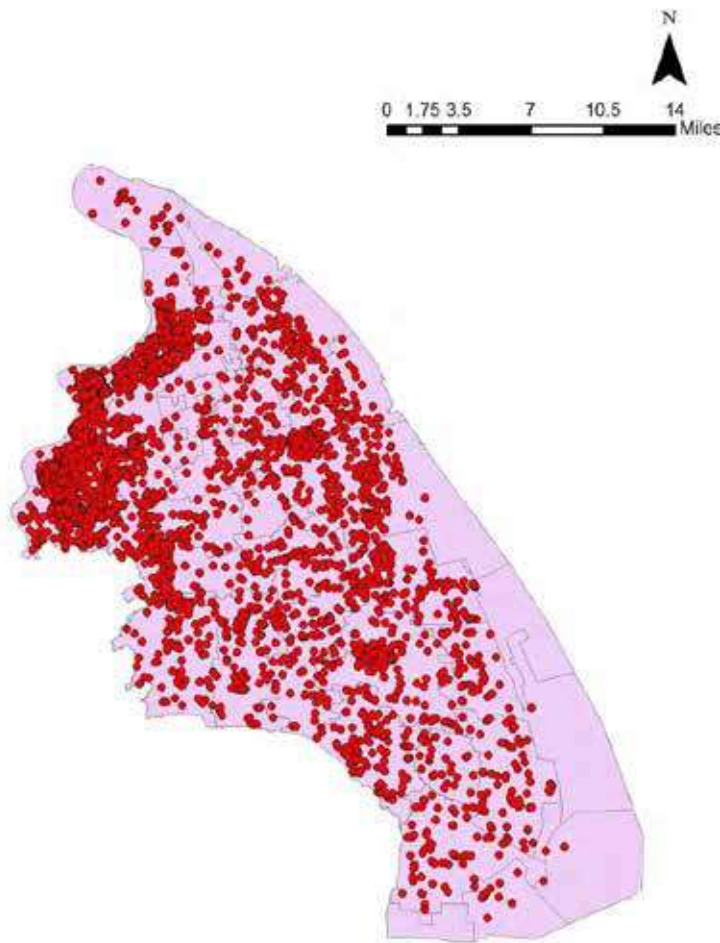


Figure 1 Spatial distribution of type 2 diabetes patients over 60 years old in the study

2.Review

The study of the relationship between built environment and physical activity has always been the focus of academic research. Lack of physical activity has become a major cause of overweight, obesity, diabetes, heart disease and some cancers. Environmental and policy interventions have become an important means of promoting physical activity, and a large number of studies have shown that the supporting elements of the community environment are closely related to physical activity. (Ball et al., 2001) With the World Center for Disease Control and Prevention (CDC), the dynamic community environment (ACES) is able to promote the active participation of all ages people in physical activity. Since 2004, the research has covered the field of health, and a large number of literatures have analyzed the built environment. The correlation between physical health and good community environment can promote the physical health of residents, thereby reducing the proportion of obese people and chronic diseases caused by obesity and improving overall health. In recent years, planners have begun to think about the relationship between built environment and physical health, and hope to promote people's physical activity through reasonable planning. Through the study of the relationship between built environment and physical activity, there is sufficient research foundation to show that the built environment affects physical activity, so we have reason to believe that the built environment will affect people's body index to a certain extent.

2.1 Study on the relationship between built environment and type 2 diabetes

In order to better understand the relationship between the built environment and type 2 diabetes and clarify the intrinsic impact of the built environment on type 2 diabetes, this study's literature review that is based on the web of science database use the software citespace to process quantitative analysis, with the literature from 2000-2018 as a sample. The key words for literature screening were built environment, type 2 diabetes, body mass index (BMI), obesity, and sandentary lifestyle which are closely related with build environment and diabetes. 1,709 articles were finally obtained.

The citespace co-citation network mapping function was used to analyze the citations, and the co-citation network of the relationship between the built environment and type 2 diabetes was generated as a time interval (Fig. 2). Through the analysis of citations, we can see that each node in the figure represents the cited article, and the nodes are composed of different rings of some circles. The larger the radius, the higher the frequency of citations, and the connection between nodes indicates a total of The relationship between the two indicates the strength of the co-introduction. It can be seen from Fig. 2 that the literature co-citation network from 2000 to 2018 has obvious natural clustering, and the clusters are linked through 10 key documents (betweenness centrality ≥ 0.1). In 2018, the clustering is in the lower left, and in 2000, the clustering is in the upper right. Explain that the flow of knowledge is relatively clear and the links between knowledge bases are very close.

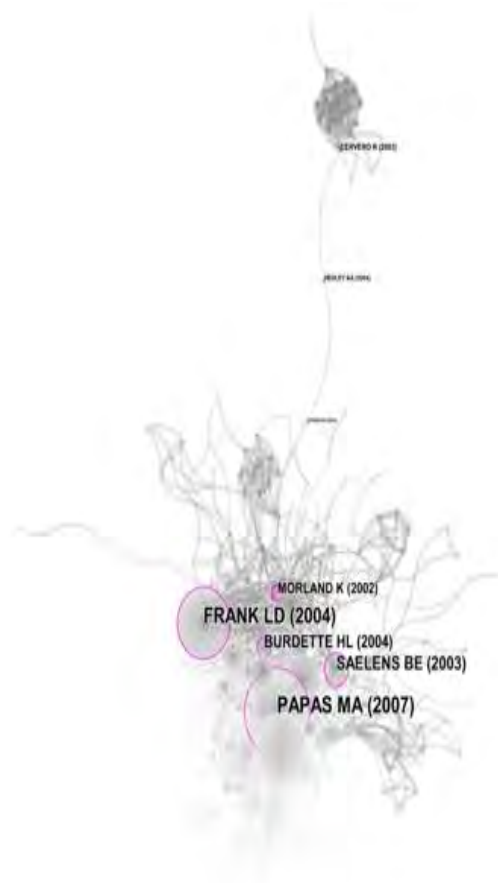


Figure 2 Citation analysis

At the same time, the keywords are clustered to generate Keyword Clustering Common Word Maps, and the 8 clusters represent the main research fields of international literature on international built environment and type

2 diabetes in 2000-2018, namely: children, walking , diet, participation, childhood obesity, community planning, intervention, effectiveness, and social environment (Figure 3).

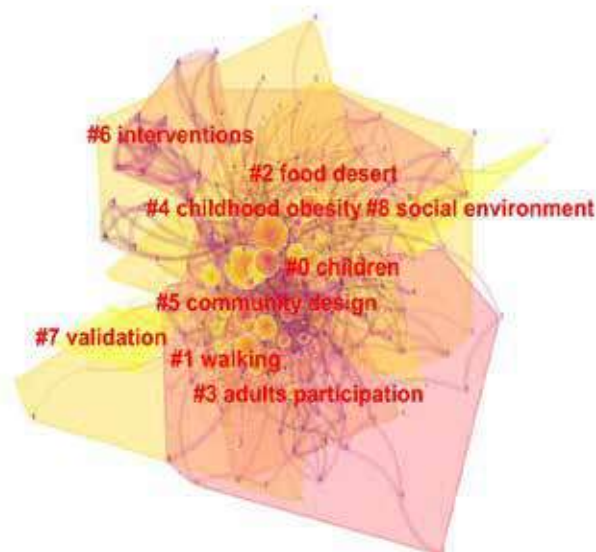


Figure 3 Keyword cluster analysis

Numerous studies have confirmed that the characteristics of the community or living environment may affect health and lead to social and ethnic inequalities in health. Cluster analysis can be seen that the built environmental elements associated with walking and diet are the focus of research. Over the past 15 years, research on the health effects of communities has grown exponentially, with increasing attention to chronic diseases (obesity and related risk factors) and mental health (depression and depressive symptoms). For each type of empirical research, it is divided into two layers: one is to use the census data to directly measure the built environment attributes for correlation analysis, and the other is to review the key concepts, core elements and methodological challenges that are affecting health, and try to clarify the field. Some knowledge gaps and promising new directions. (Auchincloss et al., 2013)

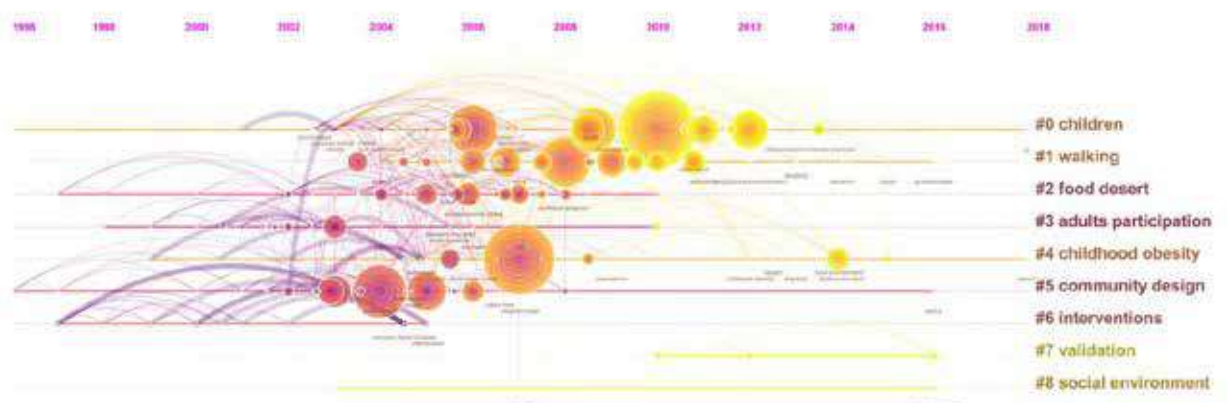


Figure 4 keywords timeline

2.2 Built Environmental Factors That Affect Physical Activity And Physical Health

1) Net residential density (Net residential density)

The net dwelling density is equal to the number of people per acre of land in the household census block. The census data is allowed to be used for population estimation in the calculations and is a more accurate source of data than the 1 kilometer buffer level data. Studies have shown that residential density can promote walking to a certain extent, so it is expected to have a negative impact on obesity. The role of net dwelling density in the study is often used as a control variable [3], or the stratification of the study sample based on the density of the dwelling density [4], and the density of dwelling as part of the evaluation of the walkable index (Smith et al., 2008).

2) Mixed use of land

Some studies have shown that the mixed use of land can promote people to walk, and the main four land uses for calculation are residential, commercial, office and educational facilities. The specific measures for the mixed use of land have the following types of methods in the study:

Entropy Scores: The entropy is obtained by predicting the walkability index through a series of predictors (such as residential density, street connectivity, etc.). The method used to calculate the entropy value was proposed by Lawrence Frank and colleagues. Through two different sets of data, the calculated results are fully correlated with body weight and walking. Entropy has the characteristics of including a wide range of land use categories, but this method also has some drawbacks, which obscures the contribution of individual land use categories. For example, in the calculation, the number of land use categories included will affect the entropy result, less The land use may have the same entropy value as for more land uses, and the land use that is not included in the calculation will also affect the calculation results to some extent (Frank et al., 2006).

$$Lum = - \sum_{i=1}^n p_i * \ln p_i / \ln n$$

Destination-Based Measures: The destination measure is mainly to mark the density of various destinations and the average distance to the place of residence by marking the walking destination around the place of residence. The choice of destination can include multiple types, including Parks, fast food restaurants, hospitals, schools, vegetable markets, shops, etc. [7] B. Brown et al. selected three types of facilities closely related to walking in the study of the relationship between land use mix and body mass index (BMI) and obesity: rail transit stations, bus stops, and parks. This method also has certain limitations and cumbersome measures. (Brown et al., 2009)

Proxy-Based Measures: This method uses substitute variable to measure the mix of land use. The first is the number of residents who walk to work in one block, and the second is the age of housing. However, this method is not suitable for large sample size calculations.

3) Street Connectivity (street Connectivity)

Street connectivity is measured by the number of road intersections in the residential buffer zone, more than three intersections per square kilometer are considered to have connectivity.

4) Facility accessibility and distance

This type of research is mainly divided into two levels, one is the built environmental factors related to walking, and the other is the body index and health-related facilities. Although the built environmental elements involved in the two types of research overlap, they also have different emphasis. The facilities related to walking are

mainly parks, open spaces, etc., and health-related facilities are mainly food-related, such as supermarkets, restaurants and other facilities(Nagel et al., 2008).

3.Spatial Distribution Characteristics Of Research Samples And Built Environment Elements

3.1 Analysis of spatial distribution characteristics of research samples

ArcGIS software is used for data acquisition and development, as well as subsequent spatial analysis. All residents in the study used address geocoding before calculating the environmental variables built by the GIS. The result of this geocoding process creates a spatial coordinate for each resident's home, allowing further analysis of the relationship of these locations to other GIS layers. Of the 8246 subjects, a total of 8211 were successfully address-matched with an accuracy rate of 99%. The map shown in Figure 1 shows the geocoded locations of the study samples within the study community.

The standard deviation ellipse analysis is performed on the sample data. The generated semi-axis of the ellipse represents the direction of the data distribution, and the short semi-axis represents the range of the data distribution. The larger the difference between the length of the long and the short axes (the larger the flatness). The short semi-axis represents the range of data distribution. The shorter the short semi-axis, the more obvious the centripetal force of the data presentation. Conversely, the longer the short semi-axis, the greater the degree of dispersion of the data. It can be seen from the standard deviation ellipse analysis of the overall sample data that the sample distribution has a certain directionality and centripetality. Generating the area representation range, we can see that the main morbidity range of the sample is concentrated in the northwest region. This area is mainly a high-density urban area. The flat rate indicates his direction clarity and centripetal force. We can see the incidence trend of Pudong district have a clear direction.

The point density analysis of the study samples can be seen: red is high prevalence, yellow is low prevalence, and high-risk areas of type 2 diabetes are high-density urban space along the Huangpu River, and expand with

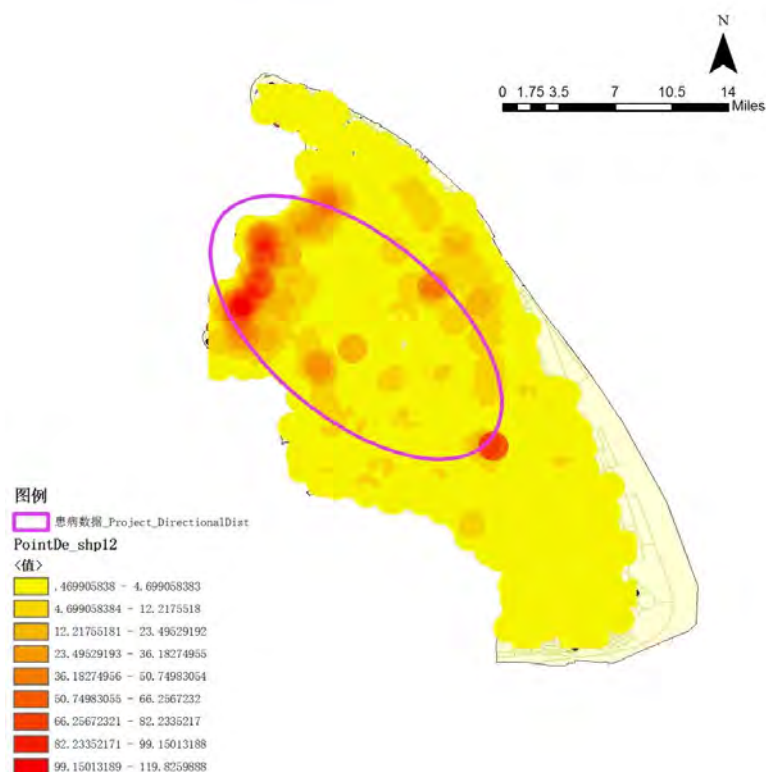


Figure 5 Sample point density and standard

the north-south direction of space.

3.2 Analysis Of Spatial Characteristics Of Built Environment Elements

ArcGIS is used to calculate the characteristics of the building environment in each block. The literature review shows that the built environmental elements that are most closely related to physical activity and health outcome are: (1) food-related facilities (supermarkets, restaurants) Facilities related to physical activity (fitness center, community center); (3) green open space and recreational space (including public parks, open area playgrounds, shopping malls, etc.). Based on the POI data of these facilities, the number of facilities distributed in each study street was calculated, and the density of each street facility was calculated according to the street layer (figure 6) .

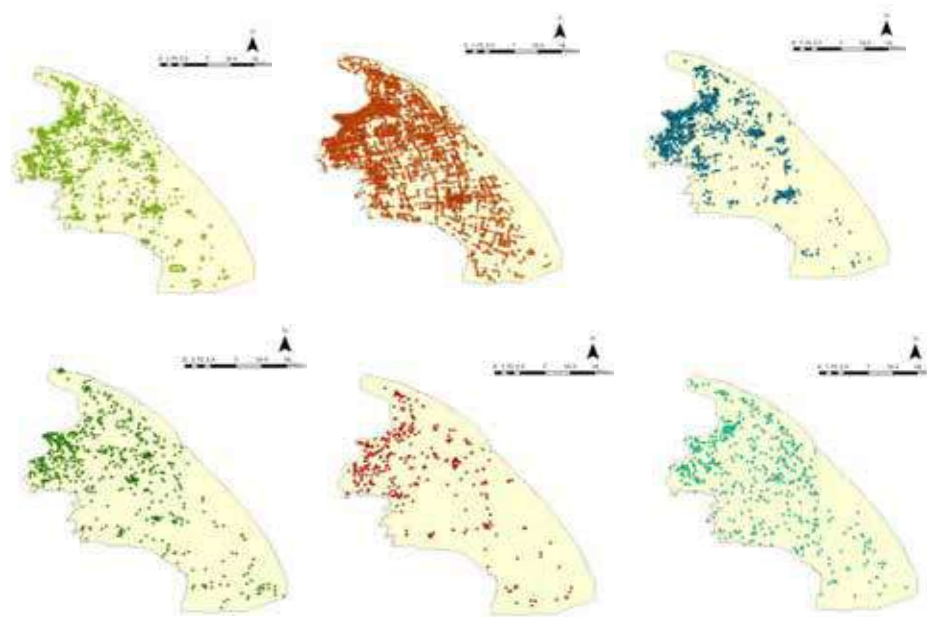


Figure 6 Spatial distribution of various facilities

The current measurement of the built environment focuses on the use of GIS for quantitative analysis, making the results more reliable. At present, some studies have suggested that previous studies have focused on the study of related relationships, and the results of the research are not very applicable. If epidemiological studies based on environmental exposure are used to investigate the effects of environmental density and quantitative levels on physical activity, the results of the study are The application has a better guiding significance. (何晓龙, 2017) In the calculation method of built environment index density, many current studies recommend the use of nuclear density analysis. The significance of the nuclear density equation is that the density distribution is highest at the center of each xi point and decreases outward. When the distance reaches a certain threshold range (edge of the window), the density is 0, and the nuclear density at the center x of the grid is (Cerin et al., 2006) :

$$f(x) = \frac{1}{nh^d} \sum_{i=1}^n K\left(\frac{x-x_i}{h}\right)$$

Here K() is the kernel density equation, h is the threshold, n is the number of points in the threshold range, and d is the dimension of the data. For example, when d=2, a commonly used kernel density equation can be defined as:

$$f(x) = \frac{1}{nh^d} \sum_{i=1}^n K\left(\frac{x-x_i}{h}\right)$$

Based on the nuclear density analysis method, this study geocodes the research samples to the nearest street, and uses ArcGIS10.3 software to calculate the indicators of each built environment (table 1) .

Table 1 Study the built environment characteristics of the sample street

street	bus stop	market	shopping mall	park	gym	community center	restaurant	open space	population
laogang	53	12	3	4	1	8	0	8	28060
tang	112	50	11	2	32	13	626	22	36971
xincahng	96	36	6	13	14	16	0	18	49414
yangjing	66	24	10	1	70	9	406	18	107512
zhoujiadu	50	14	10	1	34	14	262	8	124208
heiqng	119	44	10	19	15	30	282	16	49974
kangqiao	164	63	20	4	52	13	816	12	84628
lujiazui	81	23	22	0	60	10	1178	47	73707
tangqiao	38	15	9	0	38	5	381	8	60001
donghai	1	0	0	0	0	2	0	1	3
jinqiao	53	21	12	1	43	9	365	13	24736
handi	0	0	0	0	0	0	0	0	11572
songnan	0	0	0	0	0	0	0	0	96330
dongming	44	23	14	0	26	6	366	9	98084
waigao	85	5	5	0	6	0	63	1	50
zhaoyang	2	0	0	1	0	1	0	0	105
nicheng	66	24	9	7	10	8	0	13	49311
jinqiao	101	17	3	0	14	1	342	5	247
luhugang	14	11	3	0	1		0	3	14945
hangtou	156	48	5	7	16	18	0	10	56417
daqiao	0	0	0	0	0	0	0	0	95897
jinchang	75	32	15	0	54	10	584	7	159554
hudong	42	25	9	1	24	10	287	7	89185
zhangjiang	83	12	12	0	27	2	438	12	6005
zhuqiao	123	39	5	6	17	10	31	10	70014
changqiao	0	0	0	0	0	0	0	0	88406
zhangjiang	160	47	8	4	38	10	729	24	70602
gaohang	83	42	14	2	51	8	612	9	63487
zhoupu	204	48	21	7	46	14	539	11	90334
sanlin	143	76	18	6	92	20	1075	43	173228
shansha	339	121	43	38	176	62	1744	107	191761
wanxiang	38	7	1	0	0	4	0	0	20752
huamu	139	35	26	0	98	16	909	52	147435

nanmatou	38	19	5	1	32	4	316	9	87856
caolu	121	68	8	15	39	20	756	25	68205
beicai	128	65	21	1	74	28	863	27	159081
liuzao	49	16	1	7	4	13	8	8	30175
huinan	279	88	23	6	92	19	0	16	152765
gaodong	62	27	5	6	11	16	283	15	34978
weifang	39	23	6	0	56	10	679	16	72824
puxinglu	57	35	7	1	42	16	447	4	135287
datuan	64	29	2	7	4	17	0	11	60682
shanggang	44	20	12	3	26	9	339	29	90079
shengang	16	11	5	1	7	3	0	18	12526
shuyuan	86	16	3	5	5	12	0	7	42452
gaoqiao	95	51	10	1	32	17	657	54	92500
xuanqiao	67	28	3	6	4	8	0	62	40000

4.Analyse

The spatial research analysis is divided into two parts. One is to calculate the prevalence of each street by using the spatial distribution of the patient population, and obtain the spatial distribution map of the prevalence rate (Fig. 7).we can see the spatial differences in the incidence of type 2 diabetes in Pudong district, high-incidence streets and low-incidence streets. The second is to use the calculation results of the built environment elements calculated by gis, and compare and analyze the disease situation of each street in space, and use gis to normalize the environmental density and prevalence of each built environment, and obtain Figure 8. By comparison, it can be found that areas with low prevalence tend to have more homogeneous service facilities, and various facilities have higher density in spatial distribution; high prevalence is concentrated in urban high-density areas and central areas. Urban and rural areas combined with urban and rural characteristics. Although the high-density urban-type area has a perfect built environment configuration, due to the restrictions on land use and population, the per capita facilities use less land. For urban-rural areas, on the one hand, there are differences in the layout of facilities in urban areas, and on the other hand, The space environment is biased towards the street and the wide road network, which limits the physical activity of the residents to a certain extent. Therefore, the prevalence rate in these areas is relatively high.

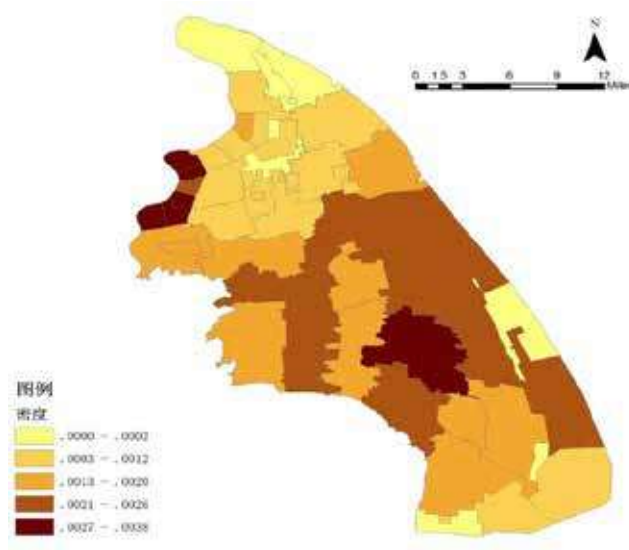


Figure 7 Disease density of each street



Figure 8 Comparison of disease density and density of various facilities in each street

In order to further analyze the relationship between the built environment factors and the prevalence rate, according to the area of each street, calculate the density of various facilities, and carry out regression analysis with the disease density of each street to quantitatively analyze the relationship between them (table 2) . Through the analysis of the regression results, we can see that the two variables of open space and surrounding leisure tourism facilities passed the significance test in the model, and the other variables failed the test in the model. By analyzing the statistical results of variables in different models, the stability of the relationship between the prevalence and the intensity of each street of the dependent variable can be judged. Model 2 reflects the variable relationship more comprehensively. The results show that the indicators that play a positive role in the physical health of residents include the open space area, that is, the number of physical activity facilities such as park green space and squares around the community. This shows that when the living space around the residents has a fitness park, it has a significant effect on physical activity, thereby promoting the physical health of the residents.

Table 2 Results of regression analysis

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.001	.000	4.755	.000	.000	.001
	开放空间_d	.001	.000	.585	5.724	.000	.001
2	(Constant)	.000	.000	2.547	.013	.000	.001
	开放空间_d	.000	.000	.508	5.842	.000	.001
	周边旅游_d	.005	.001	.456	5.242	.000	.007

a. Dependent Variable: 密度

Excluded Variables^a

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	公交站点_d	.324 ^b	2.234	.029	.273	.468
	超市_d	.315 ^b	2.323	.023	.283	.533
	商场_d	.210 ^b	1.179	.243	.148	.327
	周边旅游_d	.456 ^b	5.242	.000	.554	.972
	健身_d	.185 ^b	1.122	.266	.141	.382
	杜活_d	.321 ^b	2.430	.018	.295	.555
	餐厅_d	.049 ^b	.227	.821	.029	.224
2	公交站点_d	.245 ^c	1.984	.052	.246	.460
	超市_d	.193 ^c	1.628	.109	.204	.509
	商场_d	.262 ^c	1.776	.081	.222	.326
	健身_d	.243 ^c	1.779	.080	.222	.380
	杜活_d	.167 ^c	1.402	.166	.177	.513
	餐厅_d	.290 ^c	1.573	.121	.197	.211

5.Results

As a space carrier for the daily life of the citizens, the urban built environment has shaped the lifestyle of the residents and affected the health of the residents. Since the 20th century, chronic diseases caused by lack of physical activity have attracted widespread attention from scholars at home and abroad. A large number of empirical studies abroad have clarified the factors that influence the urban built environment on the physical activity of residents by tracking observations and cross-section confidentiality. In order to further test the universality of the existing conclusions, this paper conducted a regression analysis based on the streets of Pudong District, Shanghai.

The study found that good community space structure and community outdoor activity space can have a positive and significant impact on residents' physical health. Outdoor activities such as parks in the living circle near the community can significantly stimulate residents' willingness to carry out physical activities and promote the physical health of residents. Therefore, in the future, for community planning in healthy cities, it is necessary to rationally set up community facilities and improve the environmental quality of facilities. In the future, this research can be further expanded to analyze the relationship between the built environment and physical health from the community and individual levels.

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Theme: 12_Healthy City Planning: Food, Physical Activity

Does the connectivity of urban public green space promote use? An empirical study of Wuhan inner city

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Abstract: Improving greenness level is proved to have the potential to enhance green space use and outdoor physical activity level. However, high urbanization level and rapid densification process make green space - especially urban public green space - gradually lost and fragmented, which results in small or even no further land for public green space. Identifying such challenges, some planners and researchers suggest to connect existing urban public green space to encourage use and improve public health. Does it indeed work? Considering that, we research on the relationship between the connectivity of urban public green space and use in Wuhan inner city. In detail, we refer to the Integral Index of Connectivity in landscape ecology theory to calculate the connectivity of urban public green space by the unit of sub-district. Besides, Location Based Service (LBS) data - Tencent Yichuxing - is collected to measure the green space use of every study unit. Based on that, we make a further analysis between the two by Pearson correlation in SPSS. However, there exists in negative correlation between the connectivity of urban public green space and green space use, which is potentially due to the characteristics of public green space (such as quality and accessibility) weighing more than connectivity on promoting green space use.

Key words: urban public green space use, connectivity, LBS, Wuhan inner city

Introduction

Regular physical activity is proved to play a key role in avoiding and relieving chronic diseases –including diabetes, obesity, cardiovascular diseases, depression, etc.– and premature death (Warburton et al. 2006, Lee et al. 2012, de Rezende et al. 2018). As the evidence that physical activity contributes to improving public health gradually becomes well-grounded, increasing authorities and governments place the emphasis on promoting physical activity. For example, variety of relevant strategies and plans are proposed in the world to enhance public physical activity level, such as the Global Action Plan on Physical Activity 2018-2030 (WHO, 2018) and Physical Activity Strategy for the WHO European Region 2016–2025 (WHO Regional Office for Europe, 2016). Particularly, most of those policies stress the importance of open space especially urban green space on enhancing physically active, because study after study has demonstrated urban green space is a significant catalyzer in encouraging physical activity. For instance, it could conduce to improve frequency, intensity and duration of outdoor physical activity (Pate et al. 2008, Schipperijn et al. 2010, Coombes et al. 2010, Han et al. 2013, Kondo et al. 2009, Dadvand et al. 2014). Besides, taking physical activity within such natural environments could benefit more than that in non-green settings (Pretty et al. 2005, Taylor and Kuo 2009, Gidlow et al. 2016).

However, the process of urbanization and densification leads to open space, especially green space constantly decreasing and fragmenting in urban area (Xu et al. 2011, Kabisch et al. 2015, Haaland and van den Bosch 2015), which means that green space use and physical activity generated by green space might be discouraged by such built environment changes. On one hand, continually shrinking urban green space cannot meet residents' growing demands due to the inadequate and scarce provision; on the other hand, the disequilibrium of urban green space distribution potentially results in its unequal accessibility and availability. Indeed, series of studies have suggested that green space use and physical activity level within it are significantly and strongly influenced by quantity, quality as well as configuration of urban green space (Schipperijn et al. 2010, Thompson et al. 2014, Richardson et al. 2013, Vujcic et al. 2019), whereas it is almost impossible to largely build new green space in the intensively compact urban area or widely revise the structure of existing urban green space system to improve public green space use and physical activity. Considering that, several researchers argue that enhancing the connectivity of actual green space by referring to the principals of landscape ecological is probably the relatively economic and efficient way to handle with the forementioned challenges (Zhang et al. 2015, Jim 2013, Oh et al. 2011).

Based on the talked above, this paper aims to explore if the solution of improving connectivity of existing urban green space would be a useful way to promote green space use. Since public

green spaces are the accessible green infrastructures and free resources that can be available by all residents, therefore, we concentrate on the urban green space that is open to public in this study. In detail, the paper analyzes the correlation between the connectivity of urban public green space - calculated by applying the Integral Index of Connectivity in landscape ecology theory - and green space use through the empirical study in Wuhan inner city.

Data and Method

Study area

Wuhan, the capital of Hubei province and one of the China's megapolises, is located in the middle area of China and plays the roles of transportation hub and core of economic, technology as well as commerce trade logistics in those middle-area cities. The urbanization rate is 80.29% and approximately 647 million residents live in urban area in 2018 (Statistics Bureau of Hubei Province 2019). What's more, it is divided by Yangtze River and Han River into three parts of Hankou, Wuchang and Hanyang, which totally includes 13 districts. The scope of this study - Wuhan inner city - consists of 7 districts, namely Wuchang, Hongshan, Qingshan, Hanyang, Jiang'an, Qiaokou and Jianghan (depicted as Figure 1). Besides, each district contains several sub-districts/ *Jiedaos* (sub-district, also translated into *Jiedao*, is the lowest administrative unit in China) and 96 sub-districts are encompassed in total within the study area. In this study, we take sub-district as the basic research unit.

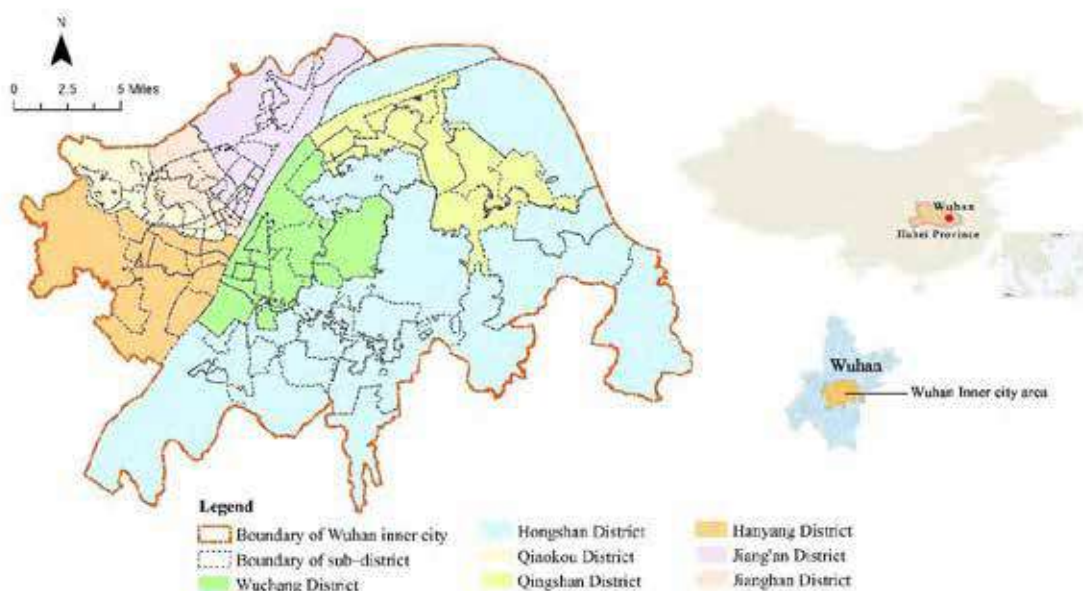


Figure 1 The location of Wuhan inner city area

Data collection

- Public green space

The distribution of public green space within inner city is extracted from the vector-graph of green space system provided by the official greening department in Wuhan. Public green space in this study consists of parkland (including comprehensive park, neighborhood park, theme park and pocket park), land for squares (green space proportion more than 35%), and parts of ecological green space as well as attached green space that can be accessible and used. Besides, according to the published studies, 1 hectare or more is proved to be the reasonable area for green space use especially for physical activity (Van den Bosch et al., 2016). Hence, that size is employed for the public green space selection (detailed distribution of PGS in Figure 2).

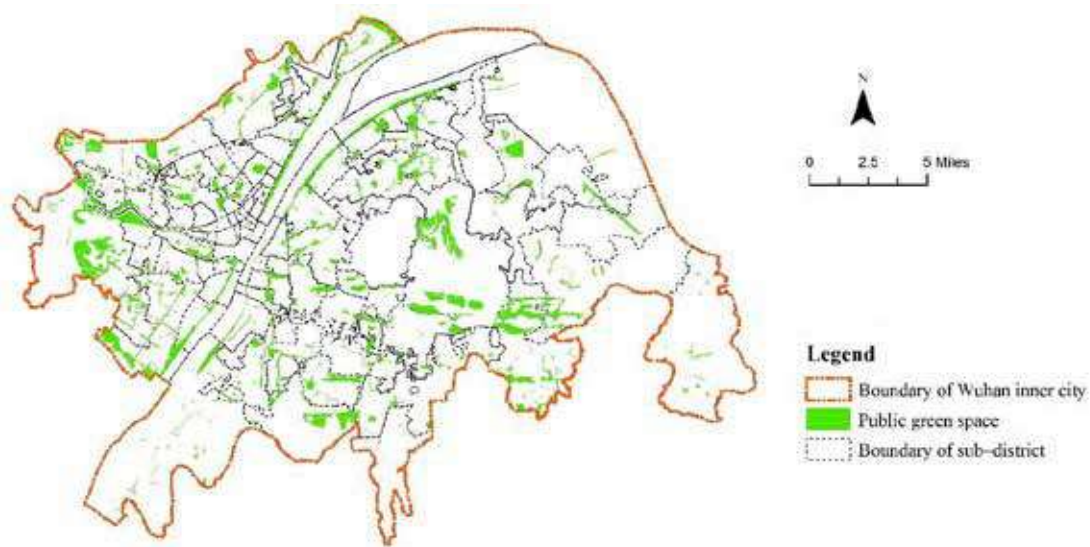


Figure 2 The distribution of public green space in Wuhan inner city

- Location Based Services data

Location Based Services (LBS) data in this paper is obtained from WeChat of Tencent company, which is the most popular social media app in China. Yichuxing is a function of WeChat to reflect population distribution by acquiring users' mobile terminal real-time position information (longitude and latitude), and the values of Yichuxing is the standardized data of actually being collected population. Therefore, it can be used to represent the relative population in a certain area. Here we apply it to calculate the relative use of public green space. Data acquisition time in this paper is a week (7 days) and the weather is non-rainy during this period. Further, it starts from 6:00 a.m. and ends at 22:00 p.m. every day with two hour-interval. In other words, there are 63 time points (9 time points/ day * 7 days) of such data acquired in total.

Variables calculation

- Public green space use

Public green space use of each sub-district is measured by relative population density within it. Since the values of Wechat - Yichuxing is the kind of real-time data, therefore, average relative population density of total public green space in each sub-district is calculated to reduce the impacts of data at different time points. The detailed calculation formulas are as follows:

$$P_i = \frac{\sum_{j=1}^n Q_{ij}}{d_i \sum_{j=1}^n G_{ij}} \quad (1)$$

Where P_i is the relative population density of public green space in sub-district i , d_i is the residential population density of sub-district i (This study takes it as a weight, when calculating the public green space use to reduce the influence of number difference of inhabitants in sub-district), Q_{ij} is the average relative population within public green space j that belongs to sub-district i , G_{ij} is the area of public green space j that belongs to sub-district i (in square meter), and n is the total numbers of public green space within sub-district i .

In particular,

$$Q_{j1} = \frac{\sum_{h=1}^w \sum_{t=1}^m X_{jht}}{wm} \quad (2)$$

or

$$Q_{j2} = \frac{\sum_{t=1}^w X_{jt}}{w} \quad (3)$$

Where Q_{j1} is the average relative population of public green space j per day, X_{jt} is the relative population within the public green space j at time t , m is the total time points per day (here is 9), w is the total days, and Q_{j2} is the average relative population of public green space j at time t . It is worth to note that for formulas (2), when w is respectively equal to 7, 5 and 2, Q_{j1} represents the average relative population of public green space j per day of a week (7 days), weekdays (5 days), and weekends (2 days) separately; for formulas (3), w is assigned as 7, which means that Q_{j2} measures the average relative population of public green space j at time t during a week. In order to explore if the time makes a difference in the impacts of public green space connectivity on green space use, we correspondingly calculate the relative population density of public green space in each sub-district at 9 time points as well as per day (separately based on a week, weekdays and weekends).

- The connectivity of public green space

The connectivity of public green space in each sub-district is measured by the Integral Index of Connectivity in landscape ecology theory, which has been developed maturely in ecology, and some researchers have applied it to study the connectivity of urban green space (Shi and Xu 2011, Mu et al. 2017). By referring to the relevant publications (Pascual-Hortal and Saura 2006, Saura and Pascual-Hortal 2007), the formula applied in our study is as follows:

$$IIC = \frac{\sum_{i=1}^n \sum_{j=1}^n \frac{a_i a_j}{1 + nl_{ij}}}{A_L^2} \quad (4)$$

Where *IIC* is the integral index of connectivity (ranging from 0 to 1), a_i and a_j respectively represent the areas of urban green space i and j (in square meter), nl_{ij} means the link numbers between public green space i and j (based on the topological distance), and A_L is the area of individual sub-district (in square meter).

Based on the analysis of distance (edge-to-edge Euclidean distances) between two arbitrary public green spaces in each sub-district by Arcgis extension, then we calculate the *IIC* in Conefor 2.6. It is worth to note that, considering on the issue focused on in this study is that the influence of public green space connectivity on its use, therefore, public green spaces within what distances can be taken into analysis is significant. According to the human's walking speed and the distance affecting users to access to public green space (Almanza et al. 2012, Kondo et al. 2009, McMorris et al. 2015, Catherine et al. 2013, Cohen-Cline et al. 2015), we separately take 500 m and 1000 m as the thresholds to decide which public green spaces are considered when calculating *IIC*.

Analysis method

Before correlation analysis, the process of data standardization (z-score) and descriptive statistics analysis (mainly inspecting outliers) is applied first to reduce the analysis error. Then the relationship between the connectivity of public green space and its use is analyzed by Pearson Correlation Analysis in SPSS 22. As mentioned above, we divide the average relative public green space use into two types by the unit of o'clock and day. In detail, the former includes 9 time points and the latter concerns 3 kinds of daily average. All of them are applied to test whether or not they correlate with *IIC* of public green space that is calculated based on 500 m and 1000 m respectively.

Results

Since there are some sub-districts that do not have the public green space meeting the requirements of area being more than 1 ha. What's more, even if some sub-districts satisfy that

standard, either the number of public green spaces within them is no more than 2 or the distance between the public green spaces within them is more than 1000 m. In a word, after neglecting those unfit sub-districts, there are 74 ones are taken into *IIC* calculation. Based on that, another two sub-districts are deleted due to the outliers, thus, only 72 units are left to be analyzed at last. According to the calculation results of *IIC*, we find that the connectivity of public green spaces within each sub-district is relatively low no matter it is based on the 500 m or 1000 m. For 500 m, the threshold of *IIC* is between 0.195 and 0 while for 1000 m, the one is from 0.202 to 0 (shown as Figure 3 and Figure 4).

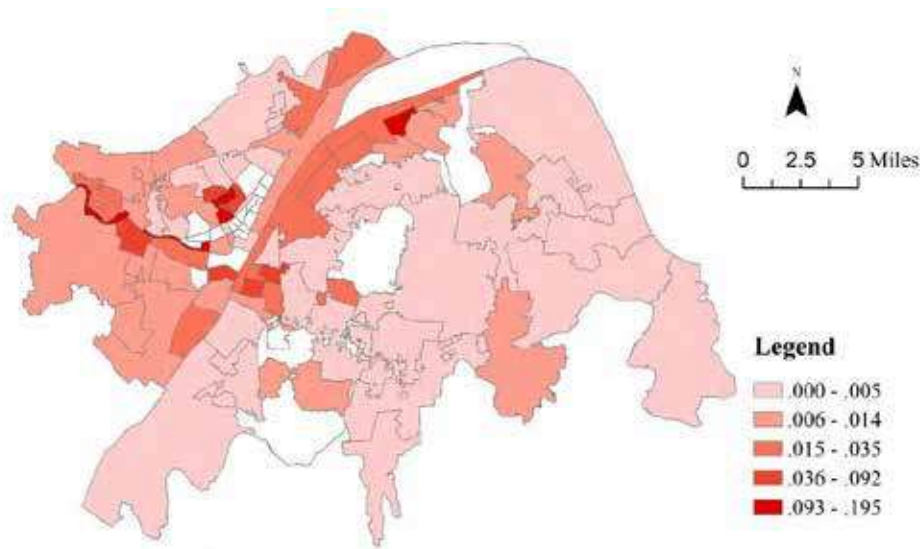


Figure 3 The connectivity distribution of public green space (distance threshold: 500 m)

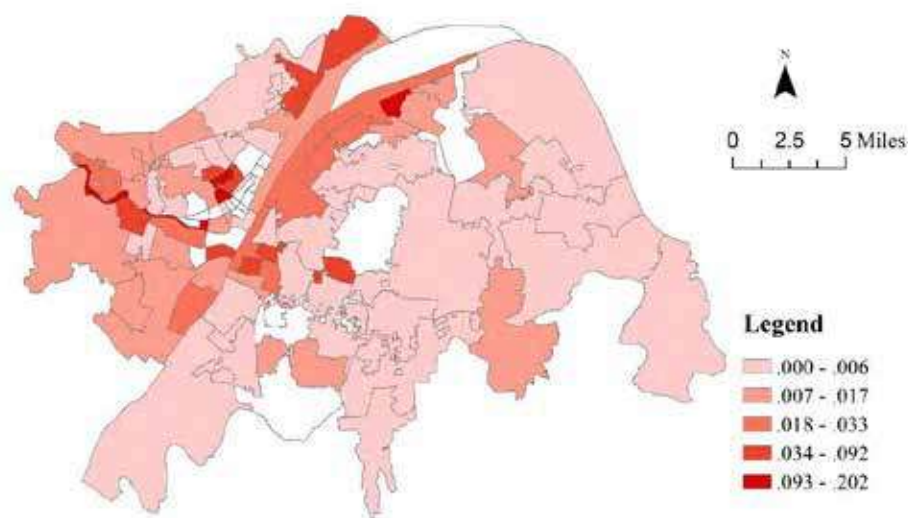


Figure 4 The connectivity distribution of public green space (distance threshold: 1000 m)

Depicted as Figure 3 and Figure 4, it is obvious that relatively high connectivity of public green space is almost in the small-scale sub-districts which locates in the old town of Wuhan, especially in the center of old urban areas, whereas low connectivity mainly lies in the large-scale sub-district, especially near the peripheral of the inner city.

Intriguingly, after visualizing the calculation results of green space use in different time, the sub-districts with high public green space use are not accompanied with high connectivity of public green spaces simultaneously. On the contrary, most high green space use distributes in low *IIC* areas, which are relatively new and near the periphery of inner city. Considering the words length of the paper, two types of public green space are selected to illustrate the detailed distribution (presented as Figure 5 and Figure 6).

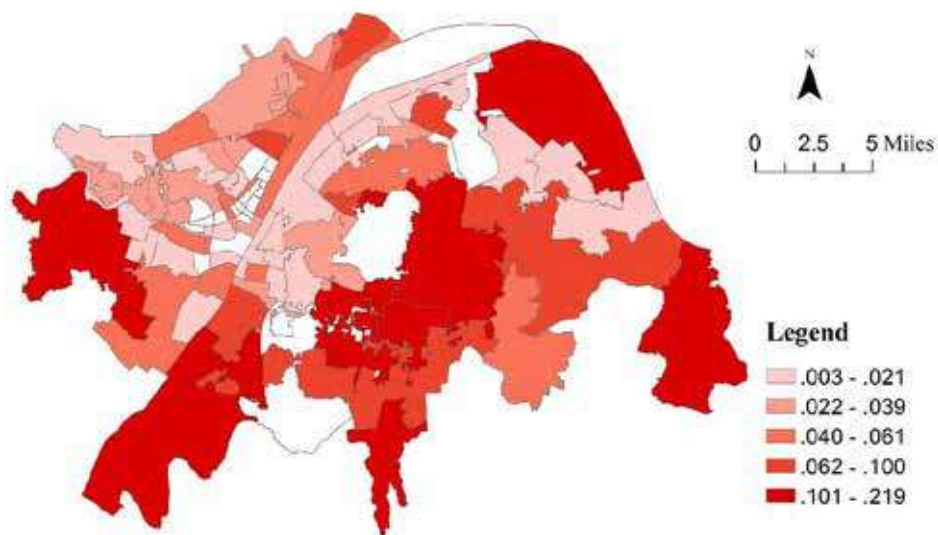


Figure 5 The distribution of public green space use (during weekends)

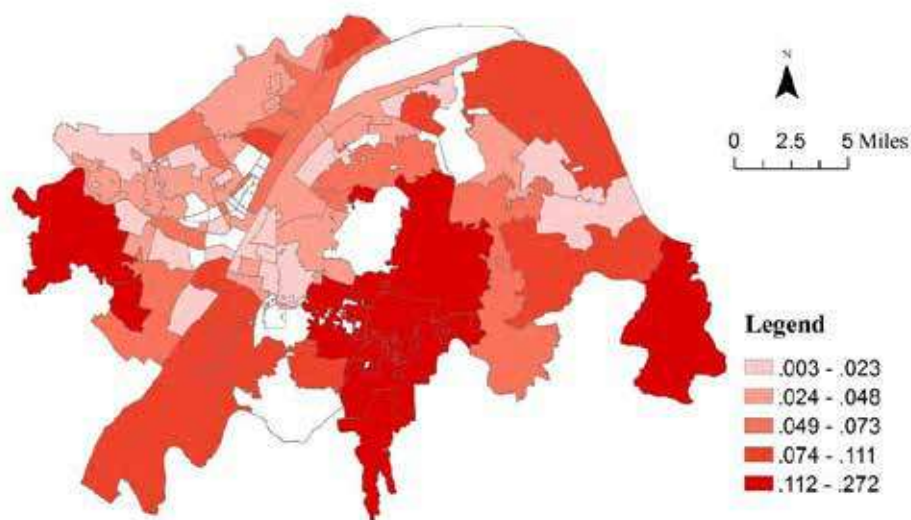


Figure 6 The distribution of public green space use (on 20 o'clock)

The results of correlation analysis are shown as Table 1 and Table 2. Different from what we expect is that the *IIC* of public green space is negatively related with green space use no matter is statistically significant or not. From the perspective of distance threshold impact, the Pearson Correlations are almost same in both ranges. In other words, as long as the distance between two public green spaces is no more than 1000 m, the generated *IIC* might not make an apparent difference in the role of green space use. While when taking time into considering, there exists several variations in that relationship. In detail, *IIC* has a statistically significant correlation (within a 95% confidence interval) with the average public green space use during weekends and a week as well as on different time points (namely, 6 o'clock, 10 o'clock, 18 o'clock, 20 o'clock and 22 o'clock). That is to say such relationship is likely to be influenced by the characteristics of residents' daily behaviors.

Table 1 The correlations between relative public green space use (daily average) and *IIC*

Correlations						
Relative public green space use (daily average)	500 m_ <i>IIC</i>			1000 m_ <i>IIC</i>		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
Weekdays (5 days)	-.231	.050	72	-.230	.052	72
Weekends (2 days)	-.266*	.024	72	-.268*	.023	72
A week (7 days)	-.246*	.037	72	-.246*	.038	72
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 2 The correlations between relative public green space use (o'clock average) and *IIC*

Correlations						
Relative public green space use (o'clock average)	500 m_ <i>IIC</i>			1000 m_ <i>IIC</i>		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
6 o'clock	-.237*	.045	72	-.239*	.043	72
8 o'clock	-.177	.137	72	-.177	.136	72
10 o'clock	-.235*	.047	72	-.232*	.049	72
12 o'clock	-.186	.118	72	-.184	.123	72
14 o'clock	-.215	.070	72	-.217	.067	72
16 o'clock	-.207	.081	72	-.206	.082	72
18 o'clock	-.243*	.039	72	-.244*	.039	72
20 o'clock	-.264*	.025	72	-.264*	.025	72
22 o'clock	-.286*	.015	72	-.284*	.015	72
*. Correlation is significant at the 0.05 level (2-tailed).						

Discussion

As mentioned above, the measurement of public green space use is based on the data of Yichuxing, which is obtained from WeChat users. Additionally, more than 90% of them, according to the Wechat Data Report in 2018, are less than 55 years old (WeChat Team, 2019). Public green space use (deriving from that data) during work and school hours or weekdays, therefore, might differ obviously from that during off-work and after-school hours or weekends, which indirectly mirrors the user group of public green space from single (mainly the elderly, during work and school hours or weekdays) to relatively diverse (during off-work and after-school hours or weekends). Moreover, series of studies have proved that various groups prefer and require different characteristics of green space, and take different types and levels of physical activity in it (Cohen, 2015, Mytton, 2012, Douglas, 2017). For example, Kaczynski et al. (2009) find that the area of neighborhood parks within 1000 m of individual's home could contribute to improving the level of physical activity for women as well as the younger (between 18 and 34 years old) and elder (more than 55 years old) groups. Similarly, Leslie et al. (2010) conclude that when local parks are safe, attractive and well-maintained, groups with high socioeconomic status have more park use and recreational walking. That is to say, the influences of public green space characteristics on use may vary with the user groups changing. Hence, off-work and after-school hours as well as weekends makes a difference on the correlations between *IIC* and public green space use likely due to the variation of user groups at different time.

Seemingly, the negative correlation generated in this study is unreasonable and opposite to the expectation that enhancing connectivity contributes to promoting green space use. After all, some scholars suggest that high connectedness among urban green spaces is good for the movement of both wild animals and human as well as public health (Tian et al. 2017, Selim and Demir, 2019, Zhang et al. 2015). However, it is worth to note that there is a basic difference of such movement between wild animals and human beings, which is that the former originally lives in the nature environment (that is a way of green space use per se) without need of considering the accessibility of those green spaces (Moving from one patch of green space to another is oriented by survival need for them), whereas people have to access to those nature places first if they want to use them and the activities happening within or inter green spaces are decided by many factors, such as the recreational demands and green space quality. That is to say good connectivity among green spaces is significant for biodiversity protection but not necessarily encouraging green space use for human beings.

Indeed, according to the analyzed results in this study, high connectivity- that represents good accessibility between green spaces but not equals to being accessed easily from other places

(like the residence, school and workplace)- locates in the old town where the quality of green space within it is poorer than elsewhere in Wuhan inner city, while high green space use primarily exists in the areas with relatively good accessibility. What's more, in the light of the characteristic evaluation of health-oriented green space in Wuhan inner city (Dong and Liu 2018), the distribution of green space use in this paper is roughly corresponding to the locations with good greenness, quality and accessibility. That indirectly reflects the characteristics of green space (including quality, accessibility, etc.) are more likely to play a significant role in promoting use than its connectivity, which aligns with the confirmed conclusion that quantity, quality and accessibility of urban green space (especially quality and accessibility) should be emphasized to improve green space use (Haaland and van den Bosch 2015, WHO, 2016). Therefore, the negative coefficient of the Pearson Correlation Analysis in this paper does not accordingly mean the higher connectivity discourages green space use. On the contrary, such results can be considered as the old town existing poor characteristics that weighs more in the role of hindering green space use than the promoting role of connectivity. However, attention should be paid when applying it, because this underlying factor is inferred from the qualitative comparison with the conclusions previous research. Quantitative analysis will be necessary in the future to improving its credibility.

Conclusion

In order to explore if improving the connectivity of public green space contributes to promoting green space use, we apply Pearson Correlation Analysis to test the relationship between them, whereas the analysis results are opposite to what we expect. Negative correlation is found between the connectivity of public green space and green space use whatever the time and distance threshold is. Moreover, this relationship differs in statistics significance with the variation of user groups of public green space at different time. Instead of superficially explaining the results as simple promotion-inhibition relationship between two variables, the paper identifies the underlying factor influencing the correlation between connectivity and green space use. That is the characteristics of urban green space (including quality, accessibility, etc.) playing more significant role in improving green space use than connectivity. Hence, putting more emphasis on the quality and accessibility of the existing public green space is potentially the useful way to promote its use when there is no large space left to build new public green space in the intensively compact cities.

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Study of the Interrelationship between Urban Micro Public Space Morphology and Microclimate

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Abstract: In high-density cities, large scale public spaces are becoming more and more precious and scarce. As a complement, micro-public space is an important indicator to measure the quality of urban lives because of its flexible location and convenient accessibility. The geometry prototype enclosed by architectural groups and texture elements as important urban morphology factors are extracted and simplified in this paper to analyze the interrelationship between micro public space morphology and the microclimate. Through the simulation of actual research projects in Shanghai, the accuracy of the simplified model is verified. The spatial and temporal distribution of microclimate is directly related to outdoor thermal comfort. It means that the correlation analysis can not only achieve multi-objective optimization to reduce urban design uncertainty, but also can provide design strategies for healthy urban environment.

Keywords: urban micro public space, urban morphology, microclimate, reactive factors

1. Introduction

With the depletion of urban land resources, activity space is gradually decreasing. The concept of micro public space has increasingly received people's attention. The idea of the miniature public spaces is a broader and richer concept developed on the basis of the notion like pocket parks, mini parks, small squares etc. which were put forward in the 1960s. Unlike other urban public spaces, micro public space is specifically produced in the centre of the city or around the community and is a place for residential daily activities. Beyond this, it also has followed features: 1. small in scale; 2. strong in accessibility; 3. high in usage rate and humanized; 4. Simple in function and human scale. Due to its small size and flexible site selection, it is mostly embedded in residential, working and commercial area. It can not only alleviate the impact of the large-scale park green space lacking caused by the acceleration of urbanization, but also promote rational utilization of street blank spaces and even corner wasteland in urban central areas.

2. The Definition of Urban Micro Public Space




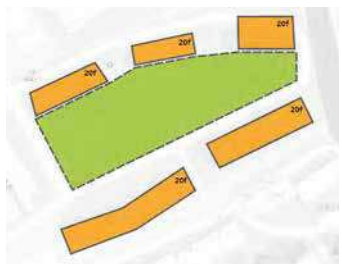



“Micro” or “small” is a relative concept of dimension relationship. The microscopic space in field of environmental psychology discipline refers to an invisible space around the human body while in the perspective of geography it is defined as a concrete space closer to daily life practice. 25m is considered as the most appropriate size in the social environment in Site Planning and it has been pointed out that spatial scales over 100m scarcely emerged in cities (Obuyoshi, 2017). In accordance with above analysis, this paper defines

the concept of “micro-space” in terms of scale, functional attributes and interaction relationship. Consequently, the micro-space refers to the public space in small measurement that mainly served for urban resident daily life in the perspective of human settlements.

Micro public space is defined as a type of space in relation to the large and medium-sized public space in the city, including small parks, small squares, community parks, stadiums and so on. "Small area" is an important feature of micro public space. According to the Hong Kong Planning Standards and Guidelines, the open spaces are categorized into three grades: Regional Open Space (at least 5 ha in size), District Open Space (at least 1 ha in size) and Local Open Space (at least 500 m²). Furthermore, the American Park Association considers the size of the pocket park to be 0.13-2ha and the service radius to be 400m. The Tokyo Park City Park green space construction target determinates the area of the neighbourhood park to be 0.25ha. China's "Park Design Code" (CJJ48-92) stipulates that the area of the residential community should be more than 5,000 square meters.

This study investigates the relationship between urban morphological characteristics and microclimate. The urban forms under various scales of public space are very different. It is determined that the scale of the micro-public space is controlled at 300-15000m², and classified into three categories basing on the size of the area: 300~3000 m² for S-Space, 3000-6000 m² for M-Space, 6000~10000 m² for L-Space (*Table 1*).

Table 1. Micro Public Spaces and Area Distribution in Shanghai

S			
Area	Xuhui Mall—2500 m ²	ABC Square—2400 m ²	Union Square—3000 m ²
M-			
Area	Xinyi Park—5000 m ²	Zhonghe Square—3800 m ²	Lanxin Square—3000 m ²
L			
Area	Boyang Park—6500 m ²	Huimin Park—6000 m ²	Songhe Park—9500 m ²

The classification methods of micro public spaces overlap with each other to some extent. For example, according to the function, it can be divided into public activity space mainly for public communication; the recreation space for the public to carry out leisure and recreation activities; the community open space mainly composed of urban communities. In terms of the positional relationship between the site and the main road, it can also be classified into following three types: 1. the open space with the total length of the adjacent side of the main road is greater than the depth; 2. open space with the total length of the adjacent side of the main road is less than the depth; 3. closed space where the main road is not adjacent.

3. Literature Review and Research Methodology

The study first identified urban form factors and key environmental parameters through literature review. And then the geometric prototype and texture elements of the miniature public space enclosed by the building group was simplified. The simulation was to performed analyse the simplified model of the urban form factor to study relationship between city shape and microclimate. Finally, the simplified simulation was validated by the actual project simulation.

In the field of environmental climate science, the research of urban microclimate involves three levels: Urban Boundary Layer, Urban Canopy Layer and Urban Street Canyon (USC). Urban Street Canyon studies urban space enclosure pattern such as streets and squares. The literature research on this point is mainly divided into the following aspects: architectural orientation, urban texture characteristics, street aspect ratio, building density, and building enclosure. The urban form factors selected in this paper include building density, building envelope, street aspect ratio, urban texture characteristics, Sky View Factor(SVF), etc. By controlling a single variable during the study the reliability of the simulation can be improved. It is shown that urban block and street space have an impact on the micro-environment in Urban Street Canyon, involving local temperatures, sunshine, wind and air quality in the space. In this article, the main performance indicators for the microclimate environment are the average radiant temperature (T_{mrt}), Universal Thermal Climate Index (UTCI) and wind speed. With the continuous revision and development of the thermal comfort model, the UTCI model has been increasingly used by researchers. Compared with the traditional empirical model, UTCI pays more attention to the human body's heat balance and can directly calculate the equivalent temperature. Compared with the complex experienced model, UTCI pays more attention to the objectivity of the model, which is the most comprehensive and widely used in human fitness indicators.

In 2013, Maro Sino et al. (2013) found that the requirements of residents in different climate zones for micro-public spaces varied greatly. In London, the most considerable factor in designing a successful park is tree and green surface, while in Athens it refers to the ample shade. The highest temperature in Shanghai is 36.8 °C and the lowest temperature is -4.5 °C. The annual average temperature is approximately 16.7 °C. July is the hottest month in one year and June 29 to July 5 is the hottest week. A typical week in summer start from August 24 and end in August 30. Contrarily, January 6th to January 12th is the coldest week and the coldest month is January. February 17th to February 23th is the typical winter week. The purpose of the microclimate design is to encourage users to participate in the local region frequently. Nevertheless, too many activities should be also avoided in maximum degree.

4. Microclimate Analysis According to Space Morphology Factors

4.1 Building density

The building density is the ratio of the sum of the floor area to the base area. The greater the building density, the narrower the air tunnel, and the greater the building's outdoor wind environment is affected by the building density. The public space forms in the building group, and the base scale has a great influence on the simulation results. In order to guarantee the precision, the layout of the “1” type building is estimated as the standard type in terms of setting building simplified model. During simulated period, the base scale remains constant and the

number of buildings randomly reduces. When the number of buildings is the least (5 buildings), the density is 4.30%. As the number of buildings increases by a factor of 5, the building density is 8.59% (10 buildings), 12.89% (15 buildings), and 17.19% (20 buildings) respectively (Table 2). The public space will also be randomly divided into smaller from 8000 to 600 m² by enlarging the building density.

Table 2. Model of building density change (Site : 125m*125m)

			
4.30%	8.59%	12.89%	17.19%

Table 3. Wind Map and Average Wind Speed According to Building Density (Site : 125m*125m)

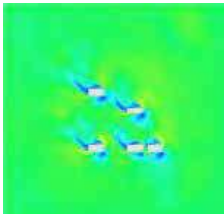
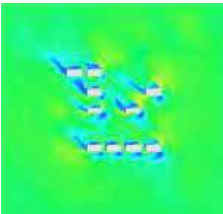
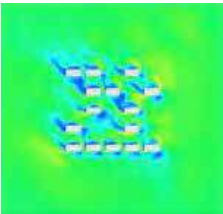
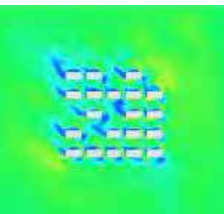

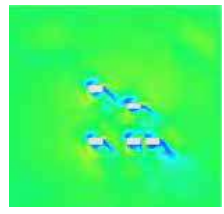
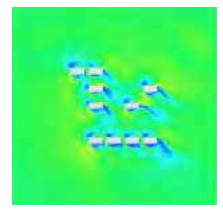
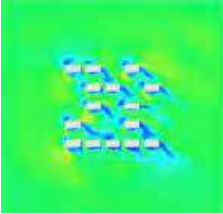
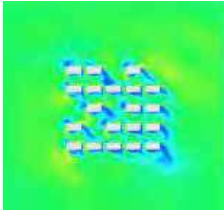

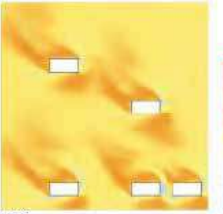
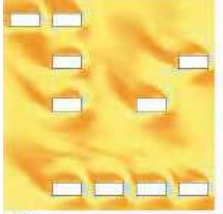
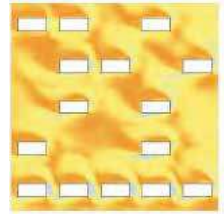
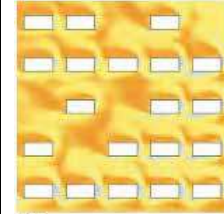
Summer					
Speed	1.933m/s	1.761m/s	1.636m/s	1.530m/s	
Winter					
Speed	2.038m/s	1.798m/s	1.629m/s	1.569m/s	

Table 4. UTCI Simulation According to Building Density (Site : 125m*125m)

			
32.805°C	32.914°C	32.911°C	32.921°C

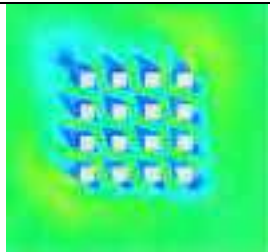
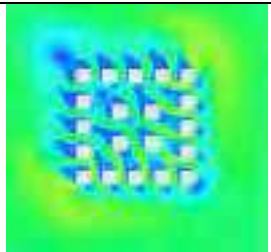
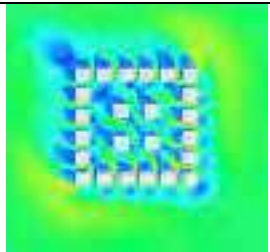
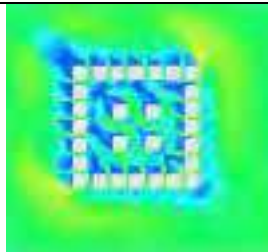
As the building density increases, the overall wind velocity in summer has dropped, and generates easily local high wind speed area (*Table 3*). Moreover, the ventilation performance of the micro public space in the high-density urban area is highly susceptible to the surrounding buildings as the increase of the static wind zone in the enclosed square. Especially if there is a building blockage in the wind coming direction, it may cause the site to be in a wind shadow area. In summer, this is unfavorable for the wind environment. In winter, this can be used to avoid the cold airflow and improve the thermal comfort.

It can be observed from the UTCI simulation that the change in UTCI is very similar to the wind contour graph and presents a negative correlation with each other (*Table 4*). That is to say, the UTCI in the static wind zone will be relatively high, and the UTCI in the well-ventilated area will be relatively low. As the density of buildings increases, the shadow area increases, the outdoor thermal comfort decreases as the enlargement of wind shadow area.

4.2 Building Enclosure Degree

In 2012, the Stephen Siuyu Lau et al. (2012) has focused on the guidance of designing small and micro-public open spaces in Hong Kong's high-density urban centers. Stephen Siuyu Lau conducted a comparison research for climatic parameters of different measurement points and relationship with the morphological and greening characteristics and a regression analysis was performed to verify the influence of building geometry and vegetation on outdoor temperature. The results show that wind conditions and building geometry apparently affected outdoor Temperature (T_a). The shading effect of a building may be more important than the shade and evapotranspiration of plants.

Table 5. Wind Map and Speed According to Building Enclosure Degree Variation

0.4	0.5	0.6	0.7
			
0.48m/s	0.47m/s	0.463m/s	0.46m/s

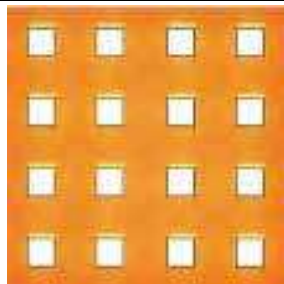
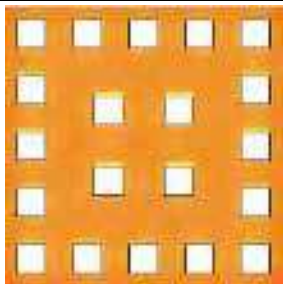
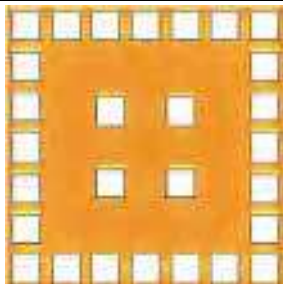

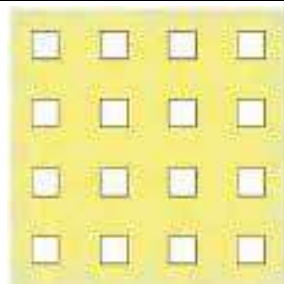
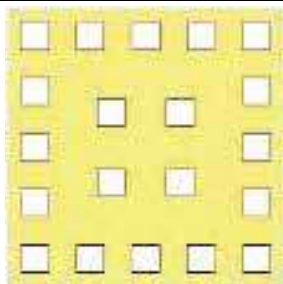
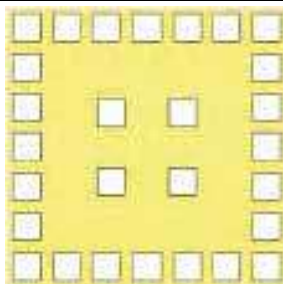

The degree of enclosure refers to the ratio of the length of the building facade along the street to the total extent of the base line, reflecting the openness of the street space. It has a greater impact on solar radiation and ventilation, but more effect on ventilation. The smaller the degree of enclosure, the more open the neighbourhood. The height of the experimental building model for enclosing degree is fixed at 20m, and the outer periphery of the buildings is arranged equidistantly with 4*4, 5*5, 6*6, 7*7 body blocks with same central plot. Simulated wind speed and T_{mrt} with variations of enclosure are shown in *Table 5* and *Table 6*.

By enhancing the degree of building enclosure, the airflow increasingly difficult to penetrate into the interior of the block. On the other hand, the local high level of wind velocity is easily formed. In this experiment, the enclosure extent has negative influence on the wind speed at the pedestrian height of 1.5m above ground level.

By comparing the average T_{mrt} of the summer solstice day through experiment, with the large level of encirclement the mean T_{mrt} is the highest at noon during the day and the lowest is achieved in the night. When the degree of encirclement is small, this T_{mrt} condition indicates contrary performance totally with the large enclosure level. It is indicated that in hot summer and cold winter regions, the variation of the enclosure has negligible effect on the thermal environment inside the block regardless of flow. The relationship between the

dominant wind direction and the degree of enclosure should be properly considered to effectively adjust the microclimate of the plot.

Table 6. Tmrt Change under Different Enclosure Degrees

0.4	0.5	0.7	
			 12:00
24.24°C	24.12°C	23.67°C	Tmrt
			 20:00
20.95°C	21.05°C	21.23°C	Tmrt

4.3 Street Aspect Ratio

Street aspect ratio refers to the ratio of the average building height on both sides of the street to the width of the street (H/W). According to the aspect ratio, the street canyon can be divided into three types: shallow canyon when $H/W < 0.5$; standard canyon when $H/W = 1$; deep canyon when $H/W > 2$. Street aspect ratio has the most significant impact on the specific linear micro public spaces. The most famous Nanjing East walking street in Shanghai is a linear urban public space with a total area of about 3ha. In addition, Shanghai has a number of linear miniature public spaces such as the 550m long Duolun Pedestrian Street (Figure 1) and the 200m long Wujiang Road Pedestrian Street (Figure 2).

Through wind tunnel experiments, Oke (1981) found that when the dominant wind direction is perpendicular to the block canyon and the height and width are relatively small ($H/W < 0.5$), there is no excess airflow exchange between the vortex area on the canyon side and the adjacent buildings. The airflow pattern is similar with that around isolated buildings which is called isolated rough flow. As H/W increases to 0.5~0.65, the airflow between the downward of the layer canyon-side vortex zone and the upward face of the adjacent building forms a secondary circulation which is called the wake interference flow. When the H/W enlarges more than 0.65, the airflow over the building gradually separates from the airflow in the layer canyon, forming a stable circulating flow in the layer canyon, called taxiing airflow. Therefore, the appropriate street aspect ratio can be applied to make the airflow pass through the street and improve the street wind environment.



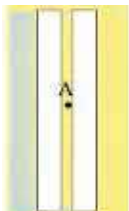



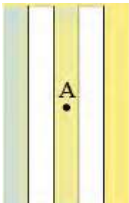

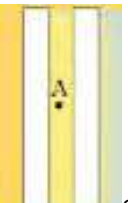

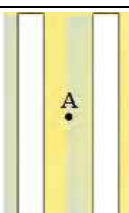



Figure 1. Duolun Walking Street



Figure 2. Wujiang Walking Street

In this experiment the block and building model was simplified into a long strip and performed in a 100m*200m site. The block width is 10m, 20m, 40m, and the aspect ratio (H/W) is 2, 1, 0.5 respectively with 20m building height. *Table 7* shows the measurement point locating the centre of the block. It can be observed from the simulation that as the aspect ratio of the block increases, the average radiant temperature decreases during the day. Meanwhile, the temperature is also reduced significantly. The phenomenon is basically consistent with other scholars' conclusions. On the other hand, with the aspect ratio of the block becomes larges, the visibility of the sky becomes smaller, which is not conducive to heat dissipation at night. Therefore, the average Tmrt at night is positive to the aspect ratio, but the effect on long-wave radiation at night is relatively weak.

Table 7. Tmrt Change Tendency Under Different H/W

Time	8:00	12:00	16 : 00	20:00
H/W=2	 21.02°C	 22.72°C	 21.81°C	 22.00°C
H/W=1	 20.69°C	 23.26°C	 21.28°C	 21.65°C
H/W=0.5	 20.20°C	 24.07°C	 20.50°C	 21.13°C

4.4 Urban texture element

Urban texture elements can be divided into two types: different textured protrusions and variant textured ground surfaces. Protrusions include isolated building, building group, urban forests and sky garden that has developed in recent years. The variant textured ground surfaces refer to urban greening, squares and water. Urban buildings can be regarded as hard elements, and urban greening can be considered as soft mass elements, which are the main factors that interfere with urban microclimate.

Studies and observations have confirmed that urban forests can play a positive role on urban microclimate. Jauregui (1990) reported that the influential range of a large urban park (525 ha) in Mexico City reaches one park's width away from the park and the green area is 2–3.8°C cooler than outside the park. At the smaller scale, even a park as small as 60m*40m can lead to a Ta reduction of 3.8°C inside the park compared with the surrounding area (Saito, Ishihara and Katayama, 1990).

Shashua-Bar and Hoffman (2000) observed the cooling effect of 11 wooded sites with various geometric configurations in Israel and developed an empirical model for predicting the cooling effect of green areas based on the observations. The areas range from 450 to 10000 m². He concluded that the shading effect by tree canopy and the Ta of non-wooded surroundings were most important for the Ta variance inside the sites. In Chang et al.'s (2007) research about 61 Taipei city parks (ranging from 0.1 ha to more than 20 ha), results showed that urban parks were on average cooler than their surroundings.

The temperature can be diminished by the vegetation function of shadowing, evapotranspiration and photosynthesis. However, more vegetation may not cause a temperature drop because it also blocks wind flux and thus affects the heat exchange process, which may be the main strategy for relieving UHI intensity in tropical climate zones. Further research should be performed on the optimal design of greening and the strategic design of the spatial layout.







4.5 SVF

SVF means the area ratio of the visible area of the sky at a position to the entire sky hemisphere. It is one of the important parameters reflecting the geometric shape of the city mainly ranging from 0 to 1. The height, shape and layout of elements such as buildings, structures and green plants in the city will have an impact on the surrounded SVF value. For example, SVF value is small in a dense urban centre while it is large in a flat and open suburb. Therefore, SVF reflects the degree of closure of the block space, and the SVF value is small, which means that the block space is relatively closed. The SVF value can be calculated in terms of the building density, height, spacing and other indicators, and is also a crucial indicator reflecting the urban fabric morphology.

In recent years, Hong Kong scholars (Grimmond, Potter and Zutter, 2001) have concluded based on field measurement research in Hong Kong that when the SVF of a city's street space is larger than 0.5, the probability of generating UHI is negligible. While the heat island effect can be obviously induced under SVF value smaller than 0.35. This indicates that the urban design or the combination pattern design of the construction could optimize the city space condition under specific constant SVF value.

This paper investigated SVF in 6 public spaces including S-Space, M-Space shown in *Table 8*. The result suggests that the public space with an area greater than 6000 m² has a large SVF value and basically does not generate urban heat island effect. When the area is between 3000 and 6000 m², a slight UHI may be produced. Note that surrounded building enclosure and height should be pay attention to controlled to avoid significant UHI with the area less than 3000 m².

Table 8. SVF Changes Under Different Areas

500~3000 m ²	3000~6000 m ²	6000~10000 m ²
		
Tongji Union Square	Xinyi Park	Boyang Park
		
ABC Square	Zhonghe Square	Songhe Park

5. Case Analysis of Micro Public Space

As the spatial form in the actual project is much more complicated than the simplified model, this paper verifies the reliability of the simplified model by investigating the five actual projects and wind simulation. The size of selected 5 actual project areas are similar with each other in the range of 2000~4000m², so as to eliminate the influence of the area factor (Table 9). The surrounding cities varies diversely in form, and Huoshan Park has a high degree of openness where one side is adjacent to the road, and one side is only obscured by the buildings on the corners, forming a very small static wind zone. Other areas are under good wind flow condition and can bring thermal environment improvement. Zhonghe Square and Tongji Union Square have a weakness airflow environment as the blockage of surrounded buildings and high level of enclosure degree. The businesses around Tongji Union Square are mainly catering, causing a large amount of waste heat to be discharged into the square. It is difficult for residents to stay in it for a long time because of the poor ventilated performance resulting in a hot thermal environment. (Figure 3, Figure 4) In the narrow gap between the buildings, an obvious blast jet zone was formed, which adversely affected the surrounding pedestrians. Tongji Mall and ABC Square are close to linear narrow spaces, which are closely related to street aspect ratio and direction. When the orientation of ABC Square and the wind direction are close together, cross-ventilation condition is formed leading to a better airflow environment. Moreover, as the narrow space of Xuhui Mall and the wind direction are under an angle, wind calm area is formed at the entrance and the high air velocity zone is generated at the exit. It can be predicted that as the angle further increases, the wind environment will continue to be exacerbated.

Table 9. Wind Map of 5 Actual Cases

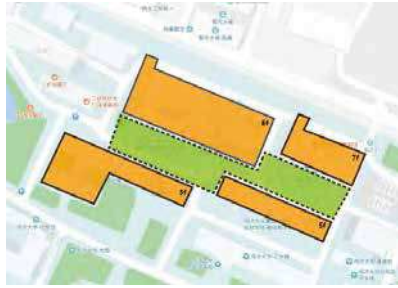
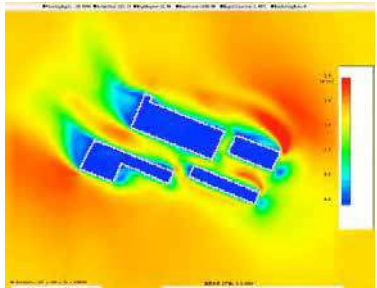

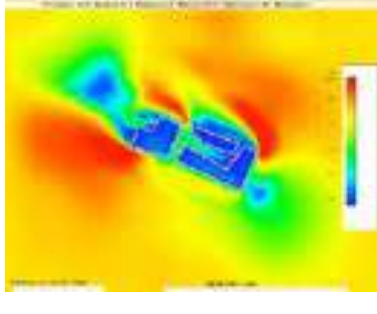

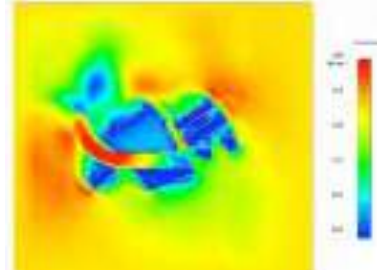

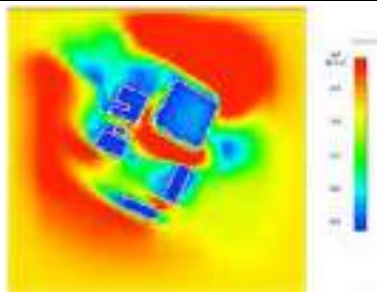

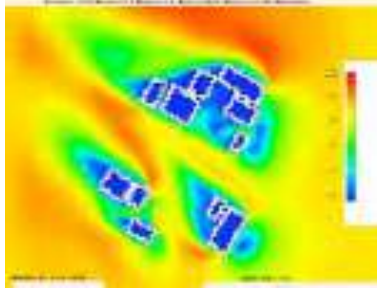
Location	Area	Site Plan	Wind Simulation
ABC Square	2400 m ²		
Tongji Union Square	3000 m ²		
Xuhui Mall	2500 m ²		
Zhonghe Square	3800 m ²		
Huoshan Park	3000 m ²		



Figure 3. Tongji Union Square



Figure 4. Tongji Union Square

It can be observed from the wind simulation comparison between the actual case and the simplified model that although the urban form of the actual project is much more complicated, using simplified model simulation shows a good agreement with the practical cases. In other words, the conclusion of the simplified model can help us to optimize the design of the wind environment in the micro public space. Therefore, simplifying model is an available tool in the process of conducting preliminary design of urban space and qualitative judgment of urban microclimate.

6. Conclusion

The essence of micro-public space is a special functional urban public space created by the designers, scattered or hidden in the urban structure to serve the public directly, could indeed stimulate the social interaction of the crowd. Consequently, urban renewal in high-density central city concentrated on the vitality of public life, especially the updating of small and micro-open spaces is becoming increasingly considerable. Especially with the increase of urban density and mental stress, people need this kind of rest space to get mind relaxation. The present study has provided much useful information for conducting more valid research for future study by refining research methods. It is hopeful that based on the implication from further study in future, a design guideline for policy-makers, urban planners, urban designers and architectures can be formed to create a more energy conscious and comfortable urban environment.

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The tables and figures are drawn by the authors.

A Research Framework of Urban Spatial Planning Regulation Based on Cardiovascular Health in the Context of Severe Cold Climate

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Abstract: Climate has a significant impact on public health. In the context of severe cold climate, severe cold regions have high incidence of cardiovascular diseases. Combining the health problems with regional climate and urban spatial elements, to study the impact of urban space has on public health and planning regulation strategies will help deepen research of healthy urban planning. In this paper, with the analysis of the correlation between severe cold climate, urban space and cardiovascular, we discuss the research significance on urban spatial planning regulation based on cardiovascular health. We try to develop a research framework of urban spatial planning regulation in severe cold regions, through two pathways including reduction of incidence of cardiovascular diseases and promotion of physical activities favorable to prevention and rehabilitation of cardiovascular diseases. With the pathways analysis, preliminary planning regulation strategies are put forward, aiming at providing some support for healthy urban planning in severe cold regions for reducing the risk of cardiovascular diseases.

Keywords: severe cold region; cardiovascular health; urban space; planning regulation

Introduction

Cardiovascular health is the important cornerstone of human health. World Health Organization has reported that about 17.1 million people die of cardiovascular diseases in the world each year, accounting for 29% of all deaths. Chinese Cardiovascular Diseases Report (2017) showed that China had 290 million cardiovascular patients, and cardiovascular disease death ranked the first place of total death of urban and rural residents, higher than that of cancer and other diseases, causing over 40% of residents disease death (Chen W. W. *et al*, 2018). In addition, the elderly are the main sufferers. Relevant studies propose that the elderly have as 2~4 times incidence as non-elderly in hypertension, ischemic cardiovascular disease, atrial fibrillation and coronary heart disease (Geng J.C. and Jian H., 2009; Chen L. *et al*, 2018). According to the statistics published by National Office for Ageing, having stepped into an aging society, China had about 240 million aging population, accounting for 17.3% of the total population in 2017 and the proportion is predicted to reach 34.1% by 2050. In face of the significant public health problem threatening life and health and healthy aging, it is urgent to promote the prevention and treatment of cardiovascular diseases.

Climate has a close relationship with health. The significant impact on public health caused by climate should not be ignored. A large number of studies have found that cardiovascular disease morbidity and mortality are higher in high latitude and cold regions and in winter (Bhatnagar A., 2017). According to the International Association of Cold Cities, there are at least 30 countries located in the northern hemisphere, and more than 0.6 billion people have the life experiences in winter (Jiang C. Y. and Leng H., 2017). How to overcome the influence of climate factors to promote public health in the severe cold regions where cardiovascular health problems are more serious is a key point for prevention and treatment of cardiovascular diseases with regards to both China and the vast cold cities of the world.

A core content of social–ecological models published by World Health Organization is that urban space is an important factor influencing public health through affecting human behaviour, which reveals that reduction of the risk of illness in a larger population may come true by optimizing urban space (Sarkar C. *et al*, 2013). Applying this content to urban space and cardiovascular health, research by Diez-Roux A. V. has showed the correlation between neighbourhood environment and coronary heart disease (CHD) (Diez-Roux A. V., 2001); approaching green space has a significant influence on reducing cardiovascular mortality (Mitchell R. and Popham F., 2008; Shen Y. S. and Lung S. C., 2016); Gan proposed automobile exhaust exposure has a link with the arising of incidence of coronary heart disease (Gan W. Q. *et al*, 2010). Relative studies also show that there is a relationship between residential environment, such as sports facilities as well as quality of leisure activity area, and physical activities; thus residential environment may influence physical activities, further having impact on cardiovascular health (Kohl and Harold W., 2001; Humpel N. *et al*, 2002). Previous studies have revealed the potential relationship between urban space and cardiovascular health.

In this paper, focusing on cardiovascular health problems in the context of severe cold climate, we expect to explore urban spatial planning regulation strategies. On the basis of the analysis of correlation between severe cold climate, urban space and cardiovascular, we illustrate the significance, pathways and methods of urban space planning regulation research based on cardiovascular health in the context of severe cold climate, aiming at providing some theoretical basis and practical guidance for healthy urban planning in severe cold regions for reducing the risk of cardiovascular diseases.

1. Severe cold climate, urban space and cardiovascular health

1.1. Severe cold climate and cardiovascular health

Medical studies support the evidence that severe cold climate affects cardiovascular health. There is a u-shaped relationship between air temperature and cardiovascular mortality- for every one-degree decrease in air temperature in cold regions, cardiovascular mortality increases by 1% (Liu Z. X., 2013). The effects can be illustrated to be direct and indirect. In terms of the direct effects, the outdoor low-temperature environment and the sudden change in temperature between indoor and outdoor space are the key factors influencing cardiovascular health. Low-temperature exposure can result in vasoconstriction, spasm, hypoxia, blood viscosity increase, and increase the burden of the heart. The sudden change in temperature between indoor and outdoor space easily lead to rapid expansion and contraction of blood vessels in the process of indoor and outdoor transformation, resulting in increased vascular resistance and brittleness, which is the key cause of hypertension, coronary heart disease, stroke and other cardiovascular diseases (Hasegawa F. X., 1985). In terms of the indirect effects, severe cold climate can exert effects on cardiovascular health through its influence on urban environment and residents' behavior and activity patterns. In relationship with the long period of coal-burning heating as well as the ascending proportion of vehicle out-driving in severe cold regions in winter, the frequent occurrence of haze and the increase of atmospheric pollutants can cause damage

to human cardiovascular system. Meanwhile, the severe cold climate makes the residents in these regions develop dietary and living habits which are different from those in other regions, such as high-salt diet, less outdoor activities and physical exercise, and overweight or obesity resulting from excess fat metabolism. A number of key risk factors lie in the regional environment and residents' lifestyle in the severe cold regions. On the other hand, it should be noted that medical studies have shown the importance and necessity of appropriate outdoor exercise in winter for the prevention and rehabilitation of cardiovascular diseases, which indicates that severe cold weather has a dual effect on cardiovascular health.

1.2. Urban space and cardiovascular health

According to existing research, urban space is associated with cardiovascular risk factors (such as obesity and lack of exercise) and cardiovascular rehabilitation factors (such as heart-healthy walking activities). For example, more than 60 studies suggest the relationship between urban space and obesity; a number of features of communities in urban space have been proved to relate to BMI; communities with more physical activity resources are associated with lower insulin resistance levels (Li J. and Siegrist J., 2012).

In addition, specific to the impact mechanism, studies have shown that urban space may have an effect on cardiovascular health by affecting air environment, physical activity, social interaction, food intake and so on. In terms of air environment, studies have confirmed that urban space is related to the reduction of air pollution (Alonso R. *et al*, 2011; Rao M. *et al*, 2014), and several studies have linked air pollution to an increasing incidence of cardiovascular diseases (Metzger K. B. *et al*, 2004; Feng J. and Yang W., 2012). In terms of physical activities, lots of studies have shown the correlation between spatial elements such as green space and physical activities, while the correlation between physical activity level and cardiovascular risk has been widely confirmed (Li J. and Siegrist J., 2012). In terms of social interaction, some studies have shown that urban space is positively correlated with social support level, and a large number of studies have found that low social support level is one of the risk factors for cardiovascular diseases. In terms of food intake, the consumption and supply distribution of food in urban space will also affect residents' diet, which is closely related to cardiovascular health (Chum A. *et al*, 2013). Therefore, air environment, physical activity, social interaction and food intake mediate the impact of urban space on cardiovascular health, and the differences in urban space are important factors leading to the differences in cardiovascular health status.

1.3. Urban space and cardiovascular health in the context of severe cold climate

Under the direct effects of severe cold climate on human cardiovascular system and the indirect effects on urban environment and residents' lifestyle, residents are at higher risk of diseases due to factors consisting of the stimulation of cold air, increasing air pollutants, insufficient physical activities and social interaction in winter, as well as high-salt diet. Research from Huang Likun *et al* indicated that under the influence of urban 6-month-heating period in winter, cities in severe cold regions of China have higher concentration of suspended particulates and extremely serious air pollution (Huang L. K. *et al*, 2011). Introducing the existing survey, Yang Baofeng proposed that due to the long winter in northern China, residents have less time for outdoor activities, and almost 80.5% of them never exercise (Yang B. F., 2015). A statistical survey conducted by the Food and Nutrition

Advisory Steering Committee of Heilongjiang Province showed that the average daily salt intake of urban and rural residents aged 18 years and over was 10.6 g per person in the province, which exceeded the recommended daily intake limit of 76.7% in the Dietary Guidelines for Chinese Residents (Chen K. *et al*, 2015).

In view of the mediating factors of the impact of urban space on cardiovascular health, existing studies have provided evidential support and realistic plans for optimizing urban air quality in winter and promoting residents' physical activity in winter through urban space variously. For instance, Kong Fanqiu *et al* studied urban space optimization in cold regions based on air quality analysis in winter (Kong F. Q. *et al*, 2018). Tucker P. and Gilliland J. reviewed the literature about the participation of people in different age groups in sports activities in cold regions (Tucker P. and Gilliland J., 2007). Leveratto J. and Maria studied the morphological scale of buildings surrounding the open space, aiming at improving the comfort and utilization rate (Leveratto J. and Maria, 2002).

Previous studies provide a theoretical basis to clarifying effects of severe cold on cardiovascular health, and revealing the possibility of optimizing intermediate factors through urban planning and design for reducing risk of cardiovascular diseases. However, research combining climate, urban space and cardiovascular health remains to be explored; the correlation between urban space and cardiovascular health in the context of severe cold climate requires to be understood. Here, the specific impact of urban spatial characteristics on cardiovascular health in winter and the role that urban space can play in resisting the threat to cardiovascular health posed by severe cold climate need to be further clarified.

2. Significance and theoretical framework construction of urban space planning regulation research based on cardiovascular health in severe cold regions

2.1. Research significance

Focusing on specific diseases to improve the quality of urban space planning, the research of urban space planning regulation help to promote healthy city planning in severe cold regions for reducing the risk of cardiovascular diseases. As for the severe cold cities in China with more harsh winter weather, more aging population and more higher risk of cardiovascular diseases, the research has more special significance. Taking Heilongjiang Province (a typical province located in severe cold regions) in China as an example, clinical data shows that hypertension, heart failure, coronary heart disease, arrhythmia and thrombotic diseases caused by severe cold climate are quite common in the province. Among the diseases, the prevalence of hypertension is 25.69% in the province, while that of the nation is only 18.81% averagely. Research from Harbin, a typical severe cold city in China, shows that cold temperature is responsible for 2.7 percent of deaths, especially for coronary heart disease patients who are affected by cold stimulation most (Liu Z. X., 2013). At the same time, Harbin has entered a fast development period of population aging. At the end of 2016, there were 1.924 million elderly people, accounting for 20 percent of the total population in the city (the 13th Five-Year Plan for the Development of Harbin Aging Cause, 2017). With significant high-risk population gathering characteristics, the city is facing a very serious situation of cardiovascular diseases. Therefore, it is of great significance to explore how to carry out urban planning for promoting cardiovascular health in the context of severe cold climate to improve relevant theoretical research and practical development in the field of healthy urban planning as well as healthy aging.

2.2. Theoretical framework construction

Based on the analysis of the relationship between severe cold climate, urban space and cardiovascular health as well as the illustration of the research significance, we intend to establish a theoretical framework of urban space planning regulation research based on cardiovascular health in severe cold regions. We aim at adding the content of urban space planning regulation research focusing on specific diseases- cardiovascular diseases in the context of regional climate to the existing research on healthy urban planning, with emphasis on the potential impact of urban space in severe cold regions on cardiovascular health, thus to enable the urban space to play a role in reducing the cardiovascular disease risk and promote cardiovascular disease rehabilitation to a certain extent.

The theoretical framework, shown in Figure 1, illustrates two pathways of urban space planning regulation research based on cardiovascular health in the context of severe cold climate. The first pathway in the framework is achieved by the protection of urban space for cardiovascular health, namely through urban space planning and design, to reduce the damage resulting from the adverse environmental problems on cardiovascular health, including reduction of cardiovascular disease risk from the low temperature, temperature change between indoor and outdoor space and air pollution. The second pathway in the framework is achieved by the active intervention of urban space for cardiovascular health, namely through urban space planning and design, to promote the occurrence of overall daily physical activities and exercise beneficial to cardiovascular disease prevention and rehabilitation.

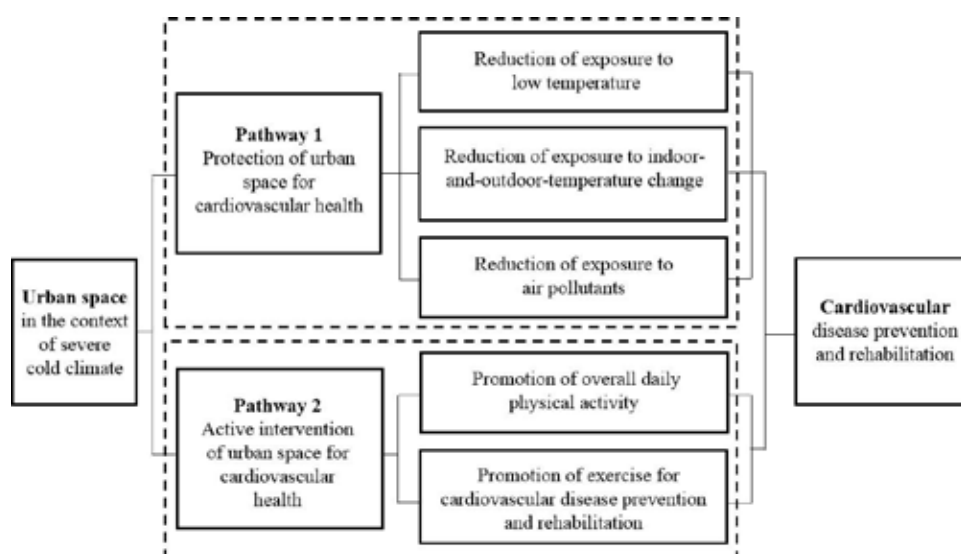


Figure 1 Theoretical framework of urban space planning regulation research based on cardiovascular health in the context of severe cold climate

In combination with these two pathways, the analysis of the situation and planning regulation in the urban space planning regulation research based on cardiovascular health in severe cold regions can be done from two perspectives. From the perspective of the protection of urban space for cardiovascular health, the research should emphasize on cardiovascular disease risk factor analysis, including the content of exposure analysis of low temperature environment, indoor-and-outdoor-space temperature change and air pollution. By identifying regions and nodes where cardiovascular health is faced with greater climate impact and the disease risk is higher, key regulatory areas will be determined, and then

corresponding planning regulation can be carried out. From the perspective of the active intervention of urban space for cardiovascular health, the research should emphasize on the analysis of supportive elements of overall daily physical activities and exercise beneficial to cardiovascular disease prevention and rehabilitation, including the content of daily public service facilities and public space. By analyzing the correlation between supportive factors and the promotion of physical activity for cardiovascular disease prevention and rehabilitation, the regulatory objectives of public facilities and public space will be determined, and the corresponding planning regulation can be carried out.

3. Urban space planning regulation based on cardiovascular health in severe cold regions

3.1. Cardiovascular disease risk factors analysis and planning regulation

There may exist risk factors with potentially negative effects on cardiovascular diseases in severe cold regions. We suggest to analyse and clarify the potential types and spatial distribution of pathogenic risk factors in planning schemes or projects, and then carry out targeted planning regulation on this basis. It can be carried out from the low-temperature exposure, indoor-and-outdoor-temperature change exposure, air pollutants exposure and other factors that have influence on cardiovascular health.

Reducing the low temperature exposure level of residents in urban space is conducive to improving the safety and comfort of urban space, so as to mitigate the severe impact of low temperature environment on human cardiovascular system properly. Low-temperature exposure is distributed in various places of residents' outdoor where people participate in travel, leisure, exercise, entertainment and other daily activities. Given the restriction of natural meteorological conditions, the low-temperature environment of these places is difficult to be changed significantly. Therefore, it is advisable to focus on key areas for regulation, especially where winter activities are particularly threatened by low temperature, such as traffic waiting area, leisure and exercise-oriented public space and so on. First of all, the waiting node can be designed to defend the climate. For example, the heated waiting hall, connecting corridor, underground passage, overpass bridge and gray space of eaves corridor can be set up at the transitional space between traffic and buildings. Secondly, the physical environment of public space can be designed and optimized. For instance, the form of streets and the layout of public space can be optimized and adjusted based on the analysis of sunshine and wind environment. Thirdly, the capacity of indoor activity space in winter can be expanded, such as the sharing of indoor activity space with school or office at different time.

Given the impact of indoor-and-outdoor-temperature change on the intensity of human blood vessel contraction and diastole, the adaptive design of indoor-and-outdoor-temperature difference is favorable to alleviate the human blood circulation obstacle resulting from it. The indoor-and-outdoor-temperature change exposure mainly exists in the boarder area between indoor and outdoor space, such as the area between the indoor space of residential houses, daily activity facilities and outdoor public space. The variation of temperature difference between indoor and outdoor space mainly exists in the area between the indoor space of residential houses, daily activity facilities and outdoor public space. In the process of planning regulation, combining medical research and methods of the temperature test and simulation of the boarder area, the thermal comfort survey and so on, indoor-and-outdoor-temperature range for reducing the degree of vascular contraction diastole can be confirmed. With regards to planning regulation strategies, the temperature environment of outdoor entry space,

the temperature gradient design of transition space, and the temperature design of the indoor space can be considered, achieving the gradual buffer and transition of indoor-and-outdoor temperature.

Air pollutant exposure is another important factor that causes cardiovascular diseases. Analyzing the types and spatial distribution of air pollutant exposure and proposing targeted planning regulation strategies are helpful to reduce the concentration of pollutants and thus to weaken their harm to the human cardiovascular system. The main types of air pollutants that affect cardiovascular health include haze and automobile exhaust. The exposure of pollutants is mainly distributed in the travel path, road intersection, traffic transfer waiting area, and the adjacent area between the activity area and the road among the daily activity space of residents. With regards to planning regulation, methods such as layout adjustment, shape optimization and pollution source isolation can be adopted to reduce the exposure of air pollutants. The specific ways include adjusting the pollution source land, optimizing the block form, setting up the greening-isolation belt of fitness ground and configuring the dust plants.

3.2. Cardiovascular disease prevention and rehabilitation resources analysis and planning regulation

Combined with the concept of health resources proposed by Wang Lan et al (Wang L. *et al*, 2018), from the perspective of active intervention of urban space for cardiovascular health, the supporting factors of the urban space for physical activity for cardiovascular disease prevention and rehabilitation will be analyzed here. Taking the promotion of overall daily physical activity as well as exercise for cardiovascular disease prevention and rehabilitation as two goals, we propose three aspects involving analysis and planning regulation, consisting of accessibility and proximity of daily public service facilities and public space, convenience and connectivity of facilities combination, the support of physical fitness facilities for cardiovascular disease prevention and rehabilitation.

The accessibility and proximity of daily public service facilities and public space is an important precondition to attract residents to the facilities and space for physical activity, which plays an important role for people to develop daily exercise habits and form exercise compliance-both for the healthy people and patients with confirmed cardiovascular diseases and those with potential risk of cardiovascular diseases such as diabetes, hypertension and hyperlipidemia etc. The accessibility and proximity can be analyzed by GIS to identify the overall fairness of the planning area and the supply and demand matching, on the basis of the distribution of the elder or patient population. Then planning regulation can be implemented focusing on the areas with higher risk of cardiovascular diseases, with regulatory elements such as road network structure, pedestrian space, barrier-free facilities, site layout and so on (Zheng C. Y. *et al*, 2017).

The convenience and connectivity of facility combination play a role in cardiovascular disease prevention and rehabilitation mainly through residents' daily use of facilities to promote traffic walking physical activities, so that residents can improve their physical activity level to some extent even if without deliberate exercise. Taking an old man suffering from cardiovascular disease as an example, the combination and connectivity optimization of facilities such as the market and the physical fitness facilities with high frequency of daily use can provide convenient walking travel options for him, so that he can complete daily travel more on foot. In addition, enhancing convenience and connectivity of facility combination can also help reduce prolonged low-

temperature exposure in winter, with dual protective and intervention effects for the prevention and rehabilitation of cardiovascular diseases. The analysis of convenience and connectivity of facility combination can be carried out through questionnaire, interview and other survey methods to investigate residents' and patients' use frequency and demand for daily public service facilities and different facilities combination, and to combine or set up facilities with high use frequency and demand nearby (Li M. *et al*, 2017). Apart from that, the spatial environment of the connection path of facilities can be investigated and analyzed through field survey and other methods, and also the targeted regulation strategies can be brought forward, such as adjusting the connection path of facilities used frequently and connecting the interruption path, so as to enhance the connectivity of the path.

The support of physical fitness facilities for cardiovascular disease prevention and rehabilitation means to analyze and planning regulate the physical fitness facilities according to medical research and exercise prescription for cardiovascular disease prevention and rehabilitation. Medical research indicates that exercise is essential for cardiovascular disease prevention and treatment, which should be regarded as significant as diet control (Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes, 2018; Joshua J. J. *et al*, 2019). The contents of exercise prescription for the prevention and rehabilitation of cardiovascular diseases include exercise items, intensity, time and frequency. In terms of exercise items, according to the research from Lancet, the top three exercises that are most beneficial to cardiovascular health are swinging, swimming and aerobics (Lee I. *et al*, 2012). In addition, as a safe, simple and easy exercise to adhere to, walking is considered as the first choice of exercise for elderly diabetic patients. Then the demand of walking and aerobics for physical fitness facilities in winter can be analyzed, such as the layout and design of anti-skid track in the community, as well as the composite use with the residents of lower age groups. In terms of exercise intensity, middle-aged and elderly patients should take low-intensity exercise due to more complications, while young people or individuals with better physical quality can take shorter and higher intensity or interval training (at least 75 minutes/week). Then the preference features of medium and low intensity exercises for physical fitness facilities can be analyzed, such as the site size, facility preferences, so as to adjust the site design and facilities configuration. In terms of time and frequency, for most people, the general recommendation is to exercise at least five days a week for at least 30 minutes a day, or 150 minutes a week. Then the thermal comfort environment of physical fitness facilities in the ideal time of exercise in winter can be tested and simulated to obtain the differences of the thermal comfort status of different positions in the public spaces. Based on that, the site selection and layout adjustment for different exercise prescription items can be carried out to extend the exercise time. The environmental factors that attract residents to stay can also be investigated and analyzed, such as winter ice sculpture, snow sculpture, and night lighting, so as to set up corresponding spots to enhance sports frequency and cultivate sports compliance by enhancing the attraction of physical fitness facilities.

4. Conclusion

With the comprehensive analysis of the relationship between the severe cold region, urban space and cardiovascular health, this paper introduces the significance of urban space planning regulation research based on cardiovascular health in severe cold regions. Then a theoretical framework is established, illustrated as two pathways, one path is to reduce the pathogenic risk factors in the urban space, the other is to promote the physical activities for cardiovascular disease prevention and

rehabilitation. In addition, we propose corresponding planning regulation strategies on the basis of pathway analysis. This paper has made a preliminary discussion in theory, in order to provide a basis for subsequent empirical research, and to provide new ideas and methods for healthy urban planning for reducing the risk of cardiovascular diseases in the context of severe cold climate.

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The construction of pedestrian network in urban blocks: A case study

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Abstract: In the past decades, the urbanization of China has developed faster. The pedestrian accessibility of large old residential areas with new village-style becomes worse due to the large scale and few entrances and exits for residents. Simultaneously, the closed communities seriously affect the development of urban areas induced by poor urban living atmosphere, incomplete pedestrian system and traditional public space node setting. The public spaces where walking is the mainly activity need optimization urgently. This paper took Anshan New Village as an example and applied spatial syntax to analyze spatial accessibility and integration based on the current investigation. The study demonstrated that the network system should be established to improve the pedestrian environment in large urban blocks and the measurements of construction of pedestrian network were also suggested. Dredging the pedestrian path and increasing public space nodes can better build the urban pedestrian network and realize the balance between privacy, publicity and security. The conclusion of this paper can provide reference for building a good pedestrian environment in the process of urban renewal in Shanghai.

Keywords: pedestrian network; large old residential areas; public space node; spatial syntax

Introduction

In recent years, building green architecture and sustainable cities have become important in all sectors of society. The WELL standard of the United States puts forward seven core systems, i.e., air, water, nutrition, light, fitness, comfort, spirit. It pays attention to the impact of urban environment on human health. The ultimate goal of urban sustainable development is to create a healthy living environment of high quality for human beings. As the most basic mode of transportation in a city, Walking not only plays a key role in alleviating traffic pressure, creating a green city, energy saving and emission reduction, but also promotes interpersonal communication, contributes to health and is conducive to the construction of a healthy city. Currently, construction of walking environment has become a major direction of healthy cities. However, with the rapid development of urbanization, population agglomeration and modern transportation, motor lanes are gradually eroding the traditional pedestrian space. Vehicle lanes, automobile exhaust, dust, haze and other factors affect our walking environment in varying degrees. Poor air quality and lack of exercise seriously affect people's health. Therefore, a good walking environment is the foundation of building a healthy city.

In the early days, industry developed rapidly and the working class population doubled due to the influence of Soviet. In order to solve the problem of accommodation for the working class, a new construction model for

workers villages emerged all over the country. The construction process of Shanghai Workers New Village had spanned from 1949 to 1978. During this period, about 11 million square meters of newly added housing area in Shanghai were workers new villages, accounting for two-thirds of total newly added housing area. In the past decades, the workers new villages have always been the important component of figure ground in Shanghai. However, the construction of workers new villages such as Anshan New Village has been existed more than 30 years and the surrounding urban areas are becoming mature. Residents in the new villages need more diverse daily life and demand higher quality of space. There is a huge contradiction between the old physical space and the needs of residents. How to change the current situation and improve the quality of space has become a top priority (Song, 2018). Currently, many studies have been addressed on this kind of urban phenomenon for more healthy pedestrian system.

Since Perry put forward the theory of Neighborhood Unit, this model has been used in residential areas, i.e., transit traffic avenues are arranged around the border, and the internal road system does not connect with the external. Although the latter traditional neighborhood units add other living facilities to create rich community life, centralized living has been developed under the guidance of the idea of neighborhood units resulting in the inadequate function of residential areas. In addition, the closed residential mode in China induces the split of urban pedestrian transportation system and brings great inconvenience to our daily life. Domestic research on the openness of residential areas begins with the criticism of closed residential areas. A large number of scholars criticize the closed residential areas and residential areas under the traditional planning theory mode. With the continuation of relevant research, the focus of research on the openness of residential areas has shifted from the criticism of closed residential areas to the practice of solving the closed problems. In recent years, the government has increasingly encouraged and supported the construction of open residential areas. Xinhua News Agency proposed that in principle, new residential areas should no longer be built in closed residential areas, and residential areas and unit courtyards that have been built should be gradually opened. It is pointed out that community opening can alleviate traffic pressure, stimulate community vitality, promote urban harmony and improve urban ecology, and can effectively solve urban diseases (Xinhua News Agency, 2016).

Streets have always been an important area of urban research. Jacobs compared hundreds of streets around the world and lists the best street models in the world. A great street should contribute to the formation of neighbourhood relations, be safe and comfortable in the physical environment, encourage the participation of the public, imprint on people's minds, and become a representative model (Jacobs, 2009). Lu discussed how to explore the visual order law in the design of building layout from the natural characteristics, aesthetic laws and humanistic characteristics of streets (Lu, 2006). Gail suggested the public communication in the street and emphasized the study and evaluation of the quality of public space in cities and residential areas from the perspective of the requirements of people and their activities on the physical environment. When social behavior and incidental behavior occur, it is necessary to create suitable space for social interaction for these behaviors (Gehl, 2002). Jacobs argued that street safety cannot be achieved by public security, but by street eyes, that is, people's conscious (subconscious) supervision. It challenges the traditional urban planning theory, deepens our understanding of the complexity and development orientation of the city, and provides a basic framework for evaluating the vitality of the city (Jacobs, 1961). In recent years, Street guides have been made around the world considering the importance of urban streets. The United States has put forward complete street guides, which are designed to make them safe for all users, regardless of age, physical condition or mode of transportation. More emphasis is placed on safe walking environment (Chen and Liu, 2017). The Guidelines for Shanghai Street Design emphasizes the construction of street interface, street pavement and the size of street space to create safe streets, intelligent streets, vigorous streets and green streets for Shanghai citizens.

This paper took Anshan New Village in Shanghai as an example and aimed to optimize the internal pedestrian structure of the old and new residential areas in Shanghai New Village and build a walking environment

conducive to people's health. Based on spatial parsing, this paper evaluated the original walking system of Anshan New Village and put forward corresponding solutions to the problems of the original walking system. The finding shows that the network pedestrian system of Shanghai blocks can be well constructed and the urban renewal of Shanghai can be promoted according to dredging pedestrian paths and adding public space nodes.

The study area

As shown in Figure 1 and Figure 2, Anshan New Village is located in Yangpu District, Shanghai, within the boundaries of Jiang-Controlling Road, Dalian Road, Siping Road and Zhangwu Road. This area was founded in the 1950s. In the past decades, Anshan New Village has been expanding continuously and has eight residential areas currently. Anshan New Village was once one of the largest and earliest workers new villages in Shanghai. The interior of the community is mostly a six-storey determinant slab building. Because of the long construction time, the social background and the main body of the construction are more complex.



Figure 1. Macrolocational map of Anshan New Village, Shanghai



Figure 2. Microlocational map of Anshan New Village, Shanghai

As shown in Figure 3, Anshan New Village has a larger neighborhood scale and dense buildings than the residential areas built in recent years. The figure ground of the buildings is arranged in parallel in determinant form, which retains the characteristics of low-rise and high-density construction in the old worker's residential areas. There is a thick wall between the residential area and the city, which severely separates the connection with the urban environment. The scale of eight residential districts in Anshan New Village is different. The main structure of residential districts is large and severely fragments the urban pedestrian road system. There are Tongji University Station, Siping Road Station of Metro Line 10, Siping Road Station of Metro Line 8 and Anshan New Village Station in Anshan New Village District. The dense distribution of bus stations and rail transit system has become the barrier for the pedestrian environment in the area. In addition, since the residential areas are close to the main roads of Siping Road, Dalian Road and Zhenjiang Road, the internal pedestrian environment and accessibility are poor and public space is scarce. The relationship with the surrounding urban environment is very negative due to lack of reasonable pedestrian system. As shown in Figure 3, Anshan New Village only has one direct pedestrian road between Siping Road and Fuxin Road and the region only has four entrances and exits along Siping Road for people living in the community. The street interface is closed and the

relationship with the city is weak. Usually, people have to go around reaching Siping Road from the residual area due to the unreasonable pedestrian system.

Methodology

Space Syntax theory was first put forward and used by Hillier and the study object is spatial ontology (Hillier, 1984). The method applies quantitative analysis to describe the spatial structure of cities and buildings and abstracts the spatial relationship through modeling. Additionally, the theory explores the relationship between spatial ontology and other non-spatial factors, such as the accessibility of space, the relationship between space structure and human activities. Spatial syntax has been widely used in various aspects of urban space, i.e., urban land use, urban morphological development and road accessibility.

This paper firstly extracted the central line of pedestrian path in Anshan New Village area based on spatial syntax and draws the axis map. Thereafter, integration, selectivity, global depth, connectivity and comprehensibility were analyzed and the existing pedestrian system in Anshan New Village was evaluated. In general, when the travel radius is less than 1000 meters, it is completed by walking (Xia, 2018). Therefore, this paper took 10 minutes walking distance, namely 800 meters, as the travel radius to study Anshan New Village. Then, a new scheme to build a more efficient walking system was proposed and the new walking system was presented based on the existing walking system problems.

Problem analysis of current pedestrian system of Anshan New Village in Shanghai

Through field investigation and spatial syntax, the problems existing in Anshan New Village are analyzed and summarized as follows.

1. As shown in Fig. 4, Fig. 5 and Fig. 6, the large size of neighborhoods results in inadequate pedestrian links between urban roads. Fewer entrances and exits along Siping Road and closed interfaces induce unobstructed pedestrian links between urban roads. The area is located between Siping Road Station of Metro Line 10 and Tongji University Station. Although the traffic volume is large, the routes to subway station, bus station and other public facilities in the district are more circuitous. The larger scale of closed unit causes the situation of pedestrian bypass;



Figure 3. Figure ground of Anshan New Village, Shanghai



Figure 4. Lot division of Anshan New Village, Shanghai

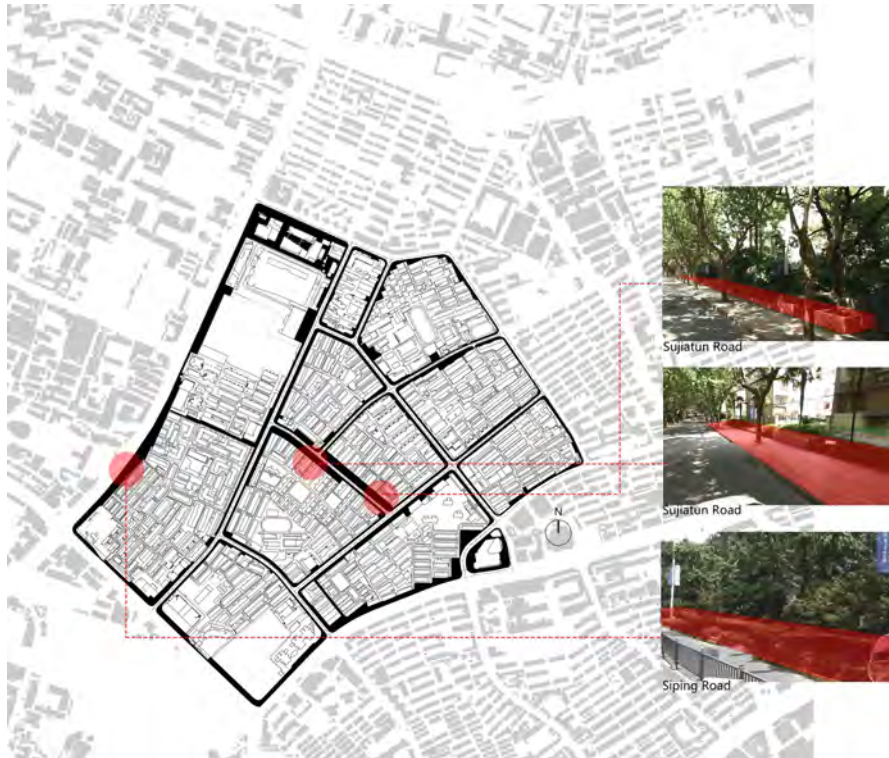


Figure 9. Public space nodes

Strategies for construction of new pedestrian system of Anshan New Village in Shanghai

For large new village residential areas with long construction time, it is a challenge to upgrade the spatial quality of urban renewal. According to the analysis of actual cases and results of spatial parsing, it is necessary to build a network system of pedestrian system and public space nodes to effectively update large-scale new village residential areas. When the pedestrian system and public space are connected into a network, the residual area will have higher connectivity and more route choices. The network space system can effectively guide people's travel and increase people's walking movement. To establish the network system of pedestrian system and public space nodes, the following principles should be met first.

1. Increase pedestrian path density. Based on comparing the areas with good walking experience, i.e., Puxi people's Square, Tianzifang, the Bund, Wu Kang Road and the areas with poor walking experience, i.e., Pudong Oriental Pearl, Shanghai science and Technology Museum and Lian Yang community, we found that when the length of the road in each square kilometer is about 10 kilometers, it is the most suitable way to create a pleasant walking environment. As shown in Figure 10, for better increasing the accessibility of internal roads in large residential areas, it is important to open up the broken roads in large-scale new village residential areas, build new path links relying on the original path, divide the large-scale plots into small plots with moderate scale and convenient access;



Figure 10. Comparison of route density in different areas in Shanghai (Sun and Xu, 2017)

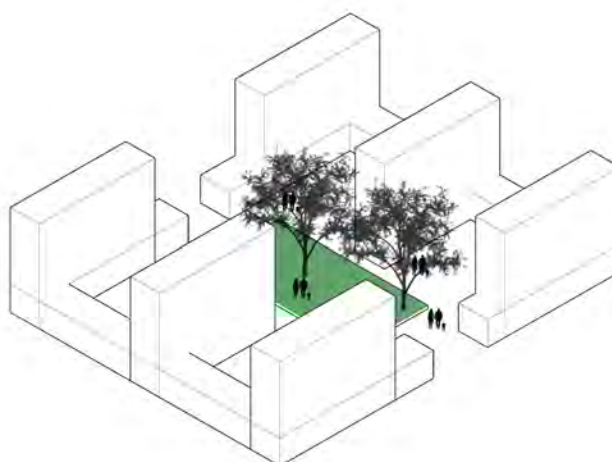


Figure 11. Enclosed unit of residual area

2. Increase public space nodes, i.e., add urban public space nodes at the junction of blocks, street corners and the center of public space structure, add community public space nodes between districts and districts, and add neighborhood public space nodes within groups. Public space nodes and walking paths form a tensioned network of public space network structure, which constructs a pedestrian space environment for urban people. There should be functional interface support around public space nodes, and the interface should be open to the public;
3. Create a reasonable open neighborhood size to achieve a balance between public and private. Closed residential district has the characteristics of quiet and safe, but it is difficult to meet the growing demand for physical space due to the lack of public facilities. People hope to open up enclosed residential areas and create open blocks. However, it is easy for the idle and miscellaneous people to enter after the opening of

the community, which challenges the security of the residential area. So we should create a new mechanism and reasonable size of the neighborhood to provide a small range of privacy for residents and meet the requirements of openness. As shown in Figure 11, the original determinant slab dwellings are partially enclosed by increasing the volume of the edge buildings. The interior is a private space, while the exterior is a public space. At the same time, the underlying functions will be replaced into commercial space, and businesses will become "street eyes" to ensure the safety of the community;

4. Improve the quality of walking space. Along the pedestrian path, trees can be planted, seats and other urban furniture can be placed, public facilities, business interfaces and public places for daily life can be increased, and water-permeable hard pavement can be laid on the pedestrian road. Through a series of detailed considerations, we can improve the quality of walking space and provide a good walking experience for travelers and create a vibrant urban living place.

Under the basic principles of pedestrian system and public space node network system, aiming at how to carry out effective urban renewal and build high-quality pedestrian space network in Anshan new area, this paper uses spatial syntax to assist specific urban renewal strategies, which are summarized as follows.

1. Increase the path density. According to the design principle of 10 kilometers per square kilometer of land in pedestrian area, the pedestrian path is added to the interior of Anshan New Village to optimize the way of path connection. The pedestrian path in the original community will be opened as an open urban pedestrian path. As shown in Figure 13 to Figure 15, through the spatial syntax analysis of the integration and connectivity of pedestrian roads in Anshan Xincun area, Fuxin Road, as the only street in the area that can directly connect Zhangwu Road and Dalian Road, has the highest integration, selectivity and connection value. Tieling Road, Jinxi Road and Sujiatun Road have higher integration, and Jiangpu Road, Anshan Road and Tieling Road have better connectivity. However, the internal road network of large-scale residential areas is not fully opened and the integration degree and connection value of pedestrian roads is extremely low. The main roads to Siping Road of the city are few and the integration degree is low, so the pedestrian system network has not been formed. Fuxin Road, Zhangwu Road, Tieling Road, Fushun Road, Anshan Road, Jinxi Road and Sujiatun Road are all the main roads with large traffic volume, but the interior of the district is closed and deep. So we should increase the density of road network in places with low integration and open the urban pedestrian path system in places with high connection value. The new road network system was shown in Figure 16 and the measurements were summarized as follows.
 - Chifeng Road will be connected with Fuxin Road. Three axes in series will be built between Dalian Road and Zhangwu Road, along Siping Road. Break the barrier between Fuxin Road and Siping Road. These strategies will increase the opening degree of the interface along the street. According to increasing the entrances and exits along Siping Road and opening the interface, people can easily and quickly reach the main road of Siping Road. The opening of the interface improves the integration of the road network system and increases people's choice of roads.
 - Connect Jinxi Road with Dalian Road and Yanji West Road. Connect Sujiatun Road with Jiang-Controlling Road. Connect Tieling Road with Jiang-Controlling Road. Fuxin Road and Tieling Road will be extended northward to intersect the central node space in the new bus village. Meanwhile, the north-south, East-West of the new bus village will be connected to form a cross-axis pedestrian road network system. Finally, create open blocks and dredge the city capillaries.



Figure 12. Integration



Figure 13. Choice



Figure 14. Total depth



Figure 15. Connectivity

2. Add public space nodes. The places with high integration degree should be active, but some areas with high integration degree are crowded and have poor quality. It is necessary to expand public space and form node squares. Fuxin Road, Anshan Road, Sujiatun Road and Dahushan Road have a high degree of integration, which makes them easy to gather traffic. Simultaneously, they are also places where people have a strong understanding of space and a high degree of comprehension. They are suitable to construct public space nodes. The new pedestrian public space was shown in Figure 17 and the measurements were summarized as follows.
 - Focus on building Jinxi Road, Fuxin Road, Anshan Road, Sujiatun Road and Tieling Road and make them become pedestrian streets. Widen the pedestrian roads on both sides of Sujiatun Road and Dahushan Road and remove the fences on both sides of the road. Increase the openness of the interface. By replacing the functions of the bottom floors of the buildings on both sides into commercial shops, residents are allowed to declare functional replacement so as to provide merit for the pedestrian roads. Jinxi Road and Sujiatun Road will be built to pedestrian roads and Fuxin Road will be built to a pedestrian priority road. Fuxin Road before and after two sections can allow motor vehicles to pass and the middle part can be used as a pure

pedestrian road. Fuxin Road, Jinxi Road, Zhangwu Road, Anshan Road and Sujiatun Road have become the main spatial topological structures, and the public spaces along them will be strengthened.

- Public node squares are built at new openings along Siping Road. City squares are constructed at TOD nodes between Tongji University Station and Siping Road Station. The turning points of Jinxi Road, Anshan Road and Fuxin Road form public space nodes. The core node square is set at the junction of Jinxi Road and Tieling Road.
- When the building is densely textured and there is no public space reserved, the buildings with poor living conditions and suitable transformation will be dismantled through functional replacement. the bottom part will be removed and public facilities will be increased to form public places of activity.



Figure 16. New road network



Figure 17. New public pedestrian space

3. Build a reasonable neighborhood size. The largest, smallest and average neighborhood size in Anshan New Village are 600*500 meters, 100*200 square meters, and 400*300 meters, respectively. Via segmentation of existing neighborhoods, about six determinant buildings are partially enclosed to form a private unit. The new size is about a quarter of the size of the current neighborhood and there is a branch between 80 and 100 meters. The inner part of the private unit is a community garden, which is only for the leisure and enjoyment of the people in the unit. Private units become public space outside through the replacement of the underlying functions into shops to create street eyes. Retail stores not only support pedestrians purchase needs, but also play the role of community safety monitoring, which is conducive to the formation of community atmosphere. According to the enclosure of small blocks, the unit is more private inside and has commercial function support outside. The specific measurement was summarized as follows.
 - The five villages in Anshan, six villages in Anshan and seven villages in Anshan are re-divided to form three residential groups. The plots along Siping Road are re-divided for high-intensity development. At the same time, the four villages in Daanshan will be re-divided to create a reasonable size of the neighbourhood.
4. Improve the quality of walking space. As shown in Figure 18 and Figure 19, the synergy between global and local integration of Anshan New Village is 0.56. Current road synergy is relatively general, indicating that it is difficult for residents to recognize the whole through local. The degree of synergy between connectivity and integration is 0.25. In the pedestrian road, there are many broken roads, T-shaped roads and so on. The comprehensibility of the pedestrian road is very poor. It is difficult for the pedestrian to feel the surrounding space environment. The lack of highly identifiable node space in the regional road network

system leads to the lack of perception of the overall form of the city. Therefore, we must rely on several main development axes to complete the subjective perception of urban form. The vision of city life was shown in Figure 20 and the specific measurement was summarized as follows.

- In the places with higher integration, the node public space with perceptible urban intentions is arranged. On the main spatial topological structures along Siping Road, Fuxin Road, Jinxi Road, Anshan Road, Sujiatun Road and Tieling Road, the main development axes and urban intentions are formed by expanding public space, increasing commercial interfaces, setting up external swing areas and planting street trees to improve the quality of pedestrian space.

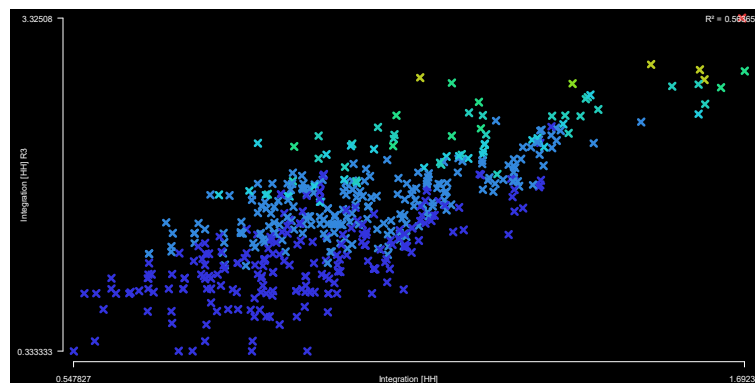


Figure 18. The synergy between global and local integration of Anshan New Village

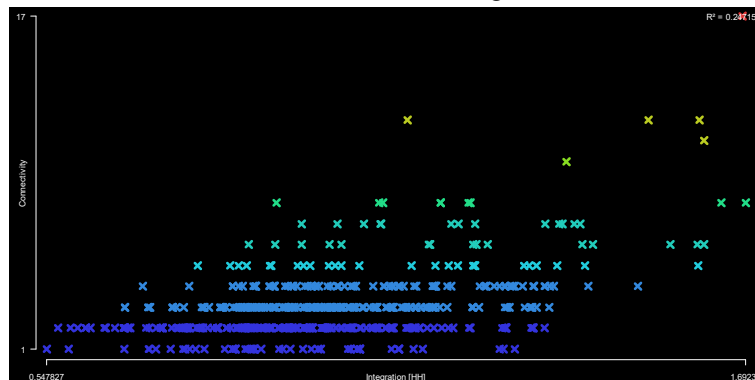


Figure 19. The synergy between connectivity and integration of Anshan New Village

Based on spatial syntax analysis, it is proved that after the formation of pedestrian space network in Anshan New Village area, the integration of internal roads, Fushun Road and Sujiatun Road along Siping Road has been significantly improved, and the accessibility of internal pedestrian roads in large old residential areas has been enhanced. Especially, when the 10-minute walking distance, namely 800 meters, is used as the travel radius calculation, the regional center integration degree has been significantly improved, and the global integration degree has also been improved to varying degrees. Fuxin Road is still the most selective street. However, under the 800 meters travel radius scale, residents obviously have more choices. In addition to the main roads such as Jinxi Road, Zhangwu Road and Tieling Road, there are more roads with the potential to attract cross-traffic. People can go through the interior of super-large-scale residential areas, and travel efficiently and conveniently. Many large-scale plots also have high traffic attraction after being re-divided. Additionally, the connection value of pedestrian structure roads in residential areas has also been significantly improved and the clear pedestrian network has been formed. The degree of synergy between local integration and global integration has also been significantly improved, and the system has good comprehensibility.

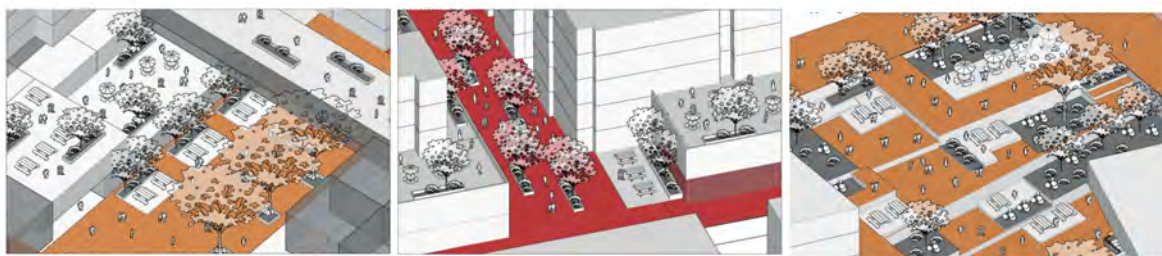


Figure 20. The vision of city life

Conclusion

Walking is the most basic mode of transportation in a city. Walking not only alleviates traffic pressure, saves energy and reduces emissions, but also promotes interpersonal communication and health. Walking is conducive to the construction of a healthy city. In the future, metropolitan cities will face the trend of more dense population and more dense buildings. Many cities will face severe environmental pollution and lack of resources. We should pay more attention to the friendly environment and create comfortable and natural urban pedestrian traffic space.

This paper studied the current network of pedestrian system in Anshan New Village and built a more friendly and healthy urban pedestrian system through increasing the density of pedestrian paths, optimizing the way of path connection, adding public space nodes, and dividing reasonable open neighborhood size. The results can provide a reference for how to establish a good pedestrian environment in the process of urban renewal in Shanghai.

Acknowledgements

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THE REPOSITIONING AND URBANISATION OF HEALTH: NEW HEALTHY PLACES ALONG HOSPITAL-CITY-CONTINUUM AND ITS IMPLICATIONS FOR HEALTHY CITY PLANNING

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Abstract:

The role of health in our cities and in planning is radically changing. Aaron Antonovsky's concept of the Healthsease-Disease-Continuum brought the dichotomy of disease and health to an end. Consequently, the differentiation between a place for the ill (hospital) and one for the healthy (neighbourhood) is outdated and rather moves towards into a Hospital-City-Continuum. While the World Health Organisation (WHO) identified the city and the urban environment as the main setting for health promotion, health infrastructures are gradually losing their insulated positions and turn into integrated elements of the neighbourhood's everyday life. Considered systematically the borders between hospital- and urban areas are blurring. Resulting from this, new fields and places for health infrastructure, health promotions and urban health evolve. At the same time, health promotion and health care increasingly penetrate the everyday spaces in the cities. Digital Health, individualized care, personalised (or stratified) medicine and mobile medical devices are no longer banded to health institutions. On the contrary, they can turn a private bedroom into a temporary patient room. The paper identifies and describes these (new) healthy places, positions them along the Continuum and enquires into their possible futures.

Introduction

The borders between the hospital and the city blur as the first assumes traits of the neighborhood while in the latter health is increasingly playing a distinctive role.

The compact and sealed off hospitals were a result of the last century's new technological and medical achievements. Patients flocked to the clinics for an increasing number of examinations and treatments; stationary admissions became quite common thereby marginalising the outpatient sector. Today, the medical wind is changing. Many devices lost their former size and increased the mobility, a gadget on our wrist monitors our physical functions, telemedicine enables the physician to treat a patient without requiring his direct presence and thanks to minimally invasive surgery patients leave the hospital on the same day of the intervention. Medicine is pushing back into the city and people's everyday life. This development raises the question as to how the nexus of hospital, health and city acts on each of its components. How do we handle the re-urbanisation of health and hospitals?

Historically, the form of a hospital was always a reliable indicator for the importance of health in the city. Every change in opinion gave birth to a new (or at least transformed) image of both the hospital and the city. Consequently, only a joint analysis of the city and the hospital on the one side, and urban planning and public health on the other side, can explain the on-going re-urbanisation. Against this backdrop I will conduct a comparative analysis of historical tendencies regarding the conjunction of the hospital and its (urban)

neighbourhood asking what can be learned from the organisation of the latter for the planning of the first. Opening up these closed or semi-closed entities can only prove beneficial when merging one into the other.

Starting from this assumption, the paper will introduce a new notion of explaining these areas along the lines of Aaron Antonovsky's (1979) idea of the health-ease / dis-ease continuum (HEDE). Differentiating between a place for the ill (hospital) and one for the healthy (neighbourhood) is both exclusive and out-dated as they clearly develop into a hospital-city-continuum (HCC).

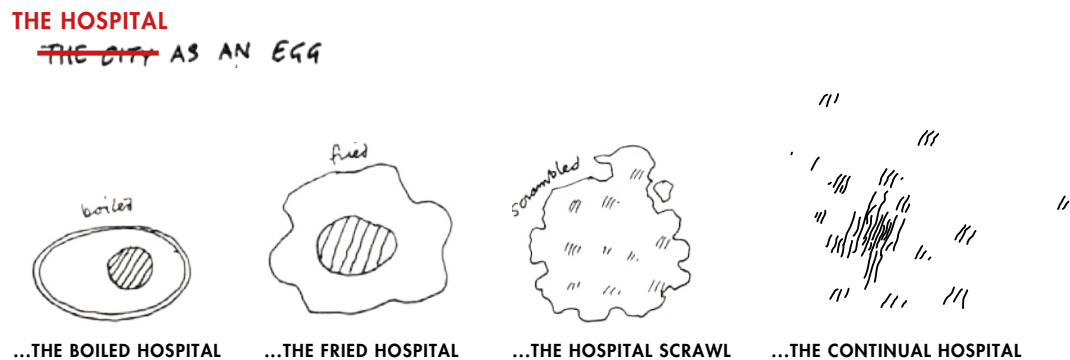


Figure 1: The hospital as an egg (Tracing of Cedric Price's original 1982 diagram, "The City as an Egg.")

The erosion of the "big hospital"

The design of hospitals is radically changing. The number of beds is being reduced, patients get redirected into primary care units or the like, as ever-improving medical engineering contributes to the erosion of the "big hospital". Large specialised and monofunctional central hospitals, the ancient "palaces of medicine" if you like, obviously fail to meet today's demands. While medical care is pushing its way back into the city's heart, the hospital is increasingly requested to take in "urban qualities". Borders between city and hospital are continuously blurred. Once the 20th century's behemoths of medical care, hospitals now seem to morph (back) into the surrounding quarters – a trend which I see as the "re-urbanisation of the clinic". (Wagenaar, 2006)

Hermetic super-hospitals like the Cornell Medical Centre in New York, or the University Hospital Aachen, or the Vienna General Hospital have a quite short history. Their de-urbanised concept, which seemingly disregards the outside world, does barely count a hundred years. Keeping in mind which spirit gave birth to these anti-urban clinics helps to the understanding of their present demise. (Foucault, 1973) Now and then, a wide-ranging repositioning of both the hospital and public health changed their interrelated connections to the city.

From the healing environments of Pavilion Hospitals to medical functionalism

Pavilion hospitals came up as the 19th century's solution to the quest for the ideal conditions of healing environments. Bright, sunny, well aerated and dry rooms were the non-plus-ultra of the time. Physicians were eager to use the results of the freshly blossomed medical empiricism and translate them into scientifically founded building types for hospitals. As measured by the standards of that time, we could read the resulting architecture as evidence-based design.

At the beginning of the 20th century, the medical disciplines change radically. It started to turn into a science, which necessitates ever more and ever bigger apparatuses – most of them immobile. Technical progress forced medicine into stationary treatment and assigned hospitals a hitherto unknown importance. (Corburn, 2009)

At the same time, the doctors' interest pivoted from the patients' living circumstances to their "inner life", the functioning and condition of their organs. (Rodensteiner, 1988) Improved microscopes and, even more importantly, the invention of the X-ray machine changed the idea of human health. Previous concepts of hospital planning appeared to be overcome, the creation of healing environments lost importance. Healing architecture had to make way for highly-specialised, compact and ever-growing buildings – medical functionalism had prevailed. The new "monuments of medicine" follow their own inner logic; they seem to ignore the urban environment just as a purely biomedical perspective on illness (and health) disregards environmental aspects. Clearly, the enclave-character of the institutions mirrored the constructed reality of the contemporary concepts of health. The de-urbanising of the hospital is a consequence of the institutionalisation of the associated de-normalisation of the clinical space. Health disappeared from the public sphere and was relegated behind the impenetrable hospital walls. This observation is significant as the motives that led to de-urbanisation are no longer valid; even more, they have attracted fierce criticism.

The Re-Urbanisation of the Hospital

Today, current hospital concepts seem to have reached their limits as they fail to answer to concerns of public health and planning. New developments such as telemedicine arise, medical devices get smaller and more mobile. Thanks to keyhole surgery and the like, the duration of hospital stays decreases. Specialised hospitals lose their monopoly over healthcare provision and it's not heretical to ask whether in the future we will need them at all. (Wischer, 2007)

Over the last decades, hospital planning has earned the reputation of a "secret science" as of its high complexity and unique character. Only genuine specialists could develop a true understanding of the mysterious matters inside. Hospital planning drifted away from the general discourse and sealed itself off from not-specific trends. Many prominent topics such as the critique of functionalism, inclusiveness or flexibility, which changed urban planning and architecture, seem as if they never really entered the sphere of hospital planning. (Nickl-Weller/Nickl, 2013)

However, it became clear that a hospital's rapidly varying professional focus, organisation and procedures couldn't provide for a reliable basis for sustainable design. As a result, medical functionalism is no longer the legit foundation of hospital planning. Its tasks undergo an important

"normalisation". This development must not be misinterpreted as mere simplification. On the contrary, previously ignored qualities like urban integration gain in importance. Subsequent approaches advocate hospitals that are no longer recognizable as such, as their sheer immensity is said to represent the inhumanity of "health machines". Henceforth, values like the human, the normal and the urban shall prevail. Urbanity is the word, the promise of salvation in a world of institutionalised cold-heartedness of shuttered clinics. The building, for instance, should contribute to public life on its site. At the same time, normalisation alters the image of the hospital, which loses the aura of a closed and solitary monument. The implication is clear. The hospital itself morphs into the city becoming an integral part

of the city and the neighbourhood. As we overcome the duality of city and hospital, the latter turns out to be both an important exercise and tool in urban planning. We shall take a closer look on three levels:

- Level 1: The hospital in the city (location of the hospital)
- Level 2: The hospital in the neighbourhood (blending with the environment)
- Level 3: The hospital as city (as urban space)

(Maierhofer, 2016)

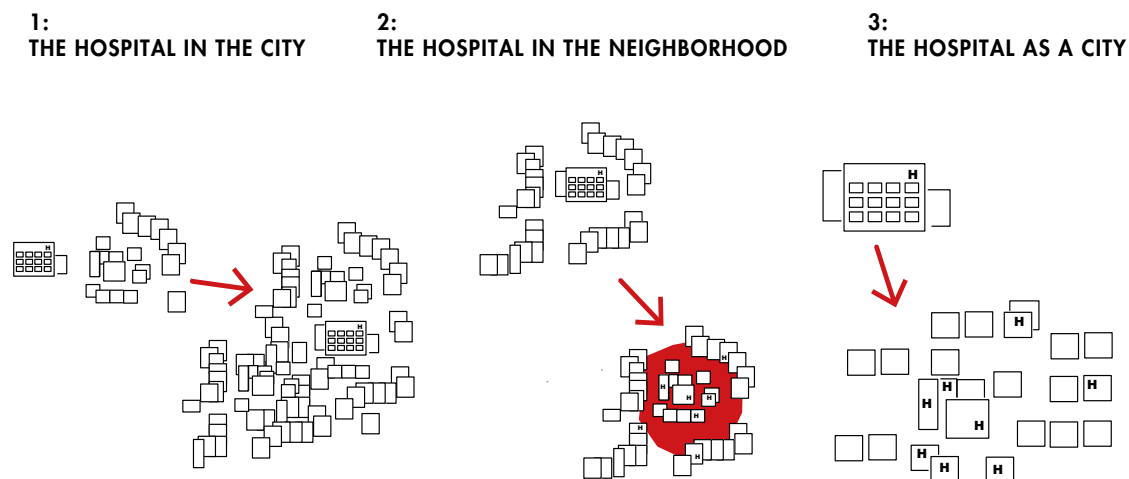


Figure 2: Levels of the hospital-urbanisation

The hospital in the city

Together with other institutions, such as an university, the city hall or a market, the hospital constitutes the basic framework of the urban fabric, the city.

The Viennese hospital master plan (Wiener Spitalskonzept 2030) displays the multiple ways a hospital may influence its urban surroundings and the city. 32,000 employees on seven locations are going to be reorganised. 10,000 beds, 400,000 stationary admissions and 3,500,000 ambulatory services per annum add to this figure. These vast numbers of permanently working, temporarily dwelling and repeatedly visiting people draw an impressive picture of how the location of such crowds and the associated visitor frequency affects the whole city and the specific site or neighbourhood. The numbers clearly point out that projecting a hospital means shaping, building and developing a city.

The crucial question of hospital planning concerns the selection of an appropriate site for the hospital. Only on rare occasions, the planner will effectively be able to choose the location. Rarely the planner may effectively choose the site. However, in this seldom case this decision has both large and long-ranging effects on healthcare provision and the city. This is why this choice must always be understood as a tool for urban development and has to anticipate future developments. The choice may change the city from within, can be part of the development or expansion of the city or may be used as a starting point of a new city.

The planner's goal shall be to link city and hospital in order to lift the veil of exclusiveness from the latter and finally overcome the not-so-invisible barriers to the neighbourhood. The city, on the other hand, has to embrace closer to the hospital and allow for its development on the urban ground. This can only be achieved through common planning of both structures.

The hospital in the neighbourhood

The strict division between structures for the sick and for the healthy can no longer be maintained. Health science has replaced this dichotomy by the “health-ease versus dis-ease continuum” (HDC). (Antonovsky, 1979) Many people live with their medical conditions, some more, some less severe. Preventive healthcare is and shall be part of everyone's quotidian live, another reason for finally bringing down the walls parting institutionalised medical care in hospitals from daily business in the urban context. The notion of functional separation is seen as obsolete for many aspects of urban organisation and hence must be reassessed also in the view of healthcare buildings.

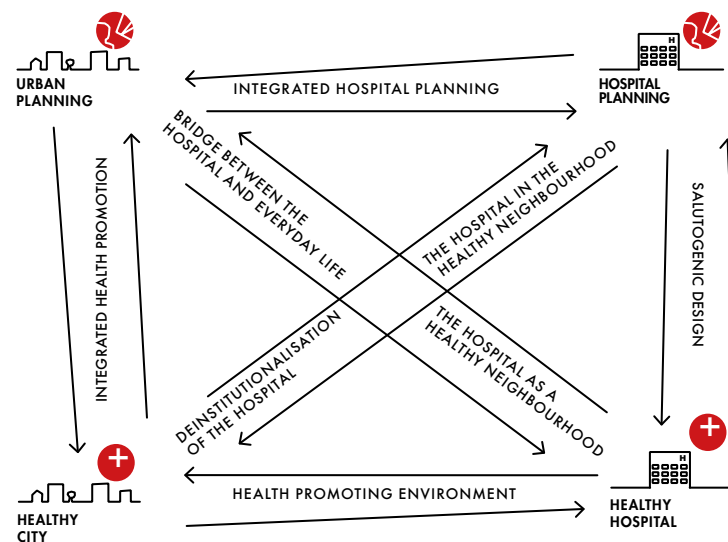


Figure 3: Integrated hospital planning

The hospital needs to blend into its surroundings and must intermesh with it on the functional, structural as well as special developments. Hospital planning must learn to see beyond the end of its stonewalled nose. In rare cases the qualities of the quarter will may prove harmful to the hospital, and vice versa. People who work at the hospital, who make a visit or receive treatments all need everyday things, that define a well-functioning town centre, a shopping street or the like. Still, the job is only half done by incorporating qualities of the quarter into the hospital: the hospital itself has to spread over into the neighbourhood. Neither are health, its provision or its promotion exclusive to hospitals, nor are they strange to the city. While integrated healthcare allows for a smoother transition between “healthy at home” and “sick in stationary care” than it used to be, it also demands closer cooperation and communication between primary care in the city and the inpatient sector.

The location in city is of distinct significance regarding the wards. While historic hospitals used to be organised as huge wards with a small number of adjacent rooms, state of the art organisation puts examination and treatment areas at the core of the hospital. The number of beds is diminishing whereas outpatient units gain importance. New flexible types of care emerge, either provided by the hospital

itself (on- or off-site) or in cooperation with the outpatient sector. This shapes the transition from fulltime care to discharge as a multi-stage process, which is reflected by both the spatial aspects and the distance to the core facilities. This form of integrated care blurs the lines between primary and secondary care. (Stapf-Finé/Schölkopf, 2007)

In the first scenario, patients are bed-bound and depend on the total surveillance of intensive care units. These are contrasted by practically healthy patients who, concerning their accommodations, have only moderate demands. For instance, it is appropriate to plan units which require less or little attention according to the logic of the city rather than to that of the hospital. The result is a continuum of hospital and city, which - in parallel to the HDC - accompanies the patients to the hospital gates and back to their quotidian life.

The hospital as a city

It is impossible to derive the immanent form of the hospital from its functions. One reason for this is in wide range of functions which all require different formal and spatial solutions. In addition, technological and medical know-how progress at an immensely fast pace acting as constant drivers of change. Every tailor-made solution, akin to a fashionable suit, would become obsolete after a couple of years.

Building a hospital is a costly affair, but running (and adapting) it will make your expenses skyrocket. It's virtually impossible to predict the challenges and requirements it will have to manage in 20 years. Hospital construction is a highly complex matter and subject to permanent transformation. Its sustainability depends on its adaptability. (Wischer, 2006)

Regarding on the hospital site, the building structure is the most important aspect of sustainability – and this, in turn, is an argument of urban design. Therefore, it is necessary to differentiate between hospital construction as long-term structure and hospital construction as „designed function“. This “designed function” describes the architectural and functional development of single hospital tracts or facilities such as stations, an emergency department (ED) or a specific department.

On the other hand, the “long-term structure” guarantees a spatial arrangement that is not only focused on present duties but allows for future adjustments – without having to question the whole organisation. This applies to both the hospital and its environment. (ibid.)

Hospital design becomes less specific as it moves towards more “normal” shapes. By virtue of this “normalisation” the planner can develop qualities independent from the building tasks. But, what are these “long-term conditions of health promotion” and what do they imply for the hospital as health promoting surrounding.

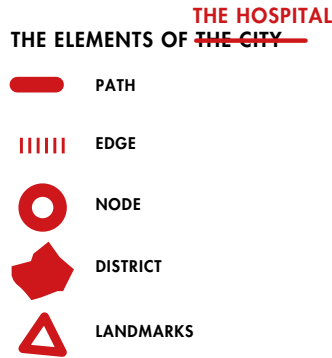


Figure 4: The element of the hospital ((Tracing of Kevin Lynch's original 1960 diagram, "The elements of the city")

If it holds true: A house, a hospital, a city; what's the difference?

It also must hold true: A good house, a good hospital, a good city; what's the difference?

So, we will be called upon to be good urban planner. (Driesen, 2006)

The city-like hospital includes tiny alleys and large streets, a variety of pathways, circular roads and axes, calli and campielli, small yards, large squares, landmarks, monuments and residential districts, houses of every size; it encloses shops, restaurants or caf  s, hotels, schools, a cinema, churches, workshops and offices. People work here, dwell and shop and celebrate here. Here they are born and here they die.

The apparent resemblance with urban spaces isn't just the result of a re-urbanised view but reveals a new understanding of looking at the conjunction of health, the city and hospitals. While the hospital adopts more and more city traits, the urban space assumes greater responsibility in healthcare provision. The compact, big hospital is to lose its importance, predictions say. It seems obvious, that the hospital's insulating walls will be torn down. The frontier between the space for the sick and the space for the fit dissolves as the dichotomy of health vanishes in the haze.

However, the impetus for this development isn't coming from the hospital alone. The second important driver of change is a new perception of the healthy city, which is born out of a novel notion of health itself.

Healthy, healthier, urban

Although urban development and medicine are mostly seen as two distinct disciplines, this hasn't always been like that. Just like their built manifestations, the fields drifted apart in the 19th century and are now slowly re-approaching each other.

Especially at the beginning of the 19th century – against the backdrop of rapidly growing cities and on the onset of modern natural science - the two disciplines lived through a quite intense love affair. Their mutual key issues consisted of the establishment of a healthy environment; this lasted until biomedical foundations of medicine were discovered and modern urban planning devoted itself to rational

functionalism. They lost interest in each other and embarked on two different academic roads. (Corburn, 2004)

Today, the glance at the city has become holistic again – everyday life is gaining ground. Urban planning concentrates on subjective experience and strives for understandable and customisable cities with empowerment and participation being the hot topics. Now that the total refusal of the city has been abandoned, urban sentiments are booming - again.

At the same time the paradigms of health are shifting. In 1948, the WHO's founding declaration adds subjective feelings to the definition of health which is described as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Both this conceptual realignment and the re-embrace of the city lay the foundations for the re-invigorated alliance and hence for mutual strategies of action in shared action fields. Both disciplines start to take interest in particular living worlds, quarters and neighbourhoods.

While urban planning dwells on the discovery of the micro plane, the medicinal disciplines revive their interest in the big picture: the human being in its habitat. As a result, research interests and action levels overlap once again in the second half of the 20th century. Bluntly put: while urban planners zoom into the city, physicists zoom out of the body. City and health meet each other in the living worlds of the people and open up a new, joint area of activity.

Along with the resuscitated concordance also methods and strategies come to a change. Planning becomes an integrating, coordinating and moderating purpose. Similar terms appear in the public health discourse as the WHO declares participation, empowerment and intersectorality as the principles of action for health promotion. Still, against the backdrop of all the similarities listed above, it astonishes how little the planning discourse of that time refers to health topics. It surprises even more as no such reservations can be observed in healthcare debates. On the contrary, beginning with the 1960s health scientist pounced on the city and started to discover it in quite an euphoric fashion.

The WHO's setting approach encourages health promotion at its origin, namely "where they learn, work, play, and love", within the settings of their everyday life. In this context, cities are the arguably most important setting. The programme aims to place health high on the agendas of decision makers and to endorse health promoting general policies. So called Health Impact Assessments (HIA) help to evaluate the policies' influence on health. All this serves the purpose of integrating health topics and measures in city planning and development.

Parallel to our analysis of hospital urbanisation, the WHO equally proposes three settings for urban health promotion: the healthy city, the healthy quarter and the healthy hospital. Urban health promotion does not only deal with the city as a whole. Many concepts take into account the quarter and the district – the hood, if you like. Since the quarter comprises a variety of spheres and hence of health afflicting factors, numerous (quotidian) risks can be reduced while health potentials can be fostered.

The idea of health promotion follows a remarkably all-embracing approach. As of its immersion into constructional and physical, social, political, administrative and symbolic topics it seems nearly impossible to separate it from other fields, especially from neighbourhood development. At a first glance, the term health-promoting hospital may appear slightly redundant but it actually does make sense in the logic of general health promotion. Taking into consideration the size of hospitals, the

amount of employees, patients and visitors and the impact of the institution on its environment, the inherent potential for health promotion becomes apparent.

The hospital plays a particular role that can be compared to universities. While the latter provide access to science and education (as institutions for research and teaching) the first carry responsibility for urban health. A health-promoting city stays a mirage without health-promoting hospitals, whereas the creation of health-promoting environments constitutes an integral part of the health-promoting hospitals. The most powerful tool of health promotion is THE health care institution itself: the hospital.

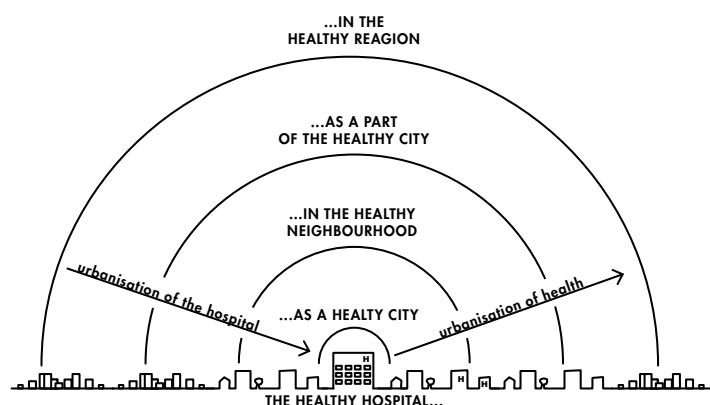


Figure 5: The healthy hospital in the healthy city

So the hospital shall become a health-promoting environment and subsequently contribute to raise the level of health promotion in the neighbourhood and the city. Bearing this spill over in mind, we can understand the correlation between the form and urbanisation of the clinic. Simultaneously, physicians re-focus on a patient's health on its whole, instead of exclusively examining the sick body. Aron Antonovsky and his description of the sense of coherence bring back the peoples' reality of life to health science. Once more, borders are overcome between health and disease as well as between pathogenic and health-maintaining spaces. City and hospital converge as more and more health arguments pop up in urban planning and hospital architecture ponders everyday properties.

The hospital-city-continuum (HCC)

In the past, the location and form of a hospital expressed the respective understanding of health and their place in urban society. Also today we may question into the current definition of health to understand the re-urbanisation of hospitals.

The duality of illness and health has been superseded by Aron Antonovskys's (1979) concept of salutogenesis, replacing it with the HEDE. In consequence, we can no longer discriminate between spaces for the sick and the fit, namely between the hospital and the city. Health promotion is no longer happening behind hospital walls, but is becoming an integral part of urban life. Simultaneously, the hospital gets increasingly integrated into the urban tissue. So it's not a mere re-urbanisation we are describing but the birth of the hospital-city-continuum (HCC). Like before, observations can be made on various levels.

Private apartments turn into hospital rooms while visiting the clinic means daily business for many city residents. A fluent transition between the two worlds implies that the “day of admission” loses the nimbus of a hard rupture between two lives (in or out, sick or healthy, etc.). The patient biography describes a gradual path; preliminary examinations and follow-ups are held in the city, the night prior to an operation is spent at the patient hotel while the procedure takes place in the core hospital. After a short time in the actual patient bed one progressively moves back to the city via patient hotel, patient apartment, day clinics and finally care at home (hence “normalising” one’s situation and condition). So we could assert that every patient passes through the HCC.

The HCC’s second implication considers the planning and building of hospitals, their physical aspects. Just as in any good community, the borders between “in” and “out” must be torn down. When the medical service spreads over the neighbourhood, the physical structure has to follow. We do not need an intermediate space between two worlds helping to comfort patients, relatives and staff. The solution for the modern hospital lies within an analogous continuum of treatment structure (both physical and organizational), from primary care at the rim to the hot floors at the core. With a shrinking hospital, the neighbour (the city) is ready to take over and reanimate the abandoned structure. – the spatial HCC.

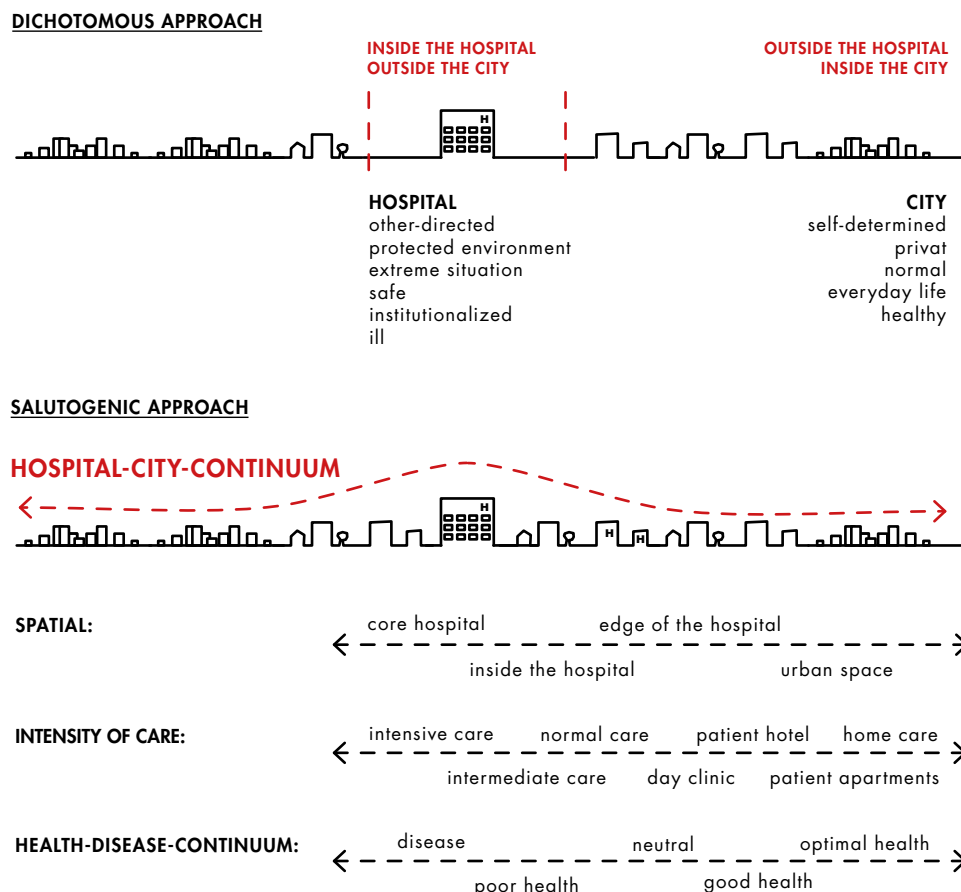


Figure 6: Hospital-city-continuum

This process will not take place abruptly, but gradually. Structures that are developed as hospitals today may be part of the “normal” neighbourhood in 40 years. Having been planned for surgery and intensive care, the core hospital might be recycled as administrative facility and thereby be moved towards the

rim before eventually merging into the city finding its built fate as university, residential complex or the like. Therefore, a genuine challenge is the planning of structures that allow for future adaptations along the lines of the HCC and repositioning therein. This process will not take place abruptly, but gradually.

Cunclusion

The disintegration of the hospital does not imply the disappearance of health infrastructure, but solely its relocation into the city, the neighbourhood, to a private apartment or the digital world. Frontiers between disciplines are brought down - no longer can be clearly distinguished between public health, urban planning and hospital architecture. Hospital planning as an isolated field will cease to exist giving way to new strategic and integrated approaches, which are needed to shape the urbanisation of health. While a hospital must always be the responsibility of urban planning, the three disciplines shall not disintegrate but maintain continuous distinctions. Neither urban nor hospital planning can be responsible for the application of health concepts for the city. On the other hand, health science won't take on the task of exploring the "goodcity" and how to plan it. Therefore, architects and urban planners must proactively develop the HCC. It has to be designed and planned like a city – like a good city.

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Physical Activity in families daily-life of suburban areas – the case of Rio de Mouro, Lisbon Metropolitan Area

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Abstract: Having as case study the parish of Rio de Mouro, a suburb of Lisbon, in this work, we try to verify in what extent the practice of physical activity fits into the daily life of the families. For this, surveys were carried out on resident families whose results show not only the existence of asymmetries in the practice of physical activity due to the socioeconomic characteristics of the population, but also due to the means of transport used in the commuting movements. A more in-depth reading shows that physical activity practice requires a framework that follows the activities of individuals and their families throughout the day (understanding the life cycle and types of families: young people, active with or without dependent children, retirees, among other modalities), so it is often the case that greater practice of physical activity arises associated to the use of the car as a mode of travel.

Keywords: Health determinants; Physical activity practices; Daily life; Means of transportation

Introduction

Lifestyles are one of the major determinants that affect the health of populations. One of the areas linked to it is physical activity practices (Dahlgren e Whitehead, 1993; Warburton et al, 2006; World Health Organization [WHO], 2008), that emphasizes that the lack of practice of physical activity is not only a problem of individuals, but also has social, economic and environmental repercussions (Kohl *et al.*, 2012). Nevertheless, the practice is generally limited to a small part of the population (Miles, 2007). As reasons for this phenomenon are: socioeconomic characteristics of the population, distance and time-consuming in daily commuting movements and the use or not of the own car or public transport (Bauman *et al.*, 2012; Franco, 2017; Franco and Marques da Costa, 2017). The availability of time and the squeeze time are factors that affect the practice of physical activity, depend largely on the mobility and the relation between working and non-working time (Marques da Costa, 2007, Marques da Costa and Louro, 2010).

In this work, we try to verify in what extent the practice of physical activity fits into the daily life of families, while also understanding if the use of private vehicle is a permissive factor in that. For this purpose, it was used one case study, the parish of Rio de Mouro, a suburb of Lisbon Metropolitan Area [LMA]. In order to assess socioeconomic characteristics, lifestyles and habits, physical activity practice, time use patterns and means of transportation preferred surveys were carried out on resident families. Those were later worked, and the results are based on statistical analysis and crossed information retrieved from them.

Theoretical framework

The correlation between physical activity, health and quality of life is strong (Warburton et al, 2006, WHO, 2008). Physical activity is seen as a decisive behavior for the individual's health and functional capacity (WHO, 2007). However, it awakens and promotes behavioral changes in society, therefore is a public health issue, increasing the well-being felt in communities, not just the individual health (WHO, 2011).

Only a small part of the population practices physical activity (Miles, 2007). This is not only related to their socioeconomic characteristics, but also the way the individual moves in his daily life - using his own vehicle or public transport - or the duration or distance of commuting itself (Bauman *et al.*, 2012). The availability of time time squeeze conflicts are a factor in the practice of physical activity. The structures of mobility and the relation between work and nonwork time are rather complex (Marques da Costa, 2007, Marques da Costa and Louro, 2010). The struggle of families against the 24 hours a day is a constant, it is necessary to make time available for paid work and for domestic work and also for family and leisure. It is usually necessary to abdicate of some activity to fit the practice of physical activity in the individuals' daily schedule, which consequently brings repercussions in family everyday life. This has implications for the practice of physical activity, due to the lack of time and framing of everyday activities, these type of activities are relegated to the background, resulting in time squeeze problems (Naegele *et al.*, 2003). These confrontations are even enhanced by the socio-geographic context, that is, the space problems and the mobility and means of transportation problems.

The lack of physical activity practice in today's society is becoming a problem, as it is implicated in a more or less direct way in many causes of death (Pate *et al.*, 2008; Barnes *et al.*, 2012). However, the inexistence of physical activity is not only a problem of individuals, it also has social, economic and environmental repercussions (Kohl et al, 2012). Hence, assessing the population practices and habits in this aspect, has large significance in health planning and in the composition and implementation of policies and programs.

Methodology and study area

The work was developed using statistical analysis of general indicators taken from the INE (national statistics) database and from information obtained through surveys. These surveys were applied to the population living in the parish of Rio de Mouro (in Sintra municipality, LMA), the data obtain referes to a total of 154 respondents. The survey intended to retrieve information about the socioeconomic characteristics, daily time use and physical activity practices. For this it was considered various types of physical activity: open air activities (like running, biking, group sports); gymnasiums; swimming

(pool). Also, with the survey data we created different family typologies that address the sample reality.

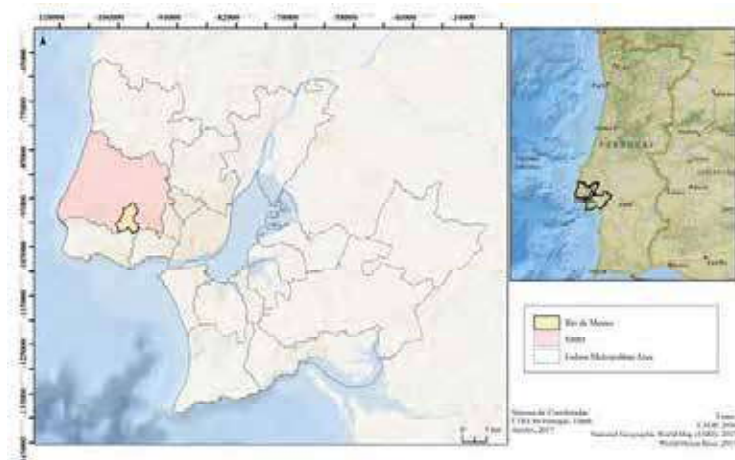


Figure 1. Territorial contextualization of the study area. Source: own execution.

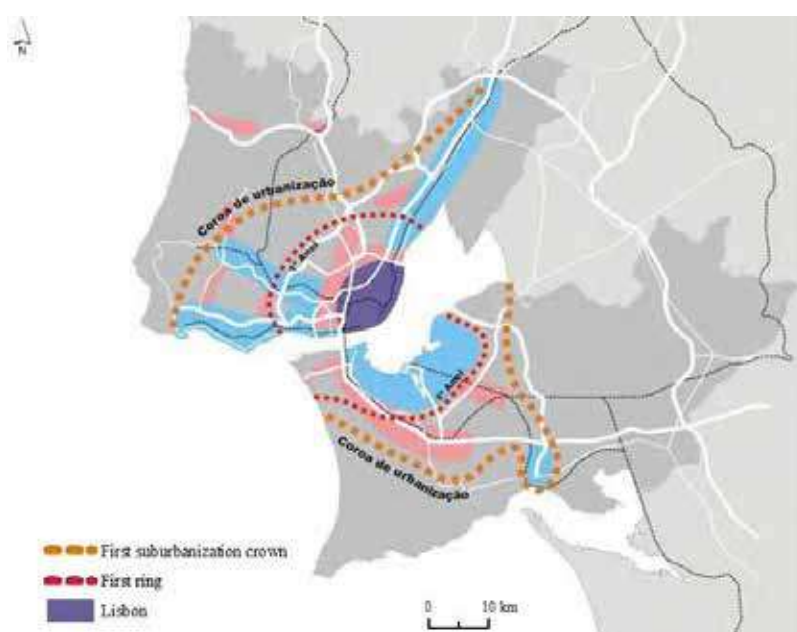


Figure 2. Structuring axes of urban occupation. Source: Marques da Costa et al. (2009).

Rio de Mouro is a parish of Sintra municipality and is situated in the first suburbanization crown of LMA. As it can be observed in Table 1, LMA is a heterogeneous region with some very different realities, even its municipalities possess traits of heterogeneity inside. Sintra ranks in the bottom half of LMA – except in the demographic aspect, as its inhabitants are younger than the average –. The majority of Sintra parishes are dependent of Lisbon municipality (in which Rio de Mouro is included), because a large part of its population works outside the municipality (normally in Lisbon). So, the daily movements are an important part of the individual's daily life. Therefore, Rio de Mouro is a good case study for an evaluation like the one we are doing in a suburban area.

Region	Youth Dependency index	Elderly Dependency index	Population Density (hab/km2)	Medics per 1000 inhabitants	Monthly mean earnings	Transition / completion rate secondary education
LMA	25.1	32.4	2020.8	4.3	1 220.07 €	80.97%
<i>Alcochete</i>	26	24.8	150.2	2.6	2 255.00 €	79.60%
<i>Almada</i>	24.1	36.8	2416.1	4.4	1 085.70 €	79.10%
<i>Amadora</i>	25.1	37.6	7565.4	3	1 324.00 €	78.70%
<i>Barreiro</i>	23.6	43.2	2080.6	3.3	1 088.80 €	81.60%
<i>Cascais</i>	25.2	31.6	2173.6	7.3	1 160.30 €	83.90%
<i>Lisboa</i>	28.8	51.1	5058.1	18.7	1 551.90 €	82.20%
<i>Loures</i>	25.1	34.1	1252.3	3.2	1 148.80 €	82.00%
<i>Mafra</i>	26.1	24.1	285.6	2.1	905.30 €	82.60%
<i>Moita</i>	24.2	31.7	1169.3	1.2	909.40 €	83.30%
<i>Montijo</i>	25.7	25.9	161.5	2.4	974.20 €	80.70%
<i>Odivelas</i>	25.8	32.2	5946	3	913.50 €	76.60%
<i>Oeiras</i>	25.9	39.8	3818.9	9.6	1 698.90 €	82.90%
<i>Palmela</i>	23.9	29.4	138.1	2.7	1 401.30 €	84.40%
<i>Seixal</i>	23.9	29.2	1738.8	2.1	1 134.30 €	78.90%
<i>Sesimbra</i>	24.9	25.5	262	1.8	909.20 €	79.10%
<i>Setúbal</i>	24.9	34.4	505.1	4.9	1 173.70 €	84.10%
<i>Sintra</i>	24.3	25.2	1209.3	2.5	1 166.60 €	78.10%
<i>Vila F. Xira</i>	24.1	25.8	443.8	1.7	1 160.30 €	79.60%

Table 1. Contextualization of LMA and its municipalities, 2017. Source: Instituto Nacional de Estatística [INE].

Results and discussion

The practice of physical activity is, in general, quite reduced, with 38% of the sample saying that practice it and 62% that does not practice it. It is a rather strong prevalence of unhealthy habits that goes along with the rest of the country reality, in fact, according to data from WHO, these values seem to be slightly better than those concerning the whole country.

In the analysis we have found many asymmetries among the resident population regarding physical activity practices. Some of those are related to socioeconomic characteristics and others linked with the means of transportation.

Physical activity is mainly practiced by men. Actually, there is little difference between those who practice and those who do not do it (pending to the last one), this in men. When we observe the women, it is not the same, the values for those that do not practice any physical activity more than double those who do it. So, sex is clearly a differentiating factor in physical activity practice in the territory analysed.

Age is also a preponderant factor for physical activity practice. Looking to these activity habits by age groups, it is possible to notice that the population that falls in the age groups of 6 to 12 years old and the two groups that comprise the ages between 18 and 49 years of age, are those that practice physical

activity the most, however the class from 6 to 12 years and from 18 to 29 years old are the only ones in which it is verified that the practicing individuals exist in greater number than the non-practicing.

This demonstrates the importance of physical activity in school context, helping to create and maintain healthy habits and lifestyles. But not only, the reduced physical activity practiced by the elder groups, mainly the 66 or more years old, emphasize the lack of effective strategies for active aging.

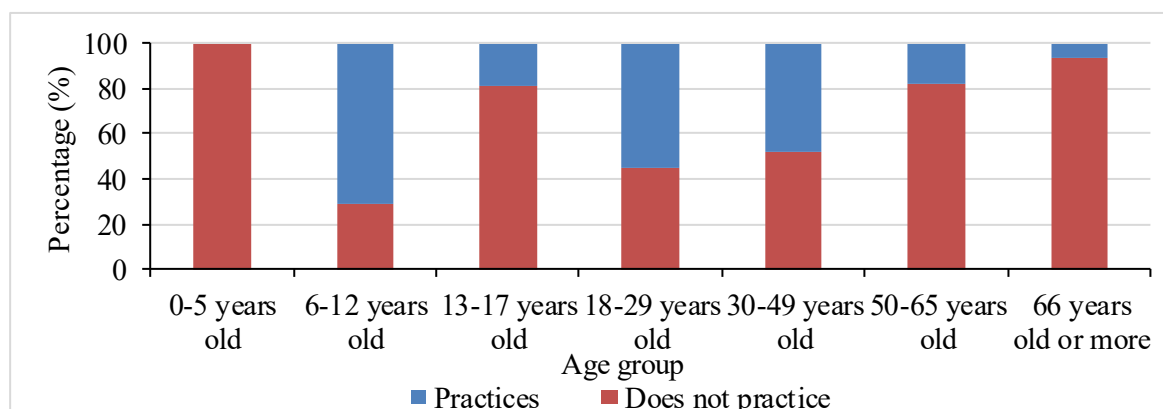


Figure 3. Practitioners of physical activity by age group in the suburban studied area, in percentage. Source: inquiry.

In none of the education levels – ranging from illiteracy to tertiary level – the number of individuals practicing physical activity is higher than the non-practicing ones. Is in the group with a higher educational level that the highest proportion of population practicing is observed, followed by individuals with lower secondary and lower primary. In fact, there is a differentiation between persons with higher level of schooling and the remaining ones, nevertheless, the smaller proportion between practitioners and non-practitioners is found in individuals with the 2nd Cycle completed and not with the illiterate level.

The educational level does not seem to evolve around some major rule, nevertheless, the highest values are detected in the highest educational level.

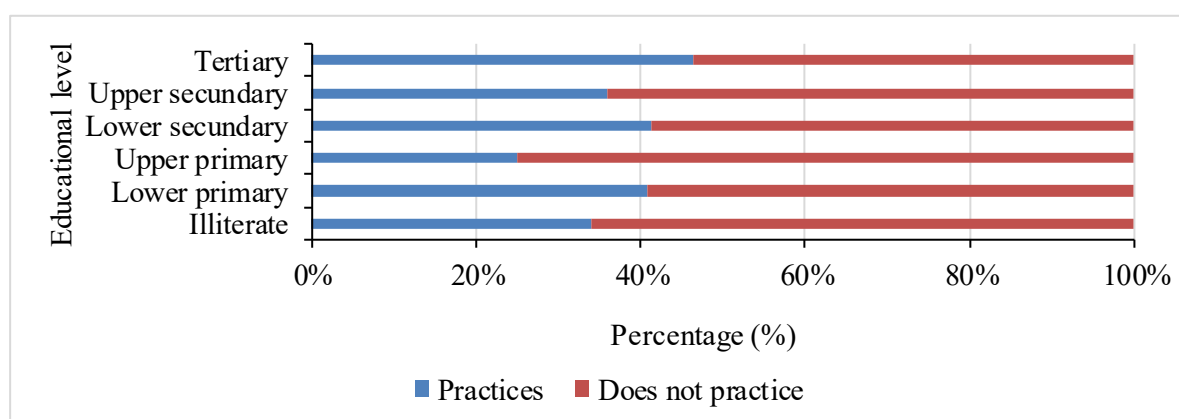


Figure 4. Practitioners of physical activity by educational level, in percentage. Source: inquiry.

The lowest levels of income correspond to those with the least physical activity. The highest incomes – with the exception of the highest echelon – demonstrate about 63% (€ 1000-1500) and 73% (€ 1500-2500) of practicans. This translates into the fact that, to some extent, there is a level of income in which below it there are considerable less (or none) population practicing physical activity.

The means of transportation used by most of the reporting population to travel to the place where they practice their physical activity are the car (especially this one) and the trip on foot, without any competitors. Among the other modes used are the bicycle (mainly used by regular cycling practitioners, both for physical activity and for others) and the train. In terms of transport used by household income levels, a greater propensity to use the car is perceived as incomes increase. In fact, from the income bracket 1000 to 1500 euros, car use becomes predominant in these journeys. Also, in the general context of mobility, from this income level and upwards that the car is most used.

Means of transportation and household income are correlated; bigger incomes translate to higher use of private transport, in contrast, smaller incomes result in higher use of public transportation.

Whilst regarding the relation between the constituency of households and the means of transportation, the families with children under the age of 15 years are the ones who use the car. This can be partly explained due to the almost unavoidable use of this type of transport in order to the individual be able to carry out all the daily tasks of caring for him and his family with a normal working day.

Practically two-fifths of those practicing physical activity use the car in commuting, followed by the combined use of their own vehicle and public transportation and the use of public transport. However, there is a more important information to retain, whereas amongst private vehicle users physical activity practice is doubled when compared to non-practitioners, in public transport users, non-practitioners are superior to practitioners, but when both types are used, practitioners are superior to non-practitioners. It should also be noted that all those who move on foot to and from work are too practitioners of physical activity.

What is verified is the existence of a greater number of practitioners when the individuals use the car, because this mode of transport is (a real) factor in providing greater independence to individuals.

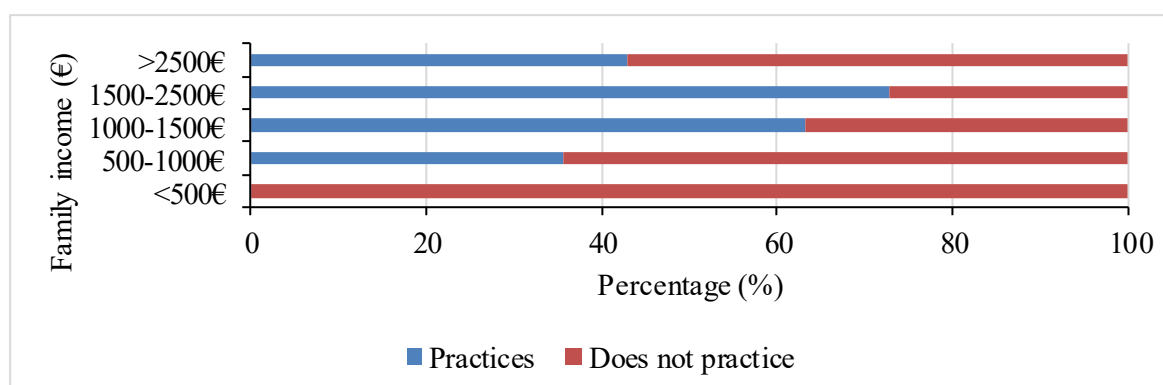


Figure 5. Practitioners of physical activity by family income, in percentage. Source: inquiry.

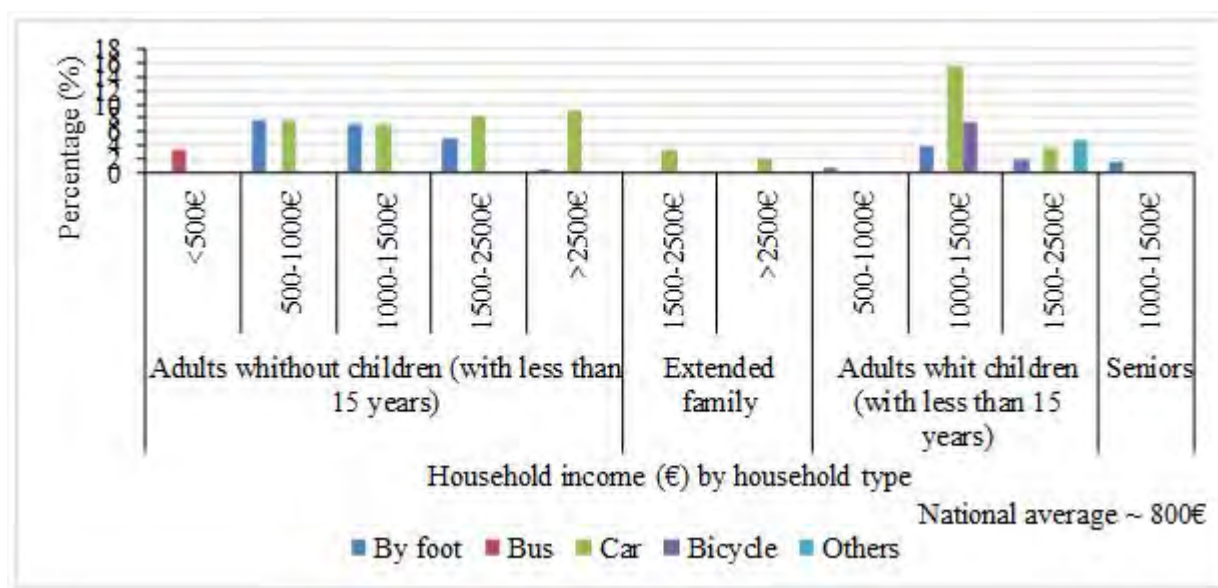


Figure 6. Means of transportation used to the place where the physical activity is practiced by type of aggregate and household income, in percentage of practitioners. Source: inquiry.

Although it is observed that the greater use of automobile in the daily movements increases the number of practitioners of physical activity, the reality is that individuals who show more regularity in physical activity practice are users of a mixed typology, followed by those who use public transports and lastly the ones who utilize the car. In this situation, it can be seen that the lower frequency is not related to the greater or lesser ease of integration of the physical activity in the day-to-day schedule, since this is already inserted in the daily life of the individual.

However, when analyzing the mode of transportation used in the commuting movements by the most active physical activity groups, a distinction is made between the existence of dependents – that in this study are viewed as the households that have one or more individuals with 15 years or less – and those without such dependents, it is noticeable that the majorities of families with dependents and practitioners of physical activity at least 3 times a week use the car at some point in their daily life, while the others use more public transport. Between car and mixed transport, those with dependents account for more than 75%, on the other hand, those who do not have dependents register just under 45%.

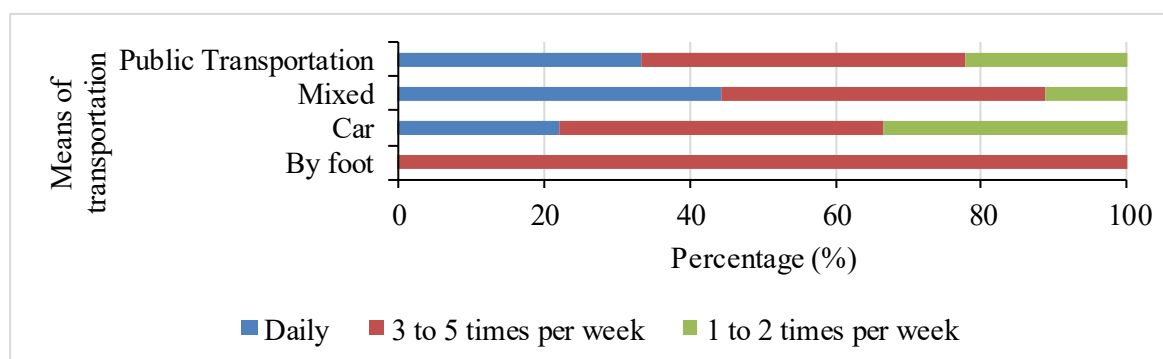


Figure 7. Weekly frequency of practice of at least one physical activity, as a percentage of the means of transportation used in commuting movements. Source: inquiry.

It is imperative to understand if the same happens to individuals who do not engage in any type of physical activity, understanding if they do not do it due to lack of time, or because they use different means of transportation or a simple matter of disinterest in the activity.

It was assessed that most individuals not practicing any type of physical activity work or study outside the parish of Rio de Mouro. Besides, these individuals, in their vast majority, spend large amounts of time outside their households doing their quotidian activities. It is interesting to note that, although there is a wide use of the car itself in commuting, especially in the typology of families with children under 15 years of age, these persons do not engage in any physical activity. It should also be noted that elderly individuals, although not practicing any kind of physical activity, make their daily commutes on foot. In this way it is perceptible that, in most cases, a time squeeze phenomenon is observed, individuals spend much of their day away from home in their daily activities and cannot find the time necessary to practice physical activity. Even with the use of the automobile itself, individuals are unable to integrate extra activities into their family quotidian life.

The possibility of conflicts between the time available for family and leisure activities with that of practicing physical activity is quite evident. There seems to be a relationship between the family routine and the practice of physical activity. However, there is no connection between the greater or lesser practice, that is, the difficulty lies in creating space in the daily life for practicing activity. In fact, the aggregates that practice it most are also those who denote certain family obligations, let alone the existence of minor dependents.

Therefore, the existence of such time-activity conflicts is reduced by the use of private transportation, but not extinct, since many families continue to be unable to put an end to these conflicts. This is a corroboration that the automobile is a weapon in the fight against time. When using the car in daily commute, the individual has access to a panoply of opportunities that can take advantage, something that could not happen and generate conflicts of time squeeze when used only the public transport, however, the vehicle itself is only a weapon in the fight against such conflicts, is not a sure and "miraculous" response.

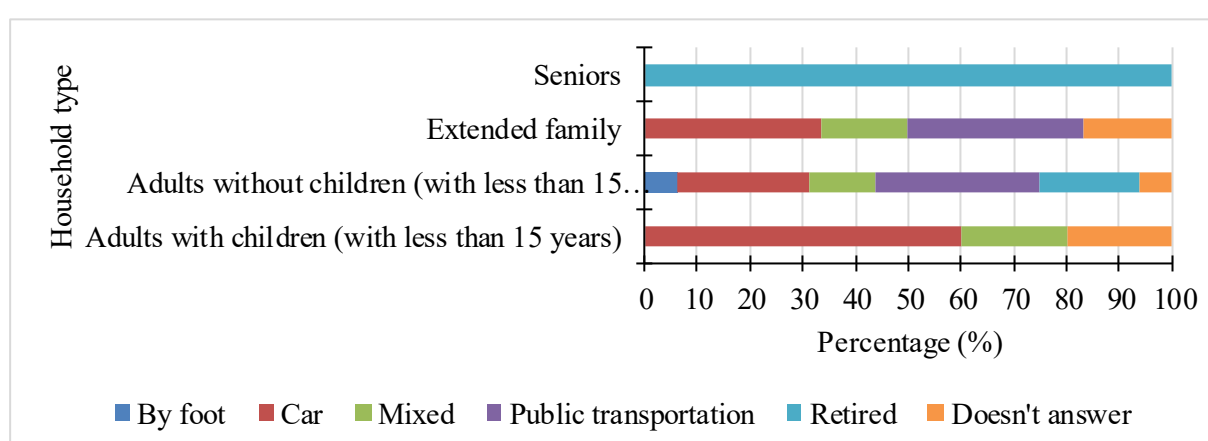


Figure 8. Means of transportation used in the daily life by non-practitioners of physical activity, in percentage.
Source: inquiry.

Conclusion

This study allowed to understand the relationship of families with physical activity, considering their socioeconomic characteristics, mobility and the use of time in their daily lives. It was verified that these characteristics play a major role in the physical activity habits, which reiterates the bibliography on the subject. We found that certain aspects, like sex, age and the family budget impact significantly the practices observed.

About the transportation aspect, when only public transport is used the propensity to practice physical activity is lower, however, once the private vehicle element is added to the equation, or when it is the only used, the trend is much higher. This is much more evident in cases which the families have a dependent, here the use of a private vehicle has the ability to enhance the execution of certain activities, in this case physical activity, due to its capacity to coadunate (in a greater extent) the family duties, work requirements and leisure and personal time.

Although not being the one true reason for activity the car arises as an enabler for individuals' practices, even more when the household has one or more dependents.

All in all, there is a close relation between physical activity practice and the family's daily life, because for there to be practice is needed a quotidian activities framework prone to that. Nevertheless, there is no relation between that and frequency of practice.

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Track 12 Healthy City Planning: Food, Physical Activity and Social Justice

(Draft)

Healthy city of tomorrow

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Abstract: In London the 32+1 Boroughs are testing methods, in terms of physical environment's and urban design, to respond to Healthy City model starting from urban open space design. The investigation field is supplied by the different Open Space Strategies OSS written by each Borough giving specific solution in term of design parameters to increase physical activity, elevate air and water quality, play and sport activities, open space deficiency and accessibility. The paper will discuss all sets of innovations introduced which have the potential to reshape the lifestyle and working patterns of urban residents, and to assure sociospatial justice. In UK they start again, using urban design, to interlace open space with services and residence at the local level, as was the local planning and urban design Anglo-Saxon tradition

Keywords: Open Space strategy, London, Boroughs

Introduction

A recent study on the latest regeneration projects in London (Nucci, 2012) proposes few guidelines on planning and designing urban green networks. The hypothesis presented in this London case study states that conceived as a design characterized by integration and continuity the system of urban open spaces can be a primary component of a city with a more consolidated form. The study analyses the possibility of re-using residual or abandoned areas as part of the urban settlement process with consolidated urban open green spaces. These spaces logically form part of continual and integrated green networks, in terms of environmental quality, of creating new uses and of greater social integration. Furthermore, they provide a unified design and quality to the whole city and its parts. The actual efficiency of this hypothesis is often viewed as a principal line of criticism for urban regeneration in terms of its operative, social consensus, economic and administrative feasibility.

The example provided of Great Britain's green networks and in particular the new London Plan has the notable advantage of simultaneously proposing government objectives and strategies for a green space system as an integral part of a proposal for the regeneration of the city (urban renewal) and some operational experiments conducted at a local level¹. The experience must be examined in relation to the Anglo-Saxon tradition of green

¹ In Great Britain, more specifically in London, the government (Department of Environment, Transport and Regions) has implemented a cultural and administrative reform in favour of urban transformations and green policies. In 1999 the *Urban Task Force* proposed guidelines to regenerate cities and London in particular. These

open space, the contractual and pragmatic planning system respectful of local authorities. The research has combined theoretical proposals with practical local experiences examining the feasibility of green theories, the debate between specialists, urban planners, administrators, workers and locals, highlighting both successes and failures. Documents, case studies and various positions emerged has been possible to single out and suggest several guidelines, together with significant issues still being debated. These can be used as theoretical reference and planning strategies for the debate on the regeneration of European cities.

The guidelines at a European level pertain the opportunity:

- to ensure the continuity of the green systems as a common objective for urban regeneration, whilst maintaining the diversity of solutions in relation to the character of the urban and territorial structure;
- to consider the realisation of green networks as an opportunity for the morphological reorganisation of the overall city form and the design of its parts and for the functional reorganisation to create new relations between the parties;
- to think and manage continuity by co-ordinating and moving across different levels (principal, secondary and local networks);
- to consider green network projects as a component of an integral urban project based on the standard used by the urban planners;
- to give preference, in the construction of a continuous network, to the use of residual spaces as elements which insure the capillary articulation of green space in residential zones;
- to reassess the relationship between private, semi-private and public green spaces;
- to re-evaluate and improve the collective uses, social and economic, of green spaces in relation to the new urban local and daily demands of residents;
- to adopt planning procedures which ensure through contractual and participative process the consensus of citizens and actors most directly affected by the interventions.

The objective of constructing a continuous green network within the contemporary city is to obtain multiple gains of urban, social and ecological order that are geared towards a greater integration and quality of urban life. More precisely, the green network from a planning perspective is an opportunity for the morphological reorganisation of the overall form of the city and the design of its parts. From a functional perspective it offers a new system of relations (renewed urban polycentrism, a new relationship between centre and periphery) linked to leisure time and low mobility which support largely saturated public spaces and mobility infrastructures.

At the level of local interventions, the realization of the green network is occurs under: an ecological profile, guaranteeing environmental conditions and biological diversity (drainable surfaces, green areas, tree cover, lakes, presence of water) in relation to the density of residents; a social perspective, to improve integration, security, increase collective uses; from a planning perspective, it becomes a salient element in the organisation of space between built-environment and open spaces, nature and architecture, public and private space.

Green space helps to create a more balanced functional organisation for new services and leisure activities, complement to living space, binding them together within a low mobility. Moreover, a highly organised open space which carefully considers accessibility and functionality helps to reduce the conditions for marginality, social risk and abandoned areas.

guidelines provoked a serious debate and many administrative changes at all government levels. In response, the Department produced the *Urban White Paper* (2001), with the government program on urban regeneration. In London, with the Greater London Authority's restructuring in 2000 a new Plan was adopted (*The Draft London Plan* 2002-2004). At the same time Boroughs put into practice certain proposals made by the Urban Task Force in poor neighbourhoods of the city centre (Southwark, South Bank) and in a brownfield site (the Dome in Greenwich Peninsula and the Greenwich Millennium Village).

The London case demonstrated how the green network project should be built along two levels following two interrelated strands, one urban-metropolitan and the other local.

The urban-metropolitan level of the project is drawn up by the Greater London Authority, a new, unique government structure, presided by the mayor and a decision making assembly for the whole of the London metropolitan area. It has transverse authority over urban projects, transport, economic regeneration and development, environment, security and public order structures, culture and public health.

On the local level, the project is promoted by each Borough and drawn up for the most part by specialists in the administration who bear responsibility for the decisions brokered in talks with private parties to guarantee the realisation of the network.

The partnership, institution bringing together the concerned public and private parties, has an important role on both levels. She has in charge of promoting for a specific area socio-economic development programmes and other financial initiatives (administering public and private funds, managing together with borough specialists, the economic planning with the owners, social planning with residents and monitoring of projects).

In regards, to the tools and the form of the project for the urban-metropolitan scheme, the planning documents for a new development clearly propose the need for the administration to have an “overall spatial design of the city” and of green networks (refer The London Plan).

The construction of a green network is carried out with a draft local urban project (masterplan) and must first be referred back to standard procedures (general plan, unitary development plan), before verifying the feasibility of the project. This will prevent the separation of green spaces from other components of the city project. The project evaluates the specialised planning (environmental, transport, technology) in conjunction with the assessment of social, environmental and economic feasibility.

It is commonplace in the UK for the plans and the local projects to be binding in contractual terms and in terms of policy; they represent the administration’s vision and strategy. In local projects, they serve as a flexible point of reference in negotiations with private parties and can remain internal documents without being formally recognised within the Local Plan. In the case studies examined, a masterplan (1:2000) summarises the structure of the local project, the relationship between the various networks and amongst other elements. Subsequently, the agreement being concluded and the executive operations begun, this agreement will be received in the local plan. In addition to the masterplan a selection of draft-phase illustrative designs of the spatial and structural elements and database for project elements in relation to properties and zone projects allow for a direct and autonomous implementation of the individual interventions. Nevertheless, the studies examining the UK’s green network projects currently in progress have revealed an approach on several different levels and a progressive reconciliation between the strategic dimension (objectives, directives, contracts) and the design dimension and formal outcomes of the project.

The continuity of green networks is realised by putting in place traditional urban project typologies (parks, gardens, river parks, tree lined avenues) within the wide variety of residual spaces left by the sprawl of contemporary cities. It is in these spaces where the large part of city transformations are taking place today (opportunity areas, areas for regenerations, areas for intensifications). Natural (woodland, streams, lakes) and artificial (urban parks, district parks, villas, tree lined avenues, canals) elements are included in a green projects. On an metropolitan level, the London Plan indicates the types of areas which compose the green system (Green Belt, Metropolitan Open Land, Blue Ribbon Network, Green Corridors, Green Chain, local green spaces). The plan indicates metropolitan and urban green systems, the areas in which the main transformations will take place and require local authorities to indicate which areas are available to realise the green networks. The decision to select areas at a local level gives an understanding of local reality, which allows more insight into problems, needs and opportunities so that the construction of a continuous network may respond to two fundamental

requirements: the first of a general nature that is regarding the connection of large metropolitan residual natural areas and parks, and the other local, regarding the resolution of environmental habitat problems.

Residual spaces are fragments of urban construction which have lost their original use or never had an allocated usage. They have not been designed and are characterised by a extreme uncertainty. Furthermore, they have what could be termed as a “fragility” of use, making them key areas for the construction of continuous green space akin to “a fluidity of space” and for the recuperation of socially and environmentally sustainable urban habitat conditions.

In the UK initiatives various types of residual space have been used for the construction of green networks from the core of the city and peripheral areas. These were classified on the basis of form, dimension (punctual, linear, areal) and former use. Amongst the areal elements selected are large abandoned areas (derelict, vacant land) in proximity of urban centres often with contaminated soils (brownfields), which have direct access to transport networks (public transport and railway lines). The linear elements chosen are obsolete infrastructures (routes, electric lines) abandoned railway tracks, throughways, artificial canals once used for the transportation of merchandise, abandoned lanes, road embankments, crossroads, the stumps and roots of felled bushes and trees, the arches of viaducts, the tracks of old tram lines, the spaces around the city walls. The punctual elements used are public and semi-private condominium spaces often with tarmac surfaced courtyards and raised walls, tarmac surfaced play parks, the spaces surrounding public buildings (schools, health centres, clubs and cultural centres, religious buildings, indoor sport structures), spaces surrounding private buildings (entrance halls and exteriors of multinationals and businesses, open spaces of research institutes), squares and various other public places where people gather.

For several reasons, many larger areas are not used to their full potential: large agricultural land owners obstruct possible intervention; areas with contaminated soils and serious environmental problems caused by industrial misuse remain too costly to repair; and unofficial political will to let land lie barren for speculation purposes. As for areas of smaller dimensions, their abandon is often due to technical design errors (irregular agricultural fragmentation, vacant expropriation areas). They are real problems but entirely solvable with government acquisition policies, attaching remunerative uses for fractions of these spaces or by providing exchanges or re-localisation of building rights.

T. Turner created an innovative way of designing green networks with the concept of green chains (Turner, 1991). They are a continuous system of public spaces set within and merging with the built-up area (parks, offices, shopping centres, town squares) to create a circuit of “environmentally pleasant” pedestrian paths and cycling lanes (drainable soil, vegetation, sustainable microclimate) to be used by citizens on a daily basis. It is innovative in that, unlike other green networks, it makes use of abandoned spaces within the built-up area. These additions aim to improve the environmental quality within the city, provide new functional uses and encourage social integration. It will also ultimately provide for a more unified urban design within the city and the component parts.

Green chains are a circuit of “environmentally pleasant” interconnecting footpaths and bicycle lanes to facilitate movement between various destinations (origin-destination survey): from one’s residence to the park, from the office to the park, from a station to the park, from one’s residence to the office. They must incorporate the existing parks, river banks, canals, shopping centres, footpaths, playgrounds and abandoned spaces. The land can be public or private, open or closed to the public, hard or soft, single or multiuse. The green chain is also a support system for transport, creating a secondary network between longer travel distances, helping to create a more effective network between various destinations (city centre, train station, underground, shopping centres, schools).

...Railway networks and abandoned areas inaccessible to the public can become part of the construction of an ecological network within green chains. In the city centre the green of the Green Chain is made up of elements that are environmentally pleasant (permeable soils, vegetation, sustainable microclimate)²...

In spite of the diverse character of residual spaces it is easy to conceive how this kind of space can be regenerated in all European cities. The space chosen to build a green chain within the typically dispersed European model needs to be carefully considered, taking into consideration sprawl or coastal settlements of Mediterranean countries, where there is an overabundance of vacant space in the absence of systems which provide structure, with the exception of basic infrastructure systems.

Continuity and integration models progressively linking minor residual spaces, private and semi-private spaces in private properties and urban public parks and natural green spaces (parks along waterway) are most frequently cited in plans and design models.

The most frequently used reference models are: a grid pattern: an interwoven green space, which guarantees the continuity and a relative homogeneity without excessive diversity in dimension or specificity of use; a tree model: the continuity of green, through the hierarchical organization of spaces, built with a gradual transition between the smallest to larger urban and regional parks; consolidated island model: built using the densification of existing residential areas to provide smaller green spaces secure, easily equipped and well delimited.

The grid pattern and tree models have the quality of combining the concepts of continuity and system, allowing for creation in phases. They are also geared towards low mobility and the creation of pedestrian walkways and cycling lanes for a better integration between spaces for social and public service uses.

Functional use and green element design are two other criteria proposed for the planning of green networks in an attempt to give a sense of identity to the various components of the green network. The reorganisation of these spaces changes their nature, image and function. They are reconsidered with a design that integrates the various demands expressed by residents and other users who make use of these spaces on a daily basis. The design is modified to suit various lifestyles with greater flexibility in use by offering a variety of green spaces, including natural open fields (crop land, pasture), Italian style gardens, local parks.

In addition to naturalistic and ecological functions provided by large parks and corridors with direct access to the countryside there are another set of functions included for social usage, such as leisure activities, sport and other events, which are compatible and in different ways characterize each green node. On a local level, every element and minor green space, often related to residential areas, presents supplementary integrated uses (recreational, sports, cultural) to render spaces more occupied, attractive and secure in the 24 hours.

Landscape, water, vegetation, morphology and historical aspects are all essential to design the city's identity. Local authorities in London conducted a green heritage census to get a better understanding of the historical significance, the singularity, the design and the state of green areas (urban parks, small local gardens, private gardens, tree lined streets etc.) in terms of dimension, range of influence, characteristics, functions. The end objective being to recuperate the historical typology of green spaces in future projects.

Using residual spaces (frequently of unusual shapes and dimensions) has allowed to experiment with new designs, open system typologies, and services, to distinguish temporary places of transience and others to hang around. The results of the most significant experiences are gathered in brief manuals.

² [Turner, T., 1991, *Op. cit.*, Green open space strategy for London, pag. 12-13.](#)

The results achieved in England demonstrate that even small changes in residual spaces with the use of few trees, to provide a place for people to stop and talk, can greatly enhance the quality of settlements (re-appropriation of these spaces by citizens, new perception of lifestyle with alternative means of transport, innovative way of experiencing daily life in a green surrounding. Space is also dedicated to hydraulic and technological efforts, to prevent energy and water waste and to restore polluted land.

Finally, the necessary measures and requisites for the operation to be a success, based on UK experiences: appropriate top-down strategies, vision and political incentives for the regeneration of the entire city and the metropolitan context; a bottom-up approach to planning, in order to increase social consensus, consent amongst actors, and resources in relation to shared local objectives; a communicative and open approach to objectives strategies and planning indications which is developed progressively in the course of the design of green spaces and through the representation of plausible end scenarios; an exhaustive analysis of the environmental, economic and social aspects in the drafting of a final proposal; a contractual and participatory method, with private parties and local authorities to define by means of consensus, a system and courses of action to carry out implementation and management.

Open Space Strategy (Oss)

The Open Space Strategy (Oss) is the document that the Government and the New Plan of London have asked all the administrations premises, Boroughs, to achieve the continuity of the green. To make this document both the government and the GLA have provided guidelines. The Open Space Strategies ... help all those responsible of open space to provide parks and open space well-designed and well gestiti61. The Strategy proposes a shared vision for improve the open space that meets the needs of the community and become a reference point for utilizing resources and detailed plan azione62. Through ... a creative and collaborative approach, the Strategies may be the way to equip cities with safe and attractive public spaces as proposed from urban renaissance: - By involving the community to create a shared vision;- Protecting the future of green spaces;- Improving the quality of Neighbourhoods;- Promoting the well-being of the residents; - Attracting resources for management. These objectives promote an integrated approach to green space that supports the guidelines of the borough to increase the value of areas and buildings and to attract external funds. In the construction process of the Strategy must be actively involved key users and stakeholders to meet the needs and the desired community. To integrate the open space in the local plan and to find safe funds, it is critical support Interdepartmental involving the offices of the Borough that involved in urban design, environment, transport and residence, both for the preparation that for the implementation of this. The Strategy must give real benefits and improve green space and must contribute directly to propose the local community strategy through:- The creation of a vision for the future of parks and green spaces; - A precise knowledge of the typological and the status of existing green space; The definition of compatible uses in accordance with the needs and aspirations of the community; The promotion of local qualitative and quantitative standards; The choice of actions and timescales to achieve these standard; The creation of a system of monitoring and updating the action plan. Each strategy should have a thorough evaluation of existing spaces and their use actual or potential, in line with the demands of government policy Government's Planning Policy 17 Guidance PPG 17, including parks, play areas, allotments, community gardens and other green spaces. In the propositional must choose their own goals, balancing the different functions of green space, integrating into a "green network" functions sports, educational, recreational and ecological preference, define actions and targets for improvement, sources of financing that need to be mobilized to achieve this vision. Finally, the strategy needs to be regularly assessed and appropriate to be sure that it can meet the needs of the community. For the part of investigation and evaluation of the paper considers the other: the structural aspects (demographic, socio-economic, ...); environmental and landscape aspects (characters idrogeomorfologici, parks, gardens, areas of flooding, environmental goods protected, strategy for biodiversity, historic and protected landscapes, ...); aspects urban, families eligible for types of uses of space; investigations seeking to ascertain the demand of the

residents. In the proactive response to the issues raised in the evaluation, the issues of greatest attention include: the types of open space, the integration between different uses; Facilities of open space per resident and pedestrian accessibility; models the network. The indications of the strategy proposals have no value prescriptive, to exemplify the will of the administration, initially evaluate the consent and feasibility of the proposals and then, once implemented in the instrument of plan UDP, express the aims and directives that intends to pursue the administration in the implementation phase, particularly in the negotiations with individuals.

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Shaping cities for health to contrast the effects of climate change: the CCHURE proposal

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Abstract: Regenerating the existing city and placing health at the center of policies, plans, and projects represents an effective response to contrast the effects of climate change that impact cities and the health of inhabitants. Convinced of this need/opportunity are the World Health Organization (WHO), eminent international researchers, and public administration representatives in many European cities. However, a consolidated "silo approach", which is common to the sectors of scientific research and public administration, does not allow common objectives to be defined, especially in small-medium cities, or integrated design proposals to be formulated. The CCHURE Research (Climate change and urban health resilience) aims to define a transdisciplinary methodology to evaluate the effects that climate change produces on urban health, to direct policies for adaptation/mitigation through the contribution of many scientific disciplines, interaction with municipalities and local health agencies, and the involvement of local communities. This will be done with the support of new IoT (Internet of Things) technologies and mobile crowdsensing techniques in order to expand knowledge to measure/assess the effects of climate change on health, to involve communities in designing shared plans for development, to empower them when dealing with urban health and wellbeing, and to support public administrations in making decisions.

Keywords: Urban regeneration; urban health and climate change; community participation; IoT and crowdsensing;

1. Introduction

Climate change is often addressed in terms of risk for infrastructures, energy reliability, and ecological concern. Growing evidence shows that the impacts on people's health/well-being are also urgent. The report "Healthy as the Pulse of the New Urban Agenda" (World Organizations Health, WHO 2016) introduced the idea of urban health resilience as the need to promote resilient urban policies to reduce the risk of climate change with respect to human health. The Fifth and Sixth Ministerial Conferences on Environment and Health from 2010 and 2017 declared their commitment to protect health and well-being, natural resources, and ecosystems; and to promote health equity, health security and healthy environments in a changing climate. The commitments made at these two conferences were the result of research activities in recent years (Patz *et al.* 2000; McMichael, 2002; Confalonieri *et al.* 2007; Barata *et al.*, 2011; Smith KR *et al.*, 2014; Watts *et al.*, 2015) and calls by international bodies (IPCC, 2013; WHO, 2015; etc.). All of these studies agree that cities are exposed to the greatest risks, both due to the effects of climate change (Ispra, 2014) and for the social imbalances that these effects can generate (UN-HABITAT, 2010; Hughes BB, Kuhn R, Peterson CM, *et al.* 2011).

The European "Health 2020" strategy recognizes the important leadership role of cities in developing health urban policies. Reorganizing the existing city by placing health at the center of policies for

urban regeneration represents an answer to contrast the effects of climate change as it impacts cities and the health of inhabitants. Many researchers from different disciplines are convinced of this, although they are accustomed to a silo approach that does not permit common objectives to be defined (e.g., the 2013 “Helsinki Statement” on “Health in all policies”).

Medical science alone is insufficient to address the theme of social and environmental determinants of health, which are explicitly present in the WHO's vision of health (WHO, 1948). Other disciplines must be involved, those dealing with the places where most people live: the cities (Urban Age Hong Kongdel 2011/London School of Economics and Political Science). First among these disciplines is urban planning and design, which is called to respond to the needs of health in cities, in delivering health improvements through reshaping the urban fabric of cities, in the creation of new healthy urban environments, in the sustainable organization of mobility, land use, and green areas. These principles were reiterated by the WHO through the UCL–Lancet Commission of 2012 and the Healthy City Europe Movement (VI Phase 2014– 2018: theme: “creating resilient communities and supportive environments”), in close relation with one of the priorities in the European Health 2020 Strategy. Some research has begun in this field in Europe (UK/ Barton, Tsourou), America (Corburn at UC Berkeley, Columbia University, Mailman School of Public Health), Canada (Canadian Urban Environmental Health Research Consortium-Canue, McGill School of Urban Planning), and Australia (RMIT University, Melbourne with NHMRC Centre of Research Excellence in Healthy Liveable Communities directed by Giles-Corti). In current research, there is a strong focus on the neighborhood scale, which is the most appropriate for involving communities in designing/creating environments favorable to health (D’Onofrio, Trusiani, 2018). London, Rotterdam, Copenhagen, Bratislava, and Almada are being activated with climate-change adaptation plans, beginning to make use of the new information technologies of sensors and mobile apps to monitor phenomena such as the urban heat island (Rotterdam), traffic, atmospheric pollution and respiratory illnesses (Barcelona), the effects of atmospheric precipitation, etc.

What emerges is the need to break down disciplinary fences in research and among the different sectors of public administration; expand knowledge to measure/assess the effects of climate change on health; and involve communities, empowering them with respect to health. Sustainable, low-cost tools to monitor health equity on the local scale are essential to make decisions, allocate resources, and guide interventions for transformations/adaptation (Vlahov D, *et al.* 2011). One aid may come from the Urban Internet of Things (IoT), low-cost technologies capable of real-time collection of information to understand the complex interactions among the urban ecosystem, climate change, the health of inhabitants, and social conditions (Yick, Mukherjee and Ghosal 2008, Kontokosta *et al.* 2016).

2. Materials and Methods

The CCHURE (Climate change and urban health resilience) Research¹ intends to take up the

¹ CCHURE is a research funded in 2018 by the University of Camerino. The members of the group are researchers from different subject areas of the University and some Italian and international researchers. Research UNIT 1: Rosalba D’Onofrio School of Architecture and Design - UNICAM (Italy); Michele Talia School of Architecture and Design - UNICAM (Italy); Chiara Camaioni School of Architecture and Design - UNICAM (Italy); Ilaria Odoguardi PhD Student School of Advanced Studies - UNICAM (Italy);

challenges mentioned above in a transdisciplinary approach, with greater knowledge of the impacts through new technologies, involving local populations in identifying the needs of health and co-designing their neighborhoods.

The research, in particular, aims to define a methodology to evaluate the effects that climate change produces on urban health, to direct policies for adaptation/mitigation through the contribution of many scientific disciplines (urban planning, architecture, medical science, computer science, social science, legal science), the interaction with municipalities and local health agencies, and the involvement of local communities with the support of the new IoT (Internet of Things) technologies and mobile crowdsensing techniques.

A small-medium size city of 50,000 inhabitants, Ascoli Piceno, was chosen for the research as being representative of small and medium European cities with greater criticalities due to the lack of qualitative and quantitative data on the risks for health and the lack of sufficient economic resources. The field of comparison is the neighborhood, where the local community is most present and participatory, specifically the Monticelli Quarter (Figure 1). In addition to involving researchers from different disciplines, CCUHRE also involves local entities, neighborhood associations, local health agencies, and experts. It aims to identify a working method that can be exported to other cities in which traditional means of gathering information on health, the environment, and their interrelationships are combined with collection via IoT devices and mobile crowdsensing techniques. Citizens are called to intervene in the process of gathering data, identifying/resolving problems, and building design hypotheses.

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Research UNIT 3: Diletta Romana Cacciagrano Researcher School of Science and Technology - UNICAM (Italy); Leonardo Mostarda School of Science and Technology - UNICAM (Italy); Fabio Pagnotta PhD Student School of Advanced Studies - UNICAM (Italy); GianMarco Mazzante PhD student School of Advanced Studies - UNICAM (Italy); Graziano Enzo Marchesani PhD student School of Advanced Studies - UNICAM (Italy); Franco Raimondi Full Prof Middlesex University London (UK) Professor of Computer Science; Marta Magagnini School of Architecture and Design - UNICAM (Italy);

Research UNIT 4: Roberto Ruggiero School of Architecture and Design - UNICAM (Italy); Roberta Cocci Grifoni School of Architecture and Design - UNICAM (Italy); Francesca Giofrè La Sapienza - Rome (Italy); Zoran Djukanovic Associate Professor University of Belgrade (Serbia) Professor in "Participatory Urban Design"; Luca Bradini School of Architecture and Design - UNICAM (Italy); Maria Federica Ottone School of Architecture and Design - UNICAM (Italy); Mariano Pierantozzi School of Architecture and Design - UNICAM (Italy); Ingrid Gomes Braga Researcher State University of Maranhão - UEMA (Brazil) Professor in Sustainable Architecture Component;

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Figure 1. View of the Monticelli neighborhood; Source: Raniero Carloni

3.1 Features of the Monticelli district

The Monticelli quarter is one of the most populous in the city of Ascoli Piceno, with about 10,000 inhabitants. It is located only a few kilometers from the historical center, but “... you can’t get to Monticelli on foot”, as the local news reported a few years ago. Until the beginning of the 1970s, the land where the quarter is located was practically open country. In 1972, the city was endowed with its first local plan. This called for linear development along the east-west expanse of the city and defined a broad area to the east of the city (Monticelli) where the greatest residential volumes, built new, would be concentrated, in order to house 21,600 inhabitants (compared to the roughly 75,000 inhabitants expected in the entire municipal territory for the year 1975). It was quickly realized that the forecast for an increase in population from 50,000 to about 75,000 inhabitants was entirely unlikely, and that the nucleus of expansion in Monticelli was oversized in relation to the effective demographic trends. Despite this, the city administration proceeded to partially realize the housing and main roads as established by the plan. This was done in consideration of the fact that the earthquake of 1972 had caused serious damage to the building heritage in the historical center, with the consequent abandonment of uninhabitable buildings and the fact that the zones for social housing in Monticelli could take advantage of significant economic subsidies. Today, the quarter contains the hospital, a supermarket, offices, various types of shops, two churches, and, until a short time ago, a fast-food restaurant. Today, for most of Ascoli Piceno’s residents, Monticelli is simply a dormitory, a quarter situated between a road axis and the Tronto River, a small town in and of itself with respect to the rest of the city of Ascoli Piceno (Figure 2). The quarter lacks infrastructure and equipped green areas, it lacks meeting points and places that identify the quarter, and some residential buildings are degraded. The city news reports stories of drug addiction, aggression, and accidents due to dangerous cross traffic — both on the central axis and the internal streets — smog, and noise. Despite this, there are signs of liveliness and action by the local population in the presence of sports associations, social gardens, and a very busy senior center. Attention for the quarter has re-emerged in recent years

following urban regeneration projects financed with national public funds and local interest holders, such as the Neighborhood Contract 2 – Extraordinary Program for Peripheries (Contratto di Quartiere 2- il Programma Straordinario per le Periferie-PRASI), which establishes a budget of €86 million, of which €18 million is financed by the State with some interventions on the roads, green areas, and degraded buildings.



Figure 2. View of the Monticelli neighbourhood; Source: Raniero Carloni

3.2 Objectives and products expected

CCUHRE, in particular, proposes to:

1) Build a methodology to investigate the relationships between the impacts of climate change and the health/well-being of inhabitants on the urban scale of the neighborhood, which contributes to selecting actions and combinations of actions for mitigation and adaptation with citizens' active role.

Outputs:

a) Climate and Health Profile (CHP): to construct the neighborhood CHP, reference will be made to qualitative/quantitative indicators that assess the effects of climate change on the health and well-being of the population. These indicators will be selected based on existing public health data, as products of international research, and with the contribution of inhabitants by administering questionnaires and activating focus groups.

b) Climate and Health Actions (CHA): the selection of actions and combinations of actions for adaptation and mitigation, already present in international best practices, with reference to the "fundamental themes" of urban design — land use, mobility, housing, open spaces, and meeting spaces, the natural environment — and some themes of technological design — temporariness and flexibility, etc.

2) Proposing a methodology for public administration to select scenarios for adaptation to/mitigation of the effects of climate change, through the use of real-time analytics and data feedback mechanisms and non-instrumental interaction with local communities. Outputs:

a) Climate Health Lab (CHL): construction of a platform of sensors and automation technologies (Urban Internet of Things, IoT), which will provide real-time information/measurement of the physical/environmental conditions of the neighborhood and its inhabitants. This platform will be implemented with citizen contribution through the use of mobile crowdsensing techniques, which will allow smart-phone users to interact with IoT devices.

With the CHL, it will be possible to:

- analyze and assess the difference between subjective and objective measurements of quality-of-life indicators to understand how the perception of different environmental conditions varies across the neighborhood;
- verify and compare, with the help of researchers, technicians, and citizens, the "health" performance of the scenarios identified and their evolution in time, thereby assisting public administrations in the decision-making process.

The research objectives will be measurable: 1) in the number of citizens involved in the experimentation in the field and in the focus groups; 2) in the number of planning proposals for adaptation/mitigation that will be designed with the support of IoT technologies and citizens and from which the administration can choose based on the quarter's needs.

3.3 The current phase and the next steps of research

The research started at the beginning of 2019 with the presentation of the theme and objectives to the local community. Up to date, the research group is involved in construction of the methodology to investigate the relationships between the impacts of climate change and the health/well-being of inhabitants on the urban scale of the neighborhood, which will help to select actions and combinations of actions for mitigation and adaptation with citizens' active role. At the base of this methodology there is an approach that foresees the fundamental involvement of the community and the preparation of preliminary data with particular reference to: a) The construction of the Community Health Profile and b) the identification of Climate-Health Actions.

In order to construct a meaningful Community Health Profile and the consequent Climate-Health Actions, some indicators were highlighted to assess the families' quality of life in the Monticelli district. The indicators have been grouped together in a questionnaire; It has been distributed to families, intercepting an average age range between 30 and 55 years, with the help of primary school in the neighbourhood. The questionnaire is organized in 9 sections: demographic data, area where the family lives, security, accessibility to services, social cohesion in the neighbourhood, daily travel, characteristics of the dwelling, quality of life in the dwelling, outdoors.

Simultaneously and in close collaboration with ASUR (Regional Healthcare Company), for a complete and significant construction of the Health Profile is begun the administration of the PASSI questionnaires (Progress of Health Services for Health in Italy). Promoted and financed since 2006 by the Italian Ministry of Health, this questionnaire aims to carry out a full-scale monitoring of the population's health status. The administration of the questionnaire is in progress; it was being

administered on a sample of 250 people in the neighborhood and it gathers information on lifestyle and behavioural risk factors of the Italian adult population (18-69 years) related to the occurrence of non-communicable chronic diseases. Among the many topics investigated by PASSI are: smoking; physical activity; obesity; excessive weight, cardiovascular risk, state of physical and psychological well-being, and other aspects related to quality of life related to health.

From the results that will emerge from the administration of these two questionnaires, the Community Health Profile will be drawn up, which will allow to the research group to select indicators that will assess the possible impacts of climate change on the inhabitants' health and well-being of the neighborhood. Moreover, these additional indicators, selected by international literature and with the citizens' contribution, will be administered within focus groups and through the contribution of new information technologies. Simultaneously, it will be conducted a survey of best practices, that many European and world cities have and are promoting, which link urban plans and projects with the objective of combating climate change and health impacts. The fields of investigation to carry out this survey will cover: *Housing and buildings; Neighbourhoods; Social environments; Connectivity, density and land use mix; Accessibility, amenities and decision-making processes; Greenspace, etc.*

To simplify this activity, a reconnaissance of the district was carried out through the analysis of the planning tools in use, and then specifically considering: demographic data, urban standards, organized for green areas (type of green areas surveyed, type of green areas of public utility, etc.) (Figure 3); services (primary services, parking areas, commercial activity, etc.) (Figure 4); mobility structure (pedestrian path's survey, bicycle lane's path, bus routes, etc.) (Figure 5). Starting from the end of 2019, the next steps will concern the activities described in the previous paragraph.

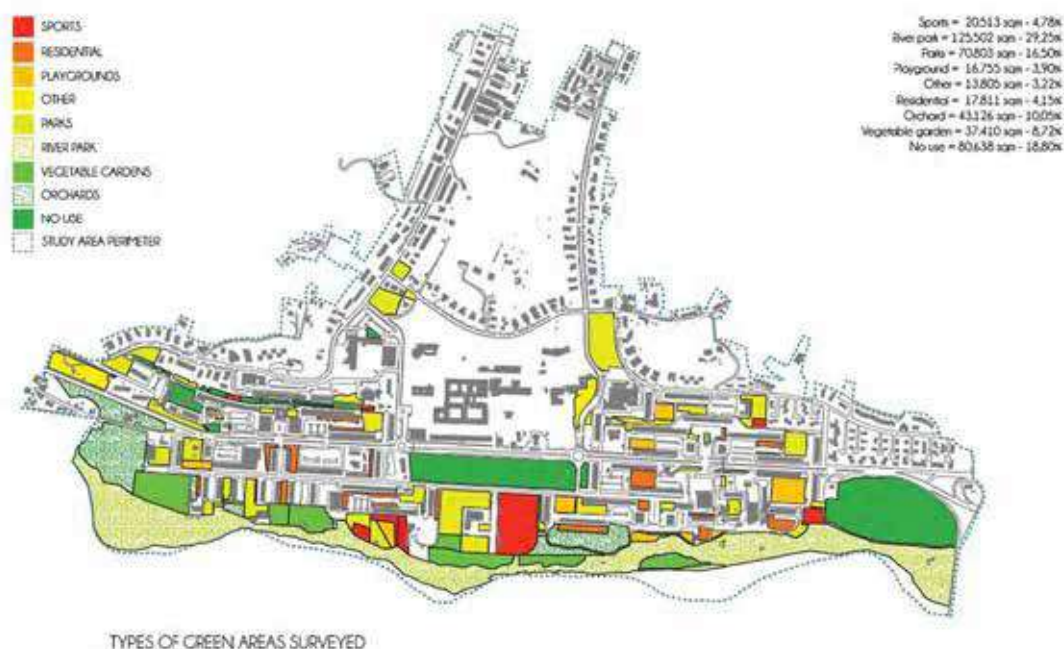


Figure 3. Types of green areas surveyed in Monticelli neighbourhood. Source: Search results

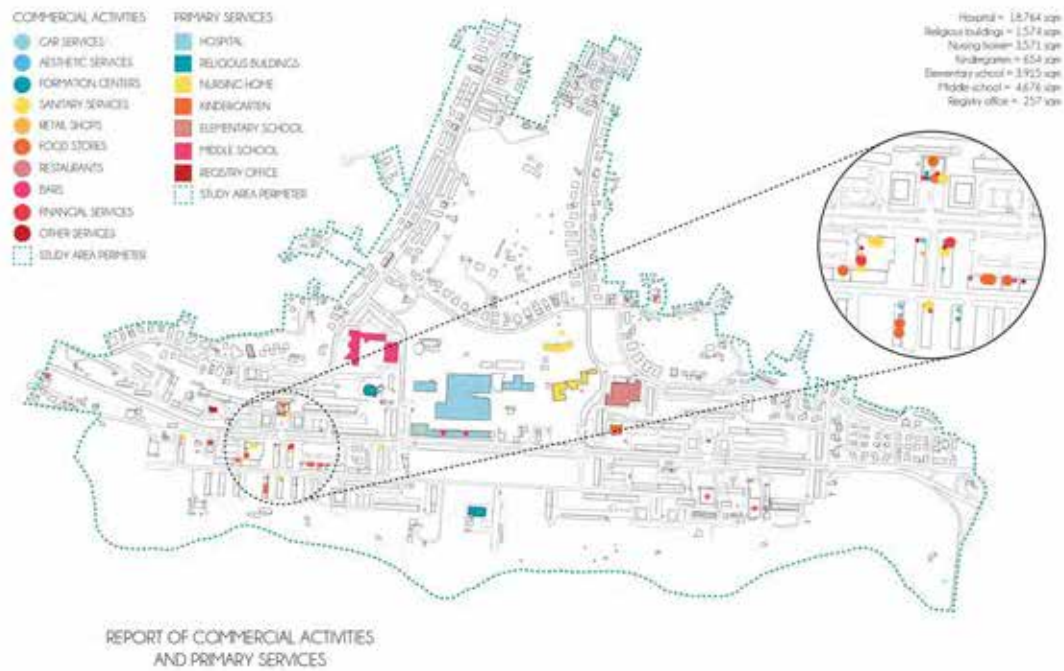


Figure 4. Report of commercial activities and primary services in Monticelli neighbourhood. Source: Search results

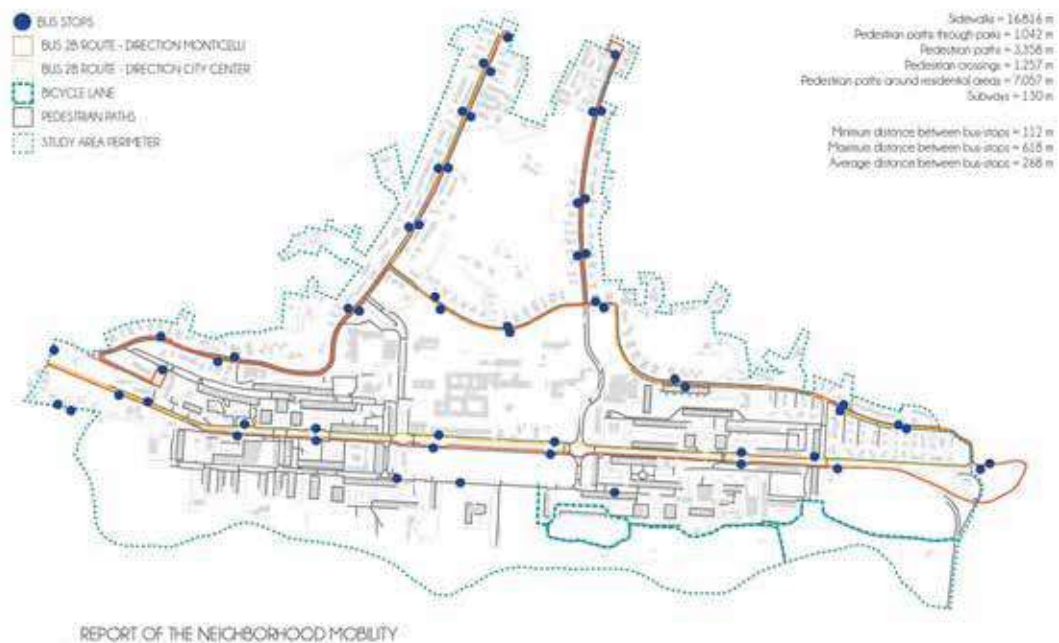


Figure 5. Report of the Monticelli neighbourhood mobility. Source: Search results

4. Conclusions

The innovation of CCUHRE regards the possibility of beginning a system of knowledge shared between the public administration, scientific community, and local community to assess projects and plans for mitigation of and adaptation to climate change and to choose the most advantageous in terms of their effects on health. This will occur through the use of IoT technologies and low-cost mobile crowdsensing. The results of CCUHRE will impact the research in the field of urban health in two ways: 1) the front-line participation of interested populations confers validity and concreteness on the research and the assessment of policies and the plans for adaptation to and mitigation of climate change, maximizing the impact of the solutions identified; 2) going beyond the concept of "urban design" guided by a top-down approach, which is strongly debated today, towards "human centred design" focusing on the knowledge of individual behavior, collaboration with the community, which makes use of contributions from various disciplines and the use of modern IoT technologies.

Citizens become providers and assessors of data regarding health and well-being, simulators and evaluators of scenarios for mitigation and adaptation, joining in the design of their living environments at risk due to climate change. This will favour:

- dialogue among the public administration, citizens, and researchers;
- citizens' participation and awareness regarding city governance/decision-making;
- an understanding of the need/opportunity to adopt an integrated, transdisciplinary approach, the only one capable of responding to the complexity of the effects of climate on health in urban areas;
- the fundamental role of the "urban project" in ensuring "equitable" access to health.

In imagining recourse to a methodology centred on people's knowledge of their living environment and the contribution that they can make in evaluating the quality of the mitigation and adaptation projects it is essential to earn their trust. It is therefore necessary to dialogue and establish collaborative relationships between citizens and the public administration by sharing information and ensuring:

- a) quality control of the data collected (which should be made known to the interested parties (ref. website of reference) and made available on an appropriate level of aggregation);
- b) assessments of mitigation and adaptation scenarios should occur through direct interaction between experts, technicians in the public administration, and citizens.

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Supply-demand analysis of park services for different age groups in Community life Circle: a central district in Shanghai as a case

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Abstract: Parks prominently contribute to the healthy lives of urban residents at all ages in their community life circle(CLC), however, it is rarely discussed what distinction in different age groups' personas exist and furthermore whether the supply and the demand of park services for them are matched. This results in socio-spatial injustice of urban parks and inefficiency of park services in terms of healthy city planning, design and governance. propose an enhanced method that takes both sides of supply and demand into account to reflect the authentic budget of park services in the CLC. At the same time, age plays a weighting factor in the evaluation progress so that the outcome could be more adaptive to specific groups of residents and thus support a targeted decision making in constructing CLC. A central district in Shanghai was taken as a case and the result suggests that in 177 out of 304 community units of this area, the elder and children's demand for park services could be basically or even better, while the young face a better situation. The service budgets also depict different spatial agglomeration. Some improvement strategies are thus proposed to assure a better healthy-oriented built environment.

Keywords: park services; demand-supply analysis; community life circle; two-step floating catchment area

Introduction

The master plan of Shanghai 2035 proposes the notion of the 15-minute Community Life Circle(CLC) as the basic unit for organizing community, which ensures basic service facilities and open space within the residents' walking accessible range so as to create a comfortable community space(Li, 2017). As a result of that, the number of researches focusing on improving service of open space in the CLC increase rapidly in recent years(Huang et al., 2019, Sun and Chai, 2017).

Urban parks, as a pivotal component of urban open space, serve residents in recreation, sightseeing and some other ecological regulating services like air purification, rainwater absorption and so on. To optimize parks' spatial pattern and to improve their service quality therefore necessarily contribute to the construction of the CLC. Nowadays the most common approach is to ameliorate the accessibility of parks, with multifarious methods in hand, for instance, provider-to-population ratios, travel impedance to nearest provider, average travel impedance to provider and gravity model(Guagliardo, 2004). The principle of them inherently bases on the assumption that

park services could be consumed only when residents could reach them. That is to say, it emphasizes parks' role as supplier of the services and services are distributed to each life circle.

Meanwhile people demand various park services according to their features. David Crawford found out the public open spaces in high socio-economic neighborhoods possess more features relating with physical activities amongst children (Crawford et al., 2008). The investigation of Jiang Haiyan suggests the more localized residents are, the more park services they would consume (Haiyan et al., 2010). Also park services are mainly consumed by children and the elderly and the young and middle-aged people only carry out community activities after work and on weekends, of which visiting a park is not inclined to be their preferred one (Li, 2017, Wang and Wang, 2016, Huang and Zhu, 2018). In that case, with personas of consumers of park services we should segment some specific needs of groups of various features in ages, income occupation and so on, furthermore judge whether or not service supply accordingly meet those demand. However, pertinent researches are still relatively rare.

Two-step Floating Catchment Area (2SFCA) method is a reasonable approach to integrate supply and demand of services. It considers population-to-provider ratio twice in turn in terms of supplier and demander: firstly, for each service supplier, all populations which falls within a threshold distance should be determined and then, for each service demander, the objective is to determine all available services that fall within a threshold distance. In the end a final outcome of population-to-provider ratio would be calculated out (Luo and Wang, 2003). This method has been applied mainly in spatial accessibility evaluation of health care facilities (Delamater, 2013, McGrail and Humphreys, 2009) (Nakamura et al., 2017) and also recently more inclined to other services like urban green space (Dony et al., 2015, Wu et al., 2018). However, the 2SFCA method manifests as a reflection of service supply in the end, since the population-to-provider ratio could be considered as a ratio of supply which is filtered twice by threshold distance. When it comes to demand, it's only possible to know how much services have been provided, rather than how much needs have been met.

Based on 2SFCA method, this paper aims to propose an enhanced method that takes both sides of supply and demand into account to reflect the authentic budget of park services in the CLC. At the same time, age plays a weighting factor in the evaluation progress so that the outcome could be more adaptive to specific groups of residents and thus support a targeted decision making in constructing CLC.

Materials and methods

Study area

The study area is located in a central city of Shanghai, with a total area of 54.76 km². There are a household-registered population of about 920,000 in the area, among which children (under 12 years old) account for 6.31%, young and middle-aged (13-59 years old) for 73.62%, and the elderly (over 60 years old) for 20.06%.

In contrast to other central districts of Shanghai, the study area owns an insufficient total green space and its park area per capita in the study area is relatively low, which drives it urgent to improve the budget of parks service. As Figure 1 shows, the parks in the study area are classified into 4 levels according to *Shanghai Park Classification and Classification Management Standards and Assessment Methods* and *Shanghai Controlled Detailed Planning Technical Guidelines*, namely district park, community park, street park and pocket park. Parks have a specific service radius which corresponds to the class (details in Table 1). The Shanghai Botanical Garden is excluded since it is not an ordinary residential park.

The research involves four types of data: (1) road network, which is extracted and topologically corrected from the road center line in the land use map 2011. (2) parks data, including information of name, location, area, entrance location and so on, which are derived from the land use map and complemented with google earth and other related materials. (3) population, which refers to the 6th National Population Census of China. (4) results of

questionnaire survey which was conducted on the working days and weekends in the summer of 2017. 13 parks, from district parks to pocket parks, were surveyed and the respondents were residents around the parks. Except for the basic profile information, the questionnaire mainly focused on the frequency of visiting parks.

All the data were loaded into ArcGIS 10.3 and edited in the Gauss Kruger Xian 1980 120E projection coordinate system. The neighborhood committee is chosen to be the spatial statistical unit, with the number of 304 in total.

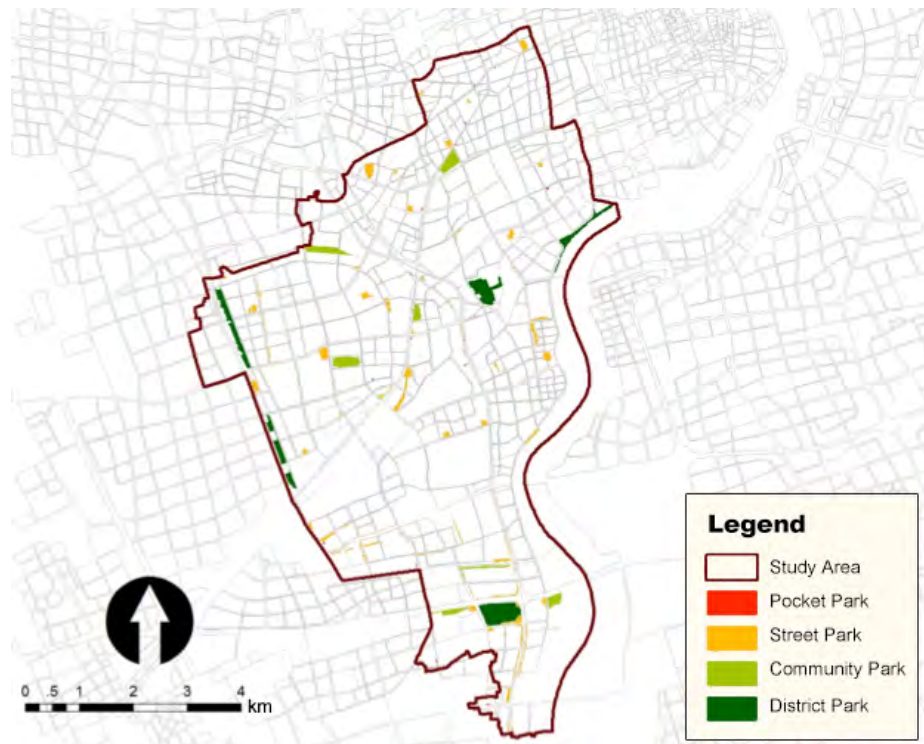


Figure 1. Parks in the study area

Table 1. Statistic information of the parks in the Study Area

Class	Threshold (hm ²)	Service Radius(m)	Number	Area in total (hm ²)	Percentage of Study area
District park	≥10	2,000	5	85.88	1.57%
Community park	≥4	1,000	6	45.77	0.84%
Street park	≥0.3	500	97	89.53	1.64%
Pocket Park	<0.3	250	82	9.91	0.18%
			Total:	227.49	4.23%

Framework of evaluation

This research takes consumption count of park services as the measurement for service supply and demand. On the one hand, for service supply evaluation, determine the ratio of park services that each park provides to the spatial units in its service catchment and then calculates available consumption count, which could interpret the level of park service supply. On the other, service demand could be measured in the way that required consumption count is calculated with the frequency of different age groups' visiting parks per week. At last, both separate evaluations are integrated to reflect the budget of the supply-demand. Compared with 2SFCA, this method

supplements the evaluation with the consideration of the demand side, which is independent of the evaluation of the supply side, so it can realize an integrated analysis. At the same time, the features of service consuming of different age groups are taken into account in terms of range of CLC and service-consumption frequency. Details of each step are as follows.

Firstly, determine the ratio of service supply. Each park is reclassified and has a service radius d . The service catchments of each park are generated with the network analysis tool in ArcGIS. Each catchment covers a plurality of spatial statistical units and then with the equation(1) we can calculate out the supply ratio of each park for each spatial statistical unit. The ratio correspond to the size of the park(larger parks have a larger service catchment and thus cover more spatial units) and the principle of equitable geographical distribution(larger spatial units should obtain more services from the parks). The equation of calculating the ratio is below:

$$W_j = \frac{S_{k_i}}{\sum S_{k_i}} \quad (1)$$

where W_j means the ratio for park j , S_{k_i} is the area of the i th spatial statistical unit k located in the service catchment and $\sum S_{k_i}$ is the sum of all S_{k_i} .

Secondly, determine the level of supply with available consumption count. The CLC of each age group has different range, thus take 15-minute walking distance as its radius(Li, 2017). In this study, according to the walking speed, the radius for the elderly and children is 1.2km and 2km for the young and middle-aged population. Usually children are accompanied by guardians (mostly the elders in China) to the park, so the study has included children and the elderly into the same group to simplify the discussion. With the network analysis tool can ArcGIS generate CLC catchments for each age group. After that calculate the ratio of effective service supply by each park in the CLC catchment and then available consumption count for each age group with the equation as below:

$$X_{k_p} = \sum (W_{k_j} \times M_{k_p}) \quad (2)$$

where X_{k_p} is available consumption count for age group p , which reflects how many people could ideally speaking be served by a park. W_{k_j} is the ratio of effective service supply by park j in the CLC for the spatial unit k and M_{k_p} is the population of age group p in unit k .

Thirdly, determine the level of demand with required consumption count as the equation below:

$$Y_{k_p} = \sum (\alpha \times M_p) \quad (3)$$

where Y_{k_p} means required consumption count, which reflects how many people would like to consume services of a park, M_{k_p} is the population of age group p in unit k , and α is the frequency of visiting parks of different age groups, which is determined by a questionnaire survey.

Finally, determine the budget Q of demand and supply for each spatial unit with the equation below:

$$Q_{k_p} = X_{k_p} - Y_{k_p} \quad (4)$$

When Q_{k_p} is greater than or equal to 0, that indicates the budget for park services of age group p manifests moderate or good in the spatial unit k . On the contrary, when Q_{k_p} is less than 0, that indicates the budget not satisfactory and a larger absolute value suggests a worse situation. We could furthermore propose adaptive strategies and carry out targeted approaches for each park and spatial unit.

Results

Supply level

As shown in Figure 2 the spatial distribution of the services supply for the young and middle-aged people and the children and the elderly is roughly the same. Abundant supply area is concentrated in the central part of the study area and the riverside area, while scarce supply are in the north and west. Overall speaking, the level of service supply for children and the elderly differentiate amongst each spatial units is more than for middle-aged people and apart from that in most spatial units is in the upper-middle class.

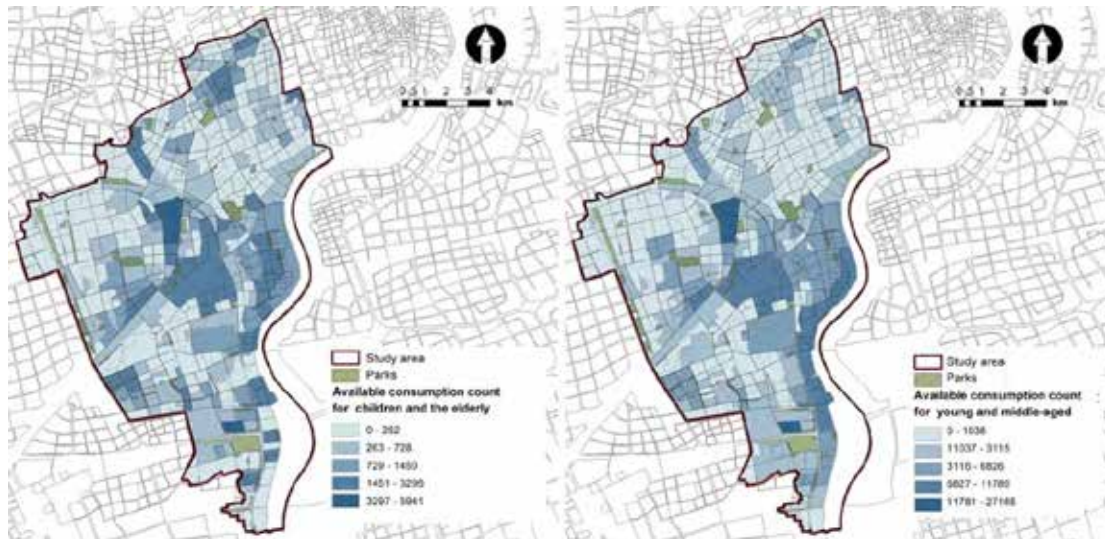


Figure 2. Supply level of park services in each spatial unit for two age groups

Demand level

In the end, a total of 280 valid questionnaires were collected, among which 171 were young and middle-aged respondents, 90 the elderly and 19 children. If the respondents visit a park every day, it is counted as 1. Then 3-4 times a week as 0.75, 2-3 times a month as 0.5, 2-3 times a season as 0.25, other lower frequency as 0. The average frequency of each age group is calculated out afterwards and the result suggests that the frequency of young and middle-aged people's visiting a park is 0.59, while children and elderly is 0.85.

As shown in Figure 3, the middle-aged and young people who demand for more park services concentrate in the middle of the study area. In contrast to that, the group of the elderly and children own much stronger demand for park services. The number of spatial units with higher demand is more amongst them than amongst young and middle-aged people and distribute wilder in the spatial dimension. On the whole, each age group's high demand areas have less spatial overlap. For example, the demand for children and the elderly in the northern part of the study area is moderately high, but the demand for young and middle-aged is on the contrary low. This indicates that parks in different parts of the study area have different target visitors.

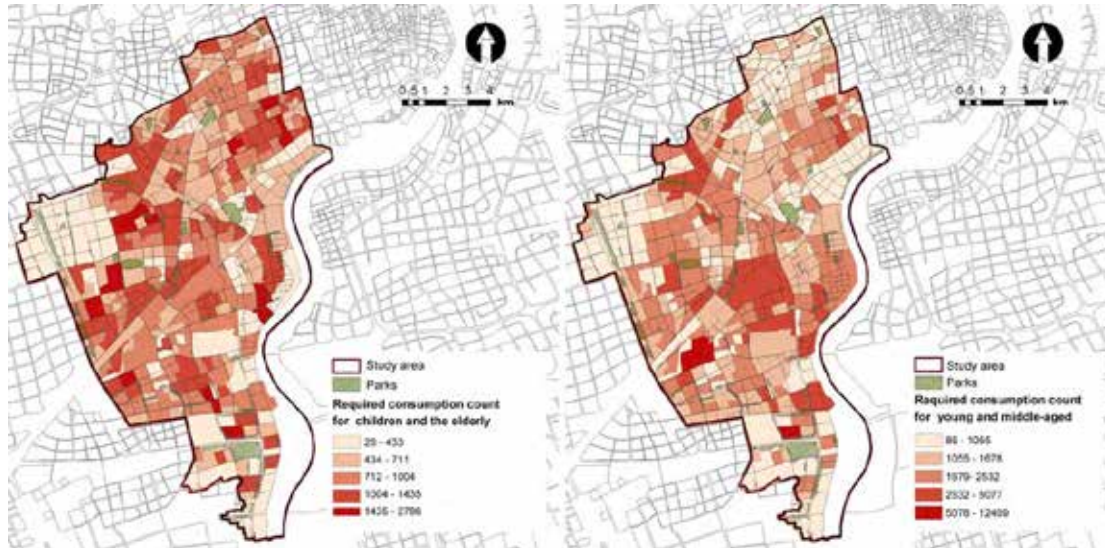


Figure 3. Demand level of park services in each spatial unit for two age groups

Budget level

The result of overlapping the demand and supply level suggests that as far as the elderly and children are concerned, as shown in Table 2, 177 out of 304 spatial units have a moderate or even ideal budget, but for the other 127 units the supply could not meet the demand. In contrast, the group of young and middle-aged enjoy a better service budget. In over two thirds of the spatial units, the supply could meet the demand or even oversupply. However, Figure 4 all in all indicates that the spatial distribution of budget for different age groups is somehow consistent with each other. The oversupply area is all concentrated in the middle and the supply shortage area is all in the northern part.

Table 2. Budget of park services for two age groups in all neighborhood committee units

	Young and Middle-aged		Children and the elderly	
	Number of Units	Percentage	Number of Units	Percentage
shortage	17	6%	21	7%
moderate shortage	86	28%	106	35%
matched	115	38%	120	39%
moderate oversupply	38	13%	25	8%
oversupply	48	16%	32	11%
Total	304	100%	304	100%

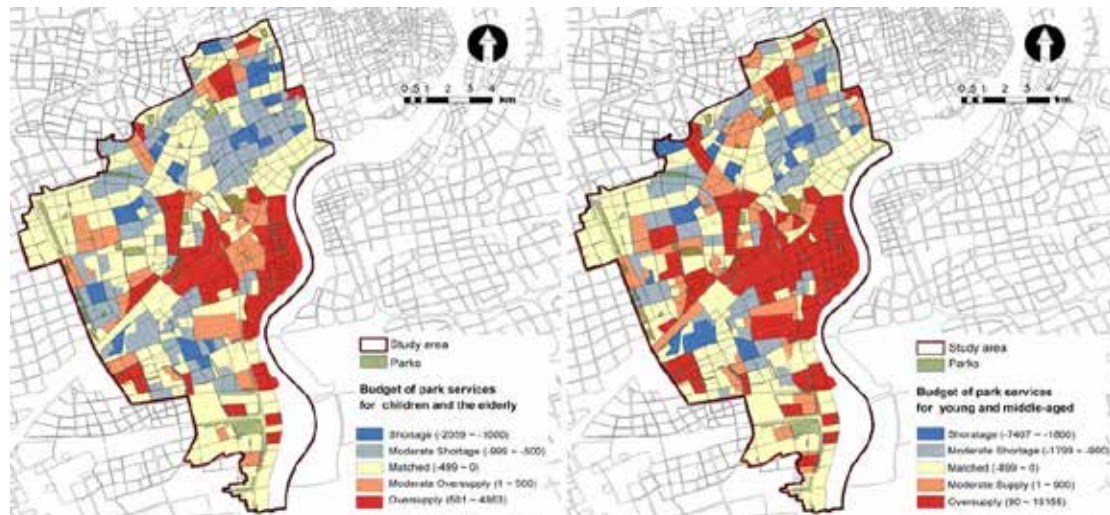


Figure 4. Budget level of park services in each spatial unit for two age groups

Discussion

As the spatial correlation analysis of park service budget in CLC for different age groups illustrates the Moran I index implies positive spatial correlation between supply and demand for all the age groups, which is significant at the level of $\alpha=0.01$. That is to say, there is spatial agglomeration of service budget and we could identify the areas which are oversupplied or in huge shortage on the basis of Hot Spot Analysis (Figure 5) and afterwards propose the improvement strategies.

As far as those oversupply areas are concerned, it would better emphasize shaping characteristics of parks and provoke their differentiated development. Supplying surplus only means the delectable number of park services rather than the quality. The next step to construct CLC, we could identify the recreational preferences in each CLC through some robust and comprehensive surveys. Then it's possible to initiate a bottom-up differentiation of park system and improve the quality of park services.

To improve insufficient supply areas, one simple but effective way is to raise the budget level of those parks surrounding the weak budget areas. Since China steps into the urban development stage of stock renewal now, it is difficult to meet the intensive demand for park services by constructing new large parks in the central urban area. That highlights therefore the importance of the existing parks. In that case, to expand recreational space and to supply more recreational facilities in parks come first when we try to take the opportunity of urban renewal to alleviate the mismatch between supply and demand of park services.

One another way to ameliorate weak budget areas is to excavate idle space and construct pocket parks. Pocket parks can be scattered in urban areas to serve residents and feature in superior accessibility and highly frequently visited. Though small scale for each, the total performance is impressive when there are numerous pocket parks. To build a sharing recreational parks in residential area, open attached green space and other kinds of pocket parks, could it benefit not only in raising the efficiency of space, but also in promoting park service budget by forwarding with breakthrough points.

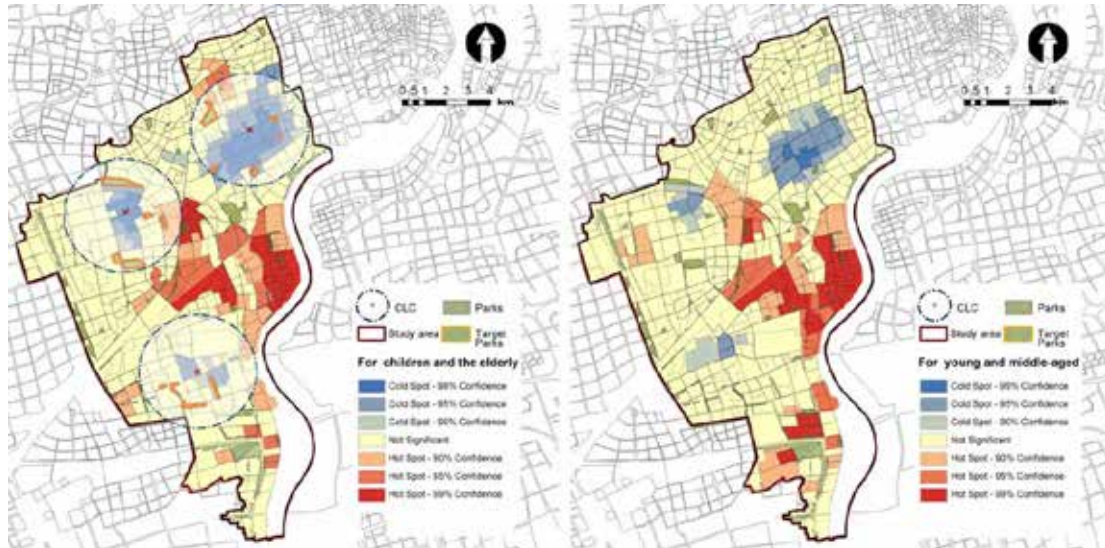


Figure 5. Identification of hot and cold spot of service budget within CLC

Conclusion

This paper proposes an method to evaluate and analyze the budget of park services in constructing CLC. In the case of a central district in Shanghai, where the method has been applied and practiced, the results indicate that the method has advantages in simple operation, especially comprehensively depicting the supply, demand of park services in term of different age groups. This method promises to promote the efficiency of urban green space in the context of urban renewal. However, the study assumes that the possibility of enjoying park services within the CLC is equal, which leads to a distorted cognition, since residents who live closer to parks are more likely to consume park services. Otherwise, it's not sufficient enough to support the improvement decision-making when evaluating park services without other criteria apart from accessibility. These shortcomings ought to be corrected in the future.

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Well-being, social interaction and physical activity: encouraging healthy behaviours through quality urban design

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Abstract: In recent years, the healthy city topic has become more and more present in both research studies and urban actions. According with many principles declared in the Quito New Urban Agenda, the centrality of this topic is due to many important factors, including the climate change; the lengthening of human lifespan; the necessity of a wider accessibility in social, physical and environmental sense. Although the recognition of the importance of liveable spaces for keeping people in good health and improve social interaction, it is difficult to demonstrate that good urban design is capable to reduce hearth and other kinds of diseases. However, the increasing in the number of people who spend time, walk and cycle on the streets can be shown easily and this is a first measure to demonstrate the success of the environment from the healthy point of view.

Starting from these premises, this work will illustrate the principal definition of healthy city mainly related to public spaces and propose the Charter of urban health, liveability and happiness with 25 principles. The principles – following an holistic approach - should be considered as dynamic, in keeping with the increasingly rapid rates of change in a place and are both a check-list and guide lines for sustainable spaces.

Keywords: healthy city; well-being; urban design; public space

Introduction

In recent years, the healthy city topic has become more and more present in both research studies and urban actions (Burns, 2005; Florida et Al., 2013; Friedmann, 2010; Gehl, 2010; Montgomery, 1998-2013; Sepe, 2017). According with many principles declared in the Quito New Urban Agenda (NUA), the centrality of this topic is due to many important factors: the climate change; the lengthening of human lifespan; the necessity of a wider accessibility in social, physical and environmental sense.

The Agenda, adopted during the Habitat III Conference in 2016, represents “a shared vision for a better and more sustainable future”.

Many principles that are contained in the NUA concerns topics related to public spaces, liveability, healthy, networks, and many arguments, which are illustrated in this study.

In the following, a selection of these principles are reported, in order to clarify the general framework in which the paper is presented.

13. We envisage cities and human settlements that:

(b) Are participatory, promote civic engagement, engender a sense of belonging and ownership among all their inhabitants, prioritize safe, inclusive, accessible, green and quality public spaces that are friendly for families, enhance social and intergenerational interactions, cultural expressions and political participation, as appropriate, and foster social cohesion, inclusion and safety in peaceful and pluralistic societies, where the needs of all inhabitants are met, recognizing the specific needs of those in vulnerable situations.

36. We commit ourselves to promoting appropriate measures in cities and human settlements that facilitate access for persons with disabilities, on an equal basis with others, to the physical environment of cities, in particular to public spaces, public transport, housing, education and health facilities, public information and communication (including information and communications technologies and systems) and other facilities and services open or provided to the public, in both urban and rural areas.

37. We commit ourselves to promoting safe, inclusive, accessible, green and quality public spaces, including streets, sidewalks and cycling lanes, squares, waterfront areas, gardens and parks, that are multifunctional areas for social interaction and inclusion, human health and well-being, economic exchange and cultural expression and dialogue among a wide diversity of people and cultures, and that are designed and managed to ensure human development and build peaceful, inclusive and participatory societies, as well as to promote living together, connectivity and social inclusion.

50. We commit ourselves to encouraging urban-rural interactions and connectivity by strengthening

sustainable transport and mobility, and technology and communications networks and infrastructure, underpinned by planning instruments based on an integrated urban and territorial approach, in order to maximize the potential of these sectors for enhanced productivity, social, economic and territorial cohesion, as well as safety and environmental sustainability. This should include connectivity between cities and their surroundings, peri-urban and rural areas, as well as greater land-sea connections, where appropriate.

53. We commit ourselves to promoting safe, inclusive, accessible, green and quality public spaces as drivers of social and economic development, in order to sustainably leverage their potential to generate increased social and economic value, including property value, and to facilitate business and public and private investments and livelihood opportunities for all.

67. We commit ourselves to promoting the creation and maintenance of well-connected and well distributed networks of open, multipurpose, safe, inclusive, accessible, green and quality public spaces, to improving the resilience of cities to disasters and climate change, including floods, drought risks and heat waves, to improving food security and nutrition, physical and mental health,

and household and ambient air quality, to reducing noise and promoting attractive and liveable cities, human settlements and urban landscapes and to prioritizing the conservation of endemic species.

97. We will promote planned urban extensions and infill, prioritizing renewal, regeneration and retrofitting of urban areas, as appropriate, including the upgrading of slums and informal settlements, providing high-quality buildings and public spaces, promoting integrated and participatory approaches involving all relevant stakeholders and inhabitants and avoiding spatial and socioeconomic segregation and gentrification, while preserving cultural heritage and preventing and containing urban sprawl.

99. We will support the implementation of urban planning strategies, as appropriate, that facilitate a

social mix through the provision of affordable housing options with access to quality basic services and public spaces for all, enhancing safety and security and favouring social and intergenerational interaction and the appreciation of diversity. We will take steps to include appropriate training and support for service delivery professionals and communities in areas affected by urban violence.

100. We will support the provision of well-designed networks of safe, accessible, green and quality streets and other public spaces that are accessible to all and free from crime and violence, including sexual harassment and gender-based violence, considering the human scale, and measures that allow for the best possible commercial use of street-level floors, fostering both formal and informal local markets and commerce, as well as not-for-profit community initiatives, bringing people into public spaces and promoting walkability and cycling with the goal of improving health and wellbeing.

109. We will consider increased allocations of financial and human resources, as appropriate, for the upgrading and, to the extent possible, prevention of slums and informal settlements, with strategies that go beyond physical and environmental improvements to ensure that slums and informal settlements are integrated into the social, economic, cultural and political dimensions of cities. These strategies should include, as applicable, access to sustainable, adequate, safe and affordable housing, basic and social services, and safe, inclusive, accessible, green and quality public spaces, and they should promote security of tenure and its regularization, as well as measures for conflict prevention and mediation.

114 (d) Urban freight planning and logistics concepts that enable efficient access to products and services, minimizing their impact on the environment and on the liveability of the city and maximizing their contribution to sustained, inclusive and sustainable economic growth.

118. We will encourage national, subnational and local governments to develop and expand financing instruments, enabling them to improve their transport and mobility infrastructure and systems, such as mass rapid-transit systems, integrated transport systems, air and rail systems, and safe, sufficient and adequate pedestrian and cycling infrastructure and technology-based innovations in transport and transit systems to reduce congestion and pollution while improving efficiency, connectivity, accessibility, health and quality of life.

149. We will support local government associations as promoters and providers of capacity development, recognizing and strengthening, as appropriate, both their involvement in national consultations on urban policies and development priorities and their cooperation with subnational and local governments, along with civil society, the private sector, professionals, academia and research institutions, and their existing networks, to deliver on capacity-development programmes.

This should be done by means of peer-to-peer learning, subject-matter-related partnerships and collaborative actions, such as inter-municipal cooperation, on a global, regional, national, subnational and local scale, including the establishment of practitioners' networks and science policy interface practices (<http://habitat3.org/the-new-urban-agenda/>).

Although the recognition of the importance of liveable spaces for keeping people in good health and improve social interaction, it is difficult to demonstrate that good urban design is capable to reduce hearth and other kinds of diseases. However, the increasing in the number of people who spend time, walk and cycle on the streets can be shown easily and this is a first measure to demonstrate the success of the environment from the healthy point of view.

Starting from these premises, this work will illustrate the principal definition of healthy city mainly related to public spaces and propose the Charter of urban health, liveability and happiness with 25 principles carried out in the framework of the IRISS CNR research project "Contemporary urban landscape design: place identity,

happiness, liveability, health and sustainability” (Responsible: M.Sepe). The principles – following an holistic approach - should be considered as dynamic, in keeping with the increasingly rapid rates of change in a place and are both a check-list and guide lines for sustainable spaces.

Well-being, social interaction and physical activity

The relationship between healthy, liveability, happiness and urban design are the complex result of multiple elements which play different roles in the city system. Improving these factors with sustainable urban design, and preserving place identity as well, is a great challenge (Carmona, et Al., 2010; Lynch, 1960; Madanipour, 2003; Porteous, 1977; Relph, 1976; Sepe, 2013-2015). To suitably understand this complex system, in the following the topics are illustrated separately.

With respect to the health theme – which is strongly connected with liveability and happiness -, recent studies (AAVV, 2017) report that firstly it is important to identify reasons why people who live in cities have greater risk to have health problems because of different factors. These include: disparities; crowding, noise, pollution, which can produce stress and encourage people to avoid social relationships that are important for mental well-being; low presence of green, which results in possible reduction of leisure time, security and privacy; the increasing use of the Internet followed by a decreasing in the use of public space; the demand of always more specific types of food; the increasing in metropolitan, street and city sports of different kinds.

Urban design and planning can contribute to decrease mental health problems and improve happiness in the city by reducing those risk factors. The Mind the Gaps frameworks created by McCay (AAVV, 2017) identify four topics to make tangible the urban planner help, even though no one city still embodies all of them. Topic 1 is, as affirmed in different theories, access to urban green places, which can have many good factors including encourage exercise and social interaction; Wilson affirms that the good effect of green space stands in the fact that humans have biological need satisfied by the contact with other species; Ulrich states that the good effect is due to the contemporaneity of experience with aesthetics of nature and distance from every day problems; the Kaplan (Rachel and Stephen) theory proposes that natural sites take the attention of people more than the non-natural because these last need contemporary concentration on many elements.

These theories can help to understand the positive effect of green space in mental health but are not enough to assume that the design of green space in a site can assure improvement in mental health. There are other factors which can influence negatively benefits in green space such as inaccessibility, bad management, a feeling of threatening that can discourage its use. Green spaces should be designed to be welcoming to different kinds of people and not monopolized by certain groups. Indeed in some cases, green spaces can encourage behaviours, which are anti-social and discourage their use, because people feel unsafe in those spaces.

Successful green spaces should be walkable and have a suitable both physical and visual accessibility, which improve people’s wellbeing. Accordingly, small presence of green in small space, streets or workplace is important as well.

Another important factor is to create different options of transport such as paths for pedestrians and bikes, which help to reduce sedentary habits. Furthermore, it is important to design public spaces with flexible use which are capable to create a sense of belonging and community, providing streets furniture for both resting and chatting and other elements which contribute to social activities and the general perception of wellbeing.

The perception of safety also contributes to a better quality of life and public spaces, and those that are capable to contribute to this feeling are successful. Some features, which can help this feeling, include suitable lighting and clear landmarks.

As Lucy Saunders (AAVV, 2017) affirms people in the last decades are living longer than ever and so it is necessary to have healthier places to allow healthier life to all. This is because the daily activities such as work, travel and leisure are directly or indirectly connected to the place where these occur requiring suitable spaces.

Elements such as air pollution, noise, road dangers and social connectedness can influence our health in different ways. The question is to understand what of these factors influence in a wider ways health and how to address them. Sauders suggests to address all of them at once and implementing good practice in urban design at the largest possible scale.

Indeed, places which are good for people are often healthy as well. In public realm, this often means the diminishing in motorised transport, which is used for carrying people who could instead walk or cycle. Motorised transport impacts in non-positive ways on air pollution and physical inactivity, transforming public spaces in noisy and unwelcoming areas. And these also increase the problems deriving by poor access and road danger, which are particularly important for the most disadvantaged people. Putting people at the centre of the urban design and decision potentially reduce the inequalities. Accordingly, Healthy streets, as Lucy Sauders suggests, identify 10 indicators, which indicate how design urban spaces and transport policies which make people first (AAVV, 2017).

The most two important indicators - pedestrians from all walks of life and people choose to walk and cycle - have the aim to create places in which all people can participate in public life and both healthy and friendly environment design are considered in priority way.

The other eight indicators - People feel relaxed, Easy to cross, Clean air, Not too noisy, Places to stop and rest, People feel safe, Things to see and do, Shade and shelter show –clarify what is necessary to do to create inclusive, appealing and healthy places. Places, which do not have these characteristics, discourage people in using them. All professionals – transport professionals, landscape architects, community groups, artists, planners and developers - are involved in the realization of Healthy streets and all the indicators are necessary for creating them.

A big challenge is to meet the demands of the different stakeholders in order to put in practice the principles, all often in limited spaces. Streets can be contested spaces and every street requires different approach according with social, physical, political or financial questions, which can weight in the general design not always in the same way. The important, as declared by Sauders, is that the general objective is to create public space which work better for people and are healthy and liveable for all.

Furthermore, there exist important factors which create good interactions between places with behaviours, including: the promotion to daily activities such as walking or cycling which help people in having a healthy weight; the facilitation to easy access to healthy food; and the promotion of connected neighbourhoods and economic development.

Finally, the Richard Crappsley' (AAVV, 2017) approach to healthy design is mainly focused on streets and includes: reducing on-street parking and reallocating road space for vehicles, while adding space for walking and cycling; improving both the quality of footway zones and furniture and making easier for all age people to cross the streets; making bicycle infrastructures safer and more comfortable also introducing suitable separation with busy roads; slowing traffic, using different kinds of visual elements and tight corners; improving environmental elements, such as trees, sustainable drainage, shades streets and reduction of traffic noise; adding on-streets activities with both formal and informal activities which encourage people to use the space for social interaction or spend more time there; making safer the streets dissuading crimes and sense of insecurity, improving suitable lighting, natural surveillance; and making streets welcoming for all, improving accessibility.

Encouraging healthy behaviours through quality urban design

The factors described in the previous sections shows that healthy and liveable urban design are capable to influence urban happiness in many ways, contributing to sustainability and the preservation of place identity. Accordingly, in the following, the principles of the Charter of urban health, liveability and happiness will be

proposed. The principles are the results of the experiments carried out with the original Ecolivable+ Design Method (Sepe, 2019). The aim is encouraging healthy behaviours through quality urban design promotion.

1. A healthy, liveable and happy place is a space which can transmit feelings of healthy, liveability and happiness to everyone who uses it.

Accordingly, it is important:

2. To encourage the use of the place by people of different age groups, from children to the elderly
3. To eliminate architectural barriers which might discourage people from frequenting that space
4. To create a suitable balance between the elements of nature, landscape and equipment in the composition elements of the space
5. To have both in streets and public spaces natural lighting during the day and artificial at other times, avoiding artificial light in daily hours.
6. To retain an adequate state of cleanliness and maintenance
7. To create suitable spaces for dogs and domestic animals
8. To create a sense of security and safety to those who walk, cross, rest, and so on in the public spaces
9. To minimise or eliminate the noise generated by public transport
10. To improve suitable cycle lines
11. To fully perceive naturally occurring smells - e.g. wood, grass, sea
12. To have direct contact with natural materials, preferably local, used in the design of the space
13. To have the presence of water in different shapes (e.g. fountains) which promotes the vitality of the place.
14. To have the possibility of doing actions – such as walking, watching, etc.. - with a moderate or slow pace, promoting opportunities to take breaks in the space
15. To have the possibility of using the space in different weather conditions and seasons, contributing at the same time to its good state of maintenance
16. To preserve both the place identity and the intangible characteristics of the site and its surroundings
17. To both allow and promote different types of functions such as games, breaks, walking, etc..
18. To facilitate gymnastic activities – also slow - with the presence of small equipment or a designated space.
19. To have the possibility of doing actions that normally are not permitted – such as walking barefoot in the water or in designated public areas -, improving a feeling of freedom and joy.
20. To encourage the presence of art in its different forms.
21. To promote sculptures, games, or other elements and amenities which can bring a smile to a person's face promotes a state of liveability and happiness.

22. To promote participation, namely the feeling of being able to contribute to the life of that place increasing the sense of belonging.
23. The consideration of the place as symbolic of the neighbourhood improves the perception of its identity.
24. To promote the educational function which a place has – e.g. clearly displayed information about history of the place etc. or suitable ways to use it - increasing its intrinsic value.
25. To facilitate the use of new technology to increase the knowledge of its intangible values and history, offering a more profound experience of the place.

The principles – following an holistic approach - should be considered as dynamic, in keeping with the increasingly rapid rates of change in a place and are both a check-list and guide lines for sustainable spaces.

Conclusion

The work illustrated the principal definition of healthy city mainly related to public spaces and the Charter of urban health, liveability and happiness with 25 principles. The New Urban Agenda, adopted during the Habitat III Conference in 2016 was used as a framework and the study concerning urban liveability and healthy were the scientific framework. The *file rouge* of the study presented in this paper is the idea that people have to be considered the centre of any design of place and that a quality urban design is able to strongly improve well-being, social interaction and physical activity encouraging healthy behaviours.

The paper identified the reasons why people who live in cities have greater risk to have health problems because of different factors, including: crowding, noise and pollution, which can produce stress and encourage people in avoid social relationships that are important for mental well-being; low presence of green, which results in possible reduction of leisure time, security and privacy; the increasing use of the Internet followed by a decreasing in the use of public space. Urban design and planning can contribute to decrease mental health problems and improve happiness in the city by reducing those risk factors.

The principles of the Charter of urban health, liveability and happiness – result of the experiments carried with the original Ecolivable+ Design method - which were proposed represent both a checklist and guidelines, which the project has to satisfy in order to enhance the three factors – health, liveability and happiness - of the place in question. As mentioned in the NUA section, the Agenda promotes civic engagement, engender a sense of belonging and ownership among all their inhabitants. Furthermore, it supports the provision of well-designed networks of safe, accessible, green and quality streets and other public spaces that are accessible, promoting walkability and cycling with the goal of improving health and wellbeing.

Accordingly, aim of the Charter of urban health, liveability and happiness is encouraging healthy behaviours through quality urban design promotion. The principles should be considered as dynamic, in keeping with the increasingly rapid rates of change in a place, which lead to continually expanding the concepts of health, liveability and happiness (Taylor et Al.,1998, Zelinka et Al., 2001; Zidansek, 2007).

Next steps of the present study – currently in development - are devoted to identify and create suitable indexes to measure urban health, liveability and happiness or other indexes derived from a combination of these elements. These indexes could be used in a more comprehensive calculation of the sustainability meant in social, environmental and economic meaning of an urban project both in the initial and final phases.

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Urban Farming in a Rapid Urban Transformation: Community Initiatives and Policy Challenges in Bandung and Yogyakarta

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Abstract: Under a rapid-unplanned urban transformation of Indonesian cities, which brings more pressures to already marginalized urban farming/agricultural practices in this country, the future of food security of Indonesian cities is in a big question. As already predicted by Central Bureau of Statistic/BPS, two-third of about 250 million Indonesian people would reside in cities in the next two decades and therefore their welfare including their basic needs particularly food would be depended how the country guarantee food security for the whole nation. The fact that many productive-agricultural areas in the urban and rural fringes, which are under pressures of unplanned-organic-scattered pattern of urban growth, suggests that there is a crucial need of reforming the existing urban policy and planning system which are not supported and protected to urban farming ideas and practices. The paper discusses this issue and documents the practices of urban farming in two creative cities of Indonesia, Bandung and Yogyakarta, and evaluates how the existing urban policy and planning guidelines support urban farming initiatives. This paper argues that it is crucially important to reform the Indonesian urban policy and planning guidelines and practices to accommodate the new paradigm of cities and urban areas as productive sources for sustaining food security for the whole nation.]

Keywords: urban farming, community, policy challenges

Introduction

It has been predicted that two-third of about 250 millions Indonesian people would reside in cities in the next two decades and therefore their welfare including their basic needs particularly food would be depended how the cities guarantees food security for their inhabitants (Bakti Setiawan, 2000). This rapid urbanization affects agricultural lands in suburbs. Most of them have been converted to housings and commercial buildings. This condition may affect food production in the future. Even though land is not the only aspect to enhance food production, farmland is still essential in food production and it needs to be expanded to meet the demand of the future population. Converting vacant lands within urban area for urban farming is one example of strategies to expand farmland. It has been predicted that more than half of global population will live in cities. There will be less people living in rural area and less labour for rural agriculture. So, integrating food production and urban development may address this issue.

In terms of nutrition and access to food, urban farming activities enhance food security by enabling urban dwellers to produce fresh produce in limited lands. In the era of rapid urbanisation, people living in urban area are relatively more vulnerable to food insecurity than rural population due to lack of access to agricultural land. Poor people living in a village can survive and maintain their health by growing their own food in their gardens or paddy fields. However, people living in cities depends on grocery stores and supermarkets to get food. Even in some cities in developed countries, there are some areas defined as food desert because of low access to fresh produce (vegetables and fruits) (Jettner, 2017). Food prices in cities are also relatively high and fluctuating because of transportation cost and unexpected weather events (Gaballa & Abraham, 2007). These problems rising awareness of urban communities in many cities in the world, to develop urban farming. For example, urban farming has been developed by low income communities in Indonesia since 1990s and a study found that urban farming in six cities in Indonesia was able to reduce communities' food expenditures (B Setiawan & Rahmi, 2004).

Unfortunately, urban farming has been relatively neglected in urban planning policies and literatures (Cohen, 2014; Morgan, 2014; Pothukuchi & Kaufman, 1999). Studies regarding urban farming are relatively limited in Indonesia and there is no recent study that specifically analyses Indonesian cities' planning policies in terms of its support for establishing urban food security. Therefore, this paper aims to discuss urban farming practices in two Indonesian cities, Yogyakarta and Bandung. These two cities are quite different in terms of population. Yogyakarta with population of 412.704 represents Indonesian small city. Bandung which has more than two million population, is one of big city in Indonesia (Central Bureau of Statistic, 2015). However, both two cities are famous of their innovation and creativity, including their urban farming movement.

The main inquiries of this study are: (1) What are types of urban farming initiatives in Yogyakarta and Bandung? (2) How did urban farming initiatives grow in Yogyakarta and Bandung and how do they manage their organisation? (3) How do government and spatial planning policies support these initiatives?

This study may raise awareness of urban planners and local government to redevelop the link between urban land use planning and food security. Food system is a part of urban system which is not less important than other urban elements such as water and air (Morgan, 2014). There is a need to reconnect urban land use planning and zoning regulations to agriculture activities. Most Indonesian cities are naturally blessed with tropical climate, fertile soil and plenty of water which enables people to grow various types of vegetables and fruits all year long. These resources must be managed through urban farming.

Methods

This study used qualitative approach and embedded multiple case study design. The case study cities are Yogyakarta and Bandung. This research design enables comparison between two cases and discussion of contrasting findings. Yogyakarta and Bandung are two cities in Indonesia that are famous of its creativity. These cities currently have a lot of communities including urban farming communities which were developed from the initiatives of the young generation. However, Bandung's urban farming community is relatively more well-known than the ones in Yogyakarta because the Mayor of Bandung, Ridwan Kamil, was the initiator of national scale urban farming

community namely *Indonesia Berkebun*. The members of this community communicate by using social media. Any kinds of information and invitations are posted to its followers (Ardianto, Aarons, & Burstein, 2014). Unlike Bandung, urban farming initiatives in Yogyakarta are developing with limited exposure to national media. Therefore, it is interesting to compare contrasting findings from these two different cities.

Data was collected from various sources such as semi structured interviews, field observation and some documents from different sources such as websites of urban farming communities, land use planning authorities, ministry of agriculture and Central Bureau of Statistics/ BPS. Interviews were conducted to eight participants who represent leaders of seven urban farming communities, four of them are in Bandung and three of them in Yogyakarta. The samples were chosen to represent different approaches and types of organisation. Some samples are initiated by government and some of them are a kind of grass root movements. Some of them run as a business, while some of them focuses on food security, social empowerment and environmental sustainability.

The data collected from interviews was transcribed, coded by using NVivo software and analysed by using thematic analysis. The coding was based on the major patterns appeared in participants' responses across interview questions. These codes then grouped into several broader themes. Additionally, data from government's websites (land use planning authorities and ministry of agriculture) was also collected for analysing policy challenges of urban farming development in these two cities. The documents collected are Urban Sustainable Home-yard Food Garden (Kawasan Rumah Pangan Lestari) Program and Report, Detailed City Spatial Planning (RDTR) and Zoning Regulation of Yogyakarta and Bandung.

Urban Farming in Indonesian Planning Literature

Several studies have been done to explore urban farming in Indonesia. Some articles relate urban farming with food security issue. For example, an article by B Setiawan (2000) provides a literature review discussing urban planning best practices in various cities in the world and draw a conclusion regarding the potential role urban farming in establishing urban food security in Indonesia. This study followed by an empirical research examining the role of urban farming for urban poor household in six Indonesian cities (B Setiawan & Rahmi, 2004). This study suggests that urban farming does not only enhance food security, but also improve households' economy through business opportunities and reducing food expenses. However, this study also mentions several problems and challenges for development of urban farming in Indonesia, such as lack of access to financial support, limited gardening skill and knowledge, and limited support from government. In this study, the authors recommend an urban land use planning that accommodate urban farming activities in the zoning regulation. Similar study has been done to specifically explores urban farming in several Green Kampongs in the City of Yogyakarta (Pasha, Widyaningsih, & Rijanta, 2013). The findings of this study depict that urban farming has been spontaneously implemented since a long time ago in Yogyakarta. Various types of simple verticulture (vertical agriculture) and container gardens even has been implemented in these Kampongs to deal with limited vacant land available for gardening. Another study in Jakarta that also suggest that urban farming has been implemented since 1990s by migrants who utilising vacant non-agricultural land in peri-urban areas for producing leafy green vegetables (Siregar, 1999).

Other studies specifically discuss the community aspect of urban farming. Puriandi (2013) explored urban farming activities of a farming community in the City of Bandung namely *Bandung Berkebun* (farming Bandung). This study suggests that *Bandung Berkebun* has a critical role in assisting and empowering the urban community to manage their gardens and sustain their farming activities. A recent study by Adinurani & Wuryantoro (2015) emphasises the role of a community in enabling people to share gardening experiences and knowledge as well as exchanging seeds and seedlings.

Based on the studies mentioned above, although urban farming may not be a new theme in Indonesian urban studies, it is still considered as a new issue in urban planning. There are still relatively limited studies that links urban farming and planning in Indonesia. The existing studies mostly explores urban farming from the side of food security and community development. However, only a few discussions regarding land use planning and urban zoning regulation for urban farming.

Types of Urban Farming Initiatives in Bandung and Yogyakarta

Yogyakarta

Although rarely exposed by national media, urban farming and local food communities in Yogyakarta (Jogja) are growing rapidly in the last five years. Each community has different approach, but they have a similar goal which is establishing more sustainable urban food system. Their activities are not limited to gardening and harvesting, but also includes discussions for raising awareness, sharing seedlings and selling products in organic farmer market. This study discusses three examples of prominent urban farming initiatives in Yogyakarta, *Pemablitz Jogja*, *Jogja Berkebun* (Farming Jogja) and *Kawasan Rumah Pangan Lestari/ KRPL* (Urban Sustainable Home-yard Food Garden).

Permablitz Jogja is one example of urban farming initiatives in Yogyakarta. This community was initiated in 2012, by a group of young people who are inspired by permablitz movement in Melbourne, Australia. Permablitz comes from words Permaculture, which is a kind of gardening approach developed by an Australian biologist, Bill Mollison (Mollison, Slay, Bourguignon, & Bourguignon, 1991) and Blitz, which means a project that is done in a short time. So, permablitz means a gardening project that involves a group of volunteers (community members) to create an edible garden in a kind of idle land (usually backyard/residential garden) in a short time. Unlike other urban farming community, permablitz Jogja implement sustainable agricultural method that focus on maximizing the use of natural resources and energy for gardening and ensuring no damage to the ecological system. The technological innovation in permaculture is similar with biomimicry, imitating what has been established in nature. This community has its own website and social media to post their activities (DALEY, 2015). In 2016, this community assisted students of Undergraduate Programs at Department of Architecture and Planning (DETAP), Universitas Gadjah Mada to develop an edible garden in the inner court of the campus building. A group of students in this undergraduate program formed a student community called *Perma DETAP* which aims to be a place for students to explore further and practice permaculture design trough urban farming.



Figure 1. Urban Farming Activities of *Permablitz Jogja* (left) and *Perma DETAP* (right)

Permablitz Jogja has converted several private residential gardens to permaculture gardens and there is no obstacle in terms of land use regulation so far. In terms of social side, there is also no significant social problem due to the development of these permaculture gardens. This may be because the projects were implemented in private lands. A small problem may occur when this project implemented in a public land such as the one in the university. *Perma DETAP* had to ensure that the garden design is agreed by all the academic staff and students. This was done by inviting the lecturers and students in the design process and accommodating comments and suggestions from the attendees.

Another urban farming community in Yogyakarta is *Jogja Berkebun (Jogbun)* that was developed in 2013. Similar with *Permablitz Jogja*, this community also converted vacant lands to edible gardens. However, unlike *Permablitz Jogja*, this community does not work alone. It is part of national movement in urban farming, *Indonesia Berkebun*, and it usually engages with private companies, state owned enterprises and government institutions in conducting gardening activities. Moreover, this community does not only manage private lands, but also utilising lands owned by some government institutions. Currently, this community is managing a vacant land owned by the department of forestry of Yogyakarta Province (Jogja Berkebun, 2017; Petani Muda, 2017)



Figure 2. Community Garden site of *Jogja Berkebun*

In terms of organisational arrangement, the membership of these communities is open and the members are free to join, contribute and even go out from this communities. *Jogbun* has an organising committee, but its formation is often reshuffled due to its open membership. *Permablitz Jogja* even does not have a fixed organising committee. This was designed to enable each of its members to

contribute similarly in this community. Each member is a leader in this community. In this kind of organisation, members can be more flexible to run these communities, but this condition is also vulnerable in terms of its sustainability. Some communities fail to maintain their sustainability due to this kind of membership and leadership management. People are free to come and go, so there is no fix organisational succession to ensure the continuity of urban farming movement. Learning from *Jogbun* and *Permablitz Jogja*, *Perma DETAP* combines formal and informal organisational structure. It was started from an informal initiative of the undergraduate students in Gadjah Mada, but its organisation was developed under the existing student organisation to ensure its continuity. *Lintang Panglipuran* also has fixed organisational committee that is divided into several divisions with specific responsibilities and duties. People are free to join, but once joined this community, a member has responsibility to contribute based on his division duties. Although it was recently formed in 2016 and still considered small and young, this community has a quite good informal organisational arrangement that may maintain its continuity and development.

Slightly different from *Permablitz Jogja* and *Jogja Berkebun*, *Kawasan Rumah Pangan Lestari/ KRPL* (Urban Sustainable Home-yard Food Garden) was initiated by a government institution, The Ministry of Agriculture. This program is a national program and was developed in almost every cities and villages in Indonesia. This program aims to bring agri-food production close to people and to increase agricultural land by utilising vacant spaces in residential areas. In the City of Yogyakarta, Kauman, a kampung located in the city centre, is one of successful model of Urban Sustainable Home-yard Food Garden.



Figure 3. KRPL in Kauman, Yogyakarta.

Bandung

Another urban farming initiative in Bandung is *1000 Kebun*. This community is relatively young because it was founded in 2015. Slightly different with other urban farming communities mentioned before, the members of *1000 Kebun* comes from different islands in Indonesia. So, it was initially founded as a local community, but then grow as a national movement. *1000 Kebun* does not only focuses on converting urban vacant lands to edible gardens, but it also manages a farmer market called *Pasar Sehat 100 Kebun* (Komunitas Indonesia, 2017).

Similar with *1000 Kebun*, *Agritektur* is a social enterprise in Bandung that concerns in both production and distribution of local produce in Bandung. This community is similar with POJOG in Yogyakarta which aims to cut food supply chain by meeting the consumers directly with the producers or farmers. However, *Agritektur* was not initiated by the producers. This community was founded by five young people with various education backgrounds who followed sociopreneurship competition in 2012. Two of the founders are an architect and a bachelor of agriculture. That is why the name of this community include *agri*, which is part of agriculture and *tektur* from *Arsitektur* (Architecture). The founders of this community engage with local farmers and help them to market their products to urban dwellers. The activities of this community are not only running a farmers' market, but it also has activities that enables people to experience growing vegetables such as table to farm, camp on farm and farming Kampong (*Kampung Berkebun*). Some restaurants in Bandung are interested to engage with this community to get vegetables, fruits and herbs from local producers (Agritektur, 2017; Bekraf, 2017).



Figure 4. Activities of *Agritektur* (left & middle) and *1000 Kebun* (right)

Some urban farming activities in Bandung were initiated by non-urban farming communities. For example, Yayasan Pengembangan Biosains dan Bioteknologi (YPBB)/ *Bioscience and Biotechnology Development Institute*, is a non-profit organisation developed in 1993 that aims to develop sustainable communities. This organisation focuses on assisting urban communities in Bandung to manage their solid waste. This activity enables people to recycle their waste including recycling organic waste into compost. Producing compost leads people to start thinking about growing veggies around their houses. The same approach occurred in Maleer, a district in Bandung that is a model of sustainable Kampung developed by the municipal government. Maleer is considered as a waste free Kampung in Bandung. Similar with YPBB, People living in Maleer started urban farming activities after being successful in composting their organic waste.

Missions, Management and Dynamics of Urban Farming Communities.

Missions illustrate perceived benefits of urban farming

Based on the interview, some urban farming initiatives began from awareness of the quality of food. The interviewees assert that urban farming enables people to care about and reconnect with their food. Urban agriculture initiatives enable people to grow their own food or engage with others who grow or make food for them. For example, one interviewee said,

“Nowadays, many food available in cities, but we do not know that they may contain chemicals that can harm our health. People do not care where their food comes from, how it was produced and how it was cooked. Therefore, this community was developed to address this issue. 1000 Kebun often brings our members to visit the organic farmers and educates our members how to make compost and grow their own food. (Interviewee 1).

Furthermore, urban farming initiatives also encouraged by low access to organic food which is considered healthy. This kind of food is much more expensive than non-organic ones because of the cost of organic certification. Therefore, not all people can afford to eat organic food. An interviewee said, “Organic vegetables are usually consumed by rich people because it is expensive, but actually we can grow our own organic vegetables”. (Interviewee 8). In terms of accessibility, urban farming brings food close to people, so they can reduce time and money to travel to markets. Urban farming also helps people to deal with spiking prices of some food commodities. One interviewee explained,

Growing food at home has several benefits. Firstly, we can grow our own organic food. This is cheaper than buying it at supermarkets. Secondly, we can save time and money. We do not need to go to the market every day to get fresh vegetables and herbs because we grow them at home. So, we can reduce our expenditure on food. Moreover, sometimes food prices are spiking, for example the price of chili that was more than doubled recently due to flooding. Actually, growing chili at home is very easy. You can see over there, I have plenty of chilies at the front yard. (Interviewee 3).

Most of interviewees also showed that their missions are related with awareness of conserving urban natural environment is a critical aspect of their initiatives. One interviewee from Bandung commented that urban farming provides urban greening and integrates waste management into urban food production. This interviewee said,

Nowadays, every neighbourhood in the City of Bandung is encouraged to be waste free by implementing sorting, reusing and recycling solid waste. Sorting is a process of separating the waste into organic and non-organic waste. In my neighbourhood, there is no waste sent to landfill because the organic waste is composted and used as fertilizer in our residential gardens, and the non-organic waste is sold to junk dealers to be recycled. (Interviewee 7)

So, urban farming is not just about producing food but also reducing waste by composting organic waste. This process is like recycling of nutrition within an urban area. Food consumed and generated food waste, then the waste is composted to grow food again.

Most interviewees also mentioned that there is no use of chemical fertilizers or pesticides in their gardens. Conventional agriculture usually uses synthetic fertilizers that can create pollution to the natural environment. Therefore, most of urban farming initiatives in Yogyakarta and Bandung stick to the use natural pesticides and fertilizers. However, some of them still use chemical fertilizers in low dosage to boost the production. One interviewee said, “This garden used fertilizers from cows’ urine, compost and a little bit of low dosage chemical fertilizers” (Interviewee 3).

One interviewee with a permaculture background commented that urban farming is just one part of sustainable living. This depicts that urban farming creates benefit for broader natural environment. This interviewee said, “Permaculture is not just about growing food with no chemical, but more broadly, it gives guidance to how to create sustainable living” (Interviewee 4).

Even though these initiatives have serious missions in food security and sustainability, most of them were started from informal meetings of a group of people. People with similar interest and hobby met and initiated urban farming communities. Urban farming become a leisure activity for them. For example, one interviewee said,

In this community, we usually spend our leisure time on weekends to meet, conduct discussions and gardening together. These programs become positive leisure activities for us especially the stay-at-home mothers. Finally, mothers can develop their neighbourhood, not only meet for shopping and gossiping. (Interviewee 7).

Management

In terms of internal organisation, all urban farming communities were initiated by people from non-agricultural background, except KRPL program which was initiated by the Ministry of Agriculture. The community members consist of people from various backgrounds, even in KRPL. They are interested in urban farming and get gardening skills from self-learning or investing their money in non-degree training programs like permaculture design course. Only KRPL that get training and 3-year community outreach program provided by government. One interviewee said,

“At that time, the members did not have any gardening skill at all, but they participated in various trainings provided by BPTP (Assessment Institute for Agricultural Technology). The trainers also came to visit the gardens and help community members to deal with gardening problems. This program last for 3 years and now the community is independent enough to manage their gardens.” (Interviewee 6).

Furthermore, almost all communities have a clear organisational structure although some of them are considered informal community with no strict or paid membership. Everyone are welcome to join with no membership fees. At least these community has a leader and members. Some communities have more complex structure with defined divisions. For instance, 1000 Kebun has four divisions: community, commercial, research and organic certification divisions. However, Permablitz Jogja is the only one which implement fluid structure with no leader. This community defined itself as a movement not community and want its members to be the leaders, so there is no hierarchy in this community.

These communities varied in terms of program developed. Some of them focus on gardening. They sell some of the produce directly to consumers or share the produce among the members or neighbours. One interviewee said, “The produce is usually sold to [informal] food vendors. However, the members are free to take veggies from the gardens, as much as they want. [Then, the rest will be sold].” (Interviewee 6). Another interviewee said, “We prefer not to sell our produce. We consume it for ourselves or give it to our neighbours. It is too valuable to be sold.” (Interviewee 8). These communities see urban farming not as business but as a self-satisfaction. One interviewee expressed this,

We do not see benefit as monetary value. We enjoy gardening. We are happy and feeling satisfied seeing the veggies grow. Sometimes, we sell the produce, so that we can raise fund for the community (Interviewee 7).

In my opinion, a community [in Yogyakarta] may survive without money. For example, the program we run last August was succeed without money. That program was developed based on volunteering. Participants contributed through their actions, time or thoughts. (Interviewee 5).

However, a few communities developed complex programs that deal with production and marketing. For example, 1000 Kebun mainly works as a food hub focussing on connecting organic farmers to consumers. This community also developed a certification board that based on trust. So, people can get affordable organic products. Agritektur even has more varied programs, including community supported agriculture (CSA) and designing urban farms for offices. However, this community currently focuses on developing urban agriculture for tourism purposes. This kind of communities see urban farming as a business, as described by one interviewee as follow,

“We have developed various programs. However, this kind of business need process and serious maintenance [to be developed]. We have created a good business plan and framework, but it seems that this business is still less interesting for young generations who prefer to work in big companies. So, we currently prefer to focus on developing Camp on Farm program because it is more [economically] prospective. We hope agriculture in [Indonesia] can sustain and to sustain it needs money not just altruism. Therefore, [in this community,] the programs were designed based on monetisation, but also implement justice, fairness and transparent. So, both farmers and consumers will benefit [from our programs]. We have to be patient to achieve that.” (Interviewee 2).

Some urban farming communities received or seek for external funding such as from government, donor or private institutions. They get external funding, then tried to sustain by selling produce or processed products. However, some of them have no external funding because they are based on volunteering. One interviewee expressed this, “We are not a kind of NGO that received fund from donors or sponsors. We depend on our own money which is limited.” (Interviewee 4).

In terms of inter-community network, some communities already reached international network. Agritektur has ever partnered with Hivos, Netherland, to develop a CSA. Permablitz Jogja was initiated through informal partnership with members of Permablitz Melbourne, Australia. It was the first permaculture community developed in Indonesia. Based on the interview, Jogja Berkebun (since 2011) is also considered as the first urban farming community in Indonesia and it becomes a part of national movement, Indonesia Berkebun (since 2013). These communities are usually supporting each other as described by an interviewee, “We have ever helped other urban famring communities in Bandung, such as Bandung Berkebun and 1000 Kebun. However, we only designed the garden.” (Interviewee 2). A community even become a member of a more formal community. An interviewee explained, “We have participated in Bandung Agri Market (BAM) three times and our community is a member of Green Farmers Group that is listed at the Department of Agriculture.” (Interviewee 7).

The management and community dynamics

In terms of continuity, some communities are struggling to sustain their activities due to low commitment. One community is struggling to conduct regular meetings and programs in the last 2 years, because their members are busy with their work or study. For example, one interviewee said, “Our community has no activity in the last 1.5 years. We were initially met because we love urban

farming. However, [we also have to work], we cannot earn money from this community.” (Interviewee 2). Another interviewee added,

The last program was in 2016. It is hard for us to arrange a meeting because many of our members are very busy especially the key members who master gardening skills. One is studying overseas, one moved to another city, one went back for good to Australia, and other members are busy working or running their business. (Interviewee 4).

Nonetheless, some other communities can maintain their sustainability may be due to the characters of their members. One community has members that mostly students. Other communities are mainly followed by stay at home moms. These groups of people have relatively more time to spend in communities than working people. Furthermore, some communities do not only sustain, they even expanded or spread urban farming activities to neighbouring areas as described by an interviewee, “Urban farming was firstly developed in RW 11 (an administrative division), then people from RW 11 helped people in RW 9 to develop their urban farming.” (Interviewee 7).

Interviewees commented that the key success of urban farming community are organisation management, varied members, support from government and commitment. An interviewee argues, “The key success of a community is organisation. With good organisation, a community can run any kind of program with little [or even no] stimulation from government.” (Interview 3). In terms of variety of members in terms of age. An interviewee commented,

A good community is the one that has members from different ages. In my opinion, 1000 kebun can be a good example because its members range from older people to youngsters. For example, when the young members are busy working or studying, the older members can fill the gap. When the older members have less creativity, the young members can help by providing plenty of creative ideas. (Interviewee 2).

Another key aspect is support from government. One interviewee explained, “Our community got 3-year support from government, and now we already know gardening skills needed. So, we can be independent now, but government is welcoming us to ask help if needed.” (Interviewee 6). Another interviewee added, “Government support is important for us. We got 1-year funding support from city government. Green kampong competition [arranged by city government] also raise eagerness in developing this community.” (Interviewee 7). Lastly, it seems that commitment is the most important aspect as described as by an interviewee, “The key is our consistency and commitment [to develop this community] no matter we get award from government or not. If we focus on getting awards [or grant], we cannot sustain in long term period.” (Interviewee 6)

Policy Challenges

Based on interview, there is no conflict emerged between urban farming and land use planning policies or other government policies. However, this does not mean that there is no problem regarding this issue. This part discusses several policy challenges that may be faced by urban farming communities in Bandung and Yogyakarta. Urban farming activities may be limited with no support from land use planning and zoning regulation. Furthermore, without support from formal organisation, these urban farming communities may face problems to sustain, expand and develop their activities.

Land use planning policies

According to the existing spatial planning policies, Detailed Spatial Planning of the City of Yogyakarta does not mention a regulation regarding agricultural activities or land uses (Yogyakarta City Council, 2015). This may be because no agricultural lands lefts in this city. Unlike Yogyakarta, detailed Spatial Planning of the City of Bandung (Bandung City Council, 2015) has a regulation regarding lands for sustainable agricultural zones (*LP2B*). These lands are in three districts of Bandung: Madalajati, Ujungberung and Cibiru. However, this plan only focuses on preserving the existing agricultural land and does not mention any strategies in expanding agricultural land or integrating agriculture in the residential lands. The programs regarding green open space and residential zone do not mention urban farming as a part of urban open space strategies or residential facilities. This depicts that although urban farming activities have been developed in grass root level, it has not yet been accommodated in the land use planning both in Bandung and Yogyakarta.

Even though urban farming is not acknowledged in the existing urban planning strategies, it has been included in a national program of the Ministry of Agriculture, Republic of Indonesia. Ministry of Agriculture has developed an urban farming models called *Kawasan Rumah Pangan Lestari/ KRPL* (Urban Sustainable Home-yard Food Garden) in several Indonesian cities in 2012. The examples of this neighbourhood models are in *Bener* and *Kadipaten*, Yogyakarta and *Astana Anyar*, Bandung (Indonesian Ministry of Agriculture, 2012; Nurnayetti & Sadikin, n.d.). However, this national program is less famous than *Indonesia berkebun* because it is slightly exposed to popular media. This program is funded by the government and engage with the residents and agricultural authorities. Coordination between KRPL and city spatial planning policies is needed to support the existing urban farming initiatives and the growth of new urban farming community innovations in the future.

The absence of urban farming in urban land use policies does not only occurs in Yogyakarta and Bandung. This issue is also emerging in cities in developed countries. Some urban planning scholars such as (Morgan, 2014), Pothukuchi & Kaufman (1999) and Budge (2012) suggest that most of the existing planning policies in global north has not explicitly accommodate urban food strategies. However, many cities in global north already have specific urban food strategies. For instance, City of Melbourne Food Policy includes a strategy regarding sustainable and resilient food system which aims to enhance urban farming within the city boundary (City of Melbourne, 2012). The City of Yarra and the City of Darebin, a municipality in inner suburbs of Metropolitan Melbourne, even have a specific urban agriculture advisory committee under the municipal government that developed urban agriculture strategies (Darebin City Council, 2014; Yarra City Council, 2014). In New York, the city government already created several planning policies and zoning regulation that aim to ensure all of the city dwellers have good access to fresh, local and healthy food (Ackerman et al., 2011; Morgan, 2014). Furthermore, some cities in Europe even have developed and implemented a food-sensitive urban design concept called *Continuous Productive Urban Landscape (CPUL)* which integrates green open space design, storm water management and urban farming (Bohn & Viljoen, 2011). These sort of planning policies particularly zoning policies are needed to be developed to support urban farming activities. Government policies should provide permit for urban farming in a residential zone and provides more facilities for urban farming and farmers markets (Cohen, 2014). This may support the continuity and the growth of urban farming movement in the future.

Local government policies

Interviewees commented that many local government policies developed to support urban farming especially in Bandung. Media reported that Ridwan Kamil, the city mayor of Bandung, created several policies to support urban farming development in his city. However, in reality, there are several drawbacks of these policies. An interviewee from Bandung said,

[Local] government donates fertilizers, seeds and other types support to every village [or kampung] that develop urban farming in Bandung. This is a very good policy, but in practical, the procurement of the donations is not as we expected. For example, we have ever submitted a proposal to government to get donations of [vegetable] seedlings, but we finally get donations of seedlings of big trees. The programs look good only in the beginning, in pictures and reports, but they cannot sustain and are usually not right on target. (Interviewee 1)

In the beginning, this community was supported by the city mayor, when he was nominated as the city mayor. We get several helps from him as a person and as a city mayor. We partnered with Bandung Agrimarket which is a government initiative. However, lately I feel that this initiative is not in line with our expectation. We tried to criticise this program, but then it is hard for us to contact the government for further partnership” (Interviewee 2).

Another flaw is related to hydroponics. Government provide grants and supports for the development of hydroponics farming, but some urban communities sees that hydroponic is not organic method and requires advanced technology and electricity. An interviewee said,

Hydroponics method does not suit to our community because it needs significant amount of water, electricity and we must buy special fertilizers for hydroponics. However, we get a donation of [a set of] hydroponics system from government. We do not benefit from this donation program. Moreover, many donations from government that came without any community outreach program. So, people cannot use the donation and benefit from it. The money is wasted through this program.” (Interviewee 8).

Conclusion

To sum up, urban farming initiatives in Indonesia has been rapidly spread over Indonesian cities in the last five years. More than five local urban farming communities was founded in 2012 in Yogyakarta and Bandung. The use of social media has significant role in spreading this green movement virus to urban population. Each community develops its own social media page to post its activities and inspire others to replicate or modified its urban farming initiatives. Even though it seems that each community has different urban farming approach and work separately, these communities are working together to greening the city and bringing back food production close to urban dwellers. However, this movement has not been supported formally by the existing land use planning and zoning regulation. This condition may be a drawback for the continuity of this movement. This kind of community initiatives may be diminished and soon changed to a profit-oriented corporate’s business ideas if there is no protection and support to legalize this urban farming activities.

This study may be considered as an initial study in Indonesia, that briefly examines the local land use planning policies in terms of its support for urban farming. Further studies that thoroughly analyse urban farming aspect of different types of Indonesian urban planning policies are needed. Besides, a study regarding the development of food sensitive planning theories is also interesting to

accommodate this current issue in urban planning theories. In terms of planning practice in Indonesia, it is also needed to develop urban planning and urban design concepts that includes urban farming as a part of urban landscape elements.

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Using Spatial Aggregation Method outcome to explain the influences of built environment on health profile

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Abstract: Health profile is becoming more significant in Developing country such as China.

Research into the effects of the built environment on health has increased dramatically in recent years. Researchers are trying to understand and research explores the role of the built environment and transport system on an individual's health. Data from recent reviews have shown associations between environmental features, such as presence of sidewalks, proximity to parks and presence of certain types of food outlets, and outcomes such as physical activity. However, results from many studies conducted have been non-significant. A primary cause of these non-significant is due to how neighborhood areas are defined, which directly affects how the built environment variables are calculated in geographic information systems.

In this paper tests to what extent the potential impacts on regression analysis resulting from different data aggregation methods are well documented in spatial studies by varying the initial geographical scale of analysis which is primarily referred to as the modifiable aerial unit problem.

As explained earlier, the focus is on reducing the error caused by the modifiable aerial unit problem by introducing a data aggregation method.

Individual health and lifestyle data are obtained from the survey of income, and labor dynamics in census figures of China, and the relationship between the built environment and health profile is evaluated by using a discrete choice model.

The intended results is identify which variable is more closely related to health status by the proposed aggregation method is evaluated across three spatial scales

Keywords: built environment, spatial, geographic, health profile, regression analysis

Introduction

Health outcomes have been a central concern in evaluations of quality of life (Brazier, Ratcliffe, Saloman, and Tsuchiya 2017). Obesity prevalence has increased at a unhealthy rate over the last three decades in industrialized countries. This sudden increase in unhealthy is more likely to be related to environmental changes than to biological changes. Several empirical studies document a relationship between built form and obesity in adults (Frank et al., 2004; Lopez, 2004; Lopez-Zetina et al., 2006; Xu et al., 2005). Green infrastructure has

emerged as a topic of significant interest in urban and regional planning. A lot of scientists and public health experts determine that environmental change could help health—for example, by restricting the number of fast-food restaurants in a neighborhood (Minkler, Wallerstein, and Wilson 2008). Different population and urban form factors also have an impact on walking and weight. Other studies have shown that store density is related to physical activity (Atkinson et al., 2005, Besser and Dannenberg, 2005, Handy et al., 2005, Frank et al., 2005). Then researchers are trying to understand the environmental variables that affect health. Land use change and urbanization have changed the architectural pattern of metropolitan areas. Studies have found land use, plot size and health-related variables (Amir Samiz, Abolfazl Mohammadian, Seyedali Madanizadeh 2009). One related growing stream of research explores the role of the built environment on physical activity (Samimi, A., A. Mohammadian, and S. Madanizadeh 2009) and the individual's health (Coffee T. N 2005). However, results from many of the studies conducted have been contradictory (Zhang, M., and N. Kukadia 2005). One of the primary causes of these contradictions can be attributed to the way the neighborhoods are defined, which directly affects how the built environment variables are calculated in geographical information systems (GIS). Spatial analysis is the foundation of many studies within the transportation field. Spatial analysis implicitly defines some of the underlying assumptions of a study. A typical spatial analysis is the aggregation of data within geographic boundaries. The distribution of data can be clearly seen through aggregation.

Materials and methods

Study population

This section describes the study area, data source, and processing procedures used in this study. The study area is defined by the Shanghai Statistical Division, which is a large administrative zone that encompasses the city of Shanghai, China. The study area includes 2,253,525 participants who responded to the survey (referred to here as “respondents”) within 5432 census collection districts (CCDs).

The health used in this study came from the Shanghai Statistical Division (SSD) survey, which began in 2010 and surveyed the Shanghai population. The data were subsequently processed in ArcGIS and spss to calculate a number of environment variables (introduced in the next section) that represented the urban characteristics of Shanghai, China

Health outcome assessment

Survey respondents were asked: “Would you say that in general your health is excellent, good, fair or poor?” SSD used this measure of self-rated health -- used extensively in the literature, and shown to be a good marker of combined physical and mental health (Idler and Angel, 1990, Idler and Benyamini 1997) -- as a continuous measure, coded such that increasing values denote better self-rated health.

Built Environment Variables

The “six Ds” principle, which accounts for the main ways in which the built environment is expected to influence travel behavior, was used as a guideline for the selection and development of the built environment variables included in this study. The six Ds principle is composed of density, diversity, design, destination, distance to transit, and demand management (Ewing, R., and R. Cervero 1998).

The destination principle was considered by using the variable “quantity and distance to supermarket” A code was developed in Python to obtain the walking distance and quantity to the grocery stores and sports facilities closest from Gaode Maps. These are the two major points of interest affecting health. In order to convert these two variables to the CCD zones, overlapping two layers and CCD layer for range segmentation to calculate the number of shops and sports facilities in each CCD range. Greenland data from Shanghai Surveying and

Mapping Department. The green space is divided according to each CCD range, and the green area of each CCD range is calculated.

.Method

The purpose of this study is to evaluate the association of urban environment characteristics and health in Shanghai, China, and to examine the importance of spatial aggregation methods in the significance of this association. The residential location of individuals is preaggregated to CCDs in the data used in this study. Although CCDs are relatively small zones (resident committee management), it is not possible to define the neighborhood area for each individual by using a road buffer from the address of each individual. Thus, the only link between the data and the built environment variables is the CCD. The CCDs were defined for the purposes of data collection during the census.

The ideal aggregation methodology would define the neighborhood area on the basis of how each individual interacts with the physical environment surrounding his or her place of residence; this method would remove the associated MAUP errors. This problem is referred to as the uncertain geographic context problem, which requires that the travel trajectory of each individual represent the urban area of influence within which an individual would have interactions (Kwan, M.P 2012). Using the self-assessment health data of the sixth census for spatial clustering, we can know the relationship between health status and built environment through clustering results. Many studies have shown that the more points of interest (POI) and green spaces and health facilities near the place of residence have a stronger link to health outcomes (Crawford, Thomas W 2014). The following steps are used to calculate the built environment variables using the suggested aggregation method:

1. Overlapping CCDs and land-use layers containing green spaces;
2. Remove the protective green space next to the road;
3. The green map layer is overlapped by the CCD range line for regional division;
4. Calculate the green area near each neighborhood committee;
5. Overlay the layers aggregated with the self-assessment health survey;
6. Calculate whether there is any correlation with self-assessment health data;

Statistically, correlations between multiple variables (statistics) are detected by correlation analysis. For example, rice yield is usually related to soil fertility. If the statistic of the analysis is the same attribute variable of different observation objects, it is called "autocorrelation". Therefore, the so-called spatial autocorrelation is to analyze these spaces by statistically studying the spatial degree of autocorrelation between a spatial unit and its surrounding units in space. Characteristics of unit space distribution phenomena. Therefore, the local spatial autocorrelation of health data is first self-assessed to understand the spatial distribution of health. The regional Moran's I measures the degree to which each i is related to each j within the range of distance d . The formula is as follows:

$$I_i = \frac{(x_i - \bar{x})}{S^2} \sum_j w_{ij} (x_j - \bar{x})$$

X_i , X_j are observations of spatial positions i and j , and w_{ij} represents the neighborhood of spatial positions i and j .

Statistical analyses

Within each areal neighborhood definition, we calculate Pearson correlations among the four environmental variation. This relation is because the defined neighborhood area is more likely to reflect the area in which an individual had direct interactions as compared with an administrative boundary or a straight-line buffer (Duncan, M. J., E. Winkler, T. Sugiyama, E. Cerin, L. duToit, E. Leslie, and N. Owen.). To measure the association between the built environment and health, a logit model is developed. To measure the association between the built environment and obesity, a one-dimensional logit model was developed. Four sets of environmental variables were modeled and saliency calculated, taking into account the potential relationship between individual variables and health. Healthy input - output model.

Results

Characteristics of survey population

A majority of participants reported at least good self-rated health: 151019 reported 'excellent' self-rated health, 150675 reported 'good,' 31248 'fair,' 12930 'poor,' and 1907933 unfilled.

Associations with self-reported health, environment variable

In each dataset, Pearson correlations were lower for green area (Table 1). The number and health status of sports facilities are significant, with the highest correlation between the two variables. Although the number of health and stores is significant, the two variables are negatively correlated. Table 1 shows the results across the four models as discussed previously. From the green area variables not has a association with health, which may seem counterintuitive at the first glance (since green area is considered healthy). From the built environment variables, the number of Sports Facilities has a positive association with health. In general, the area of green space has no significant impact on health, but the number and distance of sports facilities have an impact on health.

Table 1. Pearson correlations of health by environment variables.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.253	.072		-3.534	.000
	Green Area	-5.550E-7	.000	-.021	-1.561	.119
	Restaurant	-.004	.001	-.071	-3.188	.001
	Sports Facilities	.022	.005	.090	4.123	.000
	Population"	.000	.000	.213	15.320	.000
	Subway Station	-.149	.141	0.014	-1.052	.293
a. Dependent Variable: Health						

Cluster analysis of self-rated health

This study proposed, applied, and tested an aggregation methodology for anonymous surveys in which the self-rated health of individuals is preaggregated to an existing administrative boundary. 151019 of participants reported at excellent self-rated health that use localized spatial autocorrelation analysis(Figure 1).The low-low

clusters are mainly concentrated in the central area of Inner Ring Line of Shanghai. Residents living in the city centre are particularly bad at their health, and than it can be seen that green space has no effect on health.

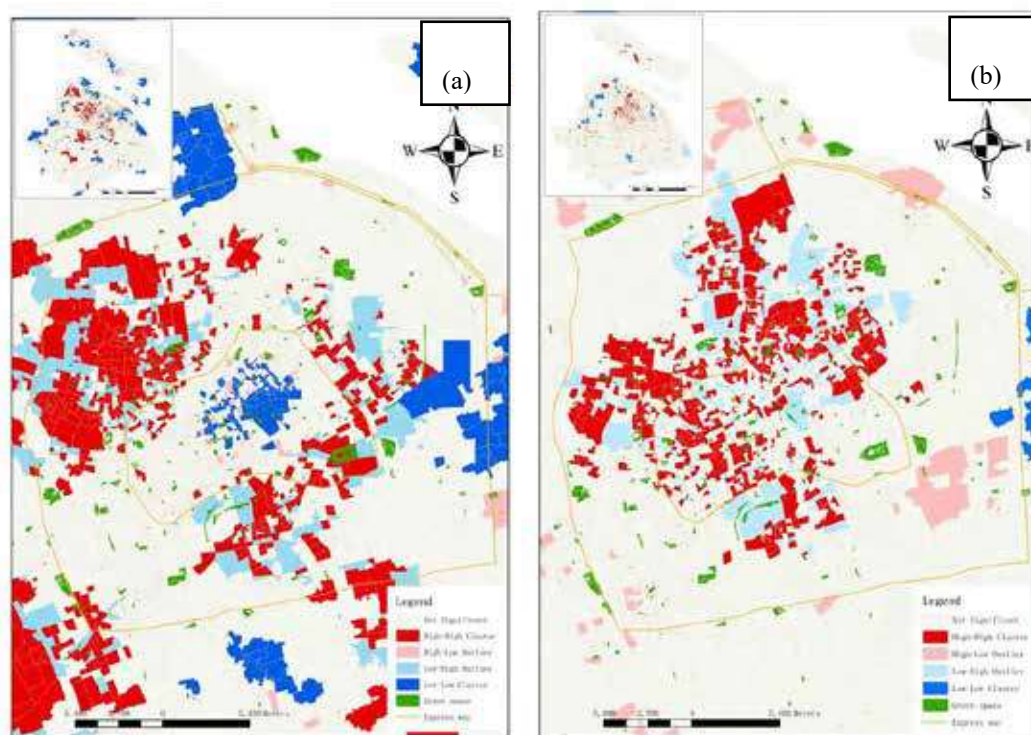


FIGURE 1 Aggregation clustering:(a) 'excellent' self-rated health within CCD boundary; (b) 'poor' self-rated health within CCD boundary

Discussion of results

The study assessed the association between built environment and health in Shanghai, China. A significant data collection and processing effort was conducted to obtain GIS data necessary for the evaluation of the built environment variables. The variables were selected on the basis of the six Ds principle, which considers how the urban environment may affect travel behavior. Results from the study indicate that there is an association between built environment and health, particularly when the number of Sports Facilities. But residents living in the city centre are less satisfied with their health than those living outside the city. There may be three reasons,(1)More demanding for your health; (2)The way to go out is mostly negative travel; (3) Getting food is more convenient. Through the aggregation clustering of health self-assessment data, the results show the distribution of residents' health status in Shanghai.

Conclusion

Our study aimed to understand the importance of: (1) know what environmental variables affect the health of residents in the city; (2) aggregation of vegetation data into the same areal units when seeking to evaluate potential effects of neighborhood greenness exposure on health. Using individual-level data obtained from a survey of Shanghai residents, we compared associations between self-rated health and greenness exposure.

The size and shape of neighborhoods as perceived by each individual (i.e., self-defined) could differ due to demographic characteristics of different subgroups within a population. Anonymous surveys tend to aggregate the residential location of survey respondents to predefined zones. These zones are typically not designed to capture the urban characteristics of a neighborhood. The issue associated with defining the spatial aggregation

boundary is referred to as the MAUP and has been shown to have dire consequences, particularly in regression analysis. In this study a variety of data sets describing the urban characteristics of Shanghai, China, are collated, processed, and analyzed. And contrary to expectations, we found not associations between green space and self-reported health, And the number of sports facilities significantly affects health. A previous US Study found that areas around home contained more fitness facilities than non-home areas(Hurvitz PM, Moudon AV.2012). It can be considered that the health status of residents outside the city center is better, because the residential area is mostly outside the city center, and the sports facilities are located near the residential area, so the residents living in the center of the city have a higher health index.

The current study has some limitations. Due to the cross-sectional nature of our research, reverse causality is possible, and it is impossible to truly identify all the variables that affect the state of self-health, and only actually reflect the distribution of health status of the city.

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The space-time relations between pedestrians and street vendors: a case study in Suihua, China

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Abstract: This paper is set in a broad scope of urban walkability research related to street vending practices. How are urban streets temporarily re-calibrated by mobile street vendors and dynamically used by the presence of pedestrians? The empirical basis and temporary data are lacking at a micro-scale. Using on-site observation and behaviour mapping, this study incorporates both social and physical elements to provide a fine-grained picture of human activity in urban spaces where street vendors operate. This compares the space-time patterns of street activities during four daily periods of three urban street spaces in the smaller Chinese city of Suihua. The empirical evidence produced reveals two co-operations of environment-behaviour interactions (e.g. micro-climates and street characteristics) and socio-spatial relations (e.g. the presence of street vendors and pedestrians). This study interprets a notion of flux in patterns of vending-walking relations, which could reveal an alternative understanding of Chinese urban walkable space via the temporary practices of street vendors. This knowledge and its application of designing active street spaces could benefit future policy-making and urban design practitioners.

Keywords: transient walkable space; urban walkability; everyday street activity; street vending

1. Introduction

1.1 Brief

This paper provides an alternative way of understanding urban walkability through dynamic street vending practices (Sun et al. 2016). Fan et al. (2018) indicate that street vendors as an interesting factor can impact walkability in contemporary Chinese cities, but there are no empirical studies. This research is an attempt to fill some of the emerging gaps. The aim is to be able to link who are they, what they do, where and when they do it. Golcinik et al. (2010) note the value of behaviour mapping and GIS techniques in producing detailed mappings of urban park spaces, which could help to understand the relationships between the built environment and human behaviour. This paper reflects on the development of the methods having collected empirical evidence in three urban street spaces, with a view to understanding the space-time relations between heterogeneous uses of pedestrian groups and street vending types.

1.2 Walkability and pedestrians

In light of the multiple benefits of walking (e.g. promoting public health, enhancing social interaction, increasing land value and reducing environmental pollution), improving walkability is becoming increasingly significant among urban designers and public health researchers (e.g. Saelens et al. 2003, Kashef 2011, Speck 2013, Duncan et al. 2015, Sun et al. 2016, Brookfield et al. 2017). The relevant studies on walkability have covered numerous different aspects, especially in developed countries: 1) The influence of urban fabric and spatial configuration on walking behaviours, such as the Walkability Index (Frank et al. 2010) and Space Syntax (Hillier et al. 1993, Koohsari et al. 2016), which could be applied in order to quantitatively evaluate cities and regions; 2) Walkability has been studied via ecological models and environmental factors, such as the Context-specific Behaviour Model (Giles-Corti et al. 2005) and Neighbourhood Environment Walkability Scale (Cerin et al. 2013), which attempt to explore correlations of perceived environmental attributes with walking behaviours; 3) Walkability could also be subjectively studied in relation to sense of place and experience of environment, such as Ewing & Handy's (2009) Urban Design Framework and Gehl's (2010) Three Types of Outdoor Activities, which present spatial meanings in terms of human-scale design guidance.

Despite the complexity of approaches to the concept of walkability, some studies have focused on specific aims, for instance, pedestrians on urban streets. Mehta (2008) notes three street characteristics (physical, social and land use), which simultaneously impact pedestrians' attitudes and perceptions. Whilst in most instances street features are relatively fixed, pedestrian behaviours are dynamic and difficult to determine. Hall (1966) defines the intimate, personal, social and public distances, which might relate to different sizes of pedestrian group. Furthermore, several studies indicate that sensitive pedestrians (e.g. older people, children, women, people with accessibility support needs and low-income groups) should be considered differently in the same environment (e.g. Unt et al. 2014, Brookfield et al. 2017, Jensen et al. 2017). However, it could be argued that street design generally focuses only on one human type (i.e. the "average person") (Jacobs 1961). Inspired by the idea of environmental affordances (Gibson 1986, Heft 2010), this study contends that pedestrians need to be more variously defined in specific urban streets.

According to the Oxford English Dictionary (2018), the word "pedestrian" is a noun, which means "a person who is walking rather than travelling in a vehicle". Therefore, pedestrianism could be defined as a transportation mode distinct from other such modes (e.g. driving) in streets. However, the word can be traced back to the early 18th century, from the French *pédestre* or Latin *pedester* "going on foot", which expands the definition of pedestrian to walking for non-transportation purposes, such as recreation, leisure, exercise, shopping, parades and social interaction (Lo 2009). The status of stationary pedestrians is also ambiguous regarding walking or standing. As such, pedestrians could be regarded as undertaking various street-based physical activities. The ambiguous activities of pedestrians could be further distinguished related to a specific purpose, population and behaviour.

1.3 Chinese cities and street vending phenomenon

The rapid urbanisation in China has led, in most cases, to urban developments, which ignore the everyday life for urban residents and the need for walkable neighbourhoods. Decreased walkability and its multiple consequences have emerged during the past few decades. For example, since China's economic reform in the late 1970s, the number of people walking and cycling has declined (Su et al. 2017). From 1992 to 2002, the increasing number of overweight and obese people in China reached

approximately 100 million (Chinese Academy of Sciences, 2009). In recent years, the Chinese scholars have begun to outline the various negative consequences of fast urban development and to undertake research into walkable environments (e.g. Sun et al. 2015, Zhou et al. 2017, Su et al. 2017, Fan et al. 2018). However, the majority of published research in this field is mostly quantitative, especially at a large-scale, and based on the study of western urban models.

Returning to the idea of distinguishing pedestrians via a specific purpose and behaviour, street vendors are a common feature of numerous streets in residential neighbourhoods, dynamically occupying space where many people regularly walk (Sun et al. 2016, Flock et al. 2016), leading to alterations of street layout and spatial use in contemporary Chinese cities. Although some Chinese scholars note that street vending can improve public vitality, its inherent mobility is considered problematic from the management perspective, such as trying to govern, control or manage the phenomenon or considering it as a necessary conflict (Huang et al. 2014, Xue et al. 2015). According to the Lefebvrian proposition that “(social) space is a (social) product” (1991 p.26), walkable space is not a pre-existing or a timeless container which pedestrians fill up and move around in, rather it is temporarily co-produced by street vendors and pedestrians. In other words, the inherent mobility should not be viewed as an “issue” but could be a positive approach to understanding a transient walkable space via ontological forces of local everyday life (e.g. habit, demand, culture and socio-economic situation), which can be further used to comprehend dynamic pedestrian behaviours.

1.4 Research aims and objectives

The challenge, therefore, is to explore the space-time patterns of street vendors and pedestrians by empirical studies of three specific urban street spaces in Suihua, in order to understand how these relations operate and how they in turn influence the walkable space at different times. The research aims and questions are:

Investigating activity types: the everyday street activities can be further distinguished via the paired types of street vendors and their clients (i.e. pedestrians), specific walking behaviours and populations, in order to identify detailed correlations across heterogeneous pedestrians and street vendors or other co-existed activities;

Understanding everyday uses in flux: how the space-time patterns differ at the three sites, periods and days; how the correlations between temporary street vendors and ever-changing pedestrians operate.

2. Methodology

This methodology included four phases: pilot study, workshop data collection, GIS database archive and analysis. A pilot study was undertaken by the researcher to develop a detailed protocol for the following workshop. Its tasks were selecting observation sites and times, drawing site plans, analysing site contexts, and summarising presence of activity types. The workshop was designed to collect data from three selected sites simultaneously, to refine the previous tasks (e.g. the activity types), and to discuss potential results or reasons, with 9 observers together, thereby ensuring inter-rater reliability and being more comprehensive when reflecting on the findings.

2.1 Developing behaviour mapping

This development has been presented in a working paper (Sun et al. 2019). The behaviour mapping method is an objective tool to study the relationships between the built environment and human behaviour through observing different activities in selected surroundings with minimal intervention by the observer (Golicnik et al. 2010, Unt et al. 2014, Ghavampour 2017). Behaviour mapping juxtaposes subject-related behaviours with the properties of space, making it possible to ascertain environment-behaviour interactions. This study has further distinguished the subject-related behaviours (i.e. Chinese everyday street activities) at specific times of the day.

The original method has five important steps: an initial site survey to collect the characteristics of the selected sites via photographs and notes; a symbolic coding system for the types of existing activities with demographic characteristics; a method of mapping the symbols or codes (e.g. activity, age, and gender) to the spatial characteristics (e.g. site plan) during a survey; iterative site surveys and recording of the microclimate at different periods (e.g. times and days); combined mappings and comparative analysis. However, this pilot study has identified the following limitations of the foregoing method:

- It is only valid for implementation in places of relatively fixed behaviours. Such streets and markets contain numerous pedestrians and changing behaviours that are impossible for observers to record.
- Observers must use the symbolic coding system creating mappings by hand. The low efficiency leads to a challenge for simultaneous recording in different streets.
- The data/mappings could not be repeatedly checked due to the activities disappearing shortly after the recording.

2.2 A workshop for data collection

This study proposes further development of the method, to include a fieldwork workshop dealing with the limitations in urban street spaces with plentiful everyday activities. The workshop entitled “Walking Practice” recruited 9 observers from various subject areas, who were studying at different Chinese universities. The multiple perspectives and interdisciplinary knowledge were significant in enriching the findings. Due to local residents were most likely to spend their time outdoors during the warmest month of the year, the workshop was held between 23 and 31 July 2017. The first day of data collection was designed for an initial practice (i.e. a weeklong survey).

Considering higher pedestrian movement and density of the selected urban street spaces, the on-site mapping by hand was replaced by taking panorama photos from high spots by observers with an average approach. 13 photos per hour were taken at each site (i.e. on average one photo was taken every 5 minutes). The date and time of each photo were archived. Furthermore, the micro-climate (i.e. approximate temperature, rainfall, cloud and wind) and special annotations (e.g. impression, light, and noise) were noted separately.

The data were simultaneously recorded from three selected sites during four different hours of the day, to have the maximum sampling of the various uses of spaces regarding the rhythm of everyday life. The four selected hours (i.e. 07.00-08.00, 11.00-12.00, 16.00-17.00 and 18.30-19.30) could be summarised as “morning commute to work”, “high temperature and lunchtime”, “commute to home after work” and “recreational phase”. The remaining hours and dates would comprise theory lectures, mapping practices, critical reviews, discussions and reflections. Three observers’ spots were selected in a higher position enabling observers to visually record a given observation area (around 1500 m²).

With the aim to create a GIS database, gender and twenty-six activity types (Table 1), were identified or refined during the workshop and discussed twice with the on-site observers. Paired activities were not only regarding street vendors and their clients, but also included some specific population groups and behaviours. For instance, children most often emerged with adults in urban street spaces. Therefore, a filtrating system was developed to distinguish all activities from explicit behaviours to ambiguous behaviours. It included five layers (Table 1): selling, buying, specific population (e.g. street cleaners), specific behaviour (e.g. dog walking) and common behaviour (e.g. walking).

2.3 Database creation and analysis techniques

The seven days’ data (i.e. the panorama photos) was recorded in digital form onto a GIS system using ArcMap 10.5 (ESRI, USA). From 13 photos taken per hour, 7 were input to the GIS database (i.e. an average of ten minutes per photo). Other 6 redundant photos were retained in case of needing to replace blurred photos systematically. The inputted photos were archived and used to repeatedly check the GIS database (i.e. spot checks). Moreover, some supplementary elements for training subjective judgment were used to refine age, gender and activity from the photos (e.g. clothes’ style or colour, schoolbag and hairstyle). The individual locations would be referred to the site settings (e.g. pavement crack, building façade, curb, tree, public furniture and private stall). The completed GIS database included 84 hours and 588 photos from three sites.

The sophisticated recording of individual spatial location, activity type, gender, time and date, created an explicit GIS database that could then be analysed through different hours, days and sites. There was no clear boundary of street vending spaces, so comparing the proportions (e.g. of percentage and mean) is more appropriate for this study. Furthermore, the database allows cross-comparison with other factors (e.g. micro-climate, spatial feature and on-site observation). The three sites were analysed separately, then the space-time patterns were compared and discussed with social relations together.

2.4 Introduce the selected sites

Site 1 is situated in Xishi street (Guangming Hutong). Figure 1 shows the spatial fabric, settings and observation area. The spatial fabric represents a high-density residential area and a feature of shortcut. There are two influential amenities around the selected site – 93 Market and Suihua People’s Hospital. The market engages numerous vendors (e.g. farmers and peasants) and pedestrians. The selected observation point is in the middle of the alley (i.e. a less integrated and narrow road), with

less vehicle movement but a higher pedestrian flow. According to the latest master plan (2012-2030) in Suihua, the alley will be removed in the future.



Figure 1: Urban fabric and spatial settings at Site 1, Suihua

Site 2 is situated in Guangsheng Street. Figure 2 shows the fabric, settings and observation area. The spatial fabric represents a high-density residential area, but a main street feature (i.e. a wider pavement with a roadway). There are many street vendors and pedestrians. The selected observation point is in front of the school and focusing on the corner (i.e. around the intersection). In addition, this site might attract many games players together (e.g. poker or Chinese chess).

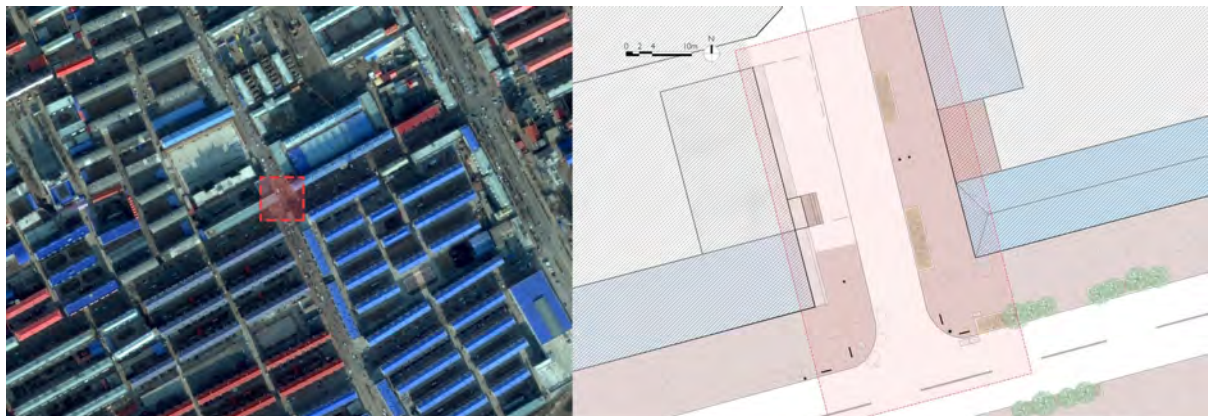


Figure 2: Urban fabric and spatial settings at Site 2, Suihua

Site 3 is situated in Zhifu Street. Figure 3 shows the fabric, settings and observation area. The spatial fabric also represents a high-density residential area and a secondary street feature (i.e. an inconsistent/incomplete pavement and relatively wide roadway). The selected observation point is in the middle of the street (i.e. a relatively less integrated area). Due to the abundant street vendors having appropriated the pavement in various ways, vehicle movement and pedestrian flow are mixed on the roadway.

obviously higher than of boys. Compared to Sites 1 and 3, males playing at Site 2 was extremely noteworthy and its mean was higher at weekends.

Table 1 Activities performed at the three sites in male/female number, mean during workweek/weekend and total percentage (abbr. V-vending & B-buying)

Activities	Site1						Site2						Site3					
	Male	Female	Week day M	Weekend M	Total	%	Male	Female	Weekday M	Weekend M	Total	%	Male	Female	Weekday M	Weekend M	Total	%
Selling Layer																		
Food v	1	7	1.4	0.5	8	0.1	36	48	7.6	23	84	1.6	286	420	110.4	77	706	13.2
Fruit v	157	296	48	106.5	453	7.8	119	65	26.8	25	184	3.4	14	40	10.8	0	54	1.0
Veg v	382	718	154.4	164	1100	19.0	44	38	13	8.5	82	1.5	296	290	79.6	94	586	11.0
Sundry v	22	46	12.6	2.5	68	1.2	7	38	5.8	8	45	0.8	174	74	35.2	36	248	4.7
Service v	1	1	0	1	2	0.0	27	2	3.6	5.5	29	0.5	0	0	0	0	0	0.0
Meat v	4	1	0.2	2	5	0.1	18	22	6.8	3	40	0.7	0	0	0	0	0	0.0
Buying Layer																		
B food	17	27	3.2	14	44	0.8	19	14	3.8	7	33	0.6	188	275	78.4	35.5	463	8.7
B fruit	96	153	29.6	50.5	249	4.3	46	67	18	11.5	113	2.1	22	76	19.6	0	98	1.8
B veg	213	473	80.4	142	686	11.8	34	66	15.6	11	100	1.9	132	307	68.2	49	439	8.2
B sundry	21	24	8	2.5	45	0.8	4	14	3	1.5	18	0.3	69	106	30.4	11.5	175	3.3
B meat	1	0	0.2	0	1	0.0	15	10	4.2	2	25	0.5	4	7	2.2	0	11	0.2
B service	0	0	0	0	0	0.0	6	2	0.4	3	8	0.1	0	0	0	0	0	0.0
Specific People Layer																		
Cleaner	21	15	3	10.5	36	0.6	6	8	2.8	0	14	0.3	6	7	1.8	2	13	0.2
Delivery	6	0	0.4	2	6	0.1	5	0	0.8	0.5	5	0.1	4	0	0.8	0	4	0.1
Police	1	0	0.2	0	1	0.0	1	0	0.2	0	1	0.0	8	0	1.2	1	8	0.2
Manager	0	0	0	0	0	0.0	0	0	0	0	0	0.0	1	0	0.2	0	1	0.0
Flyer	0	0	0	0	0	0.0	0	0	0	0	0	0.0	2	0	0.4	0	2	0.0
Wheelchair	0	1	0	0.5	1	0.0	0	0	0	0	0	0.0	0	0	0	0	0	0.0
Specific Behaviour Layer																		
Child playing	1	0	0.2	0	1	0.0	1	4	1	0	5	0.1	16	14	5.6	1	30	0.6
Child walking	13	31	5	9.5	44	0.8	7	19	5.2	0	26	0.5	48	107	28.8	5.5	155	2.9
Adult playing	0	0	0	0	0	0.0	1241	149	164.8	283	1390	26.0	0	0	0	0	0	0.0
Dog walking	2	3	0.4	1.5	5	0.1	2	0	0.4	0	2	0.0	2	5	1.2	0.5	7	0.1
Common Behaviour Layer																		
Walking	984	1329	357.6	262.5	2313	39.9	754	741	227.2	179.5	1495	27.9	605	825	201.4	211.5	1430	26.8
Standing	123	175	38.4	53	298	5.1	642	205	139.8	74	847	15.8	117	112	32.4	33.5	229	4.3
Sitting	38	19	5.6	14.5	57	1.0	286	122	66.2	38.5	408	7.6	96	62	22	24	158	3.0
Cycling	252	124	44.4	77	376	6.5	261	134	66	32.5	395	7.4	306	206	79.8	56.5	512	9.6
Total	2356	3443	793.2	916.5	5799	100	3581	1768	783	717	5349	100	2396	2933	810.4	638.5	5329	100

3.2 Temporal vendors and pedestrians in numbers

Table 2 shows the observation period, temperature, proportion of people, correlation and number of street vendors and non-vendors (i.e. various pedestrians) during the four periods at the three sites. The lowest average temperature was 20.6 °C (a range of 18-23°C) at 07.00-08.00. The highest average temperature was 24.3°C (a range of 21-27°C) at 16.00-17.00.

At Site 1, the highest proportion (32.1%) was at 07.00-08.00 and the lowest proportion (15.2%) was at 18.30-19.30. The correlations between street vendors and pedestrians during the four periods were strong and fluctuated slightly - the weakest (2.9) was at 18.30-19.30 and the strongest (2.2) was at 11.00-12.00. *At Site 2*, the highest proportion (37.7%) was at 16.00-17.00 and the lowest proportion (19.1%) was at 07.00-08.00. The correlations were generally week - the weakest (17.1) was at 18.30-19.30 and the strongest (6.3) at 11.00-12.00. *At Site 3*, the highest proportion (39.4%) was at 16.00-

17.00. The lowest proportion (16.6%) was at 07.00-08.00. The correlations fluctuated slightly - the weakest (3.0) was at 07.00-08.00 and the strongest (2.1) was at 16.00-17.00.

Table 2 Period of observation, number of days, times, temperatures, total people, vendors and non-vendors

Period of this study	24th -30th July 2017			
Time of day	7.00-8.00	11.00-12.00	16.00-17.00	18.30-19.30
Temperature (M/Range)	20.6°C/18-23°C	23.3°C/21-27°C	24.3°C/21-27°C	21.1°C/18-24°C
Site 1 (N=5799) %	32.1	24.6	28.0	15.2
Site 1 Correlations V/N	2.7	2.2	2.6	2.9
Site 1 Vendors/Non-vendors	505/1358	447/982	457/1166	227/657
Site 2 (N=5349) %	19.1	19.6	37.7	23.7
Site 2 Correlations V/N	8.4	6.3	13.1	17.1
Site 2 Vendors/Non-vendors	108/911	143/903	143/1871	70/1200
Site 3 (N=5329) %	16.6	22.1	39.4	21.8
Site 3 Correlations V/N	3.0	2.2	2.1	2.7
Site 3 Vendors/Non-vendors	224/663	364/815	677/1422	317/847

* Special weather: Rain 7.27 7.00-8.00, Cloud 7.26 whole day & 7.27 11.00-12.00

4. Discussion

Returning to the two research questions in this study, the first question has been answered through the activity filtering method (i.e. twenty-six street activities within five layers at four periods of the day in three urban street spaces). Based on the specific activities, sites' characteristics and periods, the answer to the second question is multifaceted. Examination of the space-time patterns across the three sites revealed two crucial co-operations of environmental affordances (Gibson 1986) and socio-spatial practices (Lefebvre 1991) at different times and sites. The findings are further discussed at specific sites.

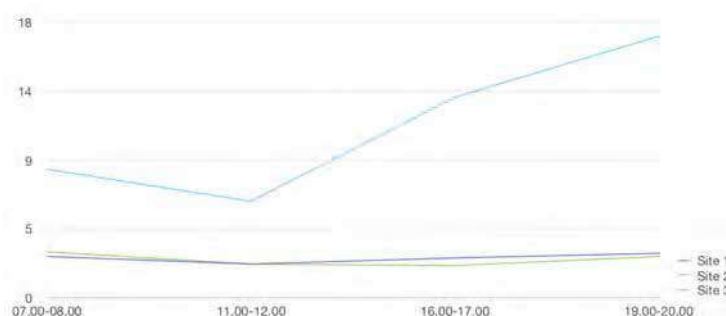


Figure 4: Correlations between vendors and non-vendors at four period of the day

Site 1, an alley connecting a popular market and hospital in the city centre, could engage many pedestrians. In this sense, the walkable environmental characteristic was less influenced, such as the thermal comfort and street design (Ewing et al. 2009, Gehl 2010, Speack 2013). Based on the field observation, the market generated numerous people in the early morning since 04.00, leading to the highest percentage of people at 07.00-08.00. Compared to the two periods of 11.00-12.00 and 16.00-17.00 (i.e. the comfortable temperature), the numbers of street vendors were similar, but the number of pedestrians dramatically increased in the afternoon during the recreational time. Also, at weekends, the number of people increased obviously (Table 1). However, at the recreational period of 18.30-

19.30, the cold temperature might result in the lowest number of pedestrians. After a whole-day selling, the vendors decreased dramatically, leading to the weakest correlation in the evening.

Site 2, an intersection connecting central urban areas, has a high accessibility (Figure 2). However, this space overlapped with another system of older people playing (Table 1), unlike Sites 1 and 3. As such, the correlations between vendors and non-vendors were significantly weak (Figure 4). The temperature and street elements play a significant role to influence when people occur and where they stay. For example, the percentage of adult playing (26%) was high (Table 1) and many pedestrians emerged during the recreational periods, particularly at 16.00-17.00 with a comfortable temperature (Table 2). Compared to Sites 1 and 3, this reveals two distinct systems (i.e. vending-walking space and playing-walking space), producing different walking behaviours and socio-spatial meanings in Chinese urban streets, which deserves to be further studied.

Site 3 is situated in an ordinary residential neighbourhood connecting central urban areas. The correlations between vendors and pedestrians were strong during the four periods, similar to Site 1. Due to this area does not have a market, the pedestrians were hurried to go to work or school and most vendors did not appear yet in the early morning, unlike Site 1. However, the highest and lowest percentages of people at different periods were similar to Site 2 (Figure 5), closely related to the two periods of the highest and lowest temperature (Table 2).

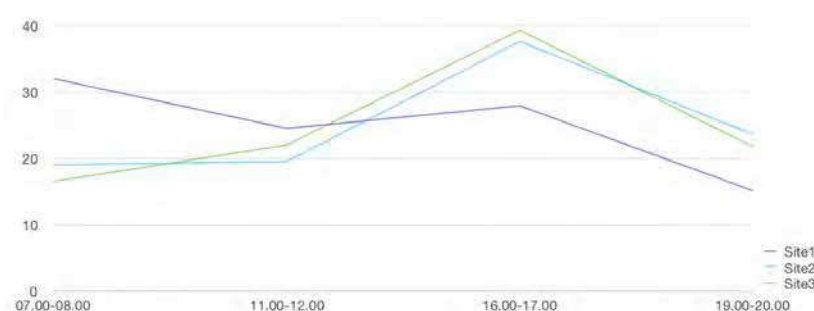


Figure 5: Changing proportions during four periods of the day at the three sites

Returning to the gender equity of everyday activities (Jensen et al. 2017), this study shows the “real life” in Chinese street space. Other studies have considered walking and cycling together as a mode of active travel (e.g. Saelens et al. 2003, Giles-Corti et al. 2005). The results show that walking females and female buyers were statistically high at Sites 1 and 3, as they still generally take care of their family. At Site 2, the number of male playing was extremely high, indicating a different family role. The most important result is that girls tended to be more linked to their guardian’s short-term movement at an intimate distance (Hall 1966, Gehl 2010) at the three sites, revealing that gender behaviours in Chinese public street space have been unconsciously formed since childhood.

5. Conclusions

This study has three main contributions. First, most previous studies show that neighbourhood walkability (determined by population density, land use diversity and street connectivity) significantly impacts physical activities. However, this study further explored the two co-operations of environmental affordances and socio-spatial practices at specific street spaces and times. Second, this

study distinguished different walking behaviours and time-related variations between the market street (Site 1) and everyday street (i.e. Sites 2 and 3). For instance, the numbers of urban pedestrian unexpectedly decreased during the recreational times (i.e. weekends and evenings) in the ordinary streets. Third, the correlations between street vendors and pedestrians existed and simultaneously changed at different periods (i.e. Sites 1 and 3). Although the correlations at Site 2 differed, this provided another system about adults playing.

This study shows how the detail of dynamic street activities was temporally related to environmental affordance, temperature variation, human feature and time characteristics. In short, the method incorporates both social and physical elements to provide a fine-grained picture of Chinese street activities, going beyond a general narrative of street vending itself or common studies on walkability, towards a precise empirical study in specific urban spaces at specific times. Although all three street spaces in Suihua are walkable, the socio-spatial practices differ, producing distinct walking behaviours and space-time meanings. This is a dynamic system of spatial uses and social practices, which possibly operates at all urban scales from the city to the street corner, recalibrating urban street spaces at different times of the day and night. This recalibration itself was also dynamic according to ever-changing or alternate demands of emerging pedestrians, and nuanced by development situations of a neighbourhood, commuting or recreational periods. Street vendors occupy marginal street spaces as transient and mobile amenities that could dynamically improve walkability via heterogeneous tactics of mixed land use.

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Walkability in Flanders (Belgium): Developing a tool to support healthy spatial planning

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Abstract: Insufficient physical activity is a key factor for noncommunicable diseases such as cardiovascular diseases, different cancers and diabetes type II. According to the World Health Organisation more than half of the European population does not meet physical activity recommendations. International studies have shown that living in high-walkable neighbourhoods is associated with higher physical activity levels. A clear understanding of the geographical variation of the walkability within a region is necessary for effective spatial interventions promoting physical activity. However to date in Europe no analytical spatial tool at a regional scale exists to provide such an evidence base. Our research mapped walkability at a high resolution for the entire region of Flanders. Analysis of the spatial distribution at a regional scale reveals only a few distinct areas showing a higher walkability score in comparison to other Flemish neighbourhoods. At a local scale differences between neighbourhoods or districts are apparent and can be addressed. The tool provides support in making more evidence-based healthy spatial policy decisions. Based on the resulting map an easy accessible open-source online tool was developed which can be used to assess the walkability and to compare neighbourhoods within a municipality or in reference to other towns and cities.

Keywords: Walkability, Physical activity, Analytical spatial tools, Urban environment and health

Introduction

Insufficient physical activity is a key factor for noncommunicable diseases such as cardiovascular diseases, different kinds of cancer and diabetes type II. Evidence shows, in Europe more than half of the population is not active enough to meet health recommendations. (World Health Organisation, 2018) Therefore increasing the average amount of physical activity is paramount to ensure a healthy population. According to The Lancet (Das and Horton, 2016) only raising awareness to the issue is not sufficient to ensure a significant long-term health outcome. Only a limited group of people will feel addressed and accordingly respond by doing more physical exercise. Moreover the effects are most of the time not long lasting and people tend to soon return to their old habits.

To profoundly embed physical activity in our daily routines, other policy fields such as spatial planning, housing and mobility should also incorporate health concerns policy initiatives or interventions. A structural way to ensure more physical activity is to shift from a motorised means of

transportation to walking or riding bicycles where possible. At some locations this is of course easier to achieve than at other locations, depending on several parameters (e.g. availability of high quality public transport, cycle or pedestrian infrastructure, proximity of jobs, schools or commercial facilities) This article focuses on exploring the geographical variation of spatial characteristics associated with high levels of physical activity, applied to the Flemish region in Belgium, situated in the centre of Western Europe.

The recently adopted strategic vision document of the ‘Spatial Policy Plan for Flanders’ (Flemish Government, 2018) expresses the ambition to develop healthy urban places as an overall policy goal, and stresses the importance of enhancing environmental conditions that favour active mobility. The aim of our research is to develop an analytical tool to assess the geographical variation in walkability in Flanders in order to support the expressed ambition to incorporate health concerns in spatial policy, and planning practice.

Walkability

Intuitively what is meant by ‘walkability’ is clear. However in literature, research and planning practice different definitions are being used, mostly based on related yet sometimes divergent spatial concepts, assumptions or empirical evidence. (Forsyth, 2015) The term is for instance often associated or intertwined with concepts of liveable and sociable placemaking at a human scale (Jacobs, 1961, Gehl, 2010, Montgomery, 2013). These concepts link walkability to other positive outcomes regarding the quality of life for people living in these neighbourhoods, not only improving their physical health but also their mental and social well-being. Still not all neighbourhoods with a large amount of people going on foot is necessarily liveable or is designed to foster pedestrians. Furthermore not every neighbourhood providing a sound, safe and pleasant pedestrian infrastructure will therefore always induce a higher rate of active mobility or be able to grow into vibrant living environments.

Research in human movement sciences (Frank et al., 2006, Owen et al., 2007, Sallis et al., 2016, Van Dyck et al., 2010) indicate a significant positive correlation between the observed amount of people’s physical activity and specific objective spatial characteristics. The evidence shows people will more likely choose for an active mode of transportation (going on foot or by bike) for functional travel in neighbourhoods characterised by a high residential density, a high amount of different destinations and a high street connectivity. Other possible determinants such as a high amount of motorised traffic, a higher risk of injuries for pedestrians, or a lack of high-quality pedestrian infrastructure or urban greenery seem to have less influence on the amount of active mobility in a neighbourhood (Van Holle et al., 2012). This insight clarifies why urban design efforts will not necessarily increase the average amount of physical activity in a neighbourhood, but also why some environments which intuitively are not considered to be walkable still attract a fair amount of pedestrians.

In this article ‘walkability’ is used to indicate spatial characteristics of a neighbourhood associated with high levels of physical activity.

Methodology

Walkability is operationalised and computed by making use of the following formula: $\text{Walkability} = 2 \times (\text{z-connectivity}) + (\text{z-residential-density}) + (\text{z-land-use-mix})$. The calculation method is based on

earlier research by Frank *et al.* (2010), which has been modified and tested by Van Dyck *et al.* (2010) to suit the specific Belgian spatial context.

In our research walkability is computed for every neighbourhood in Flanders and visualised on a high density grid (100 by 100 meters) . ‘Neighbourhood’ is defined as an area consisting of adjacent hectare-cells reachable on foot within a 1 km radius from a cell over the road network. This method is preferred over a Euclid buffer to determine the neighbourhood size because it takes physical barriers (for instance railways, highways or canals) into account. Unreachable cells are not considered to be part of the cells neighbourhood. However using this methodology the walkability index is not computed for cells not accessible by the road network, although these cells could be part of a larger adjoined area (for instance the core of a public park) which in some occasions could be reached on foot.

Connectivity for active mobility (pedestrians and cyclists) refers to the directness, or the ease, to walk from one location to another (Saelens et al., 2003). Pedestrians tend to switch to other modes of transportation if the detour to their destination is too large. A high density of intersections provides pedestrians the opportunity to choose for short walking distances. Connectivity is calculated for every neighbourhood by the ratio of the number of true intersections (by 3 or more streets) to the neighbourhood size. Only those true intersections that can be crossed by pedestrians were selected from the Flemish road network register. (<https://overheid.vlaanderen.be/producten-diensten/wegenregister>, accessed on 30/05/2019)

In the prior research by Van Dyck et al. (2010) residential density is computed by the ratio of dwellings to the area designated for housing in zoning plans. Unfortunately this data is not available for the entire territory of Flanders. As a proxy our research made use of the population density (for the year 2017), being the ratio of the total amount of people living in the considered neighbourhood to the neighbourhood size.

Land use mix indicates the diversity of different kinds of land uses in the considered neighbourhood. To assess this feature an entropy index is computed which represents how homogenous or heterogenous the usage of a neighbourhood is. The higher the entropy index, the higher the diversity of land use. Following Frank *et al.* (2010) and Van Dyck *et al.* (2010) the entropy index is calculated by using following formula:

$$\text{Land use mix} = \frac{-\sum_{i=1}^k [(p_i) \cdot (\ln p_i)]}{\ln k}$$

p_i = area of a considered land use
k = total amount of different land uses

A selection of the land use data (for retail, offices, public services, leisure) collected in the research of Verachtert *et al.* (2016) provided a solid basis for the calculation of the land use mix in Flanders.

The eventual walkability index consists of z-scores for each cell, normalised in regard to other cells of the grid.

Results

Figure 1 shows the resulting map indicating the walkability index for every cell accessible on foot by the road network. The map also includes cells that are part of agricultural or natural areas. Considering the three spatial characteristics associated to active mobility, it is more interesting only visualising cells that are part of the built environment or for which urban development is made possible in zoning plans (figure 2).

As to be expected the map (figure 2) clearly shows the neighbourhoods with the highest walkability (indicated in dark blue) in Flanders are located in the urban centres of the most important cities. The historic centres have both a high street connectivity and population density. Also the land use mix in these neighbourhoods is high, due to an abundance of retail, offices, leisure accommodation and public services (schools for instance) serving not only the local neighbourhood but the larger city agglomeration. The map also shows the effects of *urban sprawl* on walkability. Overall neighbourhoods in the centres of smaller cities or villages (indicated in light orange) score better on the walkability index than neighbourhoods characterised by scattered spatial patterns or ribbon development (in brown). The latter more peripheral locations are very monofunctional (designated residential areas, retail ribbons or industrial areas), which also have a low population density and a very car-oriented street pattern resulting in less connectivity.

Comparing the scores of all neighbourhoods in Flanders (figure 3) it is notable that only a distinct number of locations score high on the walkability index. The majority of neighbourhoods in Flanders score very low in comparison to the city centres of Ghent and Antwerp (highest scores). Using the classification introduced by Pisman, Vanacker, Willems, Engelen, and Poelmans (2018) the differences in walkability in urban, suburban and rural areas in Flanders can be assessed (figure 3).

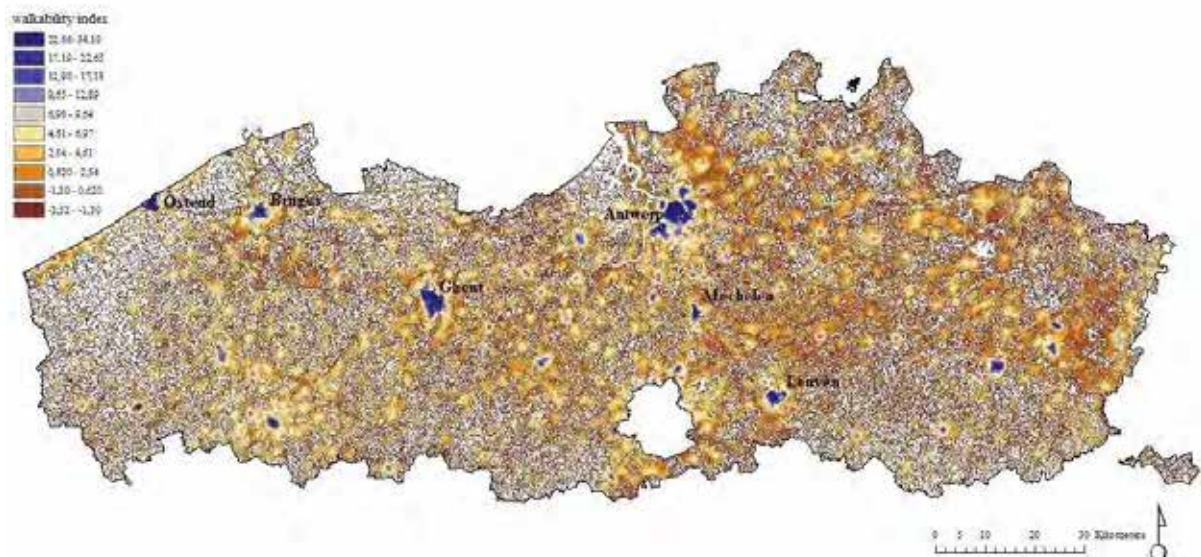


Figure 1: Walkability in Flanders, natural breaks (Jenks)

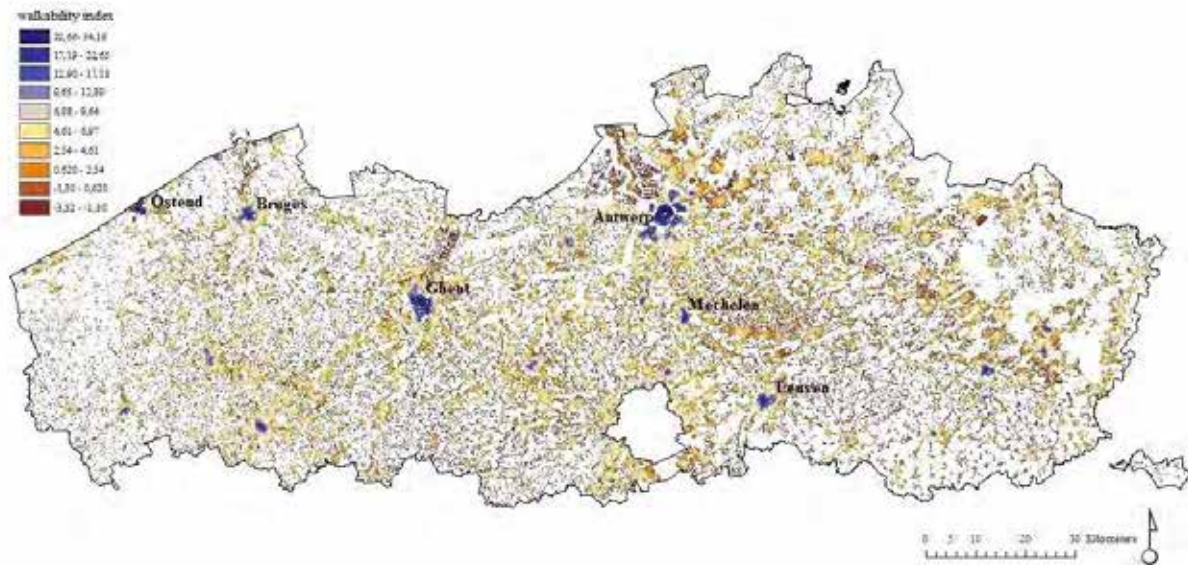


Figure 2: Walkability built environment in Flanders, natural breaks (Jenks)

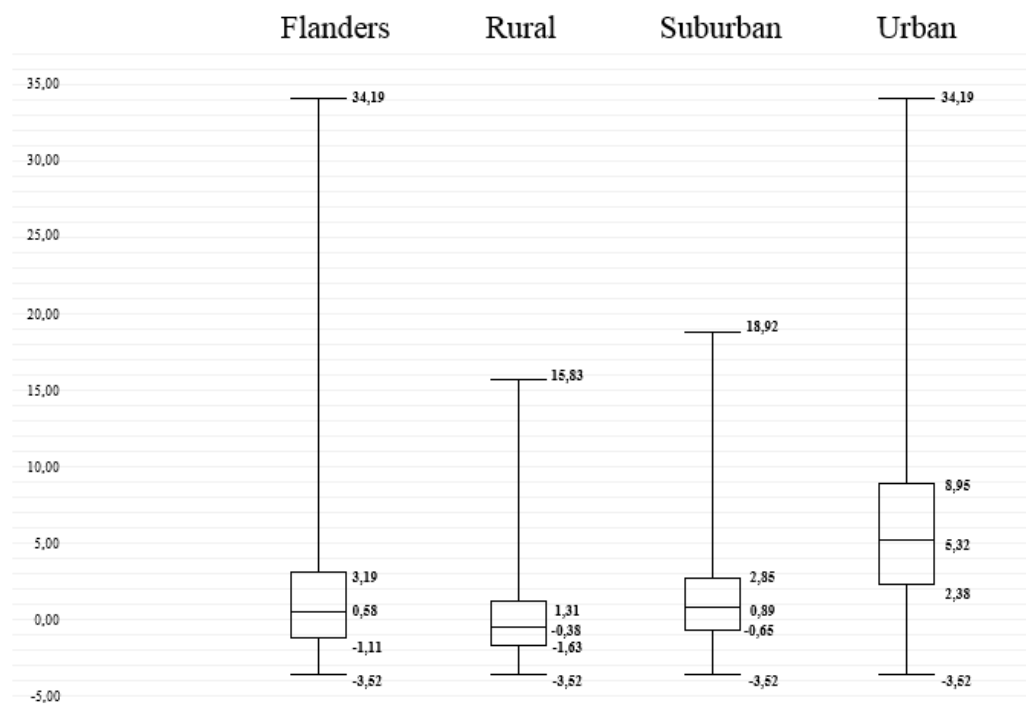


Figure 3: Box-Whisker-plots walkability index built environment in Flanders

In particular the urban areas score high on walkability. Although suburbs seem to score slightly better than rural neighbourhoods, the walkability in both categories is rather low. Nevertheless, there are also urban locations that remain below the Flemish median. Furthermore also some rural or suburban locations score as high as the most walkable neighbourhoods in the urban category (third quartile, walkability index above 8.95). Most of these high scoring suburban or rural neighbourhoods are actually situated in the centre of small historic towns and villages developed from a medieval dense spatial pattern which to date still have a local importance in terms of retail, jobs and public services.

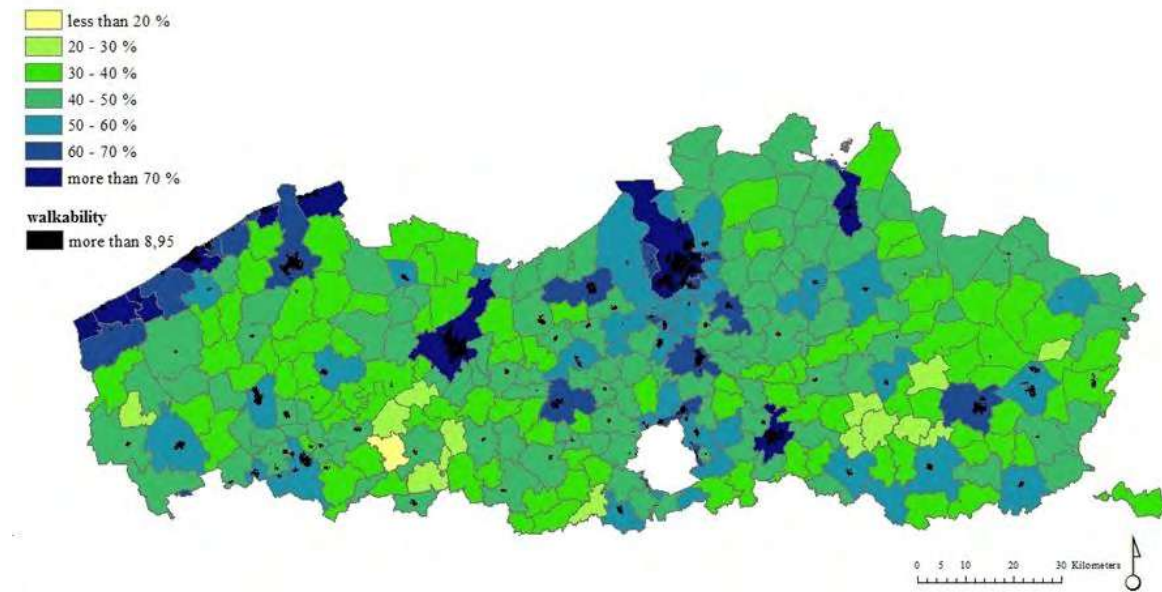


Figure 4: Neighbourhoods scoring more than 8.95 on the walkability index versus percentage of inhabitants per municipality reporting going on foot at least once a week, based on survey data retrieved from Agentschap Binnenlands Bestuur (2018).

Figure 4 shows the highly walkable neighbourhoods (walkability index over 8.95) compared to the reported active mobility in the municipality based on survey data retrieved from the Flemish Agency for Domestic Administration (Agentschap Binnenlands Bestuur, 2018). The largest clusters of highly walkable neighbourhoods are located in municipalities with a high percentage of inhabitants reporting going on foot at least once a week. For smaller clusters the relationship is less clear. In some municipalities there appears to be a higher rate of active mobility than expected based on the walkability index, at other locations the opposite is noticeable. More in-depth research can provide more insight into this. There may be other (spatial) characteristics influencing active mobility such as the urban design, the condition of pedestrian infrastructure or proximity of public transport. Also the different resolution (i.e. a survey aggregated at municipal level versus a walkability index based on a 1 km radius) can explain differences. Furthermore it is not inconceivable that a minimum size of "high walkability clusters" is required to effectively convince people to walk. Finally, it is probable that also non-functional journeys (i.e. walking for leisure) were reported in the survey, since all coastal municipalities (West on Figure 4) score high.

Walkability and spatial policy

It is probably for the first time in Europe that walkability is being mapped for a large region. Previous exercises were limited to a city or city region. Nevertheless, mapping on a regional scale also provides added value for *regional spatial policy*. It indicates places that already favour active mobility today. Our research proves the number of locations in Flanders scoring high on walkability is rather limited. Furthermore except for highly urbanised city centres the existing locations are also very limited in terms of size. The strategic vision document of the Spatial Policy Plan for Flanders (Flemish Government, 2018) focuses on public transit oriented development. Furthermore it emphasises future spatial developments have to enhance liveability, reduce health hazards, ensure more social inclusiveness, *favour active mobility* and provide a higher amount and quality of urban green spaces.

Recent research (Verachtert *et al.*, 2016) indicated high potential locations for future transit oriented development (TOD) in Flanders. These locations are close to high quality public transport hubs and have a high level of facilities in the vicinity, figure 5 shows a clear overlap with locations of high walkability. Nevertheless most of the indicated high potential locations for transit oriented development lack a high score on the walkability index.

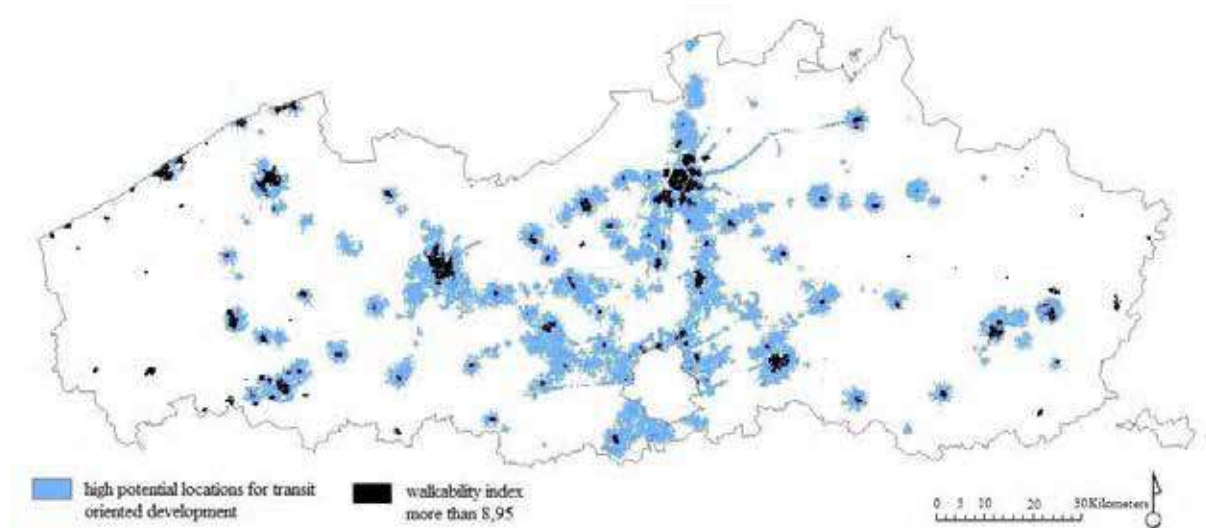


Figure 5: High potential locations for transit oriented development in terms of proximity of high public quality public transport and a high level of facilities – ‘A-Quadrant locations’ in Verachtert et al. (2016) versus highly walkable neighbourhoods.

For sustainable and healthy urban policy in Flanders walkability evidence is an added value to guide strategic development. Within the high potential locations for transit oriented development a focus on locations with a decent walkability score, or locations of which the score could be significant enhanced, will result in more active mobility. As mentioned before a walkable neighbourhood is not necessarily a liveable or sociable neighbourhood. It is however an excellent spatial condition for further spatial developments at a human scale. Moreover it will decrease car dependence, which will also have a positive effect on the use of public transport for the longer distances. At the regional scale (Flanders) this means the transformation of the urban sprawl pattern to a more dense and concentrated development at specific strategic locations must be placed central and high on the future spatial policy agenda.

Also at a *supra-local or local policy* level (e.g. a city-region, city or municipality) insights in the geographical variation of walkability provides a basis for a differentiated spatial policy for sustainable and healthy urban development of neighbourhoods. Locations characterised by a sufficiently high residential density, street connectivity and land use mix are less car dependent. Densification should therefore in the first place be considered in neighbourhoods that already have a substantial level of walkability while ensuring the improvement of other important conditions for liveability (e.g. high quality public space, safety, urban green space, absence of environmental nuisance,...). In addition these neighbourhoods are the best locations for investments in pedestrian friendly infrastructure as more active mobility is to be expected.

For example examining the walkability within the municipality of Mechelen, (a medium sized city located in the centre of Flanders, South of Antwerp, North of Brussels – figure 6) clear differences

between the city centre (dark blue) and the surrounding villages are visible. The city centre, but also the neighbourhood Spreeuwenhoek, score high on walkability. But there are also differences in walkability between the surrounding villages. Muizen, Hombeek and Walem have a larger central more walkable cluster than Heffen or Leest. Very low walkability scores are noticeable in the residential ribbons surrounding Heffen, Leest and Hombeek. Urban policy promoting active mobility should be well aware of these differences, concentrating developments foremost in the central blue or light orange areas and to a lesser extent in the more walkable centres of the surrounding villages. Also investments in pedestrian friendly public spaces should in the first place be considered in these distinct areas. High quality public transport or bicycle connections from the villages to the city centre could be introduced or enhanced. In the darker brown areas, which have a very low walkability, a cautious assessment of the desirable spatial development perspective is appropriate.

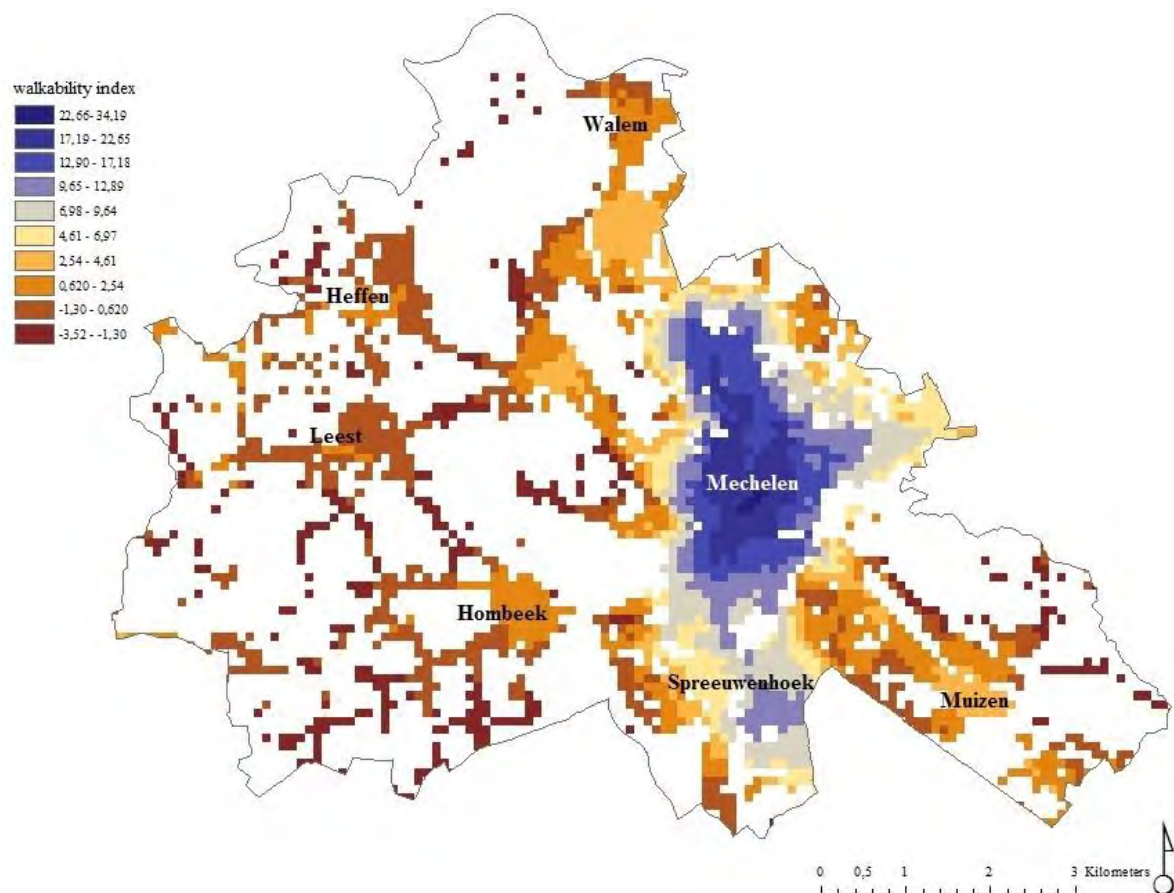


Figure 6: Walkability index for the built environment in the municipality of Mechelen, natural breaks (Jenks)

Another consideration from a health perspective to guide local spatial planning initiatives improving walkability is an assessment of the socio-economic status (SES) in different neighbourhoods. People of lower socio-economic status are more vulnerable to several health hazards (i.e. because of budget restraints which affect their diet, housing quality or access to drugs and medical advice) (Pampel et al., 2010). Increasing the walkability in low SES neighbourhoods will increase possibilities for active mobility, thus effectively improving health conditions for a vulnerable group.

Governance and dissemination

Achieving the policy goal to develop healthy urban places (i.e. neighbourhoods with increased levels of physical activity) in Flanders relies very much on the capacity of the local policy level to address the issue. The Flemish policy level outlines guidelines for spatial planning, is responsible for policy interventions in areas of regional importance and supports the local institutional level achieving policy goals, but the lot of planning initiatives and spatial projects in Flanders are carried out at the municipal level. There are 300 municipalities in Flanders: larger cities like Antwerp (over 515.000 inhabitants) and Ghent (over 255.000 inhabitants), but mostly smaller towns and cities. The administrative capacity and resources of these municipalities are unevenly distributed. To enable all local governments to access the walkability data for their municipality an easy accessible open-source online tool was developed based on the resulting maps (<https://walkability.marvin.vito.be>). The tool can be used to assess the walkability and to compare neighbourhoods within a municipality or in reference to other towns and cities. It gives insight in the underlying three environmental features (connectivity, residential density, land use mix) of a neighbourhood providing evidence to improve the local walkability. The data is also made available enabling municipalities with more technical resources a more thorough analysis possibilities using their own GIS-system. The tool was tested and adjusted in cooperation with civil servants in five municipalities of different scales.

The walkability evidence and the online-tool is actively disseminated and promoted by the Flemish Institute for Healthy Living, the Department of Environment and Spatial Development Flanders and the Flemish Agency for Public Healthcare to policy makers, civil servants, private organisations and citizens as part of a larger project on healthy public spaces.

Conclusion

Based on prior evidence (Frank et al., 2010, Van Dyck et al., 2010) linking neighbourhood characteristics to increased levels of physical activity our research succeeded in mapping a walkability index for the entire region of Flanders (Belgium). Overall the research reveals walkability throughout the region is rather low. Nevertheless clear contrasts between more walkable centres of small villages and towns and peripheral scattered spatial patterns or ribbon development with a very low walkability level is noticeable. Neighbourhoods scoring best in terms of walkability are mainly located in urban city centres. The number of neighbourhoods in Flanders scoring very high on walkability index however is limited. Except for highly urbanised city centres these highly walkable neighbourhoods are also very limited in terms of size. The high resolution map also enables analysis of walkability at a municipal level, as a basis for a differentiated spatial policy for sustainable and healthy urban development. Urban policy promoting active mobility should be well aware of the spatial differences throughout the territory, concentrating developments foremost in the more walkable neighbourhoods or actively enhancing walkability conditions at locations selected for densification.

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Research of an Indicators System for the Compact Urban Form based on the Healthy City Criteria

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Abstract: The compact city theory develops different connotations in different eras. In the information age, the way people live has changed, which leads to the reconstruction of urban functions and forms, and therefore it is necessary to develop the compact city theory accordingly. This thesis firstly reviews the development history of compact city theory in different eras, and then explores the impact of information age on urban functions and forms, and considers that living space of people has changed from real physical space to physical space integrated with virtual network space in the information age. Finally, it is concluded that function division in the future city will be more blurred, land use will be more compatible and mixed, and the city's structure develops from single center to multi-center or homogeneous center network, based on which new measurement index for compact city is proposed to measure compactness of city in the information age.

Key words: compact city, virtual network space, urban form, Internet

1.Introduction

China has a huge population of Internet users. The 43th Statistical Report on Internet Development in China issued by China Internet Network Information Center (CNNIC) shows that as of December 2018, China has 829 million web users, with the penetration rate of 59.6%, and has 871 million mobile-phone subscribers, with internet access rate by mobile phone of 98.6%. The rapid development of Internet and related information technology industry has brought new changes and experiences to the life of citizens. Working is not limited in physical space and video conference becomes quite common. Due to rapid development of e-commerce, citizens can directly buy goods and meals in any store in the city through APP, and these goods and meals can be delivered to them within half an hour. In addition, citizens can directly pay the phone bill, Internet access fee, and water and electricity charges online with mobile phone, and it is unnecessary to go to the business office. Information network technology helps citizens

to break through the constraints of physical space and influences the distribution of traditional urban functions. Since urban form is undoubtedly the most direct reflection of social conditions in urban space, exiting study of urban form is not suitable to cities in the new era and new explorations should be proposed.

2 Development History of Compact City Theory

2.1 Origin and Development of Compact City Theory

2.1.1 Origin of Compact City Theory: Industrial Revolution

After the second industrial revolution, internal combustion engine fueled by gas and gasoline occurred and automobile became popular vehicle for the public. Convenient traffic has greatly changed the way people live, promoting communications between people and enlarging the scope of activities of people. After the 1950s, automobile became the popular vehicle for the public and cities developed into transport-oriented pattern from small, crowded classical city. It also brought negative effects, such as sprawl and blind expansion of city, low-efficient land use in suburb, decline of downtown, repeated construction of municipal facilities such as roads and plumbing pipelines in new area. People began to learn how to face and solve these new problems.

In 1973, George B. Dantzi and T.L.saaty wrote Compactcity: Aplanfora Liveable Urhan Environment, and in the same year, he explained the theory of compact city in the lecture of The ORSA New Orleans Address on Compact City. He proposed to achieve concentrated construction of urban infrastructure by controlling the size of city and increasing population density and reduce the use of cars by automatic transport system covering the whole city, which can be considered as pioneer of compact city theory.

2.1.2 Development of Compact City Theory: Impact based on Sustainable Development Concept

Since the middle of the last century, urban environmental problems have been worsening, and a series of problems such as resource crisis and land desertification began to threaten human survival. In 1987, the world commission on environment and development first elaborated the concept of sustainable development in its report "our common future", which has gained broad consensus from the international community.

Under the background of sustainable development, the European Community Commission issued the Green Book of Urban Environment in 1990, which regarded compact city as "a solution to residential and environmental problems" and considered compact city as a sustainable urban form (European Commission,1990). After that, "compact city" has become the focus of many western urban planning and research of scholars, gradually changing from a vague idea to a theoretical system with certain depth, and is regarded as the thought and principle of urban planning by many cities and scholars.

2.2 Connotation and Framework of Contemporary Compact City Concept

The theory of compact city is an urban planning theory of urban sustainable development strategy and a systematic urban space construction method proposed in the process of

contemporary urban development aiming at a series of environmental, economic and social problems caused by urban sprawl (Jun JIN,2017). Up till now, unified definition of compact city hasn't been proposed. From the understanding of domestic and foreign scholars of the concept of compact, mixed-used urban functions (Chuanglin FANG,2007), intensive urban form (Wei LANG,2017)and high urban density (Lin LI,2012) are the consensus of domestic and foreign scholars about the compact city theory, also the study of compact city is mainly conducted around the functional structure of city and spatial form.

3 Urban Space under Impact of Information Age

In the context of the information age, the influence of the Internet on cities can be roughly divided into the following two aspects. (1) the rapid development of Internet information technology and related industries has changed the lifestyle of urban residents. As the main carrier of human activities, the huge changes in urban residents' production and life will inevitably lead to the reconstruction of urban functions and forms. (2) the "virtual space" formed by the Internet is interwoven with the geographical space of the real city, which influences and promotes each other and forms an informationized city under the background of the new era.

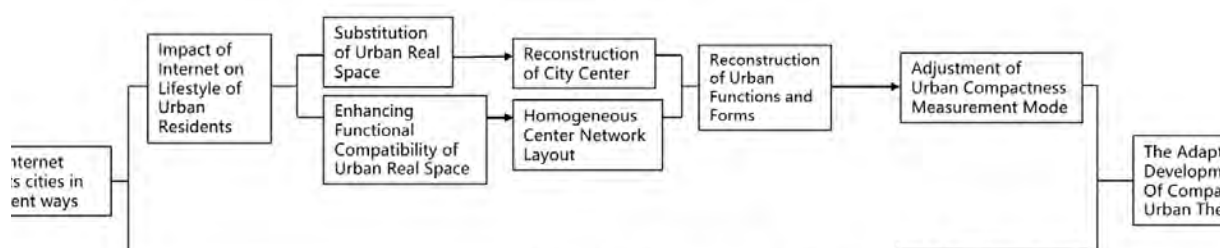


Figure 1 Concept map

3.1 Impact of Internet on Lifestyle of Urban Residents

The biggest impact of network information technology to the lifestyle of urban residents is that the "virtual space" which is formed by it is distinctly different from traditional physical space defined by entity, distance and the boundary. It specifically refers to the online virtual information space built by human by virtue of information media internet based on integration of many technologies, and its virtuality, instantaneity and interaction is transformative (Yaoyu LIN and Jiaming WU,2010). The impact on the life and work of urban residents mainly includes the following two aspects:

3.1.1 Substitution of Urban Real Space

The virtual network space has intense substitution effect to partial reality spaces in cities. Namely, partial of original pedestrian flows may realize through the virtual network space. The substitutable pedestrian flows have the inevitability of non-face-to-face communication and the network performability of behavior activities. In real life, a lot of pedestrian flows can be realized through virtual network spaces. For example, WeChat group and QQ group can be

regarded as the transfer of physical space for friends to meet and chat in the real world into the virtual space. Internet shopping platforms such as Taobao and JD can be regarded as the transfer of real shopping malls and supermarkets into virtual space. Similarly, the opening of online payment for urban public services such as mobile phone bills and utility bills can also be regarded as a substitute for the traditional public service spaces.

3.1.2 Enhancing Functional Compatibility of Urban Real Space

Traditional urban physical functions are divided into four major categories: residence, work, recreation and transportation. Under the background of informatization, hidebound classification and layout are abandoned by traditional physical functions in cities, which develop towards mutual compatibility and function integration. Production domain and current domain blend gradually, and living space and working space are compatible. For example, integrating working and living, SOHO (home office) mode rises mainly due to the development of network information technology. Further mixing of various leisure and entertainment spaces in cities is also the trend of urban development in the information age. For example, a large number of complex buildings integrating retail, leisure and culture appear in cities.

3.2 Reconstruction of Urban Functions and Forms

3.2.1 Reconstruction of City Center

Functions of traditional city center are mainly concentrated on retail, entertainment and office. Basically, difference of center level could be regarded as difference of commodity and entertainment quality and level. However, with rapid development of e-commerce and improvement of commodity and service capability provided by e-commerce, daily demands of citizens are beginning to be gradually replaced by internet, and their travel purpose will also be changed. Initially, internet weakens citizens' demands for going out to purchase daily articles and clothes. Later, they purchase home appliances and mobile phones at home. Now, they are even able to book three meals a day, nail beauty and physical therapy services at home. It means that certain demands that could not be replaced by internet, such as sports, education and outdoor activities, will become main travelling purposes of citizens. Functional focus of city center will shift towards personal experience program. Proportion of traditional retail and entertainment programs will be decreased, and such programs shall be shifted to high quality experience program, such as brand flagship stores, large stadiums, theaters, and large park green spaces that pay attention to personal experience.

3.2.2 City Developments From Single Center Towards Homogeneous Center Network Layout

Considering that great increase of compatibility of urban functional spaces leads to mutual mixing and complementation of residential district, business district, office district and sci-tech park, city layout tends to present multi-center network form and city expansion towards peripheral areas also presents multi-polarization composite development trend. With support of advanced telecommunication and transportation network, business activities in the city will be more scattered spatially in information age, and urban space structure will be gradually

developed towards balanced and scattered direction, and be shifted from single center to multi-center and later networked open space structure.

3.3 Duality of City in Information Age

Original urban physical space is interwoven with virtual space formed by information network. However, there is a certain degree of separation between the two types of spaces. The people therefore have dual identities, namely the citizens and the netizens, and the city itself has many expressions of the two different forms, namely street network and internet, physical store and online store, physical bank and online bank, hospital and remoted medical service platform, stock exchange and electronic transaction system, physical site work and online work. New information network space, and physical urban spaces formed by bricks, concrete and rebar coexist and complement with each other, presenting unique “dualized city” feature of information society.

4 Adaptation of Compact City Theory to City in Information Age

According to the influence of the Internet on cities in the information age, the theory of compact city should be developed and optimized accordingly.

4.1 Adjustment of Urban Compactness Measurement Mode

From the perspective of city planning, functional compactness of city is to configure and organize urban functions stipulated in master plan of the city. In current city development, scientific and reasonable planning requires arrangement of main city functions in different zones as per master plan of the city. Different urban area undertakes certain main city function. Previous functional compactness of compact city mainly refers to overall functional mixing in city level or highly functional compactness in certain urban area, such as downtown area.

Internet increases functional compatibility of urban spaces and obscures original functional zoning concept of city. Compatibility of production and logistics areas (retail space) of the city will become more and more prominent. Boundary and spatial concept of work, entertainment, living and leisure areas will be more obscured. Most urban functional spaces will be shifted to present interdependence and integrated development relationship (Zhongwei SUN,2007). Highly functional compactness of the city and blocks will be developed towards more micro direction, viz. create one space that could satisfy multiple demands, such as living, work and leisure demands at the same time.

4.2 Add The Measure Of The Virtual Space Of The Internet

The city under the information age is composed of real space and virtual space. The transformation of urban residents' lifestyle from traditional reality mode to reality and virtual integrated mode is the root of change. The virtual space breaks the concept and connotation of the traditional urban space, and complements and competes with the existing material space piled up by bricks, concrete and steel to form a new urban space, replacing some cities and their building space. The urban area is expanded in an intelligent way, with higher space efficiency and stronger comprehensiveness (Le CHE and Zhiqiang WU,2015).

The virtual space formed based on information technology saves a lot of physical space, but makes the city more compact and efficient. In the real world, the virtual space is not visually expressed and is imperceptible. However, in the study of the compactness of the city, this part of the “space” has a great impact on the city, particularly, the relevant measure of the city compactness. .

4.3 Preliminary Assumption on Measurement Index of Compact City

4.3.1 Mobile 2-dimensional Code Transaction Volume Per Unit Area

According to the 2018 Mobile Internet Payment Security Survey Report issued by China UnionPay, 570 million people in China use mobile phones to pay at present. Of the 100,000 questionnaires, 82% respondents have used mobile payment, which is much higher than fast payment and E-bank payment. Therefore, it is reasonable to use the relevant data of mobile payment as the coupling point between the virtual space of the Internet and the real world. The report also shows that 2-dimensional code payment has accounted for 70% of mobile payment, covering almost all types of mobile payment. By analyzing the transaction volume big data of the 2-dimensional code payment, it can indirectly reflect the usage amount of the Internet virtual space in a certain area, and provide basic data support for the compactness measurement of the virtual space.

The calculation formula is

$$D = \frac{Qc}{A}$$

D—Density of qr code trading volume

Qc—Qr code trading volume

A— The area of the area to be measured

4.3.2 Mobile APP Downloading Volume and Diversity Per Unit Area

Different APPs can provide different types of Internet services, which indirectly reflect the impact of virtual space on the real world. For instance, by analyzing the downloading volume of instant delivery and meal delivery APPs (such as Ele.me, Meituan, etc.), it can reflect the compatibility of catering and other functional spaces in urban commerce; by analyzing the downloading volume of online shopping APPs (such as Taobao, JD, etc.), it can reflect the compatibility of urban commerce and the other functional spaces; according to the downloading volume of real-time communication APPs (WeChat, mobile QQ, etc.) that breaks through the interpersonal isolation of physical space, it can reflect the real-time communication degree of the urban residents of certain areas in the Internet virtual space.

The calculation formula is

$$I = \frac{Ains}{A}$$

I—A certain type of APP installation density



Ains — *A certain type of APP installed*
A — *the area of the area to be measured*

$$V = \frac{\sum_{x=1}^m x}{N} \quad (m < x)$$

V — *The diversity of APP*

m — *Types of apps owned by a single user*

x — *Total APP type*

N — *Total number of respondents*

5 Conclusions

In the information age, the post-human living space has realized the transformation from the real physical space to the spatial mode of the virtual space of the network and the real physical space integrated. The thinking mode of the researchers, planners and managers also needs to change from reality to semi-realistic and semi-virtual mode. Moreover, we shall also pay close attention to the development trend of modern information technology, so as to control the direction of urban development and planning.

The compact city theory has developed under the different background of different times. As Castells (2001) said, "the expression form of architectural space changes with the rise of informational cities. In the next few years, architecture and design are likely to be redefined in terms of form, function, process and value. " The advancement of information technology and the popularity of Internet have changed the lifestyle and give us new insights and reflections on the changed urban spatial form and the virtual space that cannot be directly observed in real space. Therefore, the adaptive development of compact urban theory is a matter of course.

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Walking in Shanghai : street planning and design based on walkability

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Abstract: In the process of rapid urbanization, urban traffic emphasizes the development of motorization and neglects the important health effects of non-motorized transportation systems. The impact of automobile traffic on urban ecological environment and walking environment cannot be ignored. This not only causes serious air pollution, but also leads to a decline in the health of residents. Before the car became popular, walking was the most important way for city residents to go out. Residents walk not only to reach their destination, but also to socialize and exercise on the road. Improving the walking environment will enable people to choose more green ways of travel. It allows them to communicate with others while walking, which helps the residents' mental health and enhance community cohesion. This paper explores the importance of walking ability to improve the health of urban residents, and points out that walking cities are an important part of building a healthy city. By studying the practice and design guidelines for improving the walking environment in Europe and the United States, and using Shanghai as a case, explore how to transform an international city into a livable and healthy city. And what are the shortcomings in Shanghai's current street design guidelines.

Keywords: walkability; healthy city planning; walking environment

Introduction

In 1987, the World Health Organization (WHO) established the "Health Cities Project" for the first time. The researcher of this project suggested that, "Where people live affects their health and chances of leading flourishing lives. Communities and neighbourhoods that ensure access to basic goods, that are socially cohesive, that are designed to promote good physical and psychological wellbeing, and that are protective of the natural environment are essential for health equity."^[1]

In Europe, the Healthy City Project has a five-year development phase and has consistently achieved the goals and outcomes of each phase. This project has changed the traditional urban planning to focus only on the concept of urban economic, social and cultural construction. People are beginning to realize that planning should also target health promotion. Planners should strengthen their focus on public health, integrate healthy development into urban construction, and achieve a healthy built-up environment and promote public health as a foothold for healthy urban planning.

The rapid advancement of industrialization and urbanization has brought rapid economic growth to the world's major cities, and has also brought about increasingly severe urban environmental pollution, motor vehicle traffic pollution, and urban ecological imbalances. Whether a city is healthy depends not only on the medical and

health fields, but also on the urban ecological environment, the transportation environment and the social environment.

The urban walking environment is the most basic environment for people's lives, but it suffers from the imbalance of serious damage and development. How to improve the quality of urban walking environment, how to coordinate the relationship between urban pedestrian built environment and public health has become an urgent question to answer. At present, developed countries in Europe and America have produced many excellent walking environment practice and design guidelines, which have good guiding significance for developing countries. Comparing the current situation of Shanghai's walking environment with the implementation of the "Shanghai Street Design Guidelines" and the experience of Europe and the United States, it will be able to further guide the pedestrian environment in Shanghai to further deepen and improve, and to explore the construction of a healthy international metropolis.

Methods

This paper adopts literature research method and inductive method to collect and study a large number of literature materials and scientific research results, and conduct comprehensive analysis and in-depth summary of the theoretical and practical progress of pedestrian environment planning and construction at home and abroad. Then use the method of comparative analysis to judge the characteristics of Shanghai's walking environment and study the feasibility and operability of the Shanghai Street Design Guidelines. The guidelines are supplemented and revised by the evaluation results to further deepen and improve the guidelines.

Text format

The contradiction between motorized traffic and healthy cities.

Among the factors affecting the urban environment, motor vehicles occupy a high weight. Since the German engineer Carl Benz has invented the world's first car, the car has been on the planet for more than 100 years, and the number of cars continues to grow. Taking China as an example, in the past five years, the annual increase of motor vehicles has increased by more than 15 million, and the average annual increase of drivers has reached more than 20 million. The number of motor vehicles in the country has reached 264 million, including 154 million vehicles. 300 million people, including more than 246 million motorists.

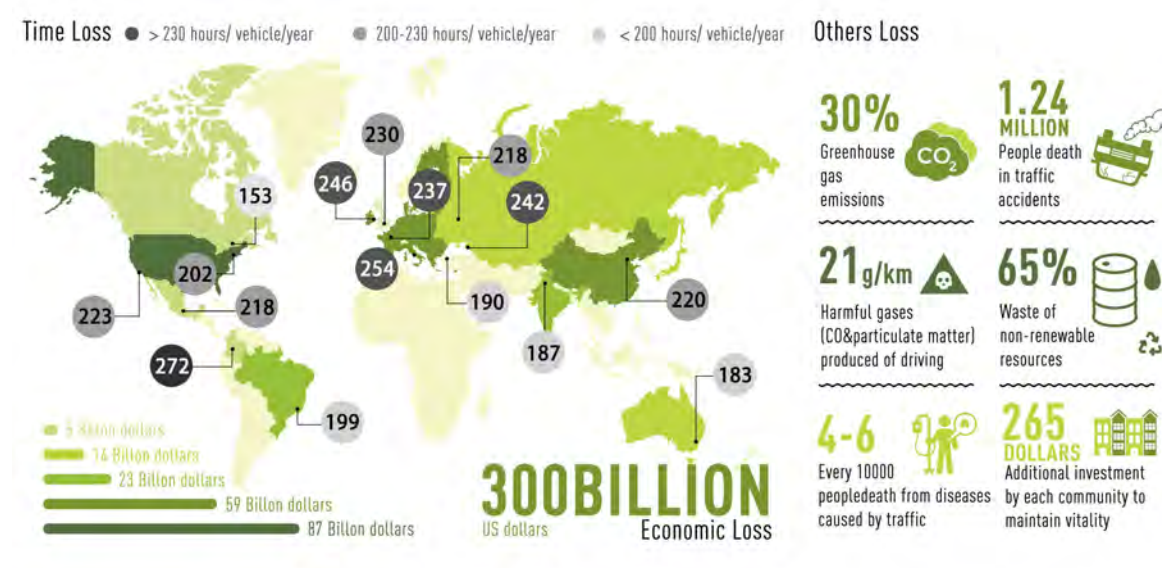


Fig1. Loss caused by traffic jam

The huge impact of such a huge number of vehicles on the city is terrible. The most intuitive negative impact is the waste caused by congestion. According to statistics, citizens in big cities around the world spend more than two hundred hours a year on congestion. At the same time, congestion also brought high economic losses. The United States loses about \$87 billion a year, and the United Kingdom loses about \$5.5 billion a year. In other countries, about 2% of the gross national product is wasted on congestion.

Compared with obvious congestion, the negative impact of motor vehicle traffic on urban health is even more serious.

70% of urban air pollution comes from automobile exhaust. Of the car's emissions, 90% come from diesel exhaust particles, DEP. These pollutants are mainly caused by incomplete combustion of automobile fuels. The main components are carbon monoxide, hydrocarbons, nitrogen oxides, carbon dioxide, lead, fine particles and the like. Among these pollutants, particulate matter that can enter the lungs has the greatest impact on human health. In the past 100 years, the incidence and mortality of airway allergic diseases have increased significantly.^[2]

Researchers have observed PM2.5 in 185 countries. By assessing the link between particulate matter emissions and average life expectancy in each country, researchers can speculate on the impact of air pollution on the global average life expectancy. They confirmed how air pollution drastically shortens the life expectancy of the global population and draws the conclusion that humans have lost their lives on average for about one year. The study also highlighted the benefits of improving air quality for older people. For most Asian countries, if air pollution is no longer a risk of death, the likelihood of a 60-year-old person living 85 years or older will increase by 15% to 20%.^[3]

At the same time, motor vehicle traffic has also had an indirect negative impact. The first is that most of the motor vehicles are driven in densely populated areas of the city. Considering that the pollutants in the exhaust gas are mainly spread through the ground through mechanical diffusion and thermal turbulence, pollutants in the traffic micro-environment, such as inside the vehicle and on both sides of the road. The concentration is much higher than the environmental background concentration, which greatly increases the health risks of residents exposed to high concentrations of pollutants.

The second is because the changes brought by the car to the street are subversive and systematic, and the traditional urban space and street structure are gradually being disintegrated. Streets lack human participation and applicability, and urban residents are increasingly prone to health crises such as tension, anxiety, depression, and insecurity. People are no longer willing to stay in the city street space. This has led to a continuous decline in the mental health of urban residents.

Benefits of a good walking environment

The shaping of the walking environment is an essential part of building a healthy city, which is embodied in the three aspects of society, economy and environment.

In terms of environment, pedestrian-preferred urban construction can reduce motor vehicle travel, reduce road congestion, and reduce carbon emissions. Despite all kinds of technical means, walking priority is still a cheap, operational, and important way to cope with energy shortages and climate change, reduce pollution and noise, increase safety and mobility.

On the social front, walking priority can reflect social equity. Walking is an integral part of many people's lives. The walking system can meet the needs of all sectors of society. The most vulnerable groups benefit the most from the construction of the walking system. Although the middle and lower classes cannot participate in the planning process, policy makers should still look at walking. Walking can also enhance the vitality of the

community, which is more beneficial to people's mental health. Walking can be cheap, convenient, and thief-lower to reduce the risk of obesity and promote physical health [4], and the World Health Organization also recommends replacing some medications by walking every day. Related studies have shown that the reduction of walking will increase the risk of chronic diseases such as obesity, arteriosclerosis and arrhythmia, which directly affect the health of urban residents. Corrective analysis showed that people walking or cycling to work were significantly less likely to have obesity, high blood pressure and diabetes than those who commuted to work by private transport. Walking to and from work is positively correlated with the health of men and women, and negatively correlated with male body mass index (BMI), obesity, triglyceride, blood pressure and insulin levels.

On the economic front, the relevant research shows that the same amount of money, invested in the construction of the walking system is far more helpful than the other places to the health of people [5], can bring long-term financial benefits.

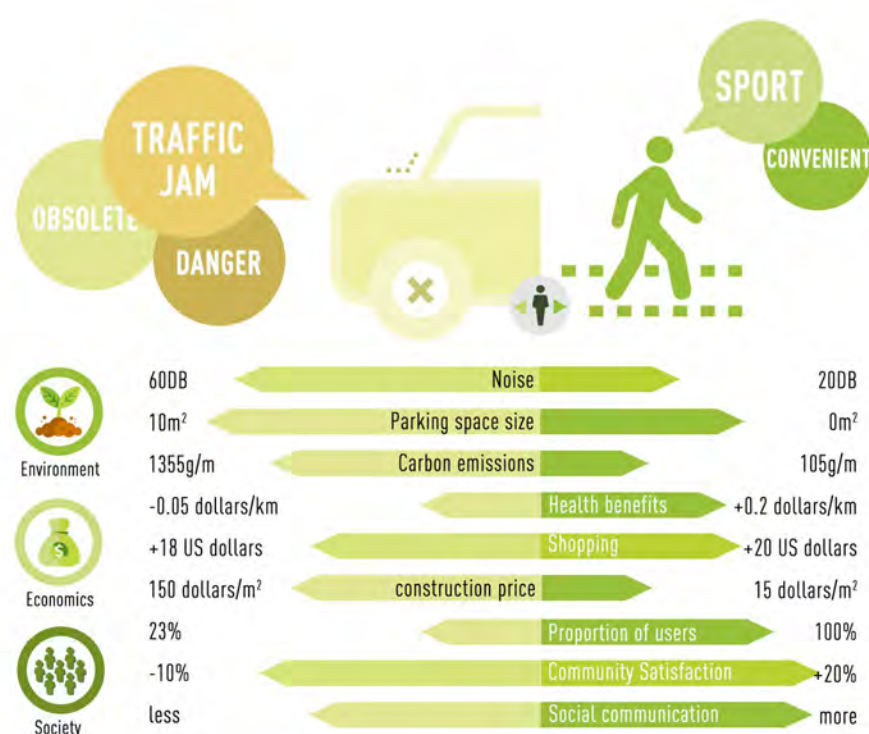


Fig2. Comparison of differences between cars and walks

Actions and guidelines to improve the walking environment

Motor vehicle-oriented traffic planning has caused such a bad negative impact, and walking has so many health benefits. In Europe, a series of practices to correct mistakes began. Urban builders provide a healthy lifestyle by improving the walking environment, thereby alleviating the health challenges of urbanization.

In 1978, the Austrian capital of Vienna began construction of new motor vehicle lanes to alleviate traffic congestion in the city. At the same time, it also introduced a free policy for parking lots in the city center. This erroneous policy led to a deterioration in urban air quality, a significant increase in traffic accidents and peaked in 1994. Some residents moved out of the city center due to the deteriorating living environment. After realizing the seriousness of the problem, the municipality of Vienna began to pay attention to the impact of non-motorized traffic on urban health. The new car-free zone is set in the city centre, and the expensive parking costs

have also brought about a fundamental change in the way the citizens of Vienna travel. 60% of the citizens began to use the green way to enter the city center, the air quality and the urban environment have been improved, and Vienna has regained its charm and vitality. The Vienna government proposed that in 2025, the proportion of citizens using public transport, bicycles or walking will reach 80%; personal car travel will be reduced to 20%.

Not only Austria, France, the Netherlands, Germany, the United Kingdom, India and other countries have proposed plans to reduce the use of motor vehicles. In 2017, the world's major cities planning to build car-free cities at the World Economic Forum reached 12, including Oslo, Madrid and Chengdu, China. In 2018, the Mayor of London clearly stated in the transportation strategy to reduce motor vehicle traffic on London roads, improve air quality, and achieve urban goals of zero carbon emissions; more importantly, roads must be designed to promote people's health. activity.

The United States has also proposed design guidelines for promoting walking, and "health promotion" as one of the important goals of urban planning, and released a series of guidelines for space design actions to promote health. Among them, New York's "Active Design Guidelines: Promoting Physical Activity and Health in Design" and Los Angeles's "Design a Healthy LA" are two representative design guidelines.

The Active Design Guidelines believe that promoting the use of transportation and related activities (such as walking and cycling will give commuters the opportunity to perform physical activities. Due to differences in social status and economic level, different groups of people have gymnasiums, gymnasiums, etc. Site accessibility and use are different. Sometimes this limits people's choice of physical activity and thus has a greater impact on health. But physical activity depends mainly on the design of walking, cycling and public transportation systems. It is possible to push people to choose these healthy ways of travel.

In the Active Design Guidelines, the principles of health-oriented include increasing the density of roads from a macroscopic level, creating as many pedestrian passages as possible, and setting up isolation zones (trees, etc.) between motorways and walkways as much as possible. reducing the impact of traffic exhaust and noise on human health.

Based on the Active Design Guidelines, major cities in the United States have developed transportation and public space designs that promote active lifestyles. For example, the "Play Streets" project in New York in 2010 used urban roads to provide public space for the public, for low-income people and lack of Community residents of the recreational venues provide an activity venue for physical exercise.

Design a Healthy LA was released in 2013 by the Urban Design Studio of the Los Angeles Urban Planning and Development Department. It is the basic construction manual for the authorities to improve the health of residents by creating environmental space design. From the perspective of urban design, the manual proposes interventions in the three spatial latitudes of buildings, streets and blocks. Because the designer believes that people of all ages and people with different activities can participate in the walk, it is proposed to establish a continuous and rhythmic walking facilities and provide benches. This is especially important for older people or pedestrians who need frequent breaks. The safety of travel is also an important factor in promoting travel. Implementing measures to reduce vehicle speed has created a safe street for pedestrians. Configure pedestrian lighting facilities and road signs to help pedestrians identify where they are heading and improve safety. "Design a Healthy LA" also pays attention to the environment and culture of the neighboring units, and hopes that walking can stimulate the vitality of the neighborhood.

Shanghai's walking environment practice and design guidelines

Shanghai is an international metropolis with a blend of history and modernity. Before the opening of Shanghai, it was a meteorological situation in Jiangnan Water Town. The staggered rivers and streets together constitute

the transportation system of the time. Since the opening of Shanghai in 1843, the Anglo-American legal concession has been established and expanded. The public concession streets are mainly square grids, which conform to the original terrain. The French Concession incorporates radial roads and straight lines in the road network.

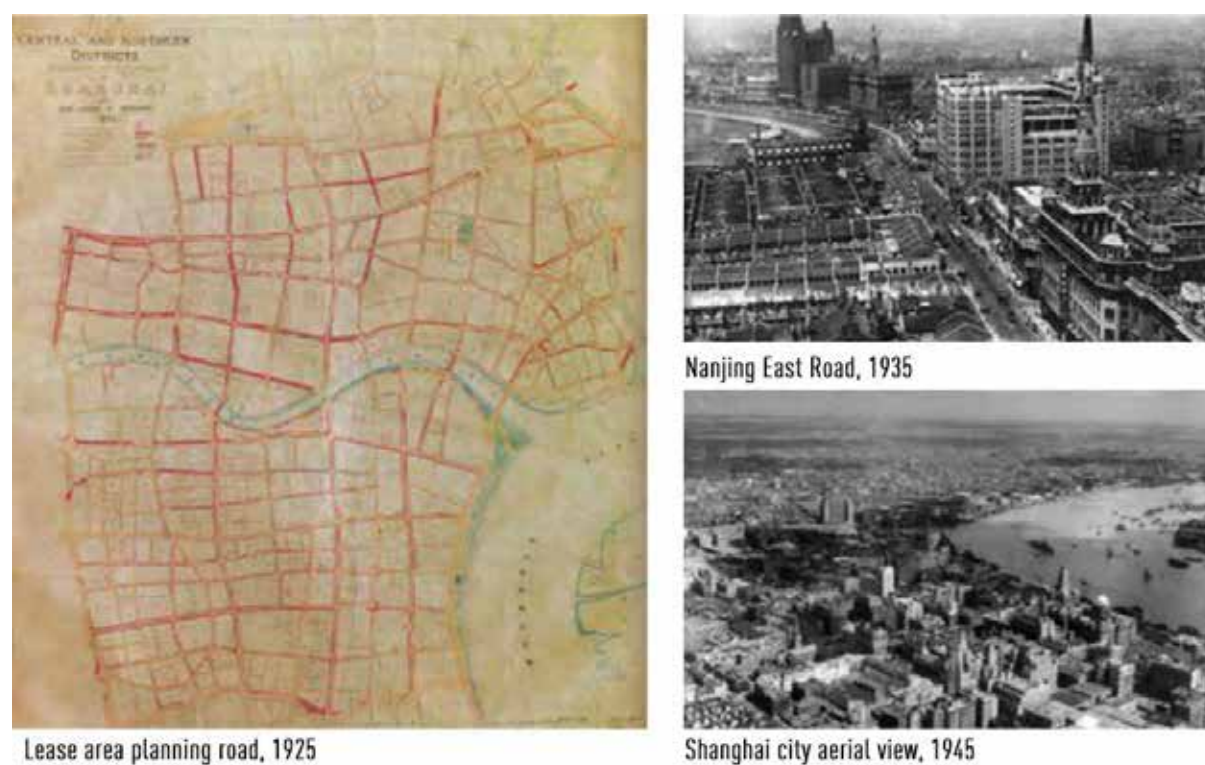


Fig3. Historical picture of Shanghai walking environment

Beyond the concession, in 1930, the Shanghai Municipal Authority compiled the "Greater Shanghai Plan" and built a central area in the Jiangwan area. The use of narrow streets and dense road networks in the city center is an important practice in the construction of modern Chinese cities. The "Shanghai Metropolitan Plan" compiled from 1945 to 1949, the Shanghai government carried out a systematic road planning for the city's road network. After the liberation to the beginning of the new century, the Shanghai Central City road network system was adjusted several times. Its planning concepts and guiding ideology are not the same, reflected in the constant and repeated changes in the red line of the road. Especially after the reform and opening up, the road network construction focuses on improving the traffic capacity of motorized transportation. After 1980, with the rapid expansion of urban form, isolated high-rise office buildings, large commercial complexes, access control communities, and centralized office parks became common forms of construction. Urban activities were transferred to the interior of the plot, causing lack of vitality in some areas. .

In 2007, Shanghai Municipal Engineering Management Office compiled the "Guidelines for Shanghai New Town Road Planning". In 2016, Shanghai promulgated the "Shanghai Street Design Guidelines", stating that the street design should be changed from car to person. The subsequent White Paper on Shanghai Transportation Development will be planned to build a slow-moving system as an important traffic strategy and target task. The "Shanghai Urban Master Plan (2017-2035)" further clarified that the city's slow-moving traffic accounts for no less than 50% of all-way and full-purpose travel, of which pedestrians and non-motor vehicles are respectively no less than 25%. In 2018, Shanghai issued the "Street Space Design Fans for Opinions", hoping to establish safe streets, green streets, vibrant streets, and smart streets.

Like other big cities in the world, Shanghai's road network has basically been shaped. The method of increasing road density cannot solve the problem of Shanghai walking environment. Therefore, Shanghai set out to develop relevant plans to improve the slow-moving system and improve the environmental quality of the street space. Shanghai divides all roads into 15 categories, each of which presents a typical representative street. In Huangpu District, Hengfu District and Taopu Science and Technology Smart City, a large number of street quality improvement work has also been carried out, and historical roads have been rehabilitated and new district roads have been completed. Some achievements have been made in high quality construction.



Fig4. Classification and current situation of Shanghai streets

Although the "Shanghai Street Design Guidelines" proposed four major street design concepts, the street design guidelines mainly focused on the creation of environment and space, and did not directly solve the macro mobility problem. Compared with the two manuals in the United States, the Shanghai Street Design Guidelines contain less content on management and evaluation, but only put forward the principled content: "Need government departments, owners along the line, designers, enterprises and the public to participate and cooperate together. ", did not propose specific implementation rules, does not have practical guidance and operational. This also reflects the flaws in China's planning on how to specifically conduct street assessments and implement public participation.

Less concern for people's mental health is also a problem in the "Shanghai Street Design Guidelines." The guidelines propose a number of recommendations that are conducive to traffic efficiency and the ecological environment, but ignore the positive effects of the street on the community and have major drawbacks in this regard.

Conclusions

This article takes the negative impact of motor vehicle traffic and the importance of the walking environment to the city as an entry point, summarizing the efforts made by countries around the world to establish a good walking environment. Taking the walking design guidelines in New York, Los Angeles, and Shanghai as examples, analyze the design principles of health orientation and explore the shortcomings in the Shanghai guidelines. Walking environment

It is an important part of urban health, and the compilation of the Shanghai Street Design Guidelines is a useful attempt in this regard. However, the transformation of ideas, methods, techniques, and evaluations will be a long-term gradual process. It still requires the joint efforts of management departments, designers, and the general public to promote the establishment of healthy cities through continuous practice.

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The influence of cognized neighborhood environment on children's health and outdoor activities: a case study of shanghai

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Abstract: Children's health and outdoor activities are closely related, with the increasing of childhood obesity and the improvement of people's health consciousness, urban planning and spatial design promoting children's outdoor activities will become increasingly important. Selecting children and teenagers of 6-18 years old in Shanghai as the object, this research conducts a network questionnaire survey to obtain the data and quantitatively analyzes the spatial-temporal characteristics of their health and outdoor activities. A relationship model between the children's outdoor activities and cognized neighborhood environment is established, using the logistic regression model. Results show that children in shanghai have a high incidence of obesity and are lack of outdoor activities. The time of outdoor activities is concentrated in the daytime of weekends, and the activity venue is concentrated in the green lands and exercise fields in the community or the parks nearby. Children's vigorous activities tend to happen with high time consumption and frequency in the vacant street space and sidewalks along the street. At the city level, some parts of Shanghai can see remarkably high concentration or low concentration of children's outdoor activities, and the frequency and time consumption of children's vigorous activities within the Inner Ring is significantly higher than that in other rings. Neighborhood environmental factors have significant associations with children's health and outdoor activities. Curb parking, environmental harmony and civilization, neighborhood relationship, and the quality of children's activity facilities have a significant correlation with children's outdoor activities, especially with their activity frequency.

Keywords: Children; Health; Outdoor activity; Neighborhood environment; Shanghai

Introduction

The origin of modern urban planning and health began in 1986 when the World Health Organization (WHO) first established the Healthy Cities Project, and then the Healthy Cities Engineering Network was established in Europe. After 30 years of development, Healthy City has become a worldwide movement (XU Congbao, *et al.* 2005). It has gone through four stages of development, and is now in the fifth stage (from 2009 to now). The core theme of this stage is supportive environment, healthy lifestyle and healthy urban design (XU Congbao, *et al.* 2005). At present, the change of life style has become one of the main reasons that endanger residents' health (MA Guansheng, *et al.* 2006). The traditional methods of urban planning to protect residents' health (such as functional zoning, sunshine spacing, green space rate, etc.) can no longer meet the growing health needs of people. Planning needs to re-recognize the direction and path of healthy city construction.

The static lifestyle formed by housework, work, commuting and leisure activities has a significant impact on residents' health, but also has a close relationship with urban spatial environment. Commuting and leisure activities are directly related to urban spatial environment (Lee C, et al. 2004). One of the most serious problems caused by static lifestyle is childhood obesity. In the Draft Final Report on Ending Child Obesity, WHO pointed out that the rapid increase of childhood obesity has become an urgent global public health problem, especially in cities of low- and middle-income countries (WHO. 2004). Existing studies generally believe that lack of adequate physical activity is an important cause of obesity and overweight in children (Fredriks A M, et al., 2005, Wang Wenyuan, et al., 2008). A large number of studies have proved that urban built-up environment has significant effects on children's outdoor physical activity, body mass index (BMI) and health perception. For example, barren open space can reduce children's outdoor activities and health evaluation value (Lestan K, Eržen I, Golobič M., 2014, Janssen I, Rosu A., 2015); low residential density and road density can increase children's obesity rate (Duncan D T, et al., 2014); neighbourhood safety has accumulated for children's outdoor activities. Extremely affect and reduce the incidence of obesity in children (Nogueira H, et al., 2013, Janssen I., 2014); leisure facilities such as parks have a positive impact on children's outdoor activities (Babey S H, et al., 2008), which will reduce the incidence of obesity in children (Wolch J, et al., 2011). In contrast, the relevant research in China focuses on the design of micro-activity sites, plant allocation, environmental construction and facilities arrangement, aiming at enhancing the safety, comfort and independence of children's outdoor activities (Zhan Yan., 2005, Xu Xuefang., 2010, Yan Tingting., 2013). It lacks the research on the relationship between built environment and children's outdoor activities from the perspective of larger-scale neighborhoods and even cities (Zhang Yi, Dai Shenzhi., 2011). Only Han Xili (2012) adopted the research on the relationship between built environment and children's outdoor activities. The perceptual map method qualitatively explores the factors affecting children's outdoor physical activity in neighborhood space environment (Wang Dong, Han Xili., 2012).

At present, the problems of high population density, land shortage, deterioration of traffic environment, prominent contradiction between supply and demand of facilities, and severe public security environment prevail in large cities in China. Additionally, the concept of children's education, such as "can't lose at the starting line", may become the cause of restraining children's outdoor activities and causing diseases. Taking Shanghai as an example, the problem of childhood obesity is particularly prominent. The detection rate of overweight and obesity among children is close to that of developed countries in the world (Zhu Meihong, et al., 2011). At the same time, the level of economic and social development in Shanghai is relatively developed, and people pay high attention to health issues. Therefore, the study of children in Shanghai is of great practical significance to solve this problem from the perspective of urban built environment. Shanghai is also a metropolis with high heterogeneity. Its built environment is rich and its population and social economic background are diverse. It provides an ideal sample space for exploring the material and social factors and mechanisms affecting children's outdoor activities. Therefore, this study takes Shanghai as a case study. The goal of this study is to grasp children's physical health and outdoor activities as a whole, to explore the characteristics of time and space, and to explore the relevant elements, so as to provide a basis for further exploring and understanding the mechanism of urban construction affecting children's health and outdoor activities, and to provide urban planning for promoting children's outdoor activities and reducing the incidence of childhood obesity. Provides the basis for the design.

Data collection

Questionnaire Survey

Questionnaire survey was used to collect data. Because the cognitive and expressive aspects of young children are not enough to complete the survey alone, at the same time, similar studies abroad mostly use the method of investigating parents, and the credibility is also recognized (Tappe K A, et al., 2013). Therefore, the subjects of this study are parents of children and adolescents aged 6-18 (hereinafter referred to as children). The goal of this

study is to collect data on children's health and outdoor activities, built environment and family background from the perspective of parents. In terms of health, the self-assessment of children's overall health and BMI index were investigated; in outdoor activities, the frequency, time consuming, activity time and activity venue of children's moderate and vigorous activities were recorded; in the aspect of building environment, 15 types of built environment indicators affecting children's outdoor activities were collected by parents in the form of structure scale, including population density. Degree, land mixing, pavement facilities, traffic volume, environmental safety, accessibility of activity facilities, neighborhood relationship environment, etc. The background information of children's family includes two levels: children and family. Children collect information on gender, age and number of children. Family level collects monthly family income, education level of parents, household registration and location information of residential quarters.

The questionnaire was distributed to the resident residents of children aged 6-18 in Shanghai in November 2015 through the "Questionnaire Star" network survey platform. A total of nearly 700 questionnaires were collected, and 403 valid questionnaires were obtained after screening and screening. Screening conditions include excluding the answers other than the age of the target children, setting trap questions to exclude the randomly filled answers, excluding Shanghai users according to IP address, excluding the answers that are incomplete and invalid, etc.

Sample characteristics

Children aged 6-7, 8-10, 11-14 and 15-18 accounted for 44.9%, 29.1%, 13.9% and 12.1% respectively. The sex distribution of the sample children was fairly uniform, with boys accounting for 59% and girls 41% respectively. The highest educational background of parents is undergraduate, accounting for 65%; 15% and 20% respectively are below undergraduate and above undergraduate. The distribution of household monthly income is not very different. 43% of household monthly income ranges from 10,000 yuan to 20,000 yuan, 34% of household income is below 10,000 yuan and 23% of household income is above 20,000 yuan. Ninety percent of the households in the sample had only one child and 10 percent had more than one child. The sample families consist mainly of nuclear families, accounting for 54.6% of the sample; 42.2% of the families living together with three generations; and only 3.2% of the single-parent families.

The spatial distribution of sample residences at Shanghai regional level is shown in Figure 1. Except for 2.7% of the cases, the residences of the remaining samples are not located, accounting for 19.6%, 25.1%, 21.3% and 31.3% respectively within the inner ring, between the inner ring and the central ring, between the central ring and the outer ring, and outside the outer ring. The number of cases and the socio-economic attributes of children and families in the four circles are more balanced in space, which lays a foundation for comparative analysis.

Children's Health

The physical health of children is measured from both subjective and objective aspects. Subjectively, the children's parents'evaluation of their children's physical health was divided into five grades: very good - good - General - poor. The results showed that most parents rated the children's physical health highly: 34% of parents thought the children's health was very good, 36.7% thought it was good, 23.6% thought it was good, only 5.7% thought the children's health was normal, and No parents think their children are in poor health.

Objectively, the body mass index ($BMI = \text{weight divided by the square of height (kg/m}^2\text{)}$) is used to measure the obesity of children. Himes suggests defining obesity in the 95-point group with BMI greater than the same age and sex, and overweight in the 85-point group(Himes J H, Dietz W H., 1994). Because of the differences in race, level of economic development and lifestyle, different countries have used different BMI screening criteria for obesity (Ji Chengye., 2006). In this paper, we selected the WGOC standard for children and adolescents of China Obesity Working Group (Chen Chunming., 2008), which was proved to be the most suitable criterion for screening the incidence of overweight and obesity among children in China (Chen Lei, et al., 2010). According

to WGO standard, children's overweight is defined as body mass index (BMI) between 85 and 95 in a specific age and sex group, obesity is defined as BMI greater than 95 in a specific age and sex group, and low body mass is defined as two standard deviations lower than the average BMI of the same age and sex group, and the rest is normal. The results showed that more than half (55.5%) of the children in the sample had normal BMI, 22.9% had obesity, 12.9% were overweight and 8.7% had low BMI.

The objective indicators reflect the serious physical health problems of children in Shanghai at present. However, the health status of children reported by parents is generally good. This shows that parents have not paid attention to the hidden dangers of children's obesity, overweight and low physique, which are harmful to children's health. It also highlights the importance of correctly recognizing children's physical health and the necessity of promoting children's physical health by building an environment.

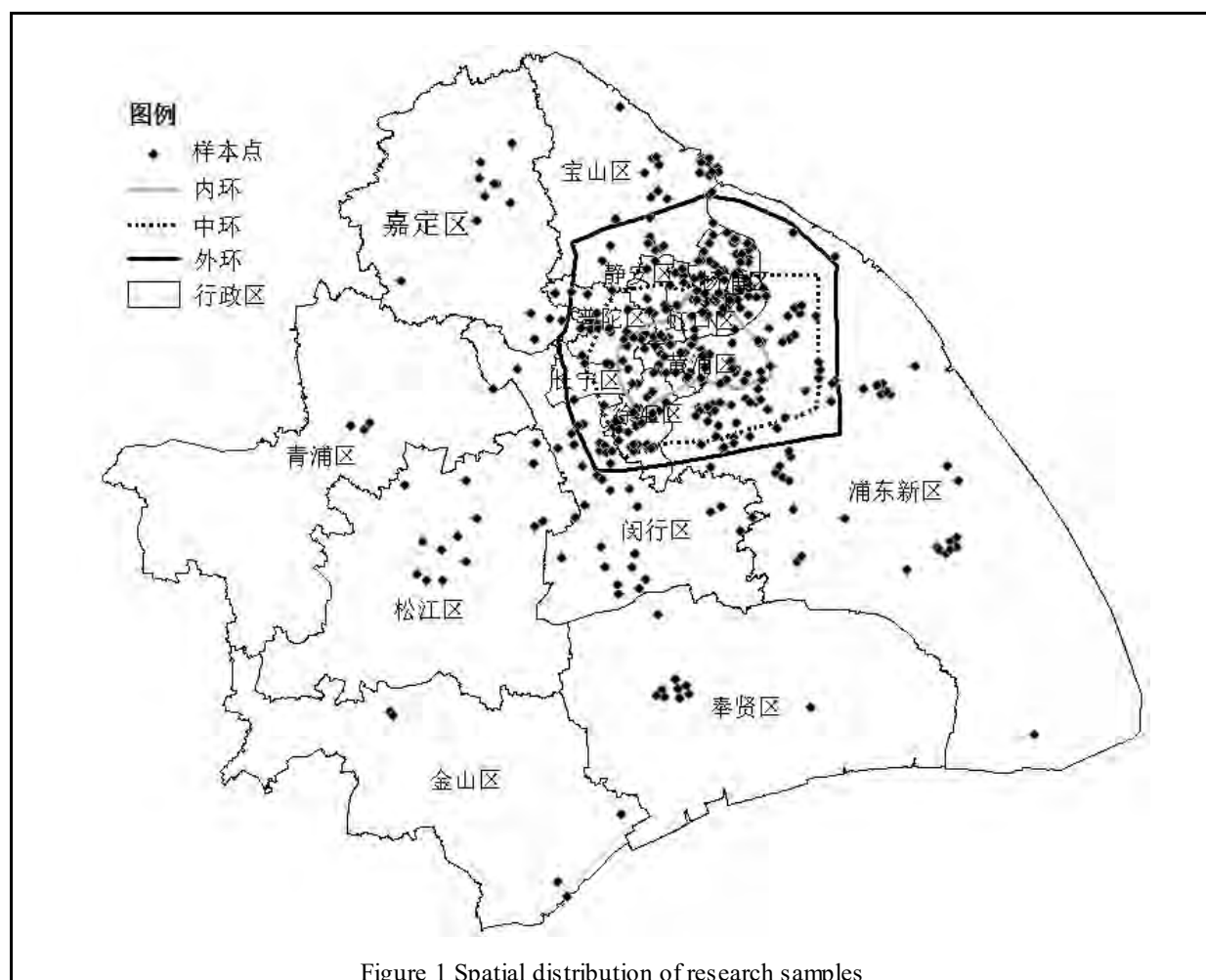


Figure 1 Spatial distribution of research samples

Children's Outdoor Activities

Existing studies have shown that children's physical health is closely related to the amount of activity (Xue Hongmei, et al., 2015). In this paper, the frequency, time consumption and intensity of children's outdoor activities are used to measure the amount of activity. According to the degree of energy consumption, children's outdoor activities can be divided into moderate activities and vigorous activities. Moderate activities refer to physical activities that require moderate exercise but do not cause shortness of breath and significant acceleration of cardiac rhythm. Vigorous activities refer to physical activities that require a lot of exercise and cause shortness of breath and significant acceleration of cardiac rhythm(WHO, 2017).

Most of the children in the sample had outdoor activities. The time and frequency distribution of activities were shown in Figure 2 and Figure 3. Among them, only 5% of children do not engage in moderate outdoor activities, and 15% do not engage in vigorous outdoor activities. The frequency distribution of moderate and intense activities is similar to that of time-consuming activities. The frequency of activities mainly concentrates on 2-5 times per week, and the time consumption of a single activity concentrates on 10-30 minutes. The frequency of moderate activity of children is slightly higher than that of vigorous activity, and the time spent within 40 minutes is also longer.

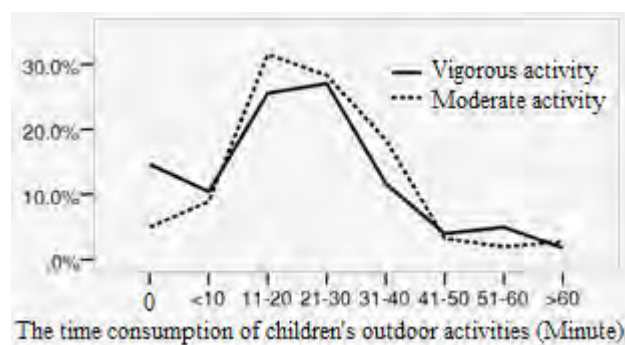


Figure 2 The distribution of time consumption of children's outdoor activities

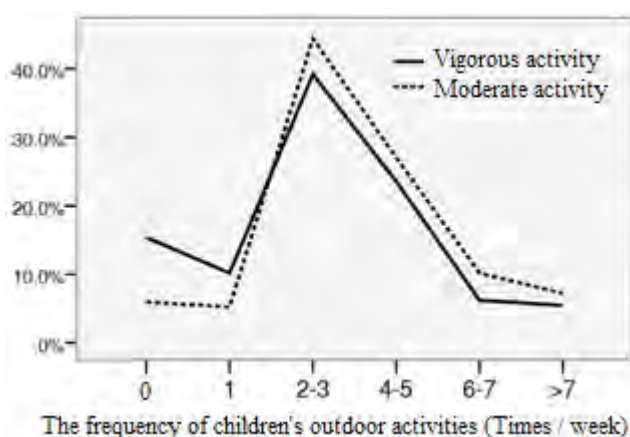


Figure 3 The frequency distribution of children's outdoor activities

By synthesizing the frequency and time of activities, the intensity index of children's outdoor activities is constructed, which is the total time consumption of children's outdoor activities every week. Because the energy consumption of vigorous activity is different from that of moderate activity, the intensity of vigorous activity is equal to about twice that of moderate activity by using the conversion method of WHO (WHO, 2017). Finally, the intensity of children's outdoor activities is calculated as Figure 4, showing an obvious exponential distribution. With the increase of activity intensity, the number of children's cases decreases; the average intensity of children's outdoor activities is 238 minutes/week, mainly within 250 minutes/week, and the number of children whose activity intensity exceeds 250 minutes/week decreases sharply; the standard deviation is 210 minutes/week, which indicates that the intensity of children's outdoor activities decreases dramatically. There are a few cases with high activity intensity. The physical activity of children and adolescents aged 5-17 recommended by the World Health Organization is greater than 420 minutes/week (WHO, 2017). Only 9.4% of the children in the sample had more than 420 minutes of outdoor activities per week, which indicated that the intensity of outdoor activities of Shanghai children was far from meeting the requirements of WHO.

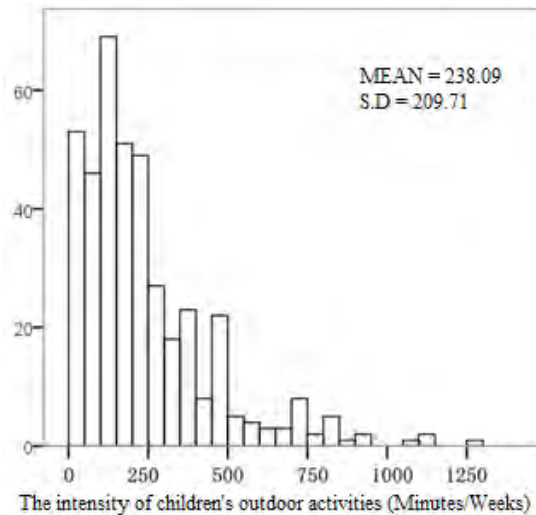


Figure 4 The intensity distribution of children's outdoor activities

The influence of built environment on children's outdoor activities

The survey asked parents to evaluate the built environment near their residence. The questions were expressed positively in terms of environmental factors affecting children's outdoor activities. The answers were divided into four levels: very disagreement - disagreement - agreement - very agreement. The statistical evaluation mean is shown in Figure 5. The higher the evaluation mean is, the more reasonable or perfect parents think the present situation of environmental factors is. It shows that the evaluation of road connectivity, traffic accessibility and neighborhood relationship around residential areas is higher. The current situation of environmental factors such as traffic volume, facilities accessibility, roadside parking and driving speed is worse.

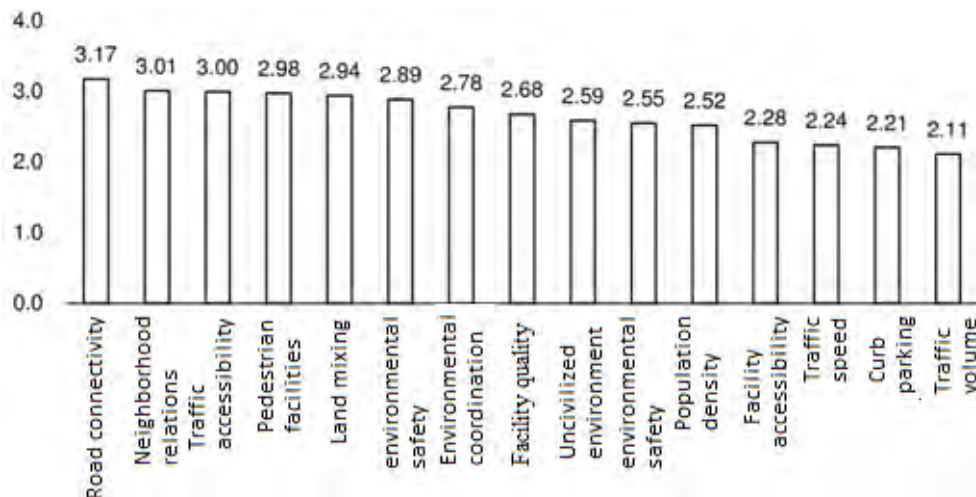


Figure 5 The mean value of parents' evaluation of the built environment affecting children's outdoor activities

Non-parametric tests were used to verify the relationship between 15 built environment factors and children's outdoor activities and health (Table 1). It is found that most of the environmental factors are closely related to children's health assessed by parents. Specifically, in the built environment with mixed land functions, harmonious neighborhood relations, perfect pavement facilities, high road accessibility, low road speed, less roadside parking, traffic safety, convenient activities and good quality, children's health assessed by parents is obviously better. In contrast, the correlation between these environmental factors and BMI health index is weak. Only road speed and traffic accessibility are significantly correlated, but interestingly, they are all traffic factors.

For children's outdoor activities, the relationship between built environment and intense activities is more closely than moderate activities, and the relationship between frequency and time is more closely. In terms of activity time consumption, in the urban environment with uncivilized phenomena (such as garbage, dog dung, graffiti) and poor road connectivity, moderate activity time consumption is significantly lower. In terms of activity frequency, children are more likely to engage in outdoor vigorous activities in urban environments with low road speed, less parking on the roadside, beautiful and harmonious built environment, civilized outdoor environment, harmonious neighborhood relationship, convenient children's activities facilities and high quality; in urban environments with less traffic, harmonious neighborhood relationship and high quality children's activities facilities, children's outdoor activities are moderate. The activity frequency is high. In terms of total activity intensity, the urban environment with less parking, beautiful and harmonious built environment, civilized outdoor environment, harmonious neighborhood relationship and high quality of children's activity facilities corresponds to children's high-intensity outdoor activities.

Table 1 Cross analysis of children's outdoor activities and health and social economic attributes

Built environment	Health rated	BMI health	vigorous activity			moderate activity			Total activity intensity (minutes / week)
			Time consumption (minutes / times)	frequency (times / week)	intensity (minutes / week)	Time consumption (minutes / times)	frequency (times / week)	intensity (minutes / week)	
Pedestrian facilities	0.000***	0.221	0.920	0.973	0.779	0.236	0.577	0.314	0.855
Road connectivity	0.009***	0.666	0.198	0.834	0.483	0.063*	0.319	0.141	0.286
Traffic volume	0.289	0.392	0.298	0.133	0.191	0.774	0.015*	0.187	0.114
Traffic speed	0.014**	0.040**	0.845	0.032**	0.190	0.526	0.433	0.296	0.105
Curb parking	0.008***	0.273	0.525	0.096*	0.080*	0.418	0.436	0.273	0.077*
Environmental coordination	0.391	0.983	0.124	0.008***	0.068*	0.238	0.789	0.638	0.070*
Uncivilized environment	0.189	0.810	0.217	0.015**	0.025**	0.036**	0.637	0.173	0.032**
Traffic accessibility	0.325	0.049**	0.784	0.673	0.792	0.608	0.544	0.577	0.611
Land mixing	0.001***	0.682	0.714	0.230	0.642	0.909	0.153	0.714	0.518
Population density	0.196	0.638	0.603	0.292	0.225	0.926	0.654	0.974	0.290
environmental safety	0.140	0.654	0.372	0.517	0.588	0.421	0.668	0.100*	0.796
trafficsafety	0.001***	0.463	0.380	0.161	0.219	0.338	0.418	0.350	0.157
Neighborhood relations	0.001***	0.123	0.132	0.039**	0.036**	0.617	0.056*	0.184	0.046**
Facility accessibility	0.005***	0.528	0.641	0.078*	0.244	0.723	0.318	0.764	0.264
Facility quality	0.012**	0.620	0.907	0.037**	0.340	0.619	0.002**	0.619	0.086*

Note: * 0.1 significant level; ** 0.05 significant level; *** 0.01 significant level.

Conclusion

With the prominence of children's health problems and the enhancement of social health awareness, children's outdoor activities will be paid more attention. Urban planning and space design for promoting children's outdoor activities are of great significance to improve children's health. Taking Shanghai as an example, this study summarizes the characteristics and related factors of children's outdoor activities in big cities from the dimensions of time, space and family attributes, which can provide a basis for relevant planning, design, decision-making and in-depth research. The study found that the incidence of obesity among children in Shanghai is high. Most children's outdoor activities are not up to the World Health Organization standard.

However, parents do not know enough about children's health, which indicates the urgency of measures to promote children's outdoor activities, including urban planning. The analysis shows that children's outdoor activities are highly heterogeneous. Although this study has obtained the overall impact direction of significant related factors to children's health and outdoor activities, more precise impact mechanism must be further explored in order to provide a clearer theoretical basis and methodological means for planning. The analysis at the municipal level finds out the hot spots of children's health and outdoor activities, which provides clues for in-depth regional case studies or interregional comparative studies to find out reasonable explanations. Some findings also prompt reflection on traditional planning concepts and methods. For example, although children's outdoor activities mainly focus on community green space, exercise venues and parks, high frequency and long time-consuming activities mainly occur in some "informal" activities such as sidewalks and street empty spaces on both sides of the road; the reasons for this phenomenon need to be more systematically examined. If space forms do have an impact, then the focus of planning and design may need to tilt towards creating safer, continuous and comfortable street children's activity space.

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The significance of urban historical parks to physical activity and public health: A case study in Beijing, China

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Abstract: Physical inactivity is a significant public health problem in cities. There is a growing consensus that physical activity results in a plenty of positive health outcomes. Therefore, finding a way to promote physical activity has the potential to improve public health as well as to control health care costs. More and more studies have proved that green infrastructure strongly affects physical activity carried out in our daily life. Urban parks eagerly visited by city dwellers are believed to promote walking and routine exercise, thus influencing population health. Based on the above assumptions, studies are conducted in three historical parks in Beijing (the Summer Palace, Beihai Park, Xiangshan Park) aiming at determining how well urban historical parks serve and influence public health for local residents, and developing recommendations for urban historical parks management and revitalization. This paper mainly researches 1) park users' physical activities, 2) community members that parks serve, 3) space size, facilities, historical and cultural atmosphere, attractiveness in parks as well as surrounding environment of the parks. Questionnaire are developed to collect park users' view of the role that they feel parks play in their physical activity. Semi-structured interview are used as complement for collecting information. We conclude that activity undertaken in the park is primarily associated with the land cover structure of the park and its location within the city. And physical activity is significant positive especially in mental health. These findings suggest that urban historical parks play a critical role in facilitating physical activity even beyond the neighborhood, and the needs also arise to conduct active maintenance and spread cultural knowledge to improve the benefits.

Keywords: Physical activity; Urban historical parks; Public health; Beijing

1. Introduction

Well-designed urban parks strongly that people are willing to visit affect the quality of human life in cities. Urban parks are good for physical health via promoting outdoor physical activity (Rydin et al., 2012). Many health problems can be prevented or alleviated through routine physical activity. It is widely acknowledged that the environment in which we live helps determine how physically active we are on a daily basis (Cohen et al., 2012). Some historical gardens in Beijing which serve as urban parks now play an important part in local people's life and urban sustainable development. Understanding the determinants of physical activity undertaken in urban historical parks and health benefits can promote the management and valorization of historical parks. Thus, those parks could attract the permanence of the resident population while keeping their historical and cultural asset/values intact (Nocca, 2017).

Existing studies have discussed relationships between park benefits, park characteristics, park use, physical activity levels and health (Bedimo-Rung et al., 2005, Agata et al., 2018, Abdullah, 2016, Bonnie et al., 2019). However, few studies have focused specifically on historical and cultural context which may affect physical activity and health. Besides, most researches on green open space use focus on North American, European, and Australian contexts (Özgüner, 2011, Sreetheran, 2017) so far.

Therefore, this research chooses historical gardens in Beijing including one cultural heritage which symbolize Chinese culture as object in order to find relationship between cultural context, physical activity and health. By focusing on Beijing, this research adds cases in Asian cities except for Hanoi (Thi-Thanh-Hien et al., 2019), Kuala Lumpur (Sreetheran, 2017) and so on.

We investigate three urban parks in Beijing which are also historical gardens in the context of the following characteristics: a) intensity and duration of activity of park users and frequency of park visits; b) plant, paths, facilities, attractiveness, cultural atmosphere in parks; c) physical and mental health condition of park users; and d) location of the parks within the urban structure. The goal of our research is to determine how urban historical parks promote physical activity for individuals and how well they serve local people in national and regional cultural context. This research serves in the pursuit of balancing people's needs and cultural landscape protection, and improves the management and preservation plan of urban historical parks. We hope that this research could develop recommendations on protection and valorization of urban historical parks adjusted to Asian cities and populations, thus achieving urban sustainable development.

2. Methodology

2.1 Study area

The research is conducted in Beijing (39° 56' N; 116° 20' E), capital of China. It is located in northwestern of the North China Plain, surrounded by Yanshan Mountain in the west, north, and northeast. It is a megacity with an area of 16410.54 sq. km. Beijing has a predominantly warm temperate continental monsoon climate. The annual frost-free period is about 186 days, the annual temperature of 10°C, and the average annual precipitation is 600 mm (Xie et al., 2015). Beijing has experienced rapid demographic urbanization and urban land expansion with the rapid economic growth during the past three decades and the urban area has increased from 801 to 2,452 km² during 1980–2010 (Wu et al., 2015), and its population increased from 8.72 million in 1978 to 19.62 million in 2010 (Beijing Municipal Statistics Bureau [BMSB] 2011). Beijing is a famous historical and cultural city in the world. There are more than 200 historical gardens with long history, high popularity and Chinese traditional garden design principle in Beijing, some of which serve as urban park and integrate into contemporary society.

2.2 Description of parks

We choose three famous historical gardens served as urban parks now differently located in Beijing. These parks are also different in size, landscape characteristics and surrounding areas which could lead to different physical activity features.

The following parks are analyzed: the Summer palace, Xiangshan Park and Beihai Park. We choose those parks for the following reasons.

As shown in Figure 1.a, the Summer Palace (290ha) (Figure 1.a) is located in north-western of central districts in Beijing, center area of Haidian district. It was built in 1750 in Qing dynasty. It was an imperial garden (temporary imperial palace) belonged to Qing imperial family. Since 1928, it has become a national park. In 1998, the Summer Palace was awarded World Cultural Heritage which meets the criteria (i) (ii) (iii). Surrounding the Summer Palace are Qinglongqiao subdistrict, Wanliu subdistrict and part of Sijiqing subdistrict which respectively had a density of 3572 inhabitants/km², 3695 inhabitants/km², 1790 inhabitants/km² in 2006. It also includes a research institution, three universities and several cultural relics.

As shown in Figure 1.b, Beihai Park (71ha) (Figure 1.b) is located in Beijing central district, northwest of the Forbidden City. It was also an imperial garden which dates back to the 13th century. Since 1925, it has become a national park. Surrounding Beihai Park are

As shown in Figure 1.c, Xiangshang Park (188ha) (Figure 1.c) is located in northwest of central districts in Beijing, north-western of Haidian district that urbanized after 2000. It dates back to Yuan dynasty. It was also an imperial garden (temporary imperial palace away from inner city). Since 1956, it has become a national park. Population densities around Xiangshan Park tend to be lower, with 428 inhabitants/km² in 2006. And there are two large botanical gardens around the park.

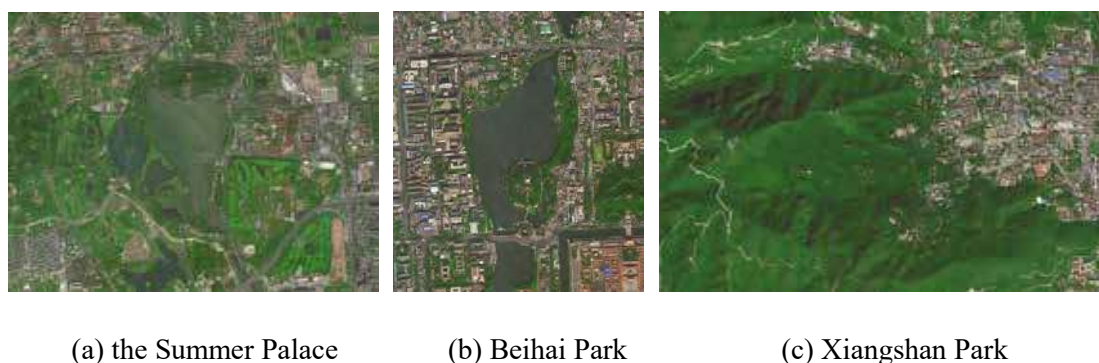


Figure 1. Location of three historical parks

2.3 Data collection-questionnaire and semi-structured interview

We applied structured questionnaire and semi-structured interview (Bonnie, 2019), to survey people's activities undertaken in parks.

A quota sampling method was applied to collect opinions from questionnaires. Quota sampling follow three rules. First, we aimed mainly to local people who undertake physical activity regularly. Second, at each research park, gender and age ratio of respondents we sought is in accordance with demographic characteristics in Beijing. Third, we carried on the survey in each park two times a week, once in weekdays and once in weekend from morning to evening. All questionnaires were self-administered on paper during multiple site visits in May, 2019. The refusal rate was quasi-null.

The questionnaires survey was conducted on a face-to-face basis, in order to collect data more sociable and enlist respondent cooperation more effective (Sheskin, 1985). Most questionnaires were

filled inside the parks such as attractive sitting-out area and other open space, and the rest were filled at park entrances, It took about 6 minutes to complete a questionnaire. Each collected questionnaire was checked afterwards to ensure their completeness and accuracy.

The questionnaires administered to respondents include: i) respondents' characteristics (gender, age, education, occupation, yearly income, transportation mode, travel mode to access the park, time cost on the way to the park, habitual companion); ii) activities undertaken in the park (physical activity frequency, physical activity duration, physical activity types, place most frequently go to for physical activity); iii) respondents' health condition (physical health through the question 'How often do you have the following physical illness over the past month?', physical illnesses include fatigue, headache, neck pain, cold, insomnia, cardiovascular diseases, respiratory diseases, mental health through the questions 'How often do you feel happy over the past month?', 'How often do you feel down over the past month?'); iv) respondents' perception of the park through the question 'Which areas of the Park do you like taking physical activities?' and impacts (including attractiveness, strong historical and cultural atmosphere, good maintenance, enough public space size, many shades, quietness, good air quality, convenient service facilities) on choosing those areas, each of which are measured on a 7-point Likert scale ranging from 1=Strongly Disagree to 7=Strongly Agree. We suppose that respondents' perception of the park represent park's characteristic. At last, the respondents were asked to suggest how to improve the park to add comfort and convenience for use.

2.4. Statistical analysis

Multivariate linear regression analysis was used to analyze questionnaire data. We investigate the associations between characteristics of the park (e.g. attractiveness, strong historical and cultural atmosphere, good maintenance, enough public space size, many shades, quietness, good air quality, convenient service facilities) and frequency, duration, intensify of physical activity. Second, the associations between characteristics of the park, frequency, duration, intensify of physical activity and physical health, mental health were investigated. And it needs to be explained that physical intensify was calculated according to Compendium of Physical Activities which has been used as important criteria and reference basis for the determination of metabolic value and intensity division(Ainsworth et al., 2000).The results are presented as unstandardized coefficients (and SE) with 95% confidence intervals (CI). A p-value of .05 is considered to indicate statistical significance. R was used for all statistical analyses.

3 Results

3.1 Socio-demographics traits of visitors

During the survey, 72 visitors agreed to answer the questionnaire. Among them, 36 were male(50%) and 36 were female(50%). According to the 2010 Beijing Municipal Bureau of Statistics data, the percentage of men and women in Beijing is respectively 51.6% and 48.4%. About 51.4% of the respondents were over 60 years old; the youngest was 21 years old and oldest was 92. Majority of the respondents were retired (68.1%), a quarter of the respondents were full-time workers (20.8%), some were students (6.9%) and the rest were freelance or waiting for an employment (4.2%). Over half of the respondents' education level were associate or bachelor degree. Most respondents were low and

middle income groups. Majority of them received CNY0-50,000 (47.2%) or CNY50,000-100,000 (33.3%) per month.

3.2 Visit-related preferences

Most of the respondents visited the park by public transportation including bus and subway (79.2%). Almost half of the respondents cost 30 minutes to 1 hour to go to the park by public transportation (45.8%), and over one third of the respondents cost 1-2 hours (34.8%). The rest of the visitors cost less than 30 minutes (19.4%), and some of them go to the park on foot. For transportation, most of the respondents thought convenient.

Most respondents visited the park with family or friends because they enjoyed themselves in group. Over half of the respondents took physical activities in the park most frequently (65.3%), the second most of respondents took physical activities at home (18.1%), students usually took physical activities at school (8.3%), and the rest took physical activity in gymnasium (4.1%) or other place (4.2%).

According to semi-structured interview, some of retired respondents participate in scheduled events such as square dancing group, social dancing group and chorus group in certain area every day or on weekdays. And they feel very delighted spend time in the park.

3.3 Relationships between park characteristics, frequency, duration and intensify of PA

To investigate relationships between park characteristics, frequency, duration and intensify of PA (Physical Activity), we carried on a series of multivariate linear regression analyses. As shown in Table1, covariates (gender, age, education attainment, occupation, yearly income level) control for the result. In the multivariate regression analysis while controlling for the covariates, the findings indicate that PA frequency was positively associated with transportation convenience. Most of respondents visit the park by public transportation that they are content with which leads to higher frequency of PA. PA duration was positively associated with shades. PA intensify was positively associated with gender, education level, the place for physical activity, and historical and cultural atmosphere. Male take more intensive activities than female. Respondents with higher education level tend to take more intensive activities. The place for physical activity is also a factor influencing intensify of physical activities. Respondents who take physical activities in park most often take more intensive activities than others. Feeling strong historical and cultural atmosphere also causes more intensive activities in the park.

3.4 Relationships between park characteristics, frequency, duration and intensify of PA and health

Relationships between park characteristics, frequency, duration and intensify of PA and health were presented in Table 2. The analysis shows that physical health was positively related to habitual companion. Mental health was positively related to PA frequency, PA duration, gender, education level, transportation mode, historical and cultural atmosphere, and space size.

Table1 Summary of unstandardized multivariate regression coefficients for characteristics of three parks and levels of PA.

<i>Predictors</i>	PA frequency		PA duration		PA intensity	
	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>
(Intercept)	-3.73	0.216	4.15	0.35	1.28	0.756
male	0.5	0.05	0.11	0.757	-0.73	0.036
Age	0.2	0.156	-0.22	0.283	0.16	0.415
Education	0.02	0.919	-0.1	0.751	0.76	0.012
student	-2.24	0.177	-2.34	0.339	3.58	0.118
retired	0.77	0.345	-0.23	0.849	-0.96	0.391
full time	0.22	0.783	-0.7	0.553	-1.19	0.284
income	-0.25	0.368	0.47	0.255	-0.74	0.055
alone	-0.92	0.093	0.5	0.528	-0.21	0.774
convenience	1.07	0.003	-0.27	0.587	0.16	0.736
walk	0.42	0.746	1.03	0.586	2	0.259
bike	-0.9	0.479	-1.1	0.556	2.33	0.183
car	-0.49	0.636	-0.37	0.808	1.72	0.232
public transportation	-0.09	0.933	-1.04	0.52	2.43	0.108
time cost	0.22	0.429	0.15	0.712	-0.07	0.843
on the way						
park	1.01	0.253	-0.26	0.839	4.99	<0.001
school	1.75	0.158	1.44	0.426	1.14	0.499
home	-0.5	0.551	0.74	0.55	4.34	<0.001
gymnasium	-1.58	0.146	-0.14	0.931	4.69	0.003
attractive	0.14	0.442	-0.14	0.606	0.01	0.968
historical and cultural	-0.17	0.072	0.08	0.582	-0.34	0.009
maintenance	-0.08	0.657	0.08	0.771	-0.14	0.571
largeness	0.02	0.863	0.21	0.231	0.12	0.439
many shades	-0.16	0.083	-0.39	0.006	0.21	0.098
quietness	-0.11	0.294	0.04	0.804	-0.06	0.708
air quality	0	0.987	0.11	0.745	-0.17	0.587

convenient facilities	0.1	0.458	0.23	0.269	-0.12	0.523
Observations	72		72		72	
R ² / R ² adjusted	0.859 / 0.772		0.569 / 0.304		0.574 / 0.313	

Table 2 Summary of unstandardized multivariate regression coefficients for characteristics of three parks, levels of PA, and health.

<i>Predictors</i>	Physical health		Mental health	
	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>
(Intercept)	18.54	0.017	-7.85	0.137
PA frequency	-0.36	0.342	0.54	0.045
PA duration	-0.32	0.22	-0.83	<0.001
PA intensity	-0.08	0.783	-0.03	0.874
Resident type	1.36	0.393	-0.72	0.512
Gender	-0.83	0.21	-1.43	0.003
Age	0.25	0.482	0.37	0.136
Education level	0.07	0.893	0.83	0.035
Student	-6.23	0.14	-1.26	0.663
Retired	-2.15	0.288	1.83	0.195
Full-time worker	-3.32	0.101	-0.44	0.752
Income	0.4	0.572	0.58	0.246
Habitual companion	-3.35	0.018	-1.64	0.09
Transportation convenience	0.52	0.576	0.53	0.409
On foot	-2.49	0.435	2.72	0.222
By bike	-0.94	0.765	4.26	0.056
By car	-2.43	0.347	4.42	0.017
Public transportation	-1.32	0.627	5.73	0.004
Time cost on the way	0.1	0.886	-0.22	0.634
Park	1.46	0.571	1.64	0.361
School	2.52	0.414	4.19	0.055
Home	-0.05	0.984	-0.62	0.706

Gymnasium	-0.33	0.911	3.02	0.143
Attractiveness	-0.59	0.197	-0.12	0.71
Historical and cultural atmosphere	-0.12	0.633	-0.45	0.015
Maintenance	0.26	0.547	0.31	0.306
Space size	0.23	0.425	0.41	0.045
Many shades	-0.07	0.788	0.22	0.202
Quietness	-0.27	0.31	-0.11	0.548
Air quality	-0.23	0.682	-0.07	0.849
Convenient facilities	0.33	0.344	-0.15	0.517
Observations	72		72	
R ² / R ² adjusted	0.382 / -0.069		0.808 / 0.668	

Table 3 Variable descriptive statistics table of characteristics of three parks, levels of PA, and health.

Statistic	Min	Pctl(25)	Mean	Pctl(75)	Max	Median	St. Dev.
PA.frequency	1	2	3.486	5	6	3	1.831
PA.duration	0	4	3.903	5	6	4	1.549
PA.intensity	2	4	4.789	5.5	8	4.4	1.448
Physical.health	0	15	14.528	15	15	15	2.049
Mental.health	-4	2.8	4.333	6	6	6	2.551
Resident type	0	1	0.792	1	1	1	0.409
Gender	0	0	0.5	1	1	0.5	0.504
Age	2	3.8	4.889	6	7	6	1.749
Education level	1	2.8	3.208	4	6	3	1.299
Student	0	0	0.069	0	1	0	0.256
Retired	0	0	0.681	1	1	1	0.47
Full-time worker	0	0	0.208	0	1	0	0.409
Income	1	1	1.792	2	4	2	0.918
Habitual companion	0	0	0.111	0	1	0	0.316

Transportation convenience	2	4	4.014	4	5	4	0.428
On foot	0	0	0.028	0	1	0	0.165
By bike	0	0	0.056	0	1	0	0.231
By car	0	0	0.097	0	1	0	0.298
Public transportation	0	1	0.792	1	1	1	0.409
Others	0	0	0.028	0	1	0	0.165
Time cost on the way	1	2	2.153	3	3	2	0.725
Park	0	0	0.653	1	1	1	0.479
School	0	0	0.083	0	1	0	0.278
Home	0	0	0.181	0	1	0	0.387
Gymnasium	0	0	0.042	0	1	0	0.201
Others	0	0	0.042	0	1	0	0.201
Attractiveness	4	6	6.472	7	7	7	0.839
Historical and cultural atmosphere	3	4	4.986	7	7	4.5	1.487
Maintenance	3	5	5.736	7	7	6	1.021
Largeness	2	4	5.25	7	7	6	1.545
Many shades	2	4	5.472	7	7	6	1.728
Quietness	2	4	5.194	6	7	5	1.43
Air quality	4	6	6.458	7	7	7	0.749
Convenient facilities	3	6	5.917	7	7	6	1.242

4. Discussion

The findings of the present research reveals that those famous historical and cultural parks are so attractive that local people living a little far away come to spend leisure time. According to Sihui G.'s(2019) study, the average service radius of historical parks is the largest among all types of parks in Beijing (Sihui, 2019). Those parks provide high-quality place for local people taking physical activities. There are also scheduled events organized by residents for taking activities in group

regularly which attractive dozens of people. Owing to a large amount of visitors coming to visit those famous parks on weekend, weekdays were the period when respondents came more often. In addition, respondents usually chose areas with fewer visitors to take physical activities.

Convenient transportation is a significant factor affecting frequency of physical activity. There are many bus stops and subway stations around those parks now. Most residents are satisfied with the transportation, while a few visitors think Xiangshan road—the road to the gate of Xiangshan park is a bit chaotic. Therefore, surrounding environment around the park needs to be focused on and improved.

Park characteristics especially shades is associated with duration of physical activity. For example, Xiangshan Park which possesses 0.27 million trees provides many shades and sitting areas in the mountains. According to semi-structured interview, visitors also prefer to run, walk or sit around the lake because of wide vision. Beihai Park and the Summer Palace both possess large lake that attract many runners and walkers. Thus, natural environment is important to stick to physical activities. Those historic parks relied on superior geographic environment which stick out from numerous parks in Beijing, attracting many local people.

Gender, education, place for taking activities and attractiveness are positive related to intensify of physical activity. According to our result, male is positive related to the intensity and frequency of physical activities. Previous studies also found that male is significantly positive in the frequency of physical activities in both Western and non-Western cities (Thi-Thanh-Hien, 2019, Baran, 2013, Özgüner, 2011, Sreetheran, 2017, Wang, D., 2015, Wright Wendel, 2012). Generally, men's physical capability is more stronger than women. This may explain that gender affects intensify of physical activity. As for frequency of physical activity, men had on average slightly more leisure time than women in China (Wei, Monika 2015) so that they can take physical activities more frequently. People with higher education level including associate and bachelor degree tend to take more intensive physical activities. This may be explained by location of the park. Those parks are all located in Haidian district, where universities, research institutions, and high-tech park are concentrated. Residents around are mostly from those institutions and more likely to get higher degree. Attractiveness is also a significant factor affecting intensity of the physical activity. Respondents were willing to spend time in place with attracting scenery. Those well-designed famous parks embodies the highest level of Chinese traditional garden art which attract plenty of local residents to take physical activities.

Physical health is significantly positive in habitual companion. Respondents who came to the park in group were in better physical health. Parks are charming places for them to spend time with family, friends and partners, to socialize, to participate in scheduled events, thus improving quality of life and well-being.

Mental health is positively associated with the frequency and duration of the physical activity, education level, and park characteristics (space size). Higher frequency and duration of the physical activity leads to better mental health. This finding was the same as previous studies indicate that higher frequency of physical activity was related to improve mental health (Abdullah, 2016). In addition, reviews reported that self-reported PA is associated with health-related quality of life (Bize et al., 2007). Respondents with higher education level also causes better mental health. This result was the same with the previous study finding marked association between educational status and the

likelihood of having sought mental health services (Leah et al. ,2007). Space size is also positively related to mental health. Large space with wide view may keep respondents pleasant mood and leads to better mental health.

However, historical and cultural atmosphere is not significantly related to the frequency and duration of physical activity and physical health. According to semi-structured interview, some of local residents did not feel strong historical and cultural atmosphere in those parks owing to lacking of historical knowledge and being accustomed to ancient architecture and gardens in Beijing. This means historical and cultural atmosphere are not primarily used for physical activity by respondents.

Based on the results of this research, it is recommended that future research could devote on different age of people such as teenagers. In addition, future research could compare historical parks to other types of parks. By doing this, more objective and specific strategies could be proposed for improving social value of historical parks.

5. Conclusion

This research explores relationships between park characteristics, physical activities and health in historical parks in Beijing, China. Some limitations are worth mentioning in this respect. The survey sample need to be more to improve the accuracy.

Our results confirm some tendencies of physical activity, characteristics of parks and health indicators observed elsewhere, but also revealed cultural and place-specific particularities. In contrast with western cities, safety is not a problem in Beijing. All areas are supervised. And because of crowded Asian cities' contexts, local residents taking physical activities need to avoid plenty of visitors which affects time and activity zones for physical activities in historical park. Such cultural and context-specific differences should be considered in theories of park use, park planning and historical park management (Thi-Thanh-Hien ,2019). Historical park and its surrounding environment need to be improved for more people to use. For example, in Beihai Park, more benches, toilet and navigation card need to be set in order to enhance convenience for park users, and some temporary architecture and surplus grass need to be changed into open space for people to take physical activities. In addition, historical parks need to disseminate history and culture to park users including local people, and closed area need to be open to make people get close to traditional culture as well as adding activity space, thus inheriting culture and making them more attractive.

China have experienced dramatic demographic urbanization and urban land expansion with the rapid economic growth during the past four decades (Sun, Zhao,2018, Zhao et al.,2015). Historical parks are part of urban green space and the symbol of Chinese culture. Urban historical parks play an important role in rehabilitating and revitalizing urban areas, and in strengthening physical activity of citizenship (United Nations, 2016). It is necessary to protect and revalorize historical park, and integrate culture and memory into social life, thus achieving the goal of cultural sustainability in the city.

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Exploring Associations between Street Networks and Cycling from the Perspective of Space Syntax: An Empirical Research of Yangpu District of Shanghai

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Abstract: Research on the correlation between physical activity such as walking and cycling and the built environment has received extensive attention. Based on how the built environment causes travel, most of the existing research focuses on spatial features such as land use, scale, density, and location on different geographic scales. The street networks is the largest and most obvious global space that affects the movement of residents. However, few studies pay attention to the influence of the structural characteristics of the street network on physical activity, thus ignoring how individuals are affected by the surrounding space elements in the process of movement. According to the theory of spatial syntax, the individual movement in the urban space network is caused by the space network itself under the same conditions, which means that the spatial configuration of the street network is a decisive factor for the movement pattern. Therefore, this paper, taking Yangpu District of Shanghai as an example, uses Mobike (a biking sharing service provider) location data to analyze the impact of urban spatial morphological characteristics on cycling. Firstly, the spatial network model of street space, which is based on the notion of a 'segment map' is established by spatial syntax, and the variables such as connectivity, integration and depth are used to characterize the spatial topological features of networks. Then, the time-space characteristics of the distribution of residents' cycling activities are analyzed by using Mobike location data. Subsequently, a spearman correlation analysis was used to assess the correlation between cycling activity and street network morphological characteristic. Interestingly, this paper finds that the local morphological characteristics of the street network have more correlations with the use of bikes than the global features. The space syntax variable that is most strongly associated with bicycle use appears at a search radius of 700 meters.

Keywords: cycling; Mobike; space syntax; spatial networks analysis

Introduction

There is clear evidence that cycling has substantial benefits for both physical and mental health. Studies have shown that regular physical activity has substantial health benefits (Warburton and Bredin, 2006, Janssen and Leblanc, 2010). People who lack adequate physical activity are at higher risk of chronic diseases such as overweight, obesity, hyperlipidemia and hypertension (Katzmarzyk et al., 2009). Cycling, as a low-carbon, environmentally friendly way of travel, has received great attention in urban research and planning practices in various countries (Moudon et al., 2005a). Cycling activities are affected by many factors such as age, gender, natural and built environment, and there

are great differences in the habits of cycling in various countries(Wang et al., 2016, Stewart and Moudon, 2014). There is growing evidence that some characteristics of built environments are closely linked to the level of cycling activities. Among many factors in built environment, lower density housing, single land use, lack of health and recreational facilities, limited public transport systems and public open spaces usually act as the barriers to physical activities, including cycling(Giles-Corti and Donovan, 2002, Saelens et al., 2003, Sallis et al., 2012, Troped et al., 2011, Van et al., 2013).

Since 2016, bike sharing, featuring “ on-demand” have begun to appear in the streets of some major cities in China. Compared with the traditional “pile-oriented” public bikes system, bike sharing can be more flexible and distributed in various angles in the city(Zhang and Mi, 2018). Although it brings certain difficulties to urban management, its flexible layout a provide great convenience to residents in cities. In some megacities such as Beijing and Shanghai, the number of sharing bikes has exceeded 3 million. Not only that, the popularity of bike sharing has also changed the daily traffic habits of residents. According to the White Paper on Bike Sharing and Urban Development released by Mobike in 2017, after the emergence of bike sharing, the proportion of urban cycling travel increased from 5.5% to 11.6%. Furthermore, 81% of bikes in Beijing are active around the bus station; 44% of bikes are active around the subway station. And these two figures are 90% and 51% in Shanghai, respectively. This shows that the emergence of bike sharing can not only effectively alleviate urban traffic congestion, but also change the traffic habits of urban residents. At the same time, under the background of bike sharing, residents' cycling activities will present new time and space characteristics. For this new cycling service provider in China, whether the relationship between cycling and built environment presents new features remains to be studied

Based on how the built environment causes travel, most of the existing research focuses on spatial features such as land use, scale, density, and location on different geographic scales. These researches are based on the assumption that space is the container of socio-economic activity and that the link between socio-economic activities results in movement. However, few studies pay attention to the influence of the structural characteristics of the street network on physical activity, thus ignoring how individuals are affected by the surrounding space elements in the process of movement. The quantitative description of urban spatial structure by space syntax theory makes it an important tool for urban planning and design decision-making. The theoretical basis of the "natural travel principle" is that the main factor shaping the urban user movement model is not the specific land use, but the spatial structure of the street network. Space syntax is a set of theories and techniques for measuring the spatial configuration of street networks. By focusing on street networks rather than buildings or parcels to describe the built environment, space syntax analysis considers spatial properties of physical space(Hillier et al., 1993). Therefore, this paper aims to use space syntax tool to identify the impacts of the relative characteristic of networks on cycling activities.

Cycling and built environment

In the identification of built-in environmental factors for cycling activities, most researches are based on the “3D” theoretical model of traffic and environment, and the environmental variables are selected from the three dimensions of Density, Diversity and Design(Cervero and Kockelman, 1997, Cervero et al., 2009, Moudon et al., 2005b). The density dimension mainly includes population density: per acre, employment density, and employment accessibility. The diversity dimension mainly includes the number of land types used in each grid of hectares, the average entropy of various types of land, vertical mixing degree, and land development intensity: residential, commercial, office, etc. Business intensity, proximity to commercial retail. Design dimensions include street design, support for walking and cycling activities, and site design elements. Among them, street design elements include street type, connectivity, street width, speed limit, number of blocks, highways, street green coverage,

street lighting, etc. Supporting elements of walking and cycling activities include the proportion of sidewalks, signals, etc. Number of intersections, average length of street blocks, width of sidewalks, interval between street lights, slopes, length of acar lanes, stay and rest facilities, shelters, etc.; site design elements include commercial retail services The design of sexual and landscape fountains. In the subsequent research, according to the development level of different countries and regions and the behavior characteristics of residents, research has increased the distance from traffic stations and the accessibility of destinations on the basis of 3D(Lee and Moudon, 2006). Moudon added "R" on the basis of 3D, that is, the environmental characteristics of the travel path are equally important for walking or cycling. In addition, in another study, Moudon proposed a spatial element that influences physical activity in the environmental-behavior theory model, which she believes should be derived from the origins and destinations of the individuals' walking or cycling trips, and the surrounding areas of the travel path(Moudon and Lee, 2003). The primary spatial object that identifies the environmental impact factor. From this point on, urban streets have become the main target for identifying the impact factors of cycling activities. More and more research has begun to pay attention to the physical form of the road and the impact of the perceived environment on physical activity.

Spatial variables in urban models in existing studies are often measured by distance. This approach comes from the observation and assumption that economic and social forces shape matter and distance is a measure of economic costs. Another perspective in existing research is to build urban models through people's complex perceptions. The main spatial variables include safety, social environment, visual quality and maintenance, and perception of sports destinations or facilities. The presence of parks, sports facilities, trails and bikes lanes, the perception of the existence of walking obstacles, and the capture of walking support conditions in the neighborhood. And this perspective tends to be a partial vision to observe the urban space. Therefore, the urban modeling method in the urban planning field should focus on the overall and local level, the residents' perception of urban space during the travel process.

Previous studies for the measurement of built-in environmental characteristics within a spatial unit at a certain geographic scale. This type of research has a natural assumption that urban space acts as a container for the influencing factors of physical activity. However, urban forms are characterized by self-organization. The original research design ignored the influence of the structural features of urban form on physical activity. Therefore, the study aims to explain the initial application of this emerging travel mode through a quantitative model of urban morphology. Hillier pointed out that in fact people's movement in the urban street network is based on the minimum number of turns rather than the shortest distance, and is a city street network, rather than attraction points, shaping the travel activities in the network(Hillier et al., 1993).What is still unclear is whether the structural characteristics of this urban form still have an impact on bike sharing in China and what is the theoretical explanatory power.

Methodology framework

The case study and data

Taking Yangpu District of Shanghai as an example, this paper attempts to analyze the influence of topological features of street networks on the distribution of cycling activity based on spatial syntax theory by using the location data of bikes sharing on a rest day, trying to explore the applicability of space syntax theory to emerging bike sharing travel mode. As one of the first cities to share bikes and the largest number of bikes in Shanghai, residents have become more stable in terms of the number and habits of bike sharing. As an old industrial base in Shanghai, Yangpu District is transforming into a knowledge-based innovative city centered on colleges and universities. Wujiaochang is a sub-center

of Shanghai City. The research area is mature and rich in function types, and it is representative of the relationship between the spatial structure of the city and the distribution of cycling activities.

Cycling behavior is greatly affected by the weather, and poor weather conditions can result in a significant reduction in cycling travel(Wang et al., 2016). In addition, cycling behavior has obvious differences in the use of working days and rest days. In order to reduce the impact of weather and commuter traffic on the research results, the study selected the rest days with good weather conditions to analyze the characteristics of cycling behavior. The date is November 18, 2017.

The research data in this paper obtains the location data of the use of bike sharing in Yangpu District of Shanghai through crawlers, and the space vector data such as POI and road acquired through open source map. Among them, the bike sharing data is crawled through the network to obtain the unlocked bikes information available in the research area. The daily data covers 48 time-and-half-hour time points throughout the day, covering approximately 327,539 locations in November 18, 2017 (rest days) in Yangpu District, Shanghai, including: bikes ID, location information, time information, etc. . These data are based on the user's completely spontaneous riding behavior, which can more objectively reflect the space-time characteristics of the residents' cycling behavior.

Space syntax modeling based on the segment map

From the existing research, more urban travel activities are attributed to the results of being attracted by travel destinations and being perceived by distance. Space syntax theory holds that when people move linearly in the city, the land-use will tend to remain the same, but when you turn a corner and move from the front of the same plot to the back, you will enter another world. Hillier called this transition through two topological depths one of the historical mysteries of urban planning. Therefore, in the urban model of spatial syntax, the basic unit of the city is not a land, but a straight line. Thus, Hillier proposed the principle of “natural travel”, that is, when other factors are not considered, the distribution of traffic flow in the city is only related to the topological form of the street network. On this basis, he believes that it is not the store that attracts the crowd, but in the process of urban evolution and development, the choice of location of commercial land use will make full use of the advantages of people flow caused by the characteristics of pure space organization, thus making “natural movement” has a multiplier effect(Hillier et al., 1993).

The classical research tool of spatial syntax is the axial map. At the beginning of the spatial syntax applied to the spatial study of urban scale, the axis model dominates. However, as research continues to expand, the axial map gradually shows its limitations. Ratti pointed out that the axial modelling only considers the characteristics of the dual network, while ignoring the typical network features such as distance(Ratti, 2004). Since 2005, space syntax has developed a second-generation model: line segment angle model(Hillier and Iida, 2005, Turner, 2007). In addition to the topological relationship, the new model can accurately reflect the geometric properties of the street network (ie, the turning angle of the street segment), showing a more accurate description of the urban spatial structure. The basic element of the line segment model is the street segment between road intersections. It is essentially based on the improvement of the axial map.Reflecting the line segment angle map in addition to capturing the topological properties of the street network, it can also reflect the geometric relationship of the network, including Concepts in Euclidean geometry such as line angle, distance, etc. The improved integration value essentially reflects the minimum number of turns from one road to another within a certain radius.

In view of the extensive research that has proved the applicability of segment map to large-scale urban space research , this paper uses segment map as the network analysis model of space syntax.

(networks analysis models). Identify the spatial group effects that influence and shape sharing bikes and their importance. As a kind of analytical tool for quantitatively describing the topological features of urban spatial structure, spatial syntax reveals the complex relationship of urban spatial form through parameters such as connectivity, control, depth and integration. Its calculation method mainly inherits the centripetal analysis method in social network analysis. Connectivity primarily represents the number (k) of other spatial units in the network that are directly connected to spatial unit i.

Integration reflects the degree of agglomeration and dispersion of a certain space and other spaces in the city. If the integration of a point is higher, the other points within the analysis range are easier to reach. Its calculation formula is as follows :

$$\text{Integration} = \frac{D_k(k-2)}{2\left(\frac{\sum_{j=1, j \neq i}^N d_{ij}}{N-1} - 1\right)}$$

Where i, j represents a spatial unit, k is the number of other units in the network, and N is the total number of spatial units in the network. Depth is the reciprocal of the integration. Choice is used to measure the probability of traffic flow in space (Hillier, et al., 1987). All axes are linearly related to each other and must pass through other axes. The degree of selectivity can be measured as the number of passes. That is, the degree of selection can reflect the importance of the axis within the scope of analysis. Its calculation formula is as follows :

$$\text{Choice}_i = \frac{1}{(N-1)(N-2)} \sum_{j=1; k=1; j=k=1}^N \frac{n_{jk}(i)}{n_{jk}}$$

The modeling method is to create the axis model by hand-drawing, transform the axis model into a line segment model by Depthmap software (version 10, UCL) and calculate the relevant space syntax variables. Then the segment map is imported into the arcgis and registered, and the attribute connection is used to connect the calculation result to the registered segment map. Cycling data analysis and visualization are done in ArcGIS (ver. 10.2) software. It should be pointed out that in order to avoid the "edge effect" in network analysis, it is necessary to set a buffer of a certain distance around the analysis area as the base area of drawing the segment map. Therefore, the study area of this study is Yangpu District, Shanghai. According to the speed of cycling activities and the actual urban space composition, base area is set up around Yangpu District, west to north-south elevated road, east to Huangpu River, north to outer ring highway. South to Yan'an elevated road.



Fig 1 the base area and the study area

Results

Since the acquired bike sharing data is the position information of the unlocked state, the bikes that have never been moved throughout the day, it is ensured that the counted bicycles have been used.. The activity of bike sharing in the study area is known by counting the number of bikes that have been moved throughout the day according to a 30-meter grid. As can be seen from Fig. 2, the use of bikes on the off day is still closely related to the subway station.





Fig 3 the results of integration, choice and depth in segment map modelling

Finally, the segment map in the Depthmap is imported into ArcGIS 10.2 and georeferenced. Then, in terms of line segments, count the number of moved bikes within 30 meters around the line segment. Spearman correlation analysis was performed in SPSS 22. Table 1 shows the spearman correlations between the global spatial syntax parameters and the use of moved bikes, important topological characteristic variables such as choice, integration, depth and connectivity pass the significance test ($p < 0.0001$). However, although the level of significance is higher, the correlation coefficient is generally lower, and the highest correlation coefficient is 0.203 (connectivity).

Table 1 Spearman correlations between the number of the moved bikes and the global space syntax parameters

	Global choice	Global integration	Global depth	Connectivity
R^2	.124**	.134**	-.134**	.203**
Sig.	.000	.000	.000	.000

Interesting findings are found in the correlation analysis of local spatial syntax variables and cycling volume from different scales, as shown in Table 2. When only the same variable is concerned, it will be found that the most relevant variable always appears on the 700m scale, and this total situation occurs simultaneously in these three set of variables. As the spatial scale becomes larger, the correlation coefficient decreases and the significance test is not passed at the 3500 m scale. Second, when compared with global variables, global integration and global choice are positively correlated with the number of bike sharing used, while these two variable show a negative correlation at with the number of bike sharing used 1600m and 700m scale. This change in the direction of correlation caused by the different scale does not appear in depth. The global spatial syntax variables represent the importance of spatial units in the overall spatial configuration. The local space syntax variable is related to how the residents perceive the local environment. It can be seen from the above analysis that the overall spatial structure of Yangpu District is related to the use of shared bicycles, and the influence is very limited. However, the spatial characteristics of the Yangpu District show few support for cycling activities. Comparing the two correlation analyses, it can be seen that the correlation coefficient of the local variable is generally higher than the global coefficient, and as the search radius continues to expand, the correlation coefficient begins to decrease.

Table 2 Spearman correlations between the number of the moved bikes and the local space syntax parameters

Choice_R700	Choice_R1600	Choice_R3500	Integration_R700	Integration_R1600	Integration_R3500	Depth_R700	Depth_R1600	Depth_R3500
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R ²	-.349**	-.126**	0.048	-.265**	-.122**	0.019	-.372**	-.193**	-.072*
Sig.	.000	.000	0.103	.000	.000	0.527	.000	.000	0.014

Unlike previous studies, the spatial syntax variables of this study did not show a strong correlation with shared bicycle use. There may be two reasons for this explanation. One is the existence of more access control street districts in Chinese cities. In Shanghai, shared bicycles are usually forbidden to enter the interior of residential areas and unit complexes. This is also why in the southern regions where road network density is high, the use of shared bicycles is very low. For further explanation of the less relevant correlation, the spatial structure of Yangpu District and the calculation result of segment map should be combined and analyzed. The result of spatial syntax also reflects the relationship between function and urban form. Fig. 4 shows the integration calculation results of the segment map in study area. It can be seen that, as Hillier said, the local road network encryption phenomenon brought by the integrated core appeared in the southern part of the region near the center of Shanghai. The inner center of Yangpu District is located at Wujiaochang area. As shown in the figure, the current commercial center and integration center are misplaced. In other words, the attractiveness of the Yangpu District Commercial Center has yet to be further enhanced. Secondly, through field research, it was found that non-motor vehicles were prohibited from entering the Wujiaochang area. In other words, due to the lack of support for the cycling activities in Wujiaochang, the high traffic is more from the subway station.. This is another potential reason why the relationship between integrated cores and shared bicycles is not strong. The results show that the overall explanatory power of networks features at the overall level is weaker than the local level. For integrated values, when the spatial scale of the analysis is large, it is positively correlated with the cycling activity. When the spatial scale is small, it is negatively correlated with the cycling activity and the depth value is always negatively correlated with the cycling activity regardless of the spatial scale. As is shown in Fig 4, the distribution of the high integration is more correlated to the subway station than local integration.



Fig 4 local integration distribution at 700 m, 1600 m, 3500 m radius

Discussion and conclusion

Based on the spatial syntax theory and model tools, this paper explores the influence of spatial fabric characteristics on the use of bike sharing in Yangpu District, Shanghai. This paper uses the location data of bikes among one day in weekend in Yangpu District of Shanghai, and analyzes the space-time characteristics of the bike sharing use on the rest day in Yangpu District by using ArcGIS and other

analysis tools, and the number of bike sharing and the parameters of space syntax at different scales. A spearman correlation analysis was performed. The study found that although there is a lack of strong correlation factors, integration, choice and depth in urban network analysis still shows a significant correlation effect with bikes use. Moreover, from the comparison of three different spatial scales, the correlation coefficient of choice is increasing as the spatial scale becomes larger. This shows that road density has a strong correlation with cycling activities at local scales. However, when the spatial scale is gradually increased, the correlation between the integrated value and the cycling activity begins to change positively and negatively. The larger the spatial scale, the stronger the positive correlation. Because the distribution of global integration values is more relevant in metro lines and site distribution. That is to say, compared with the “constant speed transportation system” of the traditional city, the actual “integrated nuclear” brought by the “differential transportation system” of the modern city is the shaper of the cycling, and is also the current resident’s habits to use bike sharing. Yangpu District used to be an old industrial base in Shanghai. Compared with Jing'an and Huangpu, the neighborhood has a large scale and low road density. There are more “access control” communities and unit complexes. With the deepening of the transformation process of Yangpu District to the knowledge-innovated urban area, the road network encryption phenomenon of the local integrated core will appear in the future, and the correlation between urban spatial form and function will be further enhanced.

Compared with the existing research on the correlation between cycling and built environment, the urban model based on spatial syntax can simultaneously measure the influence of global and local spatial fabric features on cycling activities, and thus shape the spatial factor of cycling activities at different scales. The lack of trajectory data for cycling activity is the reason for the lack of explanatory power of the integrated value based on the minimum angle weighting. This research is not enough to answer the question of whether people move at the smallest or shortest distance.

Of course, there are many limitations in this study. For bike sharing data, since the python returns the location of the bikes every half hour, the bike sharing usage within half an hour will not be recognized, and it is difficult to eliminate the interference caused by human factors such as bikes company internal dispatch. Secondly, this paper only attempts to analyze the space syntax theory to explain this new way of cycling in China, and has not yet thoroughly analyzed the built-in environmental factors affecting cycling activities. So, in the background of bike sharing, is the space configuration still the shaper of the cycling activity? The answer to this question requires further research in the next step. In the follow-up study, other built-in environmental factors such as land use, spatial form, and road traffic conditions will be included as control variables, , so as to explore the causal link between cycling activity and the built environment more deeply and comprehensively.

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Urban river regeneration as a tool for healthy city planning: the case of Shenzhen Futian river.

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Abstract: In the last decades, urban river regeneration (URR) has been increasingly adopted to solve environmental issues, especially in China. The prevalence of this trend is due in part to the fact that, besides solving water pollution problems, urban rivers are a potential new source of open public space for contemporary cities. Due to the extremely rapid urban development, available public space in these cities is shrinking and becoming more and more inadequate. In this context, URR can enhance the quality of the built environment, social life, and public health. This study aims to investigate the influence of URR on social life by analyzing people's behavior and perception of space. Due to its geographical location and its urban context, Futian River in Shenzhen has been chosen as a case study. Methods adopted include direct observation, interview, and survey research. The study is expected to explore the influence of urban river regeneration on social life, adding new knowledge for future healthy city planning in contemporary urban environments.

Keywords: urban river regeneration, open public space, human interactions, urban life

Introduction

Urban rivers as Linear Parks

After the 1950s, in China, the provision of urban green spaces started to be increased (Xiao-Jun, 2009). By 2000, China's green space ratio, green space coverage, and public green area reached 27.4%, 23% and 6.52%, respectively. However, these percentages are still relatively low. As noted by Xiao-Jun (2009), theories and methods for the planning of the urban green space system are still lacking. These issues are due to a lack of knowledge about biological processes and natural spaces in relation to urban form development. Moreover, administrative zoning limits green space development, as natural spaces and urban processes do not evolve along the same timeline (primarily due to biological principles). In their critique of the 1989 City Planning Act of the People's Republic of China, Ng and Wu (1995) explain how long-term city planning in China (20 years) is not effective in guiding urban development. In response to this critical situation, the Chinese Government over the last two decades adopted new planning strategies to increase the provision of green spaces in urban contexts (Zhao et al., 2013, Chen and Hu, 2015). Green spaces are usually public, and provided by the government (You, 2016). However, there is still an unequal distribution of green space in urban contexts due to the high-density built-up development (You, 2016). Specifically, in cities that are becoming denser, the often-adopted infilling approach produces compact urban areas, which threaten the ability to provide open green spaces accessible to the public (Haaland and Bosch, 2015). As Haaland and Bosch (2015) point out, there is growing evidence of the decrease of urban green space due to urban densification processes, especially in Asian cities. In this context, urban rivers emerge as a potential source of urban green open space, providing continuity within the green infrastructure and bringing more advantages than the sporadic green infill that is normally adopted in high-density cities.

One of the main advantages of URR is to provide the city with a new continuous greenway. In fact, the space generated by URR is typologically a linear urban open space, very similar to a linear park. While the positive role of urban green space in improving social and mental health is well-known (Grahn & Stigsdotter, 2010; Wolch et al., 2014), there is also a growing body of literature on the advantages of having urban green space

distributed along linear spaces in the form of greenways. As an example, Brown et al. (2014), indicated that urban parks of various shapes offer different opportunities for people and influence both physical activities and the distribution of social and environmental benefits. To confirm this study, Liu et al., (2016), demonstrated that in the case of Shenzhen, green and well-developed areas strongly support physical activities such as walking, jogging, and cycling. In addition to facilitating physical activities, linear parks provide many more benefits compared to other types of urban parks. In fact, linear spaces may have a greater impact on urban neighborhood environments and social interactions because of their narrow and long shape, which can provide more access to diverse neighborhoods. Accessibility is especially important for children, the elderly, and the unemployed, in other terms, vulnerable groups (Shen et al., 2017). In addition to accessibility for vulnerable groups, the linear typology can also provide access to different social groups, with a wide range of income and social status. In this regard, since linear shapes can cross continuously different districts in the city, urban rivers appear as a collector of social and urban life. Moreover, Park and Kim (2019) provided evidence that linear space has strongly influenced surrounding economies. To summarize, newly developed linear green space has frequently served social, environmental, and economic purposes.

As extremely rapid urbanization over the last few decades in contemporary cities has caused the available public space to shrink and become more and more inadequate, river regeneration has increasingly been adopted to improve ecosystems, enhance the quality of urban environments, or to gain economic benefits (Palmer et al., 2005). In fact, URR has become a worldwide tendency (Holmes, 1998; Henry et al., 2002; Ormerod, 2003). The common objectives of URR include controlling the quality of the natural environment (Gordon, 1996), improving accessibility, and improving the urban landscape along rivers. Given differences in national policies, geographical conditions, climatic conditions, and cultural backgrounds, every country has its own strategies and methods for river regeneration. The US, Canada, and Europe all have policies and legal requirements to encourage RR, such as the US Water Act (1972), the Canadian Water Act (1985), and the EU Water Framework Directive (WFD), (2000), (Morandi et al., 2014). However, in these countries, river regeneration is more oriented towards solving ecological and environmental issues and is mainly adopted in sub-urban or peripheral contexts. On the other hand, in China, several river restoration projects were undertaken from the 2000s as part of a national effort to improve mostly urban environments (Zhao et al., 2013). Compared to western countries, URR in Chinese cities is a relatively recent practice, but the pace of URR development in China is faster.

River Regeneration impact assessment

Although river regeneration projects are frequently executed around the world, there are relatively few studies to assess their success. Bernhardt et al. (2007), concluded that only 10% of RR projects in the United States over the last 30 years have had their progress monitored. In Japan, Nakamura et al. (2006) also emphasized that while these projects have been growing rapidly since the 1990s, it was rare to evaluate them at that time. In China, there are thousands of rivers that have been regenerated in recent years, but the knowledge of how to evaluate the results of URR is weak. It is crucial to assess whether any restoration project has successfully reached its objectives (England et al., 2008). Indeed, for Bradshaw (1983), the conclusion of the evaluation of restoration projects is an acid test of our understanding, and it is crucial for future studies.

According to Palmer et al. (2005), the success of URR projects can be explicitly evaluated along three axes, as shown in Table 1. Ecological success is the primary axis: URR achieves this success by enhancing the quality of the environment, mainly by solving water pollution issues and improving urban microclimates. Many studies that analyze bioremediation technologies for the natural and ecological environment have been conducted with the hope of improving the quality of remediation and control of urban rivers pollution (Qu and Fan, 2010; Wang et al., 2012). However, despite a growing body of knowledge on the ecological success axis, few researchers have investigated the social impact of URR.

Table 1. Axes of success in RR (Palmer et al., 2005).

Success	Evaluation Guidelines
Ecological Success	Guiding image exists Ecological improvement Self-sustaining No lasting harm done Assessment completed
Stakeholders Success	Aesthetics Economic benefit Recreation Education
Learning Success	Scientific contribution Management experience Improve methods

Social Impact of Urban Rivers Regenerations

The regeneration of urban riverfront space, which always combines natural and social resources, provides more public open space for urban residents. It is believed that the new space generated after URR can both improve a population's relationship with the river and provide new space for different kinds of social groups. In fact, the new riverfront space is an important part of urban open and green space, which is increasingly recognized as a recreation-oriented part of an urban landscape (Kienast et al., 2012).

Achieving both ecological and social success has increasingly been acknowledged as among the most essential parts of URR (Palmer et al., 2005; Petts, 2007). Baschak and Brown (1995) demonstrate that riverfront space brings not only ecological benefits to the city but also social benefits. The assessment of social impact is not clear because, compared to ecological impact, social impact is generally of secondary importance (Eden and Tunstall, 2006). Yang et al. (2013) believed the waterfront area to be a golden zone that brought new opportunities to developers. In addition, they believed riverfront space to be a new place for improving the urban living environment. The social impact of public green space considers how people use the new riverfront space, how people experience new human interactions along the river, and whether the new space truly caters to people's daily needs. Diverse recreational facilities and well-planned landscapes within public open spaces can encourage people to visit and thus promote human interactions between people (Gehl, 2011). Much research has focused on the human dimension of urban greenways (Gobster and Westphal, 2004), classifying them in categories such as cleanliness, aesthetics, safety, appropriateness of development, naturalness, and access. Other studies have related human interactions to the connectivity concept (Kondolf and Pinto, 2017), but little research has investigated the influence of rivers regeneration on human interactions.

Human interactions, in particular Face-to-Face (FtF) interactions, are intense and pervasive along urban reaches of rivers and along with these interactions come the communication and movement of different people, cultures, and ideas (Kondolf and Pinto, 2017). As time has passed, human interactions around rivers have been changing. Kondolf and Pinto (2017) identified that rivers can, depending on their size, have different social impacts. In ancient time, interactions occurred along rivers given their importance for transportation and agricultural use. With the development of society, however, urban rivers have become multi-functional spaces that can provide ecological and social benefits to the urban environment. An important aspect of social life, FtF human interactions are fundamental to people's well-being. In fact, it has been demonstrated that human interactions have positive benefits on public health, especially mental health (M. Leyden, 2003, Bernstein et al., 2012, Francis et al., 2012). In some cases, increasing the number of human interactions can even prevent premature mortality (Holt-Lunstad, 2018). Relevant studies have demonstrated the relative importance of FtF human interactions compared to online interactions; these studies have shown the association of the symptoms of depression with time spent online (Kraut et al., 2002). Caplan (2003) confirms this theory, relating psychosocial well-being to online communication rather than to FtF. Moreover, human interactions play a fundamental role in the definition of social life and social capital (M. Leyden, 2003), both of which are features very relevant to one's well-being. Finally, human interactions between different social groups can blunt the

effects of segregation in urban contexts. For example, Cattell et al. (2008) observed that in public open spaces, people of different backgrounds could join each other in the same recreational activities and learn from one another. Rasidi et al. (2012) indicated that urban green space could enhance human interactions between different communities. The research also revealed that the vegetation density, biological diversity, landforms, and water bodies provided favorable conditions for human interactions.

The paper will focus on recreational use along the river to investigate the impact of URR on urban life, mainly focusing on human interactions as a relevant aspect of social life. The study attempts to answer the following questions. (1) Who are the frequent river users? (2) From where do they come? (3) How frequently do they visit? (4) What is their level of satisfaction with and perception of the riverfront space? (5) What is their level of human interactions and with whom are these interactions occurring?

Methodology

Case study: Futian River, Shenzhen

Due to its extremely rapid urbanization and its massive demographical development, Shenzhen is here chosen as a case study. Having evolved for only around forty years, Shenzhen is located at the border of Hong Kong, 100 km south from Guangzhou and part of The Greater Bay Area and is one of the major high-density financial centers in southern China. In 2014, with its 50 million inhabitants, Shenzhen overtook Tokyo in terms of population and territorial expansion. Shenzhen, the first SEZ (Special Economic Zone) in China, is a leading city in economic reform. Moreover, Shenzhen territory is characterized by a dense urban fabric, so there are obstacles to providing green spaces and to introducing new green elements. Due to its dynamic evolution, history, and urban morphology, Shenzhen appears as a relevant testing site to proceed with data collection and analysis for investigating the impact of URR on social life. Special emphasis will be focused on the role of urban rivers as potential sources of new green space in high-density cities.

From north to south, Futian River runs through Bijiashan Park, Central Park and finally joins Shenzhen River; the flow pattern follows a linear distribution. Futian River is a 6.8 Km long urban river, and it crosses the main urban neighborhoods in Shenzhen. In 2008, due to severe water pollution issues and the need to improve waterlogging areas in the city, the Shenzhen Government renovated the river space. The Government hoped not only to solve the pollution issues and to increase flood control and prevention but also to improve the urban landscape and the equality of the areas crossed by the river. Furthermore, the government aimed to enhance public open space. Moreover, accessibility to the rivers has been improved, promoting the connection between people and the waterfront space (Shenzhen Water Conservancy Planning and Design Institute, 2008).

Survey Research Design and Interviews

Whether or not the regenerated riverfront space is actually promoting communication and interactions among different users around the river needs to be verified. The methods typically adopted to investigate people's perceptions of space and demographics include both quantitative and qualitative approaches, such as surveys and interviews. These methods are applied here to answer the research objectives. Demographics data must be collected, as the percentages of human interactions and social activities along the river have to be calculated. Moreover, people's satisfaction will be investigated, combined with accessibility and frequency of visits to the river. Questionnaires were distributed randomly along Futian River on weekdays and weekends between 7.00 a.m. – 7.00 p.m. At the same time, in-depth interviews were conducted. People who showed interest in being interviewed on the topic of the social impacts of URR would be asked explorative questions about social interactions along the regenerated river.

Results and Discussion

Demographics

The results of the survey analysis are based on 220 questionnaires. Data were coded into IBM SPSS for the descriptive statistical analysis. The general information in Table 2 shows that the sample of the respondents is 49.1% male and 50.9% female, and that most respondents are aged between 31 – 42, which accounts 30.9% in total. The results also showed that users of Futian River are very diverse, with different ages, educational levels, and income levels.

Table 2. Descriptive Characteristics of the Questionnaire Respondents

		Frequency	Percent (%)	Valid (%)	Percent
Total number	Valid	220			
	Missing	0			
Gender	Male	108	49.1		49.1
	Female	112	50.9		50.9
	Total	220	100		100
Age	Cannot tell	1	0.5		0.5
	Below 18	5	2.3		2.3
	19-30	61	27.7		27.7
	31-42	68	30.9		30.9
	43-54	34	15.5		15.5
	55-65	35	15.9		15.9
	above 66	16	7.3		7.3
	total	220	100		100
Education	High school and below	95	43.2		43.2
	Junior college or undergraduate	102	46.4		46.4
	Postgraduate or above	23	10.5		10.5
	Total	220	100		100
Occupation	Cannot tell	23	10.5		10.5
	Student	18	8.2		8.2
	Retired	61	27.7		27.7
	Unemployed	26	11.8		11.8
	Employed	92	41.8		41.8
	Total	220	100		100
Household Income	Cannot tell	3	1.4		1.4
	Below 5000	17	7.7		7.7
	5000-10000	52	23.6		23.6
	10000-15000	55	25		25
	15000-20000	54	24.5		24.5
	Above 20000	39	17.7		17.7
	Total	220	100		100

Frequency

The first part of the survey questionnaire aims to understand the frequency of visits to the Futian River. It includes three questions, which are how often, for how long, and when people visit the river waterfront. Table 3 shows descriptive statistics of these frequency related questions. As we can see from Figure 1, in the total sample, around 30% of people visit Futian River daily, making this the most common of five frequency

choices; the second most common frequency (24.5%) are those who come to the Futian River three or four times a week, and only 6.8% is the first time to visit Futian River.

Table 3. Descriptive Statistics of Frequency Questions

			First time	Less than 1 day per month	Once per week	3-4 days per week	Everyday	
How often		N	15	47	38	54	66	
		Percent	6.8	21.4	17.3	24.5	30	
			Never	Rarely	Sometimes	Often	Always	
How long stay	Less than 30 minutes	N	32	107	46	25	10	
		Percent	14.5	48.6	20.9	11.4	4.5	
	30minutes - 1 hour	N	28	70	85	33	4	
		Percent	12.7	31.8	38.6	15	1.8	
	1-1.5 hours	N	30	49	90	47	4	
		Percent	13.6	22.3	40.9	21.4	1.8	
	1.5-2 hours	N	41	62	59	58	0	
		Percent	18.6	28.2	26.8	26.4	0	
	more than 2 hours	N	61	44	47	43	25	
		Percent	27.7	20	21.4	19.5	11.4	
	When	Before 9am	N	73	37	45	48	17
			Percent	33.2	16.8	20.5	21.8	7.7
		9am-13pm	N	66	56	46	40	12
			Percent	30	25.5	20.9	18.2	5.5
		13-17pm	N	47	47	69	48	9
			Percent	21.4	21.4	31.4	21.8	4.1
17-21pm		N	37	31	80	63	9	
		Percent	16.8	14.1	36.4	28.6	4.1	
Above 21pm		N	189	19	7	3	1	
		Percent	85.9	8.6	3.2	1.4	0.5	

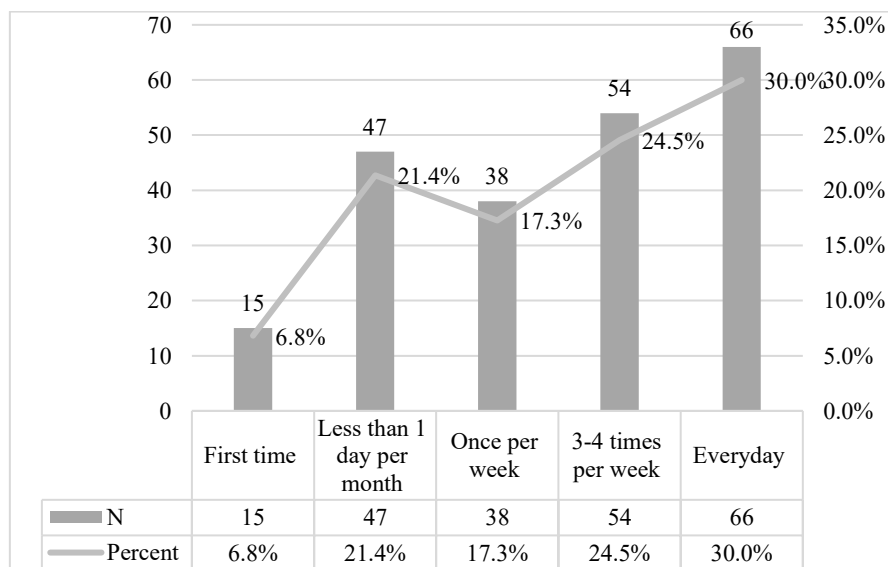


Figure 1. The Frequency of people visit Futian River

Accessibility

On the accessibility dimension, the main purpose is to find out from where people have traveled, what kind of transportation they use, and how long it takes for them to reach the Futian River. Table 4 gives an overview of accessibility-related questions. The results indicate that most people come to Futian River from their homes, with walking the most common means of transformation. As shown in Figure 2, most people (37.3%), can get to Futian River in between 10 and 20 minutes, and 33.2% travel within 10 minutes. The results show that Futian River has relatively high accessibility in terms of walking distance from the riverfront space.

Table 4. Descriptive Statistics of Accessibility Questions

			Never	Rarely	Sometimes	Often	Always
Where	Home	N	11	10	19	78	102
		Percent	5	4.5	8.6	35.5	46.4
	Work	N	123	30	43	18	6
		Percent	55.9	13.6	19.5	8.2	2.7
	School	N	191	7	9	10	3
		Percent	86.8	3.2	4.1	4.5	1.4
	Shopping	N	138	53	27	2	0
		Percent	62.7	24.1	12.3	0.9	0
	Restaurant	N	136	52	29	2	1
		Percent	61.8	23.6	13.2	0.9	0.5
Transportation	Walking	N	30	15	34	51	90
		Percent	13.6	6.8	15.5	23.2	40.9
	Bicycle	N	113	26	42	29	10
		Percent	51.4	11.8	19.1	13.2	4.5
	Bus	N	154	21	25	13	7
		Percent	70	9.5	11.4	5.9	3.2
	Driving by self	N	189	9	14	5	3
		Percent	85.9	4.1	6.4	2.3	1.4
	Metro	N	200	9	10	1	0
		Percent	90.9	4.1	4.5	0.5	0
			Within 10 minutes	10-20 minutes	20-30 minutes	30-40 minutes	More than 40 minutes
Travel time	N		73	82	33	13	19
	Percent		33.2	37.3	15	5.9	8.6

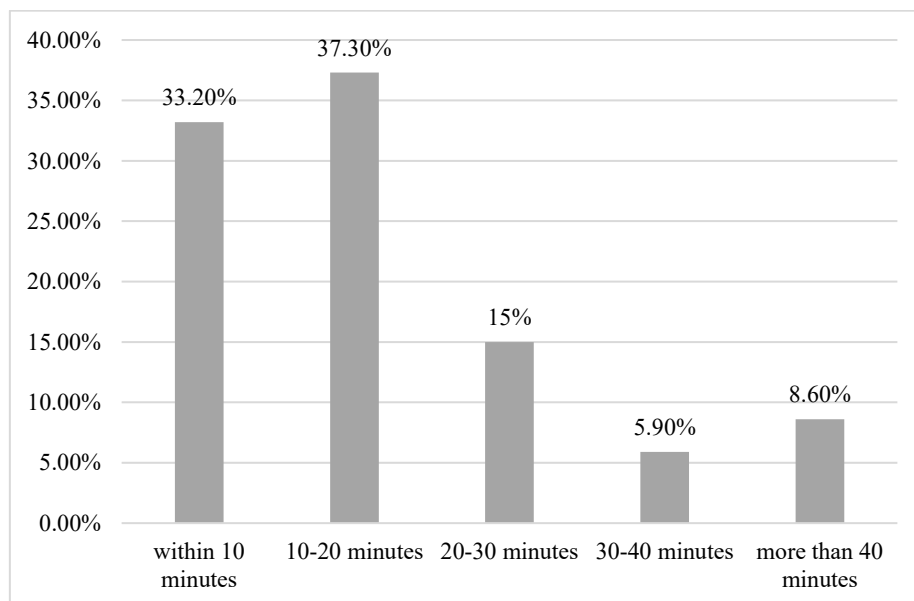


Figure 2. The Travel time to Futian River

Human Interactions

One of the most critical parts of the survey questionnaire consists of investigating whether people have human interactions in the riverfront space. The third and fourth part of the questionnaire is designed to collect information about the usage of riverfront space and people's interaction habits. The collected data in these two parts can help to find out the relationship between human interactions and the use of the space. As shown in Figure 3, around 60% of people indicated that they sometimes, often, or always having social interactions with others along Futian River. Only 13,6% of the survey replies affirmed that they never have human interactions along the riverfront, but a further 25% acknowledged that they rarely have such interactions. The majority of responses (40%) stated that human interactions occur sometimes. The percentage of people interacting compared to people not interacting is therefore relatively high.

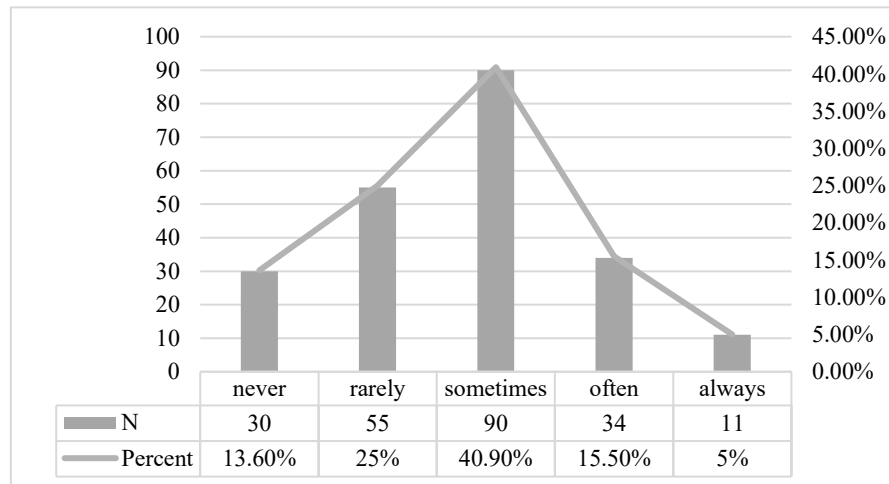


Figure 3. The number and percentage of people's social interactions along the Futian River

After analyzing human interactions percentages, Pearson correlation has been applied to verify if human interactions are related to some activities happening on the riverfront space. People's activity preference is based on Likert scale 1 to 5 (where one means never, and five means always do these kinds of activity along with riverfront space). In Figure 4 the mean and standard deviation of all activities observed are shown; at a higher level of mean, a higher number of people involved in the activity. Preferred activities are walking, relaxing, or resting in the riverfront space. Further correlational analysis results show that among all activities relaxing, resting, waiting or killing time, and dancing have a positive correlation with the percentage of human interactions.

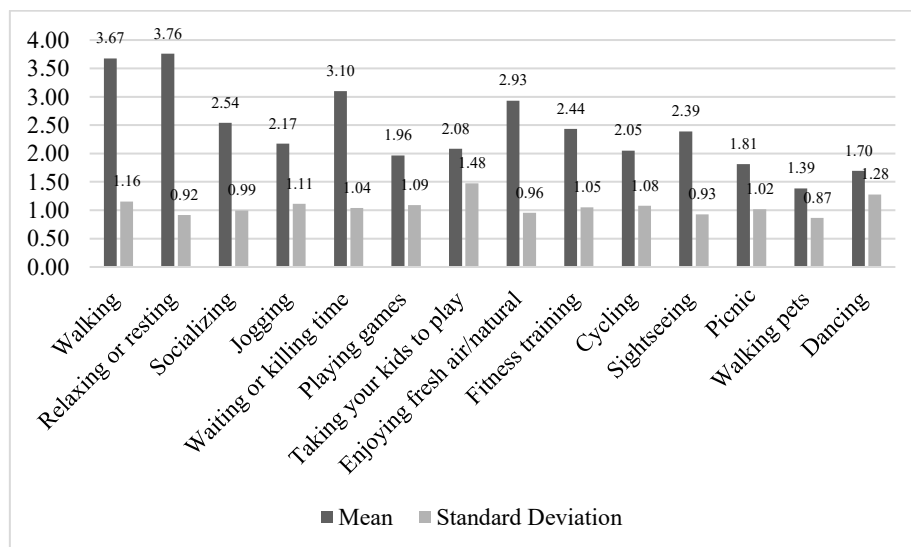


Figure 4. People's Activity Preference along Futian River

Finally, in order to understand people's perception of the riverfront space, some questions were asked to investigate and measure satisfaction and importance of the riverfront space, the variables investigated are as follow: safety (SA), activities (ACT), cleanliness (CL), facilities (FAC), public service (PS), spatial features (SF). Importance and satisfaction rates were expressed on Likert scale 1 to 5. Table 5 shows the average rates of people's perception. It appears that users of riverfront space consider relevant all variables, but with satisfaction rates are relatively lower than importance rates. The correlational analysis between people's satisfaction rate and human interactions shows that the satisfaction of the cleanliness and maintenance of public toilets, distribution of rubbish bins, and playground for children have a positive effect on human interactions. At a higher rate of satisfaction of these four factors, a higher number of human interactions is happening on the riverfront space. This type of analysis is relevant in assessing which are from users perspectives the most important variables. By associating with which factors people are not satisfied, further improvements can be arranged to increase frequency index, consequently the number of users, number of people participating in social activities and finally the percentage of human interaction.

Table 5. People's Satisfaction and Importance Rate of Futian River

	Satisfaction rate	Importance rate	Satisfaction std	Importance std
(SA) Personal safety	3.89	4.57	0.82	0.64
(ACT) Public events	3.69	4.26	0.85	0.74
(CL) Cleanliness of public toilets	3.70	4.32	0.77	0.69
(CL) Distribution of rubbish bins	3.54	4.19	0.90	0.70
(FAC) Bicycles parking	3.20	4.05	0.86	0.73
(FAC) Facilities for disabled	3.04	4.08	0.94	0.74
(FAC) Playgrounds for children	3.16	4.11	0.90	0.76
(FAC) Sport facilities	3.26	4.09	0.82	0.76
(FAC) Water disposals	2.83	3.93	0.95	0.79
(PS) Distribution of public toilets	3.26	4.20	0.97	0.75
(PS) Maintenance of public toilets	3.41	4.22	0.87	0.70
(PS) Service areas	3.45	4.10	0.80	0.70
(SF) Shadow areas	3.91	4.34	0.72	0.64
(SF) Lawns	3.85	4.40	0.78	0.70
(SF) Benches	3.84	4.41	0.79	0.71

A critical aspect of human interaction mentioned before concern the importance of facilitating interactions among different social groups, helping to heal segregation in urban environments. To investigate this aspect, besides statistical analysis, in-depth interviews have been conducted to understand people's attitude towards experiencing human interactions with strangers. The three most frequent answers reveal the fact that they generally do not care who are the people they are interacting with. Most people have interactions with other individuals with the same hobbies such as dancing, playing chess or fishing; kids are also seen as a bridge for interactions; usually, if kids are playing together, parents have communication with each other.

These were the most popular answers to the question regarding who are the people they are interacting with. In these statements, people show that they do not care about the social status of others. Another prevalent answer was related to the fact that human interactions happen on some specific occasions, such as asking others necessary information. This answer provides support to the fact that people feel safe to ask instant information to strangers, still not caring about social status or provenance.

To summarize, from the results, people on the riverfront space are in percentage inclined to experience human interactions. Moreover, most users did not care about social status, income, level of education, or provenance. Therefore, it can be assumed from this study that the riverfront space has a positive impact on people's behavior in terms of social life and human interactions, even between different social groups.

Conclusion

As an indispensable part of urban development and green space provision, rivers are getting more and more attention nowadays. In this context, URR emerges as a potential source of new green space well-distributed in the city, allowing residents of different communities to easily enjoy social resources, experiencing human interactions, and improving their social life. URR has developed rapidly in China, but few studies have assessed the social impact of URR on urban life. This paper discusses whether the regenerated river as a linear public open space in the city promotes human interactions as an aspect of social life, providing more public activity opportunities for urban population. Methods applied to evaluate the regenerated riverfront space are both quantitative (survey research design) and qualitative (direct observations and interviews).

The results show that the regeneration of Futian River promotes the advantage of its linear characteristics and provides more public open space for the surrounding residents within the linear range. Accessibility and availability of the riverfront linear space promote a well-distributed use of social resources and a high frequency of visits. Moreover, findings from survey and in-depth interviews also indicate that the improvement of the riverfront space quality increases people's satisfaction of Futian River, leading to a high frequency of visits and consequently increasing the chance to experience human interactions. People of all ages, all levels of education and income showed interest in the riverfront space, and a relatively high percentage of human interactions generally occurs in the riverfront of Futian River regardless the social status of users.

Eventually, this study has several limitations and offers room for future improvement. Firstly, data collected should be benchmarked against a sample of other case studies with different morphological characteristics in order to rise the evidence of the social impact along the regenerated riverfront. Secondly, the sample size can be enlarged in order to increase the accuracy of data results and decrease the margin of error due to calculation processes. In conclusion, this study can be considered as a preliminary research aiming to demonstrate the effectiveness of URR on the improvement of social development and provision of public green space in a Chinese high-density city such as Shenzhen. Besides, it contributes to the current knowledge on the assessment of URR success.

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Temporarily Pedestrianised Street in Hong Kong: Governmental Strategy of Implementation and Tactics of Appropriation.

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Abstract: International organizations promote the equitable provision of open public spaces (OPS) as a strategy for healthy cities planning. In the context of high-density Asian cities, the densely built environment, constraints generated by mobility infrastructures and the limited distribution of OPS pose challenges to the implementation of equitable OPS provision. Pedestrianisation –the conversion of a vehicular street for pedestrian uses– is emerging as an effective policy to increase the supply of OPS. Nonetheless, the temporary or permanent space conversion strategy –from mobility infrastructure to OPS– lacks a comprehensive implementation framework. This paper reviews the governmental policies for the supply of pedestrianised streets (PS); it investigates the *tactics* of PS appropriation drawing upon the case of Hong Kong, one of the densest and more socially polarized Asian cities. The unconventional use of the short-term OPS can provide insights into *tactics* of informal use of OPS and it can contribute to evaluating the need for pedestrianisation and for additional planning measures. This study comprises documentary analysis and primary data collection and analysis. The method adopted for policy review is content analysis. The methods adopted in fieldwork involve unobtrusive observations. Results are presented in the forms of policy review and Structured Direct Observations.

Keywords: open public space, planning, pedestrianisation, stationary activities, Hong Kong

Introduction

The equitable provision of urban open public spaces (OPS) is increasingly recognized as a strategy to promote social wellbeing in the form of social interaction, communal sharing and cultural expression in cities (Carr *et al.*, 1992; UN-Habitat, 2015). As OPS has become a further contested resource among different uses and ownership-domain in cities, current academic research, international organizations, urban planning, and public discourses give particular attention to the function of urban streets as public space (UN-Habitat, 2013). Specifically, academic research urges to incorporate the mobility uses (pedestrians, bicycles and motorized vehicles) as well as stationary uses (as social functions and cultural expression) in the planning of urban streets (Agyeman and Zavestoski, 2015; Von Schönfeld and Bertolini, 2017). In addition, research on the variety of temporary, planned or unplanned uses of urban streets by organization of citizens and small-scale entrepreneurs suggests the need for a more flexible approach to planning of urban streets to accommodate these uses (Hou, 2010; Bishop and Williams, 2012; Lydon and Garcia, 2015). Pedestrianisation, a transport planning measure for the temporary or long-term conversion of a vehicular street for exclusive pedestrian uses (Hass-Klau, 2015), epitomizes this dynamic struggle to incorporate a multiplicity of uses (pedestrian, cyclist

and partially vehicular mobility and pedestrian stationary uses) and the need for a flexible approach to planning of urban streets (Von Schönfeld and Bertolini, 2017).

The objects of this study are the planning framework for long-term and temporary pedestrianisation, and the stationary uses -consolidated over time- of the first pedestrianised street-space in Hong Kong. In this high density and compact urban environment, the quantity and quality of OPS are severely limited, and the issues related to the competing uses that public space needs to fulfil are exacerbated (Tang and Wong, 2008; Siu and Huang, 2015). A recent measure to re-open a pedestrianised street to vehicular traffic after 20 years over complaints about long-term stationary uses (Hui, 2018; Transport Department, 2018a), suggests there might be the need to reconsider the pedestrianisation planning framework and to integrate the stationary uses in the planning for pedestrianisation.

Drawing upon De Certeau's theory of strategies –policies generated by the government– and *tactics* –the powerless individuals' creative act of negotiating strategies to meet their needs– the paper revisits the conflicts between formal pedestrianisation planning and the informal stationary use of space (De Certeau, 1984). This paper first discusses the need of seeking a balance between mobile and stationary functions in planning for pedestrianisation, by illustrating the rationale behind competing and complementing roles of mobile and stationary functions in pedestrianised streets. Secondly, it discusses the logic underlying pedestrianisation policies and planning in Hong Kong. The question investigated in this second part is: to what extent planning for pedestrianisation in Hong Kong considers mobility and stationary uses? We sought answers to this question through the content analysis of the purposes and objectives of pedestrianisation policies and planning strategies. In the third part, this article focuses on the evidence of consolidated stationary uses within the first implemented case of temporary pedestrianisation in the central business district (CBD). The final section of the paper focuses on how the limitations of the pedestrianisation policy and planning strategies could be overcome by considering the empirical evidence emerging from behavioural research. It also sets indications for further work.

Pedestrianised streets: stationary and mobile uses

Urban OPS play a vital function, they contribute to social inclusion, communal sharing, cultural integration, democratic and political expression in cities (Carr *et al.*, 1992; Gehl and Gemzøe, 2004; Cattell *et al.*, 2008; Madanipour, Knierbein and Degros, 2013). They have a role as well for environmental and economic sustainability of cities (Chiesura, 2004). OPS can be places for exchange and interaction with a great variety of population (Bertolini and Dijst, 2003). So that the equitable provision of accessible and varied OPS is considered a strategy to promote the health determinants (facilitating social cohesion, supportive social networks, healthy lifestyles) that relate to the physical environment of cities, under the WHO Healthy Urban Planning Initiative (Barton and Grant, 2013).

OPS refer to different spatial forms that include public parks, squares, space between buildings, markets, transport stations, streets and sidewalks (Jacobs, 1961; Bertolini and Dijst, 2003; Chiesura, 2004; Mehta, 2013). These spaces integrate a wide variety of mobility flows as flows of pedestrians, bicycles and increasingly of personal mobility devices. At the same time OPS play the vital contribution of enabling a wide variety of stationary activities in urban environments as allowing people to linger, stand, sit, socialise, read and share food (Cattell *et al.*, 2008; Mehta, 2009; Gehl, 2011). Urban planning research and practice is increasingly showing how these activities can be

encouraged through temporary, flexible, planned or unplanned initiatives as in Copenhagen (Christiania occupation and Stroget Street pedestrianisation), London (Camden Lock pop-up market), Bogotá (Ciclovía, Highway pedestrianisation) and Hong Kong (temporary seating in urban neighbourhoods) (Bishop and Williams, 2012; Lydon and Garcia, 2015; Rossini, 2019).

OPS in the form of urban streets accommodate wider mobility functions. Urban streets are at the same time networks for private, public and shared means of transportation of people and goods, this constitutes a significant part of the functioning of urban environments. So that urban streets are often only associated to this mobility function (Von Schönfeld and Bertolini, 2017). The contribution of streets to the function of public space is equally important. Jacobs (1961) argues that “Streets and their sidewalks, the main public spaces of the city, are its most vital organs. Sidewalks, their bordering uses, and their users, are active participants in the drama of civilization...” (Jacobs, 1961, pp. 29–30).

Pedestrianised streets might represent an extreme case of these mobility and public space dynamics. Pedestrianisation is one traffic control policy that is devised to reduce the environmental and safety drawbacks of the motorized vehicles, to reallocate space for non-motorised vehicles and pedestrian mobility and activities, and, more essentially, to improve the urban environment as a place in which to stay (Brambilla and Longo, 1977; Yuen and Chor, 1998). Research on the benefit shows that pedestrianisation can lead to a significant increase (20-40%) of pedestrian flow (Hass-Klau, 1993) as well as stationary activities (sitting, strolling, socialising) (Gehl and Svarre, 2013). Pedestrianisation can involve the closure of one street or one entire precinct to motorised traffic.

Most of pedestrianisation planning have been established as a strategy to reduce automobile congestion in city centres or to stabilise downtown commercial activity, in the theory of De Certeau to “impose order” (De Certeau, 1984). According to De Certeau the “strategies” are the act of systematizing and ‘imposing order’ (idem). Strategies are imposed by structures of power- as institutional bodies- and produce a space “the city” (idem). Similarly, pedestrianisation policies and planning, promoted by the government and relevant departments produce the pedestrianised space according to specific rules.

Individuals act in the environments that are set by strategies performing “tactics”. “Tactics” are the powerless individuals’ ways to disrupt and negotiate the strategies that are imposed to them (De Certeau, 1984). These imply a creative effort to negotiate the environment in order to meet individuals’ needs. The pedestrian that takes a shortcut in the imposed rational grid of the city is an example of tactic (idem). Similarly, in the case of the pedestrianised space produced by strategies of traffic control or commercial revenue increase, pedestrians apply “tactics” to meet their needs. Specifically, through *tactics* of pedestrianised space appropriation pedestrians negotiate the environment to perform their stationary activities that otherwise cannot find spaces elsewhere.

Pedestrianisation planning in Hong Kong

In Hong Kong road infrastructure occupies the 3.7% (compared to 2.3% for private housing) of the 270 km² of the city built-up area, serving a population of more than 7 million. In comparison to other high-density Asian cities as Tokyo and Singapore, in Hong Kong the public transport modal share is high (about 90% of journeys) and the car ownership is low (74 per 1000 people). At the same time because of its high density, Hong Kong’s roadway system is the world most heavily used (Murakami and He, 2018). The

planning of urban streets as high-circulation or car parking infrastructure, the functional segregation of the urban environment (Siu and Huang, 2015), and the privatisation and the commercialization of public space heavily impact on both quantity and quality of the OPS (Tang and Wong, 2008; Xue, Ma and Hui, 2012). The OPS standard is set by the Planning Department to a minimum of 2 m² per person. On average the quantity of OPS is 2.7 m², compared to the 7.4 m² per person in Singapore (Lai, 2017).

Hong Kong transport policy goal is to ensure the efficient, safe and environmentally sustainable mobility of people and goods. The railway is set as backbone of the transportation system and road safety and traffic congestion and related vehicle emissions reduction are high priorities. Since the late 1990s, a range of strategies has been implemented -including pedestrianisation-in the attempt to mitigate the conflicts between pedestrians and vehicles. Pedestrianisation is promoted at the government level as a traffic planning policy. The department involved in planning is the Planning Department or in some cases, the planning is directly initiated by the Transport Department (Planning Department, 2001). The implementation is carried out by the Transport Department and Highways Department. Other than one pedestrianisation project in the CBD, most of the pedestrianisation projects were completed by the second half of 2000. These are of three types (Transport Department, 2019):

- Full-time pedestrianisation: In these streets, pedestrians have absolute priority. Vehicular access is restricted to emergency services only, but service vehicles may be allowed in specific periods, for selected locations.
- Part-time pedestrianisation: In these streets vehicular access is only allowed in specific periods. In these streets there is no on-street parking space.
- Traffic Calming Street: In these streets there is no restriction to vehicular access, but vehicles are slowed down, and sidewalks are normally widened.

The purposes and objectives of pedestrianisation changed through time, the next section examines the pedestrianisation policies and planning strategies of the last twenty years since pedestrianisation was first introduced.

Policy review: Purposes and objectives of pedestrianisation planning

Since the late 1990s, the Hong Kong Government started a city level study on pedestrianisation planning. The analysis of twenty years of policies shows a gradual change in the planning approach, from safety and mobility oriented to a commercial and later accessibility focus. In order to have an in-depth review of the relevant pedestrianisation planning approaches, this section will examine the purposes and objectives of the governmental planning policies in Hong Kong through content analysis (Gaber and Gaber, 2007). The data sample consists of policy addresses, planning strategies and legislative council papers from 1997 to 2016. The main intended function, the purposes, and objectives of pedestrianisation are summarised in Table 1.

The *Third Comprehensive Transport Study* (CTS-3) (HKSAR Transport Department, 1999) conducted by the Transport Department (TD) is the first planning strategy to put forward the concept of pedestrianisation at the city level. The planning approach of CTS-3 (HKSAR Transport Department, 1999) and later of 1999 *Chief Executive Policy Address* (HKSAR, 1999) shows a major focus on the mobility objectives of pedestrianisation. The purpose of CTS-3 is to update Hong Kong's transport infrastructure policy framework upon considerations of population increase and traffic-related air pollution increase. Pedestrianisation, increase in access to public transport and grade-separated pedestrian links are considered measures to promote walking as a short-distance transport mode. This significantly influences the mobility function in the planning for pedestrianisation. In addition, the purpose of pedestrianisation is a purely

traffic control resolution, that is to improve road safety by minimising the conflicts between vehicles and pedestrians. The three types of pedestrianisation (permanent, partial and traffic calming) are firstly here delineated. The decision on the implementation of a specific type of pedestrian scheme is linked to traffic management requirements, assessed by a study on the impact on local district traffic. The suggested implementation of part-time pedestrianisation is supported by a traffic management motivation: the unavailability of loading and unloading alternative access routes. This makes evident that the mobility function (concern about the access of vehicles in specific time periods) is a main issue.

These directions are represented in the 1999 *Chief Executive Policy Address* (HKSAR, 1999) where three streets in high priority urban areas (Causeway Bay, Mongkok and Tsim Sha Tsui) are selected. Russell Street, one of the most crowded streets in Hong Kong, is also set for pedestrianisation implementation in the same year. This selection of high priority streets is based on heavy pedestrian flow and pollution levels. The 2000 *Legislative Council panel on transport* further developed the pedestrianisation implementation plan in three phases: trial, traffic impact assessment and, eventually, in case of positive result the scheme would become permanent (HKSAR Legislative Council, 2000). From 2000 to 2005, the TD has extended pedestrian schemes to seven urban locations (Central, Wan Chai, Jordan, Sham Shui Po, Stanley, Yuen Long and Shek Wu Hui) other than the three priority locations. The mobility function as main objective of pedestrianised streets can be here observed in the traffic impact assessment as the only evaluation tool before implementation.

In 2001 *The Study on Planning for Pedestrians* was commissioned by the Planning Department (PD) (HKSAR Planning Department, 2001) and marks a shift in the approach to pedestrianisation planning. The objective is to formulate a more comprehensive planning and development framework for pedestrian planning at different levels (HKSAR Planning Department, 2001). In this document the concept of public space explicitly includes streets, footpaths and pedestrianised streets. It promotes planning for pedestrian mobility and safety purposes (linkage, safety, accessibility), but also for social gathering and leisure activities (stationary activities), stressing the possibility of commercial purposes and private sector involvement. In existing urban areas pedestrianisation is envisioned as a strategy to provide open public spaces. The new purpose of pedestrianisation is “[t]o provide pedestrians with a safe, healthier and more convenient street environment by giving more sympathetic consideration to pedestrians over vehicles” (HKSAR Planning Department, 2001). The objectives of pedestrianisation are widened and focus on the enhancement of the shopping environment and the provision of open public space in congested urban areas. Although this document envisions pedestrianisation planning for stationary uses, the main purpose of pedestrianisation planning is related to the additional commercial opportunities and retail viability given by pedestrianisation. These directions are embraced and updated in the *2016 Hong Kong 2030+: Planning and Urban Design for a Liveable High-Density City* (HKSAR, 2016), that promotes planning and urban design directions to enhance the quality of living and sustainability of Hong Kong. In this planning strategy, the purpose of pedestrianisation is shifted to the accessibility of the walking environment. Location of pedestrianisation projects should be explored in station precincts and walking environment enhancement plans should be part of a broader district-wide urban design plan. Drawing from Singapore covered passageways near transportation nodes, a further objective is to emphasize the provision of shading facilities and public seating. The focus shift on the accessibility of the walking environment through traffic calming streets (instead of pedestrianisation) can also be seen in the higher number of traffic calming projects implemented from 2005 to 2011 (HKSAR Transport Department, 2018b).

The analysis of twenty years of pedestrianisation policies shows that there was a gradual change in the planning approach, from safety and mobility to a commercial and later accessibility-oriented objective. Therefore, pedestrianisation objectives were mainly related to two aspects: mobility function and

commercial viability opportunity of pedestrianised streets. At the planning level, the increase of stationary activities in public space has never been highlighted as the main purpose of pedestrianisation, as this measure is mainly conceived as a traffic planning measure and implemented by the Transport Department. Therefore, pedestrianisation was initially planned to promote the mobility function of pedestrianised urban streets recognizing walking as a transport mode. The focus on the mobility function in the planning of pedestrianised urban streets can also be seen in the selection criteria of priority locations (focus on pedestrian flow), the type of scheme to be planned (based on vehicles loading access), the assessment criteria for implementation (traffic management requirements). All in all, the pedestrianisation strategy of the governmental bodies is related to the mobility function of pedestrianised street.

Table 1: Summary of main information related to Pedestrianisation planning in Hong Kong

Title	Type	Year	Function	Purposes of Pedestrianisation	Objectives of Pedestrianisation
Third Comprehensive Transport Study (CTS-3)	Planning Strategy	1997-1999			
The 1999 Policy Address: "Quality People Quality Home"	Chief Executive Policy Address	1999	Mobility function and safety function	<ol style="list-style-type: none"> 1. To promote walking as a short-distance mode of travel 2. To enhance road safety 3. To reduce pollution caused by vehicle emissions and associated air pollution 	<ol style="list-style-type: none"> 1. To consider needs of pedestrians in transport and land use planning 2. To recommend planning for pedestrians' guidelines in new areas and redevelopments 3. To designate high priority pedestrian streets based on heavy pedestrian flow 4. To enhance road safety through traffic diversion to periphery and by minimizing conflict between pedestrians and traffic
Legislative Council Panel on Transport "Pedestrian Schemes"	Legislative Council Paper	2000			
Study on Planning for Pedestrians	Planning Strategy	2001	Mobility function and stationary commercial use	<ol style="list-style-type: none"> 1. To provide pedestrians with a safe, healthier and more convenient street environment by giving more sympathetic consideration to pedestrians over vehicles 	<ol style="list-style-type: none"> 1. To minimise conflicts between pedestrians and vehicles 2. To provide a better environment for pedestrians 3. To improve pedestrian flow and provide a more favourable shopping environment 4. To increase open space provision and upgrade the quality of the environment in congested urban areas
Hong Kong 2030+: Planning and Urban Design for a Liveable High-Density City	Planning Strategy	2016	Mobility function and accessibility function	<ol style="list-style-type: none"> 1. To create a safe, inviting and accessible walking environment 	<p>Refer to Study on Planning for Pedestrians (2001) in addition:</p> <ol style="list-style-type: none"> 1. To explore location in station precincts 2. To incorporate walkable street plans as part of a district-wide urban design plan 2. To emphasize provision of facilities and shading and public seating

Chater Road pedestrianisation and public space appropriation

The analysis of the temporary pedestrianisation of Chater Road aims to provide an in-depth investigation into stationary uses practices-the *tactics*- in this pedestrianised street and shed light on the spatial characteristics as shape, shading facilities and seating availability that will generate insight for further discussion. Chater Road was the first implemented temporary pedestrianisation project, the precursor of the pedestrianisation schemes planned in the late 1990s and is a widely recognized cultural meeting space for migrant workers in Hong Kong (Law, 2002; Constable, 2007; Lorenz, 2009). Chater Road is located in the Hong Kong CBD (Figure 1), linked to a network of streets, parks, square and elevated walkways in one of the most accessible areas by public transportation in Hong Kong. The part-time pedestrianisation at Chater Road (between Pedder Street and Jackson Road) and the perpendicular Ice House Street (between Des Voeux Road Central and Connaught Road Central) was implemented on trial between 24 January and 27 January 1982 and permanently from 7:00 a.m. to midnight on every Sunday and Public Holiday starting from 31 January 1982 (Transport Department 2019, personal communication, 30 April).

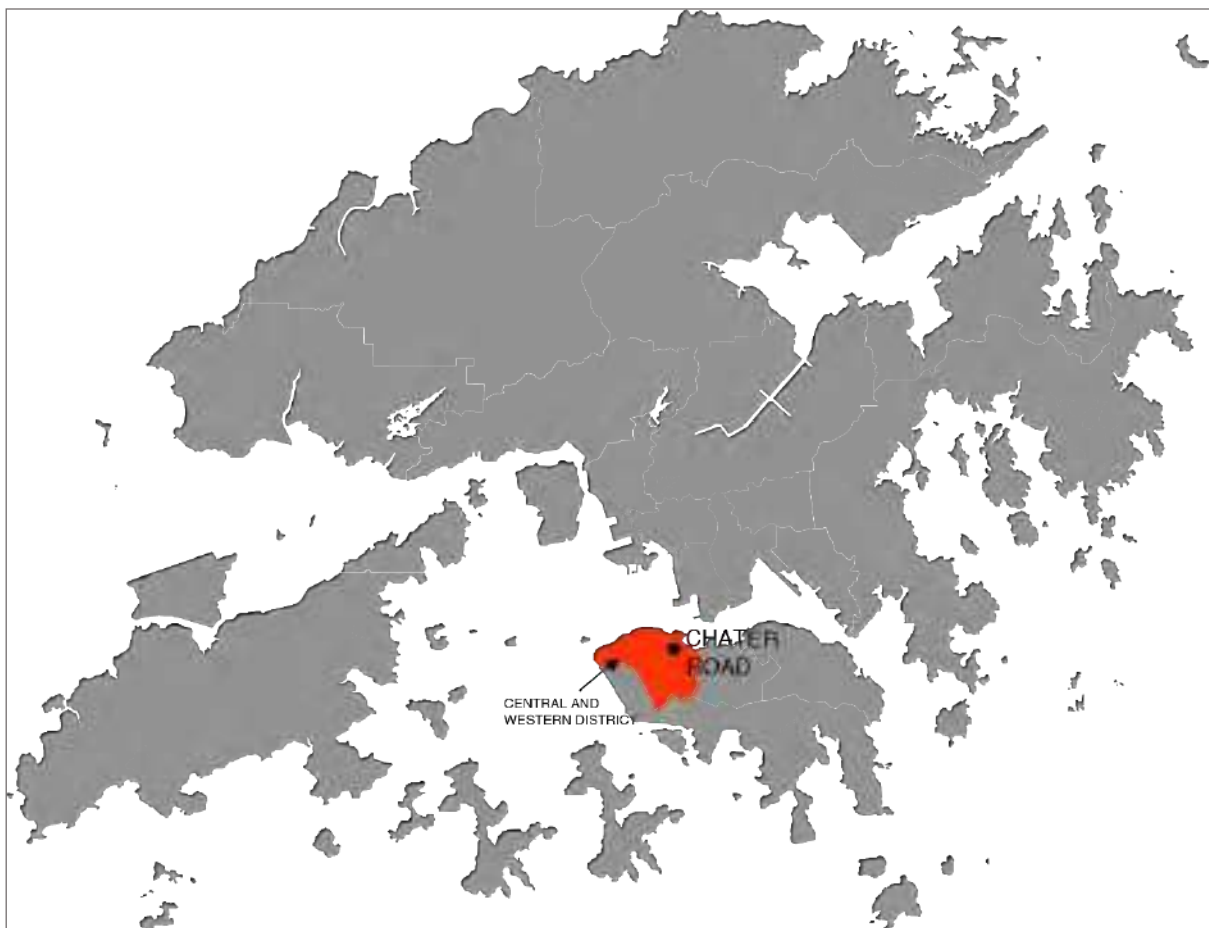


Figure 1: Location of Central and Western District and Chater Road

In 1982, Hong Kong Land, the leading central district landlord, proposed the closure of Chater Road to vehicular traffic during general public holidays. The strategy of pedestrianisation was related to commercial viability opportunity. In fact, the aim of the proposed project was to attract pedestrians to the high-end retail area and promote it as a shopping destination, organising concerts and cultural events attracting a wealthy public (Constable, 2007). While during the working days the walkways system provided greater accessibility to the connected Hong Kong Land's office and commercial properties, the CBD was empty at weekends, when offices were closed (Law, 2002). Once this street was pedestrianised, it attracted among others, migrant workers that found in Chater Road an accessible and well-served meeting point, near commercial facilities with shops (World Wide Plaza) and religious institutions (Law, 2002). During the weekly closure to motorised traffic in the pedestrianised streets emerge sedentary occupations as socializing, sharing food, sleeping, dancing, reading or praying (Figure 2). This temporary pedestrianisation in Chater Road and the perpendicular Ice House street has been going on since 1982 and gradually the area has become a form of open public space during vehicle-restricted hours. The experimental character of Chater Road use marks one high-density district in Hong Kong, with an average open public space quantity (2.1 m²) per person that is lower than the average city level (2.7 m²) (Lai, 2017). The stationary activities that take place in the pedestrianised streets can be conceptualised as *tactics* of space appropriation.



Figure 2: Chater Road temporarily pedestrianised street

Spatial characteristics of the pedestrianised street

Chater Road and Ice House Street were originally planned mainly for mobility functions (of motorized vehicles and pedestrian flow). The strategy of pedestrianisation planning enacted by the governmental bodies produced a space that is analysed in this section. The *tactics* -stationary uses- that emerge once the streets are closed to traffic suggest that the spatial characteristics of the streets might accommodate both mobility uses and stationary uses. The data here presented on the spatial features, design, land uses and establishments fronting the streets of the Chater Road pedestrianised area were collected through the on-site survey. This inventory was then recorded on geographic information system (GIS) and integrated with a dataset drawn from the Outline Zoning Plans. This plan is prepared by the Town Planning Board and the Planning Department and illustrates the designated land-use (commercial,

open space, road) and transportation patterns in every planning area (Chapter 131, Laws of Hong Kong).

The pedestrianised area consists of a 300m long by 22m wide street (Chater Road) and a 140 m long by 15m wide street (Ice House Street) that are closed to vehicular traffic during general holidays from 7 am until midnight. The area consists of two to three one-way traffic lanes plus loading bays in Chater Road and one-way traffic lane plus loading bay in Ice House Street. The street space is allocated for about the 53% (4558 m²) to motorized vehicle mobility with a concrete surface, while the remaining 47% (4095m²) is planned for pedestrian mobility with a paved surface. When no motorized vehicles move through this area, a total of 8653 m² (more than a football pitch) become a space that unites functions of non-motorized mobility and public space.

The function of non-motorized mobility is determined by the pedestrian flow generated by and from the three-mass rapid transport (MTR) exits located in the area and the bus stops and taxi stand in the streets surrounding the pedestrianised area, as well as street-level pedestrian flow from the surrounding area. The entrances to the commercial buildings and the luxury retail shops fronting the streets are additional pedestrian flow generators. During the motorized access times, this is channelled through the sidewalks and constrained by railings that do not allow pedestrians to randomly cross the roadway. When the area is closed to motorized traffic, pedestrians can potentially walk in any location of the street, making the railings lose their primary function. Similarly, the curb that separates the elevated sidewalk from the roadway loses the primary function of discouraging vehicles from driving on the sidewalk and makes this step open to multiple functions, other than mobility ones.

The pedestrianised area is characterised by two additional spatial characteristics that once motorized traffic is not allowed in the street, might contribute to the emergence of multiple uses of the streets (as stationary uses). The trees and landscaped areas that are planted in the pedestrianised streets can create shading and this condition can create favourable settings for sitting eating or any other stationary uses. In addition, the 621 m² elevated walkways that connect the commercial buildings, the MTR exit and bus stop canopies can provide shading and protection under adverse weather. These elements were purely planned with the aim of facilitating mobility functions, in one case to facilitate the pedestrian flow between commercial buildings and in the second case to ease the transition from a mobility area. Eventually, once the streets are closed to motorized traffic the shading and weather protection created by the skywalks and transport stop canopies can create wide weather protected areas for multiple uses.

Stationary activities in the pedestrianised street

In order to examine the *tactics*, stationary uses that emerge in the pedestrianised area, the purpose of this part of the study is to investigate the space occupation pattern of people in the street. The method applied is behavioural mapping, this links the design features of the setting with the behaviour of the occupants in both time and space (Bechtel and Zeisel, 1987; Mehta, 2009). This was based on three phases: on-site Structured Direct Observations, on-site video recordings of stationary activities along the full length of the area and geolocation of the activity points on Geographic Information System (GIS). Stationary activities data are information on the location where people gathered and socialized. All data were geolocated on GIS maps as points and added to the pedestrianised area dataset described in the previous section. Data were collected for one pilot study on Sunday, as pedestrianisation in-

place day, for one time-slot (1 pm) on January 2019. Observations were made during a day with moderate temperatures and climate conditions.

The Structured Direct Observation allowed to identify multiple stationary activities emerging in the pedestrianised streets (Figure 3). The main activities are socializing, sharing food, playing, talking on the phone, dancing or singing, taking a selfie, sleeping, reading, eating individually or using the phone. The average population density of 0.1 people per m² in the entire area is not quite indicative of the clustering of activities in a specific setting.

The Structured Direct Observation allowed to identify some general pattern of use of the space. Firstly, the street space is mostly dedicated to active behaviours as singing, dancing or distributing flyers. Secondly, the sidewalk area is appropriated by people that occupy the space, sometimes sitting with cardboards and gathering in groups. The specific area of the sidewalk where stationary activities are observed is in the area near the railings and the area near the curb. It is observed that the railing is used as a seatback while the curb is used as seating space. These two specific areas might be used as incidental seating space when the street is closed to traffic and they lose the primary function of directing a (pedestrian or vehicle) traffic flow. Stationary activities cluster in a few main areas of the street. These correspond to the shaded areas created by the three elevated skywalks and the public transport canopies. This suggest that when the access to the street is closed to motorized vehicles, the shaded space under the walkways or under the public transport canopies can accommodate stationary uses.



Figure 3: Stationary activities in Chater Road pedestrianised area

Discussion and conclusion

Based on current academic research this article set out one key question for pedestrianisation planning in Hong Kong: to what extent does planning for pedestrianisation consider mobility and stationary uses? we tried to answer it with the content analysis of the purposes and objectives of pedestrianisation policies and planning strategies. This highlighted that the increase of stationary activities in public space has never been considered as the main purpose of pedestrianisation. This was initially planned to promote the mobility function of pedestrianised urban streets recognizing walking as a transport mode. In the pedestrianisation policies the selection criteria of priority locations based on high pedestrian flow, the type of pedestrianisation to be planned based on vehicles loading

access and the assessment criteria for implementation based on traffic management requirements are parts where the focus on mobility function is evident.

Drawing upon De Certeau theory of strategies and *tactics* (De Certeau, 1984) this article presented Chater Road temporary pedestrianisation as a case study. It highlighted how the strategy of the pedestrianisation policy and planning are related to the commercial viability of the area and the mobility function in the design of the street. These strategies are negotiated through *tactics* based on the needs of users. This article shows the empirical evidence of stationary uses emerging from behavioural research of Chater Road temporary pedestrianisation. This area unites the function of moving through the pedestrianised streets as well as lingering and interacting between user. Although the spatial characteristics of the area have not been planned to encourage public stationary use, once the streets are closed to motorised vehicles, these becomes setting of multiple *tactics*, stationary activities as socialising, dancing, sleeping or sharing food. In particular the behavioural mapping shows that activities cluster on the curb of the sidewalks, near railings and mostly under the skywalks that become shading devices. Through the evidence of this case it is possible to inform how pedestrianised streets can be potential spaces where people can move through the city as well as have social interactions, communal sharing and cultural expression, in one-word social wellbeing.

This study reported one pilot-study observation of the pedestrianised area. Further research needs to extend the analysis to a wider number of pedestrianised streets cases. In addition, the total occupancy and the observations that emerged from Structured Direct Observation investigation can be further integrated analysing the occupancy related to specific spatial attributes of the pedestrianised streets (for example curb area occupancy and shaded area occupancy). This can highlight some directions for a planning agenda aiming at increasing the social wellbeing in similar contexts.

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Planning for accessibility and sustainable mobilities

Comparing Implementation Approaches in Mobility Innovations: The ECCENTRIC Project in Madrid

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Abstract: Innovation is often considered as a mostly linear process, piloted by visionary researchers, technicians and decision-makers to get new concepts implemented. This linear concept collides with much of contemporary thought on public policies, social action and collective thinking or knowledge creation. This paper illustrates this by analysing the planning and implementation processes of eleven measures in Madrid between 2016 and 2019, in the context of the EU Horizon 2020 *ECCENTRIC* project. The experience can be seen as a real-life experiment: different teams were charged with the implementation of each measure; although the territorial, political and social context was the same in all cases, the contents of the measures were different and each team had to find its particular route, sometimes getting momentarily lost, and sometimes arriving to unexpected destinations. The experiences of these teams offer an excellent basis to identify the essential traits that innovative measures have, and the alternative methodologies that planners and professionals may mobilise; not to get innovations implemented as initially planned, but to put innovations at the service of transformational public policies. Taking a wider understanding of their context, planners can embrace innovation critically and contribute to strengthen the local democratic discussion.

Keywords: Sustainable mobility; innovation; decision-making; planning theory

Introduction

The understanding of innovation processes in transport relies largely on Geels' (2012) description of socio-technical systems through a multilevel perspective (MLP). In accordance with this concept, changes in transport are mostly incremental, based on innovations produced by the incumbent stakeholders (mainly the transport industry), and only exceptionally of a disruptive nature, based on innovations produced by niche stakeholders challenging the dominant position of the incumbent industry and decision makers. In both cases, implementation of innovation is seen as a mainly lineal process in which research results move forward to pilots, full-size demonstrations and finally reach the market, eventually failing to move from one of these stages to the next one and perishing. Whereas this model can rightly describe wide technological developments (e.g. electro-mobility), it does not seem to capture the complexities of innovation implementation in particular contexts, such as cities.

In practice, the innovation process is far from linear, and this is particularly obvious at the demonstration stage in urban environments. The experience of large European Union's (EU) demonstration projects in cities show the lack of linearity of the innovation process, as many

innovations do not follow the simple stages of design, implementation, operation and upscaling. Along any of these stages, many innovative measures fail to move forward, and others undertake substantial changes. This can be the consequence of the interaction of the measures with their local context (Hodson et al, 2017). They can also be the consequence of the adaptation of the measure at stake with the elusive concept of *public interest*: transport is not a stand-alone, isolated policy sector but a part of a broader set of public policies serving the political agenda and priorities of those in charge.

From a public policy perspective, demonstrations become not only a critical stage of the innovation process, but also of a broader knowledge-creation process. A process that moves away from the rigid, external hierarchies of the Porphyrian tree, but which is also elusive to be described through the Deleuzian concept of rhizomes. The pragmatic tradition can be useful in this particular situation: an idea agrees with reality, and is therefore true, if and only if it is successfully employed in human action in pursuit of human goals and interests, that is, if it leads to the resolution of a problematic situation (Westbrook, 1991). In the context of innovation in urban transport, demonstration actions are asked to address a concrete challenge; however, this challenge is not the one defined by the researchers and experts that developed the original idea; the challenge has to be so in the terms defined by the particular political context in which the demonstration takes place; in other words, the idea has to be embedded within the larger perspective of the identification of the public interest in each particular local context.

The paper is organised in three sections, besides this introduction. The next section provides an overview of ECCENTRIC, a European Union's (EU) demonstration project running between 2016 and 2020, concluding that the demonstrations carried out by the project in Madrid can be classified into three different categories, with specific challenges in terms of implementation and with different knowledge creation processes and potential: the "means-focused", "market-focused" and "values-focused" measures. It is followed by another section analysing the knowledge creation characteristics for each category, suggesting that values-focused measures can be better understood along the lines of neo-pragmatic epistemology. The last section concludes providing considerations to streamline the implementation of research results, and particularly those of a "values-focused" ambition by taking into consideration the political context since the initial steps of urban transport research, rather than postponing it to the demonstration stage.

The ECCENTRIC demonstration project

CIVITAS stands for "City Vitality and Sustainability". It is a brand name grouping most of the research projects on urban transport within the European Union's Framework Programmes on Research and Development. The idea of branding urban transport research under this name started in the late 1990s, and was formalized in the 6th Framework Programme, in 2002. Since then, five generations of CIVITAS projects have followed: CIVITAS I, CIVITAS II, CIVITAS PLUS, CIVITAS PLUS II and the current CIVITAS H2020. Key elements of CIVITAS are (1) a focus on demonstration, (2) strong participation of cities and cities leadership in its flagship demonstration (also called living lab) projects, (3) strong top-down monitoring of projects, (4) focus on dissemination and replication, including annual conferences (CIVITAS Forum) and a diversity of

networking and dissemination tools (official website, newsletter, social media, publications with common guidelines...). CIVITAS has become to the European Commission (EC) “an engine of urban mobility innovation” (EC, 2013). Although formally financed by the EU’s Research and Development budget, its demonstration focus makes it closer to the instruments the European Commission manages to support the objectives of the Common Transport Policy as defined in the various White Papers on Transport (EC, 2011). CIVITAS is also loosely connected with most of the EU’s initiatives on urban issues, like the broader EC’s urban mobility package (EC, 2013).

The freedom of cities for defining their own projects (including the measures to be implemented and their particular characteristics, location, goals...) and the accompanying measures for public participation and integration within the cities’ plans are constrained by an increasingly stringent monitoring and reporting framework, largely predefined by CIVITAS. The framework favours quantitative metrics, which is helpful for benchmarking and for encouraging replication in other cities, but this comes with a risk to reduce the debate to transport technicalities, and to divert attention from the broader picture of the cities’ vision and priorities.

It is worth noting that CIVITAS is not targeting particular social groups or urban areas within cities. CIVITAS builds upon a simplified vision of citizens as individual users, rather than as members of social groups and particular communities. The same can be said about the CIVITAS’ concept of *city*. The ECCENTRIC project is a good example of a concrete effort to overcome these limitations. ECCENTRIC was selected under the 2015 CIVITAS call. Its basic hypothesis is that mobility needs in high-density districts in the urban periphery are different from those in city centres, and that innovative measures must be tailored to the specific needs of each community and place (ECCENTRIC Consortium, 2016). ECCENTRIC in Madrid intended to move away from the traditional approach in the design and implementation of mobility measures, although it was unclear at its conception to what extent the expectations of traditionally marginalised social groups could be met by the project.

ECCENTRIC (Innovative solutions for sustainable mobility of people in suburban city districts and emission free freight logistics in urban centres) is one of the three demonstration projects funded by CIVITAS within Horizon 2020. ECCENTRIC started in September 2016, and includes the cities of Madrid, Munich, Ruse, Stockholm and Turku. These cities have in common previous experience in the implementation of sustainable mobility policies and measures, and a rising demand to implement high quality and viable solutions for neighbourhoods outside the city centre. Briefly described, the challenge for these cities is to demonstrate innovative sustainable urban mobility solutions in peripheral city districts, serving as living labs.

The living lab in Madrid is Vallecas, a district at the south-east of the municipality, with 328,000 inhabitants. The area consists of several well-defined neighbourhoods, all of them with a population that has consistently decreased in the last 10 years (1.23%). The only exception is the neighbourhood *Casco histórico de Vallecas*, which almost doubled its population (+96.7% or 38,218 inhabitants), due to a newly developed area known as *Ensanche de Vallecas*, which started to materialize in the past decade.

The project in Madrid includes eleven measures. Their main contents are presented in Table 1. The measure code in the table will be used to refer to the respective measures throughout the remaining of

this paper. The link of the measures to the living lab is very different. Only four measures (measures 2.8, 4.6, 4.7, 5.1) are clearly targeting Vallecas. Another three measures (measures 2.3, 4.1, 5.8) refer to technological innovations, which could have been demonstrated in any other part of the city. Finally, four measures are taking place at a city-wide level (measures 3.3, 6.2, 7.1, 7.6).

Table 1. The ECCENTRIC measures in Madrid.

Code	Measure name	Main contents
2.3	Adaptive parking management based on energy efficiency and occupancy	A smart parking management scheme to be tested in the demonstration area. The system will include priority for HOVs and clean vehicles.
2.8	Mobility management strategies for vulnerable groups with a gender approach	A focus on vulnerable groups (children and elderly), identifying actions through a collaborative process and building upon inputs from recent psychology research. For children's mobility, the methodology will build upon the successful results of the previous project STARS. The actions focused on the elderly will be based on the projects implemented in Madrid regarding health and active life for them.
3.3	Open platform for multimodal mobility information and services	An open mobility data portal with multimodal information from different sources (public and private transport, traffic, public bicycles, air quality, etc.) will be created as a basis for the development of new mobility information services and products by interested companies, institutions and individuals.
4.1	Innovative and participative approach to traffic safety at neighbourhood level	A comprehensive road safety study, supported by the analysis of key urban parameters serves as a basis for the development of a GIS-based application collecting road safety incidents. Residents' safety perception is also analysed through a systematic review of social media and other sources of information.
4.6	Pedestrian friendly public space outside the city centre	Improving walking conditions in one of the car-oriented areas in Vallecas. A high quality pedestrian itinerary (<i>Paseo Miradores</i>) is created, improving the quality of the public space.
4.7	Enabling cycling outside the city centre	Prioritising the shared use of road space in the demonstration area. Bike ownership will be fostered through the implementation of innovative parking solutions for residents and for users of public transport hubs in the demonstration area.
5.1	High-level public transport service corridors in peripheral districts	The objective is to improve the quality of the bus service and increase the bus patronage on a tangential corridor in the eastern districts. The study will assess different solutions, and one 3-km pilot section will be built, including the rearrangement of crossings, parking facilities, new signals, bus stops, etc.
5.8	Electric and hybrid buses for public transport	Service needs will be analysed to select the electric and/or hybrid bus solution. The new buses will be assigned to serve the pilot PT corridor. Buses' performance will be monitored and assessed to support future renewal plans of the city's bus fleet.
6.2	Test fleets, policy incentives and campaigns for the uptake of electric vehicles	The municipality will foster the use of electric vehicles within its own services and also by local private companies, and will expand the electric charging network in the city. Based on the monitored performance of the electric vehicles in the pilot, new strategies will be designed to promote a wider uptake of electric vehicles.
7.1	Consolidation centre with EVs and local regulations for clean urban freight logistics	Based on a detailed analysis of the urban logistics sector in Madrid, a pilot urban consolidation Centre for last mile distribution will be implemented. The pilot will include the implementation of regulatory reforms to encourage the use of cleaner delivery vehicles.
7.6	Prototype for an ultra-low emission cargo vehicle	Development and demonstration of a 5.5-ton electric truck prototype, adapted to the specific needs of Madrid's urban delivery sector. It will be tested under real conditions in order to fine-tune its design and performance, and to promote its commercialisation.

Considering their relationship with the local context, the measures above can be classified into three different categories. The first one would include measures 2.3, 4.1, and 5.8: all of them are measures of a technological content, aiming at improving the management of existing public policies (parking access control, road safety and public bus emissions); they are likely to be pushed forward mainly by civil servants working in the related technical services, and are not expected to raise much interest from the side of citizens or decision makers. They are expected to provide incremental improvements,

of a medium to long-term range, as the measure is expanded from the demonstration site to the whole of the city.

The second cluster consists of measures providing technological solutions, usually implemented by private stakeholders. Although these are mature technologies, they still need a favourable environment or context to become fully competitive compared with incumbent solutions. This is the case of measures 3.3, 6.2, 7.1, and 7.6. The third cluster refers to measures of a more political character, highly sensitive to the local context, and requesting strong leadership from local authorities. They need to mobilize a variety of stakeholders, to gain sufficient support, and to move through administrative procedures poorly fitted to support them. Furthermore, the mobility components within each measure have to be combined with a variety of other considerations of a social, urban, or economic nature. For good or bad, they are likely to gain a prominent political profile and even to generate keen political discussion. This is the case of measures 2.8, 4.6, 4.7, and 5.1.

Demonstrations as knowledge-creation experiences

All the processes leading to the demonstration of the measures were reviewed in the first half of 2019. The results of the process evaluation suggest that those in charge of the implementation of demonstration measures follow different strategies in accordance, *inter alia*, with the particular profile of the measure they are responsible for. These strategies reflect how the technicians in charge are acquiring knowledge from their experience. In the case of measures within the “means cluster”, the process is lineal, and tends to follow the taxonomies characteristics of the traditional Porphyrian tree: the most often barriers these measures encounter are described as of a *planning*, *organisational*, *financial*, *technological* and *spatial* nature, and can be addressed through minor adjustments, without requiring significant diversions from the initially established path. The knowledge acquired is shared at the conclusion of the pilot in the form of recommendations and lessons learnt to streamline future implementation. The knowledge acquired is typically of a management nature, and is applied in the form of better suited structures within the institutions dealing with innovation (through autonomous agencies, horizontal services or other solutions), earmarking resources or providing incentives for technical services to innovate as a way to gain access to additional funds or to strengthen the relationship with the research community (e.g. May, 2015). Recommendations may also include a call to tailor measures to their specific spatial contexts, introducing methodological changes in the process e.g. to include more ambitious participatory and co-creation processes, participatory budgeting and other actions.

The recommendations above are not adequate to deal with the barriers implementation processes face in the case of measures within the “market cluster”. To be successful, these measures require to put in the market competitive alternatives to the existent options, to reach final users, and to get the support of committed private or public stakeholders eager to take these innovations to the market and make them widely available. Much has been discussed in terms of how public action can speed up the access to market of innovative technological solutions: financial support and incentives during the deployment stage, supportive regulatory frameworks, public stakeholders as early adopters, risk-sharing between the public and the private sectors... (TRB, 2015). The experience from the ECCENTRIC project in Madrid merely confirms these recommendations, and the difficulties (counter-balanced by the significant potential) to establish the appropriate cooperation framework that

can lead to successful implementation. The process of knowledge creation is no longer linear, based on choice between mutually exclusive alternatives. On the contrary, the knowledge-creation process can evolve at any moment following unexpected directions as a result of the power interactions among the variety of stakeholders participating in the market. As in the powerful image of Deleuze and Guattari (1980), the path of knowledge creation evolves like a rhizome; not only because the relations of power among the stakeholders (the industry, the innovator, the regulator, the governmental decision-maker...) are not stable, but also because the knowledge acquired at a certain moment is likely to change the relative position and power of some stakeholders vis-à-vis the others. The process is not completely anarchic, though: as it goes, moments of change and reposition alternate with more stable stages, at which stakeholders take stock of the knowledge acquired. These knowledge-building stages (*plateaux* in Deleuzian terms) provide the necessary stability for stakeholders to further cooperate, increasing the likeability of moving successfully from innovation and demonstration to the market stage.

The knowledge acquired from demonstrations within the “means-focused” and the “market-focused” categories is scarcely useful for the implementation of measures within the “values-focused” group. The difficulties for implementation of these measures primarily rely neither on rigid, inappropriate or underfunded public bureaucracies nor on the reluctant involvement of private partners. They face a more substantial obstacle: a public policy model inconsistent with such measures, and that cannot accommodate them without getting into trouble and instability. Public policies, including urban mobility policies, remain dominated by the values of responsibility and efficiency. Public bureaucracies select measures on the basis of their efficiency (e.g. cost compared to benefits or targets achieved), and public action is justified by its ability to empower users to choose alternative options to the undesirable ones. Sustainable mobility measures under this cluster do not fit well within this paradigm: their impact is of a long-term nature, and it is spread over a wider range of sectors. Consider, for example, a measure to improve the quality of pedestrian networks in a neighbourhood, such as ECCENTRIC measure 4.6. If successful, it can modify travel patterns, increasing short-distance trips and changing modal split, but these impacts will affect people’s behaviour and become significant only in the long-term; furthermore, their main impacts may be of a completely different nature, for example, increasing liveability and social bonds within the neighbourhood, or be of a more dubious character, like increasing real estate prices and displacing low-income residents and small businesses. This does not mean that we should oversize our repertoire of indicators; on the contrary, it will probably be wiser to move away from the efficiency approach to a more nuanced monitoring and assessment framework.

The relevant knowledge acquired through this category of “values-focused” measures is of a transformative nature. It relates to the ambitions to act politically, to review and challenge the traditional understanding of the public interest and to build up a stronger citizenship. Knowledge acquisition becomes relevant to the extent that it allows to effectively address this wider conversation. Borrowing the wording of James and Dewey, knowledge is validated through its ability to move forward along the path of a radical democracy (Westbrook, 1991; Dewey, 1925).

Measures within the “public policy cluster” are consistent with a long-term vision of the city, which includes but is not limited to mobility issues. They contribute to create the conditions in which alternative behaviour is not only possible, but is actively supported by public institutions. They do not primarily attempt to provide alternatives to users, but rather to empower citizens to gain ownership of

their physical and political environments, by creating the conditions to increase social bonds, and to access to the public sphere regardless of the particular personal circumstances. They cannot really be legitimized by their ability to increase the options available to people, so that they can responsibly make sustainable choices; on the contrary, they are legitimized on the basis of solidarity: they provide more balanced conditions to all, decreasing inequalities. Their impact evaluation could be assessed, if necessary, not in terms of efficiency, but in terms of their effectiveness in improving social equity. As it is well known (e.g. Nagel, 1986), the cost of these measures increases with the ambition in terms of solidarity.

These measures are not likely to be successfully implemented within the framework of mobility projects like the ones promoted by CIVITAS. They need to be embedded within urban policies based on the principles of solidarity and effectiveness, which are occasionally promoted by local leaders in some cities to address major city challenges. It is only in a context of transformative change that mobility measures can yield the expected results in terms of sustainability.

This is not to say that these measures cannot be implemented autonomously. In fact, this is the way many cities are dealing with pedestrian areas, bike expansion or children, elderly and other social groups' mobility. The point is that (1) the implementation of these measures remains, at best, at the fringes of the local bureaucracy, requires enormous resources and political leadership to move forward, and cannot be streamlined within the municipality, and that (2) the actual impacts of these measures remain uncertain, sometimes generating gentrification and displacements, or increasing motorised mobility elsewhere in the city.

The living-lab approach is consistent with a vision of public policies from the values of solidarity, effectiveness and equity. It offers an opportunity to build up a shared and integrated vision among stakeholders, and to gain their involvement (Niitamo, 2006). But a living-lab approach cannot be narrowly limited to mobility issues. With its sectoral approach to urban mobility, the CIVITAS initiative (in the case of Madrid and, probably, in most of the participating cities) is successfully developing more favourable institutional and regulatory environments for the implementation of technological innovation in cities. This is positive for the implementation of measures within the “means” and “market” clusters. But it cannot successfully support the implementation of measures of a transformative nature. For doing so, it would be necessary to get out of the “mobility bubble” and reach out to broader urban policies based, not based solely on the values of responsibility and efficiency.

Knowledge creation and innovation implementation

Geels became aware of the weakness of its *socio-technological* paradigm to understand innovative processes in highly contextual, local environments like cities. In his recent publication with Hodson et al (2017), a complementary concept is presented: innovation in the case of urban transport would be a reconfiguration process of the socio-technological system, in which besides technological changes, the transition is characterised by reforms in the governance framework and by political and technical discussion and revision of the shared vision to be attained through the transition, i.e. the sustainable transport paradigm. To better understand the reconfiguration process, it is necessary to take into consideration the governance and institutional arrangements shaping it. They will help to explain

which innovations are selected for demonstration and how they are tailored to the particular conditions in each living lab. Innovation becomes closely linked to the spatial traits of particular local contexts, such as a city, a region, a social group or an industry.

The governance framework becomes particularly relevant. Whereas the original multilevel perspective, as initially presented by Geels (2012) is strongly influenced by neo-institutional analyses (DiMaggio et al, 1983), and emphasizes the homogeneity of institutions, the living lab approach takes into account the various ways in which institutional and social interests are organized through governance processes that seek to shape transitions. In the re-organization of governance processes within living labs, concrete configurations of technologies and social interests are assembled and experimented in a particular place, and provide contextualised lessons. This does not mean that the configuration process is autonomous, and that the landscape level defined in MLP becomes irrelevant. On the contrary, exogenous processes of a global (in space) or of a modal (within the transport system) nature also intervene in the configuration of the living lab experience, and in the eventual scaling-up of the innovation from the living lab to a wider area (Kivimaa, 2014).

As social and institutional interests compete to shape the reconfiguration processes, they provide revised- and usually competing- conceptions of the sustainable mobility vision they are aiming at. Indeed, the definition of the concept remains ambiguous in the EU policies on transport and research, which can be interpreted as a recognition at the EU level of the necessity to contextualize the concept in particular spatial, temporal or social circumstances. This ambiguity facilitates its adaptation to the contextual circumstances in which each living lab takes place. In short, there would be no single way of reconfiguration in transport innovation.

Is the sustainable mobility paradigm a sufficiently bold and values-charged concept to sustain such a comprehensive reconfiguration process? If so, this would provide an excellent argument for those claiming that each relevant sectoral policy should look for its own values, and generate consistent visions of fairness or equity in accordance with those values within their own spheres of influence (Walzer, 1983). Two main arguments can be opposed to this position, notwithstanding its strong appeal. On one hand, the short-sighted scope of the sustainable mobility paradigm; on the other hand, the insufficiency of reforms in the transport sector to advance on its own along the path towards radical democracy.

In spite of its widespread acceptance within the transport community (or precisely due to this wide acceptance), the sustainable mobility concept does not provide a sound-enough basis to build up the sort of citizenship envisaged by Dewey in its radical democracy vision. Banister (2008) provides a widely-accepted description of the sustainable mobility paradigm, in which citizen participation mainly plays a users' educational, awareness and acceptance perspective. The sustainable mobility paradigm moves away from the utilitarian perspective by providing a balance among social, economic and environmental objectives. But one thing is to broaden the scope of the objectives, and another one to promote values such as better informed and educated citizenship, transparent and factual-based public deliberation or providing for minimum quality of life standards. Transport can certainly contribute to that, but should not do it on its own, without getting embedded in the wider effort of the public policies implemented by the local government. In this sense, claiming that transport innovation has the potential to reconfigure local governance seems naïve, to say the least.

To provide useful knowledge, in the neo-pragmatic sense, transport innovation rather needs to take into account the political context in which it is operating and identify whether the basic contextual conditions are present. This means, that a certain innovative demonstration of a “values-focused” content should only be implemented where the local government is engaged in a political vision consistent with these values: otherwise, the demonstration will be unable to provide the expected knowledge, and will not provide any relevant progress in the search for stronger local democracies. An innovative transport measure cannot be an isolated event: it should be understood within the wider global processes strengthening democracy beyond place-specific contexts.

Conclusions

The ECCENTRIC project in Madrid has successfully proved the ability of the municipality to implement measures within tight deadlines. The local bureaucratic and technical machines have been able to successfully deal with the challenges of adaptive management to implement actions that did not fit with the usual profile of municipal actions. However, in a few cases, adaptive management may have gone a little too far, eviscerating some measures of their most innovative contents and embedding them within actions already in progress in the city. This has been the case for the measures on the improvement of pedestrian and cycling conditions (4.6 and 4.7), on the implementation of clean buses in public transport (5.8), on the expansion of electric car fleets (6.2) and on the implementation of a freight consolidation centre (7.1). Measure 5.1 was the only one that had to be abandoned. It aimed at implementing the first section (some 3 km) of a bus corridor linking several neighbourhoods in the east periphery of the municipality, and its failure was due not only to the lack of sufficient political support from the local government, but also to the complex needs of the affected area: residents preferred that the municipality’s investments were dedicated to actions outside the mobility realm. There was a technical focus on bus priority that left aside critical issues regarding the public’s priorities and preferences, as well as funding availability. When the preparation of the construction project had been completed, decision makers realised that the concept provided little value for money and would not be backed by a majority of residents.

The project in Madrid also showed the difficulties to actively engage some of the stakeholders initially envisaged. This concerned stakeholders at the decision-making level (who tended to see their participation as unnecessary in the absence of critical problems), and residents (as the transport actions undertaken by the project, although relevant for them, were not of first priority compared to more urgent, non-transport related issues in their agendas). The central role played by the local civil servants involved in each measure became even more relevant to navigate the local bureaucracy, identify opportunities and take the actions to reasonable completion.

In general, the implementation of most measures was facilitated by its inclusion in a CIVITAS project: the project mainly served to provide the “manpower” needed to dedicate the necessary effort to actions that otherwise would have hardly been seen as a priority by the technical departments involved. The project also served to check the adaptive capacity of the local government and bureaucracy to cope with the needs of innovative actions. For example, it showed some contradiction between the top-down approach in CIVITAS (in which participation is limited to the “how”, and not to the “what” of the measure) and the general trend of the local government to foster participatory

budgeting for the selection of actions (in all policy areas) in the neighbourhoods. It also showed the tensions between the long procedures for project design, budgeting and construction in the city (fully justified by public control procedures and by the need to establish rigorous selection of public investments) and the tight deadlines established by the CIVITAS initiative within the four years envisaged for the project.

The suitability of the CIVITAS concept to the project in Madrid also showed some shortcomings. CIVITAS has a strong mobility and technological focus, not fully consistent with the particular conditions in Madrid: the focus of the project in Madrid was a large low-income peripheral district, whereas CIVITAS is usually targeting city centres with high visibility; secondly, there was a strong interest on equity and social impacts in Madrid, whereas the social focus of CIVITAS is limited to the public acceptance of new concepts. The contextual conditions in Madrid were challenging, with a new local government fighting with strong financial shortages due to the overspending of its predecessors, among others, in a multi-billion urban motorway project. It could be said, at the very least, that CIVITAS is poorly adapted to intervene in such kind of complex social, financial and political contexts. It is worth pointing out that the CIVITAS approach did not suited well the local government effort on participatory democracy. Participatory aspects were relevant only in some of the measures included in the project, and the involvement of decision-makers was not reviewed in detail in the project proposal. CIVITAS technological priorities could have at best a minor impact on the living conditions of the residents, and were unlikely to raise high interest among them. A more profound mismatch can be pointed out: the CIVITAS focus on innovative technologies and its deployment in the mobility market is far away from the political priorities in many cities, and it is not likely to induce any substantive process to strengthen local participatory democracies or to increase local cohesion.

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**Sustainable and connected infrastructure networks and
urban regions – transition towards integrated planning
of urban nodes on TEN-T corridors
- WORK IN PROGRESS -**

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Abstract: Achieving a smart, green and integrated transport system is essential for the (social)-economic and environmental vitality of European urban regions. In order to better integrate urban nodes into TEN-T corridors, the challenges of multimodal connections between long-distance and last-mile transport have to be tackled from both freight and passengers' perspective. Different spatial scales, modalities, sectors and stakeholders have to be taken into account when improving mobility, infrastructure and spatial development in both urban nodes and corridors. To tackle these challenges a research programme has been developed, supported by EU's Horizon2020 (Vital Nodes), which analyses best practices, experiences and opportunities in various urban nodes in Europe. This paper addresses the approach deployed by the Vital Nodes-project to integrate investments in mobility, infrastructure and urban development from (inter)national/corridor, regional and local perspectives. To this end, the paper discusses results from case studies in urban nodes as Gothenburg, Vienna, Rotterdam, Genova, Strasbourg, Turku, Hamburg, Budapest and Mannheim and related TEN-T corridors, including an analysis addressing their main challenges. The paper concludes by exploring the main elements of such transition that will improve the integration of urban areas into the TEN-T corridors and the vitality of the urban regions of tomorrow.

Keywords: integrated spatial and infrastructure planning, multi-modal infrastructure, multi-level governance, urban nodes

1. Introduction

The worlds of transport and spatial planning are in a major transition, coping with a large number of changes and (the need for) related innovations. This relates to global challenges related to climate change, energy transition, environmental pollution, globalisation, ageing infrastructures as well as densification, urban growth, liveability and growing passenger transport and freight volumes. Transport and logistics provides vital functions to the European society, enabling economic growth and access to jobs and services, but also create issues of CO2 emissions, environmental pollution, fragmentation and land-take. *Urban nodes* are crucial for the effectiveness of the core network of Trans-European Transport Network (TEN-T), as they are the origin and/or destination of most long-distance transport flows, for both passengers and freight. Several trends and major developments can be seen that influence the relation between the TEN-T (core) network and the urban nodes – e.g. changing freight flows via the New Silk Route between China and Europe. Developments that (may)

affect spatial-economic growth, mobility and freight flows in and between metropolitan areas, thereby impacting infrastructure networks and liveability, especially in urban areas. Important trends and transitions in the field of transport include (Linden and Linssen, 2018b):

- Growing urbanization and densification;
- E-Commerce, 24/7 delivery and access to multiple distribution channels;
- Urban and logistical sprawl and development of micro and midi hubs;
- Agglomeration, e.g. development of XXL warehouses (economics of scales);
- Growing demand of flexibility in freight transport and logistics;
- Increasing number of cities with low-emission transport policies and sustainable transport modes (related to Sustainable Urban Mobility Plans, SUMPs);
- Conflicting transport flows between freight and logistics, and person transport.

These trends are coinciding with a transformation in Europe's transport system as discussed in the Transport White Paper by the European Commission (COM, 2011) focusing on e.g. limiting transport emissions and contributing to accessibility and liveability in cities. In this regard urban nodes specifically are major areas in which public and private parties and society should join forces to cope with transitions and related challenges. The local context and characteristics of a specific place are however making an effective integration of a node in the TEN-T network more complex. As urban logistics and freight transport grow, innovate and increasingly impact socio-economic development in urban areas, accessibility and spatial-environmental quality of urban regions, there is need for a transition towards integrated planning approaches. An integrated planning of spatial, mobility and infrastructure that takes into account different spatial scales, sectors, modalities and stakeholders.

Currently infrastructure development, mobility and spatial planning are mainly separate worlds, which have not yet been integrated although the many challenges which call for an integrated and innovative approach. For an integrated approach of effective and sustainable incorporating urban nodes on the European transport corridors, a variety of actors need to collaborate early on in the decision making process, such as urban planners, freight and logistic operators, infrastructure operators and coordinators and financiers. This allows not only integrated perspectives and solutions, but also integrated investments in mobility, passenger transport, freight and logistics and infrastructure from local, regional and (inter)national/corridor perspectives. Funding is key when implementing integrated solutions and improvements. However, the conventional shaped worlds of infrastructure, urban mobility and spatial planning are often funded within their own sector. An integrated approach needs integrated funding. A (sustainable) integration of urban nodes into the TEN-T network requires coordination in public funding at European, national and/or local level but also with private funding.

This paper aims to explore how the transition towards an (sustainable) integration of urban nodes into the European TEN-T corridors can be stimulated. To this end, we build upon the results of the European Horizon 2020 project *Vital Nodes* (<https://vitalnodes.eu>). First, the paper discusses the approach of the Vital Nodes project, which has been applied during workshops in a series of urban nodes in 2018-2019, including Vienna, Rotterdam, Gothenburg, Budapest, Hamburg, Genoa, Turku, Strasbourg, Mannheim. Next, we discuss a specific case – the urban node Vienna – addressing good practices and tools that support tackling the occurring challenges. The paper concludes with a discussion of the Vital Nodes' project results and recommendations for integrated planning of urban nodes on the TEN-T corridors.

2. Integration of the worlds of spatial and infrastructure planning

To cope with current challenges, a focus on innovative technical solutions alone, will not be enough. There is need for a transition in planning connecting between the worlds of infrastructure, mobility, freight and logistics, and the world of urban and spatial development. An approach in which there is attention for soft innovations, addressing the multiplicity of the challenges by integrating different spatial scales, sectors, modalities, stakeholders, funds and levels of governance. This need for integration has been acknowledged by key stakeholders such as National and Regional Infrastructure Authorities and DG MOVE, as well as the Coordinators of the TEN-T corridors, who stress the importance of integrated strategies, platforms for exchanging experiences and multi-level governance approaches (Philips et al., 2016). Meaning a need to combine policy objectives as promoted by the Commission in the 2013 Urban Mobility Package (UMP) of the TEN-T regulations and the Sustainable Urban Mobility Plans (SUMP) (EC 2013, COM 2012, 2013). This asks for forward-looking practices and integrated approaches, which both enhance transport solutions and stimulate synergies with other urban functions (Balázs et al., 2016). Viewing the complexity of the current and future challenges, there are no ‘silver bullets’ (CEDR et al., 2018; Broesi et al., 2018).

The Vital Nodes project is funded as part of the EU Horizon 2020 programme, to investigate integrated planning approaches. The main objectives of the Vital Nodes project are (Vital Nodes Consortium, 2017; <https://vitalnodes.eu>): to deliver validated recommendations for a more effective and sustainable integration of all 88 urban nodes into the TEN-T corridors, focusing on freight and logistics; and, to establish a long-lasting European expert network for safeguarding long-term continuity in knowledge and implementation. As part of the Vital Nodes project challenges, drivers and barriers, good practices and opportunities are analysed in various urban nodes and TEN-T corridors. To this end, Vital Nodes has brought existing networks together and has been working on ensuring long-term engagement and recommendations for research and funding needs as well as input to adapt the TEN-T and CEF (Connecting Europe Facility) guidelines.

3. Approach: analysis of multiple dimensions of practical cases

The approach applied in Vital Nodes is based on the Networking for Urban Vitality (NUVit) concept (see Arts et al., 2015, 2016; www.nuvit.eu) that comprises various dimensions (see Figure 1). The spatial and network dimensions regard the linkages between transport infrastructure, freight logistics and land-use. This includes innovative solutions for freight logistics. Combining spatial and network dimensions results in potential synergies that have to be considered, at which the time and value dimensions are important to analyse and discuss. Finally, to become effective integrative planning, it is needed to develop an adequate institutional approach and dealing with implementation issues. Subsequently, transport infrastructure can be carefully coordinated with spatial developments resulting in tailor-made solutions to the local situation (landscaping, context sensitive design), enhanced vitality of regions (at the level of a Daily Urban System) and well-functioning (inter)national transport corridors and networks.

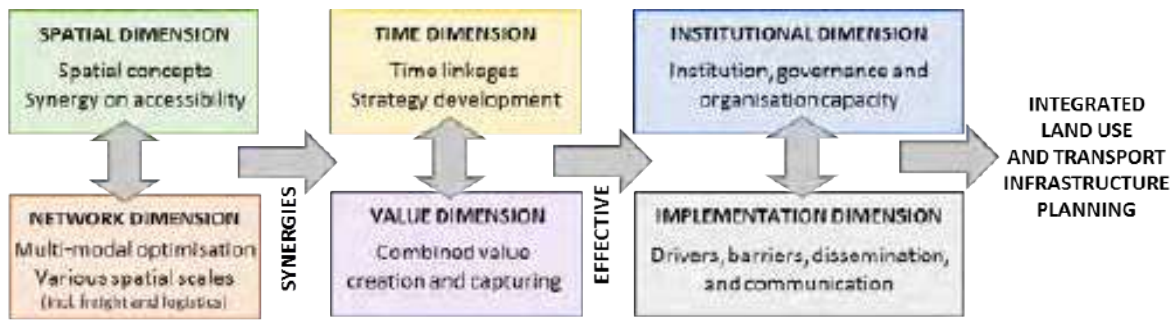


Figure 1: Linkages between different dimensions (based on Arts et al., 2016).

During 2018 and 2019 the Vital Nodes project has conducted numerous workshops throughout Europe in urban nodes such as: Vienna, Rotterdam, Gothenburg, Budapest, Hamburg, Genoa, Turku, Strasbourg, Mannheim, Ljubljana, Munich, Duisburg, Venlo, Tallinn, Bilbao, Antwerp Cologne, Piraeus and Gdynia. Within these workshops, (local) challenges have been identified, drivers and barriers discussed and good practices with potential impact presented (Poppeliers et al., 2018a; Linden and Linssen, 2018a). By bringing together results of the workshops, knowledge and information and make them available for European stakeholders, infrastructure providers, investors and urban nodes a solid basis has been developed to formulate recommendations to the European Commission for stimulating an sustainable and efficient integration of the transport network in Europe.

An important aspect of to the Vital Nodes project for planning practice proved to be bringing together stakeholders from different disciplines and backgrounds to discuss challenges of the specific urban nodes. Stakeholders present at the workshops included a variety of stakeholders: national government representatives, road and waterway authorities, railway infrastructure managers, environmental agencies, representatives of the airport, provinces/regions, service providers, urban/spatial planners, city representatives regarding spatial planning, mobility and environment, port authorities, hub operators, public transport operators, representatives of the chamber of commerce, company representatives and research institutes. In addition, external experts were also participating in the discussion to share good practices from elsewhere in Europe and to reflect on the discussions. While widening their own knowledge the participants in the workshop often came to a real understanding of each other's issues and worked together towards integrated solutions (see Figure 2).



Figure 2: Vital Nodes workshop in Gothenburg, April 2018, participants discussing the challenges of the urban node Gothenburg, while using maps.

An important issue proved to be raising awareness amongst stakeholders on the role of the urban node in the European TEN-T network and the role of freight, logistics for the urban region. In order to create this understanding a set of tools was used and developed (van der Linden and Linssen, 2019) – such as the use of ‘research by design’ and mapping the functional urban area – which proved helpful in developing possible solutions addressing the specific circumstances of an urban node.

During the discussions, participants showed their interest in the linkages between the different geographical scale levels (of (inter)national corridor, urban region and local neighbourhood) and the role of ‘their’ urban node in the context of the TEN-T corridors. Based on the objectives of the participating stakeholders and the Vital Nodes project, the data and information provided, the Vital Nodes appraisal methodology and urban node typology (Poppeliers et al., 2018b), discussions focused on the specific challenges of the urban node regarding infrastructure, freight and logistics and spatial planning. The data and information collected on forehand in a so called ‘Fingerprint’ (Linden and Linssen, 2018b; Poppeliers et al., 2018b) provided insights in – and common understanding about – the characteristics of the node, similarities and differences between nodes that might specify drivers or barriers for challenges, impacts and solutions, and good practices usable for other nodes.

The introduction of one or more European good practices, to help the stakeholders in the urban node to make a mind shift from thinking in barriers and obstacles towards (potential) solutions and options, has shown to be an effective method. Besides, several good practices connect local, regional and corridor level, so stakeholders will get concrete input and inspiration from other European cities and regions on how the relation between the urban node (local, regional) and the corridor level might be improved (Poppeliers et al., 2018c). Cases across Europe show that coordinated optimisation of infrastructure and spatial development at the level of the Dialy Urban System (DUS) can be key to safeguard corridor interests while solving local spatial conflicts. Moreover, the other way around, small measures at local scale may help to solve bottlenecks at the DUS level and the corridor level. For instance, at urban ringroads often up to 30% of the traffic is local. ‘Shaving off’ some of this share by relatively small local mobility measures (which may regard other modalities; e.g. public transport, biking) may reduce traffic sufficiently to (partly) solve congestion bottlenecks at the urban ringroad. If such a ringroad is part of the an (inter)national corridor such ‘acupuncture’ measures can be of importance to the (inter)national transport network (see also Arts et al. 2016).

Following a discussion on solutions, drivers and barriers, the different scale levels are again related to each other while discussing the added value for the local, regional and European level. The added value for Europe relates to the integration of the urban node in the TEN-T network. Special attention is given to drafting business cases with potential win-wins for both the urban node (local, regional scale) and the corridor (European scale). Identifying this (potential) European added value that can be realized in the urban node (city and region) will be direct input for the recommendations of the Vital Nodes project to the urban node and the European Commission.

4. Case study urban node Vienna

As an example of the urban nodes workshops conducted in the Vital Nodes project, the case of Vienna is described in more detail below. Among the participants were a variety of representatives of the national and regional government, municipality, railway infrastructure manager, road administration, waterway administration, airport, chamber of commerce, research institutes and the

private sector. Thereby knowledge was brought together from the fields of infrastructure, freight and logistics, spatial planning, environment, economy and finance.

The Austrian capital of Vienna with around 2.6 million inhabitants is located on three core network TEN-T corridors – the Baltic Adriatic, Orient/East-Mediterranean and Rhine-Danube corridor – including road, rail, aviation and waterways for both freight and passengers (see Figure 3).

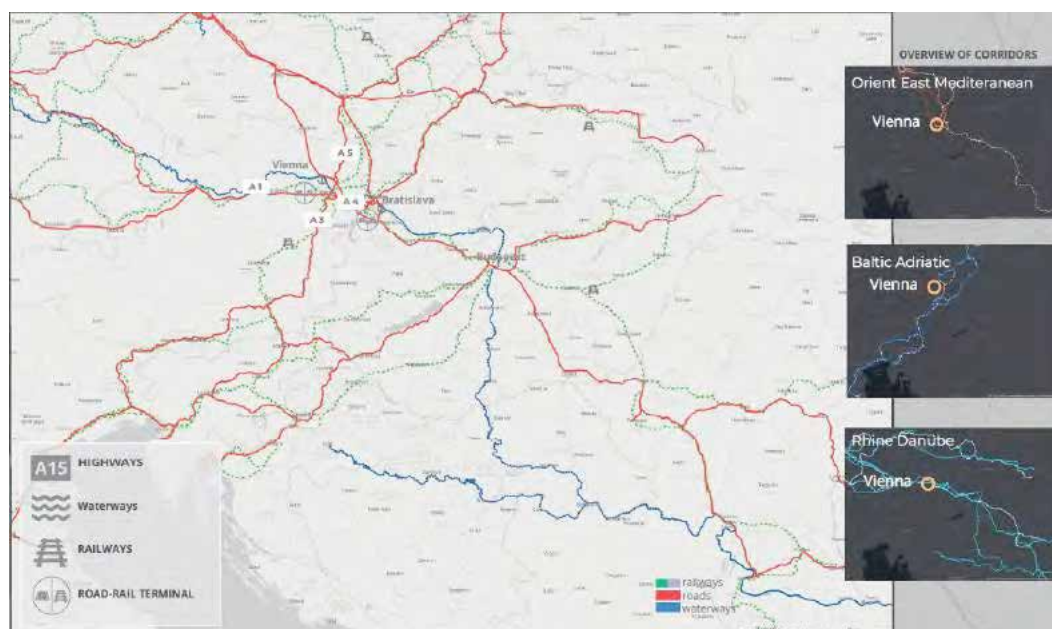


Figure 3: Vienna's location on three TEN-T corridors (van der Linden and Linssen, 2018b).

On each of the corridors Vienna is located mid-way, heightening the urban node's importance to enable well performing transit flows. It is noted that the Baltic-Adriatic flows by road are mostly transferred along Bratislava, with which Vienna has a strong relation. As a border cohesion region future investments in road and rail infrastructure are foreseen between Vienna and the Czech border, which might draw the North-South flows over Vienna instead of via Bratislava (van der Linden and Linssen, 2018b; Poppeliers et al., 2018a).

The urban region of Vienna is fast growing and major urban developments are planned (Vienna City Administration, 2014; van der Linden and Linssen, 2018b, 2018c) on Vienna's East in Aspern, Vienna's Urban Lakeside (Aspern Seestadt) and through various mixed-use urban development zones like the inner city housing projects such as the Sonnwendviertel in the central station district and the development of the Nordwestbahnhof. Impacting the regional level are: a railway connection between Hütteldorf (western side of the city) and Meidling (southwest), and the development of an additional runway of the airport. Also cross-border links are discussed such as the link between the airport and Budapest via the Eastern Rail line, an upgrade of the Pressburgerbahn between Hainburg (on the border with Slovakia) and Bratislava. At a higher spatial scale many investments are done in improving the TEN-T links at the corridors. All these developments are undeniably influencing the transport flows of passengers and freight on different levels, having its effects on the needs for consolidations centres, and hubs at different scale levels as part of logistics oriented development.

With these developments issues of multi-level governance and integrated planning becomes pressing related to the scattered responsibilities of the surrounding municipalities (local planning), the Vienna city administration with coinciding borders of the Bundesland Vienna, the neighbouring Bundesland Lower Austria, and the nearby national borders.

5. Challenges of urban nodes

Through discussions amongst all participating representatives, challenges related to the urban regions have been discussed, using maps on local, regional and (inter)national/corridor level as tools to guide the discussion and clarify specifically mentioned aspects. From the discussions in the urban node Vienna, three challenges were identified that proved to be exemplary for the urban nodes in general (van der Linden and Linssen, 2018c; see also Figure 4):

- (Lack of) logistics oriented development;
- Spatial planning at functional urban area level;
- Robustness and vulnerability of the network.

5.1. (Lack of) logistics oriented development

Vienna is centrally positioned on TEN-T corridors. However awareness of this position amongst the stakeholders in the region proves to be rather limited. However, the position on the TEN-T corridors shows the importance of the urban area for neighbouring areas and countries regarding freight flows. Multiple corridors (road, rail and waterway) are crossing the Austrian capital, meaning that the impact is substantial. Therefore the urban region has to deal with logistics in its development to be a vital node in the European network accommodating liveable housing areas and facilitating freight transport. Rethinking ‘functions’ of urban areas is essential.

5.2. Spatial planning at functional urban area level

Because of growing population, urbanization and increasing transport flows of persons and freight/logistics, a real challenge of space occurs. Many different functions are fighting for space and their place in the city. There is need for mixed land uses and attention for socio-economic relations to maintain a liveable city. This relates to both central city and peri-urban areas, urging for multi-level governance and integrated planning at the level of the Daily Urban System (DUS, for persons transport) and the Functional Urban Area (FUA, for freight transport). In other urban nodes such as Budapest similar challenges have been identified. NB: the workshop results indicate that the FUA is larger than the DUS which is usually the focus of attention in policy-making.

5.3. Robustness and vulnerability of the network

One of the main challenges discussed during the workshops is that persons and freight transport compete for limited infrastructure capacity at national, regional and local level. In Vienna the network proves to be vulnerable, especially the crossings of the Danube via road and rail. This asks for alternative routes, e.g. via a South-East bypass. Optimizing the use of the network and looking for opportunities to use the river Danube for inland waterway transport could be possibilities to find multimodal solutions. This vulnerability and robustness of the network is also a major challenge in the urban region of Mannheim in Germany.

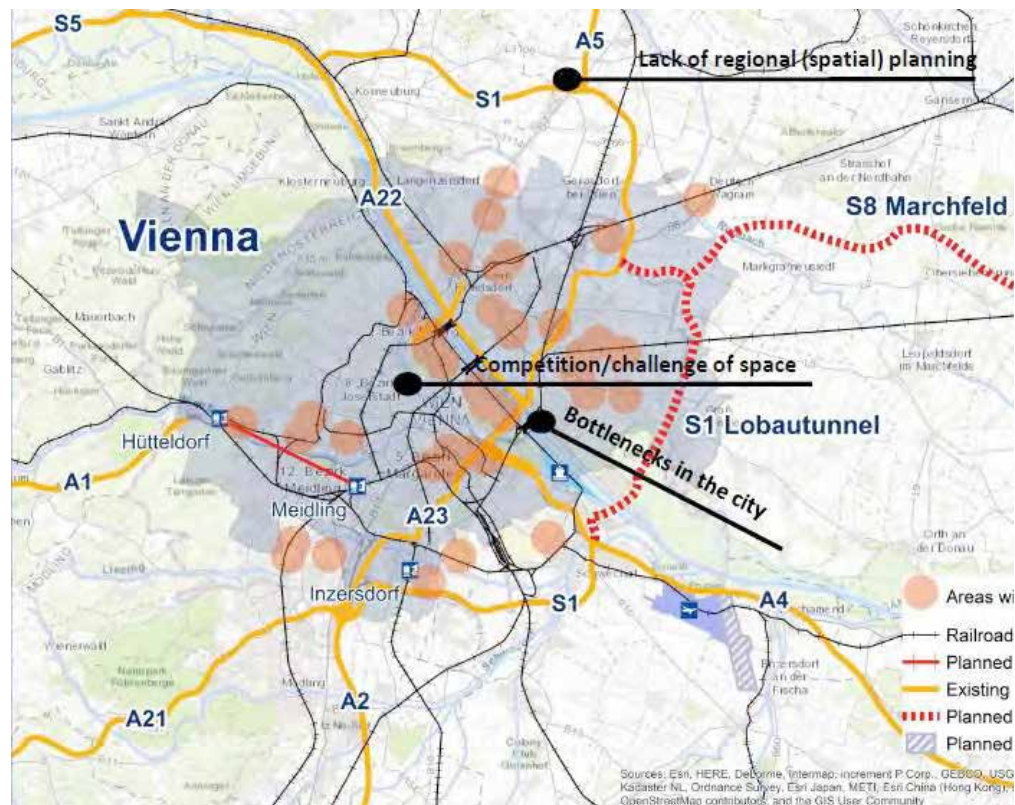


Figure 4: Challenges within and around the urban node Vienna.

6. Good practices for creating impact

Much effort has already been done in Vienna and other urban nodes to tackle the challenges identified, resulting in some *good practices* with (potential) impact that might even be of inspiration for other urban nodes throughout the (European) network (Poppeliers et al., 2018c). A few examples, related to the challenges mentioned are discussed hereafter.

6.1 (Lack) of logistics oriented development

Dealing with the (lack of) logistics oriented development has led to the search for hubs on different scale levels, including the development micro and midi hubs in the city centre of cities, accommodating supplies for last-mile logistics. An example of such approach is Vienna's HUBERT project (<http://hubert.stadtlogistik.at>). Another example can be found in Budapest where empty buildings within the city are used as micro and midi hubs for last- last-mile logistics and distribution.

6.2 Spatial planning at FUA level

To face the complexity of multi-level spatial planning, including the peri-urban areas, the city of Vienna together with other stakeholders, thought about the claim of space already in an early phase and developed a vision named the 'Produktive Stadt' (Stadt Wien, 2017) as part of its long-term strategic vision STEP2025 (Vienna City Administration, 2014). Within this vision interesting and innovative directions are introduced such as the reservation of brownfield spaces within the city centre for possible future development – not only for housing, but also for logistics, transport, industrial development. In this way authorities aims to make preservations of these areas for e.g. handling goods and prevent huge increase of land value causing future impossibilities.

The discussions during the Vital Nodes workshops in Vienna made clear to the participants that multi-level governance and cooperation in their urban region is needed to address the planning issues resulting from the highly dynamic transport and spatial developments such as urban growth and logistic sprawl in the Functional urban Area that go beyond administrative borders.

6.3 Robustness and vulnerability of the network

Developments at corridor level, focusing on multimodality could stimulate the robustness of the network and decrease the vulnerability. This is currently done in the Netherlands in the *East/South-East Freight Corridor programme in the Netherlands* that regards the corridor between Rotterdam and the Rhein-Ruhr area (Germany) consisting of a highly developed network main highway, railway and waterway (and pipeline) connections (see Faith Ell et al., 2019). This cross-national corridor is not only vital to the Netherlands' transport system and economy but also to the EC (being part of the TEN-T Rhine-Alpine Corridor). The Freight Corridor programme currently investigates what is needed to maintain and optimize this highly important multimodal corridor with the ambition of being a "topcorridor in 2030", which should result in a coherent package of measures at which national, regional and cities collaborate together with private companies. The programme focuses explicitly on the optimization of 6 major nodes. The programme strives for new economic development with specialisation in the major nodes in order to prevent unwanted competition between nodes and cities. This proves to be a complex multi-level governance issue, as it requires on the one hand that local and regional government think at corridor / network level (as many local terminals and hubs were developed, competing with each other) and on the other hand that national government reaches out to local and regional spatial-economic development issues. The programme has increased the awareness of being on a corridor, and the importance of the corridor to the country, regions and cities. Attention points for the programmatic approach prove to be issues of: multi-level governance, creating multimodality, balancing freight and persons transport, and developing a scope for cross-border issues and measures – to Germany and Flanders (Faith-Ell et al., 2019).

Another interesting development is in the Swedish city of Norrköping (130.000 inhabitants) situated 165 km southwest of Stockholm, which is transforming fast due to the building of a new high-speed rail line linking the Swedish capital with Gothenburg and Malmö including a new railway station in or nearby Norrköping (CEDR et al, 2018). At this moment the existing rail link is heavily used by both passenger and freight transport. The new high-speed railway connection will create conditions for improving freight transport and activities at both the corridor and the local level. At corridor level the new high-speed rail link will leave extra capacity at the existing rail link for freight trains (also causing less mixing of freight and passengers traffic). At local level, harbour and logistics activities will be concentrated on a 'Harbour Island' that will be developed North of the city at the former harbour area, while a new harbour extension is created to the east in seaward direction. Several smaller distribution centres that are currently scattered in the city and thereby disturbing the city life will be relocated to the Harbour Island. A new, consolidated logistic centre will be developed in the new harbour area as well (Broesi et al 2018).

7. Recommendations

Based on two years of bringing together knowledge throughout Europe – such as the Vienna experiences – recommendations can be drawn from the Vital Nodes project. Within this paper we focus on recommendations regarding the network, spatial and implementation dimension (Linden and Linssen, 2018b; Böhler et al., 2019). As In addition, some first directions are provided regarding funding mechanisms and needs (Van der Werf, and Smit, 2018).

7.1. Network dimension

Explore Functional Urban Areas (FUA), such as Vienna-Bratislava, Rotterdam-Venlo. Possible solutions for bottlenecks within urban nodes can be found elsewhere on the wider TEN-T corridor, including the comprehensive network. E.g. multimodal terminals in Venlo (NL) and Lauterbourg (FR) to relieve pressure in the urban regions of respectively Rotterdam and Strasbourg (“second order effects”).

Stimulate network resilience and infrastructure fitness. Currently local, regional and long-distance people and freight flows come together on two Danube bridges in Vienna. Realizing a new link across the Danube can free the city from the long-distance transport flows. This is also true for other nodes such as Mannheim.

Renovation and renewal of infrastructure. For instance, bridges across the Rhine is a major challenge in Germany, as has been discussed in Mannheim. This task should be organized in a broader regional perspective to prevent cutting off communities west and east of the Rhine and to offer alternative transport options for inhabitants and companies. Renovation and renewal need a more prominent position on the TEN-T agenda.

Develop the potential of urban nodes, as the main hubs for connecting the local and regional network to the TEN-T core network corridors, as *forerunner for distributing and deploying alternative fuels and other innovative technologies*. They can be centres for new inter- and multimodal logistics concepts and structures along the corridors.

7.2. Spatial dimension

Combine Transit Oriented Development (TOD) and Logistics Oriented Development (LOD) concepts (Vienna, Budapest, Hamburg, Strasbourg). Policies for densifying cities should not only relate to housing and offices but also to ‘blue collar’ production and logistics activities.

Midi and mini hubs should be implemented to stimulate sustainable inner-city freight flows and modal shift to cargo bikes and other cleaner vehicles for the last mile delivery and construction-related freight flows.

Careful design of interfaces (via integrated planning) of trans-national network and local transport. For instance, in Vienna two major Urban Consolidation Centres (Wien-Süd and Port of Vienna) are the main entrance and exit points between the corridor (rail, road, waterborne) and the city.

7.3. Institutional dimension

Development of regional SUMP including strategy on freight and logistics for preventing ‘Logistics Sprawl’ regions across city borders. E.g. in Vienna the Logistics Oriented Development strategy ideally comprises surrounding municipalities.

Stimulate regional collaboration beyond classical government borders, multi-level governance and cooperation should be required when applying for EU funding for infrastructure/regional development. Develop TEN-T related *cross-border strategies and operations* for urban nodes. For example, there is a strong connection between Vienna and Bratislava in terms of freight and logistics. The Port of Rotterdam has an important link with Duisburg and Strasbourg with the port of Kehl. These cross-border collaborations have many economic benefits for both urban nodes, but because of differences in legislation, permits, etc., the economic possibilities are often not fully utilised and can be strengthened.. To this end, cross-border collaboration is to be established.

Raising awareness for freight/logistics issues in urban, regional, and infrastructure planning. Increase the involvement of the urban nodes into the coordination of the nine TEN-T core network corridors under the lead of the European Coordinator. This could include actively involving the (main) urban nodes in the core network corridors coordination, for example by having a dedicated urban node working group, closely linked to corridor coordination. And in addition, assigning a dedicated urban node European Coordinator (in addition to the already existing ‘horizontal’ coordinators on European Rail Traffic Management System (ERMTS) and Motorways of the Sea (MoS). Establish an urban node information exchange and lobbying network, playing an active role in integrating urban nodes in the TEN-T corridors, lobbying for the urban nodes interests regarding the interface between the FUA and the TEN-T corridors.

Other recommendations relate to the focus of current TEN-T policies which focuses heavily on the core network. *Smaller nodes are also important to the functioning of the (core) TEN-T network corridors* (e.g. Venlo and Lauterbourg), this is especially true in poly-nuclear urban regions such as The Netherlands, Rhein/Ruhr and Rhein/Neckar. Include incentives for *public-private and private-private cooperation schemes* on the regional ("transit regions") and node level. Support cooperation between the public and the private sector to develop innovative logistic concepts for e.g. capacity sharing in terminals.

7.4. Funding

The current TEN-T guidelines (article 30) recognise and formalise the important role of urban nodes on the TEN-T network to connect and facilitate flows of people and goods while mitigating the negative effects. Funding of integrated solutions is complex, but also might provide ways forward to deal with this multi-level governance situation.

Awareness of complexity and importance of urban nodes. TEN-T Funding policies should be more aware of the complexity and liveability issues of urban nodes in TEN-T project development. As discussed before, urban nodes are the places where many different networks, actors and demands come together and interconnect. One stretch of TEN-T infrastructure might for example be used by both passenger- and freight transport, for different modalities, for both long- and short distance. For one single type of transport the network might seem robust, if transport grows at all these types at the

same time. Bottlenecks in the overall transport network as well as the urban spatial fabric might quickly occur (as has been observed for Vienna in the (near) future). TEN-T policy and investments should be aware of this. Sectoral, uni-modal investments along TEN-T corridors may create (especially) new bottlenecks in urban nodes, not only regarding transportation issues but also environmental issues, spatial and socio-economic development. To realize sustainable integration of the urban nodes on the TEN-T networks and increase liveability of these urban nodes at the same time, in TEN-T policy more awareness is needed of these complex environments and environmental challenges for the success of CEF and TEN-T investments in cities and regions. Sufficient funding should be set apart for mitigating measures or even alternative investments that might give the same results as the planned TEN-T investment, e.g. measures to reduce transport needs.

Integrated (metropolitan) governance and funding as key element for successful urban nodes. Given the complexity in urban nodes, the quality and architecture of metropolitan governance has a major impact on the sustainable development of urban nodes. Here awareness that the functional-spatial relationships of the DUS and FUA spread beyond (municipal) administrative borders is crucial. Through its funding, the EC has a leverage to stimulate integrated metropolitan governance. In the European Cohesion policy a certain budget is reserved for sustainable urban development. Cities can only have access to this funding if they have integrated sustainable urban development strategies (such as a SUMP). Some Member States have added the requirement for their cities that such a strategy is designed at metropolitan level. If such a requirement would become European policy, this could be an important incentive for cooperation at urban-regional scale. In practice, however, urban nodes (regions and cities) are often consulted at a late stage, when critical planning decisions have already been taken. A stronger involvement of the various governmental levels in urban nodes can significantly improve the coordination, the added value of investments, liveability and development of TEN-T projects, maximizing the potential benefits of the projects implemented on the ground.

Better integration of different types of EU funding. CEF grants are a vital part in the realization of the TEN-T networks and the TEN-T objectives. While maintaining the CEF funding for urban nodes, added value could be created by a better integration of different types of EU-Funding. Sustainable integration of urban nodes is not only a matter of increasing the capacity of infrastructure but also a matter of lowering environmental impact of logistics and transport in and around an urban node. An integrated approach of spatial and mobility planning seems the only way to make infrastructure investments acceptable to citizens and local authorities and to capture added value, e.g. for environment, liveability and property. But such an approach is expensive. Here European funding can contribute to achieving a business case for integrated infrastructure and spatial development. The European Fund for Strategic Investments (EFSI) may offer alternative means and instruments to invest in high-risk (infrastructure) projects. While national, regional and city authorities recognize and make use of the potential of Public Private Partnerships (PPPs) to support many essential urban transport projects, there are fundamental infrastructure projects that are relevant to the overall transport network structure but that cannot attract private finance because of their low financial returns. Nevertheless, these projects have a high European added value and a wide socio-economic return, bringing benefit to overall society. In order to be able to facilitate an integrated approach, proper use of financial instruments is important. A sound mix of public and private investors and long-term commitment are critical factors. Long-term commitment is a challenge for both the public and private investors and focus is often on the short and medium term. When using financial

instruments for an integrated approach, a wide range of private investors should benefit from the investment. Private investors not only include banks and pension funds, but could also include real estate companies and logistic and transport companies.

On basis of the experiences gained in the Vital Nodes project some first indications of funding needs might be given. As discussed, funding for integrating urban nodes on TEN-T corridors is financial more challenging because of the complex nature as it regards: multiple transport modes, multiple and connected infrastructure networks, multiple sectors, multiple geographical scales and multiple governance layers – see also above. As a consequence of this multiplicity nature, a first step could be that different funding sources (e.g. CEF, EFSI, ERDF, Horizon2020/Horizon Europe), are combined in order to create a shift towards integrated infrastructure and spatial development in practice. Regarding the absolute magnitude of funding needs: a comparable amount of budgets as the current funds comprise can be considered to be needed. To create a fundamental shift towards integrated planning, that at least 20% of these budgets should be combined and devoted for integrated development – and ensure that only proposals that address integrated development are eligible for this. In a stepwise approach, the percentage of funds devoted to integrated development could be raised (e.g., 50% in the subsequent period). NB: In various member states (such as the Netherlands) infrastructure and spatial development funding has already been combined over the last years (currently, in the Netherlands national infrastructure funding is in effect for some 80% devoted to integrated infrastructural and spatial development). The results of the Vital Nodes project suggest that such 20% of CEF-funding should be reserved for:

- investments in infrastructure, mobility, spatial and environmental measures enhancing the integration of urban nodes on the TEN-T Network;
- investments that focus on the peri-urban networks (the interface of long-distance, inter-urban, and short distance intra-urban mobility), on intra-urban networks in economic core areas (strengthen agglomeration effects, conform ‘borrowed size’), and on coordination with spatial development to strengthen socio-economic benefits (creating multiplier effects) of EU funding;
- investments that enhance integrated spatial and multimodal transport development and that increase coherent development of innovation, sustainability and liveability.

On basis of earlier experiences with integrated planning, it can be expected that such integrated investments in urban nodes and the peri-urban networks in economic core areas may lead to less costly planning processes (as development is directly coordinated between governance levels), less costs of mitigation and compensation measures (because of integrated spatial and environmental design), and less societal costs related to noise, air pollution (health effects) and safety (because of combined planning of (multimodal) infrastructure and spatial development).

In addition, the Vital Nodes project results suggest that more focus could be given on measures with a smaller investment volume (around EUR 50 million), which can be invested in coherence with other small initiatives and deliver an interesting proposition. And, that more funding is needed to invest in infrastructures and urban nodes that are resilient against climate change, natural disasters and catastrophes. This could include such measures as the construction of bypasses in the network, in multi-modal connections, or investments in innovative and green shipping logistics.

6. Conclusions

The Vital Nodes project discussed in this paper shows that urban nodes are often not yet an integral part of the TEN-T and comprehensive network. On the one hand, urban nodes are often important transport bottlenecks on the TEN-T network corridors, while increasing traffic at corridors is causing much environmental and spatial pressure in urban nodes. On the other hand, urban nodes profit socio-economically from their central position in the transport network, while the importance of urban nodes in terms of logistics and passengers transport at the TEN-T network will increase in the future. Urban nodes (and urban areas in general) seem to change faster than the network can keep up. To cope with these developments, a focus on innovative technical and sustainable solutions alone, will not be enough, as the challenges in integrating urban nodes into network corridors have a multi-dimensional character. Therefore, a transition towards sustainable integration of urban nodes into the TEN-T network requires an integrated a planning approach as has been discussed in the previous sections. This need for integration has been acknowledged by key stakeholders (see Philips et al., 2016) such as National, Regional Infrastructure Authorities and DG MOVE, as well as the Coordinators of the TEN-T corridors, who stress the importance of integrated strategies, platforms for exchanging experiences and multi-level governance approaches. A careful mix of interventions – regarding network, spatial, institutional and funding dimensions – seems to be the way forward to strengthen the connections between urban nodes and TEN-T corridors, and to achieve an efficient and sustainable transport system and vital urban regions.

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Cargo Hitching as a tool to transform the urban mobility system. Integrating passengers and goods transportation towards a more sustainable, desirable and efficient mobility

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Abstract: Mobility in cities is facing growing challenges. Urbanization trends, growing complexity of stakeholders scene, e-commerce and increasing fragmentation of freight transport all have negative impacts on congestion, safety, environment and quality of life in general. Authorities have developed uncoordinated policies and regulations in an effort to tackle such issues, often resulting in minor or even counter-productive effects only. The *Green Paper on Urban Mobility*, issued in 2007 by the European Commission, first explicitly mentioned the integration between passengers and freight mobility as a solution for increasing attractiveness and efficiency of the overall mobility system in urban areas, starting a new research branch. This paper presents passengers and freight transport challenges and regulation attempts and further discusses Cargo Hitching, that is the combination of people and cargo flows (cargo that hitches a ride on a vehicle transporting persons or persons hitching a ride on a vehicle transporting cargo), as an approach to promote sustainable, efficient and socially desirable passengers and goods mobility in both dense cities and shrinking peri-urban and rural areas. The potential and some limitations of Cargo Hitching will be discussed and results of a modeled application in Venice (Italy), case-study city in the Novelog project, will be presented. The focus will specifically be put on achievable operational, socioeconomic and environmental benefits and on the need of a fully renewal of governance and of the normative approach, key to the management of the mobility system as a whole in compliance with sustainability and efficiency objectives imposed on the one hand by market requests and on the other by the growing sensitivity of the various authorities and stakeholders.

Keywords: shared mobility, public transport, urban logistics, sustainable mobility

Introduction

Passengers and goods mobility is facing growing challenges: urbanization trends, growing complexity of stakeholders scene, e-commerce and increasing fragmentation of freight transport all have negative impacts on congestion, safety, environment and quality of life in general. Authorities have come up with uncoordinated policies and regulations in an effort to tackle such issues, often resulting only in

minor or even counter-productive effects. This paper first shortly discusses urban mobility and logistics challenges, both in dense urban cores and in rural or peri-urban areas with lower densities, and hints at strategies which have been pursued with little or no positive results. It then introduces a new paradigm for integrating passengers and goods transportation, referred as “Cargo Hitching” (CH), according to concept that was first mentioned by the European Commission in its “Green Paper on Urban Mobility”. The work, published in 2007, suggested how strong integration could improve mobility and logistics efficiency and sustainability (from environmental, operational and socioeconomic perspectives) while at the same time promoting a socially acceptable approach, responding to authorities’ needs and indications. Basic principles, best practices to explore the origins, and the potential of CH are presented and drivers for both success and failure are discussed, focusing in particular on achievable operational, environmental and socioeconomic benefits and improvements, as well as on regulatory and operational constraints that currently interfere with the promotion of the management of the mobility system as a whole. The last section of this work is dedicated to the presentation of results of a CH simulation for the North Lagoon of Venice (Italy), case-study city in Horizon 2020’s Novelog project. The area was chosen because of its peculiar mobility system and because, as it configures itself as a low-density semi-rural area located in between powerful attractors (Venice, Mestre and Marco Polo Airport) and relevant mobility and logistics flows, it is a perfect test terrain for CH. Despite the introduction of various constraints, reflecting operational reality, the simulation has proven to have high potentials in both obtaining environmental and operational benefits and in improving the socioeconomic situation of peri-urban shrinking, remote and scarcely populated islands, thus highlighting how CH, a solution originally designed for relieving pressure on congested urban cores, can ease long-term issues in suburban transport as well.

Logistics and mobility: challenges and hindrances to coexistence

It is important to be familiar with current challenges of logistics and passengers mobility to understand the need of growing integration and innovative practices. With decreasing densities, therefore in peri-urban or rural shrinking areas, public passenger transport faces increasing spare capacity and significant anti-economical operations, often resulting in poor service offer or no service whatsoever and therefore in transport-related social exclusion. Similarly, goods carriers might experience higher costs as demand is low and therefore offer limited service, increasing the areas’ isolation (McDonagh, 2006; Jansen, 2014). Dense urban cores, on the other hand, suffer from congestion and negative externalities generated by city logistics operations, as it will be discussed more in detail. As the world is seeing a growing urbanization trend (e.g. Taniguchi et al., 2001; Savelsbergh and Van Woensel, 2016) which will result in an urban population of around 9 billion in 2100, both urban dense areas and shrinking rural or peri-urban areas will grow in number and size, bringing whole new challenges in many sectors, including that of urban logistics (Taniguchi et al., 2001). City logistics is therefore a complex systems which operates in a complex environment, involving many active (impactful) and passive (impacted) stakeholders, such as authorities (national, regional/state and city level), carriers (transporters and warehouse companies), receivers (shopkeepers and retailers, consumers, intermediaries), residents (consumers), shippers (manufacturers, wholesalers, retailers) and traffic participants, all of which make use of the same scarce resources available in the urban areas (Kant et al., 2016; Taniguchi et al., 2001). The phenomenon of city logistics is not new and has actually been tackled at various levels, as can be seen in the Law of Caesar on Municipalities, ever since 44 BC (Savelsbergh and Van Woensel, 2016). As the world has

changed since roman times, so has city logistics, which is in fact a very dynamic sector, operating in the constantly mutating urban environment, on which it has both positive effects and major negative effects, such as contributing to congestion, creating safety concerns, participating in lowering the environmental quality of the city. The most recent major change happening to urban freight transport is the rapid development of e-commerce, which on one hand emphasizes the fundamental role of city logistics for the economic development of urban areas but on the other hand contributes to enlarging its impacts on social and environmental qualities of cities (Taniguchi et al., 2001; Anderson et al., 2005). City logistics is facing various challenges, which can be attributed to three major “channels”:

- Market requests: the conformation of today’s dynamic market leads to challenges for the urban goods distribution system, which has to respond to stimulations such as just-in-time requests, a high fragmentation in space and time of retailers and consumers, corporate policy such as the choices to only use company-owned and branded delivery vehicles (e.g. Coca Cola Company and soft drink producers in general). All of this adds constraints to the city logistics flow, often resulting in partial inefficiency due to low vehicle load rate, high mileage per vehicle, longer working shifts, higher number of deployed vehicles, etc.) (e.g. ENCLOSE Project Report, 2014).
- Policy and regulation: many authorities, particularly at local level, have come up with policy regulations that try to tackle some of the most invasive impacts of freight transport, such as noise, pollution, and usage of space (both for loading/unloading and while driving), sometimes even generating counter-productive effects due to forcing vehicles to take long detours, idle for longer times, etc. Such initiatives include time windows, restrictions for polluting, noisy or heavy vehicles, spatial restrictions, and so on (Munuzuri et al., 2004).
- Physical constraints/real time urban situation: congestion, pollution, noise are both partially generated by freight traffic and are affecting freight traffic, especially in terms of social acceptance by residents and, even more, by ruling authorities (which might lead to the adoption of some of the above mentioned measures) and in terms of inefficiency generated by extended operational time and related costs increases.

Starting from the described challenges, it becomes clear how the ultimate goal of urban logistics is (or should be) to reduce the clash between the interests of logistic companies and those of other stakeholder groups involved in urban mobility (Munuzuri et al., 2004), so that future policy and regulation on the topic can meet the interests of all parts and pick up the opportunities that are offered by technology advances. As it has been pointed out, though, it is increasingly difficult to provide “good service”, meaning managing to get the right product at the right time and at right place, at a low cost. It is also not possible to invest in transportation (infrastructure) capacity, either because of lack of space for expansion or because of the prohibitive costs that the operation would imply (Savelsbergh and Van Woensel, 2016). What is therefore needed is coordination of flows of goods, consolidation of freight volumes, and multi-organizational cooperation. It is needed to promote and inject innovative concepts at all levels: design, planning, execution, remembering that no pre-designed theoretical model can fit to real-life city logistics (Savelsbergh and Van Woensel, 2016). The solution to this has been approached in different ways from various authors, but it is recognized that cooperation between public intervention and company-driven efforts, a locally based strategy and a mix of technical/technological solutions (such as alternative fuel vehicles, use of real-time fleet management

data, etc.), logistical solutions (such as supply chain collaboration etc.), and policy solutions is needed (Kant et al., 2016; Savelsbergh and Van Woensel, 2016). Besides exploring the theory of policy and planning, many authors provide numerous examples of possible policy and physical interventions to tackle the issues of urban freight transport, which will not be extensively reported here for synthesis reasons but which in short have as keystone the creation and support of consolidation facilities and practices to achieve Joint Delivery Systems, aided by normative and economic pushes towards cleaner operations and innovative practices. For more details and examples see among others Van Binsbergen and Visser (2001), Munuzuri et al (2004), ENCLOSE Project Report (2014), Taniguchi (2014), Savelsbergh and Van Woensel (2016). It must however be said that despite a discrete amount of available literature on the weaknesses of urban logistics not much has been written on measured impact of radical improvement strategies, and this is mostly because those strategies often fail to take off (e.g. because of their complexity) while independent measures that have been promoted and tested have repeatedly proven ineffective (such as, for example, investments in urban consolidation centers). All reviewed sources, however, stress how only an increasing capacity to integrate freight transport and other urban activity and to cooperate among stakeholders, regardless whether public or private and whether impacted or impacter, can lead to a more economically and environmentally sustainable urban logistics system. The following section of this written work concentrates on CH as a way to put in practice this stated level of integration and coordination, while improving the urban mobility system from the perspective of economic stability, user acceptance, environmental performance and resilience.

Cargo Hitching: definition and basic principles

Cargo Hitching, or the combination of people and cargo flows, is a newly explored research and activity field in what regards urban freight transport and its relationship with the urban mobility system in general and with the key stakeholders in city management and economy: public administrations, those involved in the trading system (such as shopkeepers, carriers, manufacturers, etc.), residents. CH is “the combination of passengers and goods transport flows so to increase efficiency and efficacy of operations in both central and peripheral areas” (Bracale, 2016). Its main objective is “to design integrated people and freight synchromodal transportation networks and related planning and scheduling policies to enable efficient and reliable delivery of each parcel and retail delivery” (Jansen, 2014). Both definitions allow to reason on basic principles of the CH model: first, as discussed it is an integrated system, in which passengers and goods share vehicles, infrastructures, urban space or more than one of these at the same time. Both reported definitions concentrate on efficiency and efficacy (or reliability) of the proposed model: the idea is that CH, despite implying some investments, is more efficient than current business models and more effective in operations. This means lower costs for all stakeholders, more care for environmental issues, high social value. A following paragraph will discuss CH’s potential in terms of social value, discussing dynamics in central areas as well as in peripheral situations with shrinking population issues. Jansen’s definition provides other fundamental sparks: the first one is that CH is about building a network. It can’t therefore be said that it is just a modal quota shift to other means of transport: it’s a proper turnaround of the business model of both transit agencies and operators and of stakeholders of the cargo sector. The second key point that Jansen highlights is that the creation of the “network” must be accompanied by consistent policy and coherent planning. As it will be seen, regulatory and policy aspects are crucial in determining success of CH projects and currently constitute the biggest barrier to its

diffusion. Before discussing the potential of Cargo Hitching it is important to underline that is not a completely new phenomenon. The idea of outsourcing part of the delivery process, in this case using public transport with a surplus in capacity, has already been around for decades for what concerns – for example – long-haul air and rail operations, where mixed usage of one aircraft or train is nothing unusual (Bakker, 2015; Ghilas et al., 2013). The innovative aspect of Cargo Hitching lies therefore in the fact that it studies and proposes the usage of overcapacity of public transport to carry freight for short-haul operations, mainly in urban or peri-urban areas but without forgetting the potential for areas with shrinking population (Bakker, 2015; Jansen, 2014). The first hints about a shift towards a shared passengers and freight urban transport system was given by the European Commission in 2007, when they made the following statement: “Urban freight distribution could be better integrated within local policy-making and institutional settings. Public passenger transport is usually supervised by the competent administrative body while freight transport distribution is normally a task for the private sector. Local authorities need to consider all urban logistics related to passenger and freight transport together as a single logistics system” (European Commission, 2007; Bakker, 2015). Trentini and Mahene (2010) quickly reacted to this by producing a comprehensive list of ongoing or past projects that have been focused on sharing “public transport services, public road space or existing urban areas”, which can be considered as precursors of the CH model. CH in fact requires, for its implementation, a complete change of the operational model, including the way scheduling works, the fare system, the whole pickup, transfer and delivery process, and last but not least physical changes to assets (vehicle and infrastructure). Before deciding to implement such a complex and resource-taking strategy it is therefore important for local administrations and for public and private companies (goods manufacturing and delivering companies, passengers transport authorities, service management agencies,...) that the local context is carefully and exhaustively studied. The next paragraphs will first highlight CH’s theoretical potential in both central and peripheral areas and then discuss drivers which could bring the model to a failure at current state.

Cargo Hitching’s drivers for success in urban vs rural areas

CH, as said, has been developed to allow shared goods and passengers transport in short haul operations. In dense, urban areas, benefits from such a model are clearly perceivable. In shrinking, peripheral areas, the discourse is more complex and expands a bit from transport operations only. In central areas, benefits from CH are mainly financial (minor expenses), environmental (less pollution and more efficient fleet use), and related to governance (more acceptable policy and regulations). In peripheral areas, however, a new fundamental tile joins in: the intrinsic social value of CH. Cost reductions to provide transit services and goods deliveries, in fact, makes desirable or anyways possible the provision of services otherwise considered anti-economic, such as for instance additional, more frequent bus or postal services, thus interrupting or relieving the feeling of growing isolation which many shrinking areas face. this kind of dynamics increase areas’ attractiveness, allowing the retention of existing population levels and fighting growing isolation and alienation. This aspect is specifically important for the case study that will be discussed later in this work. Available literature, despite the topic having developed only recently, undoubtedly demonstrates through the analysis of real or simulated business models the potential of CH. Ghilas et al. (2013), Jansen (2014), Spoor (2015) and Li (2016) coherently present results from different studies that show how the freight sector as a whole (manufacturers, shippers and carriers, and receivers) generally gains economic advantage from loads consolidation and CH. They moreover agree in saying that public transport

operators, both fixed-schedule (typically transit agencies) or not (typically taxi and cab companies), also obtain economic advantages when making their spare transport capacity available for transporting parcels and/or small goods units. Finally, analyzed literature sources underline that public authorities can benefit from increased sustainability of transit operations, which will need lower subsidies. Absolutely not secondary are benefits related to the social sphere: as hinted, less onerous transport operations pave the way for additional, otherwise anti-economical delivery and passengers services, better serving shrinking areas and therefore increasing their attractiveness for current and future inhabitants. Those aspects are discussed in details by, among others, Jansen (2014) and Bakker (2015).

Cargo Hitching: drivers for failure. The inadequacy of the regulatory setting

CH, however, implies a significant change in today's operations and theoretical approach to urban mobility. Among the drivers which are keeping its diffusion to a hold, Jansen (2014) stresses that in most cases the regulatory and legislative systems (at all levels, from European to local) are not shaped to incentive such advanced sharing initiatives. Cargo and passengers transport are not only considered by governments and separated systems, but they are also referred as this by the law, they are regulated by different authorities, they are subject to different rules and guidelines, different work contracts etc. Spoor (2015) notes that regulatory constraints contribute to elevate the costs of the delivery chain. Ghilas et al. (2013) recognize the system as a very complex one, in which many stakeholders interact – namely “passenger door-to-door transportation, package transportation and public fixed line services,, - and produce different scenarios considering different integration levels, thus underlining that capacity to establish profitable cooperation is a necessary condition for the success of a Cargo Hitching process, but takes time and lots of political effort to achieve. The co-operation process becomes even slower due to the indecisiveness of corporation which are reluctant to “drop” their identity in delivery operations while consolidating deliveries. This phenomena is easily observable, according to literature, in the case of soft drink companies, for which the delivery with branded trucks is part of the marketing strategy. Many different constraints, moreover, complicate both the research phase and the physical application of Cargo Hitching theories. A different set of issues has to be included in research models and then transposed into practical operations, with obvious time and cost-related effects. Timing-related issues, like for example the fact that passengers are very sensible to travel times and must therefore have priority over goods, the time-limited availability of stores for receiving delivery, just-in-time deliveries and the management of just-in-time orders through web platforms, are a significant constraint to worry-free Cargo Hitching implementation. All read authors - and among those which have not yet been cited are Ghilas et al. (2013), Trentini et al. (2012) and Fatnassi et al. (2015) - have included time constraints in their research, even though they all have looked for a balance between relevance to reality and feasibility of the study. Other relevant constraints are related to spare transport capacity during certain times of the day or periods of the week, to flexibility of scheduled transportation, and to reverse logistics. None of the authors has included reverse logistics operations in their research to avoid excessive complexity of models, but it is clear that in real-life operations the problem is relevant and should be considered. This involves both waste management (which though could be outsourced to a different authority) and the return of empty rollers and containers, which is usually dealt with by shippers. A further slowing driver is the strong necessity for both public and private investments and adaptation: starting a Cargo Hitching project requires to make available at least one consolidation facility and pick-up and delivery

locations at selected transit hubs, to purchase new low impact vehicles for last mile delivery (e.g. tricycles or more sophisticated solutions such as electric light vehicles, which then introduces the problem of charging facilities), to strongly intervene on the existing public transport fleet to make it usable for easy and quick (especially in loading/unloading operations), reliable, safe for goods transport. All considered authors present this aspect as a big challenge, also considering that no regulation at the moment determines which investments should lie in the responsibility of the public sector and which should be covered by private stakeholders. One last significant braking factor for Cargo Hitching's success is the necessity of constant monitoring and adaptation of the running integrated system, so it can be kept attractive for passengers and effective for goods operators, while being in the meantime socially acceptable for residents and administrations. This involves facing problems related to ITC costs and to research costs and timing. Literature has not really widely discussed this aspect yet, because there is still no fully implemented system to analyze. To sum up and conclude, it can be said that future research should take as primary objective that to propose an acceptance model for Cargo Hitching (addressed to public administrations, private and public companies, stakeholders part of the transportation and logistics systems in general) to be merged with an integrated and broad business model, which should take into account all phases of the innovation process (from theorization and planning, to implementation, to monitoring and evaluation). The main point is – to be clear – to find a way to make the transition to the integrated system happen smoothly, thus solving regulatory issues in the first place while taking into account all other discussed aspects as well. Funding by public authorities and the design and implementation of pilot initiatives are fundamental elements in the development strategy for Cargo Hitching: small-scale applications (e.g. in a restricted sector of an urban agglomeration or in a limited-size rural area) could be the key to test proposed models thus allowing to build an appropriate and reliable set of indicators and operational model to facilitate future broader diffusion of Cargo Hitching which – as it must be reminded – available research identifies as a key process to build a more economically and environmentally efficient integrated transportation system not only in dense areas but particularly in more rural areas suffering phenomena like shrinking population and service quality decrease, thus entrusting a strong social value to transport operation.

CH for the Lagoon of Venice. Setting and business model.

This paragraph summarizes the setting and most notable results of a simulation of a Cargo Hitching shared transport system in the Venice area, Italy. The chosen area is set in the North Lagoon of Venice, and was chosen for multiple reasons: first, Venice is case-study city for the Novelog Project, meaning that some scientific contributions have been developed on the topic, including the one which is here synthetized. Second, the North Lagoon has two main itineraries, which are easily identifiable and which are used for both goods and passenger transport, carrying in both cases significant volumes. Those two main itineraries are coincident with the vaporetto/waterbus (ACTV) routes 12 and 13, from Fondamente Nove (Venice) to Murano, Burano (line 12) or Sant'Erasmo (line 13) and on to Treporti (connection with the mainland) (Figure 1).



Figure 1: ACTV lines 12 and 13, chosen for CH implementation. Own elaboration

In order to limit the overall complexity of the case study and to produce a realistic model, capable of immediate acceptability from sectorial stakeholders (of both goods and passengers transport), from the workforce and from the public, it is necessary to fix some constraints and starting hypothesis. Whereas some of these constraints have been set in the academic environment, most depend directly from the results of a confrontation with the abovementioned categories, where different scenarios were proposed for the study of CH system and the most realistic possible situation was outlined. The most important fixed constraints include:

- the choice of the study area, limited to the itineraries of ACTV routes 12 and 13, due to service frequency and volume and to its overlapping with major freight transport axes, as recognized by COSES (07/2002 report);
- the decision to simulate the worse possible scenario, using winter transit schedule (lowest offered level of service) and meanwhile the highest yearly recorded freight volumes. Moreover, prudent correction factors have been applied for loading capacity and spare capacity of ACTV waterbuses;
- the limitation of freight categories to include in the simulation to “Conto terzi” of the most frequent categories, as defined by the Chamber of Commerce, due to excessive unpredictability of transport demand of other categories;
- the decision to maintain a goods delivery window from 4 am to 11 am, corresponding to current delivery times. Public transport schedules were therefore only considered in this frame.

Table 1 synthesizes the results of data collection and elaboration regarding public transport offer, freight transport demand, and number of circulating vessels. It moreover presents the sizing of freight loads onto transit vessels, in both square and cubic meters and in percentage of available volume and surface, calculated according to the process of overlay of offer and demand. Figure 2 graphically shows the impact of goods loads into cabins of transit vessels in service on lines 12 (capacity: 325 passengers) and 13 (capacity: 218 passengers). As Table 1 and Figure 2 have helped to graphically

show how volumes could be redistributed, it is now useful to describe the functioning of the proposed CH system. Two consolidation hubs would be needed, one west , intercepting freight fluxes from Venice-Tronchetto and the mainland- San Giuliano (in Murano or F.Te Nove) and one east (in Treporti). Those facilities would serve as consolidation of goods deliveries into standard-size rolls (715x805x1800 mm) and for their transfer on ACTV's boats. The design of those facilities was not in the scope of this paper, however it must be said that current volumes do not impede to basically use standard ACTV floating pontoons, part of which could be dedicated to goods. Loading and unloading, as well as last-mile goods distribution on the islands, would occur in line with today's operational model.

Table 1: offer, demand and freight volumes on public transit vessels according to the proposed CH system.

Own elaboration.

Offer	Line 12 (carrying capacity: 325 passengers)				Line 13 (capacity 218 pax)	
	Murano-Burano	Burano-Murano	Burano-Treporti	Treporti-Burano	S.Erasmo-Treporti	Treporti-S.Erasmo
# runs before 11am	15	12	12	11	6	6
# vessels in service	4				2	
Capacity pax	4875	3900	3900	3375	1308	1308
Sqm offered before 11am	1218.8	975	975	893.8	327	327
Maximum declared usage (%)	35	35	35	35	37	37
Security factor (%)	10	10	10	10	10	10
Spare capacity (%)	55	55	55	55	53	53
Sqm used	548.4	438.8	438.8	402.2	153.7	153.7
Sqm available	670.3	536.3	536.3	491.6	173.3	173.3

Cubic meters available (security factor 10%, height=2m)	1072.5	858	858	786.5	277.3	277.3
Demand						
Freight volumes	556	366	237	163	140	87
# vessels used	22	21	13	12	6	7
Real-size freight loads						
Cubic meters on each service	37.1	30.5	19.8	14.8	23.3	14.5
Sqm on each service (height=1.8m, with security factor 20%)	20.6	16.9	11	8.2	13	8.1
Load size (side 1)	4	4	4	4	2	2
Load size (side 2)	5.1	4.2	2.7	2.1	6.5	4.0

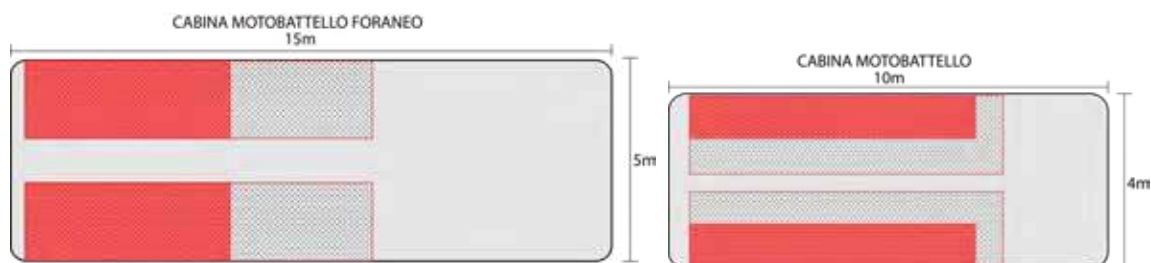


Figure 2: ACTV vessels cabins (big: line 12, small: line 13). In plain gray, space available for passengers. In dotted gray, maximum theoretic freight load (based on spare capacity). In red, maximum real freight load (based on volumes to be carried). Own elaboration.

CH in Venice. Open critical issues.

The proposed system leaves some critical aspects open; aspects which is necessary to highlight for both future research and for next on-field operative steps in the context of the city's mobility policy and practice evolution towards further integration. A first set of criticisms is represented by CH's intrinsic limits, as hinted already. In particular, it must be reminded that as today freight transport on vehicles – vessels in this case – designed and type-approved for public transportation is hardly frameable in the classic regulatory set nor in the competences which the law recognizes as proper of

public transit agencies and/or operators or in sector contracts for their employees. It would therefore be necessary to strongly act on the local, national and European regulatory structure in all interested sectors, on contracts and labor deals, on plans and strategies, with the goal of allowing and even promoting, if not enforcing, goods/passenger integration. This is a first relevant issue, which has been brought to interested stakeholders in the case of Venice and is currently under discussion in the parts of competence of local institutions and enterprises. A second critical aspect is the acceptance of CH by usual transit customers. In this particular case commuters on ACTV routes 12 and 13 might experience minor schedule dilations due to longer dwell times and higher load of vessels (meaning lower cruise speeds). Passengers could moreover experience less comfort due to higher intensities in the use of PT vessels capacity. Before implementing the CH system, therefore, further studies on social acceptability should be conducted in the interest of the public administration and of ACTV. It must however be noted, on the other hand, that in the context of the Lagoon of Venice transit is in the unique position of being in most cases the only available alternative to move. In this sense, it would be easier to force the implementation of the CH system – in case the public administration would decide so – even in case of mixed feelings from the users' side. Some more critical aspects are related to the constraints which have been introduced in the model: future research should include reverse logistics operations and additional goods categories, and should further discuss consolidation hubs.

Caro Hitching for Venice: performance evaluation

This paragraph is dedicated to an evaluation process of the proposed CH system for the venetian lagoon. This is an innovative element not only for the specific geographical context object of study, but for the whole literature body about CH. Only recently, in fact, the problem of evaluating mobility performance rose, and such an approach was, to the author's knowledge, never applied to real or simulated CH operations before. The evaluation process is conducted through a set of performance indicators (KPIs) which until now, outside of the Novellog project, have never been used with reference to the transport sector.

CH for Venice: evaluation results

Before describing the chosen indicators and the results of the evaluation process, it is necessary to highlight that in the process itself all constraints which have been set during the description of the case study have been maintained. Moreover, compared to the originally considered time window (4 to 11 am), the indicators have been calculated for a restricted time window of 3 hours only (7 to 11 am), as PT offer during those hours revealed itself to be sufficient to deliver the totality of considered freight while at the same time minimizing economic, operational and environmental impacts. The first analyzed evaluation dimension is that of operational impacts, considering efficiency and efficacy of the combined transport system and confronting obtained values with the current situation, in which the two systems are run independently. Part of this category are indicators concerning total operating hours, covered distances and load factors. A second group of KPIs investigates environmental impacts. This is an extremely important field of evaluation also for what concerns social acceptability of the integrated system: environmental benefits could be a persuasive tool to increase stakeholders' consent on the project. The third and last evaluation dimension concerns economic impacts, specifically related to costs of energy and costs of workforce. Aggregated results from each calculated KPI are available in Table 2.

Table 2: evaluation through KPIs and results. Own elaboration.

Indicator (code + name)	Description (if needed)	Evaluation results
A1 – Traffic variation	Traffic variation (# of boats)	Traffic drops from 323 to 242 daily operating boats. Average reduction is therefore -25%
A2 – Distance variation	Distance variation (kms operated)	Compared to today's 640 daily kms, with CH a reduction of 432 kms would occur. -67.5%
A3 – PT load factor	Public transit vessels load factor	CH would rise load factor to max 78.2% , still leaving spare capacity to absorb unusual peaks
A4 – Frequency/Level of service		There is no change in level of service from PT users' perspective.
A5 – Engines operating hours	Hours of total operations of vessels' engines (PT+freight)	Reduction from 50,6 hrs/day to 16,3 hrs/day. -68%
B1 – Carbon Dioxide Emissions		A daily saving of over 1.5 Tons of carbon dioxide is allowed, which means -38%
B2 – Energy consumption		Energy consumption reduction -38%
C1 – Cost of energy	Includes fuel costs	Cost of energy drops: -42.5%
C2 – Cost of workforce	Includes all human resources	Cost of labour is reduced by -38.1%

The evaluative process has highlighted incentivizing results, especially when considering that it was conducted with several limitations as to better adapt to the context's reality. According to the findings, therefore, CH proves to be a suitable solution for the discussed case study and it would be meaningful to continue the already started discussion with the various involved stakeholders so to identify common guidelines to first produce needed policy/regulatory changes and then implement the shared system. The inadequacy of the regulatory framework is, indeed, the biggest slowing driver towards high integration, in Venice more than elsewhere. It is of absolute priority to identify appropriate strategic and operational instruments to legitimate and promote integrated passengers/goods transportation. In Venice in particular the strategic reference plan could be the SUMP (Sustainable Urban Mobility Plan) which has not yet been prepared but will need to be discussed soon. From a tactic perspective, instead, the most interesting instrument for the context of study seems to be that of the tender or bid. Practically speaking, the administration should prepare a tender which includes and regulates the integrated transport system, establishing clearing rules and giving all operators time to organize and compete accordingly to their competences. In this scenario, the implementation of the CH system would be on one side supported by a powerful strategic planning instrument (the SUMP)

and on the other side promoted by the operators which would compete to affirm their role within the new system, thus lowering the risk of otherwise likely protests.

Conclusion

This paper has discussed some of the issues related with short-haul logistics, particularly in dense and congested urban environments. Given that current trends show growing urbanization and an increasing fragmentation of goods deliveries, it is obvious that the situation will grow worse. Authorities and governments have at times tried to tackle major issues (congestion, noise, pollution) by promoting restrictive and punctual measures, which have proven not effective or even counter-producing. Based on the EU Commission push for further integration between goods and passengers transportation, this paper presents Cargo Hitching, namely the combination of people and cargo flows, as a possible solution for achieving higher efficiency and sustainability standards for the overall transport system in both dense urban areas and in peripheral or rural shrinking contexts. After discussing the basic principles of CH and some of its main success and failure drivers, this article reports the setting and results of a CH simulation conducted for the venetian lagoon within Novelog Project. The evaluation process, conducted using KPIs for the first time for a CH application and innovatively for the whole transport sector research, has highlighted incentivizing results, with major operational, environmental and social obtainable benefits. Taking advantage of the participation of Venice into the Novelog project, next steps towards an integrated transport systems have been identified and discussed with the sectors' operators and other involved stakeholders. In this regard, a major issue has been highlighted in the inadequacy of the governance and regulatory systems and a proposal for a two-folded legitimation strategy (strategically, through the Sustainable urban mobility plan, and operationally, through a tendering process) has been prepared. Such a strategy should, according to the simulation's results, strongly be promoted in order not to waste the innovative push and the undoubtable potential which a CH system has with regard to themes which are or should be keystones in the political debate, particularly in the venetian area, as for instance the reduction of environmental impacts (on the lagoon itself as well), the necessity to maintain attractiveness and competitiveness not only of the historic city but of the islands as well, the will to make economically competitive and sustainable public transport and the mobility system in general, and the requirement to lighten the pressure on the lagoon generated by transport operations.

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An On Demand Transport in a Low Density Region of Portugal - Alentejo

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Abstract: ON DEMAND TRANSPORT IN A LOW DENSITY AREA OF PORTUGAL - ALENTEJO

Mobility and accessibility to services in low density areas is a concern of municipal management policies in the Alentejo. Alentejo is the least populated region in the country, representing over one third of national territory but only 7.1% of its population. It is also the region with the oldest population, 22.9% being 65 years of age or more (while the national average is 17.5%). The CCDRA (Coordination Commission of Alentejo) has proposed, working with the municipalities, to model an on-demand-transport, based on a suitable selection of route centres and itineraries, with the objective of increasing coverage of the existing public transport network (providing an offer in areas and / or periods of the day or year where this offer does not exist or is in deficit). The project will start soon with five municipalities and, in a second phase all the remaining 40 municipalities can be added according to their will. In a first stage, routes, schedules and frequencies are established depending on health needs, supply needs, weekly markets, access to administrative and financial services or for linking with other means of transportation, and serving mainly elderly people living in distant places not served by public transport. Vehicles only make the routes if, in advance, the service has been requested and only go to the stops that have reservations.

Keywords: on demand transport; flexible mobility; low density regions

Introduction

The project "On Demand Transport for Alentejo" will cover, in an initial stage, five municipalities of the Alentejo Region (Reguengos de Monsaraz, Moura, Beja, Mértola and Odemira). The main objective is to increase the coverage of the existing public transportation network, providing an offer in areas and/or periods of the day or year where this offer does not exist or is deficient.

Like regular public transport, there are circuits, stops and schedules initially defined. However, on-demand transport services are distinguished from regular transport because the customer is the one who triggers the journey, through a previous request to a reservation center. In this way, the vehicles only make the service if, in advance, the service has been requested and only go to the stops that have reservations.

The five municipalities associated to this project has defined the stops, according to the objectives of the project, namely places where there are possible clients and where the offer of public transport is low or non existent.

All the movements and schedules of existing public transport were identified, and the on-demand transportation project does not overlap with existing services, aiming at eliminating gaps in the existing network transportation in each municipality, and complementing with existing services.

It is the municipalities that make the service available. CCDR Alentejo only intends to facilitate and guarantee management availability, being responsible for modeling of the routes and programming of the platform that receives the orders. Both platform and geographic information system need to be linked in order to produce three outputs:

- travel information for the customer
- travel information for those taking the vehicle (public or private operators)
- information on the cost of travel for those who provide the service (municipality)

Each municipality made a deal with the transport operators (mainly taxis) in order to invite them to join the project and to present conditions. In the next stage, the Social Entities that the municipality can define, should also be invited so that trips can be made available for disabled people (in particular wheelchairs, since some of these entities have properly equipped vehicles for this type of transportation).

The decision to start the project

Demand Responsive Transit (DRT) systems (also called dial-a-ride systems) have emerged in the last decades as an attempt to satisfy the dynamic nature of users' demands. They rely on flexible services able to provide almost 'door-to-door' transportation in small vehicles, with the possibility of pre-booking. DRT systems are nowadays mainly implemented as services for small groups of persons (e.g. elderly or handicapped persons). However, massive and on-demand services are far from being considered as a possibility or an alternative to the conventional public transportation system. (Archetti *et al*, 2016)

In neighboring Spain these on-demand transportation experiences are working well namely in Castilla and León and are based on on-line technologies of Advanced Vehicle Monitoring. The testing phase began in May 2004 in peripheral areas, raising quickly the number of municipalities which participated in the project as well as its number of passengers, thanks to the loss-leader effect. This system has benefited firstly users who may have access where scheduled lines do not arrives, granting the speed and provision of service by removing unnecessary stops being reported in real time by terminals; secondly the operator due to route optimization, cost saving, the increase in the number of passengers and the easiness to adapt the type of vehicle to specific requirements; finally to the Administration, which is able to control the service quality. This has enabled the reduction of displacements by private cars, family spending, accidents and the CO2 emissions. (Urrecho and Fernandez, 2016)

But, the first decision of project in Alentejo was to adapt a similar project already in operation since 2013 in another region of the country with characteristics not very different from Alentejo, the region of Médio Tejo. (Portal Regional do Médio Tejo, 2019). The past experience of these projects has allowed an evaluation of sharing problems in order to create efficient solutions. It was possible to understand that on average, ondemand travels cover around 7% of the km that would be required with a regular basic service. Furthermore in the same project it has been identified that 67% of travels

are made for health reasons. The Medio Tejo community presented the conclusion that this mobility solution allows them to give a qualified answer to mobility needs of the population living in areas of low population density, particularly for disadvantaged groups, thus giving the project a social relevance. As well it reveals a more economical solution and greater environmental sustainability compared to the regular network. High levels of satisfaction (greater Comfort and shorter travel times than regular service) are presented by users of the Médio Tejo municipalities.

With this information and also according to governmental decisions to support more sustainable mobility solutions, CCDRA decided to start working with some municipalities in order to define a pilot project that could accommodate a number of municipalities whose routes and decisions could be used as models and then later export to the rest of the territory. Figure 1 shows the five municipalities of Alentejo region that belong to this pilot project.

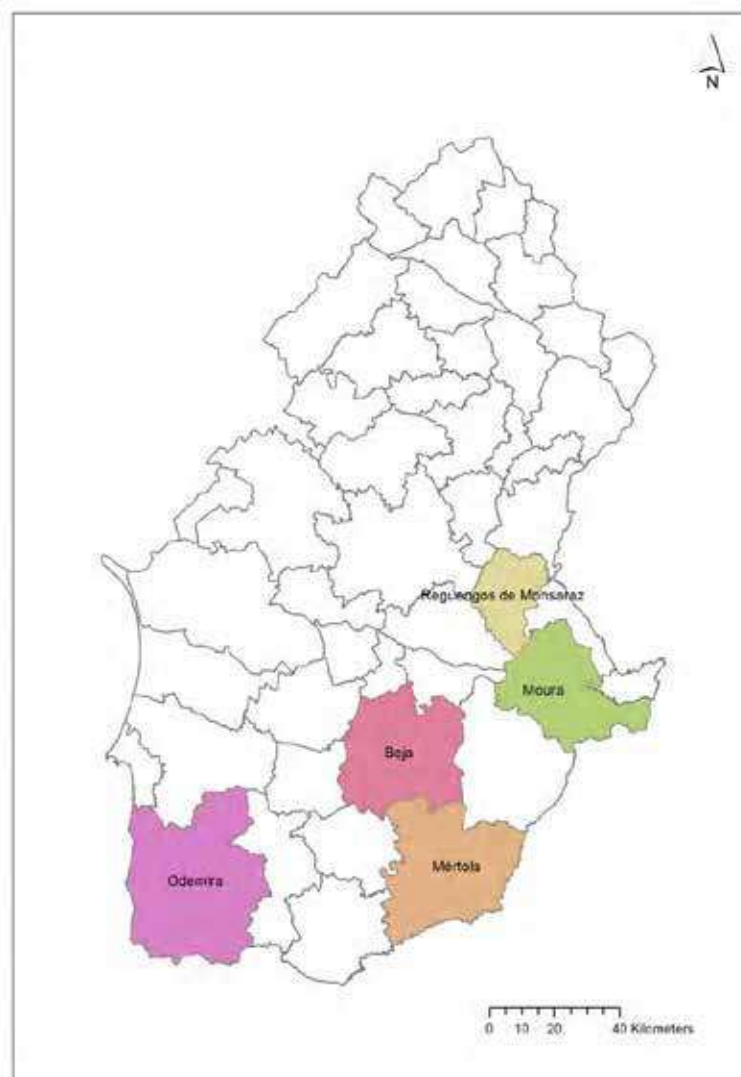


Figure 1 - Municipalities that are starting OnDemand Transportation

The road network

Each municipality was invited to define stops, suggesting that it could be in any place where there are possible users and where the offer of public transport is low or non existent. Also there can be an existing offer but in a different time of day or day of week.

Once defined the stops and having associated routes, a different color was defined and associated to each route, as shown in Figure 2, the on-demand transportation network for the municipality of Beja (7 routes with 68 stops).

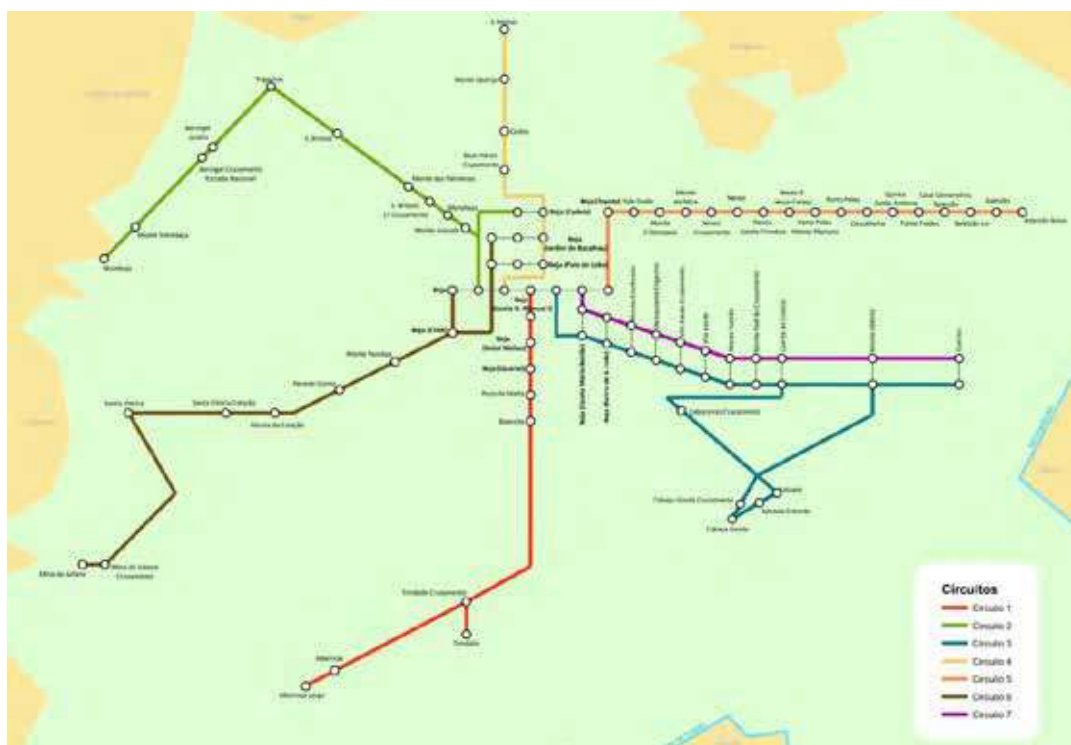


Figure 2 – On-demand Transportation Network for the Municipality of Beja

Travel prices

All prices were defined by the municipalities, according to travel distances and the normal price rate for regular trips. The prices are about 1.5 x regular route prices that correspond roughly to the taxi trip value divided by 4 passengers (echelons depending on distance 1,60€ to 5,10€). For more frequent travels a book of 10 pre-purchased tickets is available, with 30% discount. Figure 3 shows the image on line and in paper flyer to illustrate the different prices according to distances.



Figure 3 – On line different prices according to distances

Travel requests – the service user

Besides the site information (soon on line and shown in Figure 4 as it will be on line), each municipality has a paper flyer with all the information needed to request the service:

1. The customer contacts the service through the phone number up to 12:30 the previous business day of the trip;
2. The caller performs the reservation according to the request. Until 16h00 / 18h00 on that day, a call is made to the client to confirm the time and cost of the trip;
3. On the day and time scheduled by the passenger, the transport will be at the default stop.



Figure 4 – Image on line to show all steps of travel request process

The travel requests – additional frequently asked questions

In order to ensure that no user has doubts and is easy understand every moment of the service, the FAQs - frequently asked questions - have been set on each paper flyers, as well as on the website and they are as follows:

What is On-Demand Transportation? It is a public transport service where the passenger has to pre-book a trip. It is a service provided by your municipality that intends to get transportation to places where it does not exist or is deficient. On-demand transport does not overlap with the existing offer, but only complements it.

How can I book? Reservations can be made until 15:00 on the business day prior to the day of travel, by calling the telephone number 300 079 000.

Does a booking request have costs? The phone numbers beginning with 300 are called nomadic numbers, and their usage is charged as a call for a fixed service according to their tariff.

What information should I give of my reservation? Name, Phone number, Stops and hour of origin and destiny.

What happens if you do not make a reservation? If a reservation is not made until 15:00 on the previous business day, the transport service is not guaranteed. Late reservations may be allowed, but only for stops that already have reservations.

After booking is the trip guaranteed? No. You must wait for the confirmation of your trip, so you will be contacted by an operator who will give you the confirmation of the trip, as well as the information about the time and associated costs.

How far can I go with on-demand transportation? There are pre defined circuits of the on-demand transportation service operating in the counties of Beja, Mértola, Moura, Odemira and Reguengos de Monsaraz. There are stops, routes and pre-defined times in each municipality. You should consult this information in the brochures available in your local authority or parish.

What kind of vehicle is included by the service? The services are carried out by taxis (of 4 or 7 places) or by vehicles of the respective municipality.

Will the vehicles collect the passengers at their houses? No. Although the shuttle service is also made by taxis, it is not a taxi service. There are stops (properly identified with the Symbol of the Transport on-Demand), schedules and defined circuits.

Where can I buy the ticket and how much? The ticket can be purchased at the premises of the town hall, the parish headquarters or the driver, and each trip corresponds to a ticket.

How can I get more information? For more information you can call the phone number 300 079 000, running every working day, from 09:00 to 12:30 and from 14:00 to 17:30.

The travel requests – the platform proceedings

The "Call Center Operator" registers the reservation request by the "User", indicating to the platform:

- County
- Name, Tax identification number, Phone number and Email
- Origin and destiny

The platform processes the various booking requests of the day and evokes the Geographic Information System for optimization. According to this optimization it generates work orders and notifies the "Local Service Manager" (a person defined by the municipality and working there) that validates service orders (validates vehicles and associates drivers) according to availability and notifies the "Call Center Operator". Then, the "Call Center Operator" confirms the reservations with the "User" according to the processed Service orders.

The platform aggregates service orders confirmed by municipality and notifies by mail the following stakeholders:

- Municipal Manager and Local Service Manager, with all the orders that are to be carried out by that municipality
- Transport Operator, with the work orders that were assigned to their vehicles
- Driver, with the work orders assigned to him.

This information allows all those involved in the process to keep track of all the trips as well as the financial costs of each trip attributed to the municipality.

The near future work

On May 30 the CCDRA developed a public presentation event for the project. The objective of this event is that municipalities of the pilot project as well as the managers of the Middle Tejo project can share the strategies and the experience of the definition of routes and tariffs. Each of the remaining forty municipalities can thus begin to prepare the possible association to the platform and begin the procedures that precede this association.

Before the project goes into operation it is still necessary that "Local Service Manager" in the municipalities as well as "Call Center Operators" receive specialized training for the operation of the platform.

At the same time a monitoring plan is being set up for all procedures from the reservation to the final destination of each trip. In this plan there are also surveys of satisfaction to the users that allow later to indicate the needs of updating each network or specific services.

The long term future work – second stage of the project

The first major objective for the future work is to accommodate all other municipalities that intend to be associated to the platform.

The platform is already being prepared to evolve from a project of On-Demand Transportation to a project of Mobility as a Service. In this second stage, all types of public transport should be associated

and users can book a trip that has more than one type of transport and therefore for travel between different municipalities. Since it will be at a time when users are already familiar with the project, online travel reservation as well as a mobile application will also be available.

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Cycling to School: Exploring Key Factors Influencing School-Going Children's Mobility Choice to Cycle in Tallinn, Estonia

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Abstract: Cycling and other active travel modes have dominated sustainable transportation policy agenda of many cities worldwide. Cycling is deemed beneficial for individuals' health and well-being while contributing to liveability. While Amsterdam and Copenhagen are considered frontrunners in cycling, others are only taking their first steps. Tallinn, Estonia belongs to the latter category, setting up their first Cycling Strategy in 2018. Amongst other measures, the strategy aims to make cycling safer and more attractive in the vicinity of schools in order to increase the share of cycling to school to 25% by 2027. This demographic group are seen as a crucial to influence the potential future of Tallinn's cycling culture. Despite the abundant literature on cycling, there is little to no focus on children in aspirational cycling cities. This research explores factors that influence cycling to school in Tallinn among children in the ages of 13-16. The research includes street observations, a survey (n = 511) at various schools and focus groups sessions with children, parents and mobility experts. The findings support the need for comprehensive strategies including cycling infrastructure modifications and convenient cycle parking facilities together with promotional campaigns designated for children and parents.

Keywords: school-going children; school travel; cycling culture; sustainable mobility

1 Introduction

Cities are increasingly investing in active mobility strategies encouraging walking or cycling in place of private car travel (European Commission, 2016; Johansson, Laflamme, & Hasselberg, 2012). The expected benefits associated with active mobility are predominantly for increasing health and well-being. The attraction here is twofold. Firstly, cycling is considered the most sustainable transport mode in cities, also suitable for longer trips usually taken by car or public transportation. As Pucher and Buehler (2017) state: "Cycling is environmentally, socially and economically sustainable" (p.689).

Next, children are increasingly performing sedentary activities and child obesity is a growing health care concern. Walking and cycling to school offers children higher levels of physical activity, but also psychological gains such as having more social interactions. Simultaneously, a reduction in the number of parents driving their children would make active transportation safer, but also benefit the environment (Easton & Ferrari, 2015; Ermagun & Samimi, 2015; Helbich et al., 2016; Larouche, Stone, Buliung, & Faulkner, 2016; Mitra, 2013).

Most existing literature on cycling among children focuses on the USA, Canada and England, but also Denmark and the Netherlands which are more advanced in cycling. In comparison, Tallinn, Estonia where approximately

1% of all trips is done by bicycle (Maanteeamet, 2017) seems to not be addressed. This could be expected in a city where car dominate, public transport is free of charge and snow is predicted in winter months (Cats, Susilo and Reimal, 2017; Hess, 2017; Poltimäe and Jussi, 2017, Leesment, 2018). However, weather considerations aside, in comparable cities such as Helsinki or Gothenburg 11% and 8% of all trips are done by bike respectively (City of Gothenburg, 2015; Maanteeamet, 2017).

Tallinn adopted the Tallinn Cycling Strategy in 2018 which aims at 11% of cycling of all mobilities, and 25% of cycling of all mobilities for travelling to and from school (Jüssi et al, 2018). School children are an important focus of the strategy as they are seen as the future of Tallinn's cycling culture. However, as there is such a low percentage of cyclist, it becomes important to understand what the barriers to cycling for school-going children could be. These insights can offer valuable information for drawing up comprehensive measures for reaching the goals set in the cycling strategy.

In collaboration with the Tallinn Cycling Coordinator, this research therefore aims to understand which key factors influence school-going children's mobility choice for cycling to and from school in Tallinn. Through a mixed methods approach, this research discovers the factors influencing cycling to school in Tallinn, including a survey of 511 school-going children, focus groups with pupils, parents and experts to isolate the factors and observations of the current conditions in Tallinn in relation to these factors.

2 Theoretical framework

In order to understand children's mobility choice to cycle, this chapter first explains travel behaviour in boarder terms and then narrows it down to children. This research is based on the model of school transportation by Mitra (2013) which is explained here. Finally, the key factors that have found influencing children's mobility choice in other studies, are shown.

2.1 Travel behaviour & children's travel choice

Before making school travel choice explicit, first an understanding of general travel behaviour has to be established. The NOA model identifies needs (N), opportunities (O) and abilities (A) as determinants of travel behaviour. Needs describe motivational factors, social factors and emotions. Opportunities include available transportation modes and travel distance, and abilities looks at monetary and time resources, but also skills and capacity to use different travel modes. Needs, opportunities, and abilities are influenced by societal developments, such as economic growth and changes in values and norms. For instance, economic growth enables more people to own a car (Dijst et al, 2013).

In contrast to adults, children's mobility is largely determined by their independence from their parents or caregivers. *Children's Independent Mobility* (CIM) is a concept that tries to capture the extent of this independence by looking at the freedom children have to leave their home on their own (O'Brien, Jones, Sloan, & Rustin, 2000). CIM includes activities that children can do independently, such as crossing main roads, travel to places aside school, travel home from school, travel by public transport, bicycle and go out after dark (Carver *et al.*, 2014).

Children's independent mobility is linked with *Active Travel to School* which means walking or cycling to school instead of taking the car or public transport which are passive transportation modes (Easton & Ferrari, 2015; Lee, Orenstein, & Richardson, 2008). Active school travel has many benefits for the child, including higher levels of physical activity and psychological gains such as potentially having more social interactions. On the contrary, children who are chauffeured are more likely to perform sedentary activities and have weight issues (Easton & Ferrari, 2015; Ermagun & Samimi, 2015; Helbich, 2017; Larsen, Larouche, Buliung, & Faulkner, 2018; Oja et al., 2011; Schoeppe et al., 2013).

Researchers who have studied active travel to school, agree that no single factor can determine active school travel. However, factors that have more prominent influence on active school travel are similar across studies. These key factors are:

- distance to school (Broberg & Sarjala, 2015; Ermagun & Samimi, 2015; Mitra & Buliung, 2015);
- road, traffic and perceived safety (Broberg & Sarjala, 2015; Carver, Timperio, & Crawford, 2013; Johansson et al., 2012);
- street connectivity (Broberg & Sarjala, 2015; Helbich et al., 2016).

Nevertheless, experience from various countries has shown that investments in infrastructure alone have not brought the desired outcomes and thus educational programmes are also essential in influencing children's travel behaviour (Deka, 2013; Mitra & Buliung, 2015; Pucher et al., 2010).

Factors influencing active school travel also vary between younger children and the adolescences. Both Mitra (2013) and Johansson et al. (2012) agree that active commute to schools decreases as children get older. While younger children generally prefer to walk to school or use the walking school bus, the youth tend to prefer public transport (Mitra & Buliung, 2015; Hinckson, 2016). Hinckson (2016) also found that both younger and older children enjoy traveling with their peers, although they use different modes of transportation.

2.2 A behavioural model of school transportation

This research adopts Mitra's model of school transportation (2013) and uses the four domains of *external factors* (1), *urban environment* (2), *household* (3), and *child* (4) (Figure 1) to identify factors influencing active school transportation in Tallinn. However, in its simplicity, it excludes socio-demographic and economic indicators for travel behaviour.

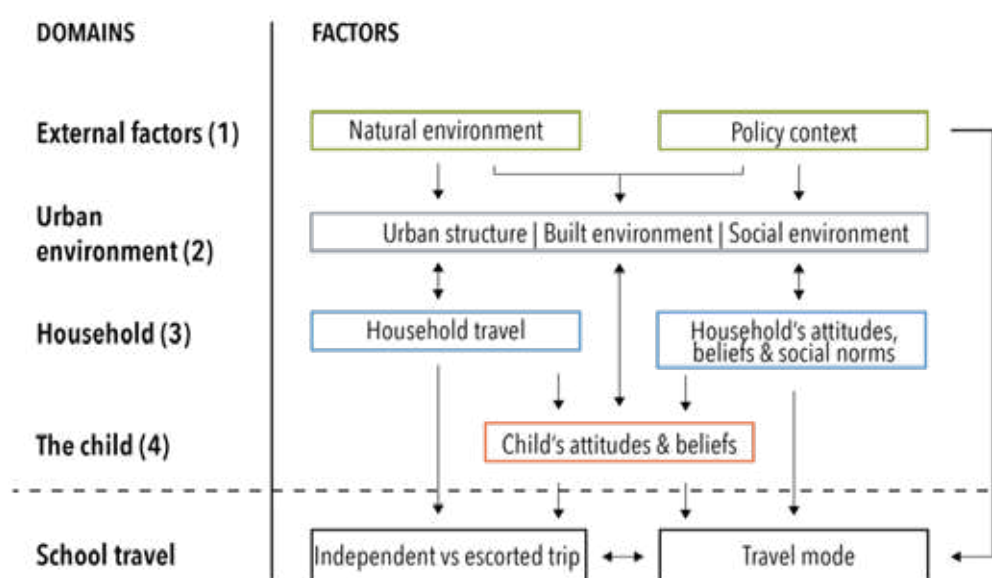


Figure 1: A simplification of Mitra's (2013) model of school transportation.

The first domain – *external factors* - include the natural environment and policy context. A city's topography, weather and climate, influence active school travel (Mitra, 2013). Studies from the Nordic countries report a

decrease in cycling rates in winter months (Larouche et al., 2016). However, if children are used to cycling on a daily basis, they are less likely to change their habits due to the change in season (Helbich et al., 2016; Larouche et al., 2016). Policies such as the possibility to use a school bus and provision of bike parking at school, can encourage or discourage cycling.

The second domain - *urban environment* – includes the urban structure, built environment and social environment. Here, Mitra (2013) identifies five links between neighbourhood characteristics and school travel outcome – proximity to school (1), traffic and personal safety concerns (2), connectivity of streets suitable for active travel (3), comfort and attractiveness of active travel modes (4) and opportunity to produce and maintain social capital (5), such as cycling together with other children.

The third domain – *household* – says that social norms and values, and the travel options contribute to school mode choice. Children are more likely to engage in active transport if they live in a car-less household. Relatives, friends and even teachers may disapprove parents' choice for active school travel (Bennetts et al., 2018; Mitra, 2013). General household activity, such as driving to work in the morning makes it convenient to drive the child to school (Mitra, 2013), but if parents are confident about their child's physical and cognitive capabilities, and aware of the benefits of active transport, they are more likely to encourage active school travel. plays a role.

The fourth domain - *the child* – says that children themselves have an opinion about their transportation options and consider their cycling capabilities and efficacies. These attitudes also change over time as they become more independent in their teenage years and make their own decisions about their mode of transport (Mitra, 2013). Veitch et al (2017) found that if children enjoy cycling, it contributes largely towards their traveling behaviour.

3 Methodology

The research requires both quantitative and qualitative methods to understand what factors influence school travel (quantitative/qualitative), and how and why they influence school travel (qualitative) in Tallinn.

3.1 Ethics approval

This research is concerned with children who are considered vulnerable groups according to the European Commission. A research protocol was submitted to and approved by the Wageningen University and Research Social Sciences Ethics Committee who declared the research satisfactory in terms of dealing with ethical issues and its compliance with the Netherlands Code of Conduct for Research Integrity.

3.2 Observations in Tallinn

Observations were carried out around three schools in Tallinn in the morning before the start of the first class. Observation forms were used to note down the weather conditions, number of cyclists entering school premises, other active modes besides the bike, location of bicycle parking and number of bikes at the bicycle parking. Photos were taken of the cycle parking and infrastructure surrounding the school. See Figure 2 for overview of school locations.

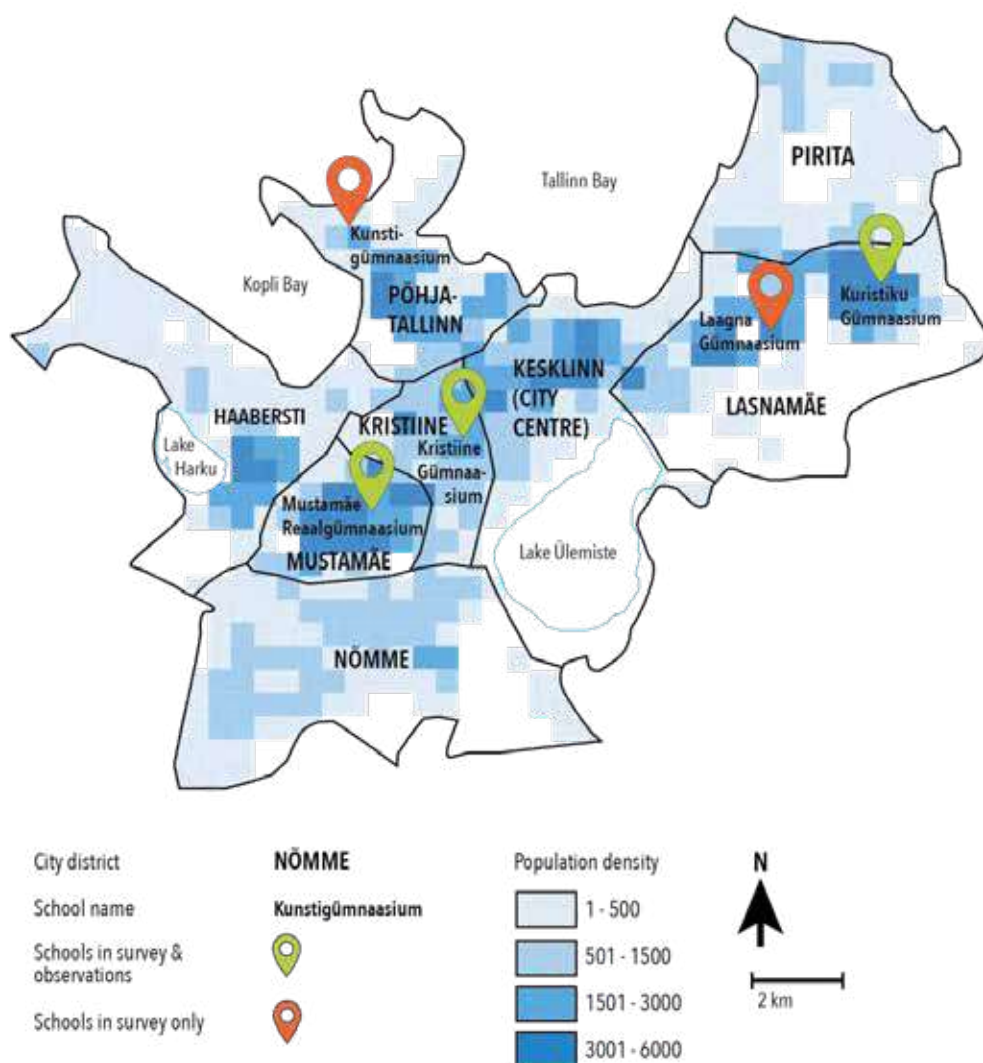


Figure 2: Tallinn – location of schools included in observations and survey

3.3 Survey among school-going-children in Tallinn

A survey was carried out among 13-16-year-old (forms 7-9) school-going children to gain a general understanding of pupils' attitudes and beliefs about cycling and barriers for cycling to school. The survey was carried out at five schools, resulting in 511 responses. This represents 5% of school-going children in Tallinn in forms 7-9 (Tallinn Education Department, 2018).

Topics covered in the survey included bike ownership, usual school transport mode, distance to school, uptake of cycling to school and different barriers to cycling. The survey was carried out as part of a promotional activity offered to schools by the Tallinn Cycling Coordinator. The interactive survey used Kahoot™ as a survey tool, included 9 multiple-choice questions and lasted about 10 minutes.

3.4 Focus groups in Tallinn

Once the surveys had been completed, three focus groups were carried out to gain in-depth information about additional barriers to cycling, and how and why these barriers influence cycling to school. Focus group participants were identified via tutors of grades 7-9 at various schools and through the network of the Tallinn Cycling Coordinator.

The three focus groups included:

1. School-going children aged 13-16 (6 participants);
2. Parents of school-going children (3 participants);
3. Tallinn's mobility experts (6 participants).

5 Results

The observations, survey and focus group sessions allowed to gain a comprehensive understanding of factors that influence cycling to school in Tallinn.

5.1 Cycling to school in the cityscape (observations)

The school observations showed that the majority of cyclists were younger children. Next to cycling, the smaller children also used the kick bikes which is a more common mode choice than the bicycle. Mountain bikes dominated in the cycle parking. Cycle parking is provided at all schools; however, the location, size and security level of each facility varies (see Figure 3 for overview of cycle parking facilities). All facilities only allow front wheel parking, which at one school meant that more bikes were parked at a wheelchair rail where bikes could be locked from the frame. Around the schools, speed limitations are put in place.



Figure 3: Impressions of cycle parking at schools in Tallinn

Observations were made about the cycling infrastructure while cycling in the school's neighbourhoods (see Figure 4). First, existing cycling paths are almost always shared with the pedestrians. However, in many places these paths are narrow which mean that there is little room for cyclists to pass pedestrians. When these slow mode paths pass bus stops, there is virtually no space left for cyclists.

Second, when crossing large intersections, in most cases it is necessary to stop at least twice to cross the street because the traffic lights are not synchronized. In these situations, the cyclist has to stop in the middle of the street on an island which is often just narrow enough for the bike to fit.



Figure 4: Impressions of cycling infrastructure in Tallinn

Third, many of the cycling paths are in poor condition and in some places signage on the roads has faded. Also, in some cases when crossing a street, the cycling path continues, but the curb stone is so high that it is not possible to get on the path while on the bike. Cycle paths can also be found ending suddenly, which proves the lack of connected cycling network in Tallinn.

Finally, no bikes were seen parked outside apartment buildings. Cycle parking facilities outside of apartment buildings were not spotted, although bikes were seen parked on balconies.

5.2 Cycling trends among school-going children (survey)

The survey resulted in 511 responses from five schools in Tallinn. Among the children, 66% have a bike, 13% do not have a bike and bike ownership is unknown for 20.4% (question was not included for one school) (Figure 5). When asked how they usually go to school, the majority of 47% says they go to school on foot, followed by 34% who take the public transport. 11% are taken to school by car and only 35 children (7%) have chosen the bike as their mode of school transportation (Figure 5).

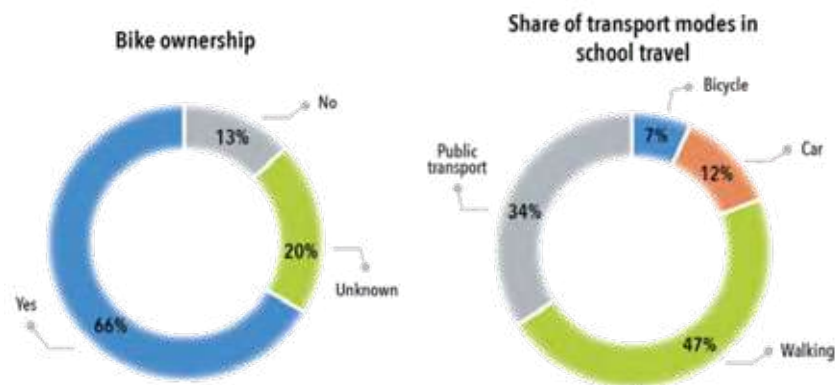


Figure 5: Bike ownership and share of transport modes in school travel

Combining data about distance to school and transport mode (Figure 6) shows that pupils living closest to school are most likely to walk while the ones living furthest away are most likely to take the car or public transport. Meanwhile, the ones cycling to school live anywhere from less than 10 minutes away to more than 30 minutes walking away from school.

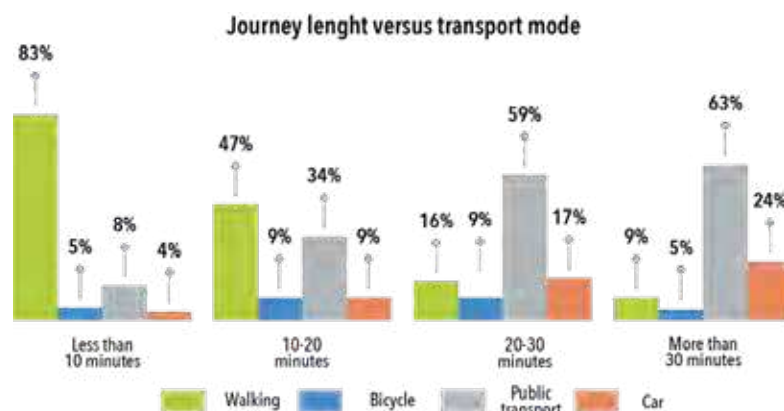


Figure 6: Journey length vs transport mode

The final part of the survey focused on different factors that hinder pupils cycling to school. Figure 7 presents ranking of these factors for two groups – for all pupils who participated in the survey and for potential cyclists (have a bike; would like to cycle to school; currently use other modes). The top three factors are the same for both

groups, stating that the weather, bike storage at home and the fact that car or public transport are more comfortable are the most chosen factors. The least chosen factor for both groups is social influence by their friends and peers.

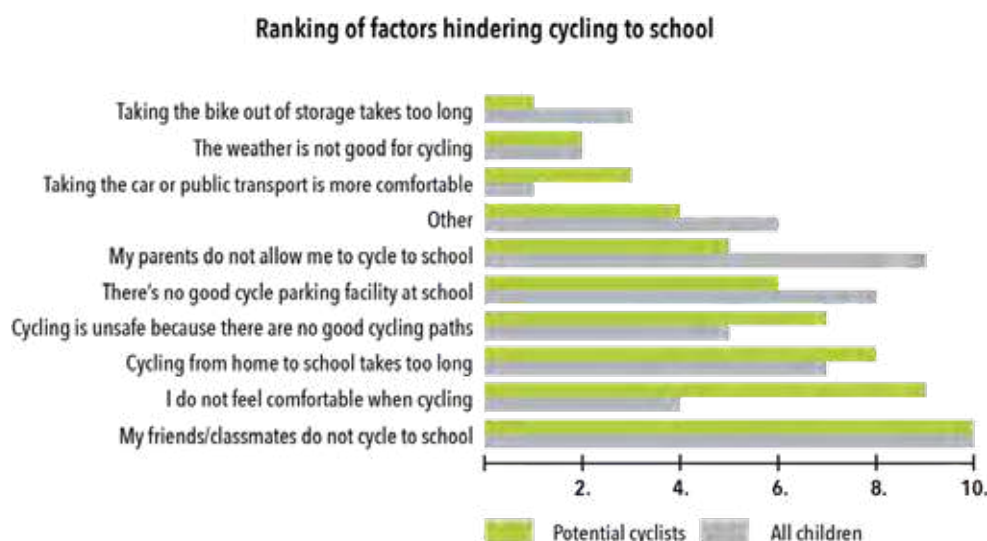


Figure 7: Ranking of factors hindering cycling to school

Overall, the data shows that the potential cyclists are more concerned about cycling facilities and are constrained by their parents, while all pupils are more concerned about safety and comfort of cycling. This could mean that the potential cyclists have more knowledge about the actual cycling conditions and are less worried about the safety issues and would like to have better parking facilities both at home and school.

5.3 In-depth exploration on cycling to school (focus groups)

In order to gain further insights into cycling and expand the information gathered through the survey and observations, focus group sessions with parents, children and Tallinn mobility experts were held. The results of the sessions were categorized according to Mitra's model (2013) and divided into external factors (1), urban environment (2), household (3), and the child (4).

External factors

The weather conditions in Tallinn prove to be a crucial barrier for cycling to school. Parents admit that cycling is unlikely during winter months and rainy days. However, for children it could be more the perception of unsuitable cycling conditions than the actual weather of the day. Experts add that weather can be an even bigger barrier for adolescents than younger children, because it could imply wearing different clothing. The children themselves state that they would only cycle to school in warmer months.

"People already have attitudes about the weather, especially in the teenage years. Smaller children wear rain clothes, but in that age, you still want to wear jeans and white sneakers, so how can you go by bike."

- Tallinn Mobility expert 3-

The cycle parking facilities provided by the school influence cycling to school. The parents state that a child should feel confident about leaving their bike at the cycle parking. Three experts add that the location of the parking facility is crucial - preferably at a visible spot right next to the school's entrance.

Cycle parking is considered a major issue for people living in apartment buildings. Since most apartment buildings do not have cycle parking facilities, bikes are kept in the basement or inside the apartment. However, the basements are small and narrow which makes getting the bike out difficult, and also unsafe. Parents and experts agreed that it is likely that pupils prefer to walk to school instead of cycling if getting the bike out and locking it at school takes more time than walking.

"The one who is going to school on foot lives so close that there's no point to go by bike. Our aim is not to make children who walk one kilometre to cycle. But taking the bicycle out of storage and locking it (at school) takes proportionally too much time."

- Tallinn mobility expert 1 -

The three parents agree that a prevailing issue in Tallinn is the lack of cycling infrastructure and cycling culture. Although the infrastructure exists, many bike paths are not connected to each other or end suddenly. Cycling on the road is not favoured by any of the parents and it is a shared opinion that cycling smoothly is not possible due to multiple road crossings and traffic lights. Lack of cycling culture and lack of continuous paths could be the reason why pedestrians do not walk on their side of the shared paths and thus make it more complicated for cyclists to pass.

"Usually there's a mom with a buggy on one hand and a dog in the other, walking all over the shared path. You can see for yourself how you pass them."

- School-going child 1 -

Regarding infrastructure around schools, two experts stated that attractive and well-maintained school cycling routes are essential. The main cycling routes leading to school in the first 200 metre radius from the school should be inspected and retrofitted since that is the area that is used by most children.

Two parents add that arriving to school by bike in the morning is dangerous because many parents bring their children to school by car and drop them off right at the school's front door. The same issue comes up also at the experts' session. A "drop-off" zone further away from the main entrance would be helpful to improve the safety situation according to the parents and experts.

"At the same time, there are a lot of cars. Estonian schools have effectively avoided a so called „kiss and fly“ zone where you could say bye and go, there's no place for that. The area in front of the school is full of cars and it is dangerous to go through by bike."

- Parent 1 -

Household

Two parents state that they are not bothered that their children do not want to cycle to school. One of the parents said her children would be too distracted on a bike. Another one mentions that she knows exactly how her daughter behaves in traffic, and thus feels comfortable with her cycling alone. The parents do not actively encourage their children to cycle to school.

"It's very important that (cycling to school) seems safe for the parents. Even when a child wants to (cycle to school), then if for a parent the journey doesn't feel safe, the child will not be allowed to cycle."

- Tallinn mobility expert 2 -

All parents agree that if a parent does not cycle, their perception of traffic safety is low. This statement is also supported by four experts. The experts conclude that working with parents on their attitudes about cycling is crucial in getting more children to cycle to school.

Children say that none of their parents have permitted them from cycling to school due to unsafe conditions. However, their parents would not allow them to cycle to school because they have expensive bikes. The ones cycling to school use cheaper bikes for the purpose. The parents agree with this reasoning.

Parents' willingness to take their children to school by car influences children's mobility choices. One of the parent states that she used to chauffeur her children since school was on her way to work. However, all parents are aware that it is a major issue for safety in the morning and wish the parents would drop off the children a bit further away.

The Child

While parents can influence the child's mobility decision, it is clear that the children themselves, especially in adolescent years, have an opinion about how they go to school. One of the parents says that his daughter does not acknowledge cycling in the cityscape although she does like to cycle for recreation. The reason for this could be that children are not aware of the fun benefits of cycling.

My 15-year old does not bike to school because she does not like it. She likes to go on longer bike hikes, but does not consider the bike as a mode of transportation in the city, even though we as parents are an active example.

- Parent 1 -

When reflecting on the outcomes of the survey, the experts have difficulty believing that children are not influenced by their peer. Instead, they suspect that the pupils cannot objectively assess their behaviour.

The experts agree that all kind of supportive information and campaigns could lead to more children cycling to school, but especially in reducing the number of pupils being brought to school by car. They propose that a campaign similar to the on-going "smoke-free classroom" could be implemented either in warmer school months



or at the same time with the Tallinn's Sustainable Mobility month. "Car-free classroom" would entail that it is up to the child to choose which mode of transportation they choose, because the aim is not to get everyone to cycle, but simply move more.

6 Discussion

External factors

Adolescence in Tallinn consider the weather as the main barrier for cycling to school. This is explained as Tallinn does experience harsh winters and a lot of rain in autumn. However, parents and experts are certain that children may associate cycling only with sunny weather. Although Mitra (2013) and Helbich (2016) state that changes in season have little effect on changing mode choice, weather is indicated as a key factor for active mode choices in Czech Republic (Hollein et al., 2017) that has comparable weather patterns to Estonia.

As distance to school is considered the most prominent barrier to active school travel, policies on parental choice for schools (Easton & Ferrari, 2015) and the school's catchment area (Mitra, 2013) can determine how far children live from their schools. This study purposely opted for schools in Tallinn with a local catchment area and thus a high share of active travel was found in the survey. Different results would be expected if the survey included schools located in the city centre that attract pupils from across the city.

Public transport is free of charge for school-going children in Tallinn. Therefore, it is common for the youth to opt for this more comfortable option as they become more independent (Mitra, 2013; Mitra & Buliung, 2015). Although generally taking the public transport allows some walking, experts believe that pupils opt for public transport even on shorter distances that would be suitable for both walking and cycling. Similar findings have been discussed in Finland (Broberg & Sarjala, 2015).

Cycle parking facilities at schools was a much-discussed topic. Pupils in Tallinn generally regard cycle parking not sufficient and thus opt for other modes. Observations showed that in all schools locking the bike was only possible from the front tire. According to Mitra (2013), provision of cycle parking is part of the schools' mobility policy. Hinckson (2016) found that in schools where active mobility initiatives were not implemented, pupils found cycle parking limited and not appropriate for use. Together with low security measures, these conditions prevented pupils from cycling to school.

Urban Environment

A prominent issue in cycling in Tallinn is the lack of cycle parking facilities in apartment buildings where taking the bike out of storage takes too long for daily use. Previous studies have not elaborated on parking facilities at home. However, Kaplan et al (2016) found that in Denmark children living in an apartment are less likely to cycle and more likely to walk. Similarly, active commute was found more prominent in children living in an apartment in Sweden (Johansson et al., 2012). Contrarily, Broberg & Sarjala (2015) report that children living in private houses in Finland are more likely to take up active transport, because the smaller blocks provide a more suitable environment for walking and cycling.

In Tallinn, pupils living in less dense neighbourhoods are expected to cycle more, consistent with the Finnish study. This could be related to having an easy access to a bike, but is likely linked with the reduced availability of bus stops in such neighbourhoods similarly to Finland (Broberg & Sarjala, 2015). This research did not ask pupils to specify their living condition in the survey. Nevertheless, the findings indicate that one of the reasons cycling uptake may vary between private housing and apartments is the availability and quality of cycle parking.

Next, the survey in schools clearly indicated that most children travel to school actively if they live within a 30-minute walking distance from the school, while cycling is more likely in the 10-30-minute range. This corresponds

to findings of many studies that report that distance between home and school is the key barrier for active school commute (Broberg & Sarjala, 2015; Carver et al., 2014; Deka, 2013; Helbich et al., 2016; Hollein et al., 2017).

Regarding cycling infrastructure, this research found availability of connected and safe cycling paths, and its strict separation from pedestrians crucial for enabling cycling to school. Connectivity and traffic safety aspects have been reported as significant variables in many studies (Broberg & Sarjala, 2015; Helbich et al., 2016; Hollein et al., 2017). Strictly separated cycling paths from the pedestrians are described important by findings of Pucher & Buehler (2008) yet similar findings have not been discussed in studies about children.

Household

Low percentage of chauffeuring to school was a surprising finding in this research. The share is believed to be higher by experts and was also reported higher in an earlier study (Eesti Uuringukeskus, 2017). However, congestion in front of schools in the mornings could also be caused by parents of younger children. This would be in line with Carver et al (2013) who found that primary school children are more likely to be chauffeured. Such explanation is consistent with studies indicating that young adolescents are more likely to travel independently (Helbich, 2017; Mitra, 2013; Mitra & Buliung, 2015). Estonia's limited policies regarding car use may also lead to more parents driving children to school. This is in keeping with the findings of Deka (2013) and Helbich (2016), who state that policies aimed to reduce car use will have an influence on car chauffeuring in school transportation.

As children in Tallinn primarily have mountain bikes, parents may not allow their children to take this bike to school. This is related to the low safety measures of school's parking facilities. Such findings have not been discussed in earlier studies.

The child

Children who cycle are primarily younger school children, as found through the observations. This is consistent with findings of Potoglou & Arslangulova (2017), who add that active travel to school peaked at age 12 and decreases from there. Considering that increasing age of children is related to improved cognitive abilities and independence (Carver et al., 2013; Mitra & Buliung, 2015), more active travel could be expected among adolescents. However, as taking the public transport is free for school-going children and most of their peers take the public transport, opting for this mode is understandable.

The choice for public transport is also reported as a comfortable option for the youth (Hollein et al., 2017). In a qualitative study in New Zealand (Hinckson, 2016), the adolescence found taking the bus a convenient, cool and fun option that allows them to hang out with friends. Thus, as discussed in the focus groups, mode choice is influenced by friends' opinion on mode choice and their actual mode choice. Additionally, at the age of 13-16, the children have formulated their own opinion about different mode choices (Johansson et al., 2012; Mitra, 2013; Mitra & Buliung, 2015), which corresponds to the results of this study. For instance, adolescence in Stockholm said that they would avoid cycling in traffic if possible (Johansson et al., 2012).

7 Conclusions and Recommendations

Physical activity among children has rapidly decreased in the past decades as children perform more sedentary activities and are often driven to school. Enabling active school travel would introduce some extent of physical activity back into children's lives. Among active travel modes, cycling allows commute on longer distances than walking and is thus a suitable alternative to motorized daily travel in a city.

Tallinn adopted its first cycling strategy in 2018 and is gradually retrofitting the city for cycling. Among other aims, the strategy aims to develop safe cycling infrastructure around schools to enable cycling to school. In

collaboration with the Tallinn Cycling Coordinator, this research identified key factors that influence cycling to school in Tallinn.

The key factors that influence cycling to school in Tallinn are safety on school travel routes, parking facilities both at home and schools, and the availability safe, smooth, connected and separated cycling infrastructure. The Tallinn Cycling Strategy already provides a variety of measures that can improve safety of cycling in the city which will be implemented step-by-step.

Additionally, in order to increase safety on school routes, the city should take a comprehensive approach which would allow both infrastructure improvements in collaboration with children and parents, but also include campaigns that influence travel behaviour. As parking facilities are currently a major constraint to cycling in the city, the city could provide parking guidelines that help dwelling owners and schools to choose for a parking facility that is convenient and safe.

This research sheds light on a capital city in Europe that is taking its first steps to allow for more cycling. The findings here support the understanding that simple adoption of measures from a city such as Amsterdam would not result in the desired benefits because of the lack of a cycling culture. Instead, upcoming cycling cities should focus on measures that the inhabitants deem important. Additionally, upcoming cycling cities can learn from each other and avoid implementing infrastructure measures that other cities are now starting to correct, such as lack of separation between cyclists and pedestrians.

8 Limitations

The extent and quality of the survey and the focus group sessions in this research has to be considered carefully due to financial and time constraints posed for this research.

First, the survey had to be short and concise, which lead to a 10-minute time frame and the use of the Kahoot™. This tool only allowed multiple-choice questions, which left no room for children's personal views if they differed from the given answers.

Second, the focus group sessions were held with less participants than originally planned. The parents' session only included three parents of which two are active cyclists themselves. Although the parents seemed to be able to offer a broad view on cycling to school, conversation with a larger group of parents could have offered more insights into the opinion of parents who are less likely to allow their children to cycle. The children's focus group was limited to participants who participate in cycling training, thus eliminating pupils who, for example, feel uncomfortable when cycling.

Acknowledgements

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Home parking and commuting: exploring new ways of estimating the impact of parking on mobility choices

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Abstract: We explore how home parking quantity affects households' choices of car ownership and commute mode in the Greater Wellington Region (GWR) in New Zealand. We consider socioeconomic characteristics of commuters from the New Zealand Household Travel Survey between 2003 and 2017, as well as commute time, and characteristics of the residential location. The research makes two important contributions to parking literature. First, we consider commute time for different modes instead of distance. Time better represents perception of commute length. Second, our work is regional in scale, including several urban and rural areas. Almost all current studies focus on urban areas. Results of this study show the significant impact of home parking quantity on car ownership and commute mode. Households with more parking at home tend to have more cars and drive to work. Wellington downtown is surrounded by sprawl suburbs with high residential parking supply. Therefore, spatial structure of the GWR and parking quantity encourage car trips to the downtown. More car trips mean greater demand for parking at the city centre. Hence, there is a relationship between home parking and work parking which is rarely studied in parking literature. This is the focus of our future research.

Keywords: home parking, commute mode, sustainable mobility, Conditional Logit.

Introduction

Commuting can be viewed either as making trips between home and work or as changing parking (i.e. from home parking to workplace parking and vice versa). The first approach has dominated commuting studies (see for example, Beige & Axhausen, 2017; Ding, Liu, Zhang, Yang, & Wang, 2017; He & Zhao, 2017; Hu & Schneider, 2017; Melo & de Abreu e Silva, 2017; Moreno-monroy & Posada, 2017; Rüger, Pfaff, Weishaar, & Wiernik, 2017). However, commuting includes both travelling and parking. Every trip ends at a destination (i.e. home or workplace) where commuters typically spend one third to a half of their day, while their cars are parked. Considering commuting as a combination of flows (trips) and places (parking), cars are most likely to stay in places rather than flow between them.

There is little literature on the relationship between commuting and parking. In the small parking literature, most studies focus on parking downtown (Amer & Chow, 2017; Arnott & Rowse, 2009; Franco, 2017), however, parking at home is also important. Cars are usually parked at home longer than they are in the workplace. Many trips begin, and eventually end,

with the car parked in a residential suburb. Moreover, access to suitable home parking is often one of the factors commuters consider in deciding where to live and how to commute. Access to more car parks at home may encourage a household to have more cars, and consequently, drive to work more often.

Therefore, according to the dominant demand-oriented approach in urban transportation, the main question regarding parking is whether home parking is one of the areas of policy intervention to control transportation demand? If home parking is a significant factor, policy makers can use this knowledge to set appropriate regulations.

In this study, we provide empirical evidence on the impact of residential parking on households' choices of car ownership and travel mode. First, our study is also novel in the regional scale examined. Instead of considering one city, we consider the Greater Wellington Region (GWR) in New Zealand. The GWR has high density suburbs in Wellington city (the main city) and sprawling suburbs surrounding it. We then explore the effect of different residential locations or parking. Second, in contrast to most studies in this area, we consider households' choices of residential location. Commuting is a multi-dimensional issue including a consideration of housing in addition to travel and demographic characteristics. This approach also removes the problem of endogeneity between home parking and car ownership. Finally, we consider travel time instead of distance as proxy for commute length.

Literature

For residential parking, most studies concentrate on the cost of residential parking (Groote, Ommeren, & Koster, 2016; Z Guo & McDonnell, 2013; Seya, Nakamichi, & Yamagata, 2016). The impact of free on-site home parking on households' choices of commute mode and number of cars is neglected outside of Guo (2013a and 2013b). Guo (2013a) who poses three questions. First: does residential parking supply have a causal influence on car ownership and usage? If so, the second question is that is the parking effect large enough, compared to other factors, to justify policy intervention? The impact needs to be both strong and statistically significant to be considered in policy intervention. Third, what is the relative importance among the different residential parking types, such as garage, driveway, and on-street? In Guo's work, households are divided into two different groups in terms of type of parking: households with off-street parking and households with only on-street parking. He applies a nested logit model to capture the causal effect of parking supply on car ownership. He concludes that (in contrast to the dominant literature, which considers household's income and demographic characteristics as important factors affect car-ownership), parking supply has a significant impact on car ownership.

Guo (2013b) focuses on parking convenience and its impact on car usage. He defines parking convenience as parking "certainty" and parking "ease".¹ Different parking types have different levels of certainty and ease. Parking convenience's effect on car usage is measured using a regression model. In this model, variables like mode choice, car usage and Vehicle Mile Travelled (VMT) are dependent variables and explanatory variables are parking convenience and control variables. The percentage of households using each type of parking (garage, driveway and on-street) and the average time of use for each type is measured. He found that households with off-street parking drove considerably more than others. In addition, when two parking types (off-street and on-street) are available, households parked on-street made more trips by car.

¹ Parking certainty is the convenience to find a parking space at a desired place and a desired time and parking ease is the convenience to move the car in and out of the parking place (Guo, 2013b).

Methodology

This study employs a conditional logit model to estimate the impact of explanatory variables on a categorical response variable. Explanatory variables are factors that affect households' choices of car ownership, commute mode and residential location (e.g. parking quantity, income). The dependent variable is the households' choices observed in the data. The estimation process with conditional logit is:

1. Measure utility (preference) that each commuter achieves from each choice using equation 1 (Greene, 2003, P.719):

$$U_{ij} = \sum_n \beta_n X_{ijn} + \varepsilon_{ij} , \quad (1)$$

where individual "i" gets utility from choosing option "j" based on the set of observables "X". The coefficient vector is given by " β " and ε is the error term (which is logistically distributed).

2. Given the error distribution, calculate the probability that each commuter chooses option "j" as follows:

$$P_{ij} = \frac{e^{\sum_n \beta_n X_{ijn}}}{\sum_l e^{\sum_m \beta_m X_{ilm}}} , \quad (2)$$

in which P_{ij} is the probability that person i chooses choice j. From equation (2), the probability that each individual chooses the actual choice observed in data can be estimated.

3. To find coefficients, we choose coefficients that maximize the probability that each person chooses the choice that is observed in data. we maximize the following Log likelihood function:

$$\text{Log } L = \sum_i \text{Log } P_i(j(i)) , \quad (3)$$

where $P_i(j(i))$ is the probability that individual i chooses the actual choice (j(i)) observed in data among all his/her alternative choices. We use the Maximum Likelihood (ML) method to estimate the coefficients (β) and their variance.

Case study

The Greater Wellington Region (GWR) includes several urban and rural areas with a diverse range of socio-economic and spatial characteristics. As shown on figure 1, GWR is in the South of the North Island of New Zealand and includes 8 districts with population of 513,900 in 2017 (Greater Wellington Regional Council, 2017).²

² <https://profile.idnz.co.nz/greater-wellington>

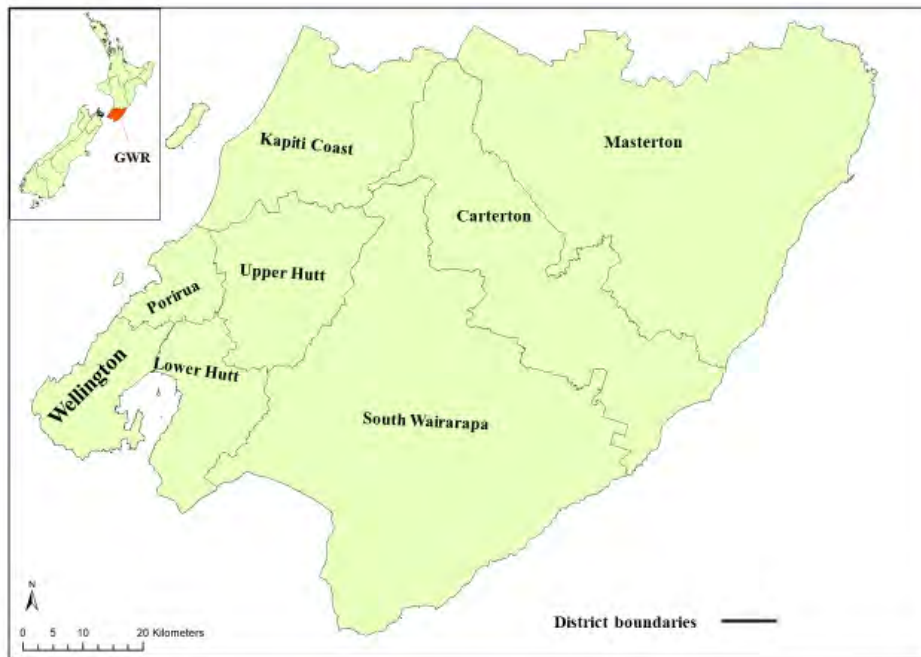


Figure 1: Greater Wellington Region³

In Wellington City, space available for off-street residential parking and on-street parking is restricted. However, in other council areas, low-density suburbs with plenty of space available for parking, parking is mostly free of charge and without time limits. Figure 2 shows two examples of home parking supply in the city and outside. Hence, Wellington City is quite different than other areas in terms of home parking quantity and regulations.

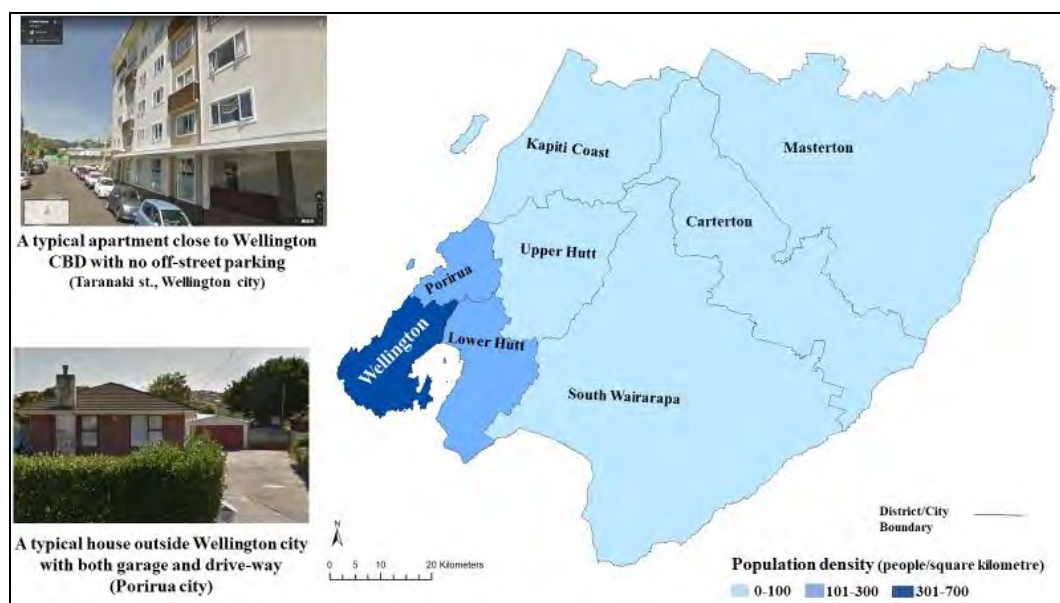


Figure 2: Population density and home parking availability in the GWR⁴

³ based on http://archive.stats.govt.nz/browse_for_stats/Maps_and_geography/Geographic-areas/digital-boundary-files.aspx. Roads are based on Google maps.

⁴ Pictures: Google street view. Map: data from stats.govt.nz

Survey data

The New Zealand Household Travel Survey (HTS) was conducted by Ministry of Transport (MOT) from 2003 to present. A number of MeshBlocks (MBs) are randomly selected and then, across consecutive years households within these MBs are interviewed on two consecutive travel days until all households in that MB have been surveyed.⁵ Our sample includes commuters with fixed workplace in the GWR (2155 commuters in 1540 households).

Data and explanatory variables

- **Home parking quantity**

Home parking quantity is defined as two variables in our model. First is a dummy variable indicating whether the household lives inside Wellington City (D_{city}). Second is the interaction of this dummy variable and the percentage of households in each MB with home parking ($D_{city} * Parking$).

- **Travel time:**

We use an adapted transport network based on a road network from Kim Ollivier and Co and updated by Daglish *et al.* (2015) in ESRI's ArcMap.⁶ This network measures travel time and cost based on road restrictions (e.g. one-way roads) and costs (including traverse time and fuel consumption for each edge of network). In measuring travel time for walking and cycling, the network considers speed based on the slope of each edge in the network, particularly suitable for the hilly terrain in Wellington. Cyclists are assumed to follow similar road rules to drivers. An amended network considers Public Transport (PT). A journey to work by PT accounts for walking or driving to a PT stop and walking from the last stop to work.

- **Household Socio-economic characteristics:**

We control for the following characteristics based on the HTS data. Household's income is classified in table 3.

Table 3. Household income

Income range (\$)	classification	Measure
0	No income	0
1-20,000	Low income	1
20,001-50,000	Middle-low income	2
50,001-70,000	Middle-high income	3
70,001-100,000	High income	4
100,000 ⁺	Very high income	5

In the model, we use this measure as a variable for income. We also include the following covariates:

⁵ A MeshBlock (MB) is the smallest geographic unit for which statistical data is reported by Statistics New Zealand. "Area Unit" (AU) is the next smallest census area.

⁶ Kim Ollivier and Co network is described at <https://koordinates.com/supplier/corax/>

- Number of driving licence per household
- Commute mode of each commuter
- Ethnicity
- Age and gender
- Number of cars per household
- Households with children
- Number of people in household working in Wellington CBD
- **Built environment features:**
 - Market house value in each MB:

“A Rating Valuation is a three-yearly assessment of a property's value in relation to current market values” (Wellington City Council, 2019). We take the median of RV in each MB to avoid very high or low values. As MBs are small and few houses in them are sold each year, we calculate the ratio of median sale price over median RV of sold houses in each MB and for each year. This ratio gives an idea of the difference between market value and RV. We multiply this ratio by the median RV of that MB for that year to calculate our measure of market house value. Homes.co.nz provided median RV, median sales prices and median RV of sold houses in each MB for each year for all the GWR for the period of 2003 to 2017.⁷
 - North-facing (sunlight):

Sunlight is a key factor in Wellington housing demand. As a proxy, we use North-facing houses as this study is conducted in the southern hemisphere. Our measure is the percentage of residential area in each MB that is North, North-east and North-west facing.
 - Proximity to commercial areas: Close proximity to shopping centres and supermarkets is attractive. We measure drive time from residential locations (MB centroid) to commercial centre of the neighbourhood.

Results

As shown in figure 3, in Wellington city, home parking quantity varies considerably among MBs. Residential blocks in the CBD are dominated by apartments where, on average, only half (55.9%) have parking on the property. This value increases to 60.86% in suburbs surrounding the CBD, and to 77.22% all of Wellington City.

⁷ Homes.co.nz is one of the institutions in New Zealand presents information about properties' features.

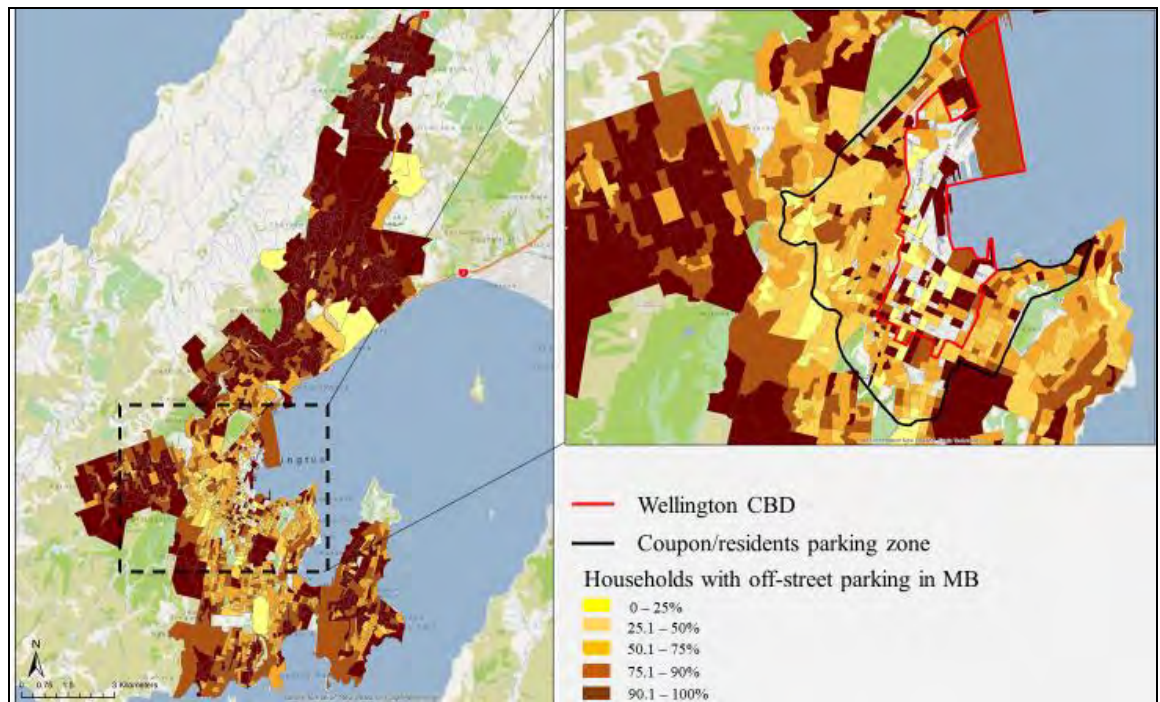


Figure 3. Home parking quantity in Wellington city

Closer to the downtown, households are less likely to live in a suburb where all houses have parking.

The difference between Wellington City and outside in terms of home parking quantity generates a considerable difference in car ownership and commute mode. According to figure 4, preference of households living in the city for having only one car or not to have a car is more than households outside. However, two or more cars are more popular outside Wellington City.

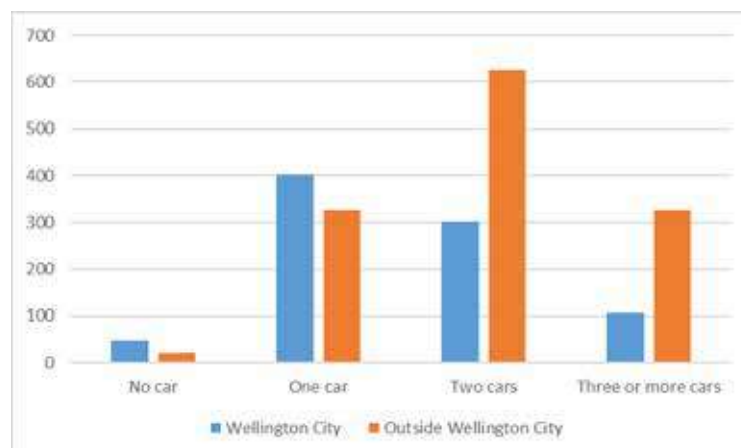


Figure 4. Number of commuters in the sample in Wellington City and Outside in car ownership categories

Figure 5 shows that although Wellingtonians are more willing to walk or cycle to their workplace, driving is much more popular among residents of urban and rural areas outside of the city.

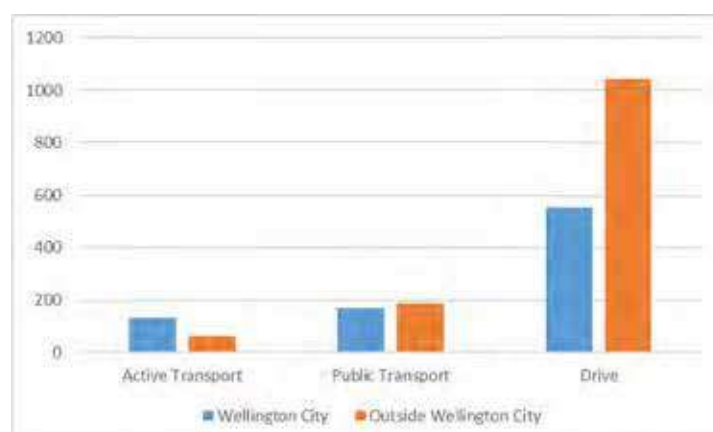


Figure 5. Number of commuters in the sample in Wellington City and Outside in commute mode categories

According to figure 6, in Wellington city, suburbs with more off-street parking at home are more attractive for households who like to have at least one car. It is mostly the case of sprawl suburbs outside coupon/residents parking zone where more than 75% of houses have either a garage or driveway. Home parking provides a certainty and safety that may make commuters willing to have more cars and drive to work. Therefore, many daily trips to Wellington CBD from suburbs are car trips which may create a congestion delays travelling with public transport.

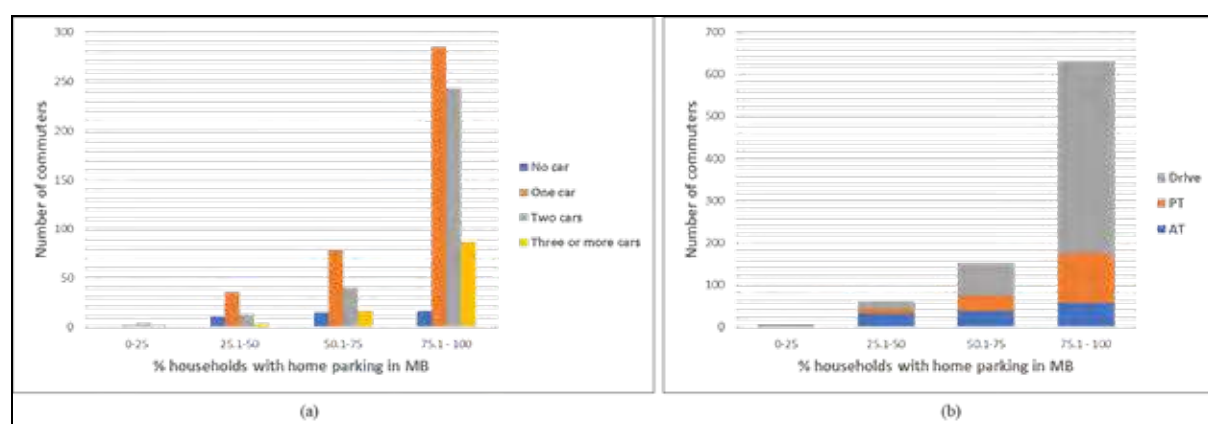


Figure 6. number of commuters in each home parking quantity and car ownership category (figure a) and mode category (figure b) in Wellington city

Car ownership and mode choices also depend on other factors (e.g. income). In the logit model, we control for important socio-economic characteristics and built environment features that might affect commuting choices. Then, we predict the impact of home parking on commuters' choices for the full study area (commuters in the Greater Wellington Region).

Estimation results

The results of our Logit model, shown on table 4, are consistent with our hypothesis about parking and commuting choices. Having cars is popular among households outside Wellington city. However, in the city, these choices are less popular.

Table 4. Logit model results

<i>Variable</i>	<i>Coefficient</i>	<i>T-stat</i>	<i>Variable</i>	<i>Coefficient</i>	<i>T-stat</i>
<i>Dcity</i>	0.42	0.50	<i>AT</i>	-2.27	-9.07
<i>DcityParking</i>	-0.17	-0.16	<i>PT</i>	-1.14	-7.28
<i>One car</i>	2.33	8.35	<i>Dcity_AT</i>	4.97	7.05
<i>Two cars</i>	2.64	9.57	<i>Dcity_PT</i>	1.94	2.48
<i>Three or more cars</i>	1.58	5.38	<i>DcityParking_AT</i>	-4.99	-6.25
<i>Dcity*one car</i>	-2.47	-3.06	<i>DcityParking_PT</i>	-2.04	-2.35
<i>Dcity*two cars</i>	-5.58	-5.34	<i>Log (house prices)</i>	-0.89	-4.06
<i>Dcity*three or more cars</i>	-3.26	-2.94	<i>Income* log (house prices)</i>	1.65	4.56
<i>DcityParking* one car</i>	3.05	3.12	<i>Log (commute time)</i>	-0.44	-4.80
<i>DcityParking* two cars</i>	5.74	4.75	<i>Income* log (commute time)</i>	0.33	2.20
<i>DcityParking* three or more cars</i>	2.91	2.23			

More parking at home is generally attractive for households. Residential parking supply in the city is not as much as outside, therefore, people with at least one car prefer to live outside Wellington to benefit from high residential parking supply.

Driving is a popular choice among households living outside Wellington city where almost all houses have parking. However, limited home parking and congested streets in Wellington city encourage households to walk, cycle or take public transport to work.

Therefore, higher parking quantity at home means more car ownership which means a greater proclivity to drive. More car trips could be translated into more demand for parking at the downtown (which contains most of workplaces). Hence, there is a mutual relationship between home parking and parking at the CBD and we should consider them simultaneously in urban transport planning.

Residential location is another important choice. People usually like to live closer to their workplaces but there is a trade-off between commute time and house price. The ratio of the coefficient of log(time) to the coefficient of log(price) gives us an idea of how much more a household is willing to pay to get closer to the workplace of the household's head. The ratio of 0.49 means that household is willing to live in a house worth 0.49% more to reduce head's commute time by 1% (0.01 hour). For example, imagine a household rents a NZ\$ 500,000 house which is one hour from the head's workplace. They are willing to live in a

house costing $500,000 * 0.0049 = \text{NZ\$ } 2,450$ more to reduce commute time by 0.6 minutes. In the other word, this household might move to a NZ\$ 622,500 house to live 30 minutes closer to work, keeping all other features constant.

Income also plays an important role in this trade-off. Low income households prefer to save money by living in cheaper houses and as close to work as possible. On the other side, well-paid commuters who can easier afford monetary costs of commuting with fast travel modes (e.g. fuel, parking) care more about quality of house and residential neighbourhood.

Conclusion

This research sheds light on commuting in a network of cities and rural areas. Wellington City, as the capital of New Zealand, includes many governmental, commercial, cultural and educational businesses mostly in its CBD. However, high supply of home parking in sprawl suburbs encourage commuters to drive to the CBD. It means that urban spatial structure and home parking quantity are two important factors that help increase traffic congestion in peak hours. To improve use of AT and PT, the suggestion here is to put active and public transport in the highest priority and develop their routes and improve their efficiency. Another suggestion is to prevent spreading the city and instead, develop low-rise and high-rise buildings in the suburbs close to downtown.

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Alternative discourse and narratives for institutional change in transport planning

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Abstract: Mega transport infrastructure is increasingly resisted by local communities throughout the world. Community resistance becomes successful if alternative discourses and narratives have been developed and linked with a wide range of like-minded actors and are advanced during the transport planning process. This paper explores discourses argued and presented by various stakeholders to advance and resist the Basin Reserve Bridge (BRB) proposal in Wellington, New Zealand as a part of the Roads of National Significance (RoNS). This paper critically reviews planning and policy documents, media reports and submissions to uncover distinctive arguments and narratives within five main storylines: economic storylines, safety storylines, environmental storylines, traffic and access storylines, and heritage storylines. The influence of discourses is discussed at political, institutional and social levels to provide a greater understanding of community resistance. This paper concludes that alternative discourse has the potential to break a path dependency in transport planning and create a foundation for a new policy path.

Keywords: Alternative discourse, transport planning, Basin Reserve Bridge, Wellington

Introduction: Mega transport projects, community resistance and discourses

Transport planning literature documents high-density urban development as an indicator for providing a high quality sustainable urban transport system. Wellington, the capital of New Zealand, relatively fulfils the requirements of this indicator. However, Wellington's transport planning over the last fifty years has been focused on private vehicles and building-wide and better roads, motorways and tunnels. Main stream politicians, as well as transport professionals, present these projects as urban transport achievements. These projects were based on the narrative that traffic congestion, occurred due to increasing population and economic growth, would be relieved, and Wellington's quality of life would be improved. However, these narratives were resisted in the case of Basin Reserve Bridge (BRB) in Wellington CBD. The purpose of this paper is to critically review BRB proposal, and alternative discourse communities have developed and advanced to resist this road project.

A statutory document, the Government Policy Statements (GPS) on Transport under the National (conservative) party led government (2008-2017) have aimed at promoting economic growth and productivity by building high-quality roads known as the Roads of National Significance (RoNS). There is political recognition of the scale and number of RoNS necessary to accelerate economic growth and the creation of jobs. Politically, there is a firm belief that a strong economy and consequent prosperity is linked with road infrastructure investment which relieves congestion and promotes business. This belief is especially appealing in a country where over 85 per cent of people drives to work by car.

The Basin Reserve Bridge (BRB) proposal is part of the Wellington Northern Corridor RoNS project that aims to construct, operate and maintain a one-way two-lane bridge on the north side of the Basin Reserve Cricket Ground in Wellington. The Basin Reserve is a cricket ground located 2 km south of the Wellington CBD. The ground has officially been used for test, first-class and one-day cricket since 1866 make it the oldest test cricket ground in New Zealand. Currently, the Basin Reserve is used as a large roundabout with signals. It is estimated that over 25,000 vehicles enter into the Basin Reserve roundabout each day, 20,000 of which head towards Mount Victoria Tunnel (NZTA, 2015). These levels of traffic are producing congestion through high traffic volumes, which are affecting the State Highway one (SH1), local and freight traffic, pedestrians and buses. Without intervention, these congestion levels are projected to continue to rise by approximately 75% by 2021 due to Wellington's increasing population.

Unlike other RoNS projects, local communities resisted the BRB which is due to the gap between perceived benefits and personal and local cost such as decreased values of residential properties, personal safety and neighbourhood changes, related to the project. One way of addressing this issue is to involve the public in a meaningful way in the planning process, which reduces uncertainty and improves acceptance of such projects (Booth and Richardson 2001). In New Zealand, the Land Transport Management Act (2003) and the Resource Management Act (1991) provide a clear mechanism for public involvement in various stages of the planning process for roading projects. The consultation process includes information provision, consultation meetings, submissions, social media dissemination, and workshopping. In general, the number of people actively participating in this process seems to be limited, and any mild opposition to roading projects is dealt with during this process. Moreover, this process broadens people's understanding of the project and improves their satisfaction.

According to Dear (1992), the intensity of public resistance depends on the type of project, location of the project and community characteristics, along with other factors. For example, new roading projects are perceived as increasing car use and have safety and environmental impacts (North 1998). The location of the project is important because people relate the type, size and appearance of the project with the surrounding site. Several studies show that resistance to roading projects is higher in cities and suburbs where high-income and educated professional people to live and use an alternative mode of transport and have an interest in the environment (Dear 1992). They are more likely to receive information from multiple sources and attend consultation meetings and make submissions. Therefore, road infrastructure project advances based on economic growth and a car superiority agenda are contested beyond NIMBY in different cities around the world, including recently in Melbourne (Legacy 2016). Schwanenetal (2012) argues that contesting roads projects are more likely to become successful by developing alternative discourses, focusing broaden the criteria for road infrastructure investment. In recent years, decision makers recognise border social and environmental agenda and promote roading project with social and environmental discourses. Therefore, it is important to develop alternative discourses that encompass contextual details and focuses on promoting smarter choices that appeal to people and mobilise the community. Moreover, alternative discourses should be advanced and propagated them during the planning process.

This paper explores the Basin Reserve Bridge project's history, decision-making process, and the discourses argued and presented by NZTA, GWRC, WCCC and local communities and stakeholders. The paper addresses two broad questions. First is the question of whether there is community resistance of mega roading projects of BRB in Wellington. Second, if there is such resistance, what alternative discourse has been developed to make that resistance successful?

This paper applies the concept of path dependence on the development of the BRB proposal in Wellington. Path dependence explains the process of how a particular policy and solution becomes stable over time in an institutional context (Arthur, 1988; North, 1990). Transport policies and projects emerge from the norms, values, perceptions, mental-models and beliefs that decision-makers

use to discuss, interpret and solve problems (Denzau and North, 1994; Hajer, 1995). These soft dimensions of transport policy can be named ‘discourse’ directly contributing to how problems are perceived and approached, creating coordination and coalitions of like-minded organisations (ibid). It is, therefore, important to question beliefs and explore alternative discourse in urban transport planning. A theoretical framework based on the discursive form of path dependence examines soft factors or discourses that justify and advanced resistance of BRB. In terms of method, the paper critically reviews planning and policy documents, media reports and submissions to uncover distinctive arguments and narratives which tried to break path dependency.

2. Wellington Basin Reserve Bridge (BRB) – History and decision-making process

New Zealand is a small country. According to the 2013 census, 4.3 million people reside in New Zealand. Despite a rural heritage and economy, approximately 87 per cent of NZ’s population resides in urban areas. Collectively, three metropolitan cities Auckland, Wellington and Christchurch account for one-half of the country’s population. Wellington is capital of New Zealand and divided four distinct geographic parts: 1) high rise CBD and inner suburbs 2) post-war suburbs in Hutt City and Upper Hutt City 3) regional centres of Porirua and 4) rural towns, coastline and hills. The steep hilly topography and coastline of Wellington dictate the urban form and transport infrastructure in the city. The population of the Wellington region is approx. 500,000 in 2019. The city has a highly developed and compact Central Business District (CBD) due to constrained by the physical space available for development (see Figure 1). According to the 2013 census, professionals and managers comprised nearly half of the total workforce in the region mainly employed in the CBD.

Transport planning in Wellington is the responsibility of the NZ Transport Agency (NZTA) who is managing state highways, Greater Wellington Regional Council (GW) who look after public transport services and eight territorial (city or district/rural) councils who managed local roads and public transport infrastructure. Land Transport Management Act (LTMA) 2003, Local Government Act (LGA) 2002 and the Resource Management Act (RMA) 1991 provide the frameworks enabling authorities at different levels to undertake transport planning activities.

The Basin Reserve Bridge (BRB) proposal can be traced back to the 1963 De Leuw Cather Transport Plan, followed by the debate carried on in the 1970s when an extension to the Wellington Urban Motorway was considered. However, it was not until the early 2000s that the idea of the Basin Bridge was properly explored. In 2000 a study of transport options around the Basin Reserve, prepared by Transit NZ and titled the Meritec Interim Scheme Assessment Report, was completed. This study identified ten options to relieve congestion at the Basin Reserve. The preferred option was a bridge at the northern boundary of the Basin.

In 2008 and 2009, the Basin Reserve Inquiry by Design was conducted. The aim of these design workshops was to assess and recommend transport interchange scenarios for the Basin Reserve. As a result, preferred scenarios were shortlisted and recommended for technical assessment (Urbanismplus Ltd, 2009).

The Feasible Options Report in 2011 listed five possible options which would aim to solve the traffic issue. An option evaluation workshop was held with relevant technical specialists in order to compare these five options. This report outlines the key drivers of each option, as well as descriptions, cost estimates and BCR figures, transportation benefits, artists’ sketches and walking and cycling routes (NZTA, 2011). The five options were compared against several evaluation criteria and effects. This report concluded by recommending options A and B as preferred options. However, option A was preferred by the majority of the technical specialists and the public.

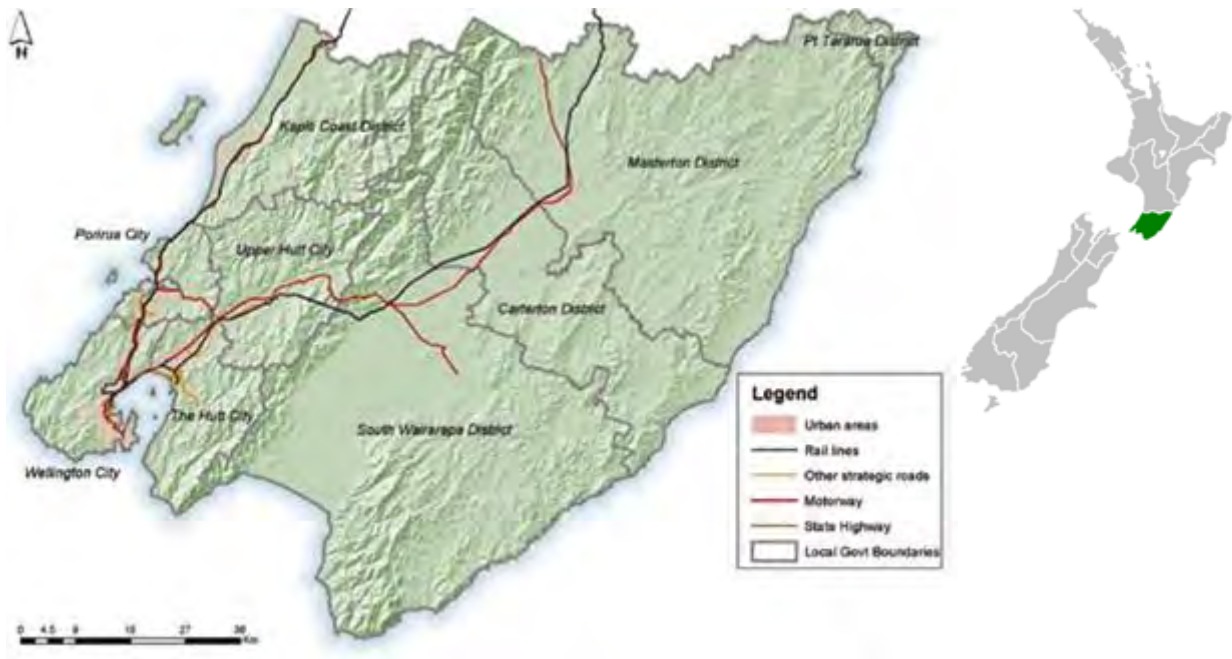


Figure 1 Map of GW and compact CBD (photograph by Muhammad Imran)

The main purpose of the Basin Reserve Bridge (BRB) was to partially separate SH1 westbound traffic from the local road network to improve congestion (see Figure 2 & 3). The proposal aspires to overcome the existing congestion, which is currently affecting SH1 traffic as well as local traffic, freight, buses, cyclists and pedestrians. The proposal also aims to (i) resolve the conflict between the two key transport arterial corridors of Wellington City, (ii) reduce traffic flows around the Basin Reserve, (iii) improve journey times and reliability, (iv) improve safety for all travel modes and (v) provide more reliable emergency service access to and from Wellington Hospital (NZTA, 2015).

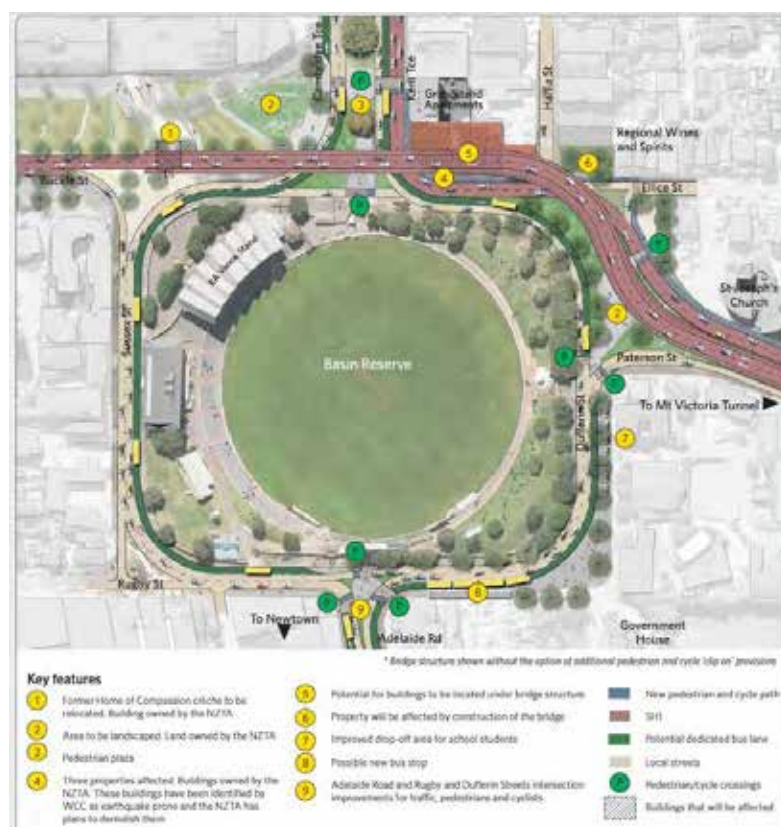


Figure 2 Project area showing the proposed road layout

NZTA lodged one notice of requirement and five resource consents for the consenting and designation of the proposal on 17 June 2013. The notice of requirement was lodged under section 145(3) of the RMA. The five resource consent applications were lodged under section 145(1)(a) of the RMA and sought to enable the construction, operation and maintenance of the project.

On 10 August 2013, the proposal was publically notified under section 95A of the RMA (1991), and public submission was open until 6 September. The EPA also identified 700 owners and occupiers of properties around the proposal area who each received a direct notification of the proposal. The total number of submissions received was 215 (three of which were late submissions that the Board decided to accept), and the NZTA filed further evidence in support of the consent applications. The submitters were largely made up of individuals (81.4%) and an overwhelming number of them either opposed the proposal in full or part. Key actors opposing the proposal in full or part include Save the Basin Campaign Inc., Action for Environment Inc., Mt Victoria Residents Association and Grandstand Apartments Body Corporate. On the other hand, main actors supporting the proposal in full or part were the GWRC, WCC, Cricket Wellington Inc., New Zealand Automobile Association, Basin Reserve Trust and Wellington International Airport.

On 22 July 2014 the EPA board of inquiry released its draft decision regarding resource consent applications; they were declined. They then released their final decision on 5 September 2014, which also declined consent. Consent was declined on many grounds, including: the adverse effects the project would have on heritage, landscape, visual amenity, overall amenity, that the transport benefits were less than originally thought and the proposed mitigation measures would do little to reduce the adverse effects on the local area (Board of Inquiry, 2014).

On 25 September 2014 NZTA decided to appeal the Board of inquiry's decision to decline the resource consents and the notice of requirement on the grounds of points of law. On 21 August 2015, the High Court delivered its judgement, which upheld the Board of Inquiry's decision to decline the consents and notice of requirement. Justice Brown determined that the NZTA was unable to establish that the Board of inquiry made an error of law in making the decision they came to. It was then announced on 4 September 2015 that NZTA had decided not to appeal the High Court's decision.



Figure 3 Before and after views of what the Basin Reserve project would look like.

Source: <http://transportblog.co.nz/2013/11/27/photo-of-the-day-basin-bridge/>

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The media played an eventful and influential role in the Basin Bridge proposal process. Printed articles in the *Dominion Post* (a Wellington-based newspaper), online articles on stuff.co.nz and presentations on *One News* and *3 News* were among the most popular media outlets. There were also several social media sites, such as a Facebook page, Twitter and website created by the group Save the Basin (savethebasin.org.nz). The media, as in all stories of significance, were very vocal in sharing political and the public's views on the proposal. The following section identifies conventional and alternative discourses presented during this project.

3. Traditional and alternative discourses for the Basin Reserve Bridge (BRB)

This section critically reviews planning and policy documents, media reports and submissions to uncover distinctive arguments and narratives within five main headings: economic effects, safety effects, traffic effects, environmental effects and effects on people and their amenities.

a) Economic storylines

Several economic benefits were argued in favour of the proposal. However, these arguments were continually challenged by opponents. They include:

Improved road efficiency through decreasing travel times. The Copeland Report (2013) states that the Basin Reserve Bridge (BRB) reduces travel times by approximately 90 seconds would improve vehicle operating costs¹ by \$696 per annum, reducing accidents and improving trip time and reliability. Another report by Dunlop (2013) provides evidence on the significantly improved journey times the Bridge would allow for motorists. Wellington International Airport Limited (submission 103557) believes the BRB will improve their route capacity, reduce congestion on routes to the airport and improve travel times. They believe all these effects will have a direct positive benefit to the airport. However, these arguments are challenged on the ground that the BRB would reduce property values and lead to loss of income in rental properties. For example, Grandstand Apartments and Graham Wigley (submissions 103450 and 103505 respectively) noted such concerns with loss of income due to the potential decrease in amenity values of the apartments as a result of visual impacts and noise and the adverse effects these would cause. Copeland (2013) agrees that there will be some negative property effects from the proposal as a consequence of visual effects and noise (an increase of approximately 1dB and severance effects). The article by Sirmans, Sirmans and Benjamin (1989) supports the idea of rental property value and income declining when such a project affects amenity values such as views, noise and general disturbances. Julie Anne Genter (2013) from Bennion Law also believes that the 'negative economic, social and environmental impacts have not been fully assessed ... and these negative effects are likely to be significant' (p. 2).

Improve industry and freight movement and overall economic productivity. Figliozzi (2011) argued that the BRB improves freight transport movement due to less congestion and quicker travel time, which would eventually improve economic productivity in the region. Mitchell Partnerships (2013), Copeland (2013) and submission (103557) argue that improved freight movement would increase the reliability of this key route, contributing to making the Wellington economy more efficient and competitive. Throughout the construction phase, there would be an increase in jobs in the Wellington region and some increase in jobs due to ongoing maintenance of the bridge. Once the construction of the bridge is completed, there would be a generation of better economic opportunities for businesses, which would allow them to grow. However, St Marks Church School Board raised concerns that construction works would reduce their enrolment abilities, which would generate risk to the financial viability of the school (submission 103516).

¹ Based on 90 second saving, twice a day, 5 times a week, for 52 weeks of the year and petrol at \$2 a litre.

Positive Benefit-Cost-Ratio (BCR). The evidence presented by Copeland (2013) states that the benefit-cost ratio of the Basin Reserve Bridge has been estimated at 1.3 benefit-cost ratio², which shows that the project's economic benefits exceed the economic costs. They also estimated the whole Wellington Northern Corridor Road of National Significance investment package to have a benefit-cost ratio of 1.1, which would contribute to the long-term productivity and competitiveness of the Wellington region. However, 49 submitters to the proposal questioned the benefits. It is argued that the BRB would generate few benefits at all and that the adverse effects outweigh any claimed benefits. Many of the benefits are unknown and are reliant on the completion of unconsented future projects which may not eventuate (i.e. the other proposals in the Wellington Northern Corridor project). The majority of opposition submitters were also concerned that there had not been sufficient consideration of alternatives, such as options B and X. Politicians such as Julie Anne Genter (Green Party) also believed the proposal had a 'poor cost-benefit analysis and is more costly than other options' (3 News, 2014). Genter also states that the majority of popular and expert opinion also opposed the project due to its questionable benefits.

b) Safety storylines

There are several safety effects argued in favour of and against the proposal. These include:

Improved safety for all users. The Basin Reserve Bridge is strongly justified on safety grounds for all users in formal documents produced by Wendy Turvey (2013) on behalf of the NZTA. Turvey states that a reduction in traffic congestion will improve safety, especially for students who are being dropped off at nearby schools. Moreover, 1.4-metre barrier along the cycle and pedestrian lane of the bridge was proposed to improve safety. In spite of safety claims, there were 67 submitters (including the Basin Reserve Trust, Cycle Aware Wellington and Save the Basin Campaign Incorporated) out of the total 215, who opposed the proposal due to safety concerns for pedestrians and cyclists. As Ron Beernink (submitter number 103510) states, the current 3-metre-wide path proposed 'is not sufficient to allow for the likely traffic volumes and the likely scenario where pedestrians will walk side by side with cyclists'. Safety concerns were also raised for pedestrians and cyclists during strong winds, due to high exposure and little protection (for example, see Save the Basin Campaign Incorporated's submission 103493). These arguments are valid, as the NZTA report itself stated that winds on the Basin Bridge could be strong enough to 'knock over a high-sided vehicle or deter cyclists from using the road' (Johnstone, 2013). Moreover, a number of submitters raised safety concerns for pedestrians and cyclists during the construction phase of the project.

Improve security in the area. NZTA also produced a 'Crime Prevention through Environmental Design' (CPED) report, which lists methods such as well-designed lighting and surveillance to mitigate crimes and chances of vandalism area under the bridge (Stoks, 2013). To further improve safety and security, NZTA proposed placing a new commercial building under the bridge, which would activate the road edge (NZTA, n.d.; Turvey, 2013).

c) Environmental storylines

The Basin Reserve Bridge was strongly opposed on the grounds of air, noise and visual pollution and vibration, regardless of mitigation proposals. The details are:

Air pollution. A report prepared on behalf of NZTA (by Gavin Fisher, 2013), models the worst-case scenario effects of the project on carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM₁₀) and benzene increases by 2021 and 2031. The evidence shows that the appropriate standards

² The benefit-cost ratio (BCR) was calculated using a national perspective. If a narrower Wellington City or Wellington region perspective were applied, the BCR would likely be much higher due to residents and businesses receiving the majority of the benefits, but paying a smaller proportion of the costs.

and regulations for CO, NO₂, PM₁₀ and benzene would not be exceeded in the selected years. Therefore, it was assumed that the project would not result in unacceptable adverse effects on air quality. However, the report does believe local dust levels would increase during the construction phase but could be mitigated through measures outlined in the Construction Environmental Management Plan and the Construction Air Quality Management Plan. The proposal is argued to contribute to combatting climate change via lower emissions from vehicles using the flyover.

However, 52 submitters raise their concern about negative air quality effects, especially dust and particulates, during the construction phase and potentially increasing carbon emissions during the operational phase. These negative effects on air quality were linked with the possibility of adverse health effects on the community, potentially affecting food hygiene and ventilation systems. For example, 24 submitters raised health issues such as asthma and lung cancer they expected from dust and other forms of air pollution in the surrounding environment. A submitter suggested NZTA establish and maintain a long-term air quality monitoring station at the proposed site to address these issues (Mitchell Partnerships, 2013).

Noise pollution. The project proposal addressed noise reduction measures in advance that include building roads with quieter surfaces and introducing noise reduction barriers (Dravitzki, 2013). Evidence produced by Vincent Dravitzki on behalf of NZTA states the operation of the Basin Bridge would increase noise levels by an average of the only 1dB, which is considered to be less than minor. It was argued that the project area had historically high noise levels, and after noise mitigation measures, noise effects would be very small. Moreover, it was promised all possible measures would be taken to ensure minimum noise during the construction phase.

There were 77 submitters, including the residents of the neighbouring Grandstand Apartments (103450), who were concerned with noise effects. Evidence from Constantin Wassilieff on behalf of the Roman Catholic Archbishop of the Archdiocese of Wellington states the noise level is expected to increase between 1-2.8dB; this is a small yet noticeable increase for near-by buildings. These adverse noise effects have the potential to affect the amenity value in the area, during both the construction and operational phases. Therefore, the submitters rejected NZTA's measures and called them 'inadequate'.

Visual pollution. The Basin Bridge proposed an integrated design approach and landscape design aiming to 'soften' the concrete structure and blending it into the surrounding environment. Deyana Popova, on behalf of NZTA, explains in her statement of evidence that the Basin Bridge would have significant adverse visual effects only within a 500-metre radius of the bridge. However, these effects could be mitigated with an integrated design approach. Popova does admit that there are some adverse visual effects that are not able to mitigated, especially when outside of the Basin Bridge site boundaries.

One hundred and fourteen submitters (out of 215) show their concern about the visual effects of the project (Mitchell Partnerships, 2013). A submitter referred to the Basin Bridge as being 'ugly', 'an eyesore' and an 'ugly wall of concrete' (Mitchell Partnerships, 2013). Grandstand Apartments Body Corporate (submission 103450) noted the 'significant interruption to the views from apartments in the building' and 'the south facing apartments will have cranes, drilling rigs etc., positioned and operating outside their windows'. Other submitters made reference to the loss of pleasant views across the Basin Reserve itself. Concerns were also expressed about the visual effects of the Basin Bridge from within the Basin Reserve. The Basin Reserve Trust (submission 103585) mentions how the proposed bridge will 'distract from events occurring on the field and detracts from the amenity value of the Basin as a peaceful and enclosed sporting venue'.

Vibration effects. NZTA proposed a Vibration Management Plan during the day and night time construction activities (Dravitzki & Cenek, 2013). According to Cenek (2013), vibration effects after the operation of the BRB are no different than those currently experienced. He also states that while

construction would increase vibration levels, this would be only temporary, of limited duration and could be mitigated through the Vibration Management Plan.

The majority of submitters were worried about construction-related vibrations (73%) (Mitchell Partnerships, 2013) and the potential effects this would have on amenity values around the Basin Reserve. One submitter, Tasman Garden Body Corporate (submission 103441), even suggested that NZTA should prepare a structural assessment of their property before and after construction and be responsible for any damage caused by the vibration effects of construction.

d) Traffic and access storylines

Access effects: The Basin Bridge proposal was strongly justified on the grounds of the traffic and access benefits. For example, the proposal would allow increased access around the Basin Reserve area, and in particular, would improve access from the eastern suburbs of Wellington. Due to the new bridge, a more reliable emergency service access to and from Wellington Hospital is expected (Mitchell Partnerships, 2013). It would also improve access to and from schools and their facilities (NZTA, 2015). It was stated that cycling and walking facilities in the project area would be improved, bus travel time would be reduced and the overall congestion level would be improved (Coulombel, and de Palma, 2014). Buses would get the main benefit by increasing their reliability (Dunlop, 2013). It is also proposed to encourage freight traffic to use the SH1 route after the building of the bridge, which would free up the local roads (Dunlop, 2013). There were 13 submitters who were generally supportive of the implications of the proposal on traffic (Mitchells Partnerships, 2013).

There were 63 submitters who were generally opposed to the project with respect to potential construction and operational effects on traffic. Most concerns related to the construction phase include access problems for emergency services, and an unsafe environment for cyclists and pedestrians. Even the Greater Wellington Regional Council (103546), who supports the proposal, has concerns with respect to the management of construction traffic effects. They advise that further information should be sought for the Construction Traffic Management Plan to ensure adverse effects are appropriately managed.

Congestion management and consideration of alternatives. 48 submitters consider that the Basin Bridge would not appropriately manage congestion and that there are other more suitable options that would better manage traffic congestion. Ninety-two submitters specifically argue that NZTA had not given sufficient consideration to alternatives required under sections 171 (1) (b) and section 32 (1) (a)-(c) of the Resource Management Act (1991) (Mitchell Partnerships, 2013). Mr Young, on behalf of Save the Basin and Mt Victoria Residents Association, says 'NZTA did not adequately assess cost-benefits of the flyover compared to other options' (Chapman, 2014). It was noted that the desired traffic improvements could be obtained from other solutions. For example, the construction of a second Mount Victoria Tunnel would be more appropriate, or a Sussex Street Tunnel, which Mark Ashby describes in his submission (103501).

In response to this criticism, NZTA argued that they produced multiple reports and documents assessing the possible options to solve the traffic issue. For example, the Scheme Assessment Report 2001, the Basin Reserve Inquiry by Design Workshop 2009 and the Feasible Options Report 2011, identified five possible options that aim to solve congestion. In 2010, NZTA organised an option evaluation workshop with relevant technical specialists and ran a series of public engagement meetings seeking further feedback on the preferred options A and B. After a process over many years, option A has been selected after more than enough consideration of alternatives for this proposal (Wayne Stewart, 2013). However, Justice Brown, the judge for the Basin Bridge case, agreed with the board of inquiry that 'other congestion-relief solutions could be applied to the Basin roundabout in order to pave the way for a second Mt Victoria Tunnel' (Forbes, 2015).

e) Heritage and amenity storylines

The Basin Bridge is strongly opposed on heritage and amenities grounds. The details are:

Heritage effects. In the Basin Bridge project area, there are three structures that have statutory recognition, one historic area, one residential character area and nine buildings with evident heritage values that are not protected by statutory recognition. There are also several listed and/or registered heritage buildings outside the project site but in very close proximity to it. Therefore, NZTA prepared a Heritage Management Plan and the Urban and Landscape Design Plan to support the BRB proposal. Salmond (2013) believes that the overall effect of the project on heritage effects is significant but that the effects will be minor after the proposed mitigation is implemented. Mitigation methods include relocating the former Home of Compassion Crèche, and reducing the visual impacts of the bridge and new structures being built.

The opponents of the proposal believe that the Bridge will generate adverse heritage effects that are irreplaceable for the historical suburb. For example, the project will damage the architectural heritage of the inner Wellington area, as well as affecting the historically significant Basin Reserve. Historic views and the surrounding historic environment will also be affected. Forty submitters opposed the project based on the potential heritage and archaeological effects. A notable submission in this area was from the New Zealand Historic Places Trust (103577) which agreed that the proposal would generate adverse heritage effects and disturb archaeological sites.

Amenity effects. There were 75 submitters who were concerned with the negative amenity effects the proposal would have on the surrounding environment. Many of these submitters believe the Basin Bridge would affect the uniqueness and character of the Basin Reserve as an iconic cricket venue and one submitter called it ‘official vandalism’ (Action for Environment Inc., 103573). There are also worries regarding the effects the project would have on the topography, character and landscape of the surrounding environment. The proposal does have some methods in place to mitigate the adverse amenity effects on the surrounding environment, but they are seen as being insufficient to screen the bulk and height of the flyover (Mitchell Partnerships, 2013). Nearby residents complain the amenity effects will affect their wellbeing and their house values. This argument is supported by Sirmans, Sirmans and Benjamin (1989), who agree that amenity effects, such as noise and congestion, surrounding apartments reduce their rental value.

4. Discussion and Conclusion

The paper aims to identify the main discourses of, and the arguments in favour and against, the Basin Bridge proposal. The main discourses are grouped into five themes: economic effects, safety effects, environmental effects, traffic and access effects and heritage and amenities effects. The analysis shows that the Basin Reserve Bridge proposal was very controversial, with high levels of resistance in the form of alternative discourses appearing from the public. However, most government organisations and businesses supported the NZTA on various grounds, especially for the project’s contribution to the local economy.

However, the Board of Inquiry concluded that the benefits did not outweigh the costs and the application for five resource consents and a notice of requirement was declined. NZTA decided to appeal this decision to the High Court on points of law, but the appeal was unsuccessful. The High Court believed the Board of Inquiry was correct in declining the resource consents and a notice of requirement on the grounds of the adverse effects the project would have on heritage, the landscape, visual amenity and overall amenity, as well as the fact that transport benefits were less than originally thought. The Board of Inquiry also believed the proposed mitigation measures would do little to reduce the adverse effects on the local area. NZTA has decided not to appeal the decision again, so the Basin Bridge seems very unlikely and its defeat is a major achievement of community resistance for a high-profile project.

Cities are increasingly recognized as an ideal place to contest transport infrastructure projects on environmental and social grounds. To what extent the community struggle has been successful depends on the specific social, institutional and political contexts and alternative discourses advanced during the process.

Social: The BRB provides an excellent example of community struggle and commitment to resist a highway project in the middle of a city. It shows that local social/community movements have the ability to stop a transport infrastructure project and shape and reshape public attitudes towards a future project. This happened because the current form of transport governance failed to recognise community actors who intervened in the purposive steering of society. These actors have been considered as time wasters and a hurdle to achieving efficiency in the implementation of the project. Although this paper analyses local actors' alternative discourses in resisting the BRB, resistance may vary from city to city and from project to project even within one city. Therefore, we should avoid generalisation that similar types of resistance and discourses can be found in Auckland or any other city.

Institutional: The resistance to the BRB shows that a deep level of change is required in transport planning in New Zealand. This may include a leadership role for local government in sharing and reshaping the debate rather than being a passive recipient of central government projects. At present, the alternative discourse that emerged during the BRB may not be powerful enough to reshape transport planning policies immediately, but it should be used as a seed for discussion.

Planning is regarded as a process of knowledge co-production between actors with different kinds of technical or contextual expertise. Therefore a collaborative planning approach can become more effective to broaden objectives and find alternative solutions to BRB. In collaborative planning, meaningful participation, on-going dialogue and an open-ended transparent process may deliver transformative outcomes by facilitating social learning, overcoming institutional challenges in a practical way and fostering innovation. This process may bring new discursive narratives that will be acceptable to all actors.

The BRB example in Wellington should be taken as a first step to redefining problems and generating creative solutions. The BRB debate can become a driver of transport innovation, where Wellington can be showcased to the rest of the world. At a minimum level, the BRB decision offers grounds for hope about possible transformations toward low-carbon transport policies as a priority agenda, at least for urban areas.

Political: The BRB example shows that grassroots initiatives help to generate valuable political and professional discussion and media coverage. It also shows that cities are very complex spaces, where diverse people and businesses, contested discourses and multiple infrastructures locate together in historical and futurist contexts. Cities are so different, even within New Zealand, that it does not make sense to use a similar objective of travel-time saving and economic growth for transport infrastructure investment. It is important to recognise the history of the place, the value of people, and the social, economic and political trajectories that shape people's lives. Therefore, cities provide opportunities to co-produce transport planning knowledge based on contextual realities empowered by visionary political and professional leadership.

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Session: Planning for accessibility and sustainable mobilities

Classifying governance initiatives for an effective integration of car sharing with urban planning and transport systems

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Abstract: Car sharing is a service in which members can access a car without having to own it. It is a relatively mature car-based component of the ‘mobility as a service’ (MaaS) system that has potential to work as sustainable transport when effectively integrated with urban systems and used as a complement to the transport network. Initiatives to integrate car sharing are relatively recent and not yet widely practiced, but they have been successfully implemented by some cities and there is an increasing interest in adopting them worldwide. However, this topic remains widely unexplored in transport studies and policy debates. This paper aims to address governance for car sharing integration by clarifying what this integration means, underlining its significances, and by classifying mechanisms and measures that can be adopted, mostly by local authorities, to achieve it. This work was based on literature reviews and on studies of practical examples focused on governance for car sharing developed by the author for her master and Ph.D. (ongoing) researches. The framework introduced here may provide insights on elements that should be considered while formulating strategies to incorporate car sharing into urban systems. It is also an opportunity to reflect on a significant, but relatively unexplored, topic in transport discourse.

Keywords: car sharing, governance, transport planning, integrated mobility.

Introduction

Overcoming car dependence still remains as a common global challenge faced by cities, especially the ones that are about to accommodate significant urban population growth in the next few years. At the same time, the disruptive emergence of the new mobilities, or ‘mobility as a service’ (MaaS) (Sochor et al., 2017), particularly car-based modes, is adding more pressure to an apparently defeated ‘anti-car’ urban planning system in most of the cities around the world. Meanwhile, “the real ‘disruption’ needed” (Stone and Kirk, 2017, p. 140), is to reshape cities with a new approach to transport planning and policy (Iacobucci et al., 2017; Marsden and Docherty, 2013) that “enables rather than frustrates” (Dodson and Mees, 2003, p. 33; Marsden and Docherty, 2013, p. 213) the achievement of more sustainable cities (Dodson and Mees, 2003; Legacy, 2017; Marsden and Reardon, 2017).

This change could begin by facing the disruption that is assailing the “current way of life” (Kent, 2013), and by confronting “orthodox tools, instruments, methods and framings” (Legacy, 2017, p. 180) of planning to reshape cities in the future accordingly. In this sense, Smolnicki and Sołtys (2016, p. 814) emphasize that, although the structural results of a “car-ownership-oriented-century” are widely recognized, the implications of a broad use of shared automobiles still need to be

understood. Hence, they suggest that a proper approach for that is to anticipate and prepare for the probable consequences of these disruptions, trying to avoid the potential negative ones (Smolnicki and Soltys, 2016). However, this can only be achieved with political will, awareness of the new mobility systems, and the development of critical, strategic and proper governance systems (regulation, promotion and adoption) aimed at incorporating these new modes in a way that ensures local communities will receive the benefits (Banister, 2011; Bouton et al., 2016; Clauss and Döppe, 2016; De Gruyter et al., 2014; Firnkorn and Müller, 2011; Iacobucci et al., 2017; Kloth, 2018; Stone and Kirk, 2017; UN, 2016).

Car sharing

Car sharing is a service that allows members to access a car without having to own it (Paganelli, 2013a; Santos et al., 2010; Shaheen et al., 1998), giving users the benefits of an automobile without the “burdens” of ownership (Alessandrini et al., 2015a, p. 147). This transport mode is considered a successful example of ‘access-based’ mobility systems (Botsman and Rogers, 2010; Gansky, 2010). Car sharing has emerged in Europe (Switzerland and Germany), where the pioneer and most relevant experiences with commercial developments were implemented in the 1980s, followed by more limited, but also successful, North American experiences in the 1990s (Shaheen *et al.*, 1998). This transport option is a relatively mature car-based component of the ‘mobility as a service’ (MaaS) system, seen as a sustainable transport mode and as an alternative to the private car due to its potential to generate social, economic, environmental, transportation and land use benefits, consequently reducing car dependence (Alessandrini et al., 2015b; Correa, 2016; Enoch and Taylor, 2006a; Kaspi et al., 2016; Kent et al., 2017; Kent and Dowling, 2013; Martin and Shaheen, 2011; Millard-Ball et al., 2005; Paganelli, 2013a; Shaheen et al., 1998, 2004, 2010; Solman and Enoch, 2005; UITP, 2002a, 2016, 2017).

Because car sharing has been evolving “along with technological innovation” (Shaheen et al., 2009, p. 42) for approximately 30 years (Bouton et al., 2016; Shaheen and Cohen, 2016, 2007), these evolution allowed a significant improvement in the services offered and a growth of car sharing operators (CSOs), resulting in the current implementation of different types and operation models of car sharing (Correa, 2016; Firnkorn, 2012; Paganelli, 2013a, 2013b; Shaheen and Cohen, 2016). The types of services can be classified into two main categories that consider physical aspects, operation models and the nature of the trips made with the vehicles. The first one is more related to the physical and operational characteristics and divides car sharing into two types of services: ‘round-trip’/‘station-based’, in which vehicles have to be returned to the same location (parking spot, area or charging station) where they were taken from - or to the vehicle owner’s parking space in peer-to-peer (P2P) car sharing (Ballús-Armet et al., 2014; Hampshire and Gaites, 2011); and ‘free-floating’/‘one-way’, in which vehicles can be picked up from and placed in any allowed parking space within a GPS delimited area, hence do not require a return trip. And the second category classifies trips as “scheduled”, when they can or need to be booked, and “spontaneous”, when trips can be made ‘on-demand’ (Brook, 2013). Worldwide CSOs offer different types of services under these concepts, which are also classified differently by distinct authors in the literature (Brook, 2013; Firnkorn and Müller, 2011, 2011; Nourinejad and Roorda, 2015; Paganelli, 2013a; Shaheen and Cohen, 2007). These types of car sharing, particularly the division between station-based and free-floating, have distinct implications in urban environments and produce contrasting, sometimes divergent, impacts in car use that depend on the characteristics of the cities where they operate (Britton, 2011; Glotz-

Richter, 2016; Iacobucci et al., 2017). Finally, this topic is vastly and constantly explored in the literature about car sharing, with studies that use a variety of analytical methods for the investigations (Firnkorn, 2012; Firnkorn and Müller, 2011; Kortum et al., 2016; Nourinejad and Roorda, 2015; Ruhrort et al., 2014; Schreier et al., 2017).

Researchers claim that car sharing has to be integrated with urban systems to achieve its potential as a sustainable transport mode, under governance arrangements that allow it to be used for combined mobility and as a complement to the wider transport system (Enoch and Taylor, 2006a; Firnkorn and Müller, 2011; Glotz-Richter, 2016; Huwer, 2004; Kaspi et al., 2016; Kent and Dowling, 2016; Millard-Ball et al., 2005; MOMO, 2011; Paganelli, 2013a; Shaheen et al., 2010; Solman and Enoch, 2005; UITP, 2016). Initiatives to integrate car sharing are relatively recent and not yet widely practiced, but some cities have successfully implemented them using various mechanisms (Baptista et al., 2015; Britton, 2011; Dia, 2017; Glotz-Richter, 2016; Iacobucci et al., 2017; UITP, 2002a). Furthermore, there is an increasing focus on their adoption and research has concluded that municipal administrations can incorporate car sharing as a tool to promote sustainable mobility (Glotz-Richter, 2012; Solman and Enoch, 2004). However, car sharing governance and integration remain widely unexplored in transport studies and policy debates (Akyelken et al., 2018; Caputo, 2012; Dowling and Kent, 2015; Kent and Dowling, 2016; Terrien et al., 2016). Additionally, it is not clear to planners and decision-makers how to integrate car sharing in a strategic, effective and comprehensive way (Enoch and Taylor, 2006b; Paganelli, 2013a).

This paper addresses governance for car sharing integration by clarifying what it means, underlining its significance, and by classifying mechanisms and measures that can be adopted, mostly by local authorities, to achieve it.

Governance for an effective integration of car sharing with urban and transport systems

Governance is a broad and rich topic that can be defined in a myriad of ways, depending on the context of the analysis, and it is unlikely that the literature will provide a definition that suits appropriately all situations. Thus, in the context of this study, governance is understood as a system of practices, “rules”, processes, legal tools, initiatives, actors (social and political, as well as public and private), interactions, partnerships, infrastructures and networks, that can be applied in different levels and scales (Gupta et al., 2015). Furthermore, integrating car sharing means recognizing it as an official transport mode, incorporating it in local urban planning schemes and allowing it to be used as a complement to the transport system. This conclusion was based on reviews of the literature (Enoch, 2002; Enoch and Taylor, 2006b; Millard-Ball et al., 2005; Paganelli, 2013b, 2013a; Solman and Enoch, 2004; UITP, 2002b) and on studies developed by the author until the moment.

For car sharing to work and generate the benefits mentioned previously, it is crucial that the system is effectively integrated with local urban planning and transport systems. In addition, to explore car sharing strategically and create appropriate governance arrangements for it, planners and decision makers need to understand how the system works and how to promote its integration. Previous works performed by the author (Paganelli, 2013a, 2013b) and a recent literature review pointed out that decision makers could benefit from guidelines that help to create initiatives aimed at recognizing car sharing and integrating it with urban systems. In this sense, it seems that an initial classification of possible mechanisms and arrangements of governance for car sharing could set a foundation for this “guide” and trigger an improvement of car sharing integration in practice. The

literature review also indicated that there is a profusion of information about car sharing governance distributed randomly in different documents or sources of related content, mostly in grey literature, with potential to be organized in distinct categories. However, to the author's knowledge, no organized document classifying these initiatives has emerged so far. Therefore, this study presents a preliminary classification scheme of governance for car sharing integration with urban planning and transport systems.

Methodology

The classification scheme proposed by this work was based on a review of scientific publications and grey literature, as well as on initiatives implemented in different cities that were identified by the author with a global study. The main goal of these tasks was to identify existing or possible arrangements and measures, which were then organized and categorized to develop the classification scheme.

According to Bailey (1994), three approaches can be applied to develop a classification scheme: conceptual, empirical, and operational. An operational approach means that the concepts represented in the categories are not arbitrary, but were found in empirical data and cases (Snowden, 2011). The process used to create this scheme was done in an operational level, from an empirical to a conceptual basis, because it followed a combination of empirical and conceptual approaches (Bailey, 1994).

Classification scheme - governance for car sharing

This classification scheme divides governance for car sharing in eight categories considering different features related to the system's development and implementation. These categories reflect characteristics of the places where car sharing operates, and indicate the natures of possible arrangements, initiatives, policies and regulations for its integration and management. The categories created are:

1. **Enablers of car sharing development:** basic conditions of cities required for car sharing's development and effective integration.
2. **Awareness and capacity building:** acknowledgement, understanding and recognition of car sharing, with the help from advocates and champions.
3. **Public support:** marketing, administrative and/or financial initiatives that support car sharing.
4. **Role of actors:** and their involvement in the implementation of car sharing - regulatory bodies, institutional arrangements, agreements, partnerships, civil society associations, coalitions, consortiums or taskforces, and fleets.
5. **Plans, policies and regulations:** implemented in national, regional and local levels, with strategies that formalize and incorporate car sharing as a transport mode into planning documents and procedures, encompassing all types of car sharing that operate locally.
6. **Public space and infrastructure:** parking spaces in public or private areas (on -street, off-street or on-site), the approach to allocate them, and car sharing vehicles' flow in the streets.
7. **Integration with the local transport system:** physical integration, combined mobility platforms, and possible gamification strategies.

8. **Performance and evaluation:** requirements for public support, data sharing, multimodal surveys and evaluation of effectiveness of the governance systems implemented.

This scheme is the first step toward a more detailed and comprehensive framework to depict the landscape of car sharing governance and integration. The content of the scheme is still under development and is not exhaustive, as more mechanisms may have been implemented but not publicized or may be outside of the author's current knowledge. Additionally, this framework will be updated and improved with results from a data collection that is under development for the author's Ph.D. research. Finally, besides the potential to be improved, this generalized scheme enables knowledge sharing (Smith, 2002) by providing a general terminology that can be used to further investigate, describe and discuss information about car sharing governance and integration measures.

Conclusion

Using a car instead of owning it can help reduce the number of vehicles and trips made with cars in cities, reduce costs and negative externalities of car use, encourage new forms of travel, free up parking spaces, as well as result in a more efficient use of resources, in particular urban space (Paganelli, 2013b).

Car sharing is not a "panacea" of urban mobility issues. However, it can be used by planners as a tool to create more sustainable urban areas (Glotz-Richter, 2012; Millard-Ball et al., 2005; Paganelli, 2013b, 2013a; Solman and Enoch, 2004). Moreover, most of the research done so far concluded that the positive effects of car sharing will only materialize if it is part of a larger system of adaptation in the cities, with integrated actions and a collective commitment to the pursuit of more sustainable life styles in terms of urban mobility (Paganelli, 2013b, 2013a).

The framework introduced by this work may inform and provide insights to policy makers, transport planners and operators on the elements that should be considered while formulating strategies or initiatives to integrate and manage car sharing in their cities. A more comprehensive and strategic approach to car sharing may lead to the creation of effective governance systems for it, maximizing its potential as sustainable transport and contributing to better outcomes in terms of sustainability in cities. Furthermore, this work brings an opportunity to reflect on a significant current topic that is relatively unexplored in transport discourse. Finally, the structure developed for this analysis can be adapted to other shared mobility services, perhaps impacting positively on how they are incorporated into urban systems.

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Planning for accessibility and sustainable mobilities

The relocation of a circus school from the perspective of mobility of its participants

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Abstract: In spatial planning theory and practice, travel behaviour is often linked to spatial structure (distance, safety...) and neighbourhood characteristics. A lot of mobility research considers also circumstances (age, luggage, weather...). Research in behavioural studies in economics, psychology, marketing... includes personality and choice of individuals in surplus. Empirical evidence of all these theories in real live cases is rather scarce. Using the real-life case of the relocation of a recreation service, we analyse its effects from several theoretical perspectives common in Flanders. We will confront the existing theories applied in materials on a Flemish scale with bottom up information from the case. Circolito is a circus school in Mechelen, a city in Flanders, Belgium, between Antwerp and Brussels. Its aim is to teach toddlers, children, youngsters and adults circus skills on a weekly basis. In the spring of 2018 the school moved from an inner-city location to a suburban location. A year before the move and short after it, all users were invited to fill out a survey concerning their mobility behaviour, trip chaining and perception of the location. The results of the survey will be discussed in relation to tools and practices in spatial planning in Flanders, applied in the city of Mechelen and the area of origin of the circus school participants. Although the case is specific, some of the results can help to formulate new research questions and discussion for policy.

Keywords: travel behaviour, spatial structure, real life case, human perspective, applied theories

Introduction

The reason to start a case research about the move of a circus school is quite simple. One of the authors has children that are active in that circus school. As a mother she was concerned about the new location that is located further away from the city centre, and she was wondering about the effect the relocation will have on the independence of her children and her own trip chaining. Being a spatial planner, she discerns quickly a difference between the two locations: the circus school moves from an inner city location to a suburban one. She was able to count on the support and cooperation of the director of the circus school, which is essential for the kind of research she wants to do.



In the paper we focus in the first paragraph on the spatial situation and context of the case and in the second on the theory that is commonly used in policy development in Flanders. The third paragraph explains the three methods that are used in this research, while the results are discussed in the fourth. In a short conclusion some ideas for further research are given, as well as some suggestions for further action.

Situation of the case of a growing circus school in the city of Mechelen

Mechelen is located between Antwerp and Brussels and is a medium sized to small city in Belgium (86.304 inhabitants 1.1.2018 (FOD statistiek)) with demographical growth on the agenda. Mechelen is also a regional centre with a lot of services for the surrounding area, especially secondary schools, but also a regional hospital, a regional fire brigade,... Demographic growth, together with the reorganisation and organisational upsizing of these kind of services require sooner or later choices regarding the location of these services. They can either expand on the original site or move to another more spacious location. In recent years, Mechelen directed a lot of services out of the city centre to a more suburban location, with more space availability and accessibility as main arguments. Leftover large plots in the city center are transformed into residential space, mixed with small scale services, such as day cares, shops and local services. These spatial strategies are quite mainstream in Flanders and Mechelen is exemplary for medium sized city policy in Flanders.

Figure 1. Circolito in Mechelen: location before (Klein Begijnhof) and after (Douaneplein) the move (Topographic map 1:10000)



- klein begijnhof
- douaneplein

industrial and recreational activities.

Mechelen is the home town of the circus school Circolito. That is a service provider, active in leisure time services. Its aim is to teach toddlers, children, youngsters and adults circus skills on a weekly basis. With the growing popularity of the school, it got short on place. The available space on site had reached its full capacity. Some short term solutions were found (e.g. certain lessons in the sports hall of Mechelen, some new branch offices in the broad area), but in 2018 a more definite proposal was put forward. The circus school was offered to move to a larger, more spacious location, with opportunities for further growth. The original location of the circus school, Klein Begijnhof is a part of a charming heritage site in the city centre of Mechelen. The environment is small-scaled, dense and with mixed use. The new place is located in an industrial shed, called Douaneplein. This is positioned on a former (and partly still used) freight site with customs facilities, and is now converted into a youth cluster under development. The location feels industrial and suburban and has

The main question of the research is to analyse the effect of the move on the use of space and on the behaviour of the users. Intuitively one would expect a change in modal split in favour of the car: Klein Begijnhof is a city centre location in a walker and cycle friendly environment, whereas Douaneplein is a suburban car environment.

Theory

According to Vleugels et al. (2007) modal choice in trip chaining is determined by demand and supply characteristics and is influenced by perception and trends. On the demand side, they place (1) spatial structure (scatter and distance), (2) travellers characteristics (personality characteristic: age, gender, household, address), (3) resources: physical condition, socio-economic position, car position and skills) and (4) motives (compulsory activities: travel to work, for business, education, services,...; leisure activities: recreation, social,...). On the supply side, they recognise time, comfort, ease and price. Aspects of comfort of the vehicle are among other things privacy, luggage, service and time spending. Comfort of the environment are accessibility, weather resistance, social security and services.

We note that it is difficult to find research that comprehends all these above mentioned aspects. Depending on the field of the research, certain aspects are highlighted. In spatial planning research and practice for example in Flanders, a lot of emphasis is laid on the relation between spatial structure, infrastructural factors and mobility behaviour (Van Meeteren et al., 2013, Verachttert et al., 2016, Van Den Bergh et al., 2018). Mobility, health and environmental research will recognize more the influence of psychological variables, personal motives, comfort of the vehicle, attitude and perception (Saelens et al., 2003, Hunecke Marcel et al., 2007, Zwerts et al., 2010, Reumers et al., 2017, GfK Belgium, 2018). At last, perception and mobility go together when we look at the mobility of children: the role of traffic and social unsafety, as perceived by the parents, is taken into account, especially regarding the decision of children's independent travel (Zwerts et al., 2010). But research that connects spatial structure or other spatial changes to behaviour is rather scarce: it is not easy to find a case where you can measure change or difference in behaviour as a part of a controlled (spatial) intervention (Saelens et al., 2003). In most research, mobility choices are studied in several case areas with different spatial characteristics (e.g. city, rural,...) and then compared with each other. These researches mainly deal with the mobility of inhabitants of a certain neighbourhood. Some Flemish researchers have also studied mobility in other kind of places or zones, such as shopping malls (Ronse Ward et al., 2013) and schools (Zwerts et al., 2010, D'Haese Sara et al., 2011, Boussauw et al., 2013). Often a survey is used to get insight into the mobility behaviour (Saelens et al., 2003), or observation is another possibility (Choi, 2014).

This research has a different study object. It is about a real-live intervention: the circus school Circolito moves to another location and the characteristics of the location change. For each pupil the route and probably the distance of the trip to get there change. How it affects behaviour and perception is researched with two surveys: one is held a year before and one shortly after the move. In order to focus on the change of the mobility behaviour, caused by the change in spatial characteristics, it is important that the other characteristics that could influence that behaviour remain constant. In our case research the aim of the journey, the activities at Circolito, is identical: the research population has not changed and the offer of lessons (hours, types) stayed the same.

We should note though, that this case is really specific. The circus school attracts a specific public that is not representative for Belgian, Flemish or Mechelen population. However, if the response on the surveys is large enough, our research can give an interesting insight into the effects of the move for the involved people.

Methodology

In this research we investigate the relation between spatial structure, distance, perception and mobility behaviour. The data for this aspects are collected with different techniques. We used a survey, distance-calculation in GIS and existing models of spatial structure in Flanders.

A survey about mobility behaviour and perception of the location

A year before the move and shortly after it, all members of Circolito were invited to fill out a survey concerning their mobility behaviour, trip chaining and perception of the location. With the collaboration of the circus school, the survey was sent to the contact email of each pupil. In most cases this is a parent. When several persons of the same household followed lessons, one email per pupil was sent to the contact email. Parents were asked to fill it out themselves or to send it to their older children.

The first part of the survey is meant to identify the respondent and the corresponding pupil by year of birth, activities in the circus school and address. In 2017 and 2018 more than 80% of respondents were parents. The only way to have some idea of the representativity of the research is to sort the respondents out by year of birth of the pupil. The age distribution of the research sample is comparable to the total population, with slightly more adults and less toddlers.

To study the mobility behaviour, the main research component is a specific trip chain of a specific pupil. The entire trip chain consists of several possible trips and stops and is structured as follows: possible trips before the stop at Circolito, the stop at Circolito (which is as well the aim of the trip), possible trips and stops during the lessons (which is meant for the possible accompanying parent) and at last, trips after the lesson. Questions about the activity and the location/address were asked for each stop in the chain. Questions about the means of transport between the stops and accompanying person were included as well.

The questions in the survey of 2018 were dealing in detail about the last trip to Douaneplein (new location) and the last trip to Circolito before the move, to Klein Begijnhof. In 2018 there was also a question about the weather and about the ‘normal’ or ‘usual’ transport choice.

In both surveys a part of the questions concerned the perception of both locations. The questions were meant to gain knowledge about the appreciation of the location, the layout, the pleasantness and the safety of the route used to reach the location. In 2017 respondents could make a forecast of the changes that the move would bring to their behaviour. In 2018 a question about the perception of the new and the old infrastructure was added, and some questions about the use of infrastructure in the building and the nearby area.

Distance objectivation

Distance is an important criterion in mobility behaviour. The surveys enquired about the time spent travelling and the change in distance. However, for analysis' purposes, more precise data were needed, and so we used the addresses of the stops. All addresses were converted into XY-coordinates by means of the CRAB system of Flanders Geographical Information Agency (FGIA), which allowed for spatial mapping. The points were used to generate routes with Arc GIS Network Analyst using a street network reference. This delivered distances for further analysis in relation with data from the survey.

Spatial structure objectivation

Policy research in Flanders has put a lot of effort into developing three models that relate mobility to spatial structures. The policy question is more or less the same in three researches: 'in which places or area's in Flanders is it interesting to develop more housing?' Three different scores are calculated to define places where 'to intensify in existing built environment, especially in terms of housing': (1) 'transit node value and service level' (Verachtert et al., 2016), (2) 'mobiscore' (Van Den Bergh et al., 2018) and (3) 'walkability-score' (VIGEZ, 2018, Vervoort et al., 2018, Vervoort et al., 2019).

First of all, one of the final products of the three researches is a map, showing several areas in Flanders with different scores. The map of the 'transit node value and service level' and 'walkability-score' are meant to be used by policymakers on a high scale, at the Flemish level. The 'mobiscore' is developed as an information-widget for immo-practice: people searching for a new home can get insight into the environmental cost of that location. Secondly, the three scores use the same dataset to define the service levels, namely the dataset collected by Verachtert et al. (2016), but a different selection or categorisation of services is made. Lastly, regarding the mobility-focus, the three researches use a different approach. 'Transit node value and service level' searches for points in Flanders where walking, biking and public transport are seen as a feasible means of transport. 'Walkability-score' only takes walking and biking into account. The 'mobiscore' uses the transport mode that is most likely to be used (based on probability), taking into account transport motive and distance.

The service level in 'transit node value and service level' is the most comprehensive, using 50 different kinds of services. They are classified in service category (education; culture and sports; residential support; health and social care) and service level (basic, regional and metropolitan)(Verachtert et al., 2016). The transit node value comprises different values to define several aspects, such as the ease to use the public transport, whether or not there are people living close enough to use it and the accessibility on foot or by bike. The score includes population density in combination with distance decay.

The walkability-score is developed from a health perspective. It draws attention on places where people are more likely to use an active means of transport. It combines street connectivity with population density and service mix. All aspects are calculated as z-scores, normalised to other locations in Flanders. Street connectivity is a way to measure how easy or difficult is it to walk from one point to another: a good street connectivity suggests that people are more likely to walk, than with

a bad street connectivity. Intersections per ha are used to calculate it. The service mix-function of the walkability-score uses almost all the services from the dataset, but it is categorized in another way than in the 'transit node value and service level', in order to stay as close as possible to the definition of the entropy score of Frank (2010) (Vervoort et al., 2018). The service categories are retail, entertainment, office and institutional. Not the total amount of functions, but the quality of the mix is taken into account. Although the score is developed from perspective of walking, Vervoort et al. (2018) presumes that a high walkability score is likely to encourage cycling.

'For Mobiscore the service categories are translated to travel motives from the 'Research Travel Behaviour Flanders'(Reumers et al., 2017). For each motive the probability of using a specific transport mode for a specific distance is taken into account. Used motives are those that are most relevant in terms of frequency share of all transport motives during one day for the entire Flemish population (ordered by share, descending: shopping, leisure, sports, culture; follow education; services (doctor, bank ...)). The motive 'work' is the second most important motive but only the mean distance for Flanders could be included. (Van Den Bergh et al., 2018). For each location in Flanders the distance to the nearest service and to the closest activities of each motive is considered. The focus on all transport modes is used to calculate the environmental cost. The environmental cost is a score from 1 (high cost) to 10 (low cost), with 5/10 a mean environmental cost for Flanders.

In this research we use the maps/scores to objectivate the differences in spatial structure of the different circus locations.

Results

In order to discuss the relation between spatial structure, distance and mobility behaviour, we first give the results of the different parts, starting with the survey, where we focus on behaviour and perception. We secondly confront these results with an objectified distance and lastly, with the spatial structure according to the three scores. In the final paragraphs, we combine the three aspects by giving some conclusions.

Mobility behaviour and perception of the location according to the survey

In this part we describe some facts and values, given by the respondents. We start with the difference between the expectation respondents had in 2017 before the move and reality in 2018 after the move. Then we take a look at changes concerning means of transport and the relation between perceived change in distance and change in mobility behaviour. Last paragraph deals with the perception of the different locations.

Expected change

The question 'do you expect that your/your child's mobility behaviour will change' in the 2017 survey was answered by 118 respondents. More than half of them (62) expected no change. The respondents who expected a change in their mobility behaviour, could answer in a comment field what they thought would change. All pedestrians thought they would change their means of transport, most of them would go by car. A quarter of the cyclists reported they would go by car and some of the motorists by bike. 11 respondents expected problems regarding the combination of the circus lessons with other activities.

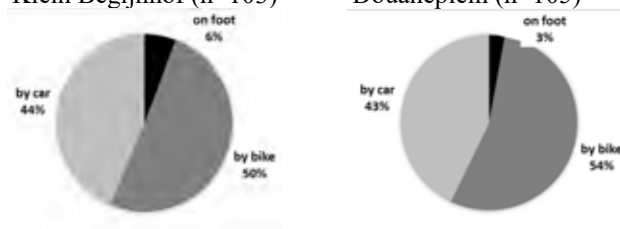
In the 2018 survey a parallel question ‘did anything change due to the move?’ was answered by 115 respondents and strikingly 81 (or 70%) reported no change. Of the respondents who reported a change, 22 said that something changed ‘for the pupil’ (means of transport, travel company and / or activities before and after) and 12 for ‘the accompanist’.

The effect of the move is a lot smaller than respondents expected.

Change in means of transport

The ‘change for the pupil’ can be the means of transportation used to go to the circus school.

Figure 2. Means of transportation used to come to the lesson at both locations of the circus school (Survey 2018)
Klein Begijnhof (n=103) Douaneplein (n=105)



The graphic in figure 2 shows the reported means of transport at the arrival at the circus school (old and new location) for all the Circolito members from the survey 2018. It was intuitively expected that after the move less pupils would come on foot (from 6% to 3%), but it is striking that there is no increase in car use. It even

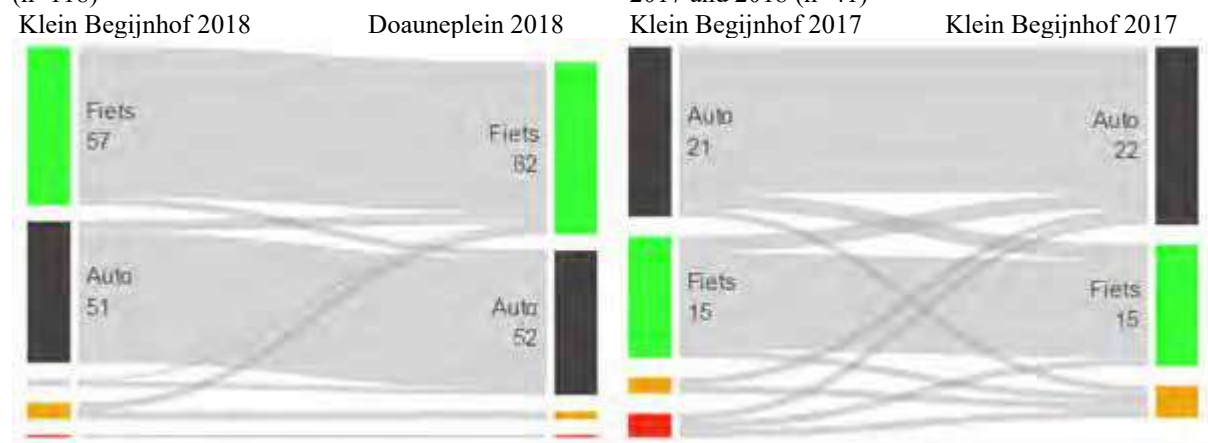
slightly decreases (from 44% to 43%). After the move, the bike is still far more used than the car.

However, the differences are small. The Sankey diagram in figure 3 uses the two surveys and shows more details.

Figure 3. Evolution in means of transport use per respondent (Survey 2017 and 2018).

Means of transport use before and after the move (n=118)

Means of transport use for location Klein Begijnhof in 2017 and 2018 (n=41)



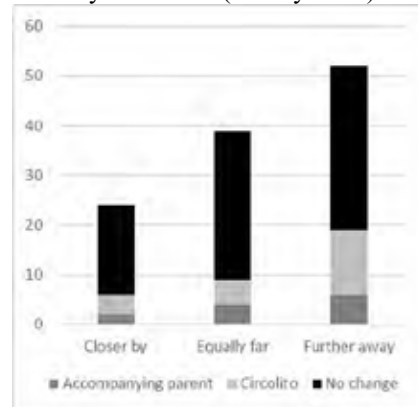
Colors used: green “by bike”, black “by car”, orange “on foot”, red “public transport”.

There are just 10 respondents out of 115 reporting change in means of transport choice, resulting in the small change in modal split we noticed before (see figure 3). There is more variation in the answers of the respondents, when we compare both surveys (Sankey diagram on the right) than when we compare the parallel questions in the same survey (Sankey diagram on the left).

Perceived change in distance

In the 2018 survey a question tried to assess the change in distance for the pupil, by comparing the new to the old location: ‘Has the distance to reach the circus school changed for the pupil/you?’

Figure 4 Perceived change in distance in relation to reported change in mobility behaviour (Survey 2018)



As there was no mention of a locational point of reference (e.g. home, stop before), the answer is merely an appreciation or a perceived change in distance. Around 45% of the respondents (circa 50) thinks the new location is “further away” than the old one, around 1/3 of the respondents (circa 40) estimates it is “equally far” and for 1/5 (circa 23) it seems closer by.

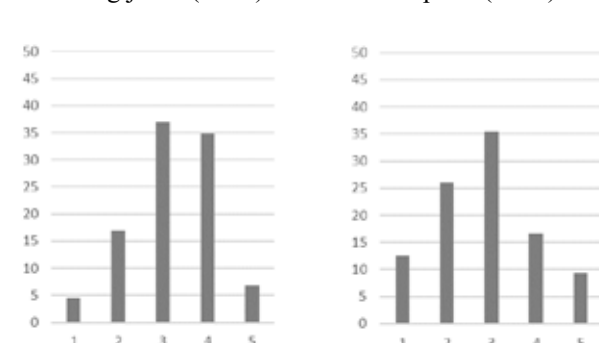
We combined these results with the perceived change in mobility behaviour (figure 4). The biggest change is reported by people who think circus school is “further away” (37%), but also around 25 % of the other respondents report change. So we can conclude that the (perceived) distance is not the only argument to change behaviour.

Perception of the locations and routes to reach the location

From a scale of one to five stars, respondents could evaluate how the circus school location performs in terms of: (1) accessibility, (2) situation to combine activities, (3) pleasantness of the road and (4) road safety. In 2017 there were also questions about the quality of infrastructure for walkers, bikers and car users. Those questions were not repeated in 2018 because the site was not yet fully furnished when the survey took place. But there was in 2018 an extra question about the interior space.

About the interior space, Douaneplein seems to score better than Klein Begijnhof: the low scores 1 or 2 are given to the Klein Begijnhof, but not to the Douaneplein. For that aspect of the move is a success. However, we are more interested in the location from spatial perspective.

Figure 5. Percentage of the respondents per given stars on safety of the route to the location. (survey 2018). Klein Begijnhof (n=89) Douaneplein (n=96)



According to the respondents, the accessibility of Doauneplein is better than the accessibility of Klein Begijnhof: the results between 2017 and 2018 do not differ much. Research of the 2017 data (Pennincx, 2018) revealed a big difference in perception of accessibility, according to the respondents’ usual means of transport. Bike users give high scores to the location Klein Begijnhof while car drivers give more low scores to Klein Begijnhof. The perception of Douaneplein differs barely.

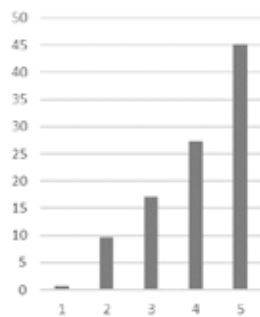
In 2018, the safety of the route to Klein Begijnhof is given less frequently 1 and 2 stars, than Douaneplein. A few more respondents give five stars to Douaneplein, but 4 and 5 stars combined, give a better result for Klein Begijnhof. So according to the survey, the routes to Klein Begijnhof have

a slightly safer name than those to Douaneplein. Pleasantness of the road gives almost the same results. Most comments in the free field next to the question about safety concern the traffic safety of cross points and the bicycle route from the city centre to Douaneplein. Some respondents comment social safety.

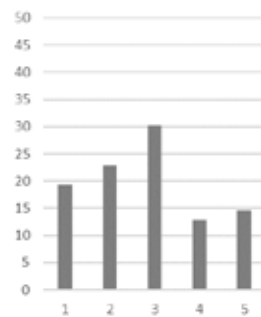
Figure 6. Percentage of the respondents per given stars on the question how well the location is situated to combine activities.

(survey 2017).

Klein Begijnhof (n=135)

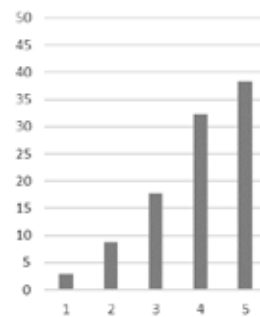


Douaneplein (n=109)

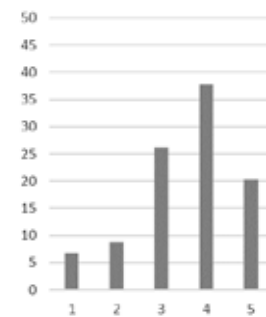


(survey 2018).

Klein Begijnhof (n=102)



Douaneplein (n=103)



Concerning the possibility to combine activities, the results for both locations differ quite a lot according to the 2017 survey. Begijnhof scores high, with a peak of 45% of the respondents giving it 5 stars. The stars for Douaneplein are more evenly distributed, with 30 % selecting 3 stars, and few people giving it 4 or 5 stars. It seems clear that the perception of Klein Begijnhof is far more positive than that of Douaneplein. However, this perception changes, according to the 2018 survey. Begijnhof is has still a positive score, but the graph is flatter. Douaneplein has somewhat grown in popularity: more respondents give now 3, 4 or 5 stars. The fact that in the survey 2017 the location Douaneplein was not yet known, had probably had an effect on the given stars in the perception research.

In conclusion of the perception part, we notice that from spatial perspective the location of Klein Begijnhof is more appreciated than the location Douaneplein. But Douaneplein is not too bad. The differences are less pronounced in the survey 2018 than in 2017, when Douaneplein was still unknown.

Conclusion of the respondents perspective

A year before the move respondents overestimated their own behavioural change. A lot of respondent thought they would use the car, but stayed with the bike. The effective change can only partly be associated with the perceived change in distance, but it is very likely that the diminished amount of walkers is due to that change in distance. The lower perception on safety of Douaneplein than of Klein Begijnhof, especially for bikers, does not seem to have an effect. The fact that the new place was not yet developed and less known can be a part of the explanation of the wrong estimate the respondents made.

Distance

One of the hypotheses is that the move resulted in a change of distance for the pupils, mostly an increase. Literature teaches us that modal split is related to distance and that increase in distance will reveal more motorised transport. In this part we focus on the difference in distance.

We described above the relation between perceived distance and change in mobility behaviour. In this part we use the calculated distance and the change.

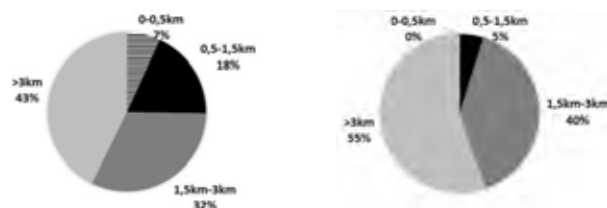
Change in distance from home to circus location for the respondents

We produced a graphic with reference values that refer to realistic distances for Flemish children of 10-12 years old to walk or bike (D'Haese Sara et al., 2011). Children of that age can walk as far as 1,5 km and bike as far as 3 km. We put in an extra reference for shorter distances (0-0,05km), because the circus school population includes also younger children.

Figure 7. Calculated distance between home and both locations of the circus school (Survey 2018, Arc GIS Network Analyst)

Klein Begijnhof (n=103)

Douaneplein (n=105)



The change in distribution of the respondents according to the distance to both locations is considerable. As expected, there is nobody living closer than 500m to Douaneplein, whereas that was 7% to Klein Begijnhof. The respondents living on walkable distance (0-1,5 km) for 10-12 years old drops down from 25 to 5%. There is an increase of 12% of respondents, who

live more than 3 km away from the circus school. According to literature, this distance is more likely to be travelled by car. But as we have seen above, the car is not used more often.

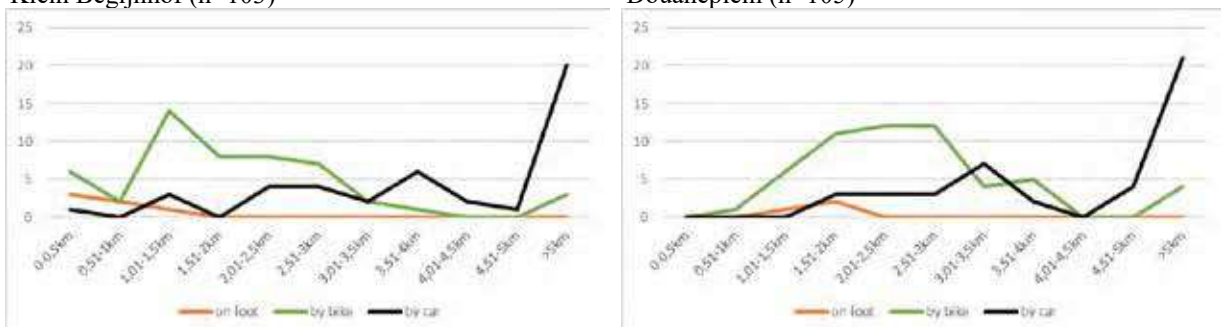
Relation between distance and means of transport choice

A more detailed categorisation of the distance, combined with the means of transport to get to the old and new location shows some interesting trends for the different means of transport.

Figure 8. Calculated distance of the trip from the location where the Circolito member was before the lesson (stop 1 / 2) and both locations of the circus school (stop 3) related to means of transport used at arrival (Survey 2018, Arc GIS Network Analyst)

Klein Begijnhof (n=103)

Douaneplein (n=105)



When we used the distance from home, we noticed that some members walked a distance that is beyond 5 km. Therefore, we used for this analysis the location where the member was before the lesson. This is more accurate, since 25% of the members do not depart from home, but from another location (hobby, school,...).

Clearly, to get to the new location, more respondents travel longer distances by bike.

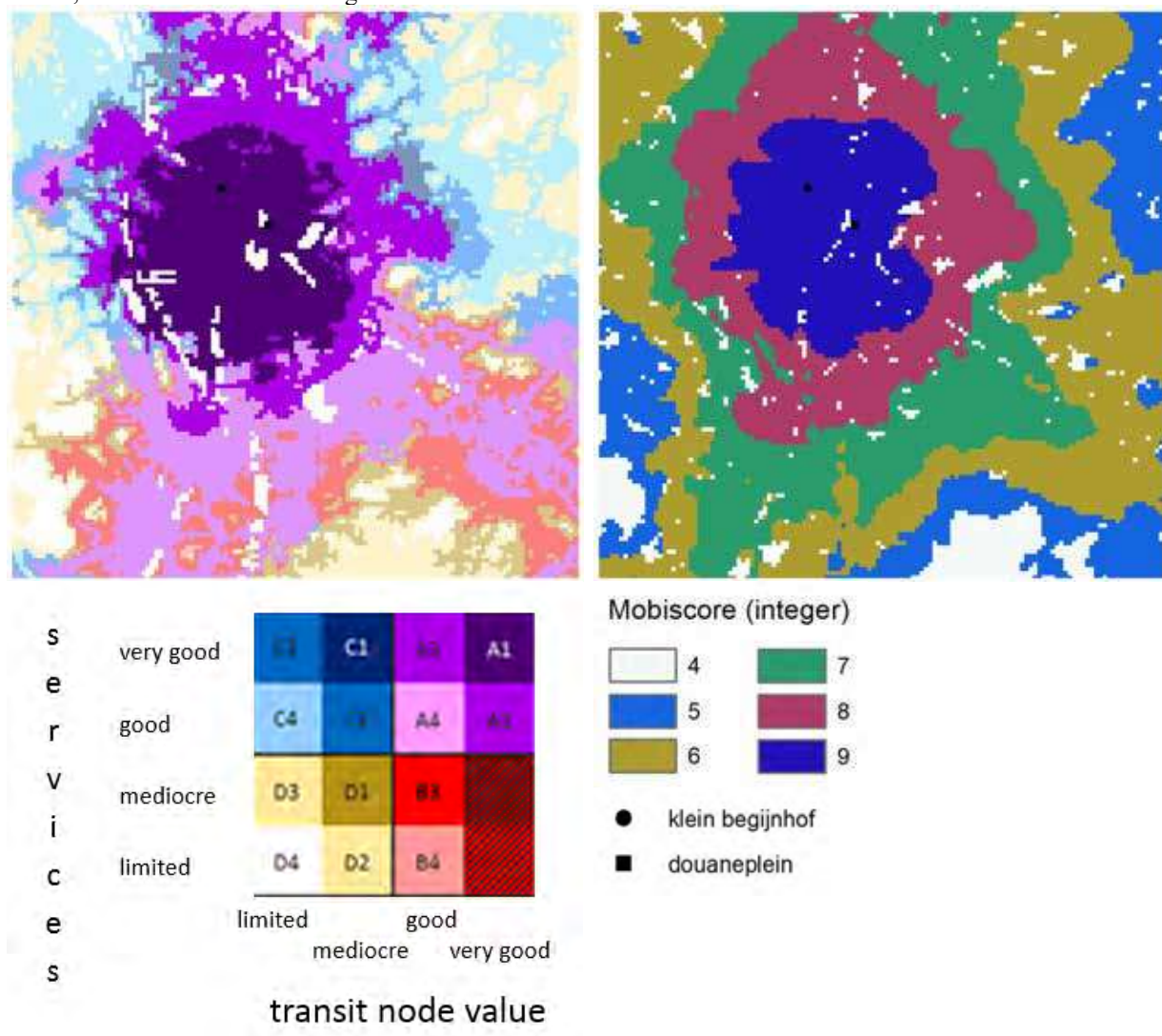
Spatial structure according to the three scores

Spatial structure of the locations

Both locations belong to the same category of ‘transit node value and services’ and have a value that stands for a very good transit node and a very good service level (A1 in the legend). For ‘mobiscore’, the site Klein Begijnhof (9,8) scores slightly higher (meaning lower environmental cost), than Douaneplein (9,7): this is because that Douaneplein is less accessible with public transport, than Klein Begijnhof. According to the walkability score, there is a wide gap between both locations: with 13,94 Klein Begijnhof belongs to the third highest category, with -0,57 Douaneplein to the lowest category but one (out of 10, figure 13).

Figure 9 Extract of the ‘spatial development potential map of Flanders and Brussels Capital Region, combining transit node value and total service level’ for the main recruitment area of Circolito circus school, Mechelen and surroundings.

Figure 10 Mobiscore mapped integer for the main recruitment area of Circolito circus school, Mechelen and surroundings.



We conclude that the locations are totally different from the perspective of walkability, but they do not differ much on ‘transit node value and service’ and ‘mobiscore’. This means that one should

expect less walkers and possibly cyclers at the Douaneplein, but the chance of public transport or car use should be more or less the same for both locations.

However, it is important to note that none of the three scores was developed with the location of a service as starting or reference point: they were developed from the perspective of a home location, and this was then seen in reference to possible services or other activities.

Spatial structure of the recruitment area

Figures 9, 10 and 13 show the spatial structure, by using maps of the three scores presented above. Both locations of the circus school are indicated.

The ‘transit node value and service level’ (figure 9) is given in a raster legend, combining different levels of services, with different levels of transit node value. On the map we notice that a central zone of Mechelen has the highest level of services and transit value possible. This zone comprises the centre, the subcentres of the agglomeration and includes some sparsely built up zones, especially in the south-east of the railway station. The further away from the centre of Mechelen, the higher the differentiation in score. In northern, southern and south-eastern direction, we notice how the railway structures space. Along the railway we also find places with a high transit node value and mediocre services. The west and the north-east have both a mediocre level of services and a mediocre level of transit node value.

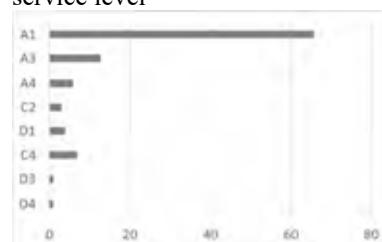
The mobiscore shows a concentric pattern on the map (figure 10). The mobiscore is 9 or higher (low cost) for the centre of Mechelen, the subcentres of the agglomeration and the city centre circle include some sparsely built up zones. The next belt of score 8 or higher comprises villages and less structured settlements and the agricultural land and nature reserves in between. Settlements further away show a lower score.

The walkability-score gives us a more diverse pattern on the map (figure 13), where almost all the categories can be seen. The highest values are situated in the centre of Mechelen and the nearby built up zones. The circular structure is less visible. The less built up spaces have very low scores. Some small sized settlements further away from Mechelen have a medium score in their centre.

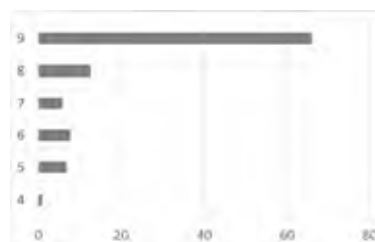
Spatial structure of the home environment and mobility behaviour

Figure 11 Percentage of the home location of Cicolito’s pro value of the score (Survey 2018)

Transit node value and total service level



Mobiscore



The results of the move of the circus school show a change, though modest, in modal split in favour of the bike. So far, there is no real explanation for this, and the three scores do not seem to provide more answers. However, the scores were developed from the perspective

of the locations of people’s homes. This implies that there should be a relation between the score of the home’s locations of the respondents and the means of transport used. Therefore, we combine the

above mentioned scores of the homes of the respondents with their chosen transport mode (figures 11 and 12).

Most of the Circolito members live in places with a high 'transit node value and service level' (A1) and a high mobiscore (9+). The biggest share of bike users, almost two out of three, lives at a location that belongs to the A1 category of 'transit node value and service level'. However, looking at the other categories of that score, the difference is modest. More than three out of four members that lives in locations with mobiscore 9+, use a bike. With lowering mobiscore, the share of car users increases.

The walkability score is more independent from the distance to Mechelen, the regional centre, in comparison with the other scores. There are not many addresses in the classes with very high and very low walkability score, but all classes in between count 13 to 18 addresses.

Figure 12. Walkability-score of home-locations combined with means of transport at arrival at Klein Begijnhof (KB) and Douaneplein (DP) (Survey 2018, Arc GIS)

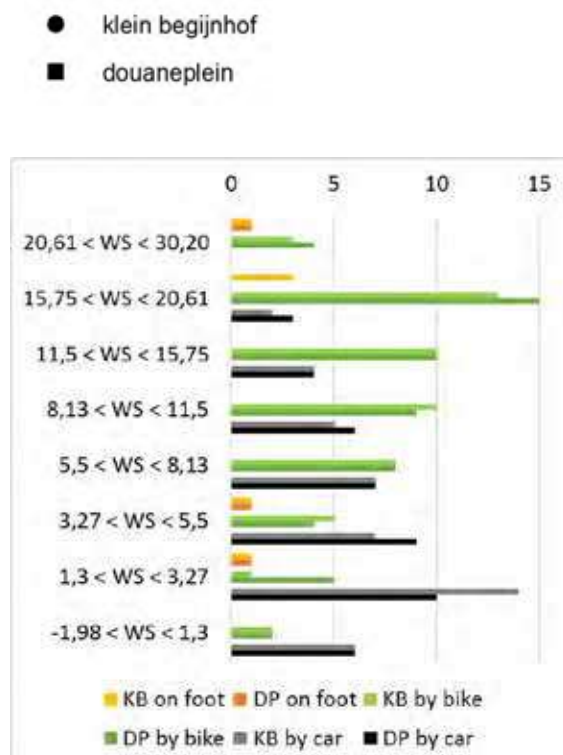
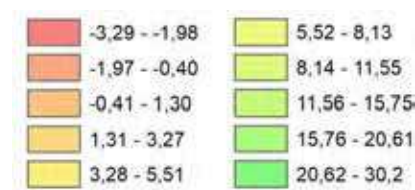
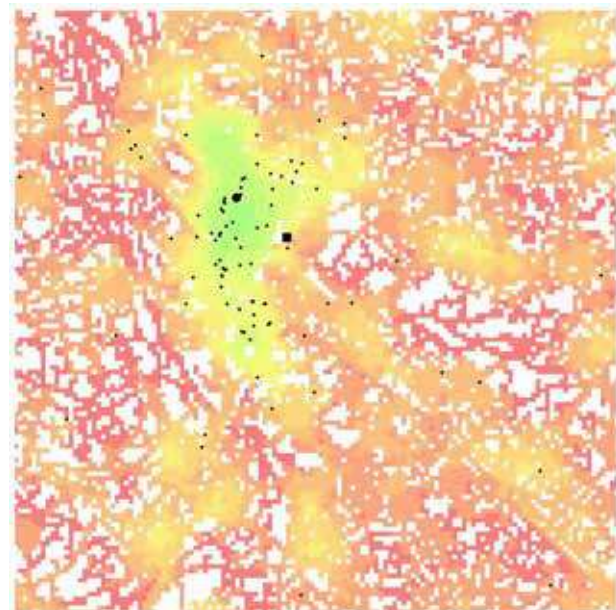


Figure 13. Map of walkability-score and of home-locations (Survey 2018, Arc GIS)



Each point stands for a home address of a member



The classification on the map and the graphic uses natural breaks (Jenks) in 10 classes (using Arc GIS).

When we combine the scores with the means of transport in figure 12 we notice that a higher walkability score gives a higher chance of bike use. The turning point is a score of 5,5 to 8,13. Lower scores reduce the chances of bike use. However, we did not research the relation between distance and the score in detail. The location of Douaneplein still convinces four people living in places with low walkability of 1,3 to 3,27 to come by bike instead of coming by car. For at least two of them the new location is closer than the old one, because they come from the south-east.

Conclusion on use of the scores to explain mobility behaviour

The three scores are developed to encourage spatial development in places that are the least dependent on car use. For the case of the circus school they are relevant.

The people living in places with high values for ‘transit node value and service level’ and ‘mobiscore’ are more likely to use another means of transport than a car. Most of them use a bike. The walkability score gives us insight in places where people are stimulated to walk and seems useful to objectivate characteristics of the location. The new location is far less walkable than the old one, so there are less pupils coming on foot. We also see indications that higher walkability scores at the living environment of the pupils relates with more bike use.

Conclusion

The spatial planning theories we used, such as the ‘walkability score’ and ‘transit node value and services’, emphasise the relation between spatial structure, infrastructural factors and mobility behaviour on the one hand and mobility behaviour on the other hand. It made us expect that the move would reveal a change in modal split in favour of the car. A lot of changes associated with less bike use are found in the data: higher distance, lower safety perception, lower functional mix and lower street connectivity. But bike use does not decrease. We notice an increase in biking distance (figure 8), that the collected data and used theories cannot explain. Although it might be interesting for Flemish spatial policy to develop and test a bikeability score and to do research on other cases, we do not think this will give us an explanation for the minor change in our circus school case.

Schwanen (2012) recognises in this mainstream research the belief in the ‘homo economicus’: individuals that actively make rational choices. However he and others researchers (Bambust, 2015) also recognise the role of less conscious aspects in the process of choices. So is habit one of them.

In our circus school case, we may find a small indication of the role of habit. Habit is typically understood as more or less automatic behaviour that is acquired through repetition and positive reinforcement (Schwanen et al., 2012). The move was not meant to change the mobility behaviour, but the expectation was it would. In reality, the move has not proven to be a habit-breaking intervention. We believe that extra case research to learn more about habits and spatial characteristics is useful, but some changes in the survey and other kinds of research, such as observation, panel discussions,... will be needed.

Currently, the Flemish administration is discussing a possible broader policy approach, especially in the discussion of habit change. A group of social marketers has been appointed to bring knowledge and know-how about this topic within the Flemish administration. A popular social marketing model in Flanders is presented by Bambust (2015). And some tests in the field of nutrition are done in order to make use of habit-breaking interventions or nudging.

Concerning this, one part of the story is not yet told. In the week before the move, the director of the circus school presented the data of the first survey in a newsletter. He praised the public for the high bicycle use and expressed hope and expectation the bike use would not decrease after the move. We cannot prove the effect of this call, but it may be another aspect in the explanation. Using a positive message and exemplifying one’s behaviour can have a positive effect on people. This kind of

interventions is exactly what social marketing tries to achieve. It is important to do such interventions and to learn more about the effects. However, there is no need to wait to use these until they have proven to be effective: we have to use all the possible and ethical means to try to lower the car use.

Acknowledgements

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Using SNAMUTS to Plan for Change: The Place for Accessibility Modelling in Strategic Planning for Urban Transitions

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Abstract: Accessibility Instruments based on big data, such as SNAMUTS (Spatial Network Analysis for Multi-Modal Urban Transport Systems), show great potential in facilitating strategic planning for mobility transitions, by providing useful and usable information on accessibility outcomes of public transport infrastructure scenarios. However, how should accessibility instruments best be used in existing strategic planning processes? This study used an experiential case study methodology to insert SNAMUTS into a real-life process of strategic planning for the Monash 'national employment and innovation cluster' in Greater Melbourne. It asked how, when and where accessibility modelling should best be introduced to improve accessibility outcomes in a long-term strategic planning process for urban transitions. The results demonstrate the significant problems with introducing accessibility data into the planning process in the context of politicised planning, weak sustainability vision and insufficient role definition between various stakeholders. In this context, the use of data and analysis in planning was limited to 'evidence-based lobbying'.

Keywords: urban governance, mobility transitions, the politics of transformation

Introduction

Unlike land use and even economic planning, transport planning is uniquely centred around infrastructure provision, requiring decision-makers to act for the greater good while making complex engineering decisions. As such, major decisions in this field typically occur at the intersection of complex technical and political processes (Stone *et al.* 2014:2). Not infrequently, transport planning is shaped by political conflict over goals towards which resources should be directed. In this process of managing technical processes against political outcomes, crucial role is played by measuring and modelling instruments, which can quantify infrastructure outcomes and translate them into non-expert language.

With advances in data collection and computing, the past decade has seen a new generation of accessibility instruments (AIs) emerge in transport planning research (Curtis *et al.* 2016). Unlike the simpler and more conventionally used 'agent-based models', accessibility indicators arise out of quantifying the interplay between land use, transport infrastructure, public transport service levels, demographics and the distribution of jobs and services. Accessibility measures not the gross supply of transport infrastructure, but its usability: it quantifies the outcomes that infrastructure has for the end-user, the citizen of the urban region. Accessibility Instruments have the potential to translate complex

correlations between land use and transport infrastructure into a single metric; at best, a simple accessibility map can be used as a basis for dialogue between transport and land-use planning authorities, as well as non-professional stakeholders (Moniruzzaman *et al.* 2017).

Historically, accessibility metrics were plagued by complexity, combining the measurements of distance, time, transport transfers, cost, and various opportunities at origins and destinations: the more complex (therefore accurate) calculations have been harder to communicate to policy-makers and stakeholders (Moniruzzaman *et al.* 2017). However, the new generation of AIs has been characterised by greater precision and technical capability, the ability to integrate 'big data' sets, with an ease of use and simplicity of output (colour-coded maps etc), as well as a holistic understanding of transport options (te Brommelstroet *et al.* 2016:1176). The visually expressed outputs (such as colour-coded maps) can communicate accessibility calculations to non-experts. For the first time, it is a viable proposition to implement accessibility modelling within the normal planning process.

The Instruments developed in recent years include TRACE (Retail Cluster Accessibility) developed at the University of Antwerp, ABICA (Activity-based indicators of connections and access needs) at Aalborg University and Technical University of Denmark, HIMMELI (Heuristic three-level Instrument combining urban Morphology, Mobility, service Environments and Locational Information) from Tampere University of Technology, and the German Guidelines for Integrated Network Design (RIN). Among the more interesting of these accessibility instruments or AIs (COST 2012) is the Australian SNAMUTS, or Spatial Network Analysis for Multimodal Transport Systems.

Broader in scope than most AIs, SNAMUTS allows not only for detailed, multi-modal public transport network analysis, but was developed specifically to fill the gap between transport and strategic use planning by incorporating measurements of activity clustering, identifying activity centres at district, regional and neighbourhood level (COST 2012; Curtis *et al.* 2016). Developed at Curtin University in Western Australia by Carey Curtis and Jan Scheurer, SNAMUTS uses publicly available public transport service data, combined with data for population, employment and road speeds, sourced from public agencies and census data (COST 2012). Starting from the perspective of the individual, it defines usable public transport nodes and segments and ranks them according to seven indicators of accessibility. The seven indicators of SNAMUTS were broadly inspired (Curtis *et al.* 2016) by the Space Syntax theory (see Hillier and Hanson 1984), and consist of:

- service intensity, or the amount of rolling stock (vehicles in simultaneous operation) required to operate the network at a SNAMUTS standard
- closeness centrality, or ease of movement to and from a transport node, in terms of speed and service frequency (an index rather than a real number)
- degree centrality, or the average minimum number of transfers from a node to get anywhere else in the network (a real number)
- nodal betweenness centrality, or the number of transport segments passing through a node weighted by catchment size and travel impediment (closeness), and shows concentrations of 'movement energy' in the network (also not a real number)
- 30-minute contour catchments, or the percentage of people and jobs accessible within 30-minute travel from the node in all directions (a real number)

- nodal connectivity, or number of services departing from the nodes and lines intersecting – i.e. whether the node is a good transfer point in the network (its TOD potential)
- network resilience, or the relationship between a node's significance in the system (betweenness) and its actual service levels (connectivity), indicating latent demand and overcrowding.

The composite map brings these indicators together into a 'semaphor' map of red, yellow and green regions, and provides a visual shortcut to understanding accessibility within the metropolitan region, which can also be used to compare cities. The simple visual representations of the seven individual indicators and the composite enable transport practitioners, but also other planners and non-experts, to easily focus on trouble spots and areas of opportunity, in group discussions (COST 2012).

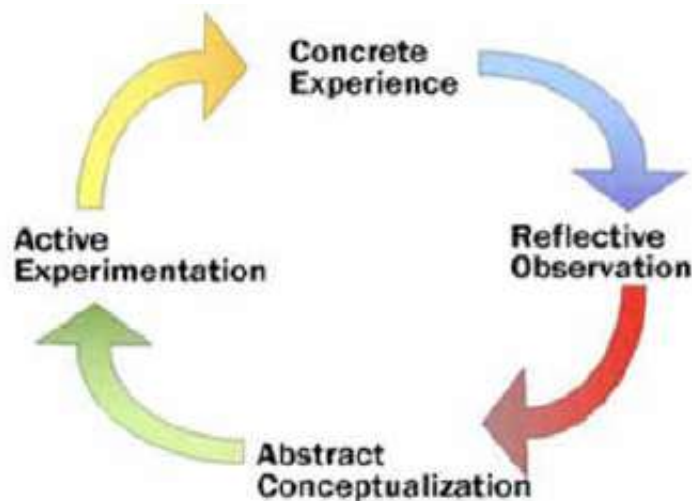
In practice, various kinds of accessibility analysis form part of pre-feasibility modelling that is part of transport corridor studies, alongside other types of modelling. However, few AIs are used with any consistency or regularity in urban planning practices and even fewer have been assessed for performance. The most important study to date has been COST 2012, a dedicated study of 22 AIs through workshops with practitioners, which confirmed that AIs are overall useful and user-friendly (see Papa *et al.* 2017, Silva *et al.* 2017). However, the uptake remains poor (te Brommelstroet *et al.* 2016, Silva *et al.* 2017, Papa *et al.* 2017). Both instrument developers (predominantly academic and professional actors) and planning practitioners (predominantly public servants) identify conflicts in department policies, lack of incentives for cooperation between agencies, and separation of land use and transport institutions, as the most salient barriers to the wider uptake of AIs (Silva *et al.* 2017). Te Brommelstroet *et al.* (2016) note that the disconnect appears to be of a practical sort: the developers develop instruments based on an abstract idea of the needs and demands of specific planning contexts, while planners hold unrealistic expectations of what technology can offer.

Analysing the workshops conducted as part of the COST 2012 study, Silva *et al.* (2017:142) note that the workshops themselves help bridge the implementation gap: post-workshop surveys indicated that 70% of the participants stated they would use the insights created by the session in their daily practice, and additional 50% would select the AI for other planning decisions. Building on such insights, te Brommelstroet *et al.* (2016) advocate greater use of practical research methods, in which AIs are inserted into realistic professional situations, noting that, while honing the technological attributes of AIs is important, refining their usability by offering them to planning practice may be more effective (2016:1178).

2 Research Approach

2.1 Methodology

The experiential case study has been proposed by a number of urban planning policy researchers in recent years – particularly in transport planning (see Straatemeier, *et al.* 2010) as particularly apt for testing approaches in a 'real world' policy setting. In an experiential case study design, the researcher does not only observe, but actively intervenes in planning practice. Backed by a theoretical understanding on how practice can be improved, the researcher develops an intervention, applies it in a real-life situation, reflects on its effectiveness and (if needed) improves both the theoretical understanding and the intervention itself.



1. The experiential learning cycle. Source: Straatemeier et al. (2010), adapted from Kolb and Fry (1975).

Departing from the existing body of knowledge on accessibility modelling, our study sought to progress the research on AIs towards greater understanding of their practical application in the context of strategic planning, by identifying the uses of SNAMUTS within an existing, ongoing strategic planning process. The research design of choice was experiential case study (see Figure 1). Previous SNAMUTS workshops had focused on generating transport infrastructure recommendations for planners. In this study, rather than focusing on the outputs that AIs provide, the aim was to observe how the planning system responds to and integrates those outputs. The scope of the research would be in identifying how the abilities of this AI to provide a metric of the reciprocal influence of land use and transport infrastructure could help push forward the process of strategic planning. The focus would be on the on-the-ground processes, rather than planning theory; and the study would seek to understand and elucidate the needs of planners within the strategic planning processes – and match them to the capabilities of the AI.

After identifying a study area that is currently undergoing a strategic land-use/transport planning process, and reviewing the planning process through a desktop review of literature and preliminary interviews with planners and stakeholders, the researchers developed accessibility models for the area using the SNAMUTS AI. The models were introduced to the study participants in the context of a structured workshop. The workshop protocol had a structure that mirrors a typical planning procedure in Victoria, designed with close reference to recent literature on experiential learning in Accessibility Instruments, particularly Straatemeier *et al.* (2010), Curtis (2011), and Silva *et al.* (2017). In order to remain as grounded in the existing planning process as possible, the workshop asked of the participants to work on real questions arising in the planning process. The first part of the workshop involved observation of this process without any input from SNAMUTS. The second part of the workshop focused on the same question, but the process was complemented by the introduction of SNAMUTS models and visualisation, to allow for comparison of two work processes. Specific activities mirrored the typical SNAMUTS workshop, as described in Curtis (2011). Carey Curtis, the leader of SNAMUTS development team, was present at the workshop: this decision was guided by the observation by Silva *et al.* (2017) that the role of the workshop leader is to ‘narrate’ the process of using the AI tool. The workshop was fully recorded and analysed using thematic analysis.

A second set of interviews after the workshop completed the data collection, with the purpose of offering planners and stakeholders the opportunity to reflect on the workshop. A critical and reflective recounting of the experience was solicited, looking for answer as to how SNAMUTS maps filled the gaps in the knowledge around the outcomes of the strategic plans, how the AI met the needs of the planners, and how the long-term planning process was affected by the introduction of the visualisations.

2.2 Case Study: Monash NEIC

Monash National Employment and Innovation Cluster (NEIC) was chosen at the case study. Located some 30km southeast of the Central Business District (CBD) of the Australian city of Melbourne, Monash NEIC is Melbourne's largest established employment cluster outside the CBD, with 58,500 jobs. It is one of the six NEICs identified in Plan Melbourne as areas with the potential to provide high job concentration in suburban areas (VPA 2017). It has a critical mass of education, health, research and commercialisation facilities, including: Monash University, the Australian Synchrotron, Monash Medical Centre, CSIRO's largest site in Victoria, Monash Business Incubator, Melbourne Centre for Nanofabrication, Monash Enterprise Centre, and the soon-to-be-completed Monash Children's Hospital. The Eastern and South-Eastern sub-regions (of which Monash NEIC is part) are expected to grow by 550,000 to 700,000 residents between 2011 and 2031. The Monash NEIC study area satisfied some key prerequisites for selection as case study for this research, these being:

- the area has been identified as a growth area of strategic interest, and is currently the subject of a strategic planning process
- SNAMUTS data for the area had been collected and analysed previously
- there was an ongoing or workable relationship between the research team and planners involved.

The area has the distinction of being something of a case study in automobile dependency, and in how transport planning involves the interfacing of technical and political decision-making. The Monash University Clayton Campus was built in 1961, in what was then city fringe (see Figure 2). A site within metropolitan Melbourne was chosen over one in regional Victoria, in order to be closer to where its 'customers' lived, in the rapidly expanding south-eastern suburbs, as well as close to the industrial belt between Oakleigh and Dandenong. The first preferred site, recommended by Melbourne Metropolitan Board of Works' chief planner, was the Caulfield Racecourse, a large expanse of underutilised Crown land located at the junction of two rail lines, close to two trams, and only 18 minutes from the city. However, protests from small, but politically influential, racing club members pushed the campus further afield, "a decision that was ultimately political rather than economic" (Davison and Murphy 2012:15). In the end, the campus was built in Clayton, in the newly industrialising farmland, where residents both made cars and owned them in higher percentage than people in other suburbs – and out of the reach of Melbourne's public transport. The worries about access to the remote location were immediate: the campus was built on the promise of a 'spur line from Huntingdale', a soon-to-be-constructed railway line that would connect Melbourne's second university to the city (Mees 2010). The railway line, however, was never built: the vague promise was "occasionally repeated and long remembered but never kept" (Davison and Murphy 2012:21). Meanwhile, Monash Clayton became an 'automobile campus': as early as 1963, less than a quarter of

the students came to Monash University Clayton Campus by public transport (Davison and Murphy 2012).



2. Monash University stood on the very eastern edge of Melbourne in 1960. Source: Davison and Murphy (2012).

The 'Rowville line', as it came to be known (Knox City Council 2018), became a mythical project of sorts. It was included among the proposals for new rail connections in the 1969 Melbourne Transportation Plan, but not pursued (Davison and Murphy 2012). It was studied again as part of the Scoresby Transport Corridor Environmental Effects Study (EES) in 1998, which led to the EastLink freeway project, but was ultimately not proceeded with. The local council, Knox City, prepared its own feasibility study in 2004 (which came out positive), and then engaged in high-level advocacy, including the formation of the Eastern Transport Coalition (Knox City Council 2018), which led to a state government-led feasibility study in 2012. That study also came out positive, but ultimately concluded that the line would be required in 2027, 15 years in the future (Carey 2018). In the interim, a boost in bus services was recommended (Carey 2018). The services have improved in recent years, with a 'smart bus' (a high-frequency bus service) added in 2006 (Mees 2010) and a dedicated university shuttle that brings the bus frequencies to Huntingdale to 4 minutes (Planner 1, research interview), but Monash University is still dependent on buses for connecting to the nearby train line.

And with 32,000 students and staff (Resident 3, research interview), the University is by far the biggest employer in the area.

However, in recent years the area has been designated of strategic importance to the state. The 2013 Plan Melbourne, the current strategic plan for Victoria, designated Monash one of six National Employment and Innovation Clusters. Once released, Plan Melbourne triggered the process of creating strategic plans for the NEICs, led by the state planning body, Victorian Planning Authority (known as the Metropolitan Planning Authority at the time). An Advisory Group was formed between state planners and representatives of the businesses in the area, and two preliminary consultant studies were produced during the four-year preparation process, both assessing the commercial activity in the area and the business needs of the commercial residents of the NEIC. Though their importance to the process of planning Monash NEIC is limited, the consultant studies were significant in identifying and articulating transport needs of the area as central to its economic development. Both confirmed that poor public transport links were a major limitation in attracting businesses to the cluster, in bringing clients and retaining qualified staff, a limitation on market reach, and a constraint on the development of the cluster as a whole (Urbis 2014:3). Additionally, lack of public transport was cited as a significant problem for overseas visitors, attracted to the area's unique science enterprises of international distinction (Urban Enterprise 2015). Public transport was consistently placed as the top priority, with all other suggestions qualified as dependent on public transport improvements (Urbis 2014). Significantly, no transport or land-use (let alone integrated) strategy scenarios were considered in the preliminary studies.

In May 2017, VPA released the Draft Framework Plan for the area; our study commenced soon after. According to the initial timeline (Figure 3), the Framework Plan was to be adopted in early 2018. Our study was designed to test transport infrastructure scenarios under consideration by the planners during the time when the Draft Framework Plan was being discussed by the stakeholders. The workshop took place in November 2017, and the final round of interviews in early 2018. As the following section will detail, the planning process ended up significantly deviating from this timeline.



3. The official planning timeline for Monash NEIC. Source: MPA (2016).

3 Findings

3.1 Transport plans to date

The Draft Framework Plan released in March 2017 did not include a transport plan – perhaps not surprising, considering that no transport infrastructure scenarios were developed or tested in the four-

year preparation process, but somewhat unexpected considering the document's own mission (VPA 2017:1) to “boost local employment by... improving transport links and public transport” and the demonstrated high business importance of improving public transport in the area. The transport component of the Plan was limited to a two-page section, with its strategic ‘outcome 3’ being to “prepare” an “integrated transport plan” to “support economic growth” (VPA 2017:7). The actions supporting this outcome were an imminent freight road extension, a walking and cycling network to be developed by local councils in short-to-medium term, and a plan to plan for “a range of high-frequency and high-capacity public transport solutions to be developed in the short to long term” (VPA 2017:12) by the newly established transport authority Transport for Victoria (TfV), with no detail, timeline, or scenarios under investigation (see Figure 4).

Figure 5 Transport Plan



4. Monash NEIC transport plan. Source: Monash National Employment and Innovation Cluster Draft Framework Plan. Source: VPA (2017:13).

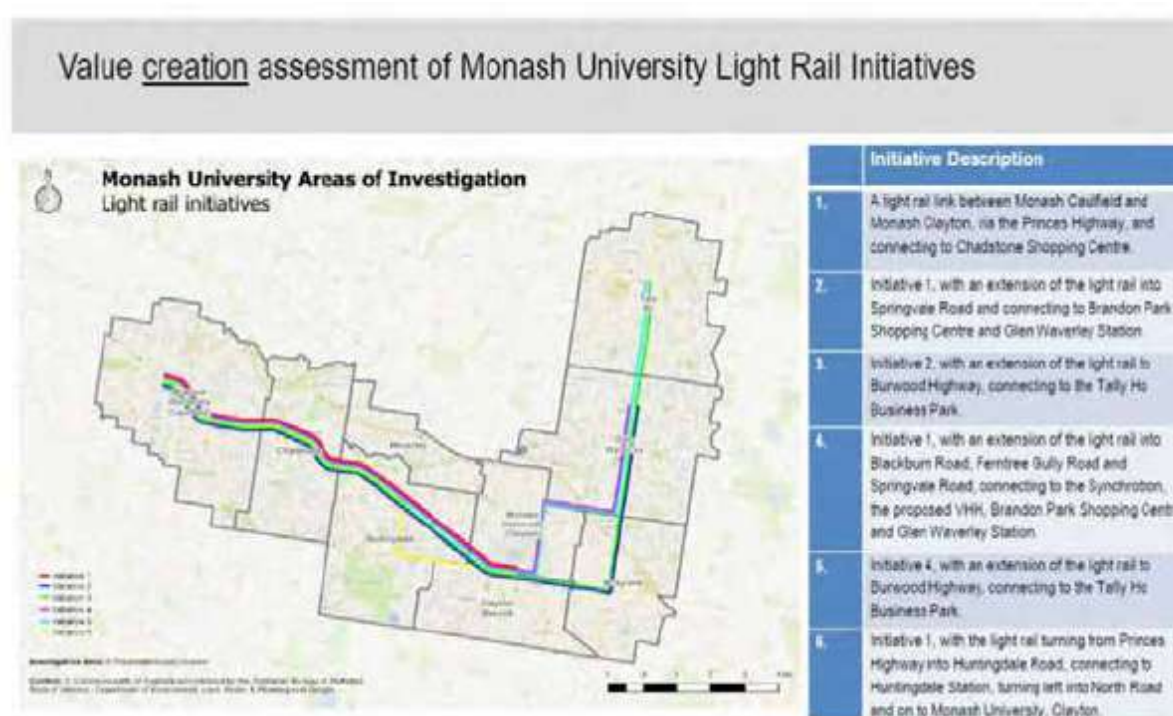
Indeed, the state government planners admitted that “the Draft Framework Plan was more of an attempt to jot on one page what all government agencies were already going” (Planner 2, research interview). In other words, the Plan collected previously approved projects in the area and showed them in relation to one another – no new strategy was generated in the preparation of the document. The interviews with state planners corroborated that there had been no confidential transport strategies either, that had been considered or assessed by state government planners. State planners from VPA and TfV both cited high staff turnover and departmental structure changes creating an uncertainty over whose responsibility it was to create a transport strategy. Local planners for Monash and Kingston City Councils were clear on what they wanted – a train line, or at the very least as much public transport as they could get – but that they could not make it happen without state government strategic support. One transport planner suggested that “a scenario suggests commitment (...) which could be interpreted as a political commitment. (...) [I]n the current political climate, public transport is very politicised and nobody wants to make claims they won't be able to deliver on” (Planner 1, research interview). This was echoed by a notable urban design consultant on Monash NEIC, who said that even the University transport submissions were kept confidential because “the State has been super nervous here about promising to do something before it's gone through a whole business case. [I]t will only say that once a business [case] is prepared, we'll commit to it – but before that, show nothing. Or show it so ambiguously that it's not clear” (Rob McGauran, research interview). The informants from the government planning agencies were reluctant to even informally suggest transport options. Additionally, multiple state planners emphasised that they perceived the current political situation (on both state and federal level) as not suitable for making long-term plans – or even suggesting scenarios. Whereas state planners perceived that they had the ability to enact land-use zoning changes, and were confident that those changes would result in a different mix of uses on the ground – this certainty was lacking in the political processes needed for commitment to infrastructure delivery.

When questioned about using accessibility modelling in public consultation, state planners showed interest in gathering community feedback on different scenarios as a form of data: it was suggested that strong support within the cluster for a detailed transportation scenario might help push it forward by building and demonstrating consensus on future direction. However, the same problem persisted, of planners not wanting to suggest what those scenarios might be. There was a strong suggestion that it would be more convenient for the professional planners if the infrastructure scenario proposal came from elsewhere.

3.2 Informal transport scenarios

Where state planners were very reluctant to suggest any transport infrastructure scenarios for Monash NEIC, the opposite was the case for the residents of the area. Transport facility managers and business strategists for Monash University and CSIRO, as well as planners from Monash, Kingston and Greater Dandenong City Councils, were eager to meet, propose and discuss possible infrastructure investments. The 'phantom' of the Rowville Line kept returning to conversations – but this time mostly as a light rail following a similar alignment, and no longer as a railway line. Representatives of CSIRO and Monash University expressed tremendous frustration at not being able to work with the

planning professionals to influence changes they saw necessary for their business expansion – such as improving walkable paths between the businesses in the area, building their own accommodation facilities, and connecting the region to the airport with fast rail.



5. Fotios Spiridonos' unofficially developed scenarios for Monash University Light Rail Initiatives. Source: Fotios Spiridonos, pers.comm.

Where state planning documents provided no transport scenarios for consideration, let alone accessibility studies, such scenarios appeared in privately commissioned studies. The most notable example was a study commissioned by Monash University's Fotios Spiridonos, the university's Manager for Campus Access and Transport, which examined value creation effects of six different public transport options linking Monash University to Huntingdale and/or Caulfield Stations with tram. The study (see Figure 5) was the closest to a fully-fledged transport scenario for Monash NEIC, in the sense that it defined both the mode and the alignment of potential new links – even though it did not detail service frequency or stop locations.

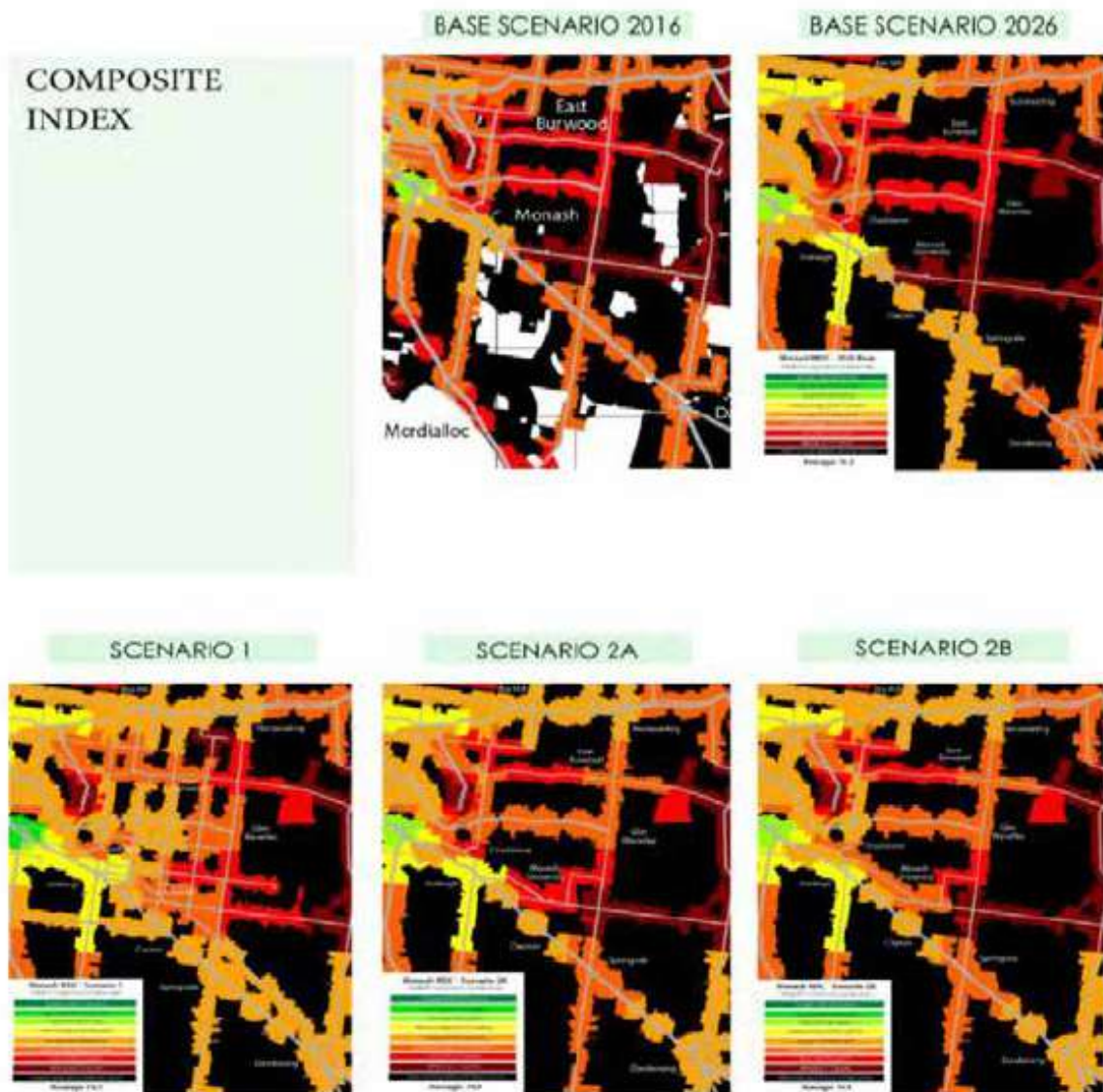
3.3 SNAMUTS modelling and workshop

The absence of transport scenarios under consideration by the state – formally and informally – the SNAMUTS models were produced for two transport proposals (known to us at the time) with the greatest level of detail: Fotios Spiridonos' Value Creation Assessment of Monash University Light Rail Initiatives, commissioned by PriceWaterhouseCoopers (unpublished and not publicly available at the time of writing, though Mr Spiridonos shared the basic details), and the transport 'composite' plan present in the Draft Framework Plan (VPA 2017) which involved “intensification and high-capacity public transport” on all major roads in the cluster.

Both plans had to be fleshed out in detail by the SNAMUTS team to model their effects. Mr Spiridonos' initiative was assessed on two scenarios with the best outcomes: Scenario 2A involved a

light-rail link between Monash Caulfield and Monash Clayton campuses, via the Princes Highway, connecting to the major Chadstone Shopping Centre, continuing via Burwood Highway and connecting to the Tally Ho Business Park (initiative 5), but extending at the northeastern end to Nunawading Station; and an alternative scenario (2B) following the same alignment east of Monash campus, also as far as Nunawading, but on terminating on the western side at Huntingdale station. Both scenarios included some modifications to the existing bus services, to avoid duplication of services. The 'transport intensification' plan in Draft Framework Plan for Monash NEIC was fleshed out in detail to include boosting the bus routes in the district to 10-minute frequencies during the weekday interpeak (and at least 30 minutes seven days a week), creating a multidirectional grid between (and to some extent beyond) the Dandenong and Glen Waverley train lines that frame the area north and south. The new bus grid included the existing SMART buses (routes 900, 902 and 903), as well as parts or all of existing routes 623, 693, 703, 733, 767 and 800.

Taking into account the realistic timeframes for infrastructure planning and constructions, both scenarios were modelled as a hypothetical situation in 2026, including demographic and job growth predictions for 2026 used by VPA, and all 'committed transport projects' likely to be completed or implemented by that date. To allow comparison, the existing state of transport at Monash NEIC was also modelled, as was the 'do-nothing scenario' for 2026, which only took into account the already committed infrastructure plans and demographic and job changes. The accessibility outcomes of those four scenarios formed the basis of the workshop.



6. SNAMUTS maps: Composite Index blends together the results of all SNAMUTS metrics to show an easily legible map of how public transport performs across the metropolitan area. It is intended to be absolute (i.e. allow international comparisons), but it remains an imprecise index due to the complexity of the underlying calculations.

The results (Figure 6) paint a stark picture of just how poorly connected Monash Clayton is – particularly stark when compared to the University's secondary campus in Caulfield, also shown on the maps. In every metric, Monash Clayton scores below the Melbourne metropolitan average:

Closeness centrality = 64 (Caulfield = 46), average 67

Transfers = 1.5 (Caulfield = 0.8), average 0.99

Betweenness centrality = 19 (Caulfield = 172), average 36.5

Nodal connectivity = 5 (Caulfield = 346), average 90

30-minute catchments = 3% (Caulfield = 18%), average 8.9%.

It is of note that accessibility results improve very little in alternative transport infrastructure scenarios (scenarios 1, 2A, 2B). Though all indices marginally improve with the additional bus or light rail services, the changes are microscopic, even compared to the accessibility index maintained by Caulfield: average transfer time to reach the rest of the network improves from 1.5 to 1.3 (scenario 1) or 1.4 (scenarios 2A and 2B), or betweenness ('movement energy', the sheer amount of PT) increases from 19 to 31-34 – compare this to Monash Caulfield existing betweenness centrality index of 172, 186-196 under future scenarios! Crucially, the 30-minute catchment of Monash Clayton, i.e. the percentage of the city's population and employment accessible within 30 minutes of travel of public transport, an index of huge importance for a university trying to attract top students, increases from a woeful 3% to just 4-7% (compare to 23-4% for Monash Caulfield in 2026, or 28-29% for RMIT University (currently 25%) and 24% for Melbourne University (currently 13%)). Only on nodal connectivity, or the potential for transit-oriented development, is there a significant improvement: the improved bus network (scenario 1) raises Clayton's TOD potential from 5 (extremely low) to a respectable 96. By contrast, improved light rail brings an improvement to 31 (scenario 2A) and 42 (scenario 2B) respectively.

In conclusion, the SNAMUTS modelling of the Monash NEIC area showed very poor accessibility metrics for Monash University Clayton Campus and the surrounding 'employment and innovation cluster'. This was not a surprise: after all, the government's own consultation documents showed that, and there had been a long history of advocacy for better public transport in the area. What did surprise, however, was how little the proposed transport infrastructure improvements – developed over many years and supposing lengthy and expensive interventions into the network – improved the status quo. While local accessibility marginally improved in all scenarios (as evidenced by the local network health in Figures 26-28 REF), absolute accessibility indicators remained on the low end of the scale in all cases.

3.4 Workshop observations and post-workshop interviews

Analysing the SNAMUTS results went beyond the scope of the study: the models were produced for the planners and stakeholders for Monash NEIC, and the role of the researchers was to elucidate the results and observe how they affect the planning process.

Three distinct themes emerged while analysing the conversations during and after the workshop:

1. *the maps allowed the participants to see metrics and understand the outcomes of infrastructure investment on accessibility outcomes, replacing some of the rhetorical arguments with more pragmatic questions;*

The Monash NEIC residents' most common observation about the planning process thus far was that the residents did not feel heard, nor that their needs were considered. There was a perception of a professional 'language barrier' in which the professionals in the cluster could articulate what they needed for their businesses to grow, but they did not know how to make a case for it – be it financial, political or administrative.

Resident 1: "It's all based on hard data, and that's important. Everybody talks about bad connection, but what does it mean?"

Planner 2: “It’s really important to carry people through these decisions as well, especially the community. A lot of people, when they’re confronted with a bunch of numbers on the page, tend to shut down, whereas this is a really clear way to see what the interventions would do.”

Resident 1: “The colours and the mapping made clear how badly connected certain parts are. It was quite shocking, actually. It gave a lot more information than I previously had. It made it very detailed.”

2. *A disinterest in discussing the details of public transport scenarios under consideration, which revealed a mismatch in roles between the planners and the residents.*

What became apparent during the workshop was that there was no-one in the role of strategic transport planner in the area. Instead of modelling the big-picture vision, planners from local councils were raising issues of individual behaviour change, and urban design at place level:

Planner 4: “Is anyone looking at urban design potential for improving the linkages and connections?”

Planner 4: “I’ll just throw this in. Employers need to think about how their people work. Employees could work from home. They could be staggered to work different hours.”

In contrast, it was the local stakeholders, representing businesses operating in the cluster, that talked about the strategic importance of the cluster, and need for infrastructure of metropolitan-wide impact. Here is a representative dialogue between the business manager at CSIRO and a transport planner at TfV:

Planner 1: “Monash University is doing a lot of master-planning. This recognised that, to achieve those outcomes, you have to do something to the road network. I guess the question is which comes first, and it has to happen simultaneously.”

Resident 4: “More of a comment: all of this looks like band-aids, because it’s still so reliant on the roads. Everything still goes in and out of the city. In European cities, you don’t need vehicles. Is any thought being given to the public transport network?”

Planner 1: “I guess it would be a long-term option. It’s often hard to justify the investment before the service has been proved. We’re thinking about prioritising buses - a 5-minute network, or a 10-minute network. High-level accessibility. And exploring that potential before we commit.”

Resident 4: “It just puts more buses on the road.”

3. *the main perceived usefulness of the data was as a tool for political lobbying with evidence-based input; there was a strong sense that the decision-makers were not present in the room – that the real strategic decisions about public transport in Monash NEIC would be made elsewhere*

In particular, when asked about the perceived benefits of accessibility modelling, representatives of businesses in the cluster expressed an interest in accessing numbers and calculations that they could use in what they perceived as a political, public opinion-dependent process of lobbying for infrastructure. The interest in comparing scenarios in detail was scarce: the respondents were not interested in gaining a nuanced understanding of how different transport and land-use scenarios

compare. What they wanted, instead, was “anything... anything you can provide us would be great” (Resident 1, research interview).

Resident 1: “It was a very insightful and a good way of presenting... that you could see what it meant in terms of bad connections, how long it would take. [...] It was a good way of presenting information that would speak to higher-level decision-makers.”

Planner 4: “It’s grounded. The methodology sounds very, very sound. It highlights the problems we have all been aware of... but puts the science behind. We may need to bring you to a new audience in order to move this forward.”

Planner 4: “If we were to put together a very influential group of people, could you do this presentation again?”

4 Post Scriptum

In April 2018, Victorian state government made a surprise announcement to build a light rail to Monash University (as well as a train link to Melbourne airport on the other side of the city), surprising commentators and transport experts alike (Currie, 2018). A financial commitment of \$3 million was made in the coming Victorian budget (June 2018 – June 2019) for designing and planning the light-rail route, which would connect two main Monash University campuses via Chadstone, as well as the Australian Synchrotron, the Monash Medical Centre and the future Victorian Heart Centre. The as-of-yet untimelined stage two would continue onto Rowville via Waverley Park. Planning work for stage one was to start immediately, and to include examining alignments, park-and-ride options, stop locations, cost and travel time benefits, and would include engagement with residents, resident businesses, and other local stakeholders (Carey 2018, Monash University 2018). (See Figure 7 for the proposed alignment). The plan showed a similarity with Fotis Spiridonos’ Value Creation plan, but had no obvious reference in Draft Framework Plan.



7. The proposed route of the new light rail link from Caulfield Station to Rowville. Source: Carey (2018).

Mere weeks later, the federal government announced it would invest \$475 million to build a (heavy) rail line to Monash, as part of the announcements in the federal budget for 2019 (Fletcher 2018). Media commentators noted that this represented a clash with the state government light rail commitment. It is important to note that neither of these announcements came with accessibility models or data on passengers – the maps supplied were mere illustrations of the proposed network.

In August 2018, some three months before the state election and five months after the surprise announcement of the light and heavy rail options for Monash Clayton, Victorian state government released a video announcement on social media announcing plans for a massive underground rail loop, that would link up all of Melbourne's radial commuter rail lines with an orbital line from Werribee Station in the outer west to Cheltenham Station in the south, stopping at both ends of Port Philip Bay at the distance of 20-30km from the CBD (Henriques-Gomes, 2018). Described as “the biggest public transport project in history” of Victoria, it would include 10 existing stations and five new ones including, crucially, one at Monash University in Clayton (see Figure 18). At 90km of new rail, \$50 billion projected costs, and the completion date of 2050, the plan sat closer to a vision than to a detailed plan. Still, speaking at a press conference a few hours later, Victorian state premier Daniel Andrews also added that the state government had already committed \$300 million to the project, that “all the geotechnical work, engineering, design and planning will be done beginning first thing next year,” that construction would commence in 2022 “if not sooner,” and that the project would be staged, with stage one involving the 25-km line between Cheltenham in the south and Box Hill in the east, the span of the rail that would pass through Monash University (Smith 2018:unpaginated). At the

time of the completion of this paper, no accessibility data of any significance has been released to accompany this announcement.

This is the context in which the post-workshop discussions took place: one of unexpected policy announcements that had taken everyone by surprise, and that were in no way envisaged in the 'ordinary' planning process for Monash NEIC in the previous years. The follow-up conversation took the opportunity to explore how those decisions were made. Three complex themes emerged in the interviews:

4.1 'Every little bit helps'

Rich descriptions of the decision-making process revealed that transport planning was a political, and not expert-led process, and that behind-the-scenes lobbying played an outsized role.

Planner 2: "From what I can gather, it wasn't so much TfV. It may have been successful lobbying of Monash Uni to the Premier, who then decided that this is the project that we're going to do. [...] My colleague Jess was speaking to [TfV] and it wasn't really on their work program either. So it was something that... it hasn't come out of the blue, but it has jumped forward a lot faster than people thought it might."

Fotios Spiridonos: "The only comment I have is that I like to be proactive, and that's why I had that value created work started in mid-2016, the report coming out in mid-2017, then trying to get it socialised, and that's good. To develop an evidence base for advocacy and I like to think that that's what it did. ... And as I said also it's an election year. what I'm trying to say, Jana, is every little bit helps."

4.2 'Happy with the outcome, don't mind the lack of process'

The second theme that emerged was, surprisingly, satisfaction: all stakeholders appeared happy with the outcome, rather than disappointed with the opaque process that led to it.

Resident 3: "It's all relatively good news."

Resident 1: "At Monash University, we don't have a position on [which proposal is better, light or heavy rail]. We welcome both proposals, as long as we get better connected. It's really important that it's not a slow tram or something, but that it's fast connectivity, that we can transport a lot of students. People come to Clayton every day. That's our point. ... So how does it fit in with what we're trying to create? Which is positive."

4.3 'Without process, we don't know where SNAMUTS would fit in'

Finally, in an echo of workshop observations, the vast majority of the interviewees struggled to identify when SNAMUTS could be used in the future, as the process going forward was both outside of their control, and fundamentally unknown.

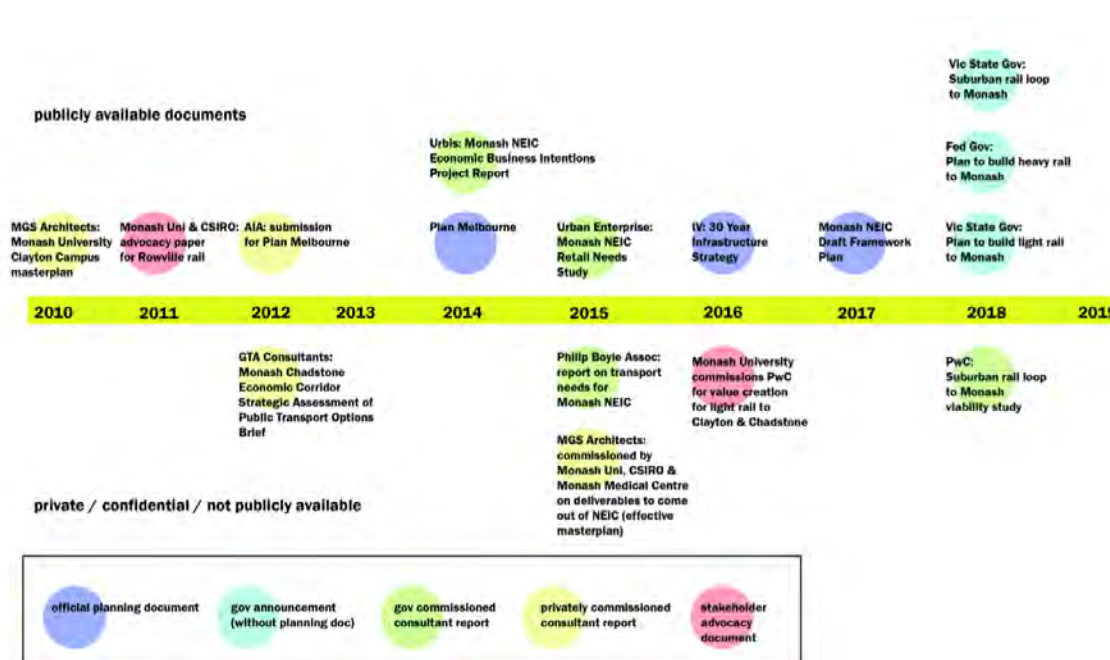
Resident 1: "I know they are doing a... feasibility study and analysis to come up with the best solution. I guess, in that context, they might benefit from SNAMUTS more. So... yeah. I don't really know how is the process going forward, how they will use the feasibility study, whether they will consider a model like that. I think it would definitely be interesting for them to see."

5 Conclusions

Accessibility is a useful indicator in any process of strategic planning. But once inserted into the planning process, accessibility – itself a complex concept – finds itself within a larger 'wicked' problem, a multi-stakeholder and multi-layered process of long-term change affected by many factors. The data is pointing to the conclusion that it would be challenging to place an Accessibility Instrument, a tool for providing an evidence base to policy, in a planning context characterised by politicisation. This in itself is not surprising; however, having put detail into an abstract situation, the study sheds some light on why this has not been able to happen – by demonstrating the limitations of the stakeholders' roles in a poorly defined process.

Rob McGauran summarised some of the problems with the integrated planning for Monash NEIC when he singled out transport planning in Victoria as a 'vexed political thing':

We have a history in this state of priorities for transport being based around swinging seats, not about transformation of a city. (Rob McGauran, research interview)



8. What actually happened: the full timeline of planning documents for Monash NEIC.

In contrast to best practice encountered in planning literature, the planning of Monash NEIC has been characterised by a highly inconsistent long-term process, with changing vision, strategic priorities, and financing. The assignment of roles has been (and remains) unclear, as even short engagement with the process has demonstrated that key decisions are made by political rather than planning players, lacking sufficient consultation even with responsible government bodies. It is notable that a number of key documents informing the planning process are confidential and not publicly available. Why confidential? The planning and financing of public transport infrastructure is certainly a matter of clear public interest. For the stakeholders from the private sector, those whose business interests, assets and professional roles are inextricably tied to the fortunes of the Monash NEIC area, the need to operate in an environment of great uncertainty and secrecy has led to frustration in some cases,

advocacy in others; as well as a tactical, ad hoc engagement with state politics, in the form of self-commissioned economic and planning reports, which are then used for lobbying – sometimes very successfully. The number of unofficial, confidential and purely secret documents in Monash NEIC almost rivals the official documents created within the process, and the extent of the problem becomes apparent (see Figure 8). Another salient characteristic of the transition process in Monash NEIC is its sheer unpredictability: the often expressed 'anything goes as long as we have a good outcome' attitude reflects a fundamental uncertainty around the likelihood of a good outcome. In other words, that government documents have marked Monash NEIC for a transition towards better connectivity does not give certainty to private actors: instead, small victories are celebrated each step of the way.

The introduction of SNAMUTS models into the planning process of Monash NEIC was welcomed by stakeholders and planners because it 'introduced clear metrics' to what appears to have, until then, been a largely impresionistic discussion of transportation outcomes. It is notable, and not entirely positive, that these metrics were immediately seen as a lobbying tool, not information to underpin nuanced decision-making. Decisions around public transport network structure, individual routes and stops, should be made in order to maximise accessibility outcomes. Only a public transport system that optimises accessibility will bring optimal economic, social and environmental benefits to the city.

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Neighborhood walks as transport, outdoor recreation and public health

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Abstract: Facilitating walks close to residential areas is an important challenge in sustainable planning. The paper illuminates how efforts to improve conditions for and stimulate neighborhood walks are organized and integrated into Norwegian municipal planning. We mainly build on case studies in 3 municipalities of different sizes. Norwegian Travel Surveys shows that about 20 per cent of all daily trips are done on foot. Nevertheless, walking regarded as either transport, outdoor recreation or public health, have little attention in Norwegian municipal planning and management. Walking as transport is nearly absent. Transport planning is still primarily concerning motorized cars and busses and railroads, and to some extent bicycles. Walking is nearly invisible in the municipalities' organization and crumbles away in the planning system. To strengthen neighborhood walks, public health should be made as an overarching perspective for the interdisciplinary organization for walks. A main network for walking should be established through land-use planning, and substantially more emphasis should be given to achieve coherence between the 'grey' pavements and walking trails in the residential areas and the 'green' trails and roads for walking in the forests outside.

Keywords: walking; public health; outdoor recreation; transport

Background and purpose

Walking is the simplest and most effective form of movement with indisputable positive impact on public health, almost any speed and length of the walk. It is well documented that short walks are the outdoor activity that is carried out to the greatest extent (Statistisk sentralbyrå, 2017). Walks are something 'everyone' deals with independently of social class. Thus, to facilitate walking in the neighborhood with the residence as a starting point is an important challenge for sustainable planning in municipalities. Such neighborhood walks may have exercise, training and public health as the main reason, but might as well be outdoor recreation and experience, or as transport for specific task. Nevertheless, neighborhood walks concern the use of different types of land, planned and adapted through the municipalities' land-use planning according to the Planning and Building Act. The purpose of the paper is to shed light on how the municipalities work to improve conditions for and stimulate neighborhood walks. We examine how the work with neighborhood walks are organized and integrated in municipal planning and discusses how the municipalities' efforts for neighborhood walks might be improved?

What are neighborhood walks?

‘Neighborhood walks’ is a complex term with many dimensions. We are looking at neighborhood walks as a kind of walking and thus of importance to public health. The immediate understanding of neighborhood walking is for most Norwegians that neighborhood walks are a kind of outdoor recreation, like walk on footpaths and hiking trails in the ‘green’ near the residence. The public definition of outdoor recreation as “stay and physical activity in the open air in leisure time with the aim of environmental change and nature experience” has been fixed since the first parliamentary report on outdoor recreation in 1987 (Meld. St. 18 (2015-2016), p. 10). Nevertheless, in recent years there have been substantial changes in the perceptions. In the parliamentary report of 1987, it is stated that “The public work on outdoor recreation has traditionally not included outdoor activities in urban areas and other areas that are dominated by buildings.” (St. meld. nr. 40 (1986-87), p. 28). This understanding is substantially expanded in the last parliamentary report about outdoor recreation, leading outdoor recreation into towns and villages: “The understanding of outdoor recreation that is the basis also includes traffic and stay in green spaces inside cities and towns, such as parks and other green structures.” (Meld. St. 18 (2015-2016), p. 10). Then, the ‘grey’ areas are included, even though this term is not being used. In practice, neighborhood walks for many must start in the grey, on the car road, pavement or walk road. The same point of departure has walks from residence to work places, schools, kindergartens, shops, etc. These walks are in principle transport, primarily as “necessary activities” (Gehl, 1971). Travel surveys shows that the percentage of trips that take place on foot has been remarkably stable since the early 1990s and until today. In Norway, this proportion of walking tours is 21-22 per cent throughout the period (Hjorthol *et al.*, 2014, Statens vegvesen, 2019). In summary, we understand neighborhood walks as walking, which includes both public health, outdoor recreation and transport. Neighborhood walks take place both on walking trails, pavements, walk roads or car roads. It is just this link between ‘grey’ and ‘green’ walking routes that characterizes neighborhood walks. Neighborhood walks concern different forms of land-use and are thus an important element in municipal land-use planning.

Management cultures and multi-level governance

Neighborhood walks are included in tasks to multiple municipal units, but no units have neighborhood walking as their main task. It is challenging to give neighborhood walking a clear and strong position in municipal planning and management, i.e. because of different management cultures in a multi-level governance system.

Tasks within clearly defined areas of responsibility and competence, sectors, usually with their own laws and regulations, and incorporating bureaucratic and professional practices, will be more successful than tasks, which are cross-sectoral and give complex co-operation and co-ordination challenges. When performing various tasks in organizations, there is a need for argumentation and documentation of positions with reference to knowledge. Different ‘management cultures’ legitimizing which tasks are more important than others and how the tasks are to be solved, are developed. It provides routines for how problems are defined and solved and for handling tasks that are imposed by others (Kleven, Thorén and Skogheim, 2005). The institutional exercise of power through norms and existing schemes that legitimize positions and power is often not visible. The exercise of power is obscured and appears to be marvelous. Through historical processes and struggles, frames are created that govern what is taken for granted and not, and gives symbolic power in specific decisions, such as prioritization of various activities and types of facilities (Bergsgard, 2017). Just as important as the formal structures that provide the framework for actions, is how these structures are perceived by the peoples who are to perform

actions within the formal structures. Actions do not necessarily follow strictly the formal structures (Bukve, 2012).

Many of the tasks that are important for neighborhood walks are to a large extent governed by decisions in the management hierarchy over the municipality, at the county and national level. Here, there can be large variations in both horizontal and vertical links between management levels and sectors (Eckerberg and Joas, 2004; Bukve, 2012; Reitan, Saglie and Smith, 2012). The gaming fund for sport facilities is an example of such multi-level management. This is state funds covering up to 1/3 of the cost of facilities for sports and physical activity, including outdoor recreation facilities like walking trails, distributed by the county municipalities after applications from the municipalities. The remainder of the costs must be borne by the local authorities and sports clubs etc.

Methods and data bases

Cases

We build on case studies in 3 Norwegian municipalities. The cases are selected from an information-oriented approach with great variation between the cases, “maximum variation” (Flybjerg, 2006). The cases are not compared, but they represent examples of various Norwegian municipality types, primarily elected by population and geographic distribution. Trondheim in Trøndelag county is an example of a large Norwegian municipality (193 500 inhabitants). Moss in Østfold county represents a medium-sized city municipality (32 500 inhabitants), while Ringebru in Oppland county is an example of a small and rural municipality (4 500 inhabitants).

Data sources

The data basis is primarily municipal planning documents and interviews in the municipalities, as well as information about the municipalities accessible on the municipalities' websites. We have gone through the relevant planning documents which varies between the municipalities. This data collection goes until today, but the interviews were primarily conducted in spring 2014 (with some additions in spring 2016 and fall 2018). The interviews were conducted as single interviews in the municipalities following a semi-structured interview guide, carried out by all three researchers jointly. In each municipality we interviewed politicians (mayor/deputy mayor), administratively responsible for important neighborhood walks tasks and representatives of NGOs. A total of 20 interviews were conducted. In four of the interviews, two people participated, so that a total of 24 people are interviewed. Each interview lasted about an hour and a half.

Neighborhood walks in the case municipalities

Content

Here follows a description of how the work on neighborhood walks is organized in the municipalities and how it is integrated into planning in the case municipalities. Within each theme, we also include how neighborhood walks are handled at national and regional level. This provides important guidelines for the municipal level in our hierarchically organized management system. We do not go into detail and look primarily at the administrative organization and how the practical work on planning for neighborhood walks goes on.

Neighborhood walks as outdoor recreation

Responsibility for neighborhood walks as outdoor recreation is at national level divided between The Ministry of Climate and Environment and the Norwegian Environment Agency, the Ministry of Culture, and the Ministry of Health and Care Services and the Norwegian Directorate of Health. At the regional level, it is first and foremost the county municipality that has important tasks related to neighborhood walks. The county municipalities manage a range of grant programs for outdoor recreation and has regional responsibility for on behalf of the Ministry of Culture to distribute the gaming fund for sport facilities. Thus, the gaming fund closely links neighborhood walks to sports in the management context.

In Trondheim municipality, neighborhood walks are most visible as outdoor recreation and walking roads and trails. The responsibility is divided between departments for Culture and industry, unit for Sport and outdoor recreation, and Urban development, units for Municipal engineering, Urban operation and Urban planning. The last edition of the mandatory municipal plan for sports and physical activity (MSP) in Trondheim is divided into two parts, one for sport and physical activity and one for outdoor activities and green areas. Attention is still mainly directed towards the green areas and environmentally friendly transport possibilities to the green areas (p. 19). The plan has become a kind of continuation of the work on green infrastructure plans, but now rooted in the unit for Sport and outdoor recreation and not in the unit for Urban planning.

In Moss, unit for sports and outdoor recreation administratively sorts under Culture. Outdoor recreation is also included in the responsibility of department for Plan, environment and technical issues when it comes to parks, hiking trails, coastal paths etc. A survey in Moss shows that people in leisure time walk about as much on streets and roads as in the green areas, even though almost 90 per cent say they would prefer to walk in green areas (Thorén *et al.*, 2015). Neighborhood walks is no central theme, e.g. in the municipally approved plan for sports and physical activity. The plan comments the outdoor recreations' challenge to be heard in the debate about prioritizing sports facilities and facilities for physical activity. Most outdoor recreation users are disorganized and are 'quiet' users of what remains of public areas. Therefore, it is important that the municipality secures areas through good land-use planning (p. 32). The organized sport has plans and funds and thus sets the agenda. Moreover, the gaming fund for sports facilities is perceived as an expensive arrangement for the municipality (interview MSP responsible, March 25, 2014).

Ringebu had shared MSP plans with two neighbor municipalities to consider regional cooperation for major sports facilities. The Cultural unit has been responsible for this planning work in Ringebu. Neighborhood walks is not a priority in MSP work, because much might be achieved by cooperation with the sports, hiking and fitness clubs and other volunteers to arrange walks and clean and maintain paths (interview MSP responsible, April 2, 2014). The MSP plan states that: "It is important to motivate more to become physically active in everyday life and leisure time. Walking or cycling to work, school and leisure activities ... » (p. 74). Neighborhood walks are priority as activity, but not as a facility. In the rural municipality Ringebu, walking routes and destination is something that mostly exists in the mountains. But there have been some changes in recent years. The municipality has marked three (existing) walking trails close to Ringebu center. The ambition is to get more people out in their own local environment (see Figure 1).



Figure 1. Ringebru center with three marked routes. Map completed in the summer of 2018. Source: Ringebru municipality, 2018.

Neighborhood walks as transport

Neighborhood walks are one important part of transport, both the necessary transport for specific issues and the recreational based. Nevertheless, neighborhood walks are rarely mentioned in connection with transport, for which the Ministry of Transport and the Norwegian Public Roads Administration (NPRA) have the national responsibility. In 2012, the NPRA presented a *National Walking Strategy. Strategy to promote walking as a form of transport and everyday activity* (Statens vegvesen, 2012). The strategy was a part of the work on the National Transport Plan 2014-2023 (St. meld. nr. 26 (2012-2013)) but was nevertheless not mentioned in the subsequent National Transport Plan 2018-2029 (Meld. St. 33 (2016- 17)).

In the municipalities, the responsibility for transport is mainly related to the responsibility for land use, in Trondheim divided between the Urban planning and the Environmental unit. Much of the work is done by the Environmental Package for Transport in Trondheim and an urban environment agreement between the State, the county municipality and Trondheim municipality. The most important sources of funding are tolls and state funds, but also the county municipality and the municipality contribute. The proportion of funding for walking roads is negligible, just about 1 per cent for the 2010-2020 period (Environmental package for transport in Trondheim. Action program 2017-20, p. 7). The Transport plan 2006-2015 summarizes goals, status and measures for different focus areas. None of the new measures relates to pedestrians and walking. The Walking strategy for Trondheim 2016 has “Easy to walk all

year round” as its main object. The city council has adopted the walking strategy, but nevertheless walking and neighborhood walks are not considered as an important part of the transport system, at least not in the fight for funds for new facilities.

In Moss, transport sorts under department for Plan, environment and technical issues. The municipal Master plan contains a number of sub-objectives and strategies where particularly bicycling and also walking are important themes. Action plan for transport 2014 –2020 shows that Moss municipality has ambitions when it comes to walking as transport, including a walking strategy. Since Moss is a small municipality in terms of area, the plan emphasizes that it should be possible for many to walk to and from work or leisure activities. A large part of the inhabitants of Moss live within 2 km of the city center, and most of them live within 3 km from the center, see figure 2.



Figure 2. Map of Moss showing the distance from the city center in a radius of 2 km and 4 km. Source: Moss municipality. Action plan for transport 2014 - 2020, p. 6.

The land-use part of the municipal plan (2018-2030) has recently been approved. The chapter about transportation and infrastructure says that it must “... be facilitated and ensured easy access to good and safe alternatives in terms of walking and cycle paths, pavements, walking crossings and paths in the forests, so that more people can change from car to walk or bike transport” (p. 74).

Neighborhood walks as public health

Neighborhood walks as public health is linked to outdoor recreation and physical activity (Nordh *et al.*, 2017). The Public Health Act (PHA) (2012) attributes both local and regional authorities a notable responsibility for health promotion in the municipalities. The municipality shall have an overview of the state of health in the municipalities and overriding goals and strategies for public health work shall be determined through the work on municipal plans (PHA, sections 5, 6). Public health is one of the specified tasks and considerations for planning according to the Planning and Building Act. Plans should "promote the health of the population" (PBA, section 3-1). Possibilities for walks is of great importance to physical activity (Breivik and Rafoss, 2017) and is an important arena for the general public health work (Bergem *et al.*, 2010; 2018).

In the municipal planning strategy for Trondheim municipality 2016-2019 public health, "health in everything we do" (p. 8) and social security are referred to as two main tasks that are to be assessed in all plans, without drawing up separate plans for these tasks. The responsibility for public health is divided between several departments and units. There is an interdisciplinary group for public health, but no separate position as a public health coordinator. Public health concerns all agencies, but how should public health gain in the battle for attention and resources, if no one has a special responsibility? Many in Trondheim municipality point out that the public health group does not have any real tasks. The ambition of public health in "everything we do" is not being taken properly into account (interviews Trondheim municipality, April, 2014).

Neighborhood walks as public health is in Moss assigned to department of Health and care and social services. One of four priority goals in Moss Municipal Plan 2011-2022 is "Living Conditions and Public Health". The report on Public Health and Living Conditions in Moss. Overview document 2018 includes outdoor recreation and it is emphasized that preserving and creating green neighborhoods is an important public health measure. Local walking routes are particularly important according to the report because this is cheap 'sports facilities' and have "the greatest potential for activating an inactive population" (p. 58). The report states that if the neighborhood walks should be attractive "paths and walking routes must be cleared, marked and maintained" (p.71).

In Ringebu, the public health responsibility most of all belongs to the department of Health and care, but what we call 'neighborhood walks responsibility' is to a large extent included also in departments of Culture and industry and Planning and technical issues. Collaboration with the voluntary sector is strong, especially with the hiking and trim club. This close and far informal collaboration is emphasized in the interviews (April, 2014). In the social part of municipal master plan (2014-2026), Ringebu refers itself as a 'public health municipality', and that one will "facilitate for varied opportunities for neighborhood walks out of the urban areas" (p. 6). The importance of "good physical environmental conditions", which "actively contribute to forward-looking road network, walking paths/bicycle trail." In the plan Health and care on the way to 2028 there is nevertheless little concrete about measures in the outdoor environment and the focus on neighborhood walks, even if 'health and prevention' is one of the central focus areas.

Neighborhood walks as land-use

Neighborhood walks as land use is under the responsibility of the Ministry of Local Government and Modernization, the Planning Department, on national level, and the county municipalities have the main

regional responsibility. Planning according to the Planning and Building Act (PBA) is the most important tool in land use planning. There is only one land-use objective in the PBA which relates especially to neighborhood walks. We find this under the main objective green structure which can be divided into four sub-objectives, i.e. green corridors. Under the main objective of transport and communications installations and technical infrastructure, we find as expected main bicycle networks, but surprisingly, no main walking networks (sections 11-7 and 12-5).

In Trondheim municipality, responsibility for land use is divided between several units. The Urban planning office is responsible for planning according to the PBA, the Municipal technique unit is responsible for parks and green structure, the Environmental unit has general environmental responsibility and Trondheim urban operations is responsible for operation and maintenance. The social element of the municipal masterplan 2009-2020 for Trondheim defines four main goals, one of them is: “ By 2020, Trondheim is a sustainable city, where it is easy to live environmentally friendly ”, with a sub-goal that Trondheim must: “have a physical urban design which promote quality of life and health” and strategies including i.e. to ensure “easy access to parks and recreation areas” and to develop “good walking, bicycle and hiking trails”. In the context of environmentally friendly transport, neighborhood walks are mentioned, but primarily as walking trails, green structure, outdoor recreation and public health, and to a little extent as transport.

In the land-use element of the municipal master plan 2012-2024 for Trondheim, public health and increased everyday activity and coherent green structure and road network are addressed under Status and challenges. One of the principles for urban development is high density in the local centers and along public transport routes and facilitating walking and cycling on daily travels. Continuous bicycle mains are included in the chapter on transport, but walking is not mentioned. Many employees at the Urban planning office find it strange that sports and outdoor recreation is not under their responsibility, but belongs to Culture and industry. Therefore, the plans for sports and outdoor recreation to certain extent “live their own lives” so that the land-use needs and impacts are not properly included into the work of the land-use part of the municipal master plan (interview, urban planning office, 30. April 2014).

Green structures have been an important issue in municipal land-use planning in Trondheim ever since the 1960s. Nevertheless, detailed research shows that there are great challenges to plan, design and maintain continuous walking trails through built-up areas. An example is the hiking track/walking trail between Nidelva in the city center and the entrance to Estenstadmarka, see figure 3.



Figure 3. Walking route from Nidelva to Estenstadmarka, Trondheim. Source: Amland 2015, p. 74.

The route has been plotted in municipal land-use plans ever since 1965. A review in 2015 shows that this walking route is now composed of 29 different zoning plans, adopted at different times between 1955 and 2011 (Amland, 2015). In many of these zoning plans, priority have not been given to the walking route in land-use allocation. The walking route is in many places considerably reduced in width and usually adapted to the car roads at crossings. There is a lack of following-up and coordination of implementation and operation.

In Moss, the theme land-use planning belongs to department for Plan, environment and technical issues. The starting point for the approach to land planning in the Moss region is the county plan (from 2008) where public health is a prioritized theme. Sub-goals and strategies of importance to neighborhood walking are included in all four priority areas of focus in the plan. Briefly summarized, physical activity and low threshold services, universal design, establishment of walking and bicycle trails with accessibility throughout the year are included, facilitating the use of environmentally friendly transport through the strengthening of public transport and the establishment of walking/bicycle trails

The new land-use element of the municipal master plan for Ringebru, 2018-2030, states in the chapter about green structure that these “shall address the need to define the main structures of natural areas in and beside urban areas and green areas along watercourses” (p. 76). One of the newly marked routes (tour 2 in Ringebru center) is connected to waterways through the center areas. The tours are not newly established, but made visible through marking and a new hiking map (figure 1). The municipality wants

a densified center in Ringebu where service functions and living areas must be coordinated closely and avoid retail trade outside the center (interview municipal planner, April 2, 2014).

Organization and planning for neighborhood walks

Neighborhood walks is not visible in the municipal organization

Neighborhood walks as an interdisciplinary subject is of course dispersed in the municipal organization. Neighborhood walks as outdoor recreation follow in all three municipalities national guidelines that link outdoor recreation partly to nature experience and partly to physical activity both in sports and culture and in health. The outdoor recreations' management culture is still heavily oriented towards the green areas and primarily forests outside the built-up areas and to walking paths and hiking trails. The close link to the sports through the municipal plans for sports and physical activity and the sports great need for facilities, both for recreational sports and for top-level sports, gives little opportunity for neighborhood walks in the struggle for funds for the preparation of new walking trails that require construction work and costs (Thorén *et al.*, 2016). This is also connected to understandings about the simple outdoor recreation based on footpaths without major interventions or adjustments and hence without substantial establishment costs. The large facilities are not needed for neighborhood walks. National resorts, however, such as Granåsen in Trondheim, which will also be used for international championships, "have their standard requirements that must be followed, even though they may seem unreasonable, cannot pay attention to pettiness" (interview politician, 30. April 2014). The sports are linked to strong market participants who contribute both financially and with argumentation and legitimization of large construction investments that also affect the management culture and what is significant and necessary.

Almost all sports require large construction investments, and many sports, such as football and skiing, have so much support that it is almost taken for granted that temporal sports facilities are needed and that the costs must be covered, both by public and private funds and by considerable voluntary efforts. Outdoor recreation with its tradition of simple preparation, small government support and a high degree of voluntary work, has basically little to set up in competition with the sports. In the struggle for the funds that go to facilities for sports and physical activity, the outdoor recreation is part of the sports concept and thus virtually doomed to lose in the fight for facilities that are to receive gaming funds. On the other hand, it is a tradition in carrying out minor improvements and simple measures on walking routes and trails, both as separate municipal actions, coordinated with the activity of technical departments, often in association with voluntary organizations.

Neighborhood walks as transport is strongly characterized by professional traditions and management cultures, from national to local level. It is roads and railways that dominate, both economically, politically and academically. The road engineers and the economists have the professional hegemony. At the national level, the national walking strategy from 2012 is completely forgotten, at least not mentioned, in the latest national transport plan (Meld. St. 33 (2016-2017)). Still, it is the walking and bicycling trails that have to adapt to the car road network and not the other way around. This makes it often difficult to construct the shortest paths for walking and bicycling. There are changes going on, but it is particular in planning and development of bicycle trails that have had a greater impact, while the focus on walking is more absent. Within transport, major changes must be made to ensure that walking and neighborhood walks are recognized as an important mode of transport.

Neighborhood walking as public health is closely linked to walking as physical activity and has high priority in the municipalities. All municipalities have more or less organized arrangements for this. Public health is naturally linked to health and the municipalities' activity for preventive and treating work, which traditionally has no strong organizational links either to culture and sports or technical agencies. The management culture, both nationally and locally, is characterized by health and physical activity, and less connections to land-use planning and physical facilities. It presents challenges in finding well-functioning ways to organize the large and varied subject matter of public health. A public health coordinator is needed, but not enough, to be able to handle this comprehensive field of action. The municipalities lack arenas that combine the physical activity of walking and public health with walking as outdoor activities and especially with walking as transport.

Neighborhood walks as land use and land use planning are in all three municipalities relating to technical sector and responsibility for land planning and follow mostly established management cultures across the public administration levels. A main walking network is not even a land-use objective in the PBA. On the other hand, we see that practically oriented and committed employees in the municipalities' technical sector get a lot out of small funds for walking trail etc. by seeing measures in context and utilizing the opportunities for coordination of construction activities. Such measures can be decided and implemented quickly, without extensive search processes (interview, municipal employee Moss, March 25, 2014), and often in close cooperation with the voluntary sector (interviews with representatives of both the Culture department and the Trim club, Ringeby, April, 2014). Walking paths and hiking trails are important elements of the green infrastructure, but when the responsibility for the green structure, which in Trondheim, is added to the Unit for sports and outdoor recreation, it may mean weaker links to planning and municipal land-use plans.

Neighborhood walks crumbles away in the planning system

Neighborhood walks in planning context we find first and foremost in the municipal master plan, both in the social element and the land-use element, and in the plan for sport and physical activity. Moreover, we also find neighborhood walks in green structure plans, public health plans, transport plans and walking strategies. In all the three case municipalities, the social element of the municipal master plan have considerable attention around neighborhood walks. A nationwide survey that shows that almost 80 per cent of the planning managers in the municipalities think that the municipal master plan's social element, and just over 70 per cent that the municipal master plan's land-use element, contains guidelines for neighborhood walks measures (Thorén *et al.*, 2018, p.36-37).

In the land-use element, neighborhood walks are mainly dealt with in the context of outdoor recreation and continues green structure, walking trails and to a little extent as transport and road network. The transport plan for Trondheim, 2006- 2015, and the national transport plans, mentions barely walking. Although the Norwegian Public Roads Administration for several years has had an effort for walking strategies, this appears to be a work on the side of the ordinary and traditional work for the development and maintenance of the car road network. The municipal walking strategies have not yet led to major changes. Preliminary results from a recent national travel survey in 2018 shows a reduction in car trips and a transition to public transport and bicycle, while the proportion of walks is stable at 20 per cent. The outdoor recreation interests are concerned with the green and work for the shortest possible distance between the residences and green areas and continuous walking trails, preferably no more than 500 meters. The pavements/walk roads which in most cases are used to travel these 500 meters, are given

less attention. There is a little attention to the important connection between the grey traffic routes for walking in built-up areas and the green walking trails and the forested areas outside.

The municipal plans for sports and physical activity are the type of plans that, according to the planning managers in Norwegian municipalities, is mostly concerned with neighborhood walks measures, as much as 80 per cent consider this (Thorén, *et al.*, 2018, p.36). Yet we see from the case municipalities that when the funds are to be distributed, it is only a few percentages that go to neighborhood walks. It is the sport and sports facilities and associated physical activity that dominates. The gaming funds are perceived as complicated to obtain, with time-consuming application processes that may seem unnecessarily extensive and complicated for many walking roads and trails that are often simple and small facilities. Besides, the gaming funds requires considerable deductibles. Plans and studies for public health contain a lot about physical activity, outdoor recreation and neighborhood walks, but there are often missing connections to the physical facilities which is an important prerequisite for activity. The general impression is that we find considerable attention around neighborhood walks in plans and reports at the overall level, such as the social element of the municipal masterplans, but this attention gradually disappears on the way towards concretization and implementation.

Improvements for neighborhood walks?

Neighborhood walks are included in many themes, but nevertheless seldom is winning the battle for resources. Neighborhood walks is a typical interdisciplinary area and is therefore particularly tied to the two most interdisciplinary topics we have addressed in connection with neighborhood walks, public health and land-use planning. The main rationale for neighborhood walks we believe is in the public health, and the most important instrument we find in land-use planning. It gives the perspective of our discussion of possible improvements.

The outdoor recreation has a management culture that is still strongly linked to the green areas. The green areas are of course important to neighborhood walks, both as nature experience and physical activity. Nevertheless, the design of the grey areas closest to the residential areas are often the most important precondition, or barrier, for neighborhood walks (Thorén, *et al.*, 2015). Outdoor recreation will need to give more attention to this important relationship and work more for outdoor recreation on grey areas and the relationship between the grey and the green transport routes.

Transport is mostly concentrated on car roads and footpaths and bicycle trails in connection to the car network, with a management culture dominated by car road engineers. So far, the walking strategies have changed this picture. Public health is an interdisciplinary focus and responsibility area in the municipalities, also related to neighborhood walks, but first and foremost as physical activity. The connection to neighborhood walks as physical constructions is weak organizational (Tilset, Gjørund and Heggem, 2015). Neighborhood walks and public health have attention in the planning departments, but crumble when it comes to concrete plans and implementation. It is areas for development purposes and large transport facilities that receive the greatest attention and neighborhood walks only come as supplementary supplements. Neighborhood walks are primarily seen as walking trails in the green structure. There are great opportunities for improvement by increasing the effort for physical activity and the physical facilities that are a prerequisite for activity. Public health is an excellent argument for neighborhood walks.

Neighborhood walks are spread in the municipality organization. As important as the organizational chart and the units, is the cooperation between different parts of the organization. If the cooperation works, the formal organization has less importance. Nevertheless, there are some overriding principles for organizing neighborhood walks that in our project point out. Firstly, the interdisciplinary organization of public health must be strengthened. Public health must to a greater extent be able to combine efforts for physical activity and physical facilities in planning and implementation. This means both establishing a common organizational arena for all relevant areas of responsibility and that this arena must be centrally located in the organization. The second is to strengthen neighborhood walks as a purpose for planning, especially land-use planning. This means, to a greater extent than in most municipalities today, gathering organizational responsibility for neighborhood walks and land-use to the planning responsible in administration and politics. The hierarchical structure of planning under the Planning and Building Act is so strong that the responsibility for all major land-use objectives, also linked to neighborhood walks, should be here.

All land-use planning concerning neighborhood walks should be collected in the unit in charge of planning and directly attached to the work with the municipal master plan follow-up be zoning plans. This means making walking roads and trails and green structure to a very clear planning responsibility. It also includes ensuring much clearer coupling is between walking trails walking roads and pavements, so that we get a continuous main network for walking comprising both grey and green walking routes. A concrete proposal is to change the Planning and Building Act so that the land-use objectives in both the land-use element of the municipal master plan and in the zoning plans so that main walking networks is included in the same way as main bicycle networks.

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Steering disruption: a backcasting approach to govern the spatial impacts of the diffusion of automated vehicles in Turin

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Abstract: The diffusion of autonomous vehicles (AVs) is expected to increase rapidly in the next decades and its impacts can be potentially disruptive. To date, scientific literature on AVs mostly focused on technological innovation, safety issues, ethical dilemmas and normative aspects. A growing number of studies also addressed social aspects and potential demand for AVs. While at first less attention has been given to spatial and territorial impacts that AVs will determine, and on the need to govern their diffusion, concerns and literature on these issues are rapidly growing. Assuming the governance of AVs diffusion as a key aspect to limit their possible negative impacts on urban public space, this paper draws on the preliminary results of a research project led by Politecnico di Torino. The project adopts a backcasting approach that considers how circulation and parking of AVs should be differently regulated in various parts of the city. The paper highlights how defining future visions of AV regulation for these backcasting exercises raises issues and questions, that are relevant for implementing policies to control AV impacts on urban public spaces.

Keywords: autonomous vehicles; visioning; backcasting

Introduction

Despite the enthusiasm of media and manufacturers, there is great incertitude about the temporal horizon of the socio-technical transition to fully automated driving. Also the impacts that autonomous vehicles (AVs) will generate on our cities and lives are to a large extent uncertain. After a first phase of enthusiastic optimism, a growing number of scholars are pointing out the possible criticalities and negative impacts of AVs, in terms of car-dependence, decline of public transport, inactivity, sprawl, etc. (Cohen and Cavoli, 2019; Fraedrich *et al.*, 2019; Soteropoulos *et al.*, 2019).

To this respect, an unconditional introduction of AVs, left in the hands of technology enthusiasts and car manufacturers, could lead to severe consequences, raised by conflicts with the sustainability and liveability objectives of urban policies. But while the awareness of the importance to steer the introduction of AVs is raising, how to deal with such an uncertain future remains unclear.

Backcasting is acknowledged as a suitable method to face such uncertainty (Banister and Hickman, 2013; Tuominen *et al.*, 2014; Vergragt and Quist, 2011). Unlike forecasting, which outlines future development visions based on current trends, backcasting moves in the opposite way; it formulates future visions and proceeds backwards, to define the actions needed to achieve them.

Several visions for AV circulation in the future have been proposed in the literature, with various focuses and methodologies (Fagnant and Kockelman, 2014; Fraedrich *et al.*, 2015; Gruel and Stanford, 2016; Marletto, 2018; Milakis *et al.*, 2017; Papa and Ferreira, 2018; Smolnicki and Sołtys, 2016; Thakur *et al.*, 2016). Still, nearly all these visions are a-spatial, in that they hardly refer to the space in which AVs will be circulating and parking.

A research project led by Politecnico di Torino is studying if and how the introduction of AVs should be differently regulated in urban context, and how the rest of the mobility and land use system could be re-organized, so to maximize positive effects of AVs and limit their negative impacts. According to the backcasting participative methodology, the project has been divided into three phases: visioning, policy packaging, and appraisal (Soria-Lara and Banister, 2017). The aim of this paper is to explore a possible spatialization of visions through a diversification of circulation and parking regulations in different parts of the city, and to highlight which potentialities and critical issues it will raise on the use and consumption of urban public spaces.

Section 1 reviews the spatial impacts of AVs as they emerge from the literature; then the importance to steer the introduction of AVs with proactive policies (section 2) is discussed. Section 3 presents three visions that have been defined for Turin (Italy); these visions have been discussed in a focus group with local experts, which insights are discussed in section 4.

1. The impacts of AVs on urban public spaces

A wide range of potential impacts of a future widespread use of AVs has been analysed in the scientific literature (Cavoli *et al.*, 2017). Some of these impacts – which are obviously dependent on the adopted level of technology and the penetration rate of AVs in the mobility system – relate to the spatial urban dimension, in terms of use and consumption of public space.

First of all, automation of driving could reduce radically the road space necessary for car circulation and parking (Metz, 2018; Zhang *et al.*, 2015), as AVs will be able to reduce safe distance among them and to pick up/drop off the riders in front of the door and then park by themselves. On-road car parks could be removed (just leaving some spaces where cars will stop to pick up/drop off) and transferred to dedicated multilevel parking structures (Fraedrich *et al.*, 2018); these structures could be located out of the city where land is cheaper, leaving space in the dense city for new developments (Zakharenko, 2016).

At the same time, there is a risk that these benefits may be limited to the short term, and turn into negative impacts in the longer term (Childress *et al.*, 2015; Legacy *et al.*, 2018). Actually, AVs could increase vehicle miles travelled (Metz, 2018), for several reasons. First, they could reduce the value of travel time, as riders will not have to drive and could use this time to carry out other activities; this could foster sprawling processes, increasing average travel distances (Meyer *et al.*, 2017). Second, AVs will allow car-less citizens (such as elderly, disabled, young people) to ride a car, improving their accessibility but also resulting in an extreme car dependence (Papa and Ferreira, 2018). Finally, automation of driving could increase the effectiveness of cars to the detriment of public transport and non-motorised mobility; in particular, active mobility could be adversely affected (with negative consequences for health) also because conflicts could arise between AVs and pedestrians and cyclists (Millard-Ball, 2018).

Not only the magnitude, but also the (positive or negative) direction of most of these impacts will probably depend on the diffusion of sharing in AV use. Some researches consider the possibility that a relevant part of the current fleet of privately-owned cars could be replaced in the long term by shared vehicles, increasing the positive effects of AVs or at least reducing their negative outcomes (Alessandrini *et al.*, 2015; Fagnant and Kockelman, 2015; Fraedrich *et al.*, 2018).

2. Visioning and backcasting for policies

Urban and transport planning can play a relevant role in the transition to automated driving, in order to influence the direction of the above-mentioned potential impacts (Li *et al.*, 2018). At the same time, given the uncertainty about the timing and scale of these impacts, policymaking for AVs at the local and metropolitan level is quite complex, and successful advance planning may seem excessively difficult (Marchau *et al.*, 2018).

Some authors have provided policy recommendations for local governments, in terms of transport and land use policies that cities and regions could implement in the short and medium term to guide the transition to AVs in their local environments in the long term (see, for example, González-González *et al.*, 2018; Guerra and Morris, 2018; Papa and Ferreira, 2018). Most of these policies can be considered as “no regret” policies; indeed, they contribute to increase the sustainability of present mobility systems and, at the same time, their short and medium term effects could be useful to prevent negative AV impacts on the longer term. In some respects, these recommendations are quite general. Backcasting and visioning can offer useful insights for implementing them in a specific local context.

Backcasting is acknowledged as a suitable method to deal with the future by setting normative visions (Banister and Hickman, 2013; Tuominen *et al.*, 2014; Vergragt and Quist, 2011). While forecasting investigates probable and possible futures, backcasting goes the other way, from future to present. It identifies desirable futures and goals, and then defines policy pathways to achieve them.

Backcasting is normally structured in three phases (Soria-Lara and Banister, 2017): visioning, in which the baselines of business as usual and alternative visions of desirable transport futures are set; policy packaging, which elaborates a set of policy measures and the pathways to steer development towards the desired result; and appraisal, through which the impacts of the policy pathways are assessed against a set of criteria (environmental, social and economic impacts, as well as feasibility and acceptability, etc.). Moreover, the backcasting methodology can be combined with participative tools, i.e. focus groups, workshops and interviews, in order to provide external stakeholder inputs (Carlsson-Kanyama *et al.*, 2008; Svenfelt *et al.*, 2011)

Defining the visions that will be subject to policy packaging and appraisal is therefore a crucial step. Several authors developed visions for AV development, with various focuses and methodologies, and the literature on visioning for AVs is rapidly growing. However, nearly all these visions are a-spatial, meaning they do not refer their envisaged AVs development to the space in which they will be circulating and parking. Parkin *et al.* (2017) propose four visions that are somehow spatialized, as they are referred to the space in which they will be allowed to circulate: segregated network for AVs, AVs only on main network mixed with human-driven cars, urban network, shared space. Nevertheless, also in this case, space is considered mainly as a container, and the focus is on the interaction of AVs with other users.

3. A visioning exercise

3.1 Aims and methods

This paper presents a visioning exercise that introduces a spatial dimension in the prefiguration of future AV visions to be used in backcasting, namely with reference to the Italian city of Turin. The proposed visions are

“spatial” as they consider how circulation and parking of AVs could be differently regulated in various parts of the city.

At first a brainstorming exercise was carried out by the research team to define possible future visions, all referred to a long term horizon when all circulating vehicles will be fully connected, autonomous (SEA level 5) and electric. Based on the authors’ own analytical thinking, this first phase led to the elaboration of three visions, characterised by different regulations in terms of AV circulation and parking.

In a second phase, seven local experts and practitioners in the transport field, ranging from politicians to managers and technicians, were invited to discuss and assess these three visions in a focus group. More in detail, these experts represented the main institutions and companies which are in charge of transport planning, managing and operating in the area of Turin:

- the Transport Department of the City of Turin;
- the Land use and transport Department of the Metropolitan Area of Turin;
- AMP – Agenzia della Mobilità Piemontese, the public transport Authority of Piedmont (the Italian region where Turin is located);
- 5T – Tecnologie Telematiche Trasporti Traffico Torino, a public company providing info-mobility and Intelligent Transport Systems for the whole Piedmont region;
- GTT – Gruppo Torinese Trasporti, the main public transport company operating in Piedmont region;
- Blue Torino, a full electric car-sharing provider operating in Turin since October 2016;
- Bike Pride, a local association focused on sustainable (in particular non-motorised) mobility.

The focus group was articulated in two steps. First of all, the three visions were presented to the participants, who were asked to fill in a questionnaire to assess (on a 1-10 scale) their “plausibility” and “sustainability” with specific reference to fourteen issues. An open discussion followed, aimed on the one hand at exploring possible further aspects not included in the visions, and on the other hand at investigating participants’ concerns about how AVs will integrate (or replace) other modes of transport.

3.2 Case study

Turin – the fourth most populated Italian city (about 886,000 inhabitants in the city, 2.3 millions in the NUTS-3 province), located in the North-Western part of the country– was chosen as a case study, for several reasons.

Turin is heavily car-dependent. It has one of the highest car ownership rates in Europe (639 cars / 1.000 inhabitants), and the modal share of private motorised mobility is quite significant (39%) (source: EMTA Barometer 2015, Istat). Car circulation is poorly moderated; only one restricted traffic zone, covering 2% of the municipal surface, and few small 30 km/h zones are active. Public transport (one metro, 8 tramway and about 100 bus lines) and the cycle network (nearly 200 km of cycle lanes and paths) are underused; their respective modal share are 24.3% and 3%. In the case of a mere transition from human- to self-driving cars, prospective negative impacts of AVs can then be particular significant in this city.

In 2018 the Public administration of the city launched a pilot project for testing AVs, initially in a closed, “simulated” urban area, and at a later stage on a 35-km route along the real road network. This street test is mainly aimed at placing Turin at the forefront of the transition to AVs, thanks to its economic specialization in the automotive and ICT sectors.

The Sustainable Urban Mobility Plan (hereinafter, SUMP) adopted by the city in 2010, is now at the end of its 10-year period of validity, and the elaboration of the next plan is starting. So, this is a right moment for the city to assess if and which short and medium term measures can be integrated in the new SUMP to try to steer the transition to AVs.

3.3 The three spatial visions

The three spatial visions were identified and articulated by the authors with reference to fourteen themes and sub-themes, namely:

1. road hierarchy, based on articulation into main roads (1.1) and local roads (1.2);
2. limitation to vehicle circulation;
3. parking areas, with specific focuses on street parking and areas to pick up/drop off the passengers (3.1), multilevel parking (3.2) and intermodal parking (3.3);
4. local public transport, with specific focuses on main lines (4.1), feeder capillary network (4.2) and reserved lanes (4.3);
5. sharing mobility, differentiated between motorised services (5.1) and non-motorised ones (bike-sharing, 5.2);
6. pedestrian areas;
7. bicycle facilities;
8. modal split.

Vision 1, called “Business As Usual” (BAU), is typified as the result of a sort of inertial interpolation of the transport policies set by the current SUMP of the city, which pursues a sustainable mobility, encouraging the use of public transport and soft modes and moderately deterring the use of private cars. In this vision, no tailored policy to assist and regulate the transition from human to autonomous driving has been implemented, so the conversion occurred in a rather inertial way. Road hierarchy is the result of the current revision process of speed limits: 50 km/h for main roads, 30 km/h for local roads. Vehicle circulation is banned in few restricted traffic zones. As regards car parks, they are partially transferred from roads to new intermodal and multilevel parking areas; the freed road space is devoted to AV circulation and ad hoc platforms to facilitate AVs’ passengers getting on and off the vehicles. The public transport supply is articulated in main lines and a feeder capillary network; reserved lanes are provided for main lines. Sharing (both motorised and non-motorised) mobility is provided by multiple companies. Some new pedestrian areas are added to the existing ones. As regards bicycle facilities, the vision complies with that of the current Bike Plan (adopted in Turin in 2013), which pursues the completion of ten radial and four circular cycle paths. The deployment of the BAU vision is assumed to lead to a modal split in which the use of private and shared motorised transport and of the bike will increase, the use of public transport will slightly decrease, while pedestrian mobility will consistently decrease as a consequence of the use of AVs for door-to-door trips.

Whereas Vision 1 continues the regulation approach currently adopted by the city of Turin, Visions 2 and 3 take this approach to two opposites.

Vision 2, called “Strong deregulation”, is based on a widespread liberalisation in the name of a complete confidence in the great outcomes of technological development; it assumes that AVs will enhance road safety, solve congestion problems, decrease the levels of air and noise pollution. In this vision, any speed limit is removed; AVs are able to circulate everywhere in the road network, with the exception of few pedestrian areas. Parking is possible only in ad hoc multilevel buildings, homogeneously distributed in some areas along the road network and in intermodal parking areas located at the termini of the public transport lines; on-road parking is completely removed and the freed space is devoted to AV circulation and ad hoc platforms to facilitate AVs’ passengers getting on and off. The public transport network is reduced to the metropolitan railway service and the metro line 1; all surface public transport is dismantled (as considered not competitive with respect to AVs)

freeing up additional space for AV circulation. Sharing mobility services are enhanced. Pedestrian areas are only kept in the historical city centre and overruled in the rest of the city. Also cycle paths are removed, reserving the saved space to AV circulation. As a result, in Vision 2 the modal split will entail a great increase of private motorised transport and a slight increase of car-sharing; the use of both public transport and soft modes will decrease.

Opposite to the “Strong deregulation” is Vision 3, called “Strong regulation”, which is characterised by a robust regulatory approach; strict policies concerning AV circulation and parking are planned to take advantage of AV benefits and limit their negative impacts. The road network is more distinctly hierarchized in main roads (having a speed limit of 50 km/h) and local roads, whose speed limit does not exceed 20 km/h. The meshes of the main road network are sort of “home zones”; inside each of these zones, every road is classified as local and only shared AVs or AVs belonging to the residents in the zone are allowed to circulate. Street parking are completely removed and the saved space is devoted to non-motorised transport; multilevel parking are built around each home zone, both for residents and visitors, and intermodal parking areas are realised at the termini of public transport lines. As regards public transport, streetcars run on reserved lanes on all the main roads; transport systems with exclusive right of way (metro and metropolitan railway service) are reinforced, whereas current bus services are banned within the home zones and replaced in the largest zones by autonomous shuttles. Sharing mobility is strongly encouraged, to the detriment of privately owned AVs. Bike-sharing services are enhanced as well. Furthermore, pedestrian facilities are improved and shared spaces having walking priority are systematically extended within all home zones. Cycle lanes are present on all main roads and bikers are allowed to freely ride on the local roads inside the home zones. As a likely outcome of the strict regulation lying behind the transport policies in Vision 3, the modal split will entail a consistent increase of all modes alternative to privately owned AVs, the latter being strongly hindered, whereas use of car sharing services will be boosted. The use of public transport and bike will slightly increase, and walking will record a more consistent growth thanks to the shared spaces in the home zones.

4. Discussion

4.1 Sustainability vs. plausibility of the three visions

Participants to the focus group were asked to evaluate and validate through the questionnaire the three proposed visions, with respect to their plausibility and sustainability, and to express possible concerns or changes to be made to each of them.

Overall, the three visions were validated, as no significant changes were proposed by the participants to any of them.

As regards plausibility, the overall average of the scores assigned in the questionnaire by all participants to each of the 14 themes and sub-themes shows that Vision 1 is - not surprisingly – the most plausible. It gets an average score of 7 out of 10, and it records the highest values for all the 14 sub-themes, except for traffic restrictions. Visions 2 and 3 were assessed almost equally plausible in terms of average score (respectively 5.5 and 5.3), but they perform very differently in relation to the sub-themes; Vision 2 is generally considered more plausible than the third concerning regulation of AV circulation and parking, and vice versa as regards the relation with public transport and non-motorised mobility.

The results are quite different for sustainability. Vision 3, which was judged the least plausible, is considered as the most sustainable; it scores 7.6 out of 10 on average, and records the highest values for 11 out of 14 subthemes. Vision 1 ranks second, with an average score of 6.2. Finally, Vision 2 is deemed as the least sustainable, with a low score both in overall average terms (4.4) and specifically for subthemes related to public transport and non-motorised mobility.

4.2 Key issues for policies

The elaboration of the three spatial visions and their discussion in the focus group let emerge some key issues for AV regulation that are not yet deeply investigated in the scientific literature, but are crucial to short and medium term policy making.

Circulation

A first issue concerns how private AVs are allowed to circulate in the road network, in particular in light of their feared impact on modal split (less use of public transport, less active mobility). Should they be let free to move on the entire road network, as in Vision 2? Or should their circulation be free only in a portion of the network (e.g., the main roads), and discouraged in the rest of the network, such as the secondary roads inside home zones? In this second case, different levers could be used to deter private AVs from entering these zones. The first one is differentiating speed limits, e.g. 50 km/h in the main roads and 30 or 20 km/h in secondary roads. Another possibility is to completely forbid privately owned AVs to access the secondary roads inside home zones (except the zone in which the owner of the AV resides), as in Vision 3. In this case, AVs could reach the border of the area in which the destination of the trip is located, but the final link in the travel chain should be made by foot, bike sharing etc.

The above-mentioned regulations could be used also to promote a transition from ownership to sharing, which is often identified in the scientific literature as a key factor to reduce potential negative impacts of AVs. Vision 3 for example applies restrictions to circulation only to private AVs and not to shared AVs, which are let free to enter secondary roads. As highlighted in the focus group, Vision 3 could also favour community car sharing services, organised just at the home zone level.

Parking

One of the potential impacts of AVs on the city, that is often cited in the literature, is the reduction of parking need. This reduction will concern the absolute number of car parks (if AVs will be most shared) and, in particular, the number of parks on roads, as AVs will be able to drop off the passengers at their destination and then travel empty to reach the nearest vacant parking space. The possibility of freeing up space on roads by gathering parking in dedicated structures (multilevel parking) raises questions on the location of these structures and the maximum distance that AVs should be allowed to travel empty to reach a parking. This question can be relevant in the short and medium term, as vacant lots in dense central urban areas are generally rare: should they be used for new residential or tertiary buildings, or for multilevel parking so to begin to reduce parking on road?

Finally, if parking on street will be removed, areas for picking up/dropping off passengers will probably be necessary: how many areas for each block and where to locate them will be issues for urban planning and design.

Multimodality

One key issue about AVs is how to avoid they increase their modal share to the detriment of non-motorised mobility (and its health benefits), also because they will make unnecessary even the short trips on foot from origin to parking, and from parking to destination. At the same time, as highlighted in the previous sections, AVs will probably allow to reduce car parks on road; this freed up space could be dedicated to pedestrians and cyclists. Vision 3 tries to combine these two issues: it forbids privately owned AVs from entering home zones, where all local roads are re-designed as shared space (without parking) having priority for pedestrians and cyclists; in this way, drivers should be fostered to walk or bike to their final destination.

As regard public transport, diffusion of AVs questions its spatial organisation. Will a hierarchical structure, based on main underground and tram lines and secondary feeder bus lines, still work? Or could feeder buses be replaced by shared AVs, robot-cabs and so on? This perspective is particularly relevant for a city like Turin, which – due to financial constraints – is now restructuring its public transport supply, and is deciding whether to linearly cut frequencies of all lines or to boost main lines to the detriment of secondary feeder buses.

Concluding remarks

The elaboration and discussion of the three visions for the city of Turin has shown that the spatial approaches in regulating AV circulation and parking are likely to play an important role to govern the impacts of AVs on the city. As just one case study has been considered, any claim to exhaustiveness and systematicity must be excluded. However, most of the emerged issues are not specific to Turin, but concern transport and urban factors that are relevant in every urban context, such as road hierarchy, speed limits, restrictions to circulation, parking location, multimodal integration, home zones and shared spaces.

The visions are currently being evaluated by 50 interviewees through in-depth interviews, and the one that will result the most preferable (as a combination of its sustainability and its plausibility) will be the objective for the backcasting exercise. At the same time, using such spatial visions, that expressly address the use of urban roads and public space, in participative exercises, can help to identify which measures could be adopted in the short and medium term. The involvement of different stakeholder can be useful to emphasize the possible strategies that the Public Administration should undertake in order to address the AV transition. This can be particularly important for cities (such as Turin) that are elaborating their SUMPs; indeed, these plans generally cover a time horizon of at least ten years, which is a plausible time-horizon to expect an initial appearance of AVs.

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Beyond the plan: methods of triggering long-term change in urban and regional mobility

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Abstract: Mobility is a complex and dynamic phenomenon that operates on multiple scales and is highly interwoven with technological, economic, social, cultural trends. Currently, multiple urban and regional projects and initiatives address the issue. For a prolonged sustainable result, ‘communication’ and ‘participation’ accompany the process – but a set of actions disconnected from a larger strategy will fail to bring about change within a complex system. Mobility is produced in the constant interplay of transport offer, user demand and behavior in relation to spatial configuration and urban qualities. Transforming mobility is a long-term process to the extent that impact exceeds plan-action. This paper understands mobility change as multiple transformation processes. It demonstrates how the scope of planning has broadened and proposes communicative planning methods as triggers of long-term change in urban and regional mobility. Four interrelated fields of tension serve as a framework: (1) Start here today. (2) Networked thinking and design. (3) Involving players beyond ideologies. (4) Make a difference in space. This framework is used to discuss the change of mobility in the context of a dialogue format for practitioners and researchers. The transformative capacity of communicating planning methods in several cases from practice and research approaches are discussed.

Keywords: communicative planning methods, urban and regional mobility, transformation, systems thinking and action

I Introduction

For many cities and regions, coping with the increase in traffic is a pressing issue. The rising demand affects the quality of life, threatens the city’s or region’s economic success and, in many cases puts a strain on the political climate. When it comes to creating more housing, new jobs, the development of educational facilities or commercial areas, transport is an ongoing, contentious issue. Cities and regional associations seek help and look out for concepts that tackle these observed demands of mobility on a city or regional scale. At the same time, whilst locally perceived urgency is evident, there exists a very global view on the subject of traffic. Normatively expressed in the Sustainable Development Goals developed by the United Nations, mobility plays a key role in the development of a sustainable world. The SDG’s 9th goal sees the need, amongst others, to ‘develop quality, reliable, sustainable and resilient infrastructure [...] to support economic development and human well-being [through] equitable access for all’. Furthermore, in order to make ‘cities and human settlements inclusive, safe, resilient and sustainable’, the 11th goal sees the provision of ‘access to safe, affordable, accessible and sustainable transport system for all’ as a prerequisite (UN, 2015). Consequently, and with the intention to push-start this topic, public incentives provide funding programs, for example the national Mobility Workshop and Laboratory of FONA in Germany, as well as numerous projects EU-wide like the European large-scale project EIT-KIC for Urban Mobility (EIT, 2019).

Mobility is subject to strong dynamics. Various factors influence movement patterns and behaviors: Changing technological conditions, the digital transformation in general, new offers and services, new forms of mobility

styles, alternative drives e.g. electric mobility, and not least the steadily growing demand to maximize people's capacity for being mobile. Simultaneously, we observe changes in lifestyles, growing awareness of health and sport, demographic change, the need for an ageing society to be mobile and more (BBSR, 2011). These trends and dynamics are forces, difficult to control, that affect the various forms of mobility. It is therefore understood in current research and practice that we cannot approach or influence the change of mobility by looking solely at traffic and infrastructure but by grasping mobility as a system. If we then want to understand deeper the concept of mobility, we can define it as the possibilities to movement available to an individual that are dependent on various framework conditions (Sterzer, 2019). Based on this definition, we suggest to generate a system view and describe the movement dependent on transport infrastructure, the offers for moving as well as the spatial structure of a city or region and the users including their individual behavior.

Having understood mobility as a system and that it is constantly undergoing change, we are confronted with a particular challenge: simply increasing efficiency of the existing system neglects the dynamics of a changing system. Nor does it improve the situation sustainably, since boundaries become noticeable more than ever: urban space is limited, and environmental damage is considerable. Rather than accepting the current trend development affecting the mobility system and plan within it, the dynamics themselves need to be redirected. So, by changing our assumptions and objectives, we acknowledge that a fundamental change of the system is unavoidable. Second, the challenges that arise from the prospected demographic change, our changing behavior through digitalization and the new possibilities created by technical advances need to be closely faced and integrated into our assumptions and objectives.

In changing this mobility system, many players are involved – be they intended partners or not: state, market, civil society and intermediaries. In Germany, transport planning is a traditional public task separated from private organizations, even though economic stakes are high. The mobility system as a whole is still subject to strong economic interests and consequently to strong lobbying. At present, we observe changing markets and market shares as influencers on mobility. It is uncertain as to who will contribute to which extent to the system in the future. What will municipalities, public and private companies do and how may they and others organize themselves? And: what instruments and methods can the planner use when it comes to a profound system change? So far, the traffic development plan, as a classical cross-sectional task of urban development, has served as a framework for individual measures and investment strategies over a certain period of time. Due to increasingly varying interests and the complexity of the task, many cities no longer manage to set up a traffic plan that solves the problems sustainably. The lack of political will in general, or the challenge to gain a majority for a bold plan may determine a plan's fate. Sometimes fierce local resistance may stop a development with good intentions because the citizen remembers previous planning decisions that failed in succeeding their aim. At the same time, research findings do not propose better instruments but only help to deepen the knowledge about the problems by modeling and showing better data. Here, the assumptions underlying the modeling need to be changed, and it cannot be produced by the scientific realm alone. Distrust, divided political banks and missing concrete knowledge over-challenge the planning authorities that are left to changing the direction without clear guidance.

This paper asks about the possibilities of the planner to shape the change in mobility. It provides an overview on transformation research and characterizes transformation from a planning perspective. From this it derives that the understanding of practice in traditional planning models evolving into the practitioner actively taking part in transformation processes. Challenges for the planners and their methods are highlighted and discussed and developed that communication plays a key role. It proposes to focus on the communicative aspects of planning methods when the task is to shape transformation and puts the method itself at the center of discussion.

II From planning to transformation – a brief outline of three basic planning models

The question of how the transformation of mobility can be shaped focuses on the deliberate contribution of planners, i.e. the contribution of the public administration to a long-term extensive transformation process. Which concept of transformation is suitable and which planning mode may be effective? What is the resulting toolbox of methods and instruments that planners should apply? What future roles can be drawn for public administration?

II.1 Basic conception of transformation

The term ‘transformation’ is to be understood first of all as fundamental social change, whereas the term is also used to describe the change of e.g. political system or organization (Heyen *et al.*, 2018). From a sovereign perspective, the term transformation is used to designate the areas of society, economy or even the physical space, which are to be fundamentally rebuilt for sustainable development. Instead of repairing deficits in the existing structures it is important to comprehensively change these structures over the long term and to raise a system that today is insufficiently stable to a new level of persistent operability. Profound change can be triggered by disruptions, e.g. war, famine or a sudden regime change and caught in a brief period of time, but it can also happen over several decades and often only be identified in the historical context. Particular to the present situation is that we as planners observe and are part of a transformation, e.g. the transformation of the urban space, but the future date of completion and the associated spatial development perspective are still unknown to us.

Within the wide range of contributions to the discourse and research on transformation three main starting points can be identified:

(1) Type and extent of necessary change

The European Commission has committed to implement the 17 global goals for future development. Even though these goals are normative and show no paths to fulfillment, they partly represent the global dependencies at a most urgent level and provide reference points for the development of more specific goals on the regional and urban level.

The German Advisory Council on Global Change, in short WBGU, calls the sustainable global transformation of the economy and society a "Great Transformation". The aim is to reduce global greenhouse gas emissions to an absolute minimum and to create climate-friendly societies. To this end, production, consumption patterns and lifestyles in the three central transformation fields of energy, urbanization and land use must be fundamentally changed. The WBGU takes a comprehensive global view of the economy and society, and identifies the urban level as a key field for transformation. Though, conclusions for the spatial organization at the level of cities or neighborhoods are not part of the WBGU's main report (WBGU, 2016).

The research organization DRIFT for transition positions itself in the field of system innovation and sustainability transitions according to the Sustainable Transition Research Network and other research literature, and derives from it the urgent need to deepen the understanding of the ongoing changes in planning related sectors, cities and regions (drift, 2019). Both terms, ‘transition’ and ‘transformation’ are used to describe fundamental changes in society but for this paper we understand the term ‘transition’ to describe a field of research i.e. to observe it, whereas ‘transformation’ aims to describe both organizable and non-organizable change i.e. a designable process.

(2) Aim of future viability

The various contributions to the issue of transformation converge at the point where they address the viability of an economic, social or spatial system. Therefore, there are strong overlaps with the discourse on sustainability, especially when sustainability is understood as a process rather than a goal or condition (Thierstein and Walser,

2007). In order to reach future viability, transformation is then described as a targeted change towards sustainability (Heyen *et al.*, 2018).

Dealing sustainably with a complex system also means to reduce its complexity. Instead of developing evermore capacities for collecting facts and framework conditions, i.e. data collection, it is necessary to reduce the 'information overload' by recognizing essential patterns that shape the interaction of crucial aspects of networks (Vester, 2007). Vester calls this 'interconnected thinking' and understands it as a quest for practicability, because it reduces the need to find data and at the same time expands the scope of inquiry (Ulrich, 2005). Mastering complexity is a crucial task in gaining future viability.

The Wuppertal Institute conceives cities as real-time laboratories for research on and for transitions to sustainable development. In order to be able to measure transitions and gain knowledge about their path of development, urban landscapes or cities offer good opportunities for research and experimentation. What is measured and tested in the city itself is already contributing to change and, if appropriate communication structures, e.g., through intercultural research networks, are trained and in place, can initiate and accelerate development in a particular direction.

(3) Steering a complex system

Transformation refers to a mostly multi-layered process of change in which different variables closely interact. Given the basic understanding of a complex system, transformation is based on interventions within the system that are supposed to bring about desired changes. These go beyond simple cause-and-effect relationships. It is essential to understand the system's previous development path in order to identify possible starting points for effective interventions. In the transformation process, time simultaneously becomes a variable that can be formed, since for the most part different time horizons of the interventions and their effects are intertwined.

DRIFT's transitions perspective puts cities in focus and understands their complexity as a system in transition. Cities are the ground on which multiple system transitions emerge, arrive and react with each other. Putting this into a spatial perspective, DRIFT expresses that 'a city is [not only] related to other cities, its direct surroundings and to rural and natural areas worldwide' but also connected to other cities in its economic and ecological development, political actions and climate as well as its social and cultural status and trends (drift, 2019).

It is widely accepted that concepts of transformation understand transformation as a systemic change. This means that change comes about co-evolutionary and that its relevant interacting variables – relating to technological, economic, socio-cultural and institutional aspects – need to change concurrently and thereby influence each other again (Heyen *et al.*, 2018).

II.2 Characteristic features of transformation

For planners, the task to actively influence transformation processes comes with certain challenges. However, certain features and findings from the research and practice on transition and transformation provide starting points to proactively shape transformation. We know that the fundamental changes bring notions of complexity, uncertainty and unpredictability to all levels of society. We find that transformation as a process is dynamic and, to begin with, non-linear. How do we steer into a future that is unclear? How do we maintain openness in defining our goals? How do we interact with the multiple processes, not knowing how change will come about?

The multi-level perspective poses a widely accepted transition framework. Initially developed as a conceptual model in innovation research (Geels, 2011), it identifies three analytical levels that form transitions: niches, socio-technical regimes and socio-technical landscapes. We understand e.g. the change of mobility as a transition in the above sense. From a planner's perspective we may describe it by multiple transformation processes, which we can observe and partly shape on the city level. A simplified description of the transformation process we find in research on the diffusion of innovations and distinguishes four phases: a pre-development phase with high

experimental content (1), a take-off phase with first changes out of the niche (2), a breakthrough phase with structural change through accumulation of changes (3) and a stabilization phase in which a new regime equilibrium emerges (4) (Heyen *et al.*, 2018). At this point it remains a challenge to directly translate these phases into planning practice: to which extent can planners trigger these phases? Or from which level can a next phase be initiated? And is the stabilization phase –waiting for the next phases to come– in line with the overall goal of a sustainable world?

Furthermore, we know that drivers and catalysts for transformation processes are not singular, nor are the provoked processes running independently. Drivers and catalysts may be economic or technological factors and exert pressure on regimes. Ecological or technical crises may pose so-called ‘windows of opportunity’ in which change is accelerated which could be, for example, observed after the reactor incident in Fukushima when an energy transition became possible through a political majority (Heyen *et al.*, 2018). As a matter of course, obstacles arise in attempts of changing the system: one is, that existing paths for development already have a direction and limit decision-making (Heyen *et al.*, 2018).

DRIFT claims that the building of what they call ‘transformative knowledge’ forms a basis for planning in transition. Transformative knowledge is translated into ‘taking an integrated approach and treating the system as a whole’ and holds planners to question the status quo, to reflect their own actions and create deeper learning processes (drift, 2019). This approach then should form a knowledge base that is needed for fundamental and irreversible change.

II.3 Shaping transformation – three basic planning models

It is widely assumed that social transformation processes are neither easy to foresee nor are they malleable as a whole (Heyen, 2017). This is due to the fact that transformation processes follow their own dynamic and path, they are complex and are influenced by a variety of inhibiting and acceleration factors. The WBGU believes that ‘great transformation’ is difficult to control, but can be deliberately shaped to some degree – even though this is estimated to be optimistic (Brand, 2017, Rink, 2018, Shove, 2007). Taking into account the characteristic features of transformation and translating them into planning approaches and methods should be a first step in the right direction (Kristof, 2010).

But how to apply the basic understanding of transformation to contemporary planning models? Planning models support the understanding of the tasks and procedures planners and designers face. According to Archibugi, planning theory is an action-oriented analysis, that creates knowledge for the purposeful design of planning processes in order to enhance target achievement (Archibugi, 2004). By this, planning theory shall provide for a real added value in practice.

In the following section we will describe three planning models in order to translate the discourse on transformation to urban and regional planning processes. The models do not need to be mutually exclusive. Rather they focus different levels of complexity that are inherent in transformation processes. They reflect on the role of professional planners as part of a public planning authority and his capabilities of adopting effective planning methods and instruments. The sketch-like models help to understand the possibilities and limits planners, in order to steer or rather shape transformation processes.

Model 1: Planning as problem-oriented communication process to explore, agree upon, carry out interventions and assess their effects

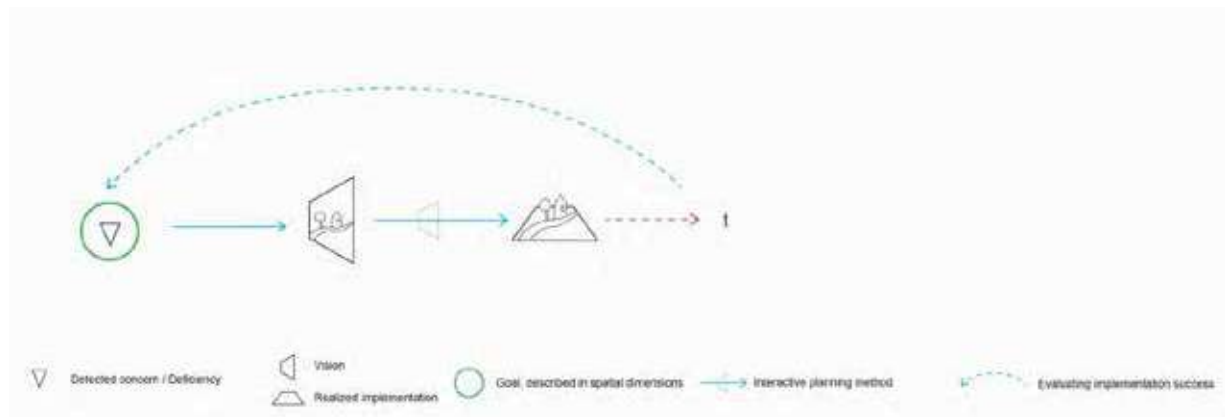


Figure 1: Model 1

This first model refers to a generic planning cycle. A time axis is integrated in order to relate and compare to the following models 1 and 2. In this model, planning is understood as a problem-solving process, that consists of various relevant work steps that stimulate interaction between the professional planning world and the day-to-day world. The handling and managing of those work steps happen in cycles and repeats itself over time (Schönwandt, 2008).

A detected problem or deficit, often in an urban context, serves as the foundation for developing alternative solutions, that are proposed by the planning authority. Problem-finding and problem-solving are described as an iterative process of generating knowledge and refining and clarifying norms and objectives (v. Eisinger, 2012, Schönwandt *et al.*, 2011, Getzels, 1975). In the next step the choice of one solution occurs in a communication process that involves planning professionals as well as political, market and civil society actors. At the end of that planning phase a single future plan is adopted. Its implementation often relies on a set of responsibilities that are distributed among different players such as approving authorities, property owners, investors, organizations or committed users and citizens. When the implementation is finished, an evaluation process is introduced to compare original intentions with the results, and to share experiences or obstacles obtained during the process.

This model is both universal in its application to different issues and spatial scales of planning and fundamental in its systemic understanding of planning as an interplay of system structures and processes. The cycle may be passed through rapidly or slowly and relate to the close or farther future. However, the model remains unclear in describing a path into the future, as it does not show to which extent planning contributes to fundamentally changing a system. Many existing planning tasks draw upon this model in order to provide for reliable solutions: developing a new city-quarter, a bypass road or a waste management system, only to name a few. To achieve this, important preconditions have to be met: Planners need professional knowledge and skills, personnel and financial resources and the capacity to steer the implementation of the plan. The political, corporate and civil spheres have to equally bring in knowledge, skills and resources based on their willingness to cooperate and to provide for legitimacy of the specific planning process. The failure and crisis of planning has to be largely attributed to gaps and weak points within these preconditions which has led to widespread criticism of the prevailing planning approach and system.

Model 2: Planning as collaborative process to analyze and negotiate long-term alternative futures, define the path for transformation and implement subsequent steps of intervention

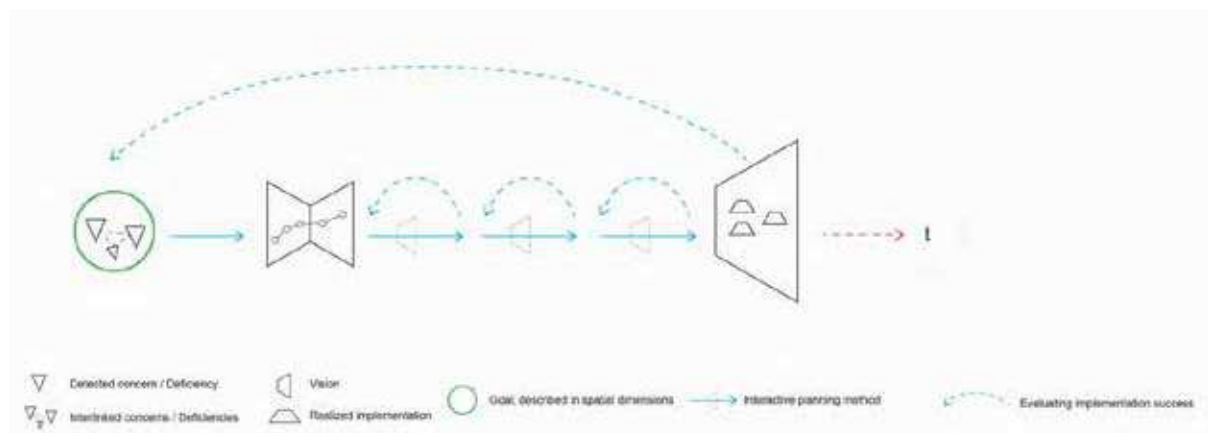


Figure 2: Model 2

The second model focuses on a long-term transformation of a complex system as in the case of structural change of an urban or regional area or the reconfiguration of an urban mobility system. Rather than looking for an immediate spatial solution, the planning group recognizes a pattern of networked problems and expresses goals in a positive vision of the future. As a result, there is a stronger focus on a systems analysis at the beginning of the process. In the next phase, visionary transformative scenarios are developed and translated into a transformation path that will consist of multiple implementation steps. What in the first model is done in one compact step, is here separated into more phases: a longer period of gaining orientation at the beginning and a road map of step-by-step implementation that happens over a longer period of time and allows for monitoring and readjustment throughout the process. As a result, the time horizon of this transformative path exceeds the one in day-to-day business that is often closely linked to election cycles.

According to current literature on transformation research, the development of an integrative and systemic knowledge base for creating transformative solutions is necessary (Jacob, 2018, Roorda, 2014). But how to push actors to deal with a long-term perspective? When starting a process, appealing narratives, that relate to people's perceived problems may serve as a positive trigger. Therefore, communicating future visions, mission statements or narratives is key when transforming a complex system (Heyen *et al.*, 2018). Hence, opening up the scope into a more complex starting position that is related to a long-term transformation process demands for a shared view of the future instead of a fixed goal or plan.

Cities can be seen as real-world laboratories for transformation processes. In their existing urban context they have to address and involve a broad variety of participants, stakeholders and citizens. In view of the range of their interests as well as the complexity of the system to be transformed, the creation of alternative scenarios and the definition of robust transformation steps that allow multiple futures might be a promising approach (Wiese, 2014, Alaily-Mattar *et al.*, 2014).

Model 2 defines a collaborative process that bridges system analysis, future scenarios and long-term implementation. Therefore, a common will amongst capable actors and financial and personnel resources for starting such a broad orientation and planning process are necessary preconditions. Another important prerequisite refers to the need to continuously steer and readjust the ongoing transformation process – as there is no blueprint to be implemented. When heading for a transformative path, the starting position needs to be redefined periodically. We might also be forced to readapt our previously developed positive vision of the future, our narratives and even our transformation path itself.

Model 3: Planning as multi-step communication and learning process to open-up and explore paths for transformation oriented towards the greater good and their successive assessment and readjustment

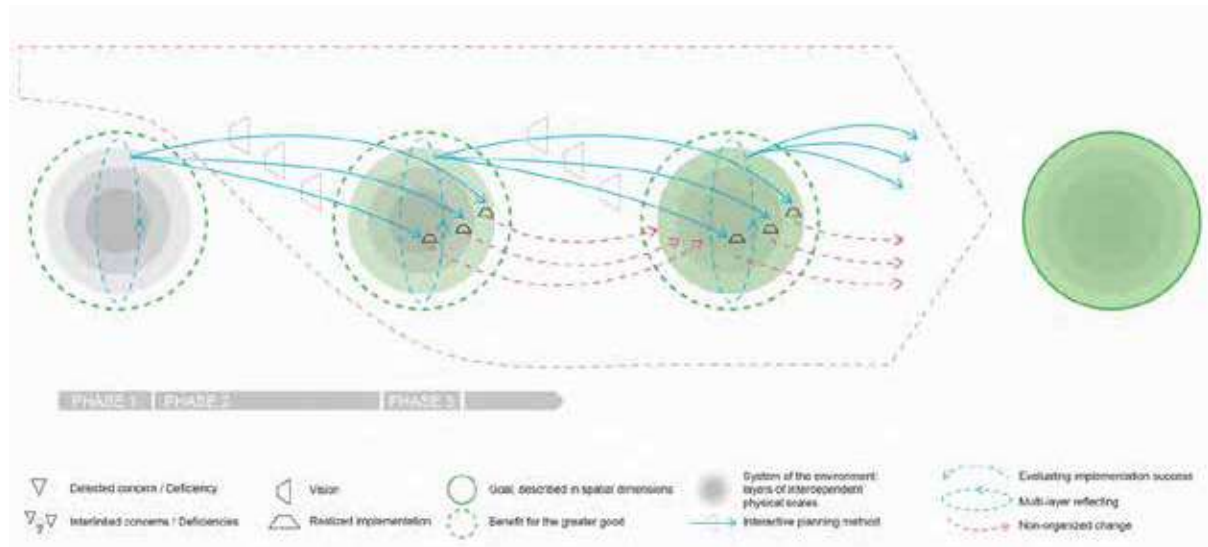


Figure 3: Model 3

The third model highlights planning steps that aim at triggering transformation processes oriented towards a greater good. We understand these planning actions as parts of a continuously changing system that comprise organized as well as non-organized change. The purposefully set planning steps are associated with the on-going non-organized change – be it two processes running independently or by correlation because of the intended and non-intended effects of the planning steps. So, rather than trying to masterplan a process architecture directed towards a greater vision, this model emphasizes the potential of organized smaller steps that aim at opening up paths for transformation.

We do not consider this model to be better than the two other models. Model 3 comes into play as important preconditions of model 1 and 2 do not apply as, for example, a common will and political mandate for coordinated and strategic planning towards a shared vision of the future.

In this model, the goal is defined in a much broader sense. Planning is directed towards the greater good, e.g. reducing CO₂-emissions state-wide or globally or creating better mobility for a better way of life. There is, however, no common view of how this goal would materialize spatially nor of the ways how to achieve it. Given this very open normative focus, three layers of analytical thinking and social and political awareness and learning are especially important: 1) The city is part of an interrelated multi-scalar regional or metropolitan system. 2) Cities have the capacity to create and initiate new solutions and act as trendsetters for others. We should therefore gather knowledge of what is happening in other cities. 3) We have to take into consideration global boundaries and thus recognize what consequences current city planning has on natural and rural areas worldwide (Wuppertal Institut, 2019).

According to model 3, the transformation process starts with a growing awareness of the status quo and the desire of collective reflection. This means to initiate communication among committed players that are open to mutual learning (Phase 1). In the next phase, a process is initiated that organizes multiple and often small-scale interventions that are networked on multiple scales. Careful preparation and implementation go hand in hand – as if the work steps of planning model 1 were passed through rapidly (Phase 2). Based on the understanding that the chosen interventions trigger transformation processes that may not be organizable a recurring evaluation is started. Taking into account the context of all three layers including the non-organized processes a new baseline is defined

that has developed a step towards the greater goal (Phase 3). This is a starting point for another set of networked interventions. Re-evaluating methods and interventions, taking steps ahead and back are part of the process. It rather describes an approximation or a development into a certain direction, which may gradually change the system.

III Rethinking communicative planning methods

What can be derived from these models for the activities of planners? And then how can transformation be shaped by which planning methods? We understand planning methods as intentional planning practices preparing interventions with a focus on tangible planning action. It is widely recognized to distinguish between methods and instruments to the degree that methods prepare instruments as spatial interventions. Methods generate knowledge, prepare objectives and solutions and support between the parties involved (Förster, 2014). Planning instruments may then be classified along their different types of interventions (Schönwandt *et al.*, 2007, Jung, 2008). Methods shall constitute effective building blocks within a purposeful planning procedure directed towards the achievement of the objectives set. They can be regarded as a not accidental sequence of activities that demands for careful preparation (Schönwandt and Voigt, 2005). In the planning cycle, methods are planned, resources provided, commissioned and carried out and then a success control is undertaken.

The spectrum of available planning methods is closely related to a broad variety of understandings of planning (Fürst, 2004). Despite the large differentiation of planning methods, one basic conception points to the understanding of planning as a social interaction – if not generally stated, then at least related to certain planning phases or work steps. Therefore communication is a prerequisite for the effectiveness of planning activities (Förster, 2014).

In order to overcome important shortcomings of planning, a renewal of planning is conceived from improved methods and instruments. This is significant as complex systems may be changed through improved processes that gradually reshape system structures. The latest version of the St. Gallen management model, which explains its complex organizational model through interwoven processes and structures, highlights the possibility to bring about change in action and points to the intrinsic motivation as a key to long-term and fundamental change (Rüegg-Stürm, 2017).

When we envisage how planners may shape transformation processes, we should go beyond the optimization of individual methods. Instead, our basic conception of methods should be questioned and reconsidered. According to our understanding of planning, which is supposed to influence transformation processes, we put the communicative aspects in the foreground and have generated three perspectives that are not contradictory but focus on complementary aspects:

- (1) In the first planning model, a broad variety of methods is linked to the different steps in the planning cycle. A main focus lies on the dialogue between different planners and their multifaceted setting. The different work steps in the planning cycle refer to a range of different, complementary skills and abilities that are necessary for planning processes as a whole – and how these different skills can be linked and integrated. They range from analytical to visual and communicative as well as design-oriented techniques. Instead of mobilizing a wide spectrum of individual skills, it seems to be particularly relevant to focus on productive interfaces and synergies in order to let them work together (Harris, 1999).
- (2) The second model focuses on a sequence of methods with which long-term visions of the future can be developed and then translated into a sequence of interventions, e.g. a roadmap. A specific mix of approaches forms a coherent planning process over a longer period of several months up to some years that involves key players up to a wider public. In many cases, an interdisciplinary approach is necessary

in order to systematically design this larger process, i.e. a mandate must also be available for this assignment, which can be difficult for some clients (Wiese, 2014, Wirth, 2019).

- (3) This open process as conceived in the third planning model demands for approaches that stimulate learning in the system without necessarily involving or pre-arranging a larger or more comprehensive planning process. Here, the interaction between processes and structures is at the center of consideration. "One cannot jump into the same flow twice". The mutual interplay of processes and structures is at the heart of the St. Gall Management Model, with the processes being everyday events and the current system structure being the result of past processes. This means that further development takes place in direct connection with the collected experiences up to the present time (Rüegg-Stürm, 2002). So, if we want to achieve 'system learning' with regard to our abstract goal – to improve the common good – we have to change our system structures in a relatively short time. Suitable planning methods and instruments should initiate a process, that produce a next round – in accordance with the French saying: "L'appétit vient en mangeant". Methods and interventions become tightly linked. These triggers for change should be applicable even if there is no significant budget, no clear political mandate and no clear objective. It is important to anticipate and take critical stages and reach thresholds in order to take new steps from there.

IV Urban Mobility: 4 key dimensions of communicative planning methods as agents of change

According to model 3, planning methods are conceived as incremental steps that trigger system transformation. Thereby, communication is a key to involve stakeholders, transport knowledge, start acting and perceive and evaluate the results. When translating this to the transformation of urban mobility, we hypothesize that four interrelated dimensions are particularly important.

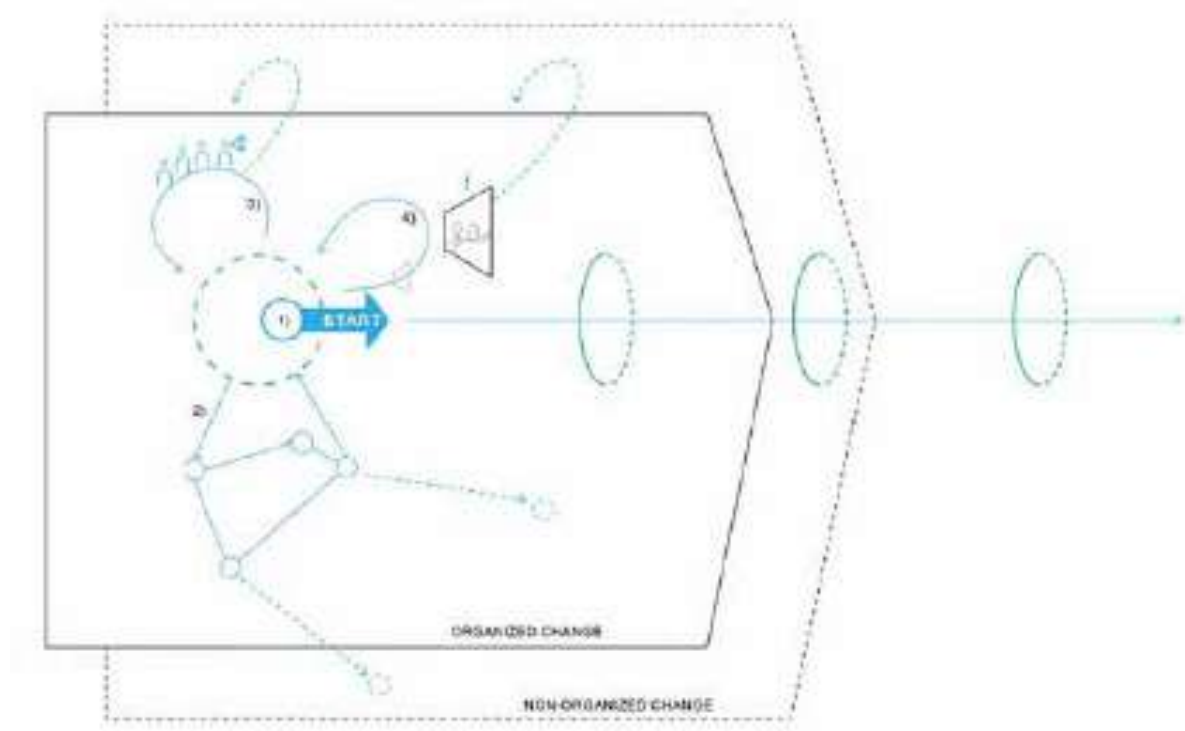


Figure. 4: Four key dimensions of communicative planning methods as agents of change.

1) Start here today with tangible steps: Which processes and steps are particularly relevant at the beginning of a transformative process? There is a need to set up a strong basis for the starting position. Communication plays a particular role in forming transformative knowledge and since knowledge goes both directions informing and collecting, we may actively influence the so-called non-organized change. The sooner we interact and intervene, the sooner our intentions and actions can become part of the transformative process as e.g. experiences, which then may be passed on and trigger more – ‘Like a stone thrown into a pond’.

2) Networked thinking and design: Our actions, ideas, strategies and transformation concepts are doomed to fail when they have to tackle such big changes all by themselves. A coordinated set of smaller actions on multiple layers – those may include spatial design proposals, a town hall meeting or the invention of a new ticketing system – may legitimize a process more effectively. Also, it is important to understand and know what other plans and strategies are currently employed. Collecting experiences on how mobility is developing in other cities or regions is crucial, given that it is such a pressing and complex task.

3) Involving players beyond ideologies and gridlocked positions: The dissemination of change is significantly dependent upon the spectrum of participants, stakeholders and users we address and have on board. However, how to communicate and what has to be communicated is particularly relevant. When we argue for a mobility change for the better, those involved need to agree on a path towards a greater good. Mobility change is very much influenced by multiple factors and powerful parties. Therefore, it is particularly important to gather a most complete group around the table.

4) Use spatial interventions to make a difference in space: Spatial interventions may trigger experiences and change motivation and behavior through a most effective learning. The scale of a spatial intervention may also determine how well it is perceived, how intense the experience is and how far it may reach. There is a threshold to the scale of a spatial intervention for them to work as messengers.

We call methods following these dimensions agents of change as they may kick-off transformation processes. While planners apply these methods in the field of organized change, communicative interventions also transfer knowledge and experience to the non-organizable part. This framework is used to discuss the change of mobility in the context of a seminar for continuing education of professionals in all planning disciplines, as described in the next chapter. The transformative capacity of communicating planning methods are discussed along several cases from practice and research.

V Pt.Seminar on methods of triggering long-term change in urban and regional mobility

Pt.Seminar is a dialogue format on current planning methods run by the Chair of Planning Theory & Urban Development at RWTH Aachen University. The seminar encourages the exchange of knowledge between academia and practice. Practitioners from public planning authorities as well as private planning offices are currently looking for new ways to handle the ever growing complexity in their everyday work. Transforming urban and regional mobility is a particularly demanding task. In many cases, planners find themselves in hybrid situations with vague political mandates and outdated development plans that lack implementation in many respects. During the half-day session we focused on innovative planning methods that have been employed to actively take part in mobility change. Experts presented current approaches which then were discussed along those four previously illustrated dimensions: 1) start here today with tangible steps, 2) networked thinking and design, 3) involving players beyond ideologies and gridlocked positions, 4) use spatial interventions to make a difference in space.



Figure 5: Impressions from the Pt.Seminar

This event took place only recently in May 2019 and helped us to gain preliminary feedback to the relevance of our conception of transformative planning methods as triggers of long-term change in urban and regional mobility. The presented cases ranged from a research approach to mobility design, a GPS-supported method for the investigation of use and perception of space, a progressive mobility concept with an elaborated set of measures for a large city initiated by a public-private coalition, the conception of a cycle fast track and regional cycle path network, mobility in rural areas to a real-laboratory for sustainable mobility culture. The joint discussion of these cases in relation to the four dimensions revealed capabilities and limitations and important fields of tensions when applying communicative planning methods as triggers of change.

The presented examples of ‘starting here today with tangible steps’, released an intense discussion on the culture of the experiment. Experimental pilot projects should not be regarded as precursors of permanent solution only. Instead, the experiment could be installed as a principle, as a stand-alone planning approach. Selective experiments could be disseminated throughout the whole quarter, city or region. In that sense, experiments are not to be held as a demonstration of the right solution, but they push forward an open learning process. Therefore the evaluation of experiments is crucial. This rather playful approach can be supported by a set of rules that give room for maneuver.

Following up this idea, the representatives from public administration stated a lack of knowledge of how to adjust their rules to the experiments they are ready to support. Furthermore, the case of the Stuttgart Laboratory of Sustainable Mobility Cultures demonstrated, that experiments as planning approach need to be managed and

supported with resources (Mobilitätskultur, 2018). This would be a new field of activity for public authorities. At the same time, a loose coupling of step-by-step activities on the ground to mid- and long-term planning strategies and frameworks at the level of the city or region would be important. Starting here and today can operate as pre-testing for overall strategies, they may pave the way to successfully transform the system.

The dimension ‘networked thinking and design’ was discussed at two levels: First, planners and designers have to intervene in the system with effective packages of measures. That means combining multiple steps on multiple layers of the system. Second, a network of partners shall be established that supports the transformation process with different knowledge, perspectives and resources. The case of Munich Model City of Mobility 2030, as presented in the seminar, uses the interplay of Transport-Space-User as leitmotif for networked thinking within a dialogue process (Inzell, 2018). This is particularly relevant, as the process brings together partners from industry –including automotive industry– the Chamber of Industry and Commerce, municipal and regional transport services and public administration. Networked thinking serves as an approach to overcome individual interests and individual solutions.

Shifting the perspective from the individual to the common good was also a key issue when discussing the third dimension ‘involving players beyond ideologies and gridlocked positions’. Therefore it is important to acquire a broad variety of partners and to encourage them to talk about needs instead of measures first. The user perspective may open-up the discussion beyond clear positions. The reflection of one’s own mobility behavior as well as the recognition of the dynamics of mobility patterns in time and space sensitizes for diverse perspectives.

When looking for partners and followers, it is important to address those who are satisfied and encourage their ambition to want more. At the same time, we shall build up relationships to those who think different, to bolster the sceptics, to invite people to jump on the process and to allow others to correct their position without loss of face. Additionally, the discussion highlighted the relation between planning and politics which is in many cases unclear. Who pushes and pulls whom? The dialogue process on the Munich Model City of Mobility 2030 was not mandated by politics but was meant to stimulate an agenda setting process in times of political blockade.

During the seminar it was hypothesized that one can intrinsically motivate citizens, politicians and other planning participants on the basis of spatially experienced experiments which in the case of success at best trigger a next round of planning activities and actions.

The issue of ‘use spatial interventions to make a difference in space’ stimulated the debate on the question how we actually experience mobility in space. This also refers to our concept of culture and everyday practices. So far, the car not only occupies a large amount of the surface in our cities, but thus also receives high visual attention. Its presence in urban space is a prerequisite for its role as status symbol. Within the seminar, the positive experience of mobility was addressed as a pressing issue for the transformation process towards more sustainable forms of being mobile. This also includes the net quality of mobility.

Based on that, the capacity of space as a transformer was subject to intensive discussion. Visualizing change may be associated with a user benefit or may also be of symbolic value. The project To the Next Place in the village of Heimenkirch in the rural area of Allgaeu in South Germany designed prominent bus shelters produced by local carpenters (Seeholzer, 2017). These shelters are intended as meeting points for lifts, and are at the same time adopted as public gathering place. Shared lifts in cars – once being communicated as credible alternative – will predominantly be arranged via internet or phone calls. So, the shelters can be seen as spatial interventions that create awareness for alternative solutions and stimulate changes in behavior. This illustrates the close link between infrastructure, design and society that is important for the shaping of transformation processes.

VI Reflection

We hypothesize that communicative planning methods as triggers of change have to comply with one or more of the four dimensions as discussed above. When regarded together, some preliminary conclusions might be drawn.

Flexibility and adaptability

The involvement of planners and planning authorities in multi-step processes with recurring phases of reflection, multi-level planning activities, following interventions as tangible steps forward demand for a high level of flexibility. The proposed approach moves the different planning steps closer together and thus may speed up everyday business of planners. Therefore, they need the mandate to make decisions beyond lengthy administrative and political procedures. Otherwise, transformation will proceed without proactive public involvement. Moreover, planners need to be prepared to readjust their methods and instruments according the lessons learnt from the organized and non-organized change they provoke.

Courage and willingness to act

Triggering change goes beyond the elaboration of a plan – it demands for action. Planners have long been paralyzed by the development of too complex, too comprehensive, too long-term planning frameworks. As a result, they tend to have a rather passive role – waiting for comprehensive feedbacks of public agencies, for political decisions, for implementation through other authorities. When shifting to an understanding of communicative planning methods as triggers of change, planners need the mandate, courage and willingness to act.

Role of planners as part of the game

If planners follow these ideas, they will find themselves as players within the transformation process. This is related to a new form of responsibility. Planners as well as public planning authorities cannot refer to the fact that they have to wait for others nor shall they act on their own. They need to actively create networks and win new partners in order to drive the process. They have to learn that the formation of opinion, the declared commitment of key stakeholders and the strong political mandate are no precondition of their activities but a result of a positive learning process.

Multiplicity of communication

Finally, proactively triggering change in a step-by-step process multiplies the communication challenge. Planners need to address and involve more participants, stakeholders and users. Networked thinking and design demands for actively linking different levels and related responsibilities within the system. Interventions demand for a dialogue with target groups, parties concerned, licensing authorities, property owners, operating companies etc. These multiple addressees and related ways of communication may lead to a productive interplay such as communicating–reflecting–negotiating–intervening–experiencing and as such triggering change.

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**Analysing the relation between territorial fragilities and accessibility:
a focus on individual dimension and needs.**

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Abstract: This paper aims at examining the relation between territorial fragilities, mobility and accessibility: mobility as social practice interlocked in time and space, and accessibility as the possibility of an individual to access at different out-of-home activities. The main purpose of this paper is to answer to the following questions: is it possible to establish a relation between the level of accessibility of a given territory and its territorial fragilities? As matter of fact, many research in last twenty years demonstrated the causality between low level of accessibility and mobility related social exclusion. In this paper I will show how an interpretation of accessibility, based on individual's needs and opportunities, may help to establish a relation between low level of accessibility and territorial fragilities. Indeed, traditional accessibility approaches brought to a misrepresented narrative, that describes a high infra-structured territory also as a more accessible and stronger one. Thanks to a bibliographical review oriented toward redefining the concept of accessibility, this work will challenge this narrative. It will be proved that a more accurate definition of mobility and accessibility may demonstrate that remoteness can be, at the most, one among the many drivers that lead to territorial fragilities.

Keywords: mobility; accessibility; basic needs; territorial fragilities.

Introduction: putting in relation mobility and accessibility with territorial fragilities.

The main aim of this research is to understand if there is a relationship between the level of accessibility of a given territory and its fragility, and which kind of territorial fragilities may be generated by low accessibility levels. In order to propose, at a later stage of this work, operative solutions that, working on mobility and accessibility, may help to deal with territorial fragilities.

The word “fragility” calls to our mind the image of something that can break easily, this is because, in physic, fragility is the particular characteristic of certain materials to break-up when exposed to given forces. Nevertheless, when talking of territorial fragilities, it seems more appropriate to refer at the “low capacity of a system to deal with circumstances which are opposite to the system itself and create the condition for conflict¹”. To apply the concept of fragilities to a territorial system moves the attention toward a systemic dimension, given by the territory itself, and oblige us to consider processes and time. For instance, if we are considering a complex system such as a territory it is more difficult to identify a direct cause/effect relationship between the conditions that started the fragilization process and the elements that broke up, as one cause may have implications on multiple territorial elements.

Also accessibility has been given multiple meanings, according to different academic fields. To the extent of this research I will define accessibility as “ the capability of individuals to participate in out-of-home activities” (Martens, 2017). Nevertheless, there is a dominant narrative, particularly diffuse in the field of transport studies, that identify accessibility with high level of infrastructure and fast connections and establishes a linear relation between high level of accessibility and urban growth and development (Hansen, 1959; Donati, 2009; Alampi and Messina, 2011), a narrative that suggests the idea that mobility is an essential requisite of the contemporary world (Kaufmann, 2011; Cresswell, 2010) and consider mobility “as education, as freedom, as modern” (Cresswell, 2010). According to

¹ From an unpublished text of F. Infussi about territorial fragilities (2019)

Luca Bertolini, for example, “since the industrial revolution, transportation and urban development have been tightly interconnected” (Bertolini, 2008), thus linking the concept of modernity with transportation and urban development and suggesting that a well infra-structured territory is also a more developed one. According to Bissel “the construction of transport infrastructure has often been viewed as the silver bullet that will solve commuting [and more generally mobility] problems once and for all” (Bissel, 2018), considering people mobility in the same manner of a liquid flowing through a pipe, larger is the pipe faster is the liquid, and assuming time and speed as the most important parameters to be considered when evaluating accessibility level. According to this narrative, that counters central fast places with marginal slow ones, a less infra-structured territory is less accessible and thus more remote and more fragile. Nevertheless, this narrative embodies some problems linked to the definition of mobility and accessibility: first of all, it matches mobility with transport; then, and related to the first one, it considers accessibility only as a spatial requisite not taking into account individual specificity and needs; last, and consequent to the first two points, it gives back a picture of territorial fragilities only as a consequence of spatial marginality and low level of infrastructures. As a consequence this approach does not allow to read territorial fragilities in its complexity and value fragilities only in the opposition to fast infra-structured and high accessible strong territory. Instead interpreting accessibility as the capabilities to reach opportunities and participate to out-of-home activities, links accessibility with other problematics that may generate fragility such as social exclusion and spatial injustice, as seen in figure 1. While the link between low level of accessibility and social exclusion has been extensively studied, particularly in U.K. after the constitution of the Social Exclusion Unit (2003) the relation within territorial fragilities is still poorly analysed and will be the subject of this research. Definitely accessibility, as a measurable dimension that connect individual and spaces, may help to understand territorial fragilities in its multidimensionality.

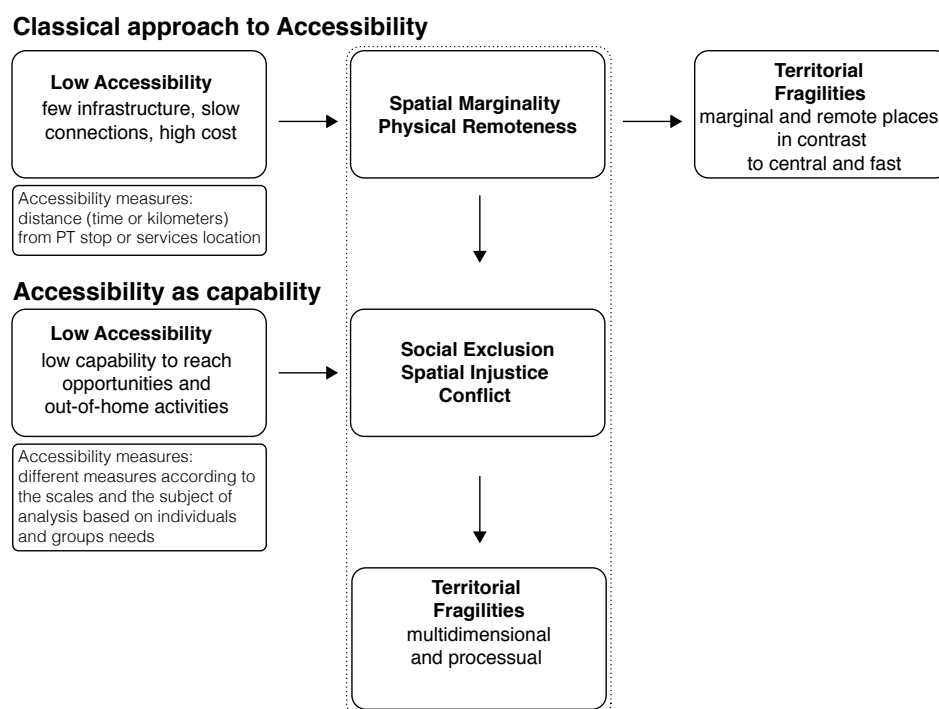


Figure 1

In the following paragraphs I will work on defining mobility and accessibility, building on bibliographical reviews, furnishing a more detailed and realistic image of the relations with territorial fragilities, and trying to invalidating the dominant narrative that a more infra-structured territory is also more accessible, developed, stronger and consequently less fragile one.

Reframing mobility and accessibility

It is nowadays well-established in different disciplinary fields, from transport studies to geography and urban studies, that mobility is passing through an important turn all over in Europe (Secchi and Pellegrini, 2010; 17), this process is expanding at the point that many scholars agree on the appearance of a paradigmatic transition in mobility (Bertolini, 2008; Sheller and Urry, 2006). The new paradigm asks for a redefinition of goals, processes and tools needed to plan and design urban mobility, and considers a broader range of modes, objectives, impacts, and improvement options of mobility (Litman, 2013; Faulconbridge and Hui, 2016). From a theoretical point of view, in its seminal book *sociologies beyond societies* John Urry (2000) suggested to replace the word mobility with mobilities. The use of the plural highlights the multiple types of mobility: corporal travels, physical movement of objects, imaginative, virtual and communicative travels (Urry, 2007), definitely we can consider mobility “as a single phenomenon that has the ability to take on different forms” (Flamm and Kaufmann, 2006). Furthermore we should also consider the different scales of mobility “from the small-scale of bodily movements, through infrastructural and transport aided movements to global flows of finance and labour” (Cresswell, 2011).

The idea of a mobility turn, although has been accepted in many different scientific fields it has not been appraised yet in urban design (Rosenberg and Shannon, 2018), where a dominant perception associates mobility only to physical movement and transport. Nevertheless “the way in which mobility is conceptualized and operationally defined [will] affects its application and research findings” (Kaufmann *et al.* 2004), thus interpreting and understanding mobility as a social practice interlocked in time and space will enable, also in the field of urban design, the elaboration of more convenient solutions to mobility related questions.

As matter of fact, the mobility turn underlines some important elements that can lead our reflection: 1) first of all, mobility cannot be understood only as the physical movement between point A and point B (Cresswell, 2010) but as a fundamental human activity that is revealed in different forms and at different scales; 2) second, mobility need to be studied with an interdisciplinary approach (Secchi and Pellegrini, 2010; Bertolini, 2008; Pucci and Colleoni, 2016; Rosenberg and Shannon, 2018) and touching different scales; 3) last, many scholars agree, nowadays, to consider mobility as a citizenship right (Secchi and Pellegrini, 2010; Carrosio and Faccini, 2018). To this regard François Ascher² defines the right to mobility both as the right to freedom and to be mobile in order to meet individual’s needs and expectations and the right to ensure a minimum level of mobility to all member of society (Ascher, 2005).

The reference to mobility as right together with the need to match this right with general costs³ of mobility draw attention toward the concept of accessibility (Colleoni, 2019; Sheller, 2018, Martens, 2017; Lucas, 2012; Pereira *et al.*, 2016, Pucci and Vecchio, 2019) . The notion of accessibility has been studied profusely in the field of transport studies. Following on this paragraph, I introduce some relevant interpretations of accessibility; the review presented in this paper is not pretending to be exhaustive, instead it focuses on those definitions that emphasize the complex nature of accessibility and interpret it as the capacity that allows individuals to reach opportunities and resources in order to be part of a territory and a community and, consequently, considers accessibility as a suitable principle to design more efficient, inclusive and equitable mobility system people-focused and needs-based (Pucci *et al.* 2019; Lucas, 2012). Many research projects have already demonstrated the causality between low level of accessibility and mobility related social exclusion (SEU 2003; Lucas, 2012; Kenyon *et al.* 2002), operationalizing an interpretation of accessibility based on individual’s needs, and highlighting that “the transport and land use system can reinforce social exclusion by increasing generalized cost of travel for person at risk” (Schonfelder and Axhausen, 2003). Nevertheless, I believe that these interpretation of accessibility, based on individual’s needs and

2. François Ascher identifies the “droit-liberté” et “droit-créance” (Ascher. F, 2005)

3. Mobility costs are not only economical but also social and environmental (Ascher; 2004; Sheller, 2018, Litman, 2013). The development of transport system involves negative impact at different territorial level: soil consumption due to the spaces occupied by car and mobility infrastructures (Sheller, 2018), congestion, emissions, noise nuisance, use of nonrenewable energy, and production of solid waste (Bertolini, 2008). Some authors also argue that an increase in physical mobility to tackle mobility-related exclusion is contrary to environmental aims; is financially costly; will take long time to be effective and is unlikely to meet all mobility needs of the all population (Kenyon, Lyons and Rafferty, 2002). To this reagrd, Bruno Latour also reasons about the relation between climate change scarcity of resources and the rise of social inequalities (Latour, 2018).

opportunities, may help also to study the relation between accessibility and territorial fragilities, which has not yet been deeply analysed.

In table 1, I synthetically introduce some definitions of accessibility highlighting for each of them the key factors. I started with a classical definition that clearly distinguishes between the different components of accessibility (individual and place) till to bring the attention toward definitions of accessibility more people-centred and based on capability approach. I consider those last very important as they allow a more multidimensional regard toward accessibility and call for new methods to measure and evaluate it. I finally consider also the concept of motility (Kaufmann *et al.* 2004), as it relates to accessibility but focuses “on the logic of the actor’s actions” in particular looking at the reasons behind modal choice and localisation (Flamm and Kaufmann, 2006), and thus may help to question traditional methods to evaluate accessibility.

Author	Definition	Key factors
Colleoni, 2019; Cascetta, Carteni, Montanino, 2012.	Characteristic of a place to be accessible or of an individual to get access at different places/opportunities	Traditional definition of accessibility according to place or people
Hansen, 1959.	The potential of opportunities for interactions with locations dispersed over space. Accessibility is a measurement of the spatial distribution of activity about a point adjusted for the ability and the desire of people or firms to overcome spatial separations	Accessibility referred both to person and context, the use of “potential” highlights the possibility to access as well as the measurability.
Pereira, Schwanen, Banister, 2016.	The ease with which persons can reach places and opportunities from a given location and be understood as the outcome of the interplay of characteristics of the individuals, the transport system, and land use”	Connection between individual, transport system and land use
Geurs and van Wee, 2004.	Focusing on passenger transport, we define accessibility as the extent to which land-use and transport systems enable groups of individuals to reach activities or destinations by means of a combination of transport modes	Accessibility as measure. Connection between individuals, activities and transport system. Measure of accessibility need to consider different components and perspectives
Handy and Niemeier, 1997	Accessibility is determined by: spatial distribution of potential destinations, the ease of reaching each destination and the magnitude quality and character of the activities found there. Accessibility is thus determined both by patterns	Land use + transport system + activities patterns and typology. Intuition in understanding the importance of people in measuring accessibility: the question of “wants and tastes”.
Martens, 2017.	The capability of individuals to participate in out-of-home activities.	Accessibility as choice, giving center stage to people. Accessibility contain the possibility of engaging in out of home activities more than to the number of activities. Capability Approach
Jones and Lucas, 2012.	Accessibility provides measures of the degree to which people can reach the goods and services that society considers are necessary for them to live their daily lives, but with an emphasis on potential/capability rather than actual behaviours.	Emphasis on potential rather than actual, connection between people and land use, and attention to individual needs
Flamm, Kaufmann, 2006	“Motility” can be defined on how an individual or a group take possession of the realm of possibilities for mobility and builds on it to develop personal projects. Motility focus on the logic of an actor’s action, in particular the reason behind the choice.	Potentiality of mobility and focus on the actor’s action

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Table 1. Accessibility definitions

Traditionally, accessibility has been defined as a characteristic both of the place - passive - or of the individual - active - (Colleoni, 2019; Cascetta *et al.* 2012; Martens, 2017). Person accessibility, or active, refers to the ease of an individual to reach different activities; while place accessibility, or passive, is the attribute of an activity location to be reached by its users. This dualism between place and person, with an emphasis on the system performances instead of a focus on individual’s needs,

limited the efficacy of traditional mobility and transport approaches in the design of mobility systems (Pucci *et al.* 2019); as matter of fact, traditional approaches assumed as main goal, the exploitation of mobility system by maximizing the distance travelled within travel and money budgets and therefore seek to enhance travel speed (Litman, 2013), furthermore, decision making in transport investments have been traditionally based on “aggregate demand” (Lucas and Markovich, 2011) and rarely considers individuals activities needs and capabilities of diverse populations groups, making it hard to design a system of mobility more inclusive and responsive to individual needs.

Since the seminal text of W.J. Hansen, who defined accessibility as “the potential of opportunities for interactions” (Hansen, 1959), combining person and place and moving the attention toward “the ability and the desire of people or firms to overcome spatial separation” (ibi), many accessibility definitions have given more attention to connect the different component of accessibility: individuals through people needs, what has been defined “wants and tastes” (Handy and Neimeier, 1997); land use, through the attention paid at the distribution of the different activities, density and quality of services; and transport system as the availability of different transport modes at different time and with different travel costs (Geurs and van Wee, 2004; Handy and Neimeier, 1997; Pereira et alii, 2016). According to these definitions accessibility involves as much people as place, because places need to be “accessible to people in all their different circumstances” (Farrington, 2007).

Accessibility as capability

All those reflections help to develop a new narrative of accessibility that considers access not merely as a transport issue but as a problematic that involves also land-use planning and the needs of individuals through the design of mobility and connectivity places (Farrington, 2007). Definitions such as the one elaborated by Martens (2017) or Jones and Lucas (2012) emphasize the potential dimension of accessibility stating that what is relevant to be measured is not the actual number of activities, services or transport but the possibility of engaging in out-of-home activities. In this sense, accessibility is a capability, which is “the ability of human beings to lead lives they have reason to value and to enhance the substantive choices they have” (Sen, 1997), thus including in the definition of accessibility also the question of choices and personal development. Working on accessibility as a capability moves attention toward individuals and their choices of mobility. The idea of mobility as potentiality, is also at the base of the formulation of the concept of motility (Flamm and Kaufmann, 2006; Kaufmann *et al.* 2004). Motility has been defined as “the capacity of entities to be mobile in social and geographic space” or as the way in which entities “appropriate the capacity of socio-spatial mobility” (Kaufmann *et al.* 2004). Motility include: access, which refers to the range of possible mobilities according to place and time; competence, which includes skills and abilities of the individual; appropriation, that refers to how agents consider themselves appropriate and select specific options for mobility.

While considering accessibility based on actual number of activities reached and existing transport system - the functioning - allows a deep knowledge of the actual condition of accessibility and mobility: what an individual has succeeded in being or doing (Martens, 2017), working on accessibility as capabilities allows to consider also activities that are not possible to be reached as well as users that cannot be mobile at the moment - the capability - which is the range of beings and doings a person could achieve (Martens, ibi.). In particular, accessibility should be considered as a combined capability (Pereira *et al.* 2016) because of its importance to the development of other human capabilities and to reach basic needs.

Accessibility: measures and scales.

Notwithstanding the great quantity and quality of studies on transport-related social exclusion, overall in UK after 2001⁴, that interpret accessibility as a capability and pose the accent on individual’s needs, it is worth noting that those works explore the lack of activity participation among fragile groups of population but still use rough proxies to measure accessibility, such as, for example, the proximity to public transport stop (Martens, 2017).

Nevertheless, many different and sophisticated indicators of accessibility are already available in literature. Geurs and van Wee have made a very deep review of the different methods that can be used

⁴ In 2001 Social Exclusion Unit have been asked to work on the problems experienced by people in reaching work and key services (SEU, 2003)

to measure accessibility (Geurs, van Wee, 2004). They identify 4 different components of accessibility: 1) land use component which analyses the land use system including distribution and demand of opportunities, 2) transportation system which describes the transport system, 3) temporal component which studies the availability of opportunity at different time of the day, 4) individual components which describes needs, abilities and opportunities of individuals. They also list 4 different perspectives to measure accessibility: infrastructure-based; location-based; person-based; utility – based. According to Geurs and van Wee, ideally an accessibility measure should take into account all those different components. Even though in practice “applied accessibility measure focus on one or more components, depending on the perspective taken” (Geurs, and van Wee, 2004). This is due to different factors such as the availability of data the ease to be operationalised, interpreted and communicated. Grieco (2006), instead, suggests to work in three main dimensions of accessibility : 1) place-based measures including opportunities and services within the immediate surrounding of a person, 2) social-category stratification of the community to identify social need, 3) person based measures, such as individual public transport user’s profile of journey needs (Ohnmacht et al. 2016), adding, to the four dimensions considered by Geurs and Van Wee, the social one. Preston and Rajé (2007) suggested to use a matrix that combine area accessibility, area mobility and individual mobility to investigate accessibility in relation to social exclusion, and propose to use this matrix also to identify differences in accessibility between urban, peri-urban and rural areas. Last, research such as the one elaborated by Schonfelder and Axhausen (2003) tries to find a measure for dimensioning activity space, which is that part of the environment used by individuals for their daily activities that includes also the locations not necessarily visited yet, and thus investigates accessibility as a potentiality. In a recent work, van Wee (2016) added some further considerations to the review of accessibility measures, highlighting that accessibility measures should focus also, among others, on: short distances and slow modes, multimodality, ICT and perception of accessibility. Those works highlight the need to explore more the individual dimension of accessibility in order to identify individuals basic needs.

As matter of fact, defining accessibility as the capabilities of the individual to participate to out-of-home activities oblige to considers individuals activities, needs and capabilities of diverse populations groups, when measuring accessibility. Preston and Rajé (2007) suggested two possible approaches: the first one, a more disaggregated, requires extensive survey in order to collect information about individual users, its interest is in revealing a dense and detailed description of the phenomenon but is time and money consuming. A second approach, easier to operationalise, consists on the simulation of population interest based on census and available data and measure, a similar approach has been used by Pucci (Pucci *et al.*, 2019) to evaluate accessibility to work by public transport in the city of Buenos Aires. In my opinion, interesting results may be achieved by the combination of the two methods in different moments of the study and applied at different territorial scales.

As matter of fact, Jones and Lucas (2012) identify, in the existing literature, three different scales of accessibility: micro, meso and strategic. At the micro scale the measure of accessibility relates to the design of object and space and the ease with which people can perform various tasks. Meso level focuses on the neighbourhood level. Strategic accessibility, instead, is associated to town and regional dimension and put in relation land use pattern, transport network and activities desired by specific populations groups. Strategic accessibility is the most studied and documented both in policy perspective as well as in academic community (Jones and Lucas, 2012). Additionally a fourth level could be added, that considers long distance accessibility and deal with national scale, highlighting that measure of accessibility may differ also in consideration of the typologies of trips, long distances or everyday mobility, for example.

A possible way to look forward in the direction of establish a method to measure accessibility, paying attention to the fulfilment of individual basic needs, may be a category based approach that matches people and targets, ensuring that basic needs are delivered or may be delivered when and where they are needed. This approach may help to avoid social exclusion and the raise of conflict, offering solutions to deal with territorial fragilities. Although working on categories and groups still involves “a form of aggregation and tend to lose the richness of individuals’ lived experiences” (Preston and Rajé, 2007).

Conclusion

There is still a dominant narrative that associate mobility with freedom and accessibility with infrastructure, a narrative that, since industrial revolution, describes transportation and urban development as interconnected and considers the construction of new infrastructure as a solution to

mobility problem and social exclusion. According to this narrative low infrastructured territories are remote and marginal, this marginality and remoteness are considered an indicator of fragilities. As matter of fact spatial marginality can be one of the many drivers that can lead a territory to be fragile, although empirical evidences may show that can exist very strong remote areas as well as fragile but central territories.

In this paper I have argued that this narrative is linked to a definition of mobility only as physical movement and focus only on transport and land-use components of accessibility. Instead defining accessibility as the capability of individuals to participate in out-of-home activities: 1) emphasizes potentiality rather than functioning, 2) allows to consider accessibility as a measures of the degree of connection between individual needs, transport and land use.

Clearly this definition of accessibility calls for more sophisticated indicators that could take into account simultaneously the different components and adapt to different scales of observation. I suggest that, even if still simplified and based on aggregated data, a possible way to look forward in this direction may be a category based approach that matches people and targets according to different scales and trips. Clearly a complete measure of accessibility have to be based on the combination of multiple accessibility indicators, each of them calculated on different scales and components. Next research step will focus on testing this approach to some areas in Italy.

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Enhancing urban-rural connectivity in non-metropolitan regions: a methodology in support to decision-making

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Abstract: Accessibility to services and opportunities is vital to achieve the EU goals of smart, sustainable and inclusive growth. Some territories are worse equipped than others in this concern, due to their intrinsic peripheral character. Their weak and scattered mobility demand has progressively made traditional public transport subject to efficiency savings and cut to the bone. Such measures contributed to worsen social inequality, as they affect especially those already vulnerable groups who do not have access to a car. In this light, to improve urban-rural connectivity is essential for granting equal access to services and opportunities and, in turn, greater social justice. Demand Responsive Transport (DRT) has been often seen as a panacea for all the circumstances where traditional services are not viable, but a range of barriers (institutional, cultural, technological and economic) suggests that its adoption is more challenging than it may seem. Drawing on the results of the ESPON URRUC project, the paper sheds light on this issue, exploring the variables according to which various DRT solutions may or may not prove viable in a given area. On this basis, the authors propose a transport policy toolkit that may support decision-maker aiming at enhancing urban-rural connectivity across Europe.

Keywords: rural areas; accessibility; policies; on-demand services

Introduction

Accessibility to services and opportunities is vital to achieve the EU goals of smart, sustainable and inclusive growth. Some territories are worse equipped than others in this concern, due to their intrinsic peripheral character. At the same time, the weak and scattered mobility demand that typically characterizes these areas makes traditional public transport inadequate and inefficient. As a consequence, in most of them public transport has been progressively subjected to efficiency savings and cut to the bone. Such measures contributed to worsen social inequality, as they affect especially those already vulnerable groups who do not have access to a car, due to physical, age or economic reasons.

In this light, to improve urban-rural connectivity is essential for granting equal access to services and opportunities and, in turn, greater social justice. Whereas the dematerialization of services and relationships may

help reducing the isolation of peripheral regions, physical accessibility to main centres is still crucial for territorial development, as it contributes to foster local economies and to increase the quality of life for those with inadequate or restricted access to services and opportunities.

Demand Responsive Transport (DRT) has been often seen as a panacea for all the circumstances where traditional services are not viable, but a range of barriers (institutional, cultural, technological and economic) suggests that its adoption is more challenging than it may seem, and that no one-size-fits-all solution exists. Taking stock of the literature on the matter and drawing on the results of the ESPON URRUC project – which addresses issues of urban-rural connectivity in non-metropolitan regions in Europe –, the paper sheds light on this issue, exploring the variables according to which various DRT solutions may or may not prove viable in a given area. On this basis, the authors bring forward a first draft of a transport policy toolkit that may support decision-makers aiming at enhancing urban-rural connectivity across Europe.

Next paragraph briefly presents general accessibility issues of remote areas; the URRUC project is then presented, describing its aims, case studies and related challenges; afterwards, the methodology used to develop the policy toolkit within the URRUC project is presented, and the summary of the results of its application to the case studies is shown. Concluding remarks highlight the preliminary results of the URRUC project, discuss opportunities and limits of the proposed toolkit and propose directions for further research.

Accessibility issues of remote areas

The first approaches to operationalizing the concept of accessibility were elaborated with reference to metropolitan areas in North America at the end of the 1960s (Hansen, 1959). However, in a couple of decades researches and studies acknowledged that accessibility problems were far more challenging in rural and mountain areas, where population density is generally low. This awareness is well summarized in the title of a famous book by Malcom Moseley published in 1979: “Accessibility: The rural challenge”.

When accessibility is dealt with in rural and mountain areas, which are significantly far from services and opportunities aggregated in urban centres, a change of perspective is required. Since the second half of the last century, most of these areas underwent intense processes of de-anthropization, that caused a reduction in the resident population and its progressive ageing. As a result, the number of potential users of basic services (such as education, health, etc.) in these areas fell below the critical minimum threshold of indivisibility; many local facilities had to be closed, and dependence on services concentrated in major cities increased.

At the same time, the low density and the scattered structure of the settlements (which are fragmented into small towns and semi-abandoned villages) make it difficult to activate public transport services. In fact, due to the low number of users and the dispersion of the origins and destinations of their trips, it is hard for these collective transport services to reach a sufficient level of financial and economic sustainability (Farrington and Farrington, 2005). Ownership of a private motorized mean becomes indispensable to access the services in the nearest main city, to the detriment of those who cannot afford or use a car, such as older residents, minors, low income families, etc.

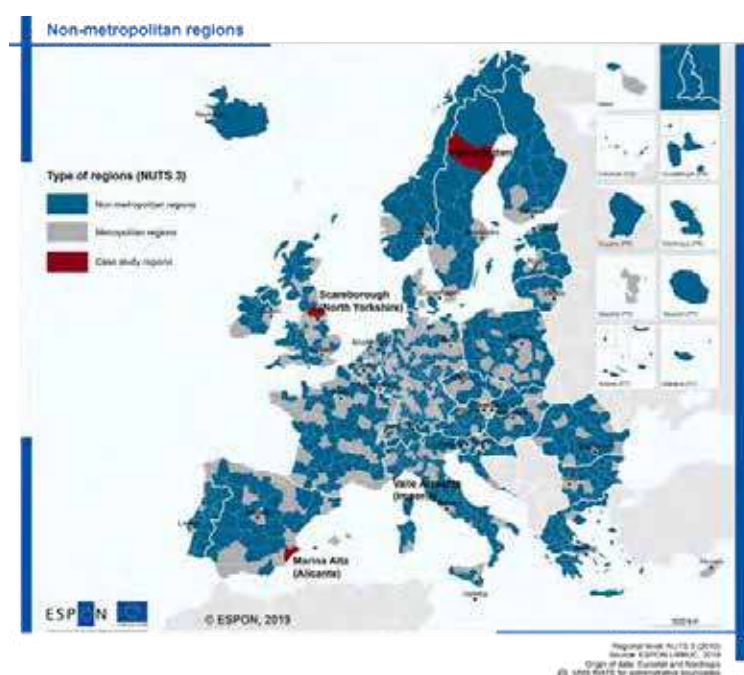
Moreover, physical inaccessibility of rural and mountain areas is often exacerbated by virtual inaccessibility. On the one hand, these territories are generally less covered by broadband infrastructure, which is essential for innovative solutions in providing those services (e.g. telemedicine and distance education) which are not locally available. On the other hand, a reduced digital literacy makes it even more difficult to activate such solutions (Malecki, 2003).

In the end, the issue of accessibility in rural and mountain areas is a vicious circle: reduction in the resident population implies the closure of most local services, which means less opportunities for studying, working, social interacting and so on; this underdeveloped condition increases the risk of further de-anthropization.

Therefore, even more than in urban centres, improving the accessibility of rural and mountain areas means acting on several fronts. It is not sufficient to strengthen transport infrastructures and promote more flexible transport services. It is also necessary to enhance the local territorial capital, bringing (or bringing back) in these areas, services, knowledge, social interactions, etc. (Gray, Shaw and Farrington, 2006; Schwanen et al., 2015).

The URRUC project and the territories at stake

Launched in June 2018 and lasting for one year time, the research project URRUC (Urban-Rural Connectivity in Non-Metropolitan Areas) is funded in the framework of the European Territorial Observatory Network (ESPON). The main objective of the project is to contribute to improving connectivity and accessibility related to urban-rural linkages in four non-metropolitan areas: (i) Scarborough Borough, (United Kingdom); (ii) Marina Alta (Spain); (iii) Regione Liguria, Valle Arroscia and the Province of Imperia (Italy) and (iv) Region Västerbotten (Sweden) (Figure 1).



1. Territories under scrutiny in the URRUC project. Source: ESPON and University of Coventry, forthcoming-a

All four share similar characteristics. They are coastal areas with poor connectivity and access to inner, rural areas. The size and dispersion of their populous makes infrastructural development difficult. Major urban centres are located by the coast and suffer from congestion due to commuting flows at peak hours, also coming from inner areas. This is driven by the needs of rural households to access core services, employment opportunities, education and recreational locations, which are primarily found in the largest urban areas. Investment in transport infrastructures and services is inadequate to meet these demands, as the nature of these territories, with small, dispersed populations, makes transport provision economically difficult and hardly justifies expenditure. Optimising transport solutions is further aggravated by seasonal flows associated with tourism.

More in particular, most of the rural and mountain areas of Marina Alta (some of them being accessible, other more remote) lack of adequate access to services and opportunities, especially as far as those who don't have access to the car are concerned. Although the potential market for public transport is wide, public transport is almost not taken into account when planning a trip. Those who have access to the car use almost only this mean of transport, both because of lack of adequate alternatives and of a poor sustainable mobility culture. Weak

horizontal and vertical coordination, fragmentation of competences and different knowledge and priorities challenge the improvement of accessibility of rural areas, and flexible solutions face a rigid legislative frame and some resistance to change.

Rural areas and suburbs of Scarborough Borough Council currently lack alternatives to private car for connections and accessibility to Services of General Interests. Social objectives prevail in such areas, whereas also economic ones are relevant for Scarborough, so connectivity is crucial and road expansion is seen as a priority by the local stakeholders. Commuters mainly use the car (or the bike where possible) and are satisfied with their mobility; public transport is unreliable and used mainly for leisure, so those who don't have access to the car are very disadvantaged. The specific and general contexts which surrounds operational conditions pose some challenges, especially in terms of fragmentation of competences, competing priorities and limited influence of the local level on upper-tier ones. Economic and commercial criteria strongly prevail on social and place shaping ones, worsening territorial and social inequalities.

The towns and hamlets of Valle Arroscia are dispersed over a wide mountain territory, some of them being far from the main road axis of the valley. Most of trips are made by car, and the current public transport system fails to meet the need of the few who rely on it. Hence, while car users are not in search of alternatives, some user groups suffer from territorial assignment. Public transport is seen as a last resort and at the same time poses serious challenges to those who rely on it to get to main urban nodes. Fragmentation of competences, different priorities, lack of vertical coordination between stakeholders involved in transport planning and operation raise challenges. Furthermore, local stakeholder has scarce influence on upper-tier decisions and the legislation, licensing and operation of public transport pose some limit to the introduction of flexible transport solutions.

Västerbotten territory features rural settlements, most of them being accessible and some very remote. Territorial density is very low and long distances and unfavourable weather strongly affect some user groups (i.e. those who don't have access to the car or inhabitants of remote hamlets in winter). To date, public transport is almost not considered as an option, and there is lack of information of the existing services. Still, public transport is generally seen with some interest, as well as digitalization of services. Vertical and horizontal cooperation is hampered by lack of time and resources, and there seems to be no intention to increase investment in public transport nor to finance potential solutions to improve connectivity in a cost-efficient way.

With the support and direction from stakeholder representatives in all four territories, the project aimed at improving understanding of urban-rural mobility and accessibility challenge in these regions and to provide appropriate tools for improving connectivity and accessibility through knowledge transfer processes. Furthermore, the project it also focused at exploring the actual potentials for transferability of findings by engaging in theory and literature-based activities, in order to provide learnings applicable to other Non-Metropolitan Regions across Europe with similar urban-rural connectivity issues, supplying valuable knowledge and outputs. These outcomes specifically address the six knowledge needs detailed below.

1. How can efficient public and private transport networks and sustainable solutions be advanced to enable access to key services, activities, employment opportunities and commercial possibilities for the population in remote NMRs?
2. What are the potentials, opportunities, and challenges for developing flexible and sustainable urban-rural transport connections and systems in comparable NMRs suffering similar connectivity and accessibility challenges?
3. What innovative solutions can be utilised, such as demand-responsive transport systems? What potential impacts can emerging technologies associated with climate change, such as low emission and electric vehicles, have on modes of travel?
4. What institutional/administrative barriers associated with cross-agency services impede the efficient implementation of transport policy in remote/inaccessible areas?

5. What can be learned from existing practices in Member States in developing and maintaining flexible and sustainable urban-rural transport connectivity in NMRs?
6. How can existing and future transport policy and other relevant policies be further strengthened to support the development of flexible and sustainable transport solutions in non-metropolitan regions, including transport initiatives at EU-level?

In order to provide answers to these questions, the research team developed a specific policy toolkit that could support decision and policy-makers in conceptualizing and implementing solutions for their respective territories. The main characteristics of this toolkit are provided in the section that follows.

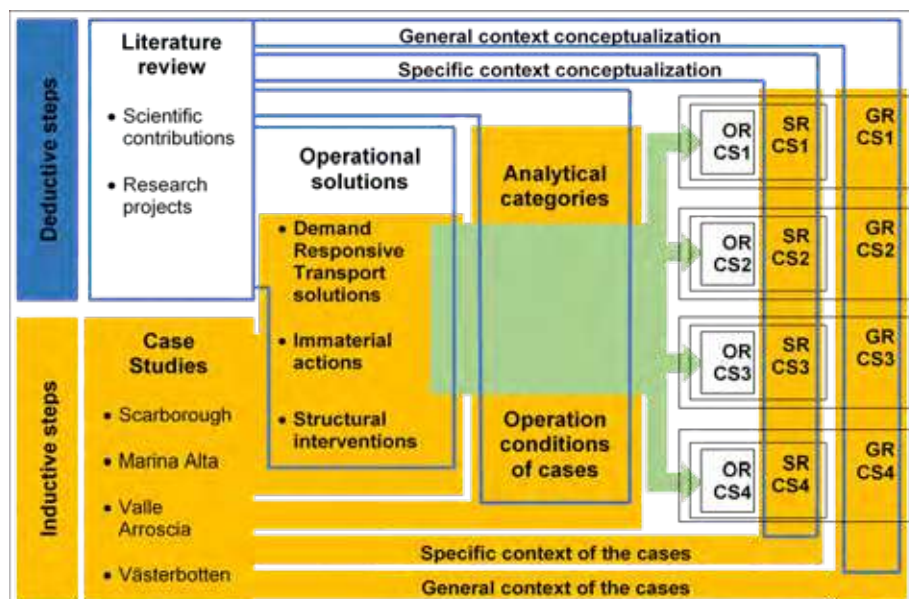
A policy toolkit to support decision-making

One of the main tasks of the URRUC project was to develop “policy recommendations to further strengthening transport policy and systems related to urban-rural connectivity and interaction in non-metropolitan regions”. This task has been pursued through two separate but strongly interrelated research activities:

- Firstly, building on the case studies’ analysis and on a thorough review of the scientific literature and recent research projects, the research team developed four sets of policy recommendations, fitting the operational conditions and meeting the specific and general challenges of the stakeholders’ territories.
- The recommendations were then reflected upon in relation to their potential to fit other non-metropolitan territories in Europe, also on the basis of the NMR typologies identified in the literature and appropriately adjusted as a result of our analysis.

Bearing in mind the challenges and barriers to policy transfer and taking stock of literature on transferability (Dolowitz and Marsh, 1996, 2000; Cotella et al., 2015; Macario and Marques, 2008), a policy toolkit aimed at supporting decision-makers to enhance urban-rural connectivity across Europe is proposed.

More specifically, the methodology adopted to develop guidelines and recommendations for URRUC stakeholder territories and, in general, for European non-metropolitan regions affected by similar accessibility challenges, is composed of a number of complementary inductive and deductive steps, shown in Figure 2.



2. Methodological steps for the identification of policy recommendations (ESPON and Coventry University, forthcoming-b).

Firstly, a thorough literature review, focusing on both academic conceptualizations of the issues at stake and international research projects identifying good practices, led to the identification of a number of possible solutions aiming at improving accessibility and urban-rural connectivity in non-metropolitan regions.

Eleven possible alternatives to the private car were selected (most of them being Demand Responsive Transport solutions). Namely: bus on demand, car clubs, car sharing, feeder, ride-sharing, service delivery, shuttle van, social transport, taxis, shared taxicabs, village minibus. These possible alternatives were assessed against a set of analytical categories identified in the literature analysis (Ambrosino, Nelson, and Romanazzo 2004; Davison et al. 2012, 2014; Hunkin and Krell 2018; Loveless 2000; Mounce et al. 2018; Velaga et al. 2012; D. S. Wright 2013; S. Wright et al. 2014) and complemented by the case studies. These are:

- geographical coverage: what type of area is the service covering? Categories: rural accessible, rural remote, hill/mountain accessible, internal mountain, suburb;
- eligible users: who are the main users? Categories: territorial assigned person, commuter, student, tourist;
- type of use: which kind of use is the service meant for? Categories: single user/small group, collective users;
- booking: how does the users book their journey? Categories: phone (call/SMS), Internet (app/website), other (i.e. infopoint, on vehicle, etc..);
- booking: when is booking required? Categories: On day/real-time, in advance (> one day), repeating (on regular basis);
- timetable: how flexible is the timetable? Categories: on demand, fixed, mixed (i.e. on demand at fixed times);
- route flexibility: how flexible is the route? Categories: Fixed route, fixed route with possible deviations (i.e. within a corridor), fully flexible;
- routing pattern: where are users picked-up/dropped-off? Categories: one to one, one to many/many to one, many to many;
- vehicle size: what size of vehicle should be used? Categories: car, minibus/van, bus;
- price: what is the price for the user? Categories: free/discounted, paid/standard, paid/premium;
- financing: how is the service financed? Categories: subsidized, partly subsidized, commercial;
- performance objectives: what kind of goal is the service meant to achieve? Categories: economic, social, environmental;
- level of demand: what is the expected or measured level of demand (total passenger trips / total vehicle hours x trip length)? Categories: very low/less than 10, low/between 10 and 20, medium/between 20 and 50, high/greater than 50.

Subsequently, the relevance of each of the above-mentioned criteria and category was assessed for each of the four stakeholders' territories. In so doing, conditions were set for a pre-assessment, to check the fit of each solution in relation to the specific operational conditions of each of the stakeholder territories. As far as the operational level is concerned, also the relevance of some non-material and cross-cutting actions (digital platforms, territorial mobility management and dematerialization of services) was assessed for each case study, taking into consideration also the territorial level at which they would best be implemented, and possible criticalities and barriers in terms of resources, digital coverage and know how).

Beside the operational conditions, the analysis had shown that each of the four case study territory presents a set of challenges hampering accessibility and urban-rural connectivity. Building on the framework proposed by Davison et al. (2012, 2014), these challenges were divided in two macro groups (specific and general), each further characterised by sub-themes (market, consumers perceptions, stakeholders, policy and government, economic, sociocultural and technological features). Building on this conceptualization, the identification of the specific and general challenges that characterise the four territories at stake has allowed for the identification, for each of them, of two additional sets recommendations. Specific and general recommendations are meant to reduce the barriers that currently hamper the implementation of measures to improve accessibility and urban-rural connectivity.

Such recommendations were then further discussed with the stakeholders, in order to assess their actual priority and complexity in the respective territories. Combining the priority and the complexity of each recommendation, their deliverability was assessed on a scale of four (high, medium-high, medium-low, low).

Finally, each case study was provided with both detailed descriptions and summary tables showing the operational conditions, specific and general challenges which feature its territory, as well as operational, specific and general recommendations.

To fulfil the project's goal of providing recommendations for EU non-metropolitan regions, a comparative synoptic evaluation of the recommendations for the case studies was made, and the operational features of each of the identified transport actions, as well as the actual transferability of the suggestions aimed at solving the identified specific and general challenges were presented.

This policy toolkit supported the process of co-definition of recommendations for the case studies, and will serve not only to guide the action of local stakeholders, but also to set the ground for a proactive dialogue with the upper-tier administrations who are responsible for planning and providing the transport offer.

Application to the URRUC case-studies

Recommendations for each of the case studies were structured according to the structure described in the previous paragraph. The following subparagraphs summarize the selected operational specific and general recommendations for each case study, showing for each recommendation the priority, complexity and rate of deliverability.

CREAMA - Consortium for the Economic Recovery of Marina Alta

Table 1. Marina Alta. Synthesis of operational, specific and general recommendations

	Recommendation	Priority	Complexity	Deliverability
OPERATIONAL	Village minibus (mixed use)			
	Social transport			
	Bus on demand			
	Ride sharing			
	Service delivery			
	Railway			
SPECIFIC	Careful analysis of the real users' needs			
	Win the trust of commuters			
	On time, regular and accessible PT			
	Strengthen a PT friendly culture			

	Flexibility in transport and service provision			
GENERAL	More compact urban development model			
	More incisive and concertized planning			
	More flexible legislation			
	Horizontal and vertical cooperation			
	More funding			
	Better access to public transport			
LEGEND				
Priority	High	Medium-high	Medium-low	Low
Complexity	Low	Medium-low	Medium-high	High
Deliverability	High	Medium-high	Medium-low	Low

Scarborough Borough Council

Table 2. Scarborough. Synthesis of operational, specific and general recommendations

	Recommendation	Priority	Complexity	Deliverability
OPERATIONAL	Village minibus			
	Social transport			
	Shuttle van			
	Feeder			
	Digital platforms			
	Territorial mobility management			
	Dematerialisation of services			
	Structural improvements (road expansion)			
	Cycle paths			
SPECIFIC	Education travel for tertiary level users			
	Recognition of value of tourism for transport			
	Increase resource capacity for transport			
	Devolve local taxation			
GEN.	More streamlined planning processes			
	Continue support to business and education			
LEGEND				
Priority	High	Medium-high	Medium-low	Low
Complexity	Low	Medium-low	Medium-high	High
Deliverability	High	Medium-high	Medium-low	Low

Valle Arroschia

Table 3. Valle Arroschia. Synthesis of operational, specific and general recommendations

	Recommendation	Priority	Complexity	Deliverability
OPERATIONAL	Feeder			
	Bus on demand			
	Car and ride sharing			
	Service delivery			
	Smart ticketing / digital platforms			
	Territorial mobility management			
	Dematerialisation of services			
	Intermodal passenger transport			
SPECIFIC	Moderate degree of flexibility			
	Target policies to various users			
	Transport services for tourism			
	Transport consortium			
GENERAL	Legislative framework			
	Interaction among layers and sectors			
	Reverse marginalisation processes			
	Bridge the digital divide			
LEGEND				
Priority	High	Medium-high	Medium-low	Low
Complexity	Low	Medium-low	Medium-high	High
Deliverability	High	Medium-high	Medium-low	Low

Västerbotten

Table 4. Västerbotten. Synthesis of operational, specific and general recommendations

	Recommendation	Priority	Complexity	Deliverability
OPERATIONAL	Transport on demand (bus or car)			
	Redesigning the bus layout			
	Intermodal parking facilities			
	Dematerialisation of services			
SPECIFIC	Combining service and good delivery with passenger transport			
	More funds for pilot transport projects			
	Workplaces as strategic partners			
GEN.	More support for rural areas			
	Beyond administrative borders			
LEGEND				
Priority	High	Medium-high	Medium-low	Low
Complexity	Low	Medium-low	Medium-high	High
Deliverability	High	Medium-high	Medium-low	Low

Comparative analysis and recommendations for EU non-metropolitan regions

As mentioned in the previous paragraphs, one of the goals of the URRUC project was to provide recommendations non only for the case studies, but also for those EU non-metropolitan regions with similar characteristics and challenges to the four stakeholders' territories.

To this aim, the challenges and recommendations for the four case studies were compared and clustered into a smaller set of recommendations, based on the affinity among recommendations made by different case studies. Table 5 is a synoptic representation of the recommendations made for the case studies, highlighting their priority for each case. It sets the ground for the definition of recommendations for EU non-metropolitan regions, as a result of the inductive-deductive approach described above.

As far as alternatives to the private car are concerned, recommended alternatives were picked among the 11 possible solutions that were previously defined¹. Similarly, the non-material and digital solutions that were recommended refer to three common clusters that are the same for all the case studies (digital platforms, mobility management and dematerialization of services). For such recommendations the synoptic representation shows the recurrence and priority in each of the case studies. A more varied frame emerged from the structural interventions (which are very context-dependent and differ in each case study) and specific and general recommendations. Hence, such recommendations were clustered: the 16 specific recommendations that emerged from the case studies were reduced to 7 clusters, and the 14 general recommendations were reduced to 5 (Table 5).

Table 5. Synoptic representation of the recommendations for the case studies

	Recommendation	Marina Alta	Scarborough	V. Arroscia	Västerbotten
OPERATIONAL	Bus on demand / call cars				
	Village minibus				
	Feeder				
	Shuttle van				
	Car and ride sharing				
	Social transport				
	Service delivery				
	Digital platforms				
	Mobility management				
	Dematerialisation of services				
	Structural interventions				
SPECIFIC	Careful analysis of users' needs				
	Targeted policies (various users)				
	Strengthen PT-friendly culture				
	Mixed use of transport services				
	Strengthen local skills and roles				
	More funds for transport				

¹ Namely: bus on demand, car clubs, car sharing, feeder, ride-sharing, service delivery, shuttle van, social transport, taxis and shared taxicabs, village minibus.

GENERAL	projects				
	More importance to tourism				
	Governance (horizontal, vertical)				
	Flexibility (rules and processes)				
	Compact urban development				
	Reverse marginalisation				
	Bridge the digital divide				
LEGEND					
Priority		High	Medium-high	Medium-low	Low

Recommendations listed in Table 5, which are fully described in Annex VIII of the final report of the URRUC project (ESPON and Coventry University, forthcoming-c), provide an insight on similarities and peculiarities of the four case studies, as well as a list of suggestions for EU non-metropolitan regions facing issues of urban-rural connectivity.

Conclusion

The proposed contribution presented the results of the project ESPON URRUC, aiming at developing recommendations towards better accessibility and connectivity in four non-metropolitan regions in Europe and, more in general, in all territories, sharing similar characteristics to those under scrutiny in the project.

It did so by explaining the methodology adopted by the project to develop these guidelines and recommendations, i.e. a preliminary policy toolkit that should help local public authorities in formulating decisions on the matter. Rather than resembling quantitative decision support systems and models, the proposed toolkit focuses on the interaction between stakeholders and on the joint identification of operational conditions and specific and general challenges and frame, and often constrain, urban-rural connectivity issues. On this basis, it guides stakeholders in the process of “weighting” the various potential solutions vis-à-vis the identified conditions and challenges, in so doing allowing them to assess their priority and complexity, and eventually their deliverability.

Whereas the proposed list of suggestions deriving from the application of the toolkit to a territory is far from being exhaustive, its objective is to stimulate policy and decision makers in EU non-metropolitan regions to think in innovative terms about transport and connectivity challenges and potentials that characterise their territories.

The toolkit helped stakeholders to realize that before designing operational solutions, it is necessary to act on the underlying preconditions for improving accessibility of rural areas. Issues of governance, legislation and sociocultural aspects revealed to be strong barriers, that would thwart any attempt to provide alternative services. Hence, before trying to provide alternative services it is necessary to reflect on such preconditions.

As mentioned above, the policy toolkit presented in this paper is to be considered as a preliminary work, which has been tested only in the four case-study areas. Dialogue with the stakeholders helped to identify possible improvements, and more research is needed, i.e. to consolidate the weight assignment system, to test the toolbox in other territorial contexts and to refine the methodology accordingly.

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‘Sticky Flows’ and ‘Productive Frictions’: Untangling the Mechanisms of Street Urbanism

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Abstract: Streets are the ultimate ‘places of movement.’ Adopting a mobility perspective on street urbanism, this paper analyzes how the interaction of movement, places, and people explains the range of activities and socioeconomic opportunities supported by the streets of Ho Chi Minh City (Vietnam). The context is one of a tangible transition from motorbike to car mobility. This paper aims at identifying mobility-specific mechanisms through which a mobility transition brings about socio-spatial change. Mixed methods served to analyze data collected through participant observations, video recordings of street life, and interviews with street users. The results show a consubstantial relationship between today’s dominant motorbike mobility and vibrant street activity. In contrast, car mobility is negatively correlated with street life. Motorbike mobility is characterized as a ‘sticky flow’ – low speed, thickness, and propensity to seep in and out of the curb. It is argued that such flow is conducive to ‘productive frictions’ between movement and the built environment. By connecting people on the move and people in places, these frictions play a significant role in the production of streets as integrative spaces of opportunities. The mobility transition in HCMC is one towards fewer and fewer points of productive frictions in the urban space.

Keywords: Mobility, Street Urbanism, Ho Chi Minh City

Introduction

Ho Chi Minh City (HCMC), the economic engine of Vietnam, has a rather unique ‘*transportation signature*,’ or ‘*mobility image*:’ there are about as many motorbikes sharing the road (8.5 million) as there are people living in the city (H.K. Kim, 2017). On average, every household owns two of these light, small, and quite affordable vehicles¹ that provide the flexibility of a bicycle coupled with the comfort of motorized transportation (Truitt, 2008). The fact that the vast majority of the population (83% in 2014) relies on this transportation mode for all mobility needs (JICA, 2016) gives the city’s streets and other public spaces a rather fast pulse, an active feel, that some may describe as loud and relentless. The mobility image of the city was radically different less than three decades ago, when the picture of any busy street or intersection would include many more bicycles than motorbikes. Like other Asian cities, most trips were non-motorized at the time (Replogle, 1992; Tiwari, 2002), the main reason

¹ The typical vehicle is either a semi-automatic motorbike or an automatic scooter. The engine capacity usually is either 110 or 125 cc.

being that years of war and restrictions under communist rule had left the population unable to afford anything else.

As for the city of tomorrow, there are signs indicating a possible transition towards either cars, transit, or both, as the dominant forms of mobility. After three decades of market economy, the emergent middle class has been increasingly tempted with the comfort, safety, and symbolic status they can now afford through automobile ownership (A. Hansen, 2017; Thu, 2016; Tuan, 2015). The number of private cars remains low compared to motorbikes. In 2017, there were one million cars registered in the city (H. K. Kim, 2017). Automobile ownership is growing at an alarming rate (15% per year since 2014 according to Hansen, 2017), which significantly contributes to traffic fatalities, pollution, and congestion. Cars now fill up entire lanes in certain places at peak hour, they generally occupy a disproportionate share of road space, forcing motorbikes to squeeze in the leftover road space. Meanwhile, public policies have been paving the way for more cars on the roads; the local government is considering a complete ban on motorbikes in the city center by 2030. The rationale is that motorbikes should soon become a thing of the past. By then, public transit should have become a viable alternative for the carless. This is assuming that the rail transit network continues to expand at a faster pace than the first metro line, supposedly about to open in 2020, but nearly one decade behind schedule. Nevertheless, whether it is towards the car, transit, or both, what societal changes will the shift away from motorbike mobility entail?

Minute observations of street urbanism dynamics, of the micro social and spatial arrangements unfolding on the streets, can help anticipate the larger societal transformations led by a mobility transition. The street is where mobility problematics meet public sphere challenges. The objective is to first gain an understanding of the ways in which present mobility practices explain everyday social interactions, and long-term social integration, or lack thereof. I do so in HCMC drawing on five months of fieldwork, including participant observations, systematic video recordings of street life, in-depth interviews with urban dwellers about their mobility practices, with informal street vendors and conventional store owners about their business activities. I develop a theoretical framework that elaborates on Henri Lefebvre's theory of the social production of space. I adopt an ecological approach to the street environment in order to grapple with the complex interactions between its two major functions, as traffic corridor and public space.

I argue that the nature of movement through urban space influences both short-term social interactions on the streets and long-term socioeconomic integration in the city. In HCMC today, I first highlight some significant correlations between mobility practices and street activity. Then I shed light on the ways in which the dominant motorbike flow, an offspring of bicycle mobility, explains the vibrant street life typical of HCMC's public spaces. I qualify motorbike traffic as a '*sticky flow*' because of its propensity to irrigate the banks of the roadbed. Furthermore, I demonstrate that a mechanism of '*productive friction*' between such sticky flow and the built environment produces both social interactions on the streets and economic opportunities to live off the connection to the street. At the core of the lived space of urban mobility, productive frictions bring together people 'on the move' and people 'in places'. The mobility transition from motorbikes to cars in the case of HCMC for example can then be interpreted as a shift towards a less sticky flow traversing the urban space, therefore leading to fewer opportunities for productive frictions, in other words to a growing disconnect between people's trajectories, both literally as they move in the city, and figuratively as they proceed in life.

Literature Review

1) 'Mobility Transition' Research Agenda and 'New Mobilities' Paradigm

In a recent effort to theorize 'mobility transitions', Temenos, Nikolaeva, Schwanen et al. (2017) define the concept as a process, a shift from one 'particular moment of assembled technologies, infrastructures, societies, and economies' to another. They ask: 'What kind of societal changes will this entail?' Geels' (2002) multi-level perspective on socio-technical transformations has driven the mobility transition research agenda. The multi-level perspective is concerned with the interactions between technology, industrial innovation, market mechanisms, policy, culture, and civil society. The normative imperative of environmental sustainability has been the primary motivation for the multi-level framework. As a result, existing studies applied in the transportation sector focus on transitions away from automobile dependence, towards low- to no-carbon societies, in places like the Netherlands or the United Kingdom (Geels, 2012). The 'Mobility Transition' research agenda has yet to embrace the question of the societal changes entailed by transitions that occur in reverse, away from sustainability, towards automobile dependence. Most countries of the developing world are experiencing such transitions (e.g. Kenworthy, 2011). Globally, the total vehicle stock has been projected to grow from 800 million in 2002 to over 2 billion units in 2030, with the bulk of the increase taking place in emerging economies; China's increase will have been nearly twentyfold for example (Dargay, Gately and Sommer, 2007). To complicate the matter, several transitions may be occurring concomitantly in such contexts, towards both sustainable and carbon-based mobilities (Jones, 2016), like it is the case in Vietnam, against a backdrop of rapid urban and economic development. Yet, little is known about non-Western mobilities in general, Asian mobilities in particular (Cresswell, 2016), and none of the existing studies adopt a new mobilities perspective (e.g. Cervero, 2013; Cervero & Golub, 2007; Mateo-Babiano & Ieda, 2007; 2009).

The 'new mobilities' paradigm, on which the 'mobility transition' research agenda draws substantively, has marked a mobile turn in the social sciences (Sheller & Urry, 2006). It followed on earlier work concerned with the structuring effect of the automobile on societies (Sheller & Urry, 2000; Urry, 2000). Mobility is considered meaningful, as opposed to being thought of as an abstract line between two points on a map, a derived demand from the need to reach destinations, as it is usually the case in transportation research. It is conceived as an 'entanglement of movement, representation, and practice' (Cresswell, 2010). Mobility is a sensual and social experience, and therefore should be considered from the perspective of the people on the move, not that of the locations in which movement lands. The 'new mobilities' paradigm therefore advances a mobile ontology to explore social phenomena, arguing that after the spatial turn of the 1980s, as initiated by Soja (1980) in particular, the social sciences have remained static and location-based in their way of addressing dynamics of exclusion. In her latest book *Mobility Justice*, Sheller (2018) makes the case that by focusing on the spatial distribution of transportation resources, costs, and opportunities, studies on destination accessibility and environmental justice have failed to consider the injustices rooted in uneven mobilities. Mobilities are uneven at all levels, and all levels are interconnected, from everyday bodily moves constrained by individual capabilities, gender, sexual and racial circumstances, to cross-country migrations bound by international relations and climate change. Sheller demonstrates how a mobile ontology helps explain power dynamics in the contemporary world. Nevertheless, the sustained effort to supersede a spatial perspective in mobility research has led to a situation where *places* now tend to be overlooked. It seems important to bring the focus back on the social production of 'places of movement' (Sheller & Urry,

2006) as originally conceived in mobility research, as part of a dynamic relationship between movement, space, and people (Cresswell 2006; 2016).

2) *Street Urbanism from a Mobility Perspective*

Urban streets are the ultimate ‘places of movement.’ Yet, scholars interested in street urbanism have been most concerned about its function as public space than its other defining feature as the stage of mobility. Public space is civic by nature, it is the physical space of the abstract notions of civility and public realm. It is ‘the common ground [...] that binds a community’ through a common sense of belonging, not only to a place, but also to a group (Carr, Francis, Rivlin, & Stone, 1992). Streets have been posited as the ‘quintessential public space’ (Mehta, 2013)—Kostof went as far as to claim ‘[t]he only legitimacy of the street is as public space. Without it, there is no city’ (Kostof & Castillo, 1992, p. 194). Sidewalks, a contested space, are the ‘most important and the most overlooked public space’ (Kim, 2015). Regulating sidewalk uses is an exclusive practice, it is a way of controlling who has access to public space (Blomley, 2007). In their study of the homeless of New York whose livelihood depends on sidewalk access, Duneier and Carter’s (1999) depicted the sidewalk as a space that ‘reveals today’s urban life in all its complexity: its vitality, its conflicts between class and race, and its surprising opportunities for empathy among strangers.’ Both in the global North and in the global South, the act of vending on sidewalks is instrumental to migrants’ social and economic integration in the city (Bell & Loukaitou-Sideris, 2014; Donovan, 2008; Eidse, Turner, & Oswin, 2016; A. M. Kim, 2015). The major difference is regulation. Western streets are known for being more regulated than Asian streets for example, where the culture of the street has often been depicted as one of great social and economic diversity, where the space is used for private, public, and domestic uses alike: vending, meeting, squatting, gossiping, eating, exercising, and so forth (Edensor, 1998; Drummond, 2000; Kim, 2015; Mateo-Babiano, 2009; Mateo-Babiano & Ieda, 2010).

However, the modernization of transportation infrastructure might be signing the “death of the street” (Holston, 1989), by systematically giving priority to traffic flows over public life. Focusing on their function as infrastructure (Ehrenfeucht & Loukaitou-Sideris, 2010), modern planning practices aim at regulating and controlling the streets in ways that bring order (Scott, 1998) to a complex, seemingly ‘messy’ environment (Hou & Chalana, 2016), in ways that clarify the blurry boundaries between public and private space, between movement and non-movement. Such efforts are occurring in HCMC, as attested by repeated sidewalk clearing campaigns justified by a need to give sidewalks back to pedestrians, street widening projects and parking investments motivated by a need to tackle congestion (Gibert, 2018; Nguyen et al., 2015). The death of HCMC’s street may be around the corner. Harms (2009) has already documented the retreat of street life into airconditioned private spaces in what used to be an active public space filled with people sitting outside coffee shops. The paradox is that if civic life as it unfolds in public space were to slowly disintegrate, it would be in the name of a ‘civilizing process’ (Harms, 2009).

HCMC has long been known for its vibrant street life. Streets and sidewalks have been described as an extension of people’s living space—their house or their store—and characterized by a blurry boundary between public and private uses (Drummond, 2000; Mateo-Babiano and Ieda, 2007). Like other Asian cities such as Bandung, Bangkok or Manila, non-movement has precedence over movement on HCMC’s sidewalks (Mateo-Babiano, 2010). At any time of the day people will be eating, exercising, praying, selling or buying goods on the sidewalks. On the streets she surveyed in HCMC, Kim (2015,

p. 103) found that most of the sidewalk space that is not reserved for pedestrian movement is used for motorbike parking (42%), followed by merchandise spillover from conventional stores (26%), leisure (13%), outdoor sitting from restaurants and informal food vendors (12%), and other uses such as motorbike taxis and services. The extensive network of narrow streets and alleys is another indigenous feature of HCMC. The city shares many built environment characteristics with other places of the developing world, including a high density, and a mostly non-gridded and poorly hierarchized street network (Cervero, 2013). Alleyways serve the densest neighborhoods in the city (more than 80% of the urban population lives in the maze of alleyways) and are used alternatively for access to private residences, as people's back kitchen, outdoor business, or other private activities, or for socializing. Totalling to the city's largest public space (85% of the street network), narrow alleyways are being progressively upgraded and modernized to give priority to traffic over other uses (Gibert, 2018). In sum, urban scholars have thoroughly documented the richness of HCMC's street life, but have internalized a dichotomy between the two functions of the streets, as spaces of mobility on the one hand and spaces of activity on the other.

More generally, the normative idea that streets should be 'for the people,' and not 'for cars,' is at the core of western-based discourses on street design and urbanism, sustainable mobility, and accessibility (Cervero, Guerra, and Al, 2017; Jacobs, 1958; Tiwari, 2017; Wallström, 2007). Such premise has crystallized an antagonism between motorized traffic and street life, between private mobility and inclusive public spaces. On the contrary, non-motorized transportation and public transit are commonly associated with more vibrant urbanisms (e.g. Calthorpe, 1993; Ewing et al., 2013; Mehta, 2008). Pedestrian counts are typically used as a proxy for measuring street life and the vibrancy of public spaces (Gehl & Svarre, 2013; Whyte, 1980). Over the last decade a growing number of studies has explored the relationships between streetscape characteristics and pedestrian activity (e.g. Boarnet et al., 2011; Ewing & Handy, 2009; Ewing, 2016; McDonald et al., 2018), and have typically found a positive and significant relationship between street activity and walkability. In many regards, HCMC appears as a counterexample. A city that is not particularly walkable, in part due to the weather (hot and humid year round), in part because the sidewalks are so busy, where only 1% of the population typically travels on foot as a result, where transit is on the way but not developed yet, and where 83% of all trips use a private motorized transportation mode (JICA, 2016), still supports a particularly rich, vibrant, and active street life. This apparently idiosyncratic case, and yet similar to many other cities of the developing world, suggests that urban design scholars may want to pay more attention to the ways in which different forms of mobility contribute to shaping and preserving the street as 'quintessential public space.'

Conceptual Framework and Research Questions

I propose to look at HCMC's streets as 'places of movement,' from an ecological perspective. By focusing on Asian street spaces known for a blurry boundary between movement and non-movement, I bring to the fore a core idea of the 'new mobilities' paradigm, according to which there is no substantial difference between travel and activities. 'Activities occur while on the move' thus producing and reproducing places (Sheller & Urry, 2006). A similar idea was previously developed by French transportation planner Georges Amar (1993) in his article promoting an ecological approach to transportation systems. He argued that there is a consubstantial relationship between movement and the built environment, that the type of movement traversing space informs the diversity of land uses and social encounters, and reciprocally. He proposed a typology of 'urban transportation ecologies' based

on the extent to which movement ‘adheres’ (sticks) to the built environment. Typically, walking is the type of movement with the highest level of *adhérence*, whereas airplane travel only ‘lands’ in ‘places’ but is otherwise disconnected from the built environment. It is the level of ‘adherence’ that makes the difference between a street and a highway. In practice, Amar made land use and transportation planners responsible for organizing human movement and encounters as one system, as opposed to a system of connections between locations. Borrowing from natural ecology, he defined the planning goal as a ‘climax’ of optimal diversity of movements associated with an optimal diversity of human encounters.

Henri Lefebvre’s (1974) spatial production theory inspires a framework to analyze urban transportation ecologies as the ‘lived space of urban mobility’, in relation with broader process of socio-spatial change. Lefebvre defined space in general, and the urban space in particular, as both socially produced and means of social reproduction, through dialectical relationships between the *conceived space* of planners and technocrats, the order they impose through abstract signs and codes (p. 43); the *perceived space* or dominated space that people experience through the senses without contesting it, the stage of all moves and activities, such as the movements between work, private life, and leisure (p. 48); and the *lived space* that users, artists, and philosophers appropriate through resistance to or contestations of dominant representations of space (conceived space). In this paper, I draw on Lefebvre’s socio-spatial theory to analyze the dialectical relationships between the lived space and the conceived space of urban mobility. I focus in particular on the everyday tactics through which people appropriate and at times contest an imposed order through urban design and planning regulation of the street space. I relate this dialectic as it unfolds in everyday life to its equivalent at the level of broader processes of socio-technical transformations. The mobility transition is conceived as dialectical relationship between planners’ conceptions of movement in the city of tomorrow, and people’s lived experience of the transition.

Therefore, adopting an ecological perspective on HCMC’s streets, I propose to explore how the interaction of movement, people, and places, influence not only street life and public interactions, but also socio-spatial transformations. More specifically, this paper addresses the three following research questions:

- In HCMC, to what extent does street activity depend on the nature of transportation flows traversing the street space?
- What are the mechanisms explaining the relationship between transportation flows and street activity?
- How do these mechanisms inform the socio-spatial transformations that the mobility transition brings about?

Methods

1) Data collection

I answer these questions using a range of quantitative and qualitative methods, drawing on data collected during five months of fieldwork (August-December 2018). In addition to participant observations of street life, I conducted 32 structured interviews in Vietnamese with people of different socioeconomic backgrounds about their mobility practices and life trajectories; 36 non-structured interviews with street vendors and conventional retailers; and 200 systematic recordings of traffic flows

(traffic videos) and street activity (side videos) on 19 different street segments. More information about the data collection protocol is provided in Appendix 1.

2) Measurements

The map in Figure 1 shows the 19 streets on which observations were made. On the map, the streets are classified as per OpenStreetMap typology, but another classification was used for the analysis. Type ‘1+1’ corresponds to two-way streets with one lane in each direction; ‘Type 2+2’ to streets with two lanes in each direction; ‘One-way’ streets, ‘Market’ and ‘Alleyways’ are self-explanatory; ‘Segregated’ streets have hard medians separating different traffic flows (typically, cars and trucks do not have access to outside lanes). The unit of observation is a ‘street segment,’ each observation including the ground-floor of the buildings, the sidewalk in front, and the traffic lanes between curb and median. In other words, when a two-way street was observed on both sides, each side counted as one observation. Segregated streets led to two observations per side (one for the inside lane[s], and one for the outside lane[s] with adjacent sidewalk and property line). An exception was made for alleyways, where properties on both sides and traffic in both directions were counted as part of the same observation. Pedestrian street Nguyễn Huệ was excluded from the analysis conducted in this paper, as well as Hẻm 440 Nguyễn Kiệm as it did not fall in any of the categories described above.² All street segments in District 3 were missing the 12:00PM observations. A total of 163 observations were included in the analysis (see Table 1).

With the support of a Vietnamese research assistant, a methodology was developed to count and classify all the street uses present on the video recordings. The same research assistant was responsible for all the counting, first under the supervision of the lead researcher, then alone, in order to avoid inter-rater reliability issues. The 5-step counting methodology is described in detail in Appendix 2.

Table 1 – Frequency of street observations by district and by type

Street type	District 1		District 3		District 7		Phu Nhuan		Total	
	Streets	Obs	Streets	Obs	Streets	Obs	Streets	Obs	Streets	Obs
1+1	2	24	1	10	2	18	1	12	<u>6</u>	64
2+2	0	0	0	0	0	0	1	12	<u>1</u>	12
Alleyways	0	0	1	5	0	0	3	18	<u>4</u>	23
Market	0	0	0	0	0	0	1	6	<u>1</u>	6
One-way	0	0	1	10	0	0	1	12	<u>2</u>	22
Segregated (inside)	1	12	0	0	1	6	0	0	<u>2</u>	18
Segregated (outside)	-	12	0	0	-	6	0	0	-	18
Total	<u>3</u>	48	<u>3</u>	25	<u>3</u>	30	<u>7</u>	60	<u>16</u>	163

² It is an alleyway in the city’s nomenclature but it is too large and too busy to fall in the same category as other alleyways, but too residential to be considered with other ‘1+1’ streets.

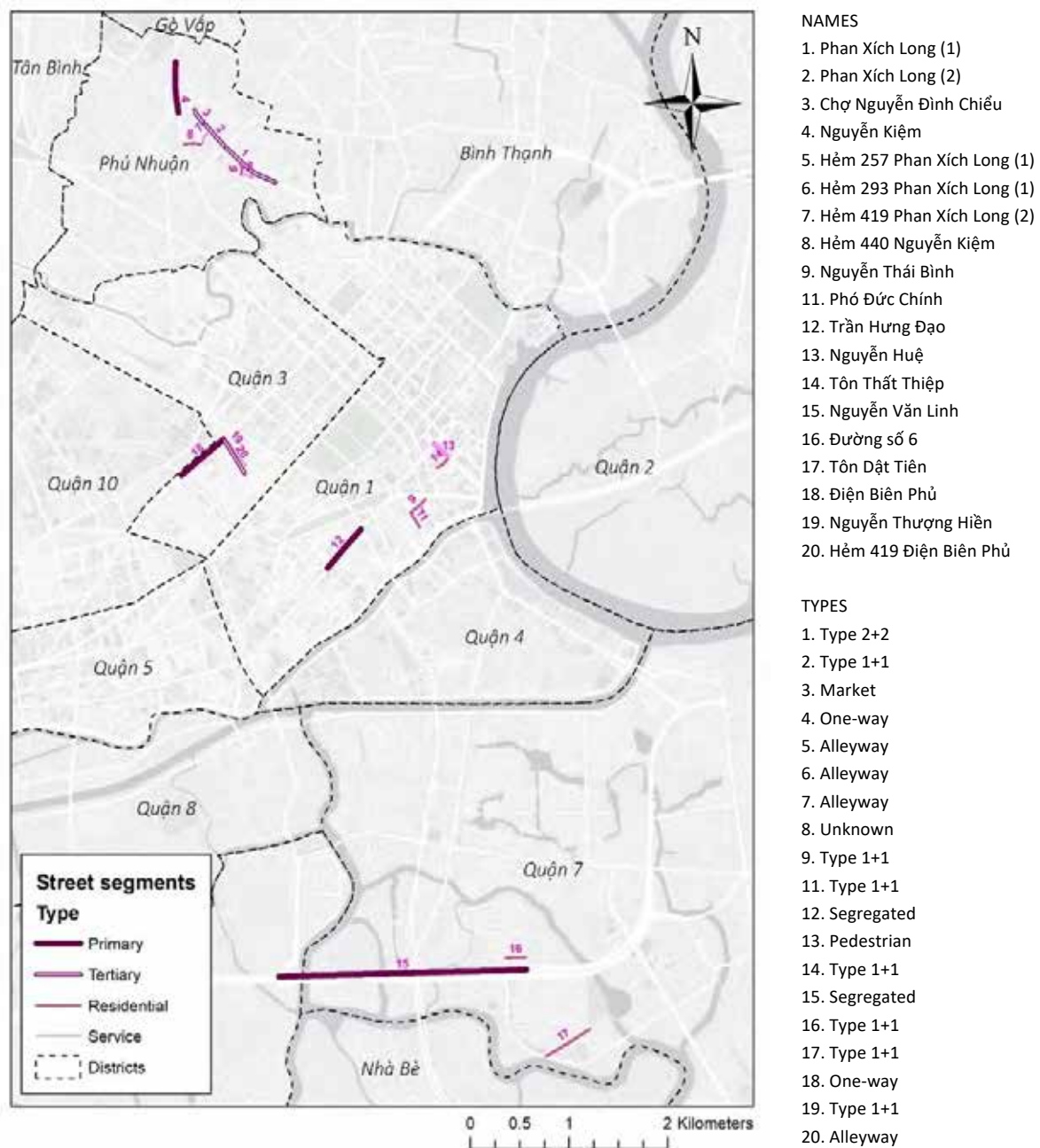


Figure 1 – Surveyed Street Segments

3) Analysis

The development of the measurement strategy led to a typology of street uses along the spectrum from movement to activity, and the definition of corresponding variables. The video data was used to calculate some descriptive statistics by type of street and by district. Several *t*-tests were ran to compare the statistical significance of the difference in means of key variables between a type of streets and the whole sample for example (one-way *t*-tests) or between two measurements of one construct (paired *t*-tests). Similar statistical analyses were conducted while focusing on one type of streets only (Type ‘1+1’) as a way to control for the type of street and tease out the neighborhood effect. Using this sub-sample

of observations, correlation coefficients were calculated between a selection of built environment-, mobility-, and activity- variables. The interview data on mobility practices served to further explain the relationships identified quantitatively between mobility and activity variables. Photographs of street activity and the interview data from street vendors and retailers mostly served triangulation purposes to ensure the validity of the results.

4) *Limitations*

The measurement strategy has some limitations. Due to resource constraints, both side and traffic videos were recorded by the same person in most cases, not simultaneously but consecutively (traffic video immediately after the side video). This means a risk of double counting, as a person sitting on the sidewalk at the time of the side video recording could have been counted as stationary, but then also on the move on the traffic video if she happened to leave in the meantime and pass in front of the camera. Another limitation is that the gender of street users was not recorded in the people's counts, which prevents any gender interpretation of the results. Finally, when building the database, the traffic counts were converted into motorbike-equivalent units using Cao and Sano's (2012) conversion rates, which were estimated based on traffic observations in Hanoi (Vietnam),³ but the article did not include a conversion rate for trucks. The bus rate was applied, which is an approximation.

The proposed analytical methods have some limitations as well. First of all, the statistical methods proposed for analyzing the data are quite rudimentary at this stage, focusing mostly on the means of all variables. Further analyses will consider more elaborate modeling techniques (e.g. Poisson regression models), but additional control variables will be needed, relative to the built environment in particular (e.g. population density, sidewalk width). Second, most variables included in the analysis are count variables, which means that correlation coefficients are probably biased due to skewed distributions of the data. Third, there is no elaboration on observed variations between different times of the day. Finally, the video data includes a significant amount of qualitative data that is not analyzed in this paper.

Results

1) *Typology of Street Uses*

Street uses were classified along a spectrum from movement to activity. Strictly about movement are all the traffic variables, as they correspond to counts of people and vehicles on the move. A sub-set of mobility practices was classified as 'non-compliant tactics.' These include practices such as driving the wrong way, riding on the sidewalk, and walking on the traffic lanes. At the other end of the spectrum are street activity variables that are strictly about static uses. These include variables such as the number of open commercial locations, people hanging out in public space, street vendors. The total count of street vendors was broken down into three categories, including vendors on the sidewalks, vendors on lanes, and motorbike taxis (*xe om*) or cyclos waiting for customers (those on the move were counted as 'motorbike' traffic for motorbike taxis, and 'other' for cyclos). Finally, there is a subset of variables that are neither strictly about movement nor strictly about activity, or both at the same time. Such '*mobility-activity*' variables involve mobility means that are temporarily static. In the case of HCMC,

³ Car = 3.4 MEU; Bus = 10.5 MEU; Minibus = 8.3 MEU; Bicycle = 1.4 MEU (Cao & Sano; 2012)

typical mobility-activity variables include motorbikes parked on the sidewalks, motorbikes or cars parked in traffic lanes, and ‘*motobuyers*.’ The act of ‘*motobuying*’ designates a common practice in Vietnamese cities where a motorbike rider pauses movement for a short amount of time (less than five minutes in general), puts one foot down on the ground, and without stepping down of the vehicle, makes a purchase to take away from a street vendor, which can be either formal or informal (see Figure 2). In what follows, ‘mobility-activity’ variables fall under the broader category of street activity.



Figure 2 – ‘Motobuyers’ purchasing drinks from a street vendor (left) and from a store (right)

2) General Description of Streets, Flows, and Activity

a. Built environment

Most recordings were made on commercial streets and boulevards. On average, the sampled street segments were lined with 15.33 locations per 100 meters. A large majority were commercial locations (68%), followed by housing (21%). The share of commercial locations approached or even exceeded 80% along two-way streets of type ‘1+1’ and ‘2+2’, and along the outside lanes of segregated streets. The share of ground-level housing locations was small on these commercial streets (less than 10%). However, the ratios were inversed in alleyways, where the majority of ground-floor locations were used for housing (76%), followed by commercial (18%). On all types of streets, very few locations were classified as institutional, mixed-use buildings, or parking lots (less than 2% in each category). Finally, the selected street segments were mostly continuous blocks. A negligible share of all locations consisted of intersecting streets (0.3%). A relatively larger share (5%) were entrances of alleyways, but such block discontinuities were nearly inevitable given the density of the network of alleyways in HCMC. See Appendix 3 for a summary of built environment characteristics by type of street.

b. Street flows by type of street segment

Against this backdrop, the transportation flow of all surveyed street segments was largely dominated by motorbikes (see Table 2). A major share of all traffic counts (71%) were motorbikes driving on the lanes. The share approached 90% of all counts on ‘2+2’ streets and on the inside lanes of segregated streets. Only in the market was it lower than average in the market (64%).

Table 2 – Means of movement variables by type of streets

	All	1+1	'2+2'	Alley	One-way	Seg. Outside	Seg. Inside	Market
<i>Traffic counts (/ 5 min)</i>								
<u>Total counts</u>	<u>153,96</u>	<u>76,73</u>	<u>259,58</u>	<u>45,43</u>	<u>508,38</u>	<u>22,94</u>	<u>326,17</u>	<u>113,83</u>
% Motorbikes in lanes	71,0%	73,4%	88,1%	77,2%	76,8%	24,8%	86,4%	64,1%
% Cars in lanes	11,2%	12,7%	7,8%	0,9%	13,0%	26,5%	7,9%	0,9%
% Bikes in lanes	1,9%	2,3%	0,9%	4,1%	0,3%	0,7%	0,7%	3,7%
% Ebikes in lanes	0,2%	0,1%	0,3%	0,1%	0,5%	0,3%	0,2%	0,3%
% Buses in lanes	0,3%	0,4%	0,0%	0,0%	0,3%	0,6%	0,7%	0,0%
% Trucks in lanes	0,9%	0,6%	0,8%	0,0%	1,4%	0,4%	3,6%	0,0%
% Others in lanes	0,4%	0,4%	0,4%	0,7%	0,3%	0,2%	0,3%	0,9%
% Pedestrians on sidewalks	4,7%	4,1%	0,8%	0,0%	1,3%	24,5%	0,0%	0,0%
<u>Sub-total compliant uses</u>	<u>90,6%</u>	<u>94,0%</u>	<u>99,1%</u>	<u>82,9%</u>	<u>93,7%</u>	<u>78,0%</u>	<u>99,9%</u>	<u>69,9%</u>
% Motorbikes wrong way	3,0%	1,8%	0,1%	0,0%	5,5%	14,6%	0,0%	0,0%
% Car wrong way	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
% Bikes wrong way	0,4%	0,2%	0,1%	0,0%	0,2%	2,3%	0,0%	0,0%
% Motorbikes on sidewalks	0,5%	0,4%	0,4%	0,0%	0,1%	2,5%	0,0%	0,0%
% Bikes on sidewalks	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
% Ebikes on sidewalks	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
% Pestrrians in lanes	5,4%	3,4%	0,2%	17,1%	0,5%	2,6%	0,1%	30,1%
<u>Sub-total non-compliant tactics</u>	<u>9,4%</u>	<u>6,0%</u>	<u>0,9%</u>	<u>17,1%</u>	<u>6,3%</u>	<u>22,0%</u>	<u>0,1%</u>	<u>30,1%</u>
<i>Modal shares (MEU)</i>								
Total MEU (/ 5 min)	196,18	93,24	319,00	41,14	630,17	33,21	497,62	70,03
% Motorbikes MEU	67,9%	62,3%	71,9%	90,2%	61,7%	65,6%	58,0%	87,7%
% Car MEU	22,1%	29,2%	20,9%	3,0%	26,5%	28,1%	18,1%	3,7%
% Bike MEU	2,7%	2,4%	1,1%	6,7%	0,3%	2,3%	0,7%	8,2%
% Ebike MEU	0,2%	0,1%	0,3%	0,1%	0,4%	0,5%	0,2%	0,4%
% Bus MEU	2,0%	2,4%	0,0%	0,0%	2,5%	1,8%	4,9%	0,0%
% Truck MEU	5,0%	3,5%	5,9%	0,0%	8,6%	1,7%	18,1%	0,0%

In terms of modal share, cars represented the second largest share of all traffic counts (11%). Unsurprisingly, the car share was almost negligible in narrow alleyways (less than 1%). The share was equally low in the market, which was not accessible to cars either, not because of width but due to the market activity itself. When converted into MEU, the average car share on all surveyed street segments (22%) turned out to be twice as large as that measured in terms of traffic counts (11%). The results of a paired *t*-test indicated that, at the .05 critical level of statistical significance, the mean MEU car share was significantly higher than that measured as counts, $t(155) = 12.51$, $p = .00$. The difference between the two measurements was of particular importance for '1+1' streets. Compared to all streets, the mean share of cars as proportion of all counts was not significantly different, as shown by the result of a one-way *t*-test, $t(62) = 0.95$, $p = 0.17$. However, the difference in means was significant when car shares were calculated as MEU, $t(62) = 2.55$, $p = .01$. In other words, although the share of cars out of all

moving objects was not particularly higher on this type of streets, the share of road space cars occupied was significantly higher, relative to other transportation modes.

In third and fourth positions in the modal split came the shares of pedestrians walking on the sidewalks (5% of all traffic counts), and that of bicycles riding in lanes (2%). After segregated streets, which had an exceptional share of pedestrians (26%, see below), ‘1+1’ streets appeared to support relatively more pedestrian traffic (4%) than any other type of streets. Naturally, the share of pedestrians walking on sidewalks was null on street segments that did not have a sidewalk, i.e. on alleyways and on the inside lanes of segregated streets. As for bicycle traffic, alleyways and the market were supporting a relatively larger bicycle share than average (4%).

The outside lane(s) of segregated streets appeared to be an exception when looking at the average modal shares. The recorded motorbike share was much smaller than average (25%). The car share was quite high numerically (27%), but the difference in means was not significant at the specified alpha level. Finally, a rather large share of all traffic counts were pedestrians walking on the sidewalk (25%). This most likely due to the fact that one of the street segments of this type—Tran Hung Dao—was located in the heart of the backpacker district of HCMC. On that street, pedestrian counts mostly included tourists, who are generally more likely to walk on the streets than their local users.

People and vehicles engaged in non-compliant mobility tactics represented a total of 9% of all traffic counts. The most common of these tactics consisted in walking in the lanes (7% of all traffic counts). A particularly large share of moving users were counted as such in the market (30%), where sidewalks were too busy to be discernable, and in alleyways (17%) where, if any, sidewalks were not continuous and extremely narrow. The second most common tactic was to ride a motorbike the wrong way (3%). This practice was significantly more prevalent on the outside lanes of segregated streets, where motorbikes driving the wrong way represented 15% of all traffic counts, $t(17) = 3.66, p = .00$. The share was numerically higher than average on one-way streets as well (5%), but the difference was not statistically significant. Non-compliant uses were almost inexistent on streets of type ‘2+2’ and on the inside lanes of segregated streets (less than 1%).

c. Street activity by type of street segment

Of all locations recorded along the surveyed street segments, an average of 8.19 per 100 meters of property line were formal commercial locations that were open to customers at 3:00 PM (Table 3). Streets of type ‘1+1’ were the most active type of commercial streets along this variable ($M = 10.81$) and segregated streets the least ($M = 6.02$). Alleyways had even fewer stores open at 3:00 PM ($M = 3.62$), given the large majority of housing locations (see above).

A ‘mobility-activity’ variable, ‘motorbikes parked on sidewalks’ outnumbered all other measurements of street activity. All street observations considered, there were nearly 20 parked motorbikes per 100 meters of street segment. The mean number of parked motorbikes was the highest on the sidewalks of segregated streets ($M = 26.57$), followed by ‘1+1’ streets ($M = 25.61$), and ‘2+2’ streets ($M = 23.67$). Of all commercial streets, one-way streets had the fewest motorbikes parked on their sidewalks ($M = 10.64$). In addition, some motorbikes were counted as parked in the traffic lanes. For reasons mentioned above, this practice was most common in alleyways ($M = 5.63$) and in the market ($M = 6.14$), but

motorbike parking in traffic lanes also occurred on ‘1+1’ streets ($M = 3.42$). In comparison to motorbikes, the average number of parked cars was very small on all streets ($M = 1.22$).

Table 3 – Means of activity variables by type of street

	All	1+1	2+2	Alley	One-way	Seg. Outside	Seg. Inside	Market
Commercial open at 3:00PM	8,19	10,81	8,25	3,62	9,19	6,02	-	-
Motorbikes parked on sidewalks	19,83	25,61	23,67	1,55	10,64	26,57	-	0,00
Cars parked (street parking)	1,22	2,15	1,12	0,29	0,26	0,43	-	0,00
Total street vendors	2,29	2,41	1,13	0,99	0,98	0,73	-	17,54
- Street vendors on sidewalks	2,07	2,32	0,78	0,25	0,89	0,63	-	17,54
- Street vendors on lane	0,19	0,09	0,19	0,74	0,00	0,10	-	0,00
- Xe om (and cyclo)	0,03	0,01	0,16	0,00	0,09	0,00	-	0,00
People on sidewalks (not walking)	9,27	13,43	9,07	3,97	3,78	7,62	-	0,11
People on lane (not walking)	2,30	0,86	0,80	2,51	0,35	0,86	-	30,81
Motobuyers	0,53	0,35	0,35	0,57	0,22	0,00	-	5,48
Motorbikes parked on lane	3,04	3,42	0,91	5,63	0,91	1,19	-	6,14

The average number ($M = 9.27$) of people sitting or standing on the sidewalks (not walking) was about half that of parked motorbikes. Moreover, some people were doing the same in the traffic lanes ($M = 2.30$). Streets of type ‘1+1’ were the most active of all streets along the former variable as well ($M = 13.43$). Segregated and ‘2+2’ streets were closer to average, whereas the mean was much lower along one-way streets ($M = 3.78$).

The mean number of street vendors was higher on ‘1+1’ streets ($M = 2.41$) than almost any other type of street. All streets considered, the mean number of vendors ($M = 2.29$) included a majority installed on the sidewalks ($M = 2.07$), few vendors in the traffic lanes ($M = 0.19$), and very few motorbike taxi drivers or cyclos ($M = 0.03$). There were no street vendors in the lanes of one-way streets. The market constituted an exception with a much higher number of street vendors ($M = 17.54$), and also a greater mean number of ‘motobuyers’ ($M = 5.48$) than average ($M = 0.53$). Nevertheless, ‘motobuyers’ were recorded every 200 meters on average in alleyways ($M = 0.57$), and every 300 meters approximately on ‘1+1’ and ‘2+2’ streets.

3) *Street Flow and Street Activity in a ‘Modern’ Environment*

The results presented in this section aim to tease out the Phu My Hung (District 7) effect, where the selected streets were planned according to an ideal of modern city life. The analysis builds on a subset of data ($N = 64$) that includes only observations made on Type ‘1+1’ streets. This is a way to ‘control’ for the variations due to street type, while focusing on streets that have appeared so far to be the most active, and where the car effect can be expected to be most tangible. Moreover, ‘1+1’ streets are the only ones for which the distribution of observations enabled a comparison between neighborhood environments. A striking figure when comparing the street flow variables (see Appendix 4) was the very low mean number of all traffic counts on the ‘1+1’ streets surveyed in District 7 ($M = 13.94$) compared to the average for all such streets ($M = 76.73$). The motorbike share as proportion of traffic counts ($M = 56\%$) was also much lower than average ($M = 73\%$), and the difference in means was

statistically significant, $t(17) = -3.13, p = .00$. In contrast, the car share ($M = 24\%$) was twice as large as average and the difference in means was also statistically significant, $t(17) = 2.64, p = .01$. The contrast was even larger with the car share measured in MEU ($M = 49\%$). Streets of District 7 were the only one where the mean car share ($M = 49\%$) was larger than the mean motorbike share ($M = 45\%$). However, neither the mean share of pedestrians on the sidewalks nor that of bicycles riding in lanes were significantly different from those measured on similar streets in more typical districts.

Most street activity variables involving people on the streets had lower means than average on '1+1' streets of District 7. It was the case for the number of commercial locations open at 3:00PM ($M = 7.23$ as opposed to $M = 10.81$); the number of street vendors ($M = .15$ as opposed to $M = 2.40$); the number of people sitting or standing on the sidewalks ($M = 7.50$ as opposed to $M = 13.43$) or in the traffic lanes ($M = .43$ as opposed to $M = .86$); and the number of 'motobuyers' ($M = .06$ as opposed to $M = .34$). The mean numbers of motorbikes parked either on sidewalks or in the lanes were smaller than average. In contrast, the mean number of cars parked next to the curb ($M = 4.51$) was higher than in any other districts.

4) *Correlations between Street Flows and Street Activity*

Continuing the analysis using the small dataset ('1+1' streets only), this section highlights some correlations between street activity, built environment, and street flow variables (Table 4). The number of sidewalk vendors was more strongly correlated with the number of ground-floor housing locations ($r = 0.50, p < .05$) than with that of open commercial locations ($r = 0.31, p < .05$). As for the number of street vendors located in the lanes, there was a positive, yet not significant, relationship with the number of housing locations, but no correlation with the number of open stores. The number of motorbikes parked on the sidewalks, however, was strongly and positively correlated with the number of open stores ($r = 0.60, p < .05$).

The number of people hanging out (sitting or standing) on the sidewalks was strongly, positively, and significantly correlated with the number of sidewalk vendors ($r = 0.66, p < .05$). Similarly, it was strongly correlated with the number of motorbikes parked on the sidewalks ($r = 0.60, p < .05$). However, the relationship with the number of open stores was weak and non-significant. The number of 'motobuyers' was positively correlated with the number of vendors in the lanes ($r = 0.45, p < .05$), and that of people in the lanes ($r = 0.38, p < .05$). However, the relationship with the number of sidewalk vendors was weak and not significant. It was weak as well, but significant, with the number of open stores ($r = 0.30, p < .05$).

Pedestrian traffic appeared strongly and positively correlated with the number of sidewalk vendors ($r = 0.63, p < .05$) and with the number of people hanging out on sidewalks ($r = 0.75, p < .05$). Although quite weak and not statistically significant, the relationship between the *motorbike share* and the number of street vendors was positive, both with those on sidewalks and those in the lanes ($r = 0.19$ and $r = 0.20$, respectively, $p > .05$). On the contrary, the *car share* (in MEU) was negatively correlated with the number of street vendors. The relationship was statistically significant with the number of sidewalk vendors ($r = -0.31, p < .05$). The signs were negative for all correlations between car share and street activity variables. The relationships between other modal shares and street activity were not statistically significant. Similarly, there were no significant correlations between non-compliant mobility tactics and street activity variables.

Table 4 – Correlation matrix of built environment, street activity, and mobility variables

	<i>Built environment</i>		<i>Street activity</i>					<i>Mobility tactics</i>			<i>Parking</i>	
	1	2	3	4	5	6	7	8	9	10	11	12
<i>Built environment</i>												
1 Stores open	1.0000											
2 Housing (/ 100m)	0.4189*	1.0000										
<i>Street activity</i>												
3 Vendors on sidewalks	0.3092*	0.5031*	1.0000									
4 People on sidewalks	0.2326	0.2379	0.6597*	1.0000								
5 People on lane	-0.0200	0.1229	0.2800*	0.0529	1.0000							
6 Vendors on lane	0.0586	0.1993	0.2737*	0.0215	0.419*	1.0000						
7 Motobuyers	0.2991*	0.3948*	0.2093	-0.0940	0.3838*	0.4450*	1.0000					
<i>Mobility Tactics</i>												
8 Motorbikes wrong way	-0.0238	-0.1243	0.1447	0.2335	0.2236	0.1107	0.0343	1.0000				
9 Bikes wrong way	-0.1196	0.0137	0.0231	0.0611	0.0079	0.0368	-0.1527	0.0837	1.0000			
10 Motos driving on sidewalk	0.1577	-0.1081	0.0399	0.0758	-0.1072	-0.0997	-0.1299	0.1682	0.2378	1.0000		
<i>Parking</i>												
11 Motos parked sidewalk	0.6009*	0.1073	0.3713*	0.5961*	-0.0694	-0.1003	-0.1515	0.0730	0.0718	0.3336*	1.0000	
12 Cars parked	-0.1185	-0.3405*	-0.0673	0.2583*	-0.1650	0.0286	-0.2711*	0.0001	-0.1389	-0.0633	0.1623	1.0000
<i>Modal Shares</i>												
13 Pedestrians (traffic)	0.1430	0.2175	0.6269*	0.7458*	-0.0315	-0.0846	-0.1980	0.0232	0.0962	-0.0065	0.5370*	0.1174
14 MEU Motorbike share	0.2297	0.5367*	0.1901	-0.0018	0.2200	0.1983	0.4140*	-0.0068	-0.0292	-0.0358	-0.0723	-0.4785*
15 MEU Car share	-0.2565*	-0.6053*	-0.3146*	-0.0459	-0.2175	-0.2076	-0.4133*	0.0997	0.0699	-0.0085	0.0650	0.4951*
16 MEU Bike share	-0.0329	0.1397	0.0716	-0.1133	0.0876	0.2205	0.0750	-0.0588	-0.0370	-0.1706	-0.2369	0.0791
17 MEU Ebike share	0.3147*	0.2426	0.0406	-0.1858	0.1234	0.0082	0.0557	0.0097	-0.0882	-0.1217	0.0391	-0.1908
18 MEU Bus share	-0.0781	-0.1096	0.2362	0.0759	-0.0507	-0.1687	-0.1373	-0.0757	-0.0243	0.0708	-0.0576	-0.0119
19 MEU Truck share	0.0704	0.0488	0.0704	0.1350	-0.0719	-0.0084	-0.0407	-0.1575	-0.0588	0.1624	0.1916	0.0523

5) *On the Relationships between Everyday Uses of the Streets*

The next series of results draws on qualitative data in order to explain the differences in means and correlations highlighted so far. The overall maneuverability of the motorbike seems to provide a crucial explanation for the observed associations between motorbike mobility and street activity. Parking on the sidewalks (or in the traffic lane next to the curb) is the typical preliminary step before entering a store, sitting down at the terrace of a café, or having a noodle soup from a street vendor, hence the strong correlations with commercial activity and street vending. Such parking habit is made possible by the small size, light weight, and little encumbrance of the motorbike (Truitt, 2008), coupled with the fact that the curb is purposely designed as a 45-degree ramp for motorbikes (and bicycles) to step up and down between the roadbed and the sidewalk. Furthermore, the maneuverability of the motorbike is also what makes the act of ‘motobuying’ possible. When reflecting on their travel diary the day prior of the interview, most motorbike users seemed to conceive such practices neither as full stops nor as complete activities. For example, one respondent started the section of the interview about his activities the day before as follows:

Interviewer: *‘Let’s now talk about the places you went to yesterday’*

Respondent (a motorbike user): *‘Oh, I didn’t go anywhere. I only went to work in the morning, and then back home.’*

Interviewer: *‘On your way to work, did you stop anywhere?’*

Respondent: *‘No, I didn’t stop anywhere’*

Interviewer: *‘Did you buy anything?’*

Respondent: *‘Yes, I bought breakfast.’*

Interviewer: *‘How did this happen?’*

While in most places around the world window-shopping on a commercial street gives pedestrians the possibility to make spontaneous stops and purchase decisions; ‘sidewalk-shopping’ and ‘motobuying’ are the equivalent for motorbike users in Vietnamese cities. Most respondents who typically commute by motorbike reported such practices being part of their everyday routine. They would ‘motobuy’ to buy breakfast in particular.⁴ A respondent explained: *‘[As I drive,] I look. I see what options there are. If I see something I want [to eat], I buy it.’* The transportation mode people use, and whether they make a full stop or not, are decisions they also make on the go. Another respondent described how she has different mobility means associated to different breakfast options (and breakfast places):

‘There is pho near the apartment building where I live. [If I feel like eating pho], I just walk out of the building and go. Banh gio [a steam rice cake wrapped in banana leave], I buy on the way. Banh cuon [rice paper steamed raviolis], it’s also on the way. For vegetarian food [she is vegetarian 10 days a month for religious reasons], it has to be inside a restaurant. So I park.’

⁴ Vietnamese people tend to have quite elaborate breakfasts that they typically do not cook at home. *Pho*, the famous Vietnamese beef noodle soup, is a breakfast favorite for example. It takes eight hours to simmer a flavorful broth and it cannot be cooked in small quantities.

There is in fact a strong co-dependence between street vending, and motorbike mobility. The correlation coefficient was not significant in earlier analysis for reasons most likely related to the fact that all streets had a very large share of motorbike traffic, with very little variation from one observation to another (no effect to pick up). The co-dependence between motorbike mobility and street vending is as real as the one between pedestrian traffic and street vending. Both relationships are most apparent when observing street vendors' tactics as they seek to 'catch' customers. All street vendors interviewed for this study reported that the vast majority of customers reached either by motorbike, or on foot. Street vendors appeared to use different location tactics depending on the type of traffic flow they want to catch. Those who primarily target pedestrians sit low near the ground, facing the sidewalk, and possibly turning their back to traffic, as in vignettes 1 and 2 below (Figure 3). Vignette 3 shows a typical stall targeting 'motorbuyers.' The vendor (not-visible on the picture) is standing behind a stall facing traffic, and the merchandise is at eye level for people on motorbikes. In this case, the stall is in the traffic lane of a narrow alleyway. Finally, vignette 4 shows a specific case where a watch vendor has positioned his stall at ground-level, on the sidewalk, not to catch pedestrians but motorbike users in a particular situation, when they wait at the traffic light (light not visible on the picture). Many formal businesses use similar tactics as informal street vendors to catch the motorbike flow in particular. Some conventionnel cafés for example position a cart similar to the one shown in Vignette 3 right next to the curb in order to catch sell to 'motorbuyers' in additional to seated customers.



Figure 3 – Four street vending location tactics by type of flow

In contrast, car mobility goes against street activity because of its lack of flexibility. Current motorbike users who said they were considering shifting to the car in the near future were asked to reflect on all

the stops they had made the day before (including the quick ones they would not have considered stops outside the interview), and whether these would have been possible had they been going by car. Typically, the first answer would be ‘Yes, why not?’ but, admitting they had never thought about this question, they would then correct themselves: ‘No, I guess not.’

‘There is nowhere to park near the market [where the interviewee had purchased ingredients from four different sellers the day before, in ‘motobuying mode’]. I will have to buy everything from Coop.Mart [a supermarket]. There is underground parking.’

Current automobilists confirmed that their range of options was constrained by their mobility. They almost never buy anything anymore from a street vendor, rarely stop for a coffee on the sidewalk. While it seemed to be a matter of choice for one of the interviewed car users, all others said it was by constraint, because of limited parking options, coupled with the impossibility to stop spontaneously like motorbikes do without seriously disrupting traffic. Nevertheless, they accept the tradeoffs as compared to driving a motorbike, they enjoy being sheltered from the surrounding environment, being protected from the dust, the heat, the rain, and the exhaust fumes, and knowing their children are safer in case of an accident.

Knowing that they cannot catch it, street vendors avoid contact with the automobile flow. This is most evident when observing one-way streets, where traffic regulation requires that motorbikes drive on the right lane(s), cars and other larger vehicles on the left lane(s). Typically, street vendors will be concentrated on the right side of the street. As a robustness check, this hypothesis was tested comparing the counts of street vendors on both sides of the one-way streets included in the sample (Nguyen Kiem and Dien Bien Phu). The result of a *t*-test showed a significant statistical difference for Nguyen Kiem. The result was not significant for Dien Bien Phu, but the surveyed street segment had large hospitals on the left side, which attract street vendors. A left-side street vendor selling *chào* [rice porridge] confirmed that she very never has cars stopping by, and rarely has customers reaching by motorbikes. The vast majority of her customers are relatives of hospital patients who walk out of the hospital to buy lunch for themselves and the patient.

Findings

Two complementary concepts have been identified to further explain the consubstantial relationship between transportation flows and social interactions in HCMC’s streets: the ‘stickiness’ of the motorbike flow and resulting ‘productive frictions.’

1) ‘Sticky Flows’

Borrowing from Amar’s (1993) ecological perspective on transportation flows and the built environment, first of all HCMC’s motorbike traffic can qualified as particularly ‘sticky.’ As per Amar’s definition of *adhérence*, the flow is integrated in the built environment. It has its own content and space, it enables spontaneous stops and a number of activities while on the move, it opens up possibilities of improvisations and detours. A high-level *adhérence*, or stickiness, is high, is longitudinal: there is an uninterrupted relationship between movement and the built environment, a consubstantial relationship between movement and what it leads to. On the contrary, when the adherence is punctual, the movement ‘sticks’ to the built environment only at origins and destinations but it disconnected otherwise. The observations made in this paper invite to qualify motorbike mobility as a ‘sticky flow.’ Furthermore,

the case of motorbike mobility enabled to identify some mobility-related technicalities to further conceptualized **‘sticky flows:’ a rather low speed, a certain thickness (or density of users on the move), a propensity to seep through the banks of the road bed, to overflow the built environment, typically the sidewalks, and the direct contact between its participants and the environment through the senses.** Based on this definition—low speed, thickness, propensity to infiltrate, and direct environmental perceptions—pedestrian mobility definitely ranks highest on the stickiness ladder, whereas car mobility falls to the bottom rung.

2) *‘Productive Frictions’*

Moreover, this study proposes a complementary concept, that of ‘productive frictions,’ to explain how ‘sticky flows’ relate to a density and diversity of human interactions in the built environment. The mechanical notion of ‘friction’ is one of the components in Cresswell’s mobility definition. The friction is conceived here as socially produced, and as critical to the production and reproduction of the ‘lived space of urban mobility.’ Permitted by the resistance of a sticky flow as it traverses the built environment, **‘productive frictions’ are the interactions between street users ‘on the move’ and street users ‘in place,’ thus producing opportunities for social interactions. They necessitate a temporary inversion of movement and non-movement—only when movement pauses do places become activated.** In the case of HCMC, the sticky flow relentlessly rubbing against the banks of the roadbed creates opportunities for strangers and semi-strangers with different socioeconomic backgrounds to remain in constant interaction with each other. They would hardly every meet otherwise. The ‘productive frictions’ highlighted here are at the core of the symbiotic relationship that exists between motorbike mobility and street activity (Piazzoni and Jamme. Forthcoming 2020). They play a critical role in shaping HCMC’s streets as the vibrant public spaces they are. Moreover, they participate in the production of a fertile ground of socio-economic opportunities on the banks of the streets, as sidewalks present possibilities to live off the connection to the street.

3) *Mobility Transition and the Social Production of Space*

In a rapidly changing context like HCMC, the concept of ‘productive frictions’ enables to anticipate the socio-spatial transformations that the on-going mobility transition brings about. On the one hand, evidence from Phu My Hung (District 7) and from current car users suggest that HCMC’s street spaces will undergo a radical transformation if car mobility is to supersede motorbike mobility. The explanation being the consecutive loss of frictions points in the system of movement. On the other hand, HCMC’s streets and sidewalks may remain a vibrant public space if the mobility transition were to turn predominantly towards sustainable mobilities: walking and biking coupled with mass transit. Non-motorized mobilities are even ‘stickier’ than motorbike mobility in fact, so at least as conducive to the ‘productive frictions’ and the production of places in the urban space.

These foreseeable consequences associated with different modalities of the mobility transition are not groundbreaking: cars have caused the ‘death of the street’ in other modernizing cities of the developing world, while car-oriented cities in the Global North know that promoting non-motorized mobilities is key to activating the streets. Nevertheless, the contribution here is an explanation for these assumed processes, a theoretical underpinning to substantiate urban discourses that have internalized a dichotomy between motorized traffic and public sphere. The mechanism that almost inexorably links car mobility and the ‘death of the street’ can be described as follows: a non-sticky flow becomes the

dominant form of mobility, therefore contact between people on the move and people in places becomes more and more punctual, movement through space loses its spatial production function, the density and diversity of human interactions dwindle, social disintegration ensues. On the contrary, promoting non-motorized mobilities is re-injecting some stickiness in the system, creating friction points.

Conclusion and Discussion

This paper built on a case study of HCMC's street urbanism, where the street network can be thought of as an endless drive-through that people on the move traverse with unlimited options and opportunities to take part in street life. Formal or informal, most street vending places are 'third places' as defined by Oldenburg (1999): places that enable people to stay in touch, to support each other, to develop a sense of belonging to a place and to a group.

I highlighted two mechanisms that help understand how spatial transformations of street urbanisms relate to broader processes of social change led by a mobility transition. The level of 'stickiness' of movement that traverses the urban space informs the possibilities for 'productive frictions' between people, movement, and places, thus shaping opportunities for everyday interactions and long-term opportunities for integration.

Based on this premise, the issue in practice becomes a matter of arranging human movement in the city in ways that care for a diversity of levels of friction in the transportation system, knowing that all forms of mobilities have their own level of friction. The two concepts advanced here invite to planners and urban designers to work with the complexities of multi-modal environments. In places like HCMC that are highly-multi-modal, the goal should not be to simplify the mobility landscape, by banning one form of mobility to force another one through for example; simplifying, one way or another, only leads to creating discontinuities in an existing system of movement. The loss of friction points is a social cost associated with a mobility transition, one that impact societies even more directly than social costs commonly considered: congestion, pollution, and traffic fatalities. Ultimately, as Manuel Castells put it (Castells, 1989, p. 353): *'What we must prevent at all costs is the development of the one-sided logic of the space of flows while we keep up a pretense that the social balance of our cities has been maintained.'*

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Appendices

Appendix 1 – Data Collection Protocol

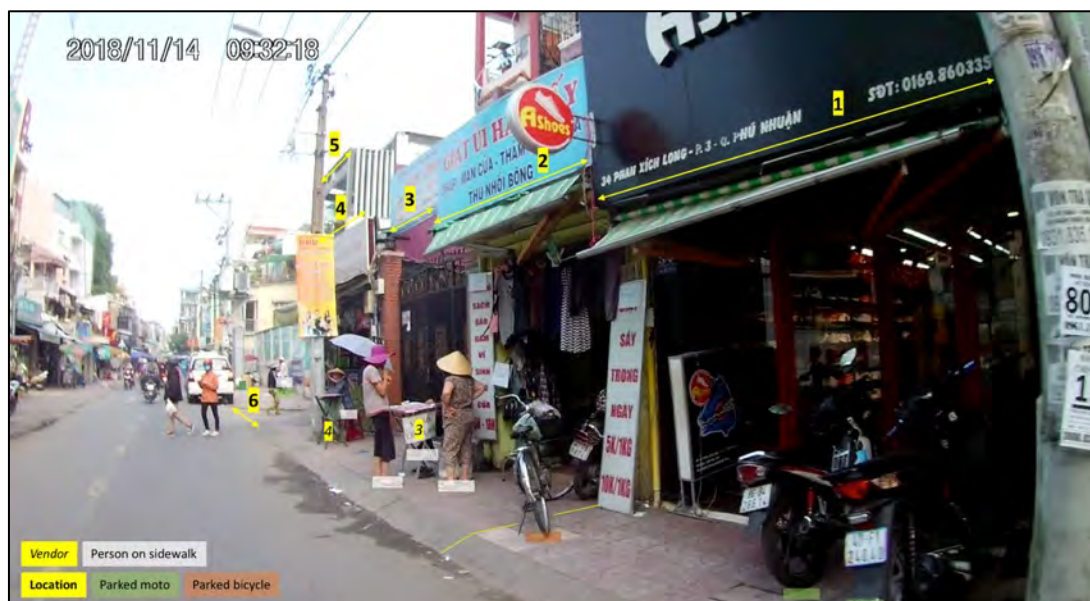
Interviews: The interviews about individual mobility practices lasted about one hour and included five sections. First, interviewees answered question about their past and present personal circumstances (age, family size, job, income, education, housing situation, and so forth), and their projects, expectations and preferences in these regards. Second, they described their past, present, and anticipated mobility means. The third section aimed at revealing the relationship between everyday mobility practices and urban activities. Following the template of a typical travel survey, interviewees first described their trips and activities the previous day. Then they were asked whether these activities would have been possible with the mobility means they had in the past and those they anticipate (or hope) to have in the future. They also spoke more generally about things they commonly do, especially leisure activities, and associated mobility means. The fourth section aimed at revealing perceptions and meanings attached to different streets. Finally, open-ended opinion questions addressed three major policies likely to transform the urban space in HCMC: the metro project, the ban on motorbikes by 2030, and the sidewalk clearing campaigns. The interview guide was approved by the Institutional Review Board of the University of Southern California. Eligible participants were 18 years or older and had lived in HCMC for at least one year. The final sample 32 of participants included a diversity of profiles in terms of common transportation mode (moto, electric bicycle, bicycle, walking, car, motorbike taxi, and bus), age, gender, and income, but was not representative of HCMC's population.

Video recordings: The video recordings were conducted on 19 streets located in different urban environments, including typical districts characterized by a dense network of alleyways (Phu Nhuan and District 3), the historical and institutional center (District 1) planned according to a grid pattern during the colonization era, and the Phu My Hung neighborhood (District 7) was planned and developed in the last two decades in ways supposed to offer the comfort of modern life to those who can afford it (Harms, 2012; 2016; Kim, 2008). Several types of streets were included, ranging from narrow alleyways to large boulevards. With the exception of alleyways, which by definition cut through residential neighborhoods, all selected streets were lined with 3- to 6-story mixed-use buildings typical of HCMC's urbanism, with stores on the ground floor and additional commercial or residential space in the upper floors. Using an action camera, each street was filmed six times over the course of one day (at about 6:30 AM, 9:30 AM, 12:30 PM, 3:30 PM, 6:30 PM, and 10:30 PM). First, a tracking shot was used to record 'side videos' of the sidewalk and background properties, by following the curb either on foot or on the back of a motorbike; second, a static shot was used to record 5-minute 'traffic videos' (motorized and pedestrian). All videos were recorded in November, during the dry season, so the weather was quite similar from one day to another (approximately 30°C in the afternoon, no rain). Finally, the waiting times between recordings were used for participant observations of street life, photographs, and short interviews with vendors and retailers. Thirty-six interviews were conducted, including 25 with informal street vendors.

Appendix 2: Counting Methodology (Measurements using Video Data)

For each street segment, the methodology included the following steps:

- Step 1: Using the 6:30 AM video, list all activities in anchor ‘locations’ along the property line. Each location was attributed a location number, a name (e.g. the store’s name), a type (e.g. store, house, alleyway, parking lot, institutional use) and a short description.
- Step 2: Using the same video, add to the list all activities happening in front of anchor locations. For example, the screenshot in the Figure below shows a street vendor in front of location #3. This vendor was recorded under the same location number (#3), the type was ‘sidewalk vendor,’ and the description said, ‘lottery ticket seller.’
- Step 3: Using the same video, indicate whether the listed activities are ‘active’ (open) or not at the time of observation.
- Step 4: Count the number of stationary people and parked vehicles (by type) in front of each location. People (or vehicles) on the sidewalk were counted in another category than people (or vehicles) in the traffic lanes, provided that the distinction could be made. Pedestrians on the move were excluded.
- Step 5: Using the 6:30 AM traffic video, count the traffic exited the shot by transportation mode. Each pedestrian was counted as one in the pedestrian traffic category. For vehicular traffic (motorbikes, cars, trucks, buses, bicycles, e-bikes), each vehicle was counted as one in respective categories.
- Step 5: Repeat steps 2-5 for all other videos recorded on the same segment (other times of the day).



Appendix 3: Built environment characteristics of selected street segments by type

	All	1+1	2+2	Alley	One-way	Seg. Outside	Seg. Inside	Market
Built environment								
Length (m)	514	269	612	203	521	1170	1170	152
Sidewalk	0,71	1,00	1,00	0,00	1,00	1,00	0,00	0,00
Lanes	1,47	1,00	2,00	1,00	1,73	1,33	3,33	1,00
Locations (/ 100m)	15,33	15,51	13,64	33,34	14,93	8,61	0,00	
% Commercial	68,2%	80,5%	76,7%	17,8%	72,1%	78,7%	-	-
% Housing	20,8%	10,4%	6,6%	75,7%	12,7%	6,8%	-	-
% Institutional buildings	1,7%	1,9%	1,5%	1,0%	2,2%	1,4%	-	-
% Mixed-use building	0,3%	0,3%	1,3%	0,0%	0,0%	0,6%	-	-
% Alleys	4,8%	4,9%	7,2%	1,4%	7,6%	3,5%	-	-
% Streets	0,3%	0,0%	0,6%	0,0%	0,0%	1,9%	-	-
% Parking lots	0,1%	0,1%	0,0%	0,0%	0,0%	0,6%	-	-
% Other	3,9%	2,0%	6,2%	4,1%	5,4%	7,1%	-	-

Appendix 4: Built environment characteristics of selected street segments of '1+1' streets by district

	All districts	District 1	District 3	District 7	Phu Nhuan
Built environment					
Length (m)	269	179	386	304	300
Sidewalk	1.00	1.00	1.00	1.00	1.00
Lanes	1.00	1.00	1.00	1.00	1.00
Locations (/ 100m)	15.51	13.67	25.91	9.88	19.00
% Commercial	80.5%	85.8%	83.0%	82.9%	64.0%
% Housing	10.4%	12.4%	14.0%	1.3%	17.3%
% Institutional buildings	1.9%	2.8%	0.7%	0.0%	3.6%
% Mixed-use building	0.3%	0.5%	0.0%	0.0%	0.5%
% Alleys	4.9%	5.0%	0.5%	3.5%	10.5%
% Streets	0.0%	0.0%	0.0%	0.0%	0.0%
% Parking lots	0.1%	0.0%	0.5%	0.0%	0.0%
% Other	1.9%	-6.6%	1.3%	12.3%	4.1%

Appendix 5: Street flows and activity on '1+1' streets, by district

	All	District 1	District 3	District 7	Phu Nhuan
Traffic counts (/ 5 min)					
Total counts	<u>76.73</u>	<u>88.71</u>	<u>119.00</u>	<u>13.94</u>	<u>111.75</u>
% Motorbikes in lanes	73.4%	73.6%	92.9%	55.8%	85.1%
% Cars in lanes	12.7%	13.1%	3.4%	23.5%	2.9%
% Bikes in lanes	2.3%	1.2%	1.5%	3.5%	3.2%
% Ebikes in lanes	0.1%	0.0%	0.5%	0.0%	0.3%
% Buses in lanes	0.4%	0.7%	0.0%	0.3%	0.0%
% Trucks in lanes	0.6%	0.9%	0.4%	0.4%	0.3%
% Others in lanes	0.4%	0.1%	0.5%	0.6%	0.6%
% Pedestrians on sidewalks	4.1%	7.2%	0.0%	3.3%	2.4%
Sub-total compliant uses	<u>94.0%</u>	<u>96.8%</u>	<u>99.2%</u>	<u>87.3%</u>	<u>94.8%</u>
% Motorbikes wrong way	1.8%	0.7%	0.0%	5.0%	0.7%
% Car wrong way	0.1%	0.2%	0.0%	0.0%	0.0%
% Bikes wrong way	0.2%	0.3%	0.0%	0.3%	0.0%
% Motorbikes on sidewalks	0.4%	0.7%	0.0%	0.4%	0.4%
% Bikes on sidewalks	0.0%	0.0%	0.0%	0.0%	0.0%
% Ebikes on sidewalks	0.0%	0.0%	0.0%	0.0%	0.0%
% Pestrans in lanes	3.4%	1.4%	0.8%	7.0%	4.2%
Sub-total non-compliant tactics	<u>6.0%</u>	<u>3.2%</u>	<u>0.8%</u>	<u>12.7%</u>	<u>5.2%</u>
Modal shares (MEU)					
Total MEU (/ 5 min)	93.24	121.45	132.69	19.69	114.30
% Motorbikes MEU	62.3%	56.1%	84.9%	45.2%	83.4%
% Car MEU	29.2%	31.8%	9.9%	48.8%	9.3%
% Bike MEU	2.4%	1.2%	1.9%	2.9%	4.5%
% Ebike MEU	0.1%	0.0%	0.4%	0.0%	0.3%
% Bus MEU	2.4%	5.3%	0.0%	1.4%	0.0%
% Truck MEU	3.5%	5.6%	2.9%	1.7%	2.5%
Street activity counts (/ 100m)					
Commercial locations open at 3 :00PM	10.81	10.72	17.48	7.23	9.66
Motorbikes parked on sidewalks	25.61	34.44	22.98	19.90	18.72
Cars parked (street parking)	2.15	2.16	0.23	4.51	0.17
Total street vendors	2.41	3.61	1.79	0.15	3.92
- Street vendors on sidewalks	2.32	3.61	1.71	0.07	3.61
- Street vendors on lane	0.09	0.00	0.08	0.08	0.28
- Xe om (and cyclo)	0.01	0.00	0.00	0.00	0.03
People on sidewalks (not walking)	13.43	21.96	5.36	7.50	12.00
People on lane (not walking)	0.86	0.84	1.53	0.43	1.03
Motobuyers	0.35	0.02	1.14	0.06	0.78
Motorbikes parked on lane	3.42	1.67	5.70	5.92	1.25

Parking Pattern and Influencing Factors of Dockless Public Bicycle: Case Study from Nanshan Shenzhen

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Abstract: The last-mile problem has been the hot focus question in the field of urban planning for a long time. In recent years, booming dockless public bicycle system in China provides new solution of this problem. However, large number of dockless public bicycles have occupied large amount of public space and disturbed people's daily life. To support dockless bicycle system efficiently, it's urgent to understand the parking modes of dockless public bicycle and their impacts on public space use. Using big data from the OFO BSS in Shenzhen, demographic data, building environments and the location of points of interest. This study defines the "parking density" and "parking duration" of sharing bicycles to analyze the parking characteristics. We take Nanshan district in Shenzhen city as a representative case, and divides Nanshan area into a 500m*500m grid, counts the number of bicycles parked in each grid. The factors affect dockless public bicycles are grouped into four main categories: transportation, land-use/build environment, population-job and meteorological data. We summarized four parking modes and a logit regress model was applied to explore the relation between parking pattern and open space. Based on the results of the model, we discussed the management of public bicycles in Shenzhen and made some suggestions.

Keywords: Dockless bicycle sharing system; Parking mode; public space

1. Introduction

Public bike system (PBS) also called a bicycle sharing system (BSS), which was born in 1965 in Europe has been developed for three generations. The third-generation system included electronically-locking racks or bike locks, telecommunication systems, smart cards and fobs, mobile phone access, and onboard computers (Demaio, 2009). The concept of PBS/BSS is simple: A user arrives at a station, takes a bike, uses it for a while and then returns it to another station. It is economical, eco-friendly, healthy, ultra-low carbon emissions and more equitable, has increasingly received attention in the last decade and have rapidly emerged in many cities all over the world. A characteristic differentiating bike sharing systems from other non-motorized systems is that they do not necessitate ownership of bikes and therefore facilitate increased complementarity between biking and transit. Bicycle-sharing systems free the user from the need to secure their bicycles avoiding bicycle theft issues. At the same time, the decision to make a trip can be made in a short time frame providing an instantaneously accessible alternative for a one-way or a round trip. Generally, many studies referred to the docked system, which need several fixed stations with docks in each station used to store bicycles and finish rent and return operations. The dockless system, also considered as the fourth-

generation system, based on the mobile app and GPS, which eliminates stations and docks. Passengers can easily pick up and drop off bikes anywhere using their cell phone.

This system is quite spread nowadays in China through enterprises as OFO and Mobike since early 2016. Majority of bike-sharing schemes contains fewer bicycles compared with a dockless sharing bicycle. Many available bicycles and no restrictions on parked locations may result in different characteristics of public bicycles using and their influencing factors from dock system. Dockless public bike system brings new experiences and conveniences as well as some problems: (1) the emergence of huge number of dockless public bicycles means that more parking space needs to be set up in the public space of the city. This is bringing challenges to urban planning and urban management. (2) meanwhile, the feature of “drop off bikes anywhere” will result in a lack of certain constraints on the user's parking behavior. The user's parking location may disturb or affect the daily activities of city residents such as parking bicycles on the pavement. (3) For areas where many bicycles are parked, if the demand and supply do not match, it will result in a waste of bicycle resources and urban space resources.

However, few studies focused on the dockless parking system which needed to be deeply discussed. This paper selected Shenzhen, one of Chinese fastest urbanizing city, as a representative Metropolis case, and explored dockless bicycles by OFO bike sharing system. OFO bicycle-sharing system was launched in Shenzhen in December 2016 with more than 2200,00 bicycles. This paper mainly studies the inactivity of the dockless public bike system. Four issues are discussed: (1) How to measure the parking of dockless public bicycles? (2) what are parking modes of dockless public bicycles? (3) What's the relationship between parking modes and built environment? (4) how to manage public space to support efficient dockless parking?

2. Literature review

2.1 The systems perspective of sharing bike research

Sharing bike involved in many areas of research and it is broadly based on two perspectives: user perspective and systems perspective (Faghih-Imani and Eluru, 2015). In this study, we only focus on systems perspective.

2.1.2 The systems perspective

System perspective research can be divided into three categories.

(1) Based on the practical usage, a number of studies focus to deal with bike sharing rebalancing problem, using intelligent algorithms. In bike sharing system, the lack of resources is one of the major issues: a user can arrive at a station that has no bike available or wants to return her bike at a station with no empty spot. Fricker and Gast (2016) propose a stochastic model of a homogeneous bike-sharing system to study the effect of users' random choices on the number of problematic stations and compute the rate at which bikes must be redistributed by trucks to ensure a given quality of service. You, Lee and Hsieh (2017) provide an integrated model for the problems of fleet sizing, empty-resource repositioning and vehicle routing for bike transfer in multiple-station systems. O'Mahony (2015) tackle rebalancing the system during rush-hour, developing novel methods for optimizing rebalancing resources and formulate an optimization problem whose goal is to produce a

series of truck routes to get the system as balanced as possible during the overnight shift. Chen, et al. (2015) address the layout planning of public bicycle system within the attracted scope of a metro station. and locations of service stations and the optimal route options for the implement of redistributing strategy. Lozano, et al. (2018) proposes a multi-agent model that provides visualization and prediction tools for bike sharing systems.

(2) Explore the spatial and temporal patterns of bike use over the time of day, using data mining and visualization techniques. Whereas the aim of clustering is to identify mobility patterns in BSS usage by partitioning the stations into different clusters having a similar usage. Wong and Cheng (2015) presents the insights of imbalanced public bicycle distributions through the analysis of spatiotemporal activity patterns of bike stations. the clustering algorithm is used to analyze how station activity patterns are geographically distributed in the city based on their usage patterns and explore how these activity patterns relate to underlying cultural and spatial characteristics of Taipei City. Temporal and spatiotemporal patterns among bike stations of Barcelona bike sharing system were explored by Froehlich et al.(2008). Numerous researches also used a hierarchical clustering method to generate clusters and investigate usage patterns geographically distributed in the city to understand the impact of the inhomogeneity of the city on the long-run activity of stations (Vogel and Mattfeld, 2011, Lathia, et al., 2012). Brien et al.(2014) proposed a classification of bike-shares, based on the geographical footprint and diurnal, day-of-week and spatial variations in occupancy rates. Etienne and Latifa (2014) present one such automatic algorithm based on a new statistical model which will automatically cluster BSS stations according to their usage profile. Zhou (2015) investigated the spatiotemporal biking pattern in Chicago by analyzing massive BSS data from July to December in 2013 and 2014, constructed bike flow similarity graph and used a fast greedy algorithm to detect spatial communities of biking flows.

(3)Thirdly, study on demand estimation and corresponding methodology. These studies examine the influence of BSS infrastructure, transportation network infrastructure, land use and urban form, meteorological data, and temporal characteristics on BSS usage. This is the most relevant reference for this research. Faghih-Imani et al.(2014) collect station-level occupancy data from two cities and transform station occupancy snapshot data into station level customer arrivals and departures to perform our analysis. develop a mixed linear model to estimate the influence of bicycle infrastructure, socio-demographic characteristics and land-use characteristics on customer arrivals and departures. In the work of Krykewycz, et al.(2010) various demographic, land use, and infrastructure factors understood to be favorable for bike share usage were spatially analyzed to define a primary market area. El-Assiet al.(2017) investigate the effects of weather, socio-economic and demographic factors, as well as land use and the built environment on bicycle share ridership, a regression analysis was performed on three different levels. Hampshire and Marla(2012) explaining the factors affecting the bike sharing trip generation and attraction. Using usage data from bike sharing systems in Barcelona and Seville, 9 census level demographic data, and the location of points of interest, employ a panel regression model to produce consistent estimates of trip generation and attraction factors in the presence of unobserved spatial and temporal variables. Zhang et al.(2017) employed a multiple linear regression model to examine the influence of built environment variables on trip demand as well as on the ratio of demand to supply at bike stations in China. Faghih-Imani et al.(2014) investigated factors affecting bicycle share demand at the station level using real-time ridership data. The results showed that stations close to major roads had lower trip activities compared to stations that were situated

around minor roads and bicycle lanes. A number of land use and built environment variables, temporal characteristics and weather variables such as temperature were investigated. Maurer(2011) used a pair-wise suitability analysis to understand the effects of variables such as job density, household income, and alternative commuters on public bicycle share ridership to propose the locations of bicycle stations in Sacramento, California. Gebhart and Noland(2014) used real-time ridership data for Capital Bikeshare in Washington D.C. to investigate the impact of weather variables and proximity of bike share stations to metro stations on ridership levels. Buck and Buehler (2012) investigated the influence of bicycle infrastructure, population density, land use mix around stations, and the number of households without a car using bicycle share systems using ridership data from Capital Bikeshare. Wang et al.(2012) evaluated the effect of socio-demographic, land use, built environment and transportation infrastructure variables on bicycle share ridership. Rixey (2013) explored the influence of socio-demographic characteristics such as education, income, and employment and population density on monthly ridership data from three United States.

Most studies focused on the factors affecting the use of public bicycles and the scheduling methods between stations. Since the shared bicycle does not have a centralized station, the starting and ending position of the vehicle is only related to the user's personal travel destination, so the impact of the built-up area on the shared bicycle usage will change. In addition, because the shared bicycle does not have a fixed site, but is dispersed in the city, the network formed by it is extremely complicated; and its more fluid characteristics also makes it difficult to monitor the number of vehicles in real time. In addition, there are significant differences in the number of vehicles used between different regions. Based on the above characteristics of shared bicycles, the original site-based data analysis method and the small network-based global optimization scheduling strategy are difficult to apply to the current shared bicycle.

Therefore, combined with the current use of public bicycles without dock, this paper will focus on the relationship between the parking characteristics of the dockless public bicycles and the built environment. Explore the parking mode of dockless public bicycles under the influence of different built environment factors, and then coordinate the relationship between urban public space and dockless public bicycles, rationally plan bicycle parking facilities, and promote green travel to provide relevant suggestions.

3. Data sources and method

3.1 Data source

3.1.1 The data of bike status

OFO is one of the biggest companies operating dockless bike-sharing systems in China, with a market share of about 50%. OFO bike is equipped with GPS to provide useful, accurate trip data. OFO began operating in Shenzhen in December 2016 with more than 20,000 bicycles in September 2017. This study takes Nanshan district which is one of the city centers of Shenzhen as case study. Nanshan has a high accessible road traffic network with subway and bus system cover the whole area. The climate in Nanshan is also pleasant, so it is very suitable for short-distance travel by bicycle. In order to describe spatial distribution of the dockless public bicycle and compare the parking characteristics between different areas, this study divided Nanshan district into 500m*500m grids with a total of 823 grids.

Grids with an average 24-hour bike less than 10 were removed. Finally, 500 grids were taken into our analysis (Figure 1).

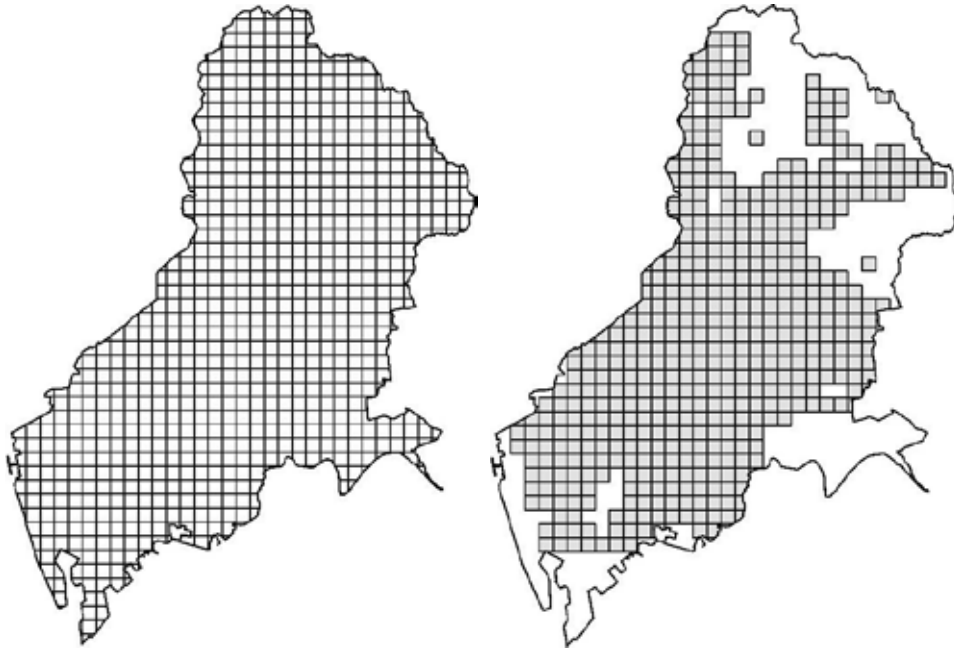


Figure1 the grids of Nanshan District

The raw data were obtained from the OFO website, which contained about 46.5 million pieces of messages including information of trip start time and date, trip end time and date, start location and end location. This study scanned the working status of these bicycles every 5 minutes and got records the working day of the fourth week of September 2017. The data content includes the bicycle ID, the time and date when the bicycle starts to be used, and the bicycle position coordinates. There are about 57.6 million bicycle status records in a day. We determined bicycle parking by identifying unmoved positions and corresponding duration during the day by bike's location and time stamp to explore parking mode.

Table 1 The raw data of OFO using

Time stamp	Bike ID	GPS signal	X	Y
2017-0321T00:13:21	7556118647	1(1-work,2-non-work)	113.884828	22.857536
2017-0321T00:13:21	7556073013	1(1-work,2-non-work)	113.884834	22.857274
...
2017-0321T00:27:44	7556146932	1	113.896694	22.458407

3.1.2 The factors of impacting bike parking

These factors are grouped into four main categories: transportation, land-use/build environment, population-job and meteorological data. Detailed indicators are shown in Table 2.

Table 2 The parking variables and influencing factors

Variable	Calculation	unit
Parking variables		
Parking density	Number of public bicycles parked in a grid at a time	num/ per grid
Parking duration	Average of the parking duration of all parked vehicles in a grid	minutes
Independent variables		
Density of fast way	Length of Expressway in a grid	km/km ²
Density of major& secondary road	Length of Major road and secondary road in a grid	km/km ²
Density of minor road	Length of Minor road in a grid	km/km ²
Bus stops	Number of bus stops in a grid	num/ per grid
Subway	Distance to the nearest subway	m
Population	Number of residents in a grid	1000/ per grid
Job	Number of Enterprise POI in a grid.	num/ 1 grid
Mix used	Information entropy	/
Residential land	Percentage of Residential land in a grid	/
Commercial land	Proportion of Commercial land in a grid	/
Educational Land	Proportion of Educational Land in a grid	/
Green Land	Percentage of Green Land in a grid	/
Building density	Number of building in a grid	num/ per grid
Service facility density	Number of shop and restaurant in a grid	num/ per grid
Altitude	Average altitude of a grid area	m

The parking density of a grid is the parking number of dockless public bicycle in a certain period. We first calculated parking number of each hour, then the average number of 24 hours is the parking density of a grid. The parking duration refers to the time interval value of a single dockless public bicycle from the time of stopping to the next use. The parking duration of a grid is the average of the parking duration of all parked vehicles in a certain period.

The land use mixing degree is to first calculate the area proportion of each type of land use in the grid, and then calculate by the following formula (1):

$$MixUsed = -\frac{\left(\sum_{i=1}^N p_i \ln p_i\right)}{\ln N} \quad (1)$$

p_i ——the percentage of i land type ;

N ——the number of all land types.

The data of subway comes from the website (<http://www.szmc.net>) of Shenzhen Metro Group Co., Ltd. The road net and bus data are provided by Shenzhen Urban Transport Planning Center. The information of population, job and land use is supplied by the Shenzhen Urban Planning Bureau and the Urban Planning and Design Institute of Shenzhen. We use points of interest (POI) data from BAIDU (see www.baidu.com). The terrain data of Shenzhen comes from google map.

3.2 Statistical analysis

First, we calculate the parking density and parking duration of each grid. According to these two attributes, we use the cross-classification method to divide the grid parking type. In this way, each grid corresponds to a parking mode, and then the built environment indicators of each grid are calculated. The multinomial Logit regression model is used to analyze the influencing factors of parking mode and the parking mode preferences in different built environments.

4. Results

4.1 Statistical characteristics

4.1.1 Parking density

62 thousands dockless public bicycles had been parked in Nanshan district for more than 10 minutes, and on average, 49 thousand bicycles parked per hour, which occupied 7.3 ha public space. By grid analysis, the parking density was around 100 bicycles per grid per day, and the maximum number of bicycles in one grid was 575.

Figure 2 shows an uneven spatial distribution of parking density of dockless public bicycles in Nanshan. Obviously, the bicycles were unevenly distributed. The central area had a significant higher density than others because these are the main functional areas of people's daily life, such as living, employment, leisure, transportation, etc. The low-density areas were mainly close to less-developed area, mountain and other bicycle ban zones such as parks and waterfront.

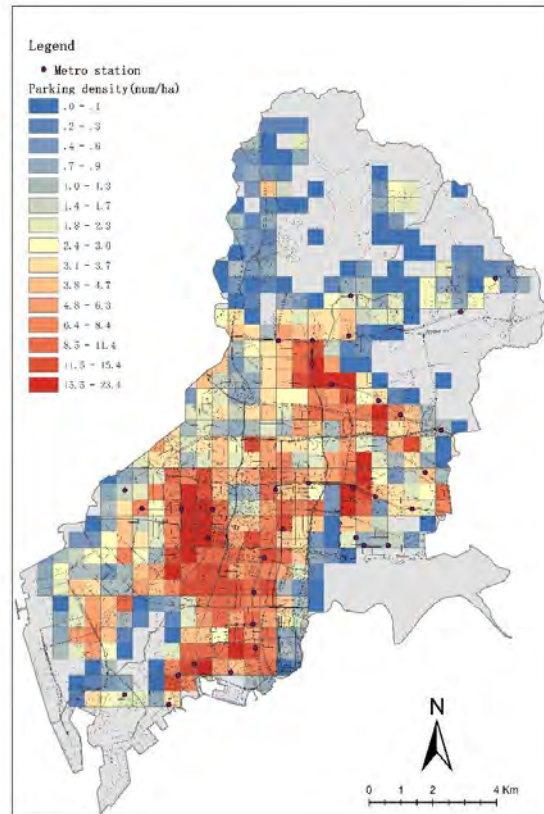


Figure 2 The spatial distribution of parking density of dockless public bicycles in Nanshan

3.1.2 Parking duration

The average parking duration of bicycles was 341 min per time, which meant bicycles were used around every 6 hours. The parking durations of around 10 thousand bicycles were more than 1420 min, which continuously occupied public space whole day. Figure 3 shows the spatial distribution of parking duration of dockless public bicycles in Nanshan. Grids in the center area of Nanshan had a significant shorter parking duration and peripheral grids had a longer parking duration. The short-term parking of grids was mainly in high-tech employment center, universities and commercial centers. These areas are mostly with good location, a large number of enterprises, well-constructed urban roads and mixed land use. In addition, the grid with subway station in has a high probability to be a short-term parking place. The grids with long-term parking were mostly in the suburb areas. The destinations of one-way riding such as Shenzhen-Hong Kong port area also caused long-term parking. By comparing the spatial distribution characteristics of parking density, it can be found that the area with a long parking period generally belongs to the area with a lower parking density.

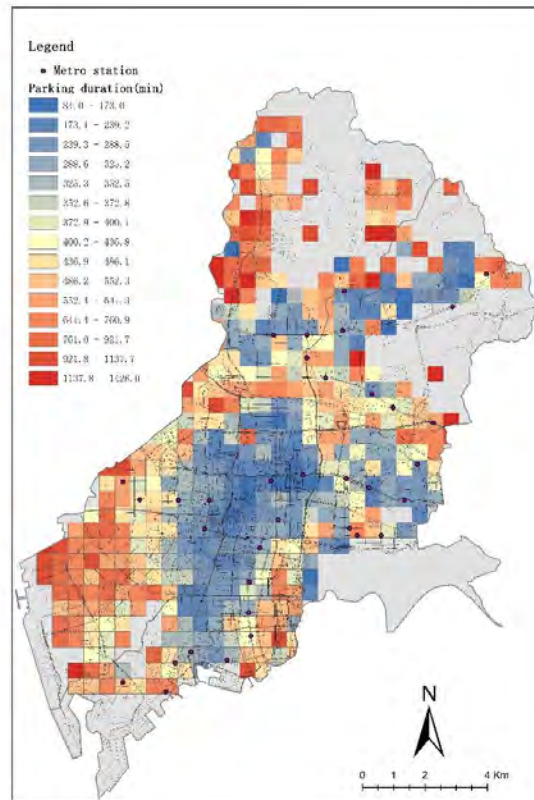


Figure 3 The spatial distribution of parking duration of dockless public bicycles in Nanshan

3.1.3 Parking patterns by Cross-classification

Figure 4 is a scatter plot of parking density and parking duration, in which X-axis is the parking density, and the origin is the average value of parking density and parking duration. Obviously, parking duration is negatively correlated with parking density. Four quadrants represented different parking characteristics of dockless public bicycles: (1) The grid in the first quadrant had high parking density and long-term parking and we called it **High-High(HH)** parking mode, which meant bicycles were static and dense stacked. (2) The grid in the second quadrant had low parking density and long-term parking. We named it **Low-High (LH)** parking mode, in which the bicycles were not many and inactive. (3) The grid in the third quadrant was the **Low-Low (LL)** parking mode which meant there were a few bicycles but efficiently used. (4) At last, the grid in the fourth quadrant with high parking density and short parking was **High-Low (HL)** parking mode, which was the most active mode.

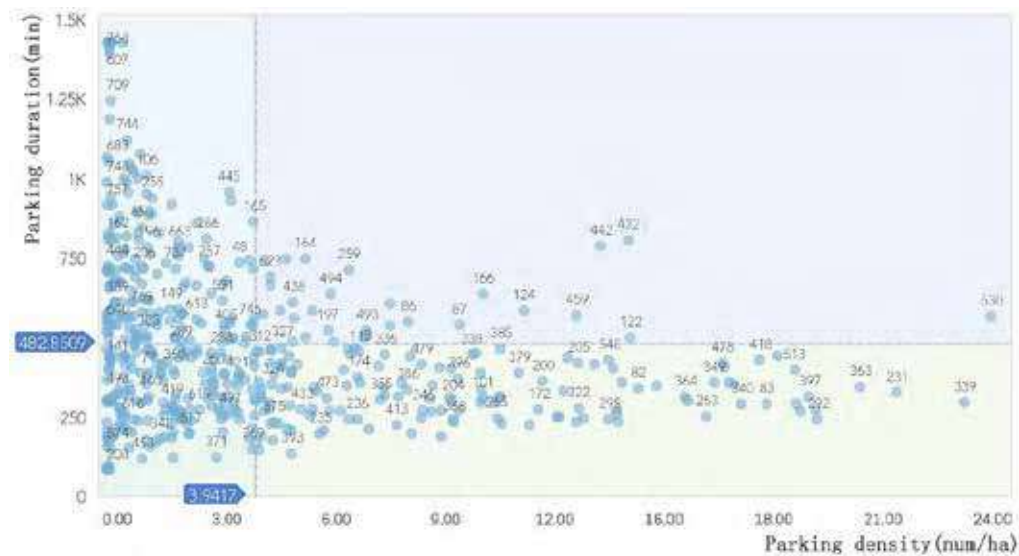


Figure 4 The scatter plot of parking density and parking duration

3.1.4 The spatial distributions of four parking modes

By categorizing the grids by 4 parking modes, the distribution of each parking mode were shown in Figure 5. Among all grids, HH mode accounted for 6%, LH mode had 34%, LL mode accounted for 32% and the left 28% was HL mode.

Table 3 shows the average value of built environment variables for each parking modes. Grids of HH mode had the highest density of fast way and grids of HL had the highest density of all other road types. LH mode grids had the poorest public transportation service (less bus stops and far away from metro station). HL mode was with the highest population and job density, and the LH mode was with the lowest ones. In terms of land use, HL mode had the highest mix use degree, residential land and proportion of commercial land. LL mode had the highest educational facilities and green land. The HL mode also had the highest service facility density followed by LL mode.

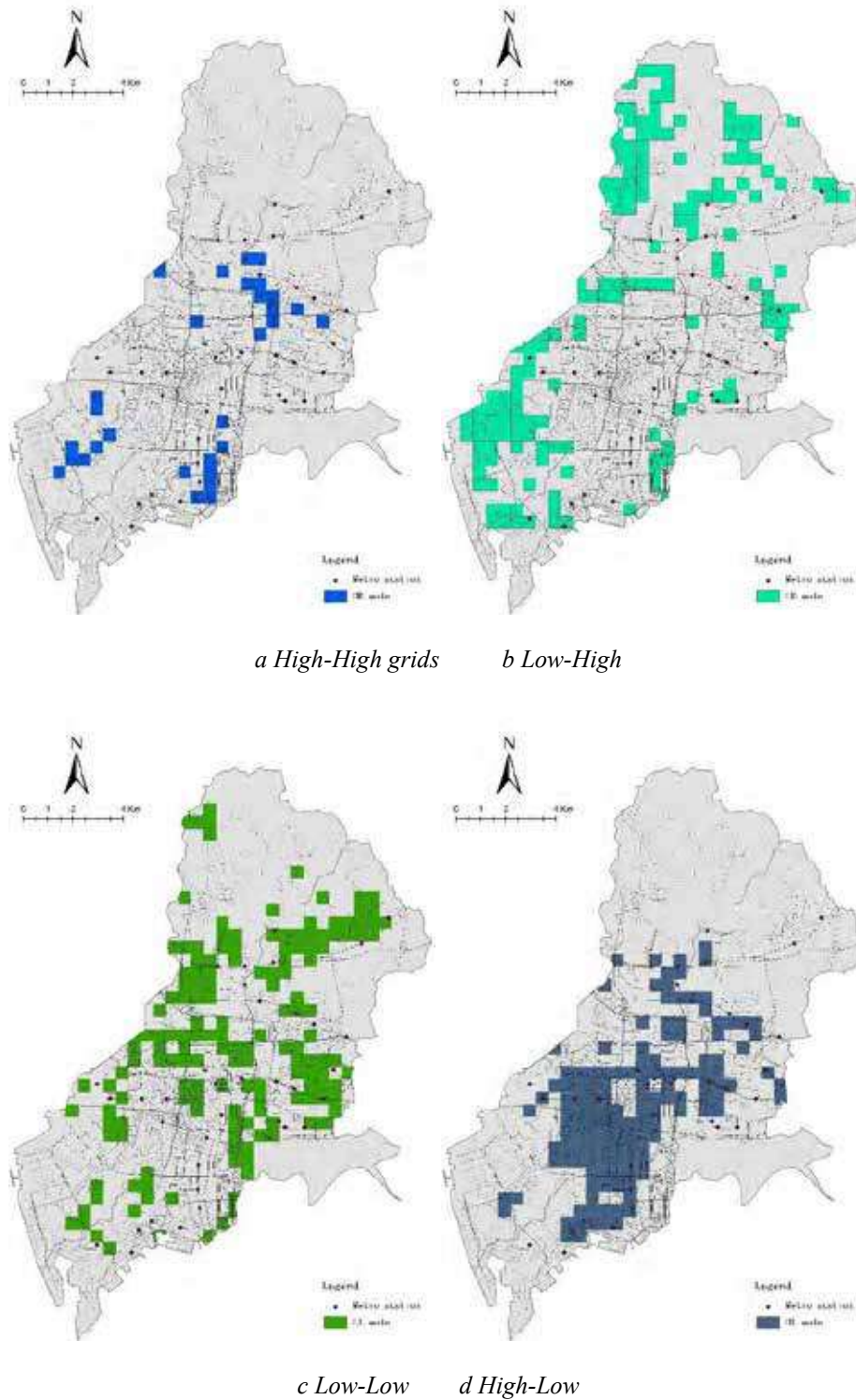


Figure 5 The spatial distribution of four dockless public bicycles parking mode in Nanshan

Table3 Statistical characteristics of built environment of four parking modes

Built environment variables	HH	LH	LL	HL
Density of fast way	32.91	14.25	20.06	22.97
Density of major & secondary road	46.10	15.49	27.22	51.01
Density of minor road	62.48	43.65	58.01	79.30

Bus stops	2.52	0.77	1.95	3.90
Subway	1222.15	2019.12	1226.13	672.47
Population	53.61	33.80	61.86	317.91
Job	0.48	0.34	1.08	2.80
Mix use	0.50	0.39	0.45	0.54
Residential land	0.02	0.02	0.02	0.07
Commercial land	0.03	0.02	0.05	0.06
Educational Land	0.02	0.01	0.09	0.05
Green Land	0.03	0.03	0.05	0.03
Building density	0.10	0.06	0.12	0.21
Service facility density	0.28	0.05	0.35	1.75
Altitude	12.95	35.64	28.02	16.23
Number of grids	31	167	162	140

4.2 The influencing factor of parking mode

A logistic regression model was applied to explore the built environment impacts on parking mode. The LH mode area had low artificial built environment and high altitude which was obviously far away from people's daily life. The number of dockless public bicycle in this area was small. Although the parking duration was long, this would not be a problem to occupy public place. We took LH as the compared group. The results are listed in table 4. The model's likelihood ratio is statistically significant at 0.01 level and the pseudo R square is 0.418.

Table4 Multinomial Logit Estimates Results of Built Environment Factors

	HH			LL			HL		
	B	Sig	Exp(B)	B	Sig	Exp(B)	B	Sig	Exp(B)
Intercept	-0.907	0.156		1.999	0.000		-0.007	0.990	
Density of fast way	0.422	0.022	1.525	0.242	0.093	1.274	0.571	0.001	1.770
Density of major & secondary road	0.505	0.019	1.657	0.239	0.165	1.270	0.669	0.001	1.953
Density of minor road	0.074	0.755	1.077	0.192	0.185	1.211	0.398	0.058	1.489
Bus stops	0.606	0.041	1.833	0.135	0.566	1.145	0.173	0.519	1.188
Subway	-0.572	0.067	0.564	-0.605	0.000	0.546	-1.531	0.000	0.216
Population	-0.573	0.405	0.564	0.054	0.883	1.055	1.148	0.006	3.152
Job	-0.112	0.892	0.894	1.409	0.004	4.093	1.694	0.001	5.441
Mix use	0.161	0.560	1.174	-0.355	0.029	0.701	0.066	0.800	1.068
Residential land	0.115	0.776	1.122	-0.381	0.128	0.683	-0.391	0.240	0.677
Commercial land	-0.198	0.561	0.820	0.310	0.059	1.363	0.215	0.298	1.240
Educational Land	0.832	0.187	2.299	1.468	0.002	4.339	1.315	0.009	3.724
Green Land	0.029	0.911	1.029	0.196	0.080	1.217	0.299	0.152	1.348
Building density	0.504	0.199	1.655	0.320	0.177	1.377	0.850	0.014	2.339
Service facility density	2.462	0.033	11.727	2.428	0.016	11.336	2.836	0.006	17.048
Altitude	-1.851	0.002	0.157	0.033	0.799	1.034	-2.187	0.000	0.112

(1) Results show that compared with LH parking mode, HH parking mode is with denser high-class roads (fast road, primary and secondary roads), probably because of spatial segregation of bike lanes by high-class roads. Grids with denser bus stops have positive impact on being a HH mode, since bike plus subway is not competitive than bus in these areas. Meanwhile, area with more shops and restaurants are the easier to be HH mode than LH mode. In addition, with the lower the altitude, public bicycles are easily stacked to increase the parking density and parking duration. Therefore, we can infer that it is easy to form a HH parking mode when those areas are separated, bus-oriented, lower and with lots of shops, where the attraction demands are **one-way demands**, to restrain bicycle flows out of the areas. As a result, bicycles in this area stack and cause long-term parking, strongly occupied public space and disturbed people's outdoor activities.

(2) Close to subway station, dense job opportunities, lots of educational land and shops, less mixed land use indicate those special zones such as universities and independent high-tech parks, and form LL parking mode. These regions are normally independent managed, with big scale and closely interrelated, where the demands of dockless public bicycles are limited, clear, stable and continuous, therefore the use of dockless public bicycles is very efficient and the parking duration is short. The public bicycles in this area have less exchange with other areas. LL parking mode is self-sufficient, with the least occupation of public space comparing with other 3 modes.

(3) High-grade urban roads, closer to the subway station, high population density, high density of jobs, high density of shopping and restaurants, and relatively lower the altitude have a significant impact on the HL parking mode. Areas with the combination of the above characteristics will tend to be the core area of people's daily activities and have strong and aggregate demands to use bicycles. To meet the demands, bicycle operators often set up excessive bicycles to serve people at any time. Due to the large travel demand, the dockless public bicycles are used at high frequencies, resulting in a high density, low duration parking feature. At the same time, the bicycles in the area exchange frequently with the bicycles in the surrounding area. In HL mode areas, bicycles are most active, and besides parking space, the turnover space, bike lane and other facilities are urgently needed.

4.3 Suggestions for public space governance to adapt dockless public bicycles

Comparing the parking demand of public space, first, the two parking modes of LH and LL have little impacts on the occupation of public space. For the LH parking mode, a small number of public bicycles are parked in the area for a long time, which is not conducive to the maintenance of public bicycles. Bicycle maintenance and parking spots can be combined to design as part of a public space service facility. For area with LL parking mode, it is necessary to pay attention to changes in land use or transportation facilities in the area, which will cause changes in the demand for public bicycles. Some public space can be reserved as a potential bicycle parking slot. Secondly, HH parking mode and HL parking mode have high pressure on public open space. On the one hand, a multi-level parking facility system can be constructed, combining a centralized and decentralized layout. In areas where public open space is limited, multistory parking can be used. On the other hand, bicycles with less use is a waste of public open space and it is reasonable to control the scale of the dockless public bicycles. In addition, for the HH parking mode area, the considerable bike lane design is necessary to encourage bicycle flow and to overcoming those obstructions from slope and one-way destination.

Besides, the dispatch management of dockless public bicycle is an also important optional strategy for reducing public open space pressure. Dispatch management strategies can be divided into active dispatching and passive dispatching. Active dispatching encourages cyclists to ride public bicycles in the HH area to other areas in need by setting incentives for operators; and passive dispatching is to transport dockless public bicycles from HH area to the demand area by full-time dispatchers and vehicles. This involves vehicle route and bicycles redistribution problem.

In terms of urban spatial management strategy, some public open place should adopt a limited open management strategy for dockless public bicycles, allowing a certain number of dockless public bicycles to enter, which not only does not create pressure on the spatial environment in the region, but also meets people's cycling needs. In some important areas, such as the area within 10m around the entrance and exit of subway station, a no-parking area for public bicycles is set up to prevent public bicycles from occupying safe evacuation space.

5. Conclusions

This paper took Nanshan District in Shenzhen city as a representative case, to analyze the parking characteristics of dockless public bicycles by "parking density" and "parking duration".

For the "parking density" and "parking duration" of sharing bicycles in Nanshan, the short-term parking of grids are mainly high-tech employment centers, universities and commercial entertainment areas. The areas with long-term parking are mostly in the suburb areas close to mountain or construction site. the central area has a significant higher density than others. Based on cross classification, we presented four parking modes, and applied a logistic regression model to explore built environment impacts on parking modes.

The results show that spatial isolation, public transportation, urban centralization, functional zone and attitude all significantly influence the parking modes and cause uneven spatial distribution and uneven uses of dockless bicycles, and cause serious occupation of public space. To improve the efficiency of bicycle parking and reduce the useless occupation, considerable bike lane system to encourage bicycle's flow, compact parking facilities to save space, dispatch management to improve efficiency, diverse policies to ease the burden of public space are all necessary strategies.

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“Imagining the future of my neighbourhood”:

Residents’ perceptions of sustainable mobility and regeneration around metro stations in the city of Thessaloniki

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Abstract: New development around public transport stations has long been seen as the main alternative to low-density urban sprawl and car dependent land use patterns. Less attention has been given, however, to involving local residents in the public discussion about the potential of public transport infrastructure for sustainable regeneration of their neighbourhoods. The present paper presents an experiment undertaken to seek out how local residents would actually conceive the future of their neighbourhood and its potential for sustainable regeneration based on the metro which is under construction in the city of Thessaloniki. The experiment focused on two metro stations under construction in two different neighbourhoods in terms of their socio-spatial characteristics. After a questionnaire survey to residents and businesses, two interactive workshops were held on the day of the nearby open market, one in each station. The survey and workshops operated as knowledge production for both sides: the local residents that were helped to envisage the metro as a future challenge and the research team that had to incorporate their expectations into an ongoing pilot urban project. The paper highlights the potential of the use of qualitative methods in the research and planning of sustainable mobility and neighbourhood regeneration.

Keywords: Transit-oriented neighbourhood regeneration; sustainable urban mobility; residents’ perceptions; Thessaloniki metro

1. Introduction

Public transport has long been seen as the backbone of the transition to urban sustainability whereas new development around public transport stations has been proposed as the main alternative to low-density urban sprawl and car dependent land use patterns (Cervero, 2015, Curtis *et al.* 2009, Papagiannakis *et al.*, 2017). Coupling public transport investments and urban development mainly through mixed use development around public transport stations, what is mostly known in the literature as a Transit-Oriented Development (TOD), is one of the more widely accepted policies seen as the undisputed path to achieving efficient and sustainable urban development forms.

As urban areas are continuously experiencing transformations of slow or more rapid paces, urban development characteristics and dynamics, mobility and accessibility patterns and in general a city’s spatial geography are all components which are interconnected in a complex way (Naaes, 2006). In places where new public transport services are provided in existing, compact, mixed-use areas which have been classified by some writers as high-density TODs (Thomas *et al.*, 2018), such transport investments not only transform neighbourhood identity but also reshape the lives of residents, in some cases by forcing the most vulnerable to leave (Chapple and

Loukaitou Sideris, 2019). Therefore, it is crucial to study patterns and changes that occur at a local scale and identify potential strategies that enhance local identity and the sense of space from a resident's perspective.

Among the main objectives of a TOD is to increase the quality of life of the local community inhabitants given that a TOD contributes to increased transport alternatives in congested urban areas, to the reduction of energy consumption and air pollution, to increased safety for pedestrians and cyclists and to the reduction of road accidents (Parker *et al.*, 2002) and consequently to more vibrant communities. Yet, policies that advocate a TOD pattern have given less attention to involving residents in the discussion about the potential of public transport infrastructure for a sustainable regeneration of their own neighbourhoods. It is worth noting here that recent research has shown the impact of compactness within a wider range of urban form typologies and found that the higher the density, the higher the neighbourhood satisfaction due to the main important components of the compact city that is public transport, accessibility to city centre and land use mix (Mouratidis, 2017).

Neighbourhood regeneration strategies are strongly associated to sustainable community development and to the overall sustainability of the cities as it combines multiple social, economic, environmental and institutional objectives (Kafkalas *et al.*, 2015). Additionally, these strategies promote compact forms of development in existing urban areas, while reducing the need for suburban development. The demand for prosperity along with the request for open-endedness and constant re-interpretation of urban places, more important when it concerns small urban spaces, have led to changes in the approaches of local scale planning, aiming to reconsider the quality of public space (Aravot, 2002, Whyte 1980). A subsequent practice of urban regeneration, especially at the neighbourhood level, is the placemaking approach, as this approach is based on working with the local community through participatory forms of planning involving residents and employees in the intervention areas (Laven *et al.*, 2016). In this way, social and economic productivity, and physical improvements are considered more successfully implemented in an area. Promoting local involvement through placemaking policies contributes to the redesign of dominant uses of specific public spaces, such as streets, changing them from simple transport corridors to significant spaces for human activity. Thus, their regeneration as a public space of shared nature, in other words as "shared spaces" (Clarke, 2006, Grey and Siddal, 2012), addresses basic objectives of neighbourhood regeneration such as good connectivity, safety and preservation of social cohesion. Such approaches and tools improve the integration of urban and transport planning by focusing on the implementation of measures that enhance accessibility and quality of the public realm giving priority to local community and vulnerable users.

Thessaloniki is a typical Mediterranean city with high densities and a characteristic mixed-use pattern throughout its main compact area (Yiannakou, 2013). Since 2008, a metro transport system is under construction passing through the most densely and mixed-use parts of the inner city. Thessaloniki Metro has been for years a politically controversial mega-project as financial and other critical obstacles, especially major archaeological findings, led to a very slow pace of its construction. Degradation images and closures of many businesses in the surrounding areas have dominated the perception of local residents for this mega-project, almost exclusively conceived as a problem within the city's heart and less as a potential of upgrading the local quality of life.

Taking into consideration this dominant image of the residents regarding the metro under construction, the paper presents an experiment undertaken to seek out how local residents would actually conceive the future of their neighbourhood and its potential for sustainable regeneration based on the metro which is under construction in the city of Thessaloniki. The experiment focused on two new metro stations (currently under construction) in two different neighbourhoods of the city. For the needs of the study, a questionnaire survey to residents and businesses was initially undertaken followed by two interactive workshops that were held on the day of the nearby open market, one in each station. A profile of the study areas and the methodology followed is presented in the second section while the third section analyses the findings and discusses the main results of both the survey and the workshops.

2. A profile of the study areas and the methodology of the case study

For the purpose of the case study, two different neighbourhoods were selected within the dense compact area of Thessaloniki with different, however, socio-spatial characteristics: the first one (Patrikiou Station study area) is located within the older, typically residential, inner part of Thessaloniki, a former middle class area which has been gradually deprived over the last decades; the second one (Kalamaria Station study area) is located in one of the main municipal centres of Thessaloniki, a typical middle class area in the compact city.

a. Study area of Patrikiou Station

The study area of Patrikiou Station (Figure 1), located in the east part of the Municipality of Thessaloniki, the central and largest municipality of the city, is a typical compact and high density residential inner-city area. Densities in the area range between 600 and 700 inhabitants per Ha, with buildings up to 5 floors and mainly of an age of 40-50 years old. At a ground floor level, most uses consist of multiple retail outlets, freelancers, services and utilities which serve daily needs of local residents. A considerable number of the ground floor outlets are closed, without any use, which is partly due to the economic crisis of the country since 2010. Within walking distance of less than 10-minute walk of the metro station under construction, there are facilities of leisure, sports and green areas with the most significant one the Mina Patrikiou park, a neighbourhood park and one of its most characteristic public spaces. The study area is located within the wider zone of influence of nearby coastal zone of the city, known as Nea Paralia, which offers recreation facilities and activities for the residents of the entire east and south east part of the compact city. The study area is crossed by two main roads of the city (Vasilissis Olgas and Delphon), one of which functions as a major arterial and entrance to the city and the second as one of its minor arterials. In terms of the mobility characteristics, the proximity of the area to public transport services (bus lines) is quite satisfactory. However, it lacks an integrated pedestrian and biking network.

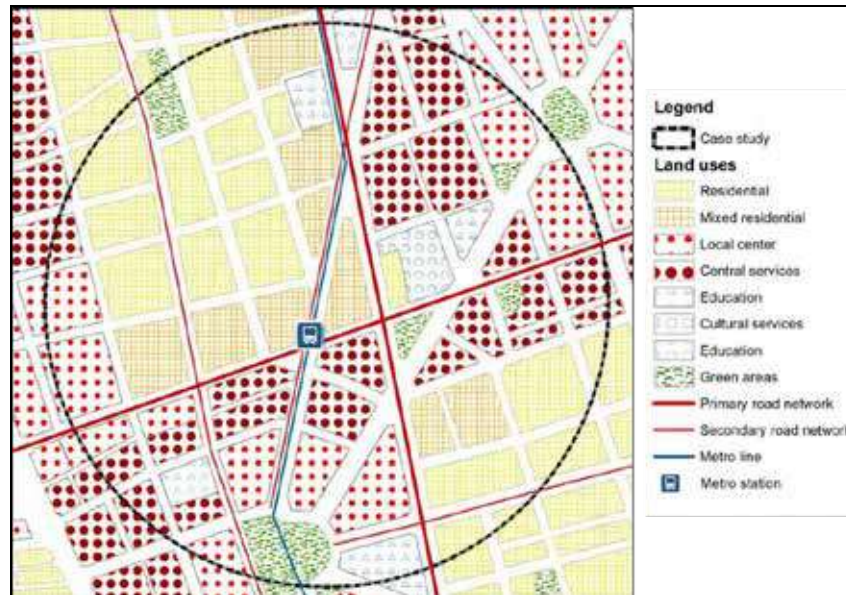


Figure 1: Land uses in Patrikiou Station study area

b. Study area of Kalamaria Station

The study area of Kalamaria Station (Figure 2) is located in the centre of the Municipality of Kalamaria, situated in the south east compact area of Thessaloniki. This study area is also distinguished by mixed uses of a local centre nature that are developed along a pedestrian zone as well as other main streets of the area. The area is compact with rather lower densities ranging between 120 to 270 inhabitants per Ha, with buildings of 4-5 floors and mainly of an age of 20-40 years old. The immediate zone of influence of the metro station bears common urban characteristics with those of Patrikiou Station area. At a ground floor level, there are multiple commercial and recreational uses as well as education, care and cultural services all developing along the main road axis (Metamorphoseos, Aigaίου and Pontou). In the case of Kalamaria Station study area, there is a much smaller number of closed stores without use comparing with that of Patrikiou Station, along with a greater number of residential ground floor uses and parking lots. Regarding the mobility characteristics, the area is also characterized by satisfying accessibility and proximity to public transport (bus lines). Despite the long length pedestrianized streets of Metamorphoseos and Kominon, the wider area lacks an integrated pedestrian and biking network.

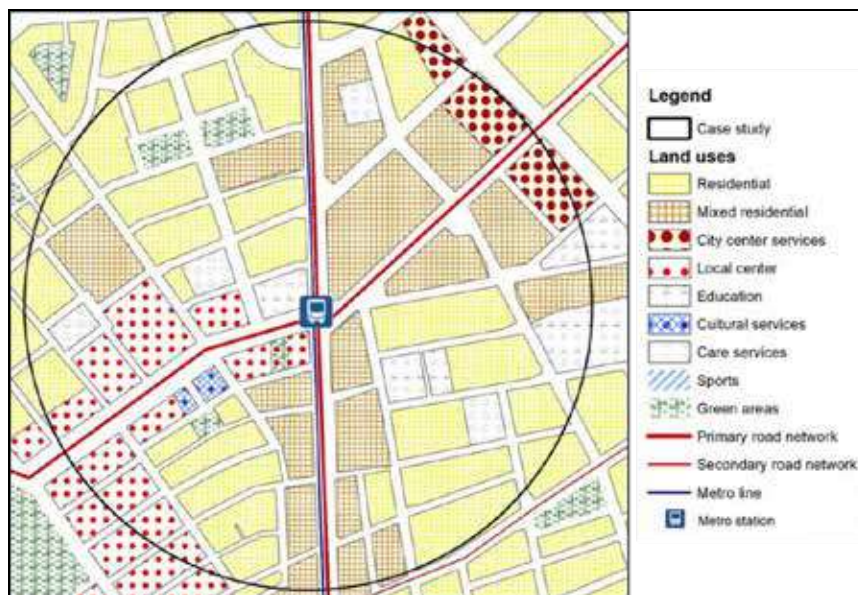


Figure 2: Land uses in Kalamaria Station study area

c. Methodology

The methodology of the present case study included the following three steps: 1) An analysis of the two study areas based on field recording and mapping of their critical urban and mobility characteristics. 2) A questionnaire survey in order to understand the main characteristics of the users of the study areas, to evaluate these areas based on the respondents' perceptions about the local problems and to record their views and expectations regarding the potential of upgrading the neighbourhood around the future metro stations. The questionnaire survey was held in the first week of December 2017 and was addressed to a sample of 180 people (90 questionnaires in each study area) who work, live and visit the two study areas. The questionnaires were conducted in public places, retail and leisure stores of the study areas. 3) The organization of two participatory workshops, in order to involve people living, working and visiting the study areas in a future neighbourhood regeneration project based on the metro stations.

Regarding the third step, in order to make sure that people would participate in some way or another, both workshops were held as open interactive events organizing the whole event as part of people's regular activity in

their neighbourhoods. Thus, the two workshops were conducted on a day when the weekly open market is held in the study areas. The workshops were promoted with the slogans “Imagining the future of my neighbourhood” and “The Metro in our neighbourhood: I participate, I propose, I make the place where I live” and were carried out in cooperation with the Municipalities of Thessaloniki and Kalamaria and with the support of the company responsible for the construction of the metro project, Attiko Metro SA. The events took place in 6 and 14 June 2018. A total of 150 people took part in the events, 76 and 74 people at Patrikiou and Kalamaria Station areas respectively. During the events, the participants were invited to express their everyday difficulties encountered in their neighbourhood and their perception on how these problems affect the quality of the urban environment, the local economic activities, the identity of the area, the mobility patterns and the housing prices. They were also asked to state their suggestions and expectations for future regeneration interventions envisioning their neighbourhood after the accomplishment of the metro construction.

The study group provided the participants with guidelines for the evaluation of the areas as well as example ideas in order to encourage them to take part in the event. The participatory process included the use of post-it notes, where participants could write down specific problems as well as their personal ideas for a future regeneration plan. On satellite maps of the study areas the participants could assess specific places that they consider problematic, attractive or prosperous as well as their own proposals for the regeneration of the study areas. In the proposal maps, participants were able to mark up the zones which they prefer to be developed with commercial uses, leisure uses, green areas, as well as the creation of traffic calming or pedestrian streets.

3. Main findings

Table 1 presents the main characteristics of the respondents in the questionnaire survey in both study areas. The findings from the field research as well as the results from the questionnaire survey were mapped (Figures 3 and 4) in order to understand critical issues and correlate them with the results of the participatory workshops.

Table 1: Sample characteristics

Gender	Female	Male					
Patrikiou	52%	48%					
Kalamaria	41%	59%					
Age range	16-24	25-34	35-49	50-64	65+		
Patrikiou	11%	27%	31%	26%	5%		
Kalamaria	36%	18%	23%	14%			
Profession	Free lancer	Retired	Unemployed	Public servant	Private servant	Student	Household
Patrikiou	38.7%	5.6%	5%	37.1%	2%	8.2%	3.4%
Kalamaria	21.4%	10%	2%	11.3%	24.3%	22.9%	8.1%
Annual income (€)	0-5,000	5,000-10,000	10.000-20,000	20.000-40,000			
Patrikiou	53%	36%	8%	3%			
Kalamaria	51%	29%	4%	6%			
Status of Respondents	Residents	People working in the area	People visiting the area				
Patrikiou	56%	35%	9%				
Kalamaria	70%	22%	9%				

Looking into the main findings from Patrikiou Station study area (Table 2, Figure 3), it can be observed that, according to the users, the area is well accessible due to its easy connection to the city centre by public

transport. However, they indicate the lack of an integrated pedestrian and bicycle network. The users think the operation of the metro in the area will allow public transport multimodality, as the area will be served by metro and bus connections. A notable problem for the users is the lack of parking spaces and of an integrated parking management plan for residents and visitors. Real estate prices, which are considered to be ranging at low levels due to the economic crisis, are expected to increase up to 20% with the launch of the metro. Finally, the area was evaluated as having considerable open and free spaces and greenery areas, with the presence of Mina Patrikiou park, in about 5 minutes' walk from the station.

Table 2: A summary of the results of the questionnaire survey

	Evaluation of Patrikiou				Evaluation of Kalamaria			
	Dissatisfied	Partly Satisfied	Satisfied	Very Satisfied	Dissatisfied	Partly Satisfied	Satisfied	Very Satisfied
Degree of satisfaction by public transport	14%	29%	52%	5%	14%	29%	52%	5%
	High		Low		High		Low	
Housing price rates	78%		22%		80%		20%	
Distance from the city center	73%		27%		56%		44%	
	Sufficiency		Absence		Sufficiency		Absence	
Green areas	12%		88%		15%		85%	
Public spaces	20%		80%		46%		64%	
Parking spaces	24%		76%		41%		59%	
Pavement quality	40%		60%		35%		65%	

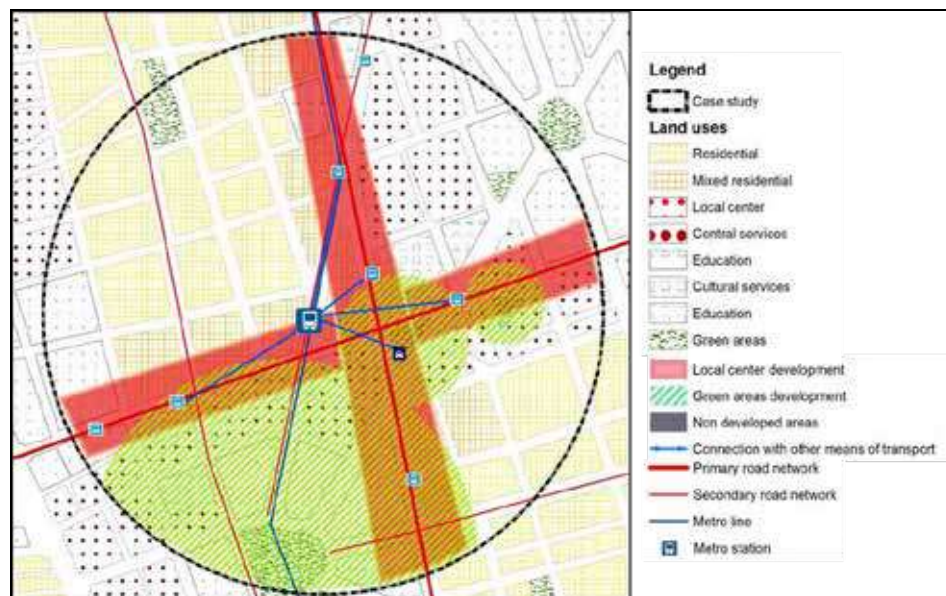


Figure 3: Evaluation map of the Patrikiou Station study area

Regarding the main findings from Kalamaria Station study area, the users find as the most forceful characteristic of the area the main pedestrian street which is the most central and vibrant street of the municipality with

immediate proximity to the station. The connectivity of the area to the centre of Thessaloniki is also considered satisfactory, although the area is in larger distance from the city centre than the Patrikiou Station one. It was also stated that the proximity of the bus stops from the station will enhance public transport intermodality. The users agree that the lack of parking space in the area makes necessary the implementation of a parking management plan. Regarding open space and green areas in the zone of influence of the station, residents and visitors seem to enjoy the operation of the central pedestrian street which functions as the urban centre of the municipality. Housing prices in the area are higher than the ones in Patrikiou Station, however, a decline in the prices during the last years as a result of the financial crisis was also recorded. These prices are expected to change due to the metro operation in the area, with an increase of 20% -25%.

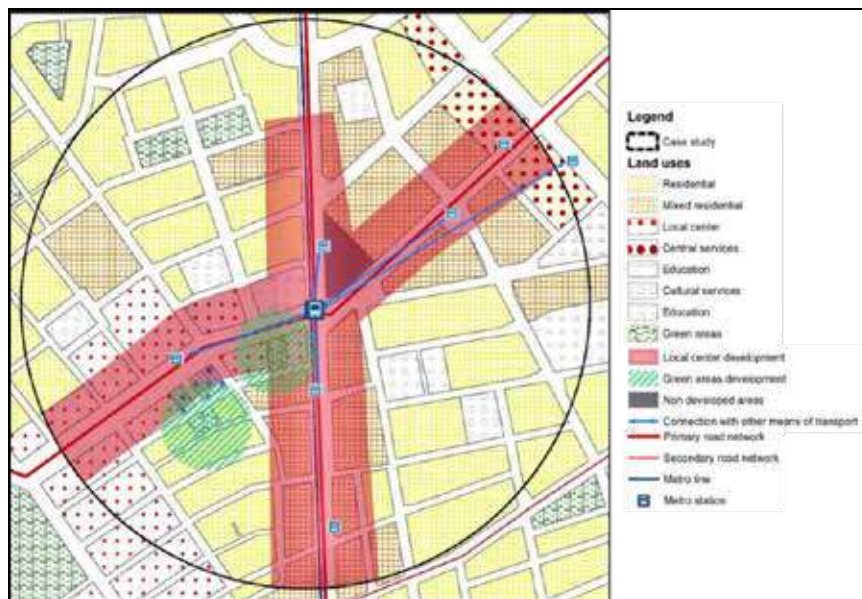


Figure 4: Evaluation map of Kalamaria Station study area

Based on the results underlined from the workshop "The Metro in our neighbourhood", in Patrikiou Station study area the participants noted more or less all the above mentioned problems that were identified in the evaluation based on the questionnaire survey and made the following specific suggestions regarding the regeneration of their neighbourhood and the public realm enhancement:

- Maintenance of the pavements and construction of necessary facilities for people with disabilities
- Establishment of a bicycle network and creation of parking facilities next to the station area
- Implementation of a parking management plan and development of parking spaces also suitable for disabled people
- Redesign of the Mina Patrikiou park with standards oriented to children and disabled people
- Informative signs, either with information about the area and the available public infrastructure and how people could make the best of it
- Protection and enhancement of all open and green areas and more specifically of the Mina Patrikiou park.

As mentioned above, during the event the participants were asked to mark on a map the preferable type of development in the area (commercial, recreational, green uses, traffic calming streets or shared spaces) (Figure

5). The majority of the participants proposed to pedestrianize or implement traffic-calming measures on Solonos street, as well traffic-calming or shared space measures around the Mina Patrikiou park in order to protect children playing in the park during the day. A smaller percentage of participants suggested to pedestrianize or implement traffic-calming measures on Kritis street in order to restore economic vitality in the area. Both these streets function today as collector roads and are congested with parking. Similar suggestions were made for specific local streets aiming to protect children crossing these streets to access their school.

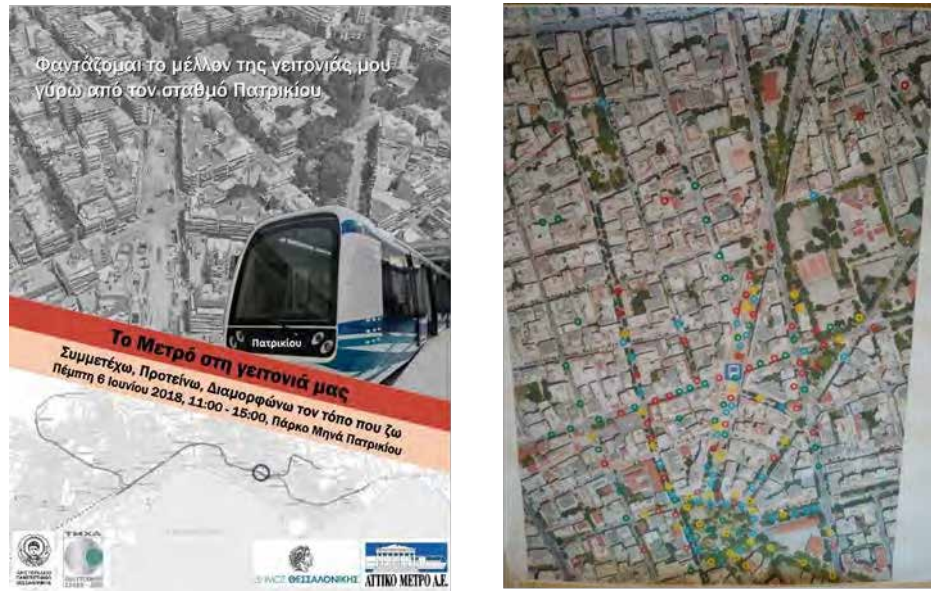


Figure 5: Invitation poster and map with the participants' proposals (Patrikiou Station study area)

Regarding commercial development, the majority of participants stated that greater development of commercial functions after the metro operation should be promoted in the streets Solonos, 25 Martiou and Delphon, as they represent the main arterial or collector roads of the area and they are directly connected with the station. In addition, it was highlighted that Kritis street, the street that trespasses the study area, which has also been stated as downgraded zone with a decrease of commercial stores due to economic crisis in the last years, is expected to be upgraded after the operation of the metro. Considering green areas that should be developed, the participants stressed the lack of greenery mainly on 25 Martiou street as well as on the local streets Chalkidikis, Alexandrias and Christovasili. In addition, they mentioned that the metro will affect positively the aesthetic and environmental enhancement of nearby Mina Patrikiou park, which is and the most popular area during the day.

In the case of Kalamaria Station study area, the results of the workshop "The Metro in our neighbourhood", underlined the following suggestions regarding the regeneration of this neighbourhood and the public realm enhancement:

- Restructuring the mobility patterns of the area oriented to pedestrians, to children and to people with disabilities
- Development of an integrated bicycle network
- Implementation of a parking management plan and parking facilities near the station as well as construction of underground parking infrastructure in connection with the station
- Redesign of an open parking space into a green space with an underground parking
- Playgrounds installation on the parks

The majority of the participants suggested the implementation of traffic-calming measures in Aigaiou and Pontou streets in order to reduce the speed of the vehicle and protect pedestrians. Furthermore, it was suggested to pedestrianize most of the local streets (Soumelas, Vazelonos, Iasonidou, Kyriakidou) which are connected to the main pedestrian street Metamorphoseos, because they have very narrow sidewalks. In the new car free streets, only residents would be allowed to park their vehicles and as a result, the walkability will be improved.



Figure 6: Invitation poster and map with the participants' proposals (Kalamaria Station)

Most participants stated that the greatest development of commercial functions after the operation of the metro will take place on the main arterials Pontou and Aigaiou as well as in the part of Metamorphoseos which is today closed due to metro construction. As they acknowledged, this will arise as result of their proximity with the station. A significant observation for the case study is that most of the participants claimed that the area is full of commercial and leisure stores in the main pedestrianized zone of Metamorphoseos and Komninon streets and therefore there is no need for further development of such land uses in the area. Regarding the development of green areas, the participants stressed the importance of the sustainable upgrade of the outdoor parking area between the streets Chaldias, Karolidou, Kiouptsidou, with the creation of a park and underground parking. Finally, a smaller percentage of participants suggested the redesign of an existing park between the streets of Metamorphoseos, Amisou and Soumela.

4. Discussion and conclusions

Public participation represents a tool whereby the community can express its needs and desires. Incorporating a public participation process regarding new policies or policy changes for sustainable mobility and neighbourhood regeneration, is one step, and perhaps the 'easy' one as the real challenge is 'implementation' (Public Participation and Citizen Engagement, 2015). So, the main purpose of the present paper was in fact to bring experimentally into the broad public the question of the future of their neighborhood in connection to a large transit infrastructure under construction, which for years was creating negative attitudes on behalf of the local residents due to its impacts during the construction stage. This experiment attempted to study whether we can build a broad local support to such big projects through a neighborhood regeneration plan around public transport, in other words through a transit-oriented regeneration, and through that to urge for the implementation of more sustainable forms of development and mobility at the local scale.



Figure 7: Pictures from the two citizen workshops

The overall results of both the questionnaire survey and the workshops indicated that in both study areas a TOD regeneration plan based on the metro station were very welcome by the citizens involved. As a matter of fact, it was notable that the citizens didn't comment at all on the problems and impacts of the construction of the metro.

The most important benefit of applying such a methodology was the interactive education between planners and participants. Planners can educate and inspire participants by explaining the planning guidelines and presenting already successful examples, and therefore participants can express ideas, problems and needs that the planner missed or haven't taken into consideration. In an effective public participation, citizens' involvement can result in better and more informed decisions and thereby, generate durable and sustainable solutions. It goes without question that an authentic public participation requires rethinking the underlying roles of, and relations between the involved parties (King *et al.*, 1998) such as the citizens, experts and public authorities. The survey and workshops of the present research operated as knowledge production for both sides: the local residents that were helped to envisage the metro as a future challenge and the research team that had to incorporate their expectations into an ongoing pilot urban project. Public involvement in the present research, through questionnaire surveys and interactive workshops, showed the potential of the use of qualitative methods in the research and planning of sustainable mobility and neighbourhood regeneration. Furthermore, these methods helped to identify different types of citizens and the way they may affect or be affected by decisions taken in the process. Overall, such an approach can enable to integrate local knowledge into urban planning and regeneration policies (Berman, 2017).

Public involvement includes the promise to the public that its contribution will influence decisions in a planning process and thereby represents a way of building trust between local government and citizens. For such an experiment to be useful and effective further elaboration is necessary to draw the attention of the local authorities and encourage the drawing of a neighbourhood plan and the implementation of specific interventions based on placemaking practices and advocating for social, human-scale places. It is also important to ascertain that the citizens' individual ideas will be implemented in some way or another and that closer attention will be paid to their needs and desires. Planning a sustainable neighbourhood based on the citizens' perspective

represents a tool for upgrading public space with an emphasis on human scale. It is a policy of revitalizing public space in cooperation with its users and residents, aiming at the creation of attractive places that will satisfy their needs. A collaboration between residents, planners and decision-makers along with a continuous contact and communication among them can increase the added value and may bring significant positive effects at the local scale as well of large scale public transport investments which usually are evaluated only by their contribution to city and metropolitan scale development.

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How Could the Integration of Land Use and Transport in Planning Practice Contribute Achieving Sustainable Urban Form - By a Case Study Analysis of Kings' Cross and Olympic Legacy in London

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Abstract: This dissertation seeks to analyse how the integrated land-use and transport planning could contribute achieving sustainable urban form. It has been evidenced that there is a close interrelationship existing between land use and transport. Moreover, it is essential to evaluate the effectiveness of planning practice for achieving a more sustainable future from an integrated perspective of land use and transport. London Kings' Cross and Olympic Legacy have been selected as two studying cases, as London can be regarded as an excellent research platform with the well-developed planning system. In general, this study will analyse and explain the contribution of integrated land-use and transport planning for sustainable urban form in three levels. Firstly, the theoretical relationship between sustainable urban form and its influencing factors will be summarised. Then, the primary planning principles will be summed up through the analysis of integrated planning strategies. Finally, the effectiveness of planning practice will be assessed through the case-specific planning policies. The conclusion in various levels will improve the connection between theoretical research and planning practice for achieving sustainable urban form through integrated land-use and transport planning.

Keywords: Sustainable urban form, Integrated land-use transport planning, London King's Cross, London Olympic Legacy

1. Introduction

1.1 Theoretical background and purpose of study

In the 21st century, urban sustainability is regarded as a crucial issue for the development of human society. It is evidenced that the integrated efforts of land-use and transport planning usually have significantly positive impacts on sustainability in an urban context, which is also regarded as the achievement of the sustainable urban form (Mason, 1994). The definition of sustainable development and its relationship to the urban context is a priority to understand the concept of sustainable urban form (SUF). Since the conference of World Commission on Environment and Development (Brundtland, 1987), the universally accepted definition of sustainable development is described as an event which is capable of meeting today's needs without compromising the ability of future generations to meet their own needs. Previous research has revealed that shifts in behaviour and attitudes could significantly affect the acceptance of urban sustainability. Implicitly, manipulating land uses which support potential reductions in transport emissions should be one of the most effective methods of achieving sustainable urban development.

1.2 Research question

The principal aim of this paper seeks to answer the question of how could urban planners and policy-makers promote sustainable development in planning practice from the viewpoint of integrated land-use and transport planning (ILUTP). The interrelationship between sustainable urban form (SUF) and integrated land-use transport planning (ILUTP) will be established to explain how land-use and transport planning could collaboratively contribute to SUF in planning practice.

1.3 Overview of study process and significance of the study

Firstly, main influencing factors in achieving SUF will be critically analysed to explain why the relationship between land use and transport planning is vital in achieving SUF. Secondly, a literature review about the theories of the land-use transport interaction will be discussed to explain the interrelationship between land-use and transport planning system. Strategic planning policies will then be reviewed to classify main planning principles for achieving SUF. According to the analysis of strategic planning policies, case-specific policies of two study cases will be comparatively analysed. Finally, the contribution of ILUTP to achieve SUF will be assessed.

The primary contribution of this research may be to further explore the correlation between land-use planning system and transport planning system for make SUF successful. On the other side, the comparative analysis of case-specific planning policies in two study cases will help to define similar and different focuses on integrated principles in achieving SUF.

2. Literature review and criticism

2.1 Theories about sustainable urban form

It is hard to identify which urban form is most sustainable for development in cities. Williams et al. (2000) argued that certain types of urban forms could be more sustainable in some respects, involving

reduced travel demand and green energy usage, but detrimental in others, perhaps in causing social inequalities. In fact, the concept of sustainability covers a variety of aspects. It is necessary to analyse the connections between urban form and various sustainable features at different geographical scales.

Figure 2.1(a) Egan wheel: Key components of sustainable communities. Source: Mazni et al, (2010)



From the perspective of planning sustainable community, Egan (2004) reviewed a series of key components in sustainable place making, which involves transport, ecosystem, economy, social equity, housing, governance, public services, and the built environment (Figure 2.1a). However, addressing key sustainable components appropriately in urban development can be challenging due to the complexity of the large cities.

Clearly, sustainability is not just dependent on physical form alone. However, expectations about the magnitude of an urban form's influence on sustainability are significant. Manipulating land uses could be regarded as an effective method of achieving sustainability especially for the sustainable transport systems in urban areas (Williams et al. 2000). Presently, there are two basic types of urban development patterns:

- **Compact city pattern**

The compact city pattern implies intensive land use patterns and a predominantly monocentric urban structure. The high density, the high spatial accessibility, and the high share of non-car travel modes could be expected in the compact city. From the perspective of energy efficiency, the compact city form is recognised as having the most efficient land use and transport systems by the Green Paper on the Urban Environment, which claims European policies on SUF (Brundtland, 1987).

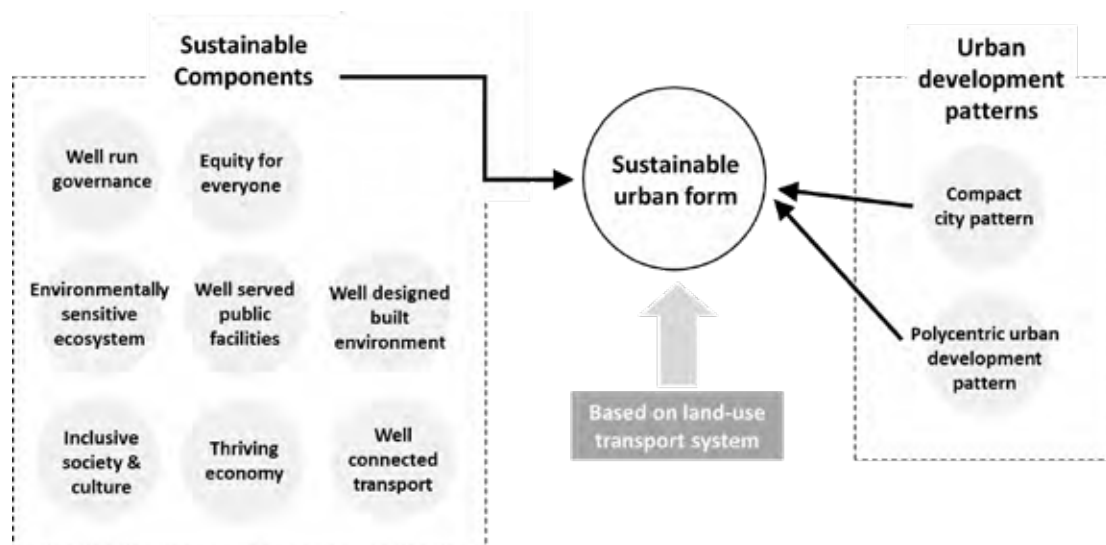
- **Polycentric urban development pattern**

The polycentric urban development pattern pursues a relatively high density around a central core that is surrounded by local employment and business centres. Development is restricted to the central zones adjacent to the sub-centres while a vital role for the central inner city is retained. As a result, high accessibility of primary facilities by non-car mode can be ensured, and more open spaces within the metropolitan area can be preserved (Wegener and Fürst, 2004).

Though a variety of urban development patterns have been proposed as theoretically sustainable urban forms based on sustainable land-use patterns and transport systems, there is not a clear consensus about which type of urban development pattern is preferable for achieving SUF. The different development histories of metropolitan areas, such as London or New York, make the urban development pattern significantly diverse. SUF cannot be designed as a specific type of form affected by the pre-existing historical urban development patterns. For different cities, urban planner and policy-makers will determine different pathways of sustainable development. But there is still a common agreement for urban planners and policy-makers.

From the perspective of transport, SUF could be regarded as a type of urban development pattern which significantly promotes a sustainable travel system regarding the considerable reduction in energy consumption and an increase of the journey efficiency and road safety. In any case, a highly sustainable land-use pattern and transport system can be regarded as the cornerstone for SUF (Figure 2.1b), which is why research on SUF should focus on the interactive relationship between land use and transport.

Figure 2.1(b) The composition aspects of SUF, from the perspective of sustainable components and urban development patterns. Source: Made by author



Meanwhile, there is some practical analysis of SUF including the compact city pattern, urban villages pattern, mixed-use neighbourhood pattern, and the adaptable city pattern. Burton (2000) and Williams (1999) concluded that urban compactness achieved through higher residential density and mix of land use could promote greater public transport usage and social communications in town centres. Newton (1997) discussed some different urban forms beyond the distinction between compact and dispersed city form. He recommended the concept of the urban village located near public transport infrastructure as an ideal form for small-scale towns focusing on reduced travel distance and low-carbon emission.

Masnavi (1998) emphasised the variables of density and mix of uses as key influencing factors in achieving sustainable neighbourhoods, which significantly affect travel behaviour and attitudes of residents regarding travel mode choices, social interaction, and their perceptions of environmental quality. Besides, urban adaptability, which means the ability of different urban forms to adapt over time to the increase of travel need and land-use density is also discussed in the SUF debate. It is evidenced that particular shapes and sizes of urban grid, such as regular grid, adapt well to the urban change in density and travel patterns. (Scoffham and Vale, 1996).

In combination, considerable amounts of research have been conducted revealing the most effective development patterns for a more SUF. The research elements based on land use characteristic have positive impacts on sustainable travel patterns and travel behaviour (Table 2.1a).

Table 2.1(a) Aspects of sustainable development and their impacts

Elements of sustainable development pattern	Possible impacts
<i>High density;</i> <i>Mix of land uses</i>	Improve public transport usage with good accessibility to transport facilities; Improve social communications through design of active street space
<i>Small neighbourhood size;</i> <i>Neighbourhood location around town centres</i>	Decrease travel distance with commensurate lowering of carbon emission
<i>High density;</i> <i>Mix of land uses</i>	Improve travel mode choice, but only if the transport options are provided; Increase social interaction
<i>Regular urban grid which promotes the increase of density;</i> <i>Small-size block which is easily redeveloped into walking block</i>	Increase density, easily adapt to changing travel patterns

Besides, Newman and Kenworthy (1999) argued that the compact city development pattern could only have limited impact on sustainable travel behaviour if the travel strategies restricted car usage and improved travel mode choices. It is asserted that proximity to travel destinations did not have a significant influence on travel mode choices without considering travel purpose. Van and Senior (2000) argued that mixed-use and high-quality neighbourhood design with more accessible walking and cycling routes could encourage sustainable mode choices and reduce car dependency for daily shopping needs.

Based on the analysis of planning policy on transport, the relationship between urban form and travel patterns is criticised at the regional scale. Headicar (2003) concluded that the travel patterns are not just related to the size of neighbourhoods. It is suggested that residential density should be strategically considered, for example, in connecting to town centres or employment centres. Stead et al. (2000) speculated that if the location strategies for settlements catered to increased travel demand for work and shopping by offering more sustainable mode choices, then a greater reduction in car use and energy consumption will be achieved at the urban scale.

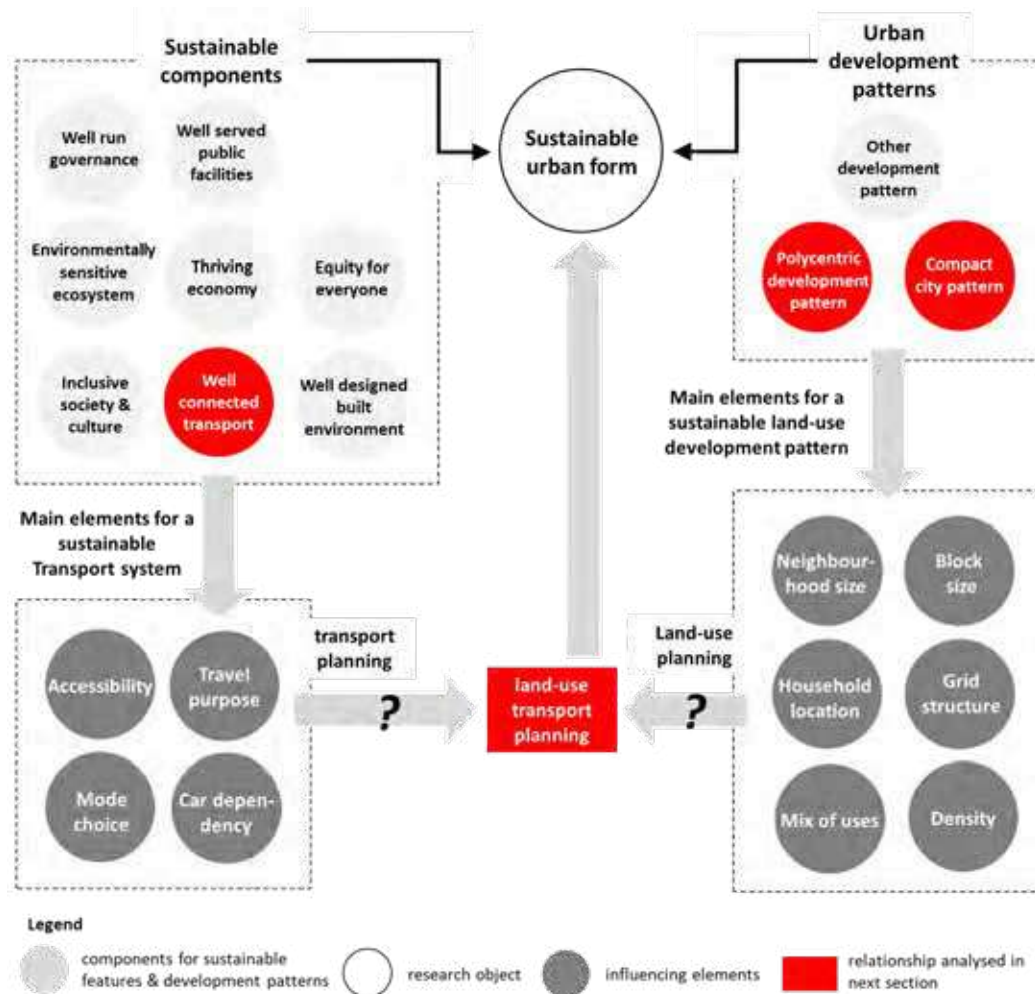
Overall, the main elements of a sustainable transport system have been illustrated (Table 2.1b), among which higher density development, good spatial accessibility to public transport, mixed land use, more travel mode choices, and proactive household location are key, and these elements could have evident influences on sustainable travel patterns and behaviour in achieving more SUF.

Table 2.1(b) Aspects of sustainable transport system and their impacts

Elements of a sustainable transport system	Possible impacts
<i>Reduce car usage;</i> <i>Create more travel mode choices;</i> <i>Focus on travel purpose and distance of work and shopping</i>	More sustainable mode choices may result, such as walking, cycling and public transport
<i>Increase the mix of land use;</i> <i>Improve neighbourhood design for cycling and walking</i>	More sustainable mode choices for travel generated by shopping; Reduce car uses for daily shopping
<i>Large neighbourhood size with good connection with transport infrastructures;</i> <i>High residential density</i>	Promote the transport accessibility and attractiveness of public transport
<i>Household locations;</i> <i>Accessibility of public transport;</i> <i>Create more travel mode choices</i>	Reduce car uses which then reduces energy consumption

In fact, all research discussed previously co-determine the sustainability of urban development patterns and transport patterns (Williams et al. 2000). The interrelationship between transport planning system and land-use planning system need be explored further through the integrated planning view of land use and transport system (Figure 2.1c).

Figure 2.1(c) The potential interrelationship between SUF, land-use planning system and transport planning system. Source: Made by author

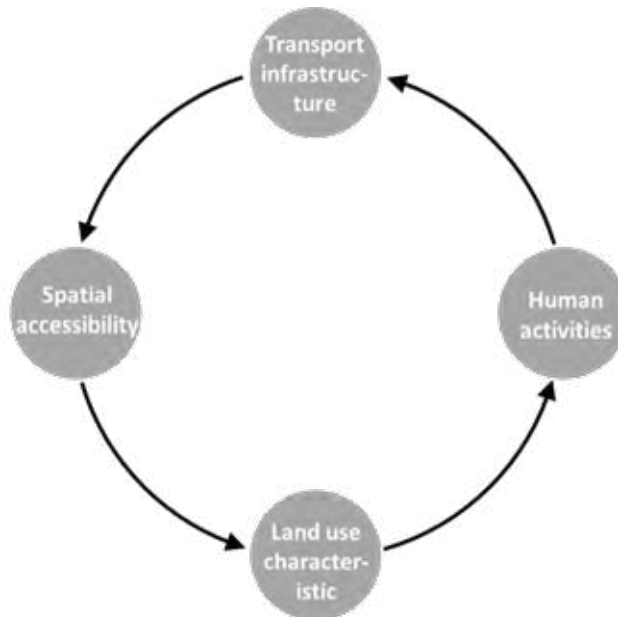


2.2 Theories about the land-use and transport interaction

Theories concerning the interaction between land-use and transport planning system involve technical, behavioural, and strategic dimensions. For example, land use has impacts on travel behaviour. Meanwhile, transport could influence the location behaviour of firms and households. But issues of coordination between land-use and transport planning in different urban contexts are still less well known (Wegener and Fürst, 2004).

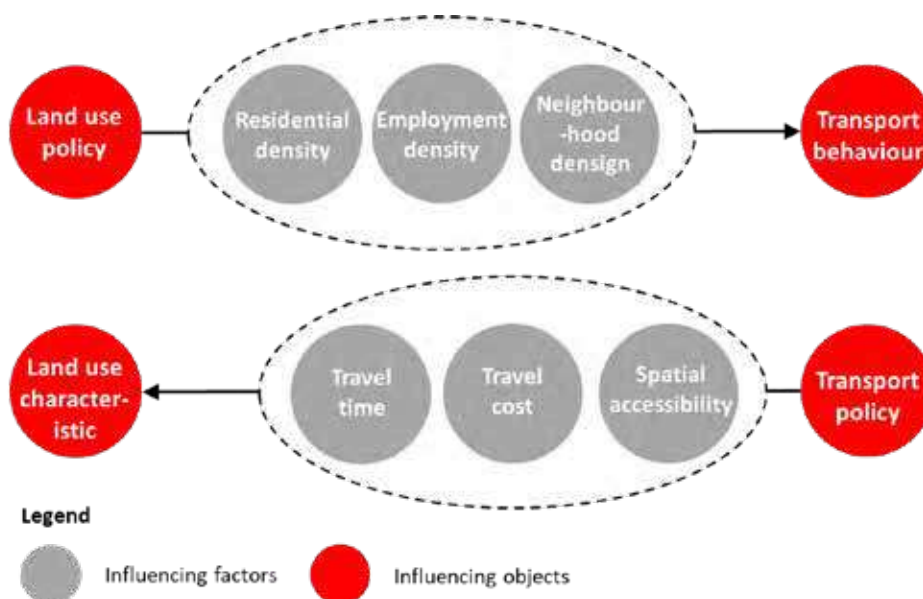
According to the EU research project, 'Transland' which evaluates strategic policies and their impacts on future urban developments in the field of integrated transport and land-use planning, theoretical and conceptual work on the integration of land use and transport has been reviewed. Theories on the two-way interaction are put forward to address the locational and mobility responses, involving households, travellers and firms, to changes in the land use and transport system. It is proposed that land-use and transport planning should be seen as an integrated mechanism, producing the land-use transport feedback cycle (Figure 2.2a). The mechanism in this 'cycle' is based on a set of relationships including the distribution of land uses, human activities, transport infrastructure, and spatial accessibility.

Figure 2.2(a) The land-use/ transport feedback cycle to illustrate the land use/ transport mechanism. Source: Made by author, Wegener and Fürst, (2004).



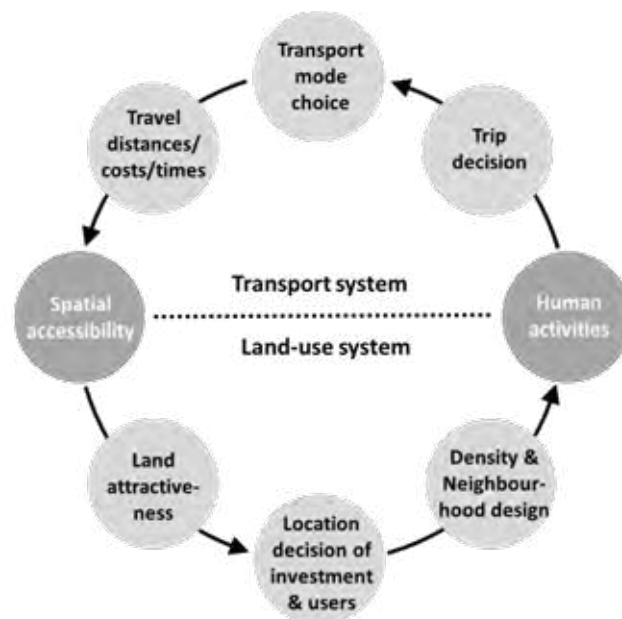
The results of the land-use and transport interaction are expressed concerning expected impacts on urban density, employment density, neighbourhood and open space design, development locations, accessibility, and travel cost/ time (Figure 2.2b). There are two influencing directions in this interactive mechanism, which is the impact of land use policies on transport behaviour and the impacts of transport policies on land use outcomes. It is summarised that the impacts of land use policy on transport behaviour could be reflected through the traffic variables such as trip length, mode choice, and travel cost. Besides, the impacts of transport policy on land use characteristics could be mainly measured by the location decisions reflected in different land-use categories.

Figure 2.2(b) Expected influencing factors within land use/ transport mechanism. Source: Made by author, Wegener and Fürst, (2004).



In general, the current research has explored a two-way interactive paradigm of urban development, which consists of four main elements including the land use system, human activities, the transport system and spatial accessibility. Land-use planning policy is regarded as an important factor to generate travel demands, while transport planning policy has an inevitable influence on the changes in land use because of diverse location decisions of investments in future development. Moreover, changes in land use characteristics will further generate more travel demands and inevitably have impacts on current transport behaviour. Thus, the dynamic relationship between the land use system and the transport system have been established (Figure 2.2c). Based on this interactive relationship, the interrelationship between SUF and the specific influencing factors can be established.

Figure 2.2(c) Dynamic relationship between the land use system and the transport system. Source: Made by author, based on an article by Wegener and Fürst, (2004).



2.3 Strategic policy Review

To guide the sustainable planning practice, a variety of strategic policies have been stated, which adopt the integration of land-use and transport planning, such as Planning Policy Guidance 13¹ (PPG 13), National Planning Policy Framework (NPPF), Sustainability of Land Use & Transport in Outer Neighbourhoods² (SOLUTIONS), and Smart Codes³.

¹ 'PPG 13' aims to deliver the UK government's objectives for transport development and encourages the integration of planning and transport. (National planning policy framework, 2012).

² 'SOLUTIONS' is a research conducted by Engineering and Physical Research Council, which aims to develop a guidance to support the implementation of sustainable land use and transport. (Suburbansolutions.ac.uk, 2017).

³ 'Smart Codes' is a guidance for smart growth, including multimodal transport, infill development, affordable housing, and other practices in planning regulations (American Planning Association., 2017).

This paper has summarised the major planning objectives from these policies, basically involving the formation of urban form, the promotion of transit-oriented development, the classification of walking and cycling transport system, the improvement of spatial accessibility and safety, the application of traffic and parking management to reduce the usage of private cars (Table 2.3). In addition, the key planning factor has been categorised, which could be regarded as a set of the main influencing factors for making the sustainable development possible.

Table 2.3 Strategic policies for the integrated approach to land-use and transport planning

Framework	Planning objectives	Key factor
<i>PPG 13 & NPPF</i>	Manage the major generators of travel demand in district centres and make them near to the transport interchanges	Developments site locations
	Promote more sustainable mode choices for people and moving freight	Public transport, Walk and cycle
	Promote accessibility to work, shopping, leisure and other services by public transport, walking and cycling	Accessibility of facilities, Work-housing balance
	Reduce the need to travel in urban areas, especially for the reducing of car uses	Travel demand management
	Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians	Walk and cycle, Neighbourhood design
<i>SOLUTIONS</i>	Regulate land use and transport, particularly for the conservation area and the allocation of dwellings and employment	Work-housing balance
	Invest the development of land and transport, for example improving the capacity of existing transport networks and establishing more travel links	Strategic transport network
	Price the use of land and transport, such as the extra travel taxation in central region like the congestion charging zone.	Travel demand management

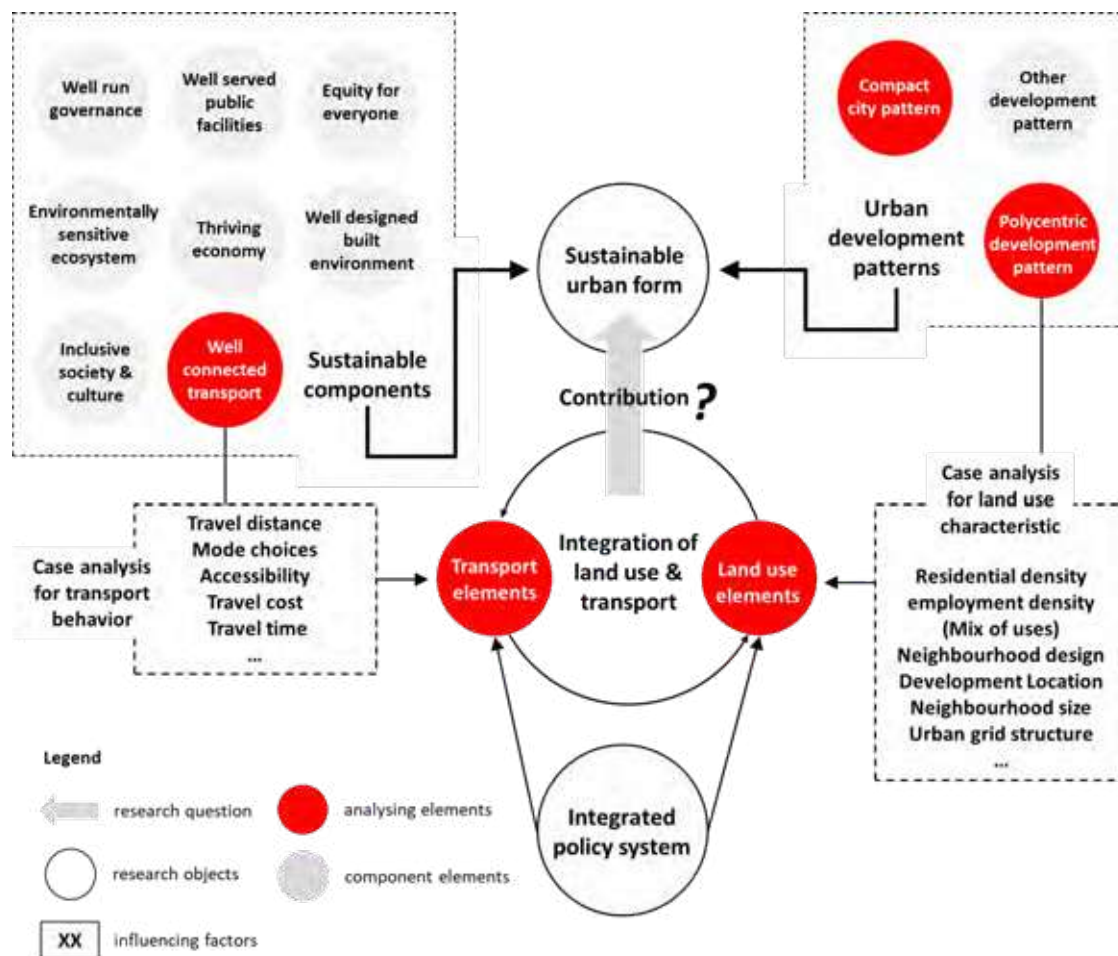
Smart Codes	Accommodate the mixed-use blocks and buildings to stimulate community development and promote the wellbeing of residents	Mix of use, Neighbourhood design
	Provide the appropriate flexibility of live/work units used for commercial and residential development	Work-housing balance
	Develop a high-density, high-intensity and mixed-use employment district centre	Development density Mix of use
	Encourage the development of affordable housing in more accessible areas and increase the community density	Development density, Development site locations
	Protect the transfer right of development for different purposes, such as green spaces preservation, historical district preservation.	Mix of use
	Cluster the residential development and creating the physical active community	Neighbourhood design

2.4 Theoretical framework - interrelationship between sustainable urban form and integrated land-use transport planning

A theoretical framework is established, which shows the expected interrelationship between SUF and its influencing factors (Figure 2.4). More importantly, the interactive mechanism between these factors has been revealed by the land use and transport system relationship. Banister and Givoni (2010) argued that an integrated view of land-use and transport planning could guide them in the direction of more effective measures to achieve SUF. Based on the perspective of an integrated land-use and transport planning system, a sustainable development pattern could be possibility assessed.

Land-use system considered in spatial planning will define particular types of urban forms (i.e. compact, polycentric) which can promote more social interaction, activities and sustainable transport behaviour. Transport system considered in spatial planning could contribute to reducing unnecessary long-distance travel, car use and to guiding more sustainable travel behaviour. More importantly, once more sustainable travel behaviour has been achieved, this will have positive impacts on later land-use investment and development to strengthen its pre-existing sustainable land-use characteristics. Finally, SUF will be accomplished through this dynamic-interactive relationship, especially regarding the aspect of sustainable transport.

Figure 2.4 Interrelationship between sustainable urban form and integrated land-use transport planning. Source: Made by author



3. Methodology for the research process

3.1 Research approach

The approach of this research will mainly focus on the exploratory, qualitative research on the integration of land-use and transport planning to promote the evolution of more SUF through primary principles of planning policy and planning practice instructed by them. The research can be regarded as a collaborative effort to criticise planning guidance on how local planning authorities can contribute in making urban development more sustainable through the integration of land-use and transport planning.

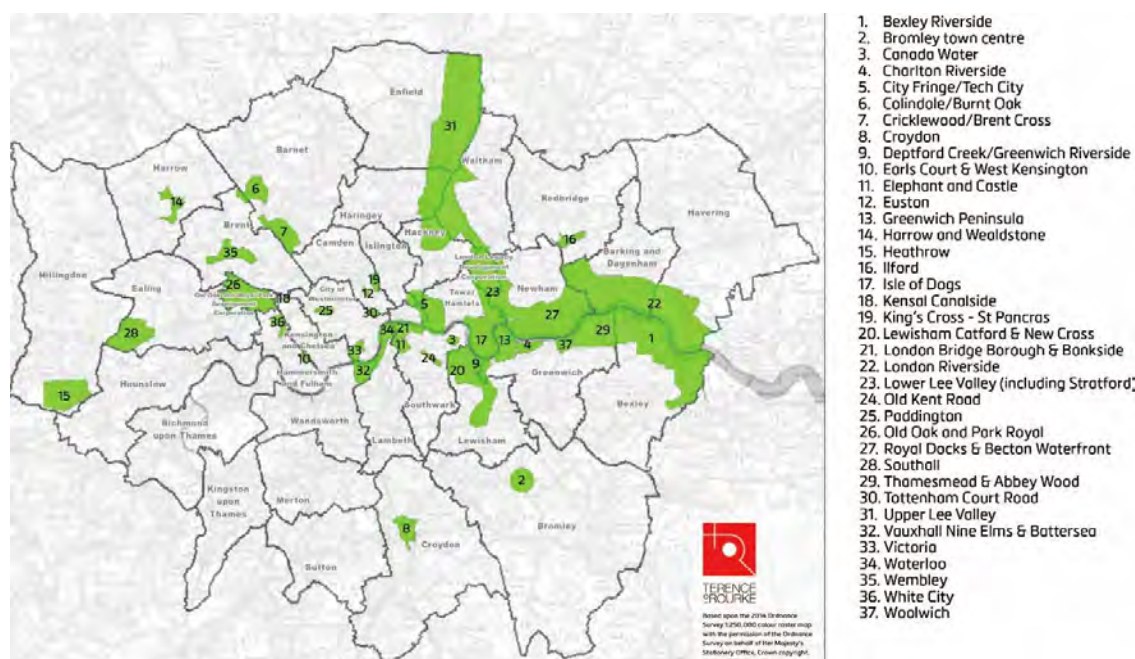
3.1 Research scope

According to the model of urban development pattern, the compact city model and polycentric urban development pattern is commonly recognised as more sustainable growth pattern, which is also mainstream urban development model in most western countries. Cities under the effects of high development density and high-efficiency public transport system such as London, Paris, Barcelona have great potential to be more sustainable through the integrated land-use transport planning. More

importantly, the research should concentrate on a highly-developed city currently experiencing pressures of urban growth.

London is an excellent platform for the analysing the practice of integrated land-use and transport planning because of the large-scale urban intensification and numerous regeneration events. Thousands of new homes and jobs are proposed to create in London's 38 opportunity areas. The delivery of SUF through urban development practices in these opportunity areas will significantly affect the urban sustainability in London (Figure 3.1).

Figure 3.1 The location map of London's 38 Opportunity Areas. Source: Londonfirst.co.uk, (2017)



4. Case study analysis

4.1 Background for Kings' Cross and Olympic Legacy area

The regeneration of King's Cross can be recognised as a transport-led development project, while the urban regeneration in London Legacy district was significantly promoted by the 2012 Olympics and its redevelopment. Though the two cases have different development histories and historical backgrounds (Table 4.1), they have strong similarities in their development objectives.

Table 4.1 Overview of the case study areas

Area	Kings' Cross Opportunity Area (KCOA)	London Legacy Development Corporation area (LLDC)
<i>Developing vision</i>	a vibrant, inclusive, and sustainable redevelopment project with the	a mixed-use development driven by the 2012 Olympics, London's eastern

	significant potential to utilise its excellent transport accessibility	gateway and intersected by the Channel Tunnel Rail Link
Total area	24 hectares (excluding the area of railway stations)	73 hectares (Phase 1, known as ‘Stratford City’)
Principle Development objective	High spatial accessibility, mixed use (including commercial, retail, education, residential, green spaces), high density (especially compared to traditional residential areas), improvement of transport interchanges, local community involvement.	

In brief, regeneration of Kings’ Cross and Olympic Legacy is mainly driven by the massive investment in transport infrastructure and land use development, which contributes to integrated land-use and transport planning more significant (Figure 4.1a, Figure 4.1b). These cases both reflect the strong character of the compact city pattern or polycentric urban development patterns, such as high density of housing and employment, a mix of uses, and high spatial accessibility for public transport. Land use characteristics and transport behaviour in local areas will be substantially changed by these regeneration projects. The two cases have relatively high value for assessing the contribution of integrated land-use and transport planning to develop a more SUF.

Figure 4.1(a) Location and the boundary of Kings’ Cross Opportunity Area. Source: Made by author



Figure 4.1(b) Location and the boundary of London Legacy Development Corporation Area. Source: Made by author



4.2 Case-specific policy analysis in Kings' Cross Opportunity Area

Currently, Kings' Cross presents one of the most significant regeneration opportunities in Europe. It is also the largest plot of brownfield land in central London. As a gateway from Europe to London and the UK, St Pancras International and Kings' Cross railway station play vital roles in the urban-regional transportation system.

4.2.1 Spatial accessibility and connectivity in urban-regional scale

Delivering efficient urban-regional transport connection is an integral part of the regeneration objectives (Kings Cross Opportunity Area planning & development brief, 2003). The location of Kings' Cross and two transport interchanges offer significant advantages for the improvement of spatial accessibility and mobility (Figure 4.2.1). The physical boundaries of the regeneration site should be broken down to provide a full connection with the rest of London. It is argued that the area's transport accessibility underpins the potential for high-density development, which is also fully integrated with public transport network (Kings Cross Opportunity Area planning & development brief, 2003).

Figure 4.2.1 The spatial connection of KCOA with central London. Source: *Kings' Cross Central: Urban Design Statement* document



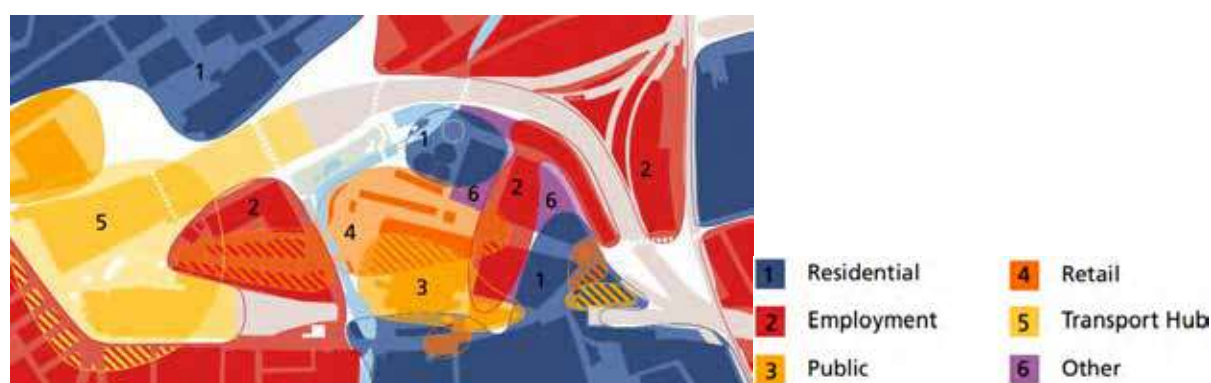
In a word, the planning policy related to spatial accessibility usually focuses on the improvement of transport connectivity within the urban-regional area. For KCOA, two transport interchanges, Kings'

Cross Station and St Pancras International Station including CTRL terminus, are key catalysts to guide the direction of redevelopment. This transportation hub comprised of two railway stations, CTRL terminus and Kings' Cross St Pancras underground station become one of the most crucial transport gateways for central London. Under this developing condition, the form of high-density development will also be considerably promoted by the integrated rail transport system. On the other side, locating at the fringe of Central activities zone (CAZ) and smaller size of regeneration site (around 24 hectares) enhance the demand for developing density and intensity, because of the significant increase in land values.

4.2.2 Social and economic activities in regeneration area

Financial links can be promoted by allocating newly available jobs widely. For social interactions, the focus is on community involvement, which primarily includes making better access to employment and training, improving local people's qualification through education and creating attractive communication environments. High-density mixed use is an effective way to enhance the competitiveness of business, maximise affordable housing provision to meet changing needs and contribute to the vitality of the whole project. Depending on this mixed pattern of land uses with optimised density (Figure 4.2.2), the land-use capability of offices, retail, leisure, education can be increased. The hugely demand of housing and diverse services in central London will be met.

Figure 4.2.2 Strategic land use framework in KCOA. Source: *Kings' Cross Central: Urban Design Statement document*



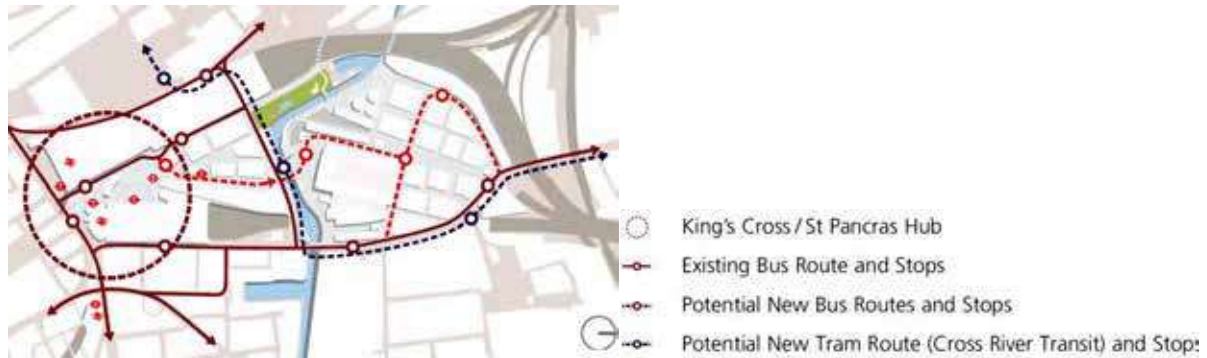
To conclude, the planning policy related to the social-economic activities generally emphasis on the enhancement of local vitality by high density and mixed-use development. The policy requires the commercial development should achieve plot ratios of at least 3:1 wherever there are good transport accessibility and capacity. Moreover, that ratios nearer to 5:1 is recommended to be achieved in highly accessible areas (Queenelizabetholympicpark.co.uk., 2017). To make optimum mixed use of the site, a flexible framework of land use plan is proposed that allows the mix of uses in the north part to be chosen to respond to a changing social-economic climate.

4.2.3 Transport availability for sustainable travel modes

Encouraging more sustainable travel modes by improving the attractiveness of public transport, walking and cycling will have significant impacts on reducing car dependency. To increase the attractiveness of sustainable travel modes in KCOA, new reliable bus routes linking the site with surrounding

communities and Camden town centre should be considered (Figure 4.2.3). The provision of bus priority measures wherever needed to maximise the reliability of existing and new services for jobs, shopping, leisure and other activities. Besides, high-quality pedestrian and cycle links to public transport nodes should be well-designed. For car parking and storages, the provision for car parking is expected at deficient levels. For example, the developer should demonstrate on minimising the traffic generation in the site. The proportion of car-free housing is required to reach at least 75%.

Figure 4.2.3 Public transport system plan in KCOA. Source: *Kings' Cross Central: Urban Design Statement document*



In summary, the planning policy related to promoting the availability of sustainable travel modes builds on the well transit-connection of public transport, walking and cycling. A network of tertiary vehicular routes can minimise most of the car traffic in the centre of the site except for the essential vehicle services such as fire access and deliveries, which will make public realm more quiet and safer for pedestrians. In Kings' Cross, private and public car parking is combined to make the best use of shared facilities, which can also provide for different demands at different times of the day and week (Queenelizabetholympicpark.co.uk., 2017). Also, more cycle parking can improve the attractiveness of cycling travel instead of travel by private car.

4.3 Case-specific policy analysis in London Legacy Development Corporation Area

Different from the regeneration of Kings' Cross, the redevelopment of London Legacy emphasises on a larger-scale site, which covers the area in four London boroughs. After the 2012 London Olympic, the London Legacy Development Corporation was established to promote and deliver physical, social, economic and environmental regeneration of the Olympic Park and its surrounding areas by securing sustainable development and ensuring the smooth transformation of these Olympic venues in the long term (Queenelizabetholympicpark.co.uk., 2017).

4.3.1 Spatial accessibility and mobility in urban-regional scale

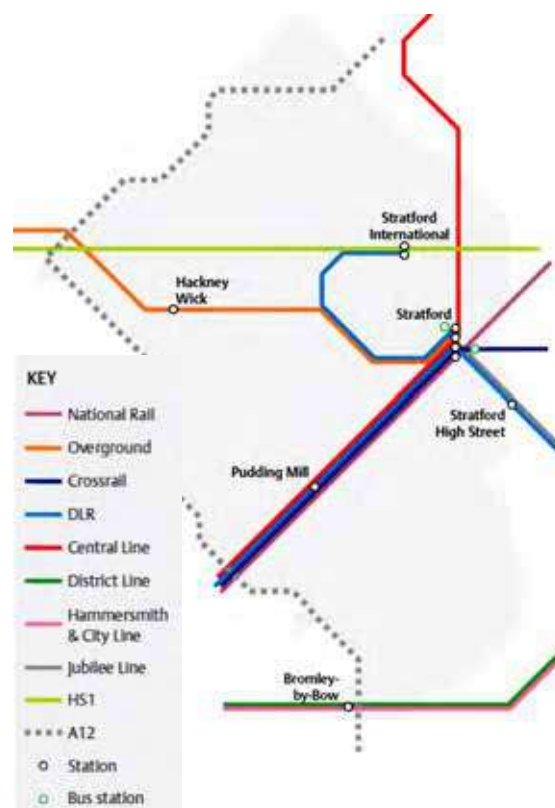
Improving the strategic transport connection and transport infrastructure is considered as the priority to develop business growth, jobs and lifelong learning in Stratford area. The Legacy Corporation area occupies a key strategic location at the meeting point of the London-Stansted-Cambridge-Peterborough Growth Corridor and the Thames Gateway Growth Corridor (Anon, 2017). Strategically, this area is connected to the major business and growth hub of central London, including Canary Wharf and the

Royal Docks (Figure 4.3.1a). The potential of being another London Metropolitan centre improves spatial accessibility more important for the redevelopment after the 2012 Olympics.

Figure 4.3.1(a) Location of LLDC area in London. Source: *A walk around Queen Elizabeth Olympic Park*



Figure 4.3.1(b) Public transport and connectivity in LLDC area. Source: *LLDC Local Plan 2015 to 2031*



In general, the improvement of public transport infrastructures and services at all levels is the cornerstone for delivering the social-economic growth in Stratford area, including the development of international, national, regional and local transport connectivity. The efficient and well-designed stations, including the development of Stratford Station for Stratford City and the 2012 Games, the new stop of Channel Tunnel Rail Link at Stratford International Station, the capacity enhancements of Jubilee Line, Overground and DLR, strengthen the spatial accessibility and mobility of LLDC area (Figure 4.3.1b). Based on that, Stratford becomes one of the best-connected places in London, which attracts substantial investment for the further land redevelopment.

4.3.2 Social and economic activities in regeneration area

Developing a strong local economy and driving the transformation of east London as a new city centre is the vital objective for the regeneration in LLDC area. To reach this target, the economic profile of the area should be strengthened, which depends on providing additional floor spaces in a wide range of sizes, types and forms.

More particular, the local plan about employment clusters will foster a range of job opportunities, and it is also the key to the character and vibrancy of the regeneration site. With the spatial distribution of employment areas and social infrastructures in several hierarchies, the daily social activities can be centralised around the central development area. More social communications can be promoted within the new-designed public spaces. On the other side, a mix of housing types should be provided to create the sustainable neighbourhood and avoid problems that may result from over-concentration of certain size and types of accommodation. It is required that all community planning proposals should reflect identified housing size, building form and tenure requirements.

4.3.3 Transport availability for different travel modes

Managing development and its transport impacts to promote sustainable transport choices and prioritise pedestrians and cyclists is an essential policy to minimise reliance on the private car to ensure that the regeneration of the Legacy area is optimised and more sustainable. The plan aims to lead to dramatic changes in Londoners' behaviour and attitudes to their cars and contribute to decreasing car ownership per household in local communities. In doing so, several specific policies should be considered, such as implementing a locally connected street network that prioritises pedestrians and cyclists as the most important travel modes, followed by public transport and the private car (Figure 4.3.3) (Queenelizabetholympicpark.co.uk., 2017). The amount of new development across its areas, in particular as the town centres and employment clusters, should be related to the transport capacity of existing or planning improvements to transport infrastructures and services.

Figure 4.3.3 Transport prioritises. Source: *LLDC Local Plan 2015 to 2031*



Besides, facilitating local connectivity with the redevelopment of high-quality built environment can significantly strengthen the attractiveness of walking and cycling within the area. It is believed that the improvement of local connectivity is a critical issue for the liveability of this area. Currently, physical barriers such as motorways, railway lines and canals, increase the difficulty for people to move around the area. It is crucial to forming a network of linked walks connecting with adjacent neighbourhoods and town centres throughout the Olympic Park, which will adequately respond to the potential of social activities.

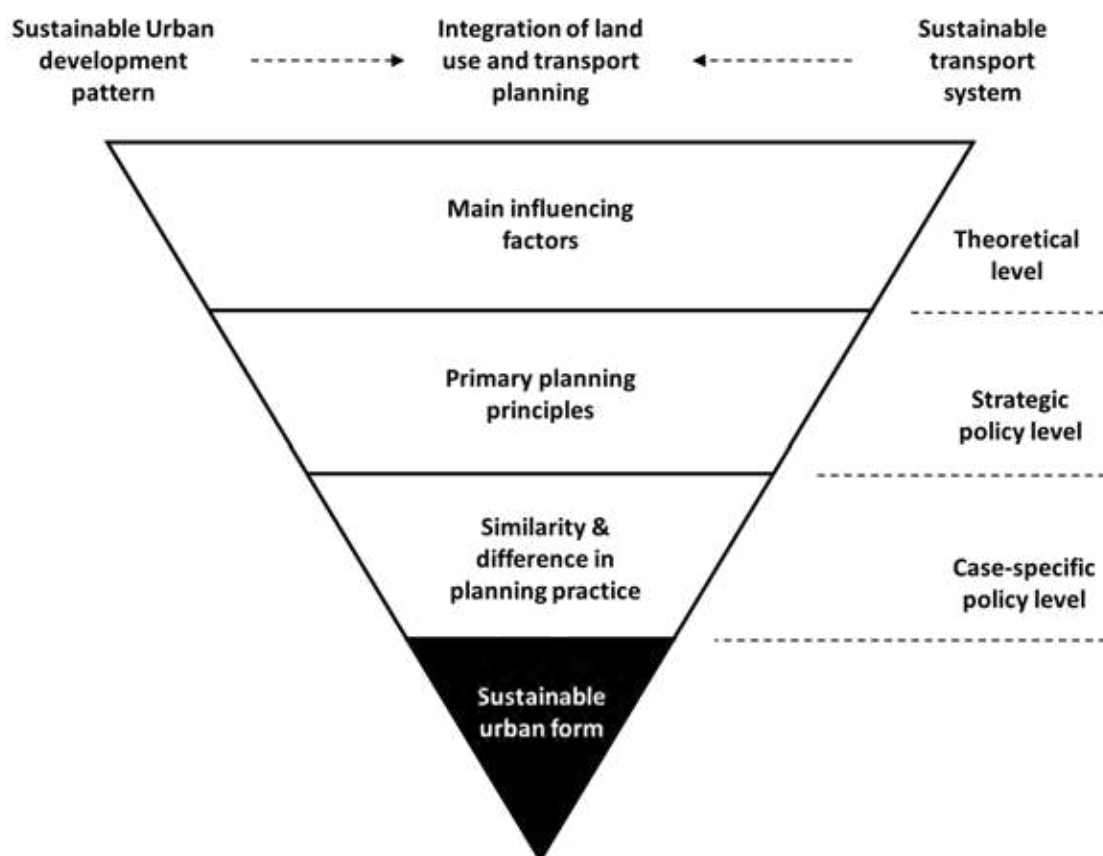
5. Conclusion and recommendation

5.1 Contribution of integrated land-use and transport planning for SUF

It has been evidenced that land use and transport planning are two principal systems in co-determining the sustainable effectiveness of spatial planning in practice. In general, the transport planning policy can be regarded as a kind of ‘push’ measures to limit the unsustainable travel behaviour, such as long-distance car travel and car dependency. While, the land use planning policy can be considered as a kind of ‘pull’ measures to indirectly guide more sustainable land-use characteristics, which greatly promote the social-economic vitality in town centres and communities.

This research concludes that the integrated land-use and transport planning consisting of sustainable urban development pattern (i.e. compact city model and polycentric urban development pattern) and sustainable transport system (the most crucial components for sustainable objectives) can significantly contribute to achieving SUF (Figure 5.1).

Figure 5.1 The framework about contribution of ILUTP for achieving SUF at three levels. Source: Made by author



Besides, the complexity of SUF and ILUTP has been revealed. The reason is probably that a various range of influencing factors are involved in the land-use planning and transport planning systems, and they have impacts on co-determining the sustainability of urban development. More complicated, it is difficult to assess the efficiency of each influencing factor on promoting SUF because of the significant

difference in urban areas. However, the contribution of ILUTP for achieving SUF can still be assessed in the western countries with the well-developed planning system, through the analysis of planning strategies and empirical studies. Based on this research, contributions of ILUTP for achieving SUF have been concluded in three respects, involving influencing factors summarised from the literature review, planning principles classified from planning strategies and different planning practice assessed through case-specific policies.

a) Main influencing factors for affecting SUF

Main influencing factors are summarised from land-use and transport planning policy which promote SUF through positively affecting transport behaviour and land-use characteristic in development areas.

The influencing factors related to changing transport behaviour have a ‘push’ impacts on achieving SUF in the short term, which mainly include the improvement of public transport infrastructures to change people’s travel modes, traffic management and minimised parking provision to reduce the use of the car.

The influencing factors related to affecting land-use characteristic usually have a ‘pull’ impacts on achieving SUF in the longer term, which include strategic development location, accessibility of key facilities, size of development settlement, work-housing balance in local area, a mix of uses in town centre, high development density especially for residents and employments, design for walkable neighbourhood and open streets.

b) Primary planning principles for instructing SUF

To guide planning practice, three primary planning principles have been summarised, include the promotion of spatial accessibility, diverse activity and sustainable transport availability.

Principle-A: Spatial accessibility supported by the improvements of transport infrastructures and transport network connectivity to attract investments and connect the travel origins and destinations much easier;

Principle-B: Diverse activities in town centres and new communities supported by high-density development and mixed land use to create social and economic vitality;

Principle-C: Transport availability for mode choices supported by high-quality design and amenity of public spaces to promote more sustainable travel behaviour.

c) Case-specific planning policies for achieving SUF

The similarity of case-specific policies in planning practice has been assessed and summarised from the case-specific policies as well as the difference (Table 5.1). It is also explored from the case-specific planning policies that the location of regeneration projects may result in somewhat different outcomes in planning practice for achieving SUF.

Table 5.1 Similarity of case-specific planning policies in KCOA and LLDC area

Principles	Similarity of case-specific policies
<i>Principle-A</i>	<ul style="list-style-type: none"> Deciding the form of regeneration as high-density and mixed-use development by establishment of integrated transport system at the beginning; Easily getting more capital investments from related stakeholders to speed up the regeneration process; Potentially generating vast numbers of inbound and outbound daily trips through the improved transport infrastructure and system;
<i>Principle-B</i>	<ul style="list-style-type: none"> Greatly cutting down the travel distance between homes and workplaces by offering relative numbers of new homes and workplaces and keeping work-housing balance locally; Compulsively providing sufficient proportion of affordable housing in development communities to promote the mix of accommodation, the mix of residents and the mixed use of public spaces;
<i>Principle-C</i>	<ul style="list-style-type: none"> Directly reducing car uses through discouraging unnecessary car travels, such as daily light food shopping, leisure activities by working out more strict parking measures; Indirectly reducing car uses through encouraging more sustainable mode choices by designing more walkable public spaces and street layouts, particularly in new communities;

The development location may affect the development pattern of the project and change the spatial character of the city. Kings' Cross is planned as a viral connection node, and new employment centre in central London as the transportation interchanges have already been here. The project can be treated as an expansion of central London, which significantly strengthens the spatial character of the compact city in central London. While London Legacy is planned as a new urban centre for the great London, which relies on the consistent improvement of transport accessibility since 2012 Olympics. The project can be recognised as a development for a new urban centre, which shapes the spatial character of Great London as a polycentric urban form. In general, the regeneration project in KCOA and LLDC area will both contribute to promoting London as a more sustainable city at regional-district scale.

5.2 Limitation of the research and recommendation for further analysis

The conclusions reflect primary concerns for urban planners and policy-makers toward more SUF from the perspective of ILUTP. The outcomes may not be specific enough to explain the achievement of SUF through influencing factors, primary principles, and case-specific policies, because of the limited time and lack of data. The measures of quantitative analysis focusing on the changes of travel modes, density, and the mix of uses will be greatly helpful to evaluate the correlation between SUF and ILUTP.

d) Shortcoming and failing within this research

One significant limitation is those previous conclusions about achieving SUF aim at assessing the effectiveness of integrated policies in urban regeneration projects. The outcomes of ILUTP have limited influence on the improvement of sustainability in surrounding areas. But the SUF should not just be accomplished through urban renewal projects under the instructions of integrated land-use transport planning, which may lead to creating a 'sustainable island' surrounded by the 'unsustainable sea'. A more ambitious target should be considered, emphasising on how to promote more SUF for the whole city through the integration of land use and transport planning.

e) Further questions arising from the research

It is also claimed that the influencing factors in social respect can also affect the sustainability of urban development, especially having considerable impacts on the sustainable transport system. Stead et al. (2000) once argued that socioeconomic conditions could explain more variation in travel patterns than do land use characteristics. It is believed that the influence of land use could not be as significant as it previously assumed. The socioeconomic component, such as household car ownership, household socioeconomic group and working residents proportion, need to be paid more attention instead of issues of land use or transport.

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Bicycle-Metro Integration for The 'Last Mile' in Shanghai*

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Abstract: Cycling is always considered to be one of the most popular daily traffic tools in cities due to its flexibility, convenience and low cost. Moreover, Bicycle-metro integration is theoretically considered to be an effective solution for improving public transportation efficiency of "last mile" between home and metro station in big cities. However, this proposition has not been fully proved in practice. In recent years, the emerging dockless bike-sharing system makes it possible to examine the spatial integration between flexible bicycle traffic and rail transit. Compared with traditional public bicycle systems with fixed docks, such as New York Citibike, this new bike-sharing system demonstrates the mobility and flexibility of cycling. We randomly sampled the GPS coordinates of 80,000 dockless bikes in Shanghai, which represent the origin and destination points of cycling. We mapped the bicycle traffic on an equal population cartogram of Shanghai to distinguish overall patterns within the center of Shanghai. Results show that most of the high-frequency cycling streets still centre around metro stations. The streets basically present a gradual decline from the metro stations to outlying areas in terms of cycling frequency, which indicates that bicycle-metro integration has already become the basic model for daily transport in Shanghai.

Keywords: Bicycle-metro integration, the 'last mile', dockless bike-sharing system, Shanghai

Introduction

Traffic-oriented development (TOD) is a way to ensure the sustainable development of transportation and urbanization. As a fast, efficient and large-capacity transportation mode, the subway system is the focus of the TOD strategy. However, in the suburbs of the city, the subway stations are sparsely distributed, and their service radius often needs to be extended to more than one mile or even three miles, which seriously reduces the public accessibility of the subway system. In such cases, passengers in the subway system usually enter the station by other means, such as walking, cycling, and taking a bus. This transfer process is described as the last mile issue. Improving accessibility and strengthening the integration of other modes of transportation with subway stations will definitely increase the passenger capacity of the subway system.(Zhao and Li, 2017).

Meanwhile, cycling is always considered to be one of the most popular daily traffic tools in cities due to its flexibility, convenience and low cost (Akar and Clifton, 2009; Parkes et al., 2013). The traditional bicycle sharing system began in the late 1990s and has been extensively researched to date. For bicycle sharing systems in different cities, Pfrommer et al.(2014) determined that the peak usage of working days is between 7 am and 9 am, 4 pm to 6 pm, and the weekend peak is at noon. Ahmed et al.(2010) argue that the shared bicycle system is busier in warmer months, which usually confirms the relationship between weather and private cycling tendencies. A study of bicycle-sharing travel time based on data from Melbourne, Brisbane, and Washington,

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DC Researchers at the University of Minnesota and the University of London determined that this duration was within a narrow band between 16 and 22 minutes (Fishman, Elliot, Simon Washington, and Narelle Haworth., 2014). Another study shows that average users of a particular bicycle sharing service typically travel longer than annual membership (Buck, Darren, et al., 2013). Tao et al.(2013) analyzed the global and space-time modes of traditional public bicycle sharing systems in Nanning, China, and studied the impact of urban patterns on these models. Froehlich et al.(2009) conducted a spatio-temporal analysis of the use of bicycle stations in the shared bicycle system in Barcelona for 13 weeks, applied clustering techniques to identify sharing behaviors between stations, and compared experiments with four prediction models used in nearby stations. result. Some studies have focused on the sustainability of bicycle sharing systems.

Bicycle–metro integration is an effective solution for improving the accessibility of metro systems and facilitating green transportation (Zhao and Li, 2017). In recent years, dockless bike-sharing programmes have been launched in China at an impressive speed. These new common-usage bikes cover almost every street in Chinese big cities, and can be accessed via smartphone (Chinta and Sussan, 2018). Compared with traditional public bicycle systems with fixed docks, such as New York Citibike (Faghih-Imani and Eluru, 2016), this new bike-sharing system demonstrates the mobility and flexibility of cycling. People do not have to depart from or arrive at fixed docking stations; they may enjoy cycling from/to anywhere in the city. This design is effective in solving the ‘last mile’ problem, which is spreading across hundreds of cities around the world, including San Francisco, Seattle and London, by providing people with the transportation tools between public transport hubs and home.

Data and methods

With a surging number of active users, bicycle sharing is growing rapidly. Shared bicycles are used by more than 32 million users every month on average, reaching a coverage of 8.04% in first-tier cities in China. Currently, GPRS-based smart locks are widely used in the bicycle sharing industry. OFO, as the first and one of the biggest dockless bike-sharing firms in China, provides the bicycle-sharing system with more than 700,000 bikes in Shanghai. This study randomly sampled the GPS coordinates of 80,000 OFO bikes in Shanghai, which represent the origin and destination points of cycling.



Figure 1. Working mechanism of dockless bike-sharing system

Source: <https://www.zdnet.com/article/chinese-bike-sharing-company-fofo-arrives-in-seattle/>

Navigation in the Google Maps App provide a feasible approach to generate the cycling route from the origin and destination points. Furthermore, in order to eliminate the interference caused by the passing behavior of the research, The 80,000 cycling origin–destination (OD) lines were intercepted into 141,317 cycling directional lines, each with a length of no longer than 500 metres, which is generally considered as the basic service radius of metro stations.

Results and discussion

In order to explore the spatial relationship between rail transit stations and shared bicycle riding behavior, as shown in Figure 2, the shared bicycle riding behavior is divided into five categories: starting, riding, inner, outer and transit. Cycling data. This study mainly focuses on the starting and riding, arrival and riding behaviors around the various rail transit stations, and records the starting, reaching, and internal riding of the 500-meter radius around the rail transit station i as Di , Ai and Ci .

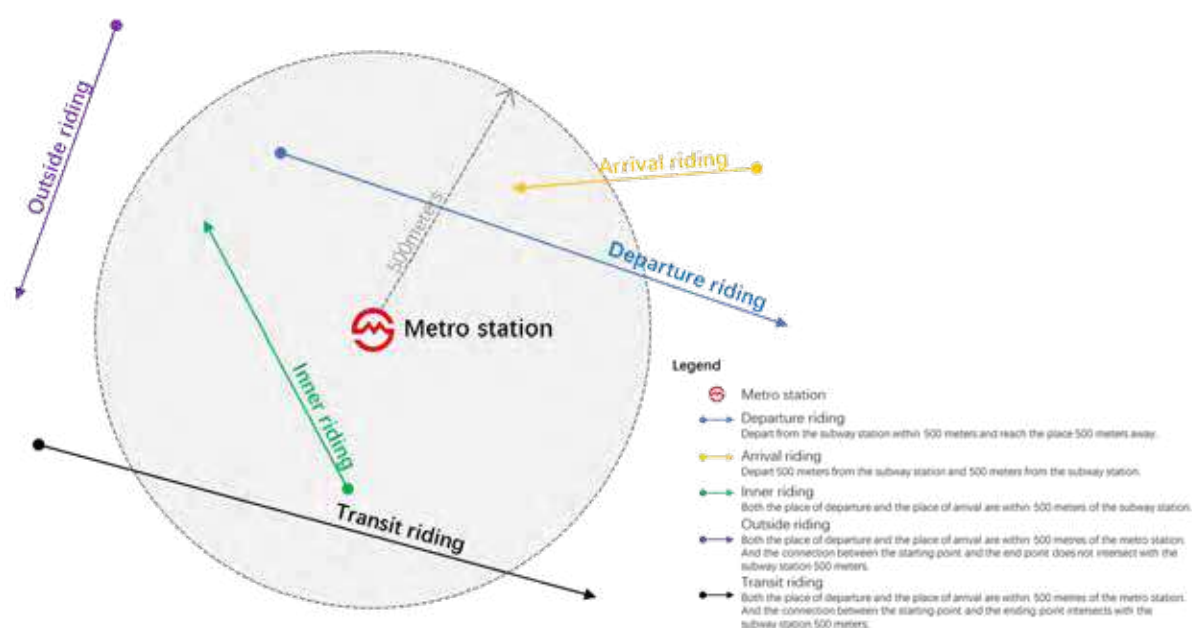


Figure 2. Division of riding behavior based on metro stations

According to the test, the number of riding, arrival, and internal riding around the Shanghai Rail Transit Station were 35,492, 31,646 and 1,245 respectively, and the number of rides related to the 500-meter range of the rail transit station reached 68,383. The ratio is as high as 85.48%, which indicates that there is a great spatial matching relationship between the shared bicycle riding data and the rail transit as a whole.

Shanghai Rail Transit Line 1 was selected as the research object, and Shanghai Rail Transit Line 1 was the first subway in Shanghai. There are 28 stations on Line 1, including 8 interchange stations, running through the Shanghai city from north to south, connecting the city center (People's Square), the city's sub-center (Xujiahui area), the suburban area, and the transportation hub (Shanghai South Railway Station, Shanghai Railway Station) can reflect the spatial connection characteristics of subway and bicycle travel in different locations. After testing, there were a total of 9455 cycling data around the rail transit line 1 site, accounting for 11.82% of the city's data.

Comparing the number of rides within 500 meters of each orbital station, it is found that: 1) the urban center system is clearly reflected: the city center, the sub-center and the commercial center of the district have high riding capacity; 2) the starting distance and the number of arrivals There is a clear positive correlation (the correlation coefficient between the two reaches 0.960), but the starting distance of each station is generally higher than the arrival of the ride (the ratio of the two is 1.26:1); 3) the number of terminal rides is obvious

“Zoom in” phenomenon: the number of rides around Xinzhuang Station and Fujin Road Station is significantly higher than that of Outer Ring Road Station and Youyi West Road Station; 4) There are some gradients in the process of attenuation of the center-suburb ride: such as Hengshan Road - Xujiahui, Tonghe New Village - Hulan Road.

Compared with the starting and the riding, the distribution characteristics of the two are relatively the same, except that the total number of starting and the line density is obviously stronger than that of the riding. Compared with the bicycle to the railing station, people are more It tends to ride from the perimeter of the rail transit site.

Compared with working days and rest days (Table 1), the average daily riding time on working days is 895 times, which is slightly higher than the rest day (858 times), but the riding distance is 1896 meters, which is obviously less than the riding distance of the rest day (2601 meter). At the same time, comparing the total travel time of each time period, it is found that there is a clear “early peak + late peak” double travel peak feature on the working day, while the rest day more reflects the single travel peak feature of “noon peak”.

Table 1. Working days and rest days in 500 meters of each station on the rail transit line 1

	Weekdays		weekends	
	Cycling frequency(per day)	Average cycling length(meters)	Cycling frequency(per day)	Average cycling length(meters)
Departure cycling	524	1874	495	2785
Arrival cycling	371	1928	363	2352

We mapped the cycling directional lines of Shanghai (Figure 3) to distinguish overall patterns within the centre of Shanghai. The cycling directional lines are represented clearly as groups of radial lines from/to metro stations. Furthermore, with the help of the bicycle route navigation of Google Maps (www.maps.googleapis.com), each cycling trip was simulated by inputting coordinates of its start point and end point. Each street is assigned the number of starting and ending trips (no longer than 500 metres), which represents the cycling frequency. As is shown in Figure 3, most of the high-frequency cycling streets still centre around metro stations. The streets basically present a gradual decline from the metro stations to outlying areas in terms of cycling frequency, which indicates that bicycle–metro integration has already become the basic model for daily transport in Shanghai.

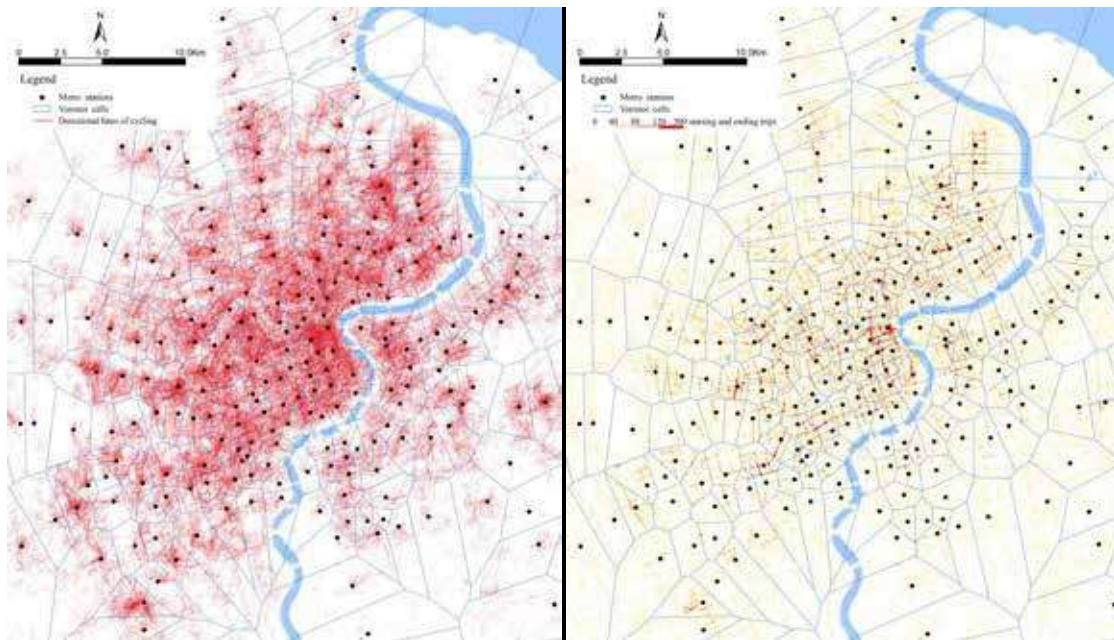


Figure 2. The cycling directional lines and cycling frequency of Shanghai's metro station voronoi diagram

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PA15

Planning, Law and
Property Right:
in the face of transitions

Right to the city, human rights, and Canadian cities

By Sandeep Agrawal

Right to the city

The idea of the *right to the city*, as conceived by Henri Lefebvre¹, raises questions of how or whether human rights intersect with cities. Can rights be used to implement Lefebvre's notion? In Canada, federal and municipal governments are deploying human rights policies in combination with city planning to realize this right to the city.

A fundamental question here is whether a difference exists between the right to the city and human rights in the city? Much academic debate on Lefebvre's concept encompasses two inter-related principal ideas:

- The city is an *oeuvre*—in which all its citizens participate and make decisions that contribute to the production of urban space
- Spaces are produced by their inhabitants by physically appropriating them—accessing, occupying, and using them in everyday life.

Right to the city resists the power of capital and the state by calling city inhabitants to engage in direct struggle and urban politics to achieve access and occupancy in urban spaces.

Human rights

Human rights are the rights we each possess by virtue of being human, based on our inherent dignity and equal worth as human beings. These are the “highest moral rights, [as] they regulate the fundamental structures and practices of political life, and in ordinary circumstances, they take priority over other moral, legal and political claims.” This Universal Declaration of Human Rights (UDHR) of 1948 is the foundation of human rights law, inspiring an extensive body of legally-binding human rights laws.

I interpret the *right to the city* as several human rights—rights to expression, religion, life, liberty, equality, housing and property² — as they relate to city inhabitants in the form of political engagement, equitable services and the accommodation of diversity. An aspect of city life is the notion of a right to property,³ but Lefebvre rejects this idea, arguing that it undermines the right to appropriate and inhabit the city. However, he does acknowledge that the right to housing as the right to adequate housing and shelter is a necessary but insufficient condition for the right to the city.

Many planning scholars who resist the prevailing neo-liberal tendencies in planning have embraced Lefebvre's concept, while others point to gaps and disconnects within his ideas and between his concept and human rights. For instance, it critically overlooks practical guidance on what this right to the city entails or how it informs relations between urban dwellers and the state. Even while it significantly resists the privatization and homogeneity of public space, it is more useful as a rhetorical device than a policy-making or legal instrument. The concept remains vague, with undefined terminology: What is a “right”? What is meant by “the city”?

For Lefebvre, the right to the city was a “cry” to initiate a radical struggle against the state and capitalism, but it was not supported by law in any conventional sense. Thus, this concept diverges from codified, legally binding human rights. However, we can still adopt it by relying on current institutional frameworks and invoking moral and legislative policy that affects people, along with their spaces and

places. The judiciary can further facilitate this orientation by interpreting and applying human rights in the state's policies and practices. More recent scholarship⁴ interprets Lefebvre's later writing as a potential encouragement to finding a more transformative potential within existing legal rights framework.

Several countries, including Canada and some European nations, as well as the UN, champion the right to the city as part of a broader agenda for human rights.⁵ In Canada, both the *Charter* and provincial and territorial human rights legislation provide the basic mechanism and legal framework for this idea. The humane development of inclusive cities depends on these constitutional and quasi-constitutional guarantees and their inherent values⁶. The Canadian *Charter* and human rights legislation provide rights to individuals, but they are increasingly being viewed as "collective rights," such as the rights of Indigenous peoples or persons with disability—the convergence point in the contemporary interpretation of the *Charter* and the right to the city.

Rights are enduring legal protections that are granted to individual citizens by the liberal-democratic state. The state, however, conceives of rights as ends—that is, the struggle is over when a legal right is secured—which is antithetical to Lefebvre's conception of ongoing resistance to capitalism and the state. Fainstein's *Just City*⁷ supports political institutions and public policies despite their imperfections. She endorses, instead, reforms through existing political-economic processes and argues against the need for social unrest to achieve justice. The construction of cities makes justice possible for everyone, through "continued pressure on the existing democratic practice." Nonetheless, in neoliberal cities, social equity is largely disregarded in favour of growth.

The Charter and Canadian cities

The *Canadian Charter* delineates the rights and freedoms of people only in relation to government activities, versus human rights legislation, which encompasses both private and public acts. Specifically, *Charter* Section 15 guarantees equality before the law and the right to equal protection and benefit of the law without discrimination based on race, disability, and analogous grounds. Laws (including municipal government bylaws) inconsistent with the *Charter* may be declared invalid and may lead to the payment of damages or other remedies. Notably, these constitutional guarantees are not absolute. *Charter* Section 1 places "reasonable limits [on rights] prescribed by law as can be demonstrably justified in a free and democratic society."

Interactions between individuals and organizations (for example, between employers or landlords) are governed instead by human rights legislation, like the Alberta Human Rights Act or the Ontario Human Rights Code. Therefore, provincial and territorial human rights agencies deal with discrimination issues based on race, religion, age, or sexual orientation, and thus may vary by region. However, overlaps do occur when an act of government occurs in an employment context or when the federal, provincial, or municipal government provides services, facilities, or accommodations.

Canadian municipalities have made significant progress on the human rights front, enabled by either federal and provincial legislative changes, or due to government responses to court rulings. As well, the federal government now maintains a human rights-based approach to a national housing strategy. Human rights issues in municipalities have also evolved over the last decade, increasing in the last few years.

Two key factors affect planning at the municipal level:

1. Increasing challenges to municipal bylaws based on *Charter* Sections 2 (right to expression, religion, and peaceful assembly), 7 (right to life, liberty, and security) and/or 15 (right to equality) and to court decisions that favour protecting these rights—such as the right of the homeless to erect tents on public properties and improving working conditions of city sex workers.
2. New federal legislation or amendments to existing federal regulations, some emerging from court rulings that protect human and *Charter* rights—such as safe injection site locations, methadone clinics, and cannabis dispensaries.

These two factors have prompted municipalities to review, revise, or even rescind existing bylaws, create new land-use classes, or revise existing zoning bylaws to accommodate new resulting land uses.

Implications

Now more than ever before, human rights are a critical issue at the municipal level. Certainly, new federal legislation now shapes municipal planning in unprecedented ways, such as with the locations of safe injection sites and cannabis dispensaries within the municipal fold. However, these new issues follow perennial ones, like secondary suites, user characteristics, minimum separation distances, and keeping livestock within the city limits. Still, provincial and municipal governments continue to make significant human rights progress, as in these examples⁸:

- Alberta revised its human rights legislation to include age (in relation to the provision of goods, services, accommodation, or facilities), sexual orientation, and gender identity and expression as grounds of discrimination.
- Alberta municipalities amended their bylaws to align them with human rights legislation and the *Charter*: Calgary removed its prohibition on secondary suites in residential areas; Edmonton changed its group homes use-class, and a complete review of a zoning bylaw is currently in progress.
- In 2014, Ontario included human rights in its provincial policy statement, mandating that municipalities ensure their planning and policies adhere to the *Charter* and the province's human rights code.
- Many Ontario municipalities changed the definition of group homes and other supportive housing facilities, as well as the use of minimum separation distances.
- City of Toronto established equity, diversity, and human rights offices.

In closing, I wish to highlight that the Canadian state has taken the lead in guaranteeing its citizens the *right to the city* and all the related rights that attend this. Lefebvre challenged whether this was possible for a state to do. Concomitantly, the Canadian judiciary has further clarified, applied, and even expanded the scope of human rights as they relate to various aspects of city life. According to Qadeer⁹, even if rights exist in law, their actual realization depends on the institutionalization of equality in economic, social and cultural matters; entrenched institutional biases and power politics may still prevent any progress made in law. Hence, Lefebvre's perspective remains valid in its emphasis that the *right to the city* is the *ongoing pursuit* for better conditions for city dwellers. This continual struggle appears to yield better results when worked within the existing political and institutional structures.

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author of the book *Understanding India's New Approach to Spatial Planning and Development: A Salient Shift?*, published by Oxford University Press.

¹ Henri Lefebvre was a French intellectual who was inspired by critical theorists such as Marx, Hegel, Nietzsche, and Heidegger. Spanning over three decades, his writings offered a critique of existing society and presented an idea of new society, a possible world beyond capitalism, the state, and consumer society. For instance, Lefebvre, H. *Writings on cities* (E. Kofman & E. Lebas, Trans.). Cambridge, MA: Blackwell (1996).

² The right to property is constitutionally guaranteed in the USA, is included in the UDHR, and is also part of Alberta's *Bill of Rights* although not included in the Canadian *Charter of rights and freedoms*.

³ Multiple interpretations of right to property exist. According to UDHR, "right to property" means that everyone has the right to own a property and no one shall be arbitrarily deprived of their property.

⁴ Such as Huchzermeyer, M. The legal meaning of Lefebvre's the right to the city: addressing the gap between global campaign and scholarly debate. *GeoJournal*. 83 (2018). 631-644.

⁵ The right to the city exists in many forms within states' constitutions—a direct right, an embedded right as a component of other rights, and as an implied right (Oren, Alterman, and Zilbershatz, 2014). There also exist "quasi-rights," which are neither fully realized rights nor legally binding.

⁶ They find support in two other important documents: the 2006 European *Charter for the Safeguarding of Human Rights in the City* and the UNESCO–UN Habitat project of 2006, which focuses on city dwellers and their "collective rights" to welfare, governance, and efficient public services.

⁷ Fainstein, S. *Just City*. Cornell University Press (2011)

⁸ Agrawal has published a number of articles and reports on human rights and the city. Agrawal, S. Human rights 101 for planners. *Plan Canada*. (Summer, 2017). Agrawal, S. Balancing Municipal Planning with Human rights: A Case Study. *Canadian Journal of Urban Research*. 23:1 (2014). Pp 1-20. Agrawal, S. Human Rights and Alberta Municipalities. Report submitted to Alberta Human Rights Commission (2018).

⁹ Qadeer, M. *Multicultural Cities: Toronto, New York and Los Angeles*. Toronto: University of Toronto Press, 2016.

Transposition of Advocacy Experience as Triple-Loop Social Learning in Albania: Fighting HPPs in Protected Areas from the Vjosa River Basin to the Canyons of Osumi

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Abstract: This paper traces the learning experiences of communities, living near protected areas, taking to the Administrative Court, in view of a lack of environmental crime law that would render these cases penal procedures, government decisions awarding the right to build hydropower plants to several national and international companies. We focus on the first four such administrative lawsuits in Albania, arguing against the construction of HPPs in the protected areas of the Vjosa river basin, the Valbona Valley National Park, the Seta river, and the Canyons of Osumi, from 2016 to 2018. Based on Brown et al.'s definition of triple-learning loops as a process transformative of decision-making paradigms and of the learning process itself (2015, pg. 1685), we demonstrate how the fight to protect national parks, biomonuments and dependent livelihoods, accompanied by social media campaigns and protests, have informed practices of participatory social learning (Brown 2015, 1686). We break down the dynamics of the multi-level and multi-agency approaches of these claims, to denote and explain the role of multiple social actors opposing the lack of compliance with environmental legislation on protected areas. We, ultimately, argue that the switch in feedback loops has acted as a catalyst for sustained behavioural change, and rendered possible the transposition of advocacy practices across different communities.

Keywords: triple learning loops; protected areas; environmental law; adaptability; Albania

Introduction

Since 2008, one of the main priorities of the Albanian government has been the exploitation of water resources in the country. First and foremost, the idea for the exploitation of water resources in Albania is based on the wrong conviction that given how the per capita water use in the country is among the highest in Europe this resource is endurable and associated benefits are permanent. Thus, the Albanian government focused on the massive development of hydropower plants (HPPs) of different sizes and types. These efforts however, have been accompanied by an indiscriminate action to exploit all water resources, independently of their ecological and biological values and approved permits for HPP constructions have been awarded independently of their social and environmental impacts. This way “[t]o date there are around 500 hydropower plants in Albania that are either operative, under construction, or planned. Of these, 105 are located in protected areas. Such power plants have had a significant impact on local biodiversity (Gjoka, 2018).” The lack of transparency that surrounded the processes of concessions the government made to private, foreign and in-country companies contributed to a widely chaotic misinformation process that made for a powerless citizen. At present, 95% of

Albania's electrical consumption needs are covered by production from hydro sources (Ministry of Infrastructure).

However, the implementation of such policies is not backed up by any significant, or meaningful study, on water resources in Albania and any proof that the production capacities of existing and proposed HPPs would eventually outweigh the permanent destruction of the natural ecosystems where they were built or are planned (Revista Monitor, 2013). The case is even more so when it comes to HPPs built in protected areas (PA). More to this point, several environmental NGOs and activists in Albania and elsewhere argued against these measures. The various privately-owned HPPs have brought about significant alterations to the Albanian landscape. The most prominent biologists in Albania saw themselves improvising as activists and arguing in favor of protecting the flora and fauna (Miho 2015a; Miho 2015b; Miho 2015c).

More specifically, just to briefly reference the average drop in annual rainfalls, the Albanian Institute of Statistics (INSTAT) reports, net domestic production of electricity decreased by 36.6% in 2017, with “public hydro plants decreas[ing production] by 42.7% and independent and concessionaire power producers decreased [production] by 21.3%” (INSTAT). The contrary was true a year later, to be fair. According to the same data gathering and interpretation process, in 2018, a good year given the rise in 89% gross domestic production of electricity, “public hydro plants contributed 68.4%, while independent hydropower plants realized 31.6% of the net domestic electricity production” (INSTAT).

As studies on the impact of HPPs, small and medium, that have sprung everywhere are beginning to be carried out either by Albanian biologists and scientists, or international bodies concerned with the environment it is obvious that the abovementioned premise does not hold true. While Albania might have a high water resource per capita in general, the relatively low and fluctuating productivity of HPPs when compared to their environmental impact does not always justify their presence.

Furthermore, the indiscriminate construction of HPPs has forever altered the landscape of the livelihoods of the communities that reside near them. While often advertised as one of the last unexploited European gems, local eco-tourism has suffered, especially in the case of touristic initiatives relying on the Valbona river PA, as we will show later on in this paper.

The current government came into power in 2013 with the promise they would halt the ferocious HPP development, but this did not prove to be the case and personal and corruptive interests have since often prevailed. Then again, the Albanian government is paying lip service to European integration strategies aiming at supporting and developing sustainable tourism, increasing environmental quality and contributing to ‘blue growth’, such as the EU Strategy for the Adriatic and Ionian Region (EUSAIR).

The situation escalated to the point that an assessment study, titled ‘Identification of water related conflicts linked to hydropower project in Albania’ (Qendro, 2017) carried out as a joint effort of several main environmentally focused think tanks and NGOs operating in Albania in 2017 showed the dire consequences of the clashes between communities threatened by the construction of HPPs and state authorities. More specifically, between 2012 and 2016, 34 people were arrested, among whom protesting the Cernaleva HPP three women and one minor, while six casualties were recorded overall.

Meanwhile, the negative impact of HPPs on ecosystems and the communities left without water became the subject of several journalist denouncements both at home and abroad. Among the most outrageous examples, the Rapuni 1 and 2 projects built in the Shebenik-Jablenica national park registered the desertification of much of the protected area and failed local mini businesses relying on water mills (Qendro, 2017).

Community Organization and Knowledge Transfer

This section of the paper traces the learning experiences of communities, living near protected areas, taking to Administrative Court, in view of a lack of environmental crime law that would render these cases penal procedures, government decisions awarding the right to build hydropower plants to several national and international companies. We focus on the first four such administrative lawsuits in Albania, arguing against the construction of HPPs in protected areas and more precisely those of Poçëm in the Vjosa river basin, the Valbona Valley National Park, the Seta river in the Dibër Municipality, and in the Canyons of Osumi, from 2016 to 2018. We demonstrate how the fight to protect national parks, biomonuments and dependent livelihoods, accompanied by social media campaigns and protests, have informed practices of participatory social learning (Brown et al. 2015, 1686).

The most sensational case of an HPP being built on a river while highly disrupting its ecosystem was that of the HPP planned in Poçëm, in the Vjosa river, one of the few existing wild rivers in Europe. The plans for Poçëm made the round of the news and of the European community of environmentalists, whom organized and staged several protests in Tirana, in front of governmental buildings. What gave protesters a leg up in this fight was the successful association of Vjosa with the ‘Blue Heart of Europe’ area of which the river is part, tracing the beginning of the river as the Aoos in Greece and making casual references to the mythologies the latter is tied to. Biologists, nature conservationists and both traditional and social media jumped on the branding. Although within national parks from Slovenia to Greece a total of 1,003 HPPs were estimated to exist in 2018, while 188 were being built and 2,798 were planned (Morris, 2018), the argument that the dam in Poçëm would forever alter the landscape of Vjosa caught up. Poçëm’s case altered the landscape of protests organized by small and poor communities, which often were paid fleeting attention by traditional media, but never received any support from outside civil society organizations (CSOs) and/or environmental actors. The community protest in Poçëm benefitted from visual materials and strategic protest tools, such as people chaining themselves to block nearby national roads (Koha Jonë, 2016). Another peculiarity of the protests in favour of the preservation of the Vjosa River was the public stance against the governmental decision on the part of five Mayors, belonging to the Përmet, Tepelenë, Memaliaj, Mallakastër and Selenicë Municipalities, who argued against the Environmental Impact Assessment that informed such decision, in February 2017 (BIRN, 2017).

Thus, Poçëm marked the first instance of a community, 37 individuals supported by three national NGOs, taking the state to court, and more precisely sued the now former Ministry of Energy and Industry, the now former Ministry of Environment and the National Environmental Agency, over the approval of an HPP permit. The sensationalism had turned into excitement and hope and the materialization of the protest into a court case, the first of its kind. CSOs felt more compelled and secure enough to speak up and insisted on the government’s obligations to several international agreements, such as the Bern Convention (ecoalbania, 2018). On 2 may 2017, via Decision no. 1813 (ecoalbania, 2017), the Administrative Court of First Instance of Tirana found the approval of the HPP permit on Poçëm to be invalid and stated that the expenses incurred by the plaintiff were to be covered by the indicted parties. More precisely, the decision of the Court stated that the developer did not fulfill his duty, and did not inform the general public on the public hearing, according to conditions specified in point 6 of DCM no. 247, date 30.04.2014, ‘On the definition of rules, requirements for informing procedures and the involvement of the general public in environmental decision-making processes’. The latter states that the developer must notify and inform the public via audiovisual media channels, printed local and national media, given the national character of the HPP project, the placement of informative tables at the place where the project is to be developed, and making available material concerning the public hearing at the offices of the Local Government Unit (ecoalbania, 2017).

Although the victory of the community impeding the construction of an HPP in Poçëm was historical and ground-breaking, the practice of building HPPs in protected areas did not stop there. Another, more sensationalist, case was that of the HPP permits approved on the Valbona river.

“In January 2016, local people in Valbona Valley National Park learned of the plans to build as many as 14 hydropower plants along 30km of Valbona River, 8 of them wholly within the National Park. The procedure and content of the projects’ environmental impact assessments demonstrate non-transparent decision making, disregard for local communities’ well-being and indifference towards high conservation value ecosystems, including a complete disregard of the fact that the development is occurring in a protected area” (Toka, 2018).

Here the Valbona community benefitted from a relatively long, taking into account the history of the nation, and stable operations of eco-tourism. The Valbona community had been attracting tourists from all over the world as one of two most popular mountain destination, together with Theth, and had been advertised internationally by big international actors acting in the country, such as The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Albania, which supported the development of the Peaks of the Balkans trail. Needless to say, the Valbona community protests made use of the momentum built by the protests still occurring with regard to the Poçëm HPP and representatives of the cultural community in Albania, who had supported the electoral campaign of the ruling party or the Prime Minister himself given his role in the cultural promotion of the country abroad, voiced their stance against the HPPs. A series of events and actions were organized by different stakeholders, among which the most popular proved to be two concerts: one organized in Valbona, which attracted Albanians from all over the country and from Kosovo as well, and another one in Tirana in the city center. Protest supporting the conservation of the Valbona River were also held in New York. The concerts were played by internationally renowned figures. The events were accompanied by some ongoing fund-raising that goes toward the legal battle.

The court case regarding Valbona proved to be a harsher battle, accompanied by some outrageous court standings. First and foremost, the suing community, the Valbona community, at a certain time was not even recognized as a lawful representative of the region by the Administrative Court of First Instance of Tirana. The first lawsuit “was thrown out by the court after 14 hearings and 5 months,” as the Court stating that the government makes decision with the best interest of the citizen in mind. The plaintiff argued that their rights to free speech and “right to information, involvement in decision making and judicial recourse in development decisions with environmental impacts,” (Toka, 2018) deriving from the Aarhus Convention of which Albania is a signatory, were not respected. The case is still being processed, while the construction company, or the HPP company, is sporadically working on the project, excavating and permanently altering the environment. Conversely, the developer Gener-2 and their subsidiary company Dragobia Energy have taken to court one of the main organizers of the protest over damages on their image. The Toka NGO, as the leader of the lawsuits and any other organization against the HPPs in Valbona, nevertheless states that the experience so far has been overall a positive one. “The battle so far has been notable in helping to change the national perception of protected areas and National Parks, from distrusted, ‘mysterious’ zones created by the government to limit the rights of inhabitants to national treasures belonging to the people” (Toka, 2018).

In 2015, the National Territorial Council, part of the National Territorial Planning Agency, released a permit for the construction of four HPPs onto the Seta River, to the HydroSeta Power company. Given how the area is protected by Albanian law, and more precisely via Decision of the Council of Ministers no. 676, date 20.12.2002, “On the provision of protected natural areas” and Law no. 112/2012 “On the integrated management of water resources”, inhabitants of the area brought their claim to court asking for the partial annulment of the concession contract concerning the construction of the last HPP, SETA 4. The inhabitants claimed that this particular HPP would impact two, out of four, canyons which are within the protected area. While the inhabitants of the area argued that the deviation of the water resources would impact PAs and decimate the trout population, the representative of the former Ministry of Infrastructure and Energy argued that given how the HPP would not be built on PAs or biomonuments the plaintiff’s claim had no grounds. The inhabitants of Çidhën faced the state in court since 27 July 2017 and during 17 months they participated in a total of 20 judicial sessions. In August 2017 the police prosecuted 20 inhabitants that tried to block construction

in the area. In December 2018, the Administrative Court of First Instance definitely dismissed the plaintiff's claims and although the case was presided by a judge, "the decision was taken by a majority of votes" (Curri, 2018).

Nevertheless, a last case arguing for the protection of PAs, was still won by a community taking on the role of the plaintiff. A concession to the HEC Bigas and Veleshnje company, to build two HPPs in the Bigas watershed, in the Canyons of the Osumi River was kept secret for years, from 2013 to 2018 to be precise, until the case was uncovered by one of the top media channels in the country. Following the highly unpopular news, and how the Canyons of Osumi have become one of the main touristic attractions in the country, highly advertised via celebrities and high-level politicians, and hence a meaningful generator of revenues for the areas, adjacent communities, touristic operators and the general public started protesting the decision both in the streets and online. In a very successful first, the construction permit given to the developer was found to be irregular by the Ministry of Tourism and Environment and the Ministry of Infrastructure and Energy (MIE). More precisely, the MIE announced on 15.02.2018 that the administrative act concerning this case's Environmental Impact Assessment was null. Ultimately, the developer would sue the government on the rescission of the permit to no avail.

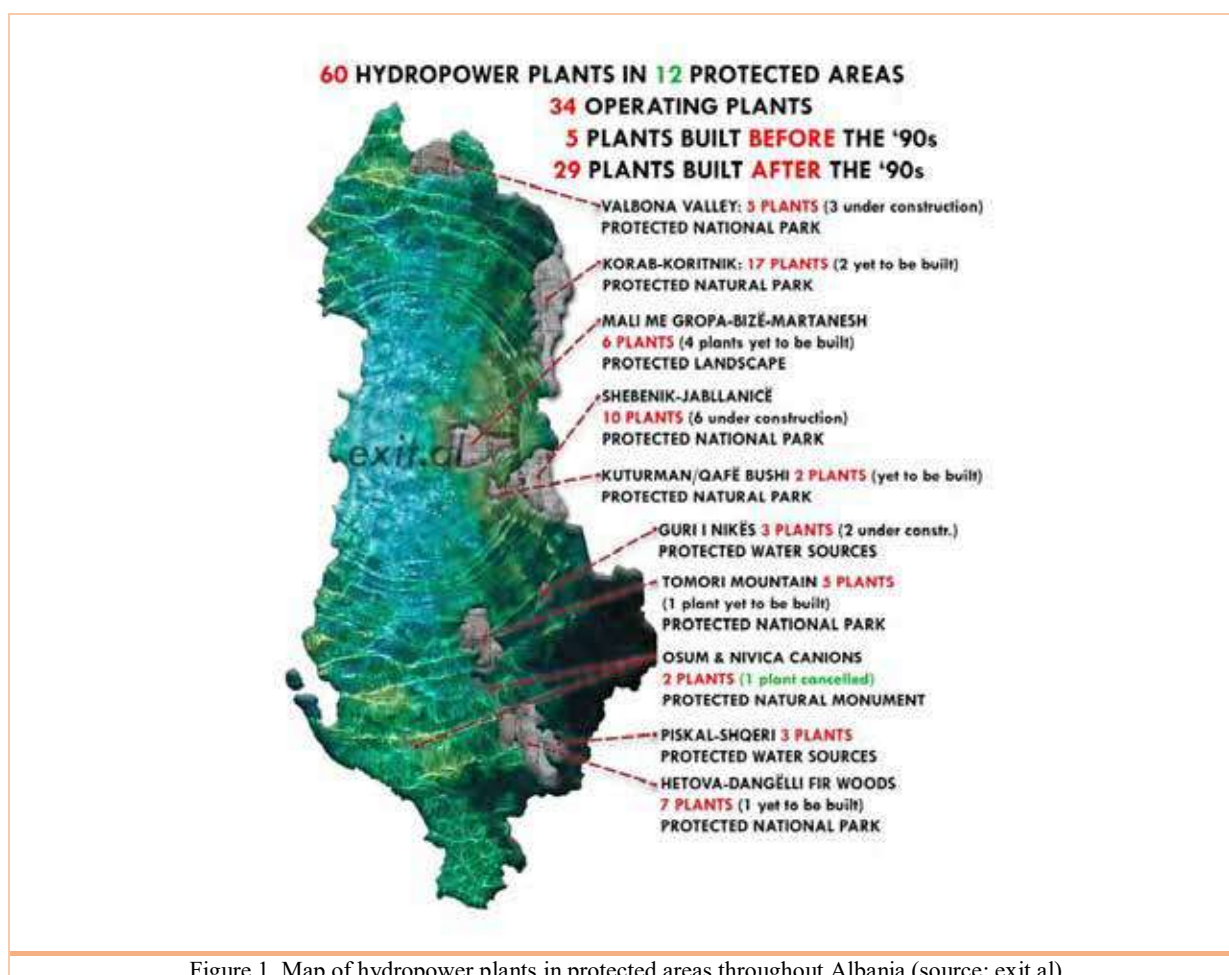


Figure 1. Map of hydropower plants in protected areas throughout Albania (source: exit.al)

A successful series of community protests was that of the inhabitants of Zagoria. The Albanian branch of the Dutch giant, Shell, had signed another silent contract with the National Agency of Natural Resources, representing the former Ministry of Energy and Industry, to drill in four different blocks in Albania via DCM 350, date 12.6.2018, "On the approval of the contract dividing production on the research, development and production of hydrocarbons in the soil, in Albania, Block 4, between the Ministry of Infrastructure and Energy, represented by the National Agency for Natural Resources and Shell Upstream Albania B.V.". When the Dutch

company announced community hearings, as per Law no. 10281, date 20.05.2010, “On concessions”, protests ensured. The popularity of the region, deriving not just from its touristic destination status but from the fact that one of the most popular bottled waters comes from Zagoria and is named after the region, social media followed up with online petitions and denouncing the nature of the arrangement. Ultimately, unable to conduct public hearings with the communities and overwhelmed by the pressure coming from public opinion, Shell Upstream Albania declared it was giving up its search for oil in Zagoria.

Indeed, the transformation of the overall situation regarding translated into such pressure for the next Minister of Infrastructure and Energy, after the restructuring of the Ministry and the government even more widely, that in February 2019 she declared that she would freeze works on the two HPPs that were to be built in Gramsh, near the Holta Canyon, another very popular tourist spot (Spasić, 2019). The declaration did come after protests were organized by inhabitants of Gramsh and villages near the Holta Canyon. In a first, the Minister also stated that she would investigate 182 licenses issued to build a total of 440 HPPs (Spasić, 2019), and backed her statement with the fact that the damages these SHPPs would cause outweigh the economic gain they generate (Spasić, 2019).

What had occurred at a national level, thanks to social media, traditional media and journalists that were willing to challenge the status quo of silent deals, agreed upon away from the public eye, was participatory social learning which had translated these actions into “knowledge exchange, adaptive management and local leadership, together with recognition of informal or tacit knowledge systems that extend beyond conventional scientific knowledge (Nazarea 2006 in Brown 2015, 1686).” Participatory social learning allows for “[p]luralistic approaches to knowledge development can provide an important enabler for engagement of civil society in sustainability planning if they can incorporate longer time horizons, adaptability and feedbacks, integrated approaches, and systems thinking (Burch et al. 2014 in Brown 2015, 1686).”

As Löf explains in his paper, *Exploring Adaptability Through Learning Layers and Learning Loops*, the need of small communities, that depend on water resources and rely on protected areas statuses in various locales throughout Albania to sustain their livelihoods, to adapt and react against a situation always in their disfavor led to various learning loops (2010). Social learning with relation to environmental protection and conservation has also been the subject of relatively recent studies (e.g. Keen and Mahanty 2006; Maarleveld and Dabgbégnon 1999; Pahl-Wostl et al. 2008; Stagl 2007; Wals 2007 in Löf 2010, pg. 534).

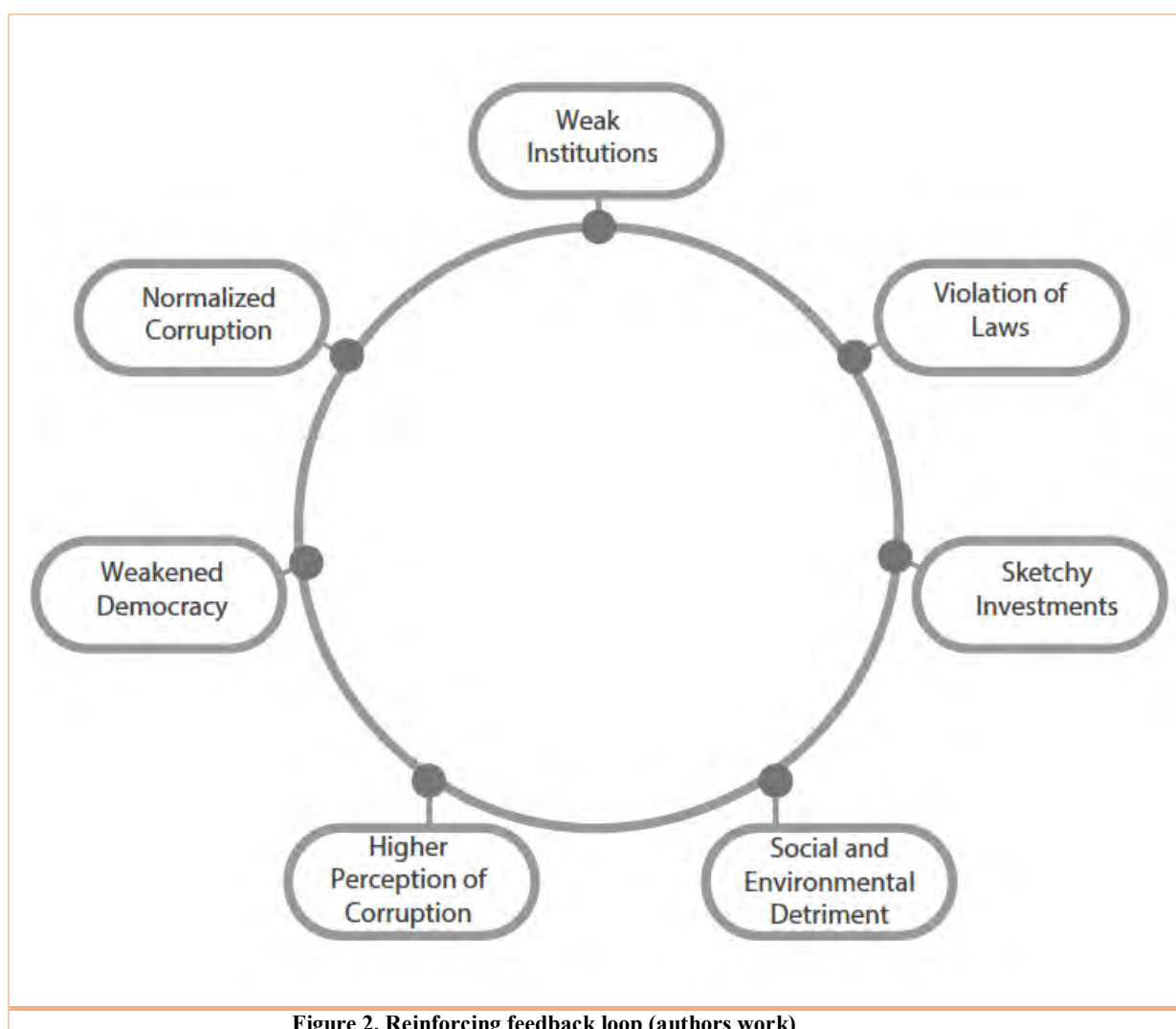
“Social learning has for instance been applied to denote individual learning in a social context; learning by social aggregates (Stagl 2007); or synonymously with participatory processes, co-management and collaborative governance (Mostert et al. 2007). The latter conceptualization emphasises that multiple-loop (group-layer) learning does not come automatically but requires deliberate and strategic efforts. (Löf 2010, pg. 534).”

Transformation of Feedback and New Learning Loops

Based on Brown et al.’s definition of triple-learning loops as a process transformative of decision-making paradigms and of the learning process itself (2015, pg. 1685), we demonstrate how the fight to protect national parks, biomonuments and dependent livelihoods, accompanied by social media campaigns and protests, have informed practices of participatory social learning (Brown 2015, 1686). We, further, argue that these communities have been able to turn a self-reinforcing feedback loop, one where economic laws undermine national and international environmental legislation contributing to the mismanagement of national natural resources for over a decade, to a balancing one, where implementation of environmental legislation is equated to higher community awareness and organization. Employing Löf’s distinction of governance versus government and governing (2010, pg. 534), we break down the dynamics of the multi-level and multi-agency

approaches of these claims, to denote and explain the role of multiple social actors opposing the lack of compliance with environmental legislation on protected areas.

For years, and more precisely since the communist regime in Albania, HPPs were built in PAs altering the livelihoods of the communities living near them and making use of protected resources. Caught in a negative feedback loop where corruption weakened democracy and left no space for governance, Albanian citizens kept quiet. Switching to a double-learning loop would have meant that the citizens in the communities of Osum, Vjosa, Seta and Valbona would have had to put up with the at least one of the elements represented in the loop diagram in Figure 2, - ultimately, an impossible task if they wanted to achieve social and environmental justice.



In the previous section of the paper, we have shown how communities, together with other key actors, were able to switch to a balancing loop (Drutman, 2015), in which corruptive practices of economic legislation were countered by pro-active communities arguing in favour of the rightful application of national environmental legislation, thus, bringing the democratic system in Albania to a new stable system.

To better support the claim of this paper, that is to say that the learning loops in Albania represent a case of triple-loop learning rather than a double-loop one, it is worth shortly focusing on the distinction between the two.

As Petersen points out, landscape conservation has usually made use of single-loop learning processes, where problem solving was directed by the desired achievement, with new strategies being continually envisioned and

implemented after initial failures (2014, pg. 784). Nevertheless, this kind of learning loop only led extremely low successful percentages, and it led to even less operational changes (Petersen 2014, pg. 784). In other respects, double-loop learning requires the identification, development and integration of new behavioral changes, “as informed by the new values and frames, into group norms and relationships so that it becomes the new normal (Putnam 2014).” While Brown et al. provide the best definition of a triple-loop learning process:

“Triple-loop learning takes actors beyond pre-existing structures by challenging existing decision paradigms and the contexts which frame the decision-making process, including underlying principles and norms (Maarleveld and Dabgbegnon 1999; Pahl-Wostl 2009). Full triple-loop learning may therefore be conceptualised as learning about the learning process itself and how this process can be further enhanced to tackle new challenges and opportunities (Brown et al. 2015, 1686).”

In short, the differences between the different learning loops that have wanted to specify in this paper, with regards to the events that have taken place in Albania following the approval of HPPs in nationally protected parks, is also presented by Löf, in his publication with the *Environmental Education Research* journal:

“*Single-loop* learning refers to ad hoc or routine learning, simply responding to errors by making smaller adjustments. *Double-loop* learning refers to actively trying to change protocols and organisational norms in response to detected errors (Argyris and Schön 1978). *Triple-loop* learning entails fundamental change of the entire mental model the governance or management process is based on (Keen and Mahanty 2006 in Löf 2010, pg. 533, authors’ emphases).”

In this paper, we, ultimately, argue that the switch in feedback loops has acted as a catalyst for sustained behavioural change, and made possible the transposition of advocacy practices across different communities in Albania. We have focused on these learning loops as they challenge the status quo and disrupt the correlation between poverty, inequality and environmental degradation. Most importantly, we hope this paper serves as a reminder that environmental and social justice are deeply interwoven and that changes with regards to adaptability and governance call for:

“[b]alancing short term needs with longer-term requirements for sustainability while managing multiple uses, accounting for legacy issues, and integrating the dynamic and complex relationships between human and nature through space and time requires a more complex and integrative approach than is normally used in biodiversity conservation and natural resource management (Thiault et al. 2017, pg. 448).”

We also aimed to show in this paper, that the approach toward the protection of national parks and connected livelihoods employed “[m]ulti-modal (direct, deliberative), multi-level (local, urban, national) and multi-user (policy, [activist], research) learning loops (JPI Urban Europe)”, not only as the Looper project distinguishes in general, but also as has become general knowledge when dealing with conservation efforts and/or water management (Petersen 2014, pg. 782; Balazs 2014, pg. 99).

Conclusions

HPPs, be them small or medium, in a time of technological acceleration most often cannot catch up with their own temporalities, - the multiple timelines that include needs for approvals, public hearings feasibility studies, and the upkeep - and the social and political worlds, - often small and already having achieved self-sustainability, just like the ones we have presented in this paper, - where they would be of relevance are already obsolete. The role of the technical/engineering expert becomes irrelevant and the role of the nature conservationist takes crucial importance. The false image these failed megaprojects projected as a necessary

modernity were not only met by a knowledgeable public, but one that was willing to learn and do more. At a time of a new climatic regime, the vision of relying for energy production on the exploitation and alteration of small and medium HPPs proves unsustainable. Drawing from UNFCCC data, rainfall in Albania is expected to decrease by approximately 14.37% by 2080 and by more than 18% by 2100, while becoming more unpredictable throughout the year (Gjoka, Hoxha and Bashmili, 2018, 107-8). The overview of the exploitation of water resources in Albania, as a top-down process regulated by central government deepening financial strains for local communities, presents us with what Bruno Latour hypothesizes, “the explosion of inequalities and the denial of climate change are one and the same phenomenon (2018, p. 1-2).”

This paper is instrumental in the way it gives out an accurate account of the learning loops through which communities around Albania, living near protected areas and living off of them, passed in an organic manner with on-the-spot organization, guided by the principle of law. The social learning lesson we draw from the above cases is that it is precisely the triple-loop learning that which makes for long-term structural change (Balazs 2014, pg. 100). Furthermore, it is imperative to demonstrate, as this paper does, that these communities shook things up and completely transformed the feedback loop that the news and top-down development approaches dictated daily via the news. These communities were successful in gaining national and international visibility and went from marginalized groups to efficient governing bodies. They transformed a negative feedback loop, one where corruptive practices weakened democracy and public institutions, into a positive feedback loop, one in which governance and adaptability determine the fate of communities and the environment, and the kind of development they seek. The first four cases of citizens taking the state to court over nature conservation marked the forming of a new public, proactive, international, collaborative, engaged and engaging, and a shift from passive to active citizenry. A culture about water, biodiversity, the protection and conservation of ecosystems as values to be upheld not as commodities to be fought upon, and about the support and promotion that remote populations, which perform this kind of work, deserve was set. “[S]ocial learning provides a link between procedural and distributive justice; to the extent that it changes water management institutions (Balazs 2014, pg. 99).”

What this paper ultimately demonstrates is that communities are willing and able to contribute to effective governance even in a developing and problematic context such as that of Albania. However, what is lacking in the latter is the use of online platforms and other traditional methods, such as traditional community planning and design workshops, to effectuate policies. These tools were, however, only employed to resist top-down, environmentally exploitative policies. To conclude, we would very briefly state that the current state of development and planning policies should shift focus from ‘sustainability’ to inclusive development, which “focus[es] on social wellbeing and protecting the ecosystem services of nature through redefining political priorities, especially in the context of the Anthropocene (Pouw and Gupta, 2016, 104).”

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Monitoring and enforcement of short-term rentals rules. Mission impossible?

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Abstract: Short-term rental platforms, especially Airbnb, represent a deep change in the housing sector. In Portugal, the first attempts at designing regulatory measures to balance short-term rental are far from achieving high levels of compliance. As in other European cities, the monitoring and enforcement of rules drawn up so far entail difficulties for most of the management entities. This paper aims to discuss the relationship between the type of rules designed for short-term rentals, and the enforcement effort required from public entities. The methodology relies on a brief analysis of the rules implemented in different European cities through available literature, and a detailed assessment on the evolution on the Portuguese case, evaluating the expectations on the level of compliance with short-term planning rules. To access enforcement effort, we propose a systematization of the type of rules in place in the main European cities. In countries with traditionally low levels of compliance and reduced enforcement results (such as Portugal), reducing the enforcement effort seems the 'smart' thing to do. We conclude that monitoring and enforcement of short-term rental rules is not a 'mission impossible' but it is certainly a demanding one.

Keywords: Airbnb; Short-term rental; Housing; Tourism; Illegal development

Introduction

Online platforms have a growing impact on society and urban life, allowing easy connection between people and offering the most varied types of services. The so-called "sharing economy" (for un- or underutilised assets), of which Uber and Airbnb platforms became icons, definitively changed the traditional forms of transport, accommodation, tourism and, consequently, the way to inhabit cities. This growth of the sharing economy or "economy of trust" is faced by many economists as a new economic paradigm and is expected to change substantially the service sector (Dudás, Vida, Kovalcsik, & Boros, 2017). The short-term rental sector has grown exponentially in recent years leveraged by Web applications that offer accommodation all over the world at a one-click distance. The last count of Airbnb indicates its use by nearly 500 million guests distributed across 191 countries¹. The emergence of other similar platforms, such as Flipkey and VRBO, reveal a general acceptance of this type of service and interaction. The ease of access to users and the offer of a wide variety of accommodation is now an important factor in the decision to travel or stay in any part of the world. The new technologies associated with tourism are a way of evaluating tourism business models and also to create competitive and alternative forms of accommodation (Munkøe, 2017). This business model, and competitive accommodation, are increasingly segmented and influenced by changes at consumer level, especially in

¹ <https://press.airbnb.com/pt/fast-facts/> (accessed 26 May 2019).

the last decade (Turismo de Portugal, 2007). A few years since its emergence, these new forms of rentals have caused a profound economic, social and urban impact in many cities. On the other hand, they created the opportunity for individual owners to obtain a steady income (either complementary to the family economy or by job creation), to increase cities' tourist capacity, and to encourage urban rehabilitation in city centres (R. Lopes, 2018). In Portugal, the tourism sector contributed favourable to economic growth, helping to overcome a period of crisis. On the other hand, negative externalities are strongly contested in major cities: "unfair" competition for the hotel industry, disturbance of the tranquillity and security of multi-family dwellings, and housing price-increases. Airbnb's "sharing" principle faces increasing criticism, given the fact that its offer contains a large share of entire apartments where the host is not present, and the professionalization of services is similar to hotels.

The rise of housing sales prices in Portugal between 2015 and 2017 is one of the highest in Europe, estimated at 20% (INE, 2017). The emergence of short-term rentals is aggravated by the relative ease in obtaining credit and to the incentives to foreign investments. The average value of the new loans is approaching 100,000 euros, the highest amount since January 2009 as in the period before the beginning of the last crisis (INE, 2017). Therefore, long-term rentals (historically not popular in Portugal) suffer a chronic shortage of supply and disproportionate rise in prices. After decades of rent freezing, there was an owner-favourable amendment to the Rental Law. The cease of old long-term rental contracts is now succeeding, and apartments are being made available for much higher prices or turned into short-term rental accommodation.

High prices of real estate in cities centres is not a new issue. The problem of the gradual voiding of housing in favour of commercial activities and services was recognized decades ago (Mendes, 2014). Nevertheless, the phenomenon of the short-term rental now exerts influence more widely, and, above all, the speed of change in city real-estate dynamics has no precedent.

All over the world, government and public administration bodies face a dilemma: how to regulate short-term rentals so that they can minimize negative externalities without losing their positive effect on the economy. State intervention and new restrictions on renting entire apartments is part of the current social and political agenda in most European countries (Dudás et al., 2017; Gurran, 2017). However, these first attempts to impose restrictions demonstrate that drawing-up regulations is not enough. Given the magnitude of interests and profits in perspective, owners often choose to ignore rules. In this matter we recall Bowles' estimate that *"20 per centre of the regulated population will automatically comply with any regulation, 5% will attempt not to fulfil it, and the remaining 75 percent will fulfil it as long as they think the 5% will be caught and punished"* (Bowles, 1971 in Zaelke, Kaniaru, & Kružiková, 2005, p. 24). Therefore, monitoring and enforcement are key issues in the process of ruling.

Depending on the type of rule, monitoring of short-term rental activity may require economic and (specialized) human resources. The existing traditional planning enforcement teams from local authorities are likely to need adjustment, to be able to respond to the high number of lodgings to inspect, assure in-time response to neighbours' complaints, to do digital monitoring of ads and/or eventually to serve numbers of enforcement notices. In countries with traditionally low levels of compliance and reduced enforcement results (such as Portugal), reducing the *enforcement effort* from public entities seems the 'smart' thing to do. In this paper, we argue that the enforcement effort depends greatly on the design of short-term rental rules. Implications are relevant: How often are on-sight visits required, and how many enforcement officers are needed to cover them? Does enforcement proof depend on easy-to-reach information or on circumstances (i.e. the presence of the owner during while guests are staying)?

Enforcement has always been the orphan in planning, being considered the weakest link of the planning system (Dobry, 1975 in McKay & Ellis, 2005), however short-term rentals impact and the urge to put in place effective regulation brings a new relevance to the topic. This paper discusses the relationship between the type of rules designed for short-term rentals, and the enforcement effort required from

public entities. The methodology relies on a brief analysis of the rules implemented in different European cities through available literature, and a detailed assessment on the evolution on the Portuguese case, evaluating the expectations on the level of compliance with short-term planning rules. To access enforcement effort, we propose a systematization of the type of rules designed in the main European.

1. Planning compliance in Mediterranean countries

In southern European countries illegal development is a still a wide-spread phenomenon. Previous studies estimate that more than 282,000 entire new buildings were illegally constructed in Portugal between 1991 and 2011 (Calor, 2017), 300.000 in Andalusia (Ruiz Olmo, 2015) and 1 million in Greece (Potsiou, 2015). Italy, Turkey and other Balkan countries have approximate levels of compliance (Falco, 2017; Ozer, Vardar, & Naz, 2007; Unsal, 2009; Zanfi, 2013). Building extensions, balcony enclosures, swimming pools, changes of use and other minor works are also frequently undertaken without permits.

Changes of use and subdivision of apartments are likely to be the kind of development promoted by short-term rentals. These are the most difficult to monitor and enforce. Detecting an entire illegal building is fairly simple and evidence easy to collect (i.e. aerial imagery or on-site pictures). Extensions, swimming pools and other physical elements may be more difficult, but once detected, evidence is on the ground. However, changes of use and apartments subdivisions are hidden from external sight and monitoring may require more sophisticated methods. Regarding the difficulties in enforcing changes of use, we recall of a story of a dubious Greek hotel whose owner claimed that the persons in the building were his cousins and friends whom he often entertained in his big house... He may well be successful in claiming 'absence of evidence' in a Mediterranean country court.

For several reasons Portuguese municipalities tend to be condescending on illegal development (Calor & Alterman, 2017). Studies show that municipal officers and politicians avoid detecting, serving notices and taking action in court in most circumstances. Enforcement may be initiated but, for political, social and economic reasons, is rarely taken to the limit (Leite, 2010; D. Lopes, 2004).

The same (or greater) difficulties apply to identifying primary housing, holiday housing and tourist accommodation. Today it is not rare that a single building fits all-in-one types of housing. Enforcement actions to distinguish primary housing (for relocation of residents) from holiday housing (for demolition) in squatter settlements in Ria Formosa (Algarve, Portugal) involved several officers for months, and required regular visits to hundreds of houses (Calor & Magarotto, 2018).

Additionally, the high profitability of this sector encourages imaginative solutions. The plurality of hosts and the possibility of money increases a tendency to circumvent established rules. Some amusing "informal" rental accommodation examples can be found online. Among our favourites are a garage-bar with the bathroom in the "closest bush" in Prague, Czech Republic in 2015², or a caravan parked in the centre of New York with WC at the nearby gymnasium, at additional cost at 2018³. Notwithstanding these obvious cases, mostly one cannot identify the legality of advertised accommodation.

Summing up, the level of compliance with planning rules in southern European countries is probably mid-way between developing countries (often referred as the Global South) and northern European countries (Calor & Alterman, 2017). In southern European countries illegal works are common, owners are audacious, and the administration is incapable (and unmotivated) in dealing with the high number of breaches of planning control. On the other hand, neighbours' complaints are not frequent, or socially

² <https://www.airbnb.pt/rooms/10457093> (accessed June 26, 2015).

³ <https://www.airbnb.pt/rooms/25374851> (accessed October 6, 2018).

accepted. In this context, how reasonable is it to expect that owners and promoters comply with short-term accommodation rules? Will authorities be more willing and capable of enforcing them than planning laws?

2. An overview of short-term rules and enforcement strategies

Restrictions have been enforced in several countries and cities with a high number of short-term accommodation. Strategies vary and the speed of the change of rules change is high. Rules are increasingly complex and de updated is difficult. However, this is probably the most interesting contemporary case of boundary shifting between formal and informal.

In London, a limit of 90 days' rental is applied to individual owners, except if they obtain a specific planning permit for a vacation home (Ferreri & Sanyal, 2018). In San Francisco (USA) the limit is 30 days (Gregory & Halff, 2017; Martin, 2016). In Berlin, entire houses must be registered and taxed as vacation homes. Renting rooms is accepted, with the condition that the host be present. In Barcelona, the number of entire apartments is restricted by areas, through specific zoning (Segú, 2018). In a more extreme attitude, New York has recently updated its laws to ban the advertising of short-term rentals (Dudás et al., 2017; Gurran, 2017).

The difference between entire apartment- and room-rentals (in the presence of the host) requires intensive monitoring. Even when officers are successful in entering the apartment, what evidences can prove the host presence? Personal objects or pictures? In northern European countries, telling-on-the-neighbours might help but these circumstantial evidences are not easy to be considered valid in southern European courts.

The strategies of cities to monitor and ensure rules compliance depend on the type of rules. London (and other cities) established an agreement with Airbnb to ensure automatic blocking beyond 90 days but doubt arises if the owners will comply or simply use other platforms (Ferreri & Sanyal, 2018). Several French cities also have a 120 day time-limit for renting an entire primary housing but no limit applies to room rentals (Heo, Blal, & Choi, 2019). To overcome the problem of differentiating the type of housing, since June 2018 French hosts need to categorize their listings within those three categories: primary residence, secondary residence and non-residential space⁴. Another national law comes into effect in January 2020 forces online platforms to automatic report host income and to transmit user data to the French tax authorities on a yearly basis, including gross income and number of transactions.

In 2016, the city of Barcelona fined the platform at 600,000 euros for advertising unlicensed accommodation. But the practice resumed. The number of enforcement officers needed to find illegal lodgings rental spaces in Barcelona has been greatly increased, as well as the amount of the fines (Segú, 2018). In New York, despite the ban, thousands of entire-apartment advertisements continue to be publicized (Dudás et al., 2017).

Airbnb policy on not revealing consumers or transaction data has led to the emergence of companies dedicated to the extraction of data from the platforms, such as the non-commercial "Inside Airbnb"⁵ and the commercial "Airdna"⁶. The latter provides statistical and geo-referenced information about the properties advertised on Airbnb in major cities, using sophisticated artificial intelligence methods to distinguish the occupancy dates of those blocked by the hosts. There are also new "start-ups" dedicated to gathering information about unlicensed accommodation, for sale to neighbours or to the public administration (Gurran & Phibbs, 2017). These new start-ups create an important balance in this era of

⁴ <https://www.airbnb.pt/help/article/1383/responsible-hosting-in-france#regulations> (accessed May, 30, 2019)

⁵ <http://insideairbnb.com/> (accessed October 1 May 30, 2018).

⁶ <https://www.airdna.co/> (accessed October 1, 2018).

a shared economy, where enforcement relies in digital tools as much as in physical sight visits (Harris, 2015).

3. Portuguese national strategies and tax regulation

Until recently, short-term rental was an activity free of obligations and restrictions. Despite tourist rentals were common in coastal areas during summer, authorities had always turned a blind-eye to this economic segment. In 2008⁷, the first law short-term rentals was included in a general tourism legal framework where the minimum conditions for lodgings were established. It defined short-term rental or “local accommodation” (“alojamento local”) as an establishment *“that provides temporary accommodation to tourists, in exchange for a remuneration”* and that do not *“meet the requirements to be considered tourist ventures”*. In 2014⁸ specific law entitled Legal Framework for the Exploration of Short-term Rentals was enacted and the activity was further regulated, introducing the obligation for apartments, rooms and hostels to register. The online registration application requires (i) personal information about the person responsible, (ii) a national tax office declaration (“activity initiation” to ensure that owners would be able to issue invoices), and (iii) the housing occupancy permit number (issued by municipalities after building completion). Different to other countries, “tourist apartments” permits are not granted for individual apartments or houses (may only have that designation when integrated in a tourism complex, i.e. hotel or apart-hotel). As such, any conventional house or apartment is eligible for short-term rental. After online registration has been submitted, the owner can start advertising and renting immediately. A municipal inspection would be scheduled within a month and, if it is positive, an administrative fee is due and the process concluded.

Therefore, we can note that the registration process aims on the one hand to prevent tax evasion, and, on the other, to ensure that tourist accommodation complies with minimum housing standards. At the municipal level, the first measures were pecuniary. Since January 2016 the municipality of Lisbon charges a tourist fee (two euros per day per guest). Mafra and Porto followed. Similar to other European cities, an agreement between Airbnb and the municipalities of Lisbon and Porto guarantees the direct collection of the tourist tax. Owners are responsible for paying the fees directly to municipalities when rentals are directly booked or advertised on other platforms.

Despite being competing economic activities, recent academic studies show that the impact of short-term rental in the hotel sector has been moderate, keeping the profit levels of most hotels but bringing difficulties to establishments in the low-range economical segment (AHRESP, 2016). In the main Portuguese cities, Lisbon, Porto, Braga and Coimbra, the rise in prices is significant. Gentrification is an evident phenomenon, displacing not only poor populations but also medium income ones to beyond the city centre. In academic literature the impact of short-term rentals in house-price increases is undervalued. The causes of price increases are thought to be a combination of additional factors such as low interest rates and incentives to foreign investment (R. Lopes, 2018). The proposals of the parliamentary groups have succeeded, and discussion on how to deal with high house-prices is on the political agenda. A new set of laws aiming to deliver affordable rental housing is close to being approved, and it is expected that relief from taxes on long-term rentals and other programs for increasing the housing rental stock will be debated.

An intense political debate on the policy to adopt towards short-term rental culminated with an amendment the Legal Framework for the Exploration of Short-term Rentals⁹. In force since October 2018, the changes focus on providing larger guarantees to condominiums members (they can now

⁷ Decree-Law 39/2008 from March 7.

⁸ Decree-Law 128/2014 from August 29 approved the Legal Framework for the Exploration of Short-term Rentals.

⁹ Decree-Law 62/2018 from August 22.

oppose to registers) and grant municipalities wider powers to establish zoning, restrictions on the number of local lodgings and cancellation of registrations. This law thus enables municipalities to design an urban strategy.

Today, obligations for owners can be summarized in the following list:

- **National tourism office:** register the lodgings (obliges to comply with housing standards and fire regulation and to have a complaints book).
- **National tax service:** issue an invoice within five days of the guests' payment reception, pay annual income tax and tax on capital gains (upon selling).
- **Foreigners and Border Service:** submit international guests' data within three days of arrival.
- **Social security:** monthly contribution or a trimestral declaration with total income.
- **Municipalities:** pay inspection fee (upon registration). In Lisbon, Porto and Mafra a trimestral declaration is required, with number of stays and correspondent payment of the tourist fee.

All these obligations may be fulfilled on separated internet platforms.

With a reduced tradition of monitoring and enforcement, expectations of compliance in Portuguese owners is low. A simple search on Airbnb reveals the existence of several advertisements without a registration number, or in places where it cannot be obtained such as informal settlements in public maritime areas (Calor & Magarotto, 2018). Additionally, a study by AHRESP (2016) found that the number of accommodation units officially registered in September 2016 was much lower than those advertised on Airbnb. In the capital, the difference is almost 3,500 properties, corresponding to 37.4% of those advertised on Airbnb. The parishes of Santa Maria Maior and Misericórdia (in Lisbon) and the centre in Oporto City show the greatest incongruence in the numbers - in the central parishes in Oporto it is estimated at more than 50%.

Recently, the municipality of Oporto reported that revenues from the tourist fee surpassed expectations by 50% (Lusa, 2018). As the fee is directly charged by the Airbnb platform, this difference may well relate to the difference between the number of registered accommodation units and those actually made available for rental.

Under these conditions, what are the expectations of the Portuguese Administration that it can effectively implement restrictive zoning rules for short-term rentals? Is it prepared to monitor, enforce and deal with social and political deviations from the rules? More importantly, what lessons can it learn from the experience of other cities?

4. Municipal strategies

After the 2018 law amendment, a few municipalities immediately took the opportunity to “freeze” new registrations in specific areas. In November 2018, the Lisbon municipal assembly decided to prevent further registrations in certain central areas, and the Mafra municipality did the same for the “Urban Rehabilitation area of Ericeira”¹⁰.

Very recently, in May 2019, a new municipal regulation was passed from the Lisbon municipality which “*establishes rules to apply to the new registries of short-term rentals in areas delimited as containment areas*”. The zoning defines two categories: “**absolute containment**” in areas that the ratio between registered lodgings and primary housing is calculated above 20% and “**relative containment**” for a 10-20% ratio. New registers will not be granted for areas of “absolute containment”, with one exception

¹⁰ <http://www.cm-mafra.pt/pt/municipio/alojamento-local> (accessed May, 30, 2019)

for entire buildings renovation if the building was previously in ruins and unoccupied for longer than three years. In “relative containment areas” the exceptions are broader: when an entire building or an independent unit is unoccupied for three years and has suffered profound rehabilitation works or when there was a change of use approved from industries, logistic or services to housing units in the last two years. Nevertheless, no registrations are allowed if there was an official rental contract in the last five years (even if the previous conditions are met)¹¹. It is worth noting that the enforcement section of Lisbon municipal regulation mentions that it “*can be asked to collaborate with administrative and police forces and protocols can be hold with associative and public interest entities, or contracts with private entities to undertake specific actions, namely inquire into existing establishments and their conditions*”.

No other zoning-based policy is yet known for other municipalities. Porto has announced a draft of municipal regulation for June 2019 (Lusa, 2019) but so far no restrictions to the number of short-term rental registrations have been put in place.

5. How ‘smart’ can short-term rules be?

The assertion that “*enforcement is the weakest link in the planning system*” (Dobry, 1975 in McKay & Ellis, 2005) remains actual and is pertinent. As stated above, planning enforcement in southern European countries faces strong opposition and lack of efficiency. Those countries where enforcement is particularly challenging should think “smart”, meaning, to have especial attention on the design of rules for short-term rentals by anticipating their implications on the resources for monitoring and enforcement. In a simple exercise, we suggest a systematization of the type of rules implemented in a few European cities and comment on the enforcement effort they require.

- **Time-limited rules.** May be monitored in several ways, but agreements with web platform companies, as in London, make it simple. However, owners may use different platforms to manipulate the restrictions, so digital monitoring is still necessary. Site visits seem necessary only after owners have exceeded the time-limit.
- **Accommodation-type rules.** Rules that differentiate rooms from entire apartments, as in Berlin and Paris. To verify the presence or absence of the owner, regular visits to the lodgings are necessary and, because it relies on circumstances, enforcement may be delicate. Monitoring may rely on neighbours’ claims, so incentives and open-lines for citizens to communicate with administration seems a key-tool.
- **Zoning rules.** Rules may be more restrictive in specific areas of the city. Barcelona, Lisbon and many other cities are applying different rules according to different zones. As locations at Airbnb may not be accurate, digital monitoring and sight-visits might be necessary to make a match between building pictures and platform information.
- **Registration rules.** Requiring a register makes monitoring and enforcement much easier, as responsible-person contacts are available. Implemented in Portugal and Berlin, it allows data crossing with other public bodies and practicable to serve enforcement notices if subsidiary rules are not followed. If a registration number is mandatory on the advertisement, digital monitoring becomes easier - despite still being necessary to check the correspondence between the added details and the registration data (fake numbers may be used). It also makes it easier to establish maximum quotas for the number of lodgings allowed.
- **Banning rules.** Some cities do not allow short-term rentals at all, such as New York. Banning entire apartment rentals in specific areas is implemented in Berlin. These kind of rules are easy to monitor but not easy to enforce due to the general trend of acceptance of this type of rental.

¹¹ <http://www.cm-lisboa.pt/viver/urbanismo/alojamento-local> (accessed May, 30, 2019)

National policies and local governments have opted for a combinations of rules (for some European cities see Table 1). In Paris, where the number of existing accommodation units in Airbnb is the highest, all types of rules except banning are in place. Despite its necessity, this wide strategy demands a considerable number of specialized human resources for the different tasks involved, such as digital monitoring, sight-visits and enforcement-notice serving.

Table 1: Short-term rental type of rules in European cities.

Short-term rentals type of rules					
	time-limited rules	accommodation-type rules	zoning rules	registration rules	banning rules
Lisbon (PT)			X	X	
Berlin (DE)		X	X		X
Barcelona (ES)			X	X	
Paris (FR)	X	X	X	X	
London (UK)	X	X	X		

The difference between entire apartment and room rentals (in the presence of the host) requires intensive on-sight monitoring. Even when officers are successful in entering the apartment, the owner might not be there. What evidence is accepted for the owner's presence? Having personal objects or pictures would be enough? This sort of rule seem difficult to enforce, at least in southern European countries' social context.

In general, the type of rules that depends more on digital tools than site-visits demand less resources. Even if specialized human resources are needed for this task, it allows them to cover a wide number of situations in a shorter time. Plus, evidence is easy to collect. We also consider especially positive the implementation of registration rules, as it guarantees an access to owners (which is very important in countries where cadastre and property rights are not always accessible to local administration).

5. Conclusion

The rapid evolution of the short-term rentals business has caused a paradigm shift in major European cities. The growth of the economic sector has been accompanied by attempts to regulate the activity, and different types of rules have been adopted. The number of obligations for owners are summed up and their complexity is increasing. Consequently, the probability for voluntary or involuntary incompliance is high.

In countries where enforcement is particularly challenging, regulation should anticipate the implications of enforcement effort on public administration. If rules require non-existent resources or actions that are difficult to put in practice, they are likely to fail. To better access the enforcement effort we suggest a systematization of the type of rules implemented in a few European cities: (i) time-limited rules; (ii) accommodation-type rules; (iii) zoning rules; (iv) registration rules; and (v) banning rules.

From this exercise it is perceivable that monitoring and enforcement of short term rental rules is not a 'mission impossible' but it is certainly a demanding one. Digital monitoring is relatively new for authorities and may require skills that are more sophisticated. Airbnb have accepted collaborating with administrations on time-limited type of rule, but it has been resistant to help monitoring other types of rules (despite the costs of court cases). The yet-to-be-implemented French law on automatic reporting of host income and transmitting user data to the tax authorities seems a step forward in the relations

between public administration and online platforms. If successful, most probably other countries will follow.

In comparison to most European countries, Portuguese regulation is still “soft”. From the above mentioned, only registration rules are in place for the entire country and zoning rules apply for Lisbon and Mafra only. Nevertheless, based on the experience on planning enforcement, there are good reasons to believe that municipalities will not be motivated to deal with monitoring and enforcement tasks. Besides the lack of enforcement resources, there is also an economic interest behind low levels of monitoring in cities where a tourist tax is charged directly by online platforms. As Porto municipality remark shows, municipalities will probably have little interest in “chasing” unregistered lodgings as they profit from them. On the other hand, the national administration has an objective interest in reducing tax evasion, so it is more likely that they probably more active in enforcement.

Finally we underline that improving compliance with short-term rules should not be regarded as a formal issue or exclusively an administrative responsibility. It is a matter of order, justice and collective responsibility. For consumers there is also a "social" responsibility behind the verification of the legality of the lodgings to rent, as a conscious and respectful attitude towards the local inhabitants.

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COMMON VALUE: TRANSFERRING DEVELOPMENT RIGHTS IN THE FACE OF CLIMATE CHANGE CHALLENGES

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Abstract: Flooding accounted for more than 37% of natural disasters in 2017, affecting 55 million people and amounting to 20.3 billion \$ of economic losses worldwide. These figures are the highest in the last decade and with higher urbanization rates, the number of people living in precarious and flooding prone areas is increasing. Under the light of these challenges, Flood Risk Management narrative is evolving towards integration of nature-based solutions and Green Infrastructure. This paper investigates the role of Land Value Capture instruments in financing Green Infrastructure. More specifically, this research focuses on the Transfer of Development Rights (TDR) instrument, which has enabled some planning authorities in the global north and south to successfully adopt preventive measures in flooding prone areas. Through TDR, property devaluation in flood prone areas or areas where Green Infrastructure is to be implemented is cross-subsidized through capturing part of the “windfalls” in properties benefiting from GI, by transferring development rights from the former to the latter.

Keywords: Flood Risk Management, Green Infrastructure, Land Value Capture, Transfer of Development Rights

Introduction

Floodplains can be described as areas between levees or within the river valley, which can be inundated or overflowed when the river becomes “too full” (Hartmann, T., 2016; Cambridge University Press, 2019). Yet floodplains are also the locations where the first civilizations emerged. The ever going symbiotic yet conflictual relationship between water and human activity is not a contemporary phenomenon; indeed Hartmann (2016) refers to floodplains as contested land. However, with the latest trends of urbanization and increased occurrence of extreme weather events and flooding possibility, the amount of human resources and capital exposed to flood risk is increasing.

There is now a common accordance that higher levies and grey protective infrastructure alone will not resolve the future flood protection needs; perversely it might contribute to higher vulnerability towards disasters from unpredicted and extreme weather events. For instance, traditional solutions to flood, like levees take up space from the river beds, reducing their retention capacity and therefore contributing to higher exposure to flood risk over time. Hartman (2016) illustrates this phenomenon with a specific example, referring to River Elbe that lost 2,300,000,000 m³ of its retention volume since the 12th century, which for a specific locality, such as Wittenberge can translate into an increase in water levels by 50cm. Therefore, flood risk management narrative is shifting more towards finding nature-based solutions and investing in green infrastructure (GI). However, there are various barriers that hinder the

implementation of green infrastructure, the most relevant of which have to do with development pressures in flood prone areas, scarcity of land for accommodation of GI and lack of financial resources for their implementation (O'Donnell *et al.*, 2017).

On the other hand, various studies have revealed the impact that GI has on land markets (Lamond and Proverbs, 2006; Bin and Polasky, 2013; D'Acci, 2018; Jung and Yoon, 2018; Zhang *et al.*, 2018). Recouping some of the incremented value of land by the public authority, with the purpose of covering all or some of the costs of providing infrastructure and services is what is usually referred to as Land Value Capture. Smolka and Amborksi (2000) define LVC as “the process by which a portion of or all land value increments attributed to the 'community effort' are recouped by the public sector either through their conversion into public revenues through taxes, fees, exactions and other fiscal means, or more directly in on-site land improvements for the benefit of the community”. LVC has been widely investigated as a means to finance infrastructure and promote sustainable urban development, however not much literature is available about its role in Flood Risk Management programs – most research is related to transport infrastructure and traditional methods of tax capture and/or betterment. The purpose of this paper is to explore the potential how LVC can facilitate the implementation of GI, by focusing on one particular LVC instrument: Transfer of Development Rights.

Flood Risk Management and Green Infrastructure

A recognition for more sustainable and natural solutions has increasingly become a cross cutting topic in various international, national and local FRM policy documents. The 2007 Flood Directive of the European Union for instance, points towards the need of providing more space for rivers as a sustainable flood prevention measure. The European Commission Strategy “Green Infrastructure (GI) - Enhancing Europe's Natural Capital” further highlights the need for mainstreaming green solutions to urban problems, including disaster risk management. Green Infrastructure¹ is defined as “strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” (European Commission, 2013). Dutch authorities have recognized since 2000 that the current water management systems relying on technological solutions and grey infrastructure will be insufficient to face future coastal and river flooding risks; hence more space should be made for water. Similarly, the aftermath of Hurricane Katrina in 2005 has pressured policy makers in the state of Louisiana and the city of New Orleans to think of alternative ways to increase the urban resilience towards extreme weather events. Consequently, the New Orleans Masterplan emphasises the need for a shift from traditional flood protection infrastructure to more natural solutions, including solutions such as wetland conservation (Kazmierczak and Carter, 2010).

The integration of GI in urban areas provides many advantages in comparison to grey infrastructure, from integrating urban green with other urban infrastructures, to multifunctionality, serving not only its

¹ Here the term “Green infrastructure” is used interchangeably with “Blue Green Infrastructure”

infrastructural purpose but also an ecological, social and economic role. Due to its multifunctional properties, GI is considered to be more efficient in handling complexity in an urban setting in comparison to more traditional infrastructure (Hansen and Pauleit, 2014). The multifunctional nature of GI and other benefits associated with it such as increased public spaces, improved image of the city and overall contribution to a better quality of urban life are sometimes bigger drivers for implementation than their effect in climate change adaptation (Kazmierczak and Carter, 2010). Despite GI planning being more suited for urban areas in terms of aligning ecologic, economic and social interests, its implementation remains very limited and calls for a careful identification and evaluation of the barriers that restrict its mainstreaming.

Challenges for the implementation of Green Infrastructure in Flood Risk Management

While GI has attracted a lot of attention amongst academics as well as policy makers, publications and guidelines about it have by far outnumbered the actual practices of its implementation. Regardless of its many benefits when compared to more traditional alternatives, the implementation of GI seems to be perceived as more complex and remains stubbornly slow. Clean Water America Alliance (2011) has categorized the main barriers to GI implementation into four groups: Technical and Physical Barriers, Legal and Regulatory Barriers, Financial Barriers and Community and Institutional Barriers. Technical and Physical Barriers include lack of technical knowledge on GI and its benefits, lack of experience in its implementation, limited empirical information regarding its costs and benefits, as well as physical challenges such as availability of land. In terms of Legal and Regulatory Barriers, the most important challenges derive from lacking or conflicting local rules and from land use policy and property rights which might complicate matters. Lack of funding and perceived high costs for upfront implementation and maintenance are also amongst the most common barriers towards mainstreaming of GI. The multifunctional nature of GI calls for effective cooperation and partnerships between various stakeholders. Hence, education and capacity building of political leaders, administrators, professionals and of public in general is essential.

Similar findings were attained by a study in the city of Newcastle. The most prevalent barriers were of socio-political nature, from reluctance to support novel approaches, lack of knowledge and education on the subject, to lack of finance (O'Donnell *et al.*, 2017). Indeed, when it comes to implementing GI for flood prevention purposes, seeking to mimic pre-development hydrology, financial constraints are often linked to the spatial requirements of such projects, which generally demand more land available for their implementation than grey infrastructure. For example, traditional systems address storm water management through underground pipe networks, whereas a green solution might entail systems that allow storm water to infiltrate into the ground, which sometimes requires additional land reserved and designed for this purpose. Similarly, “making room for rivers” approach to flood prevention also calls for planning of submergible land, which can serve other alternative purposes as well, in terms of green and open spaces, but which cannot be developed and is ultimately reserved to its ecological, social and climate mitigation function. However, empirical studies that evaluate the economic benefits of GI, which would serve to inform decision making and explore alternative ways of financing GI, have been limited.

Nevertheless, Kazmierczak and Carter (2010) argue that while environmental protection and economic development are traditionally considered conflicting issues, recent local initiatives have provided examples of how the latter can support the implementation of green infrastructures. The municipality of Faenza is implementing an incentive program which allows developers to take advantage of higher FARs in exchange of providing green roofs, green walls, contributing to public green spaces and water retention systems. Similarly, South East Dorset local authorities are also deploying developer contributions to mitigate adverse effects that developments might exert on Dorset Heathlands. Berlin's Biotope Area Factor is another example listed by Kazmierczak and Carter (2010) in the realm of developer contributions for the implementation of climate change mitigation measures.

Notwithstanding various local initiatives in exploring the financial benefits of GI and ways of taking advantage of such benefits to support their implementation, financing of GI through capturing part of the value it creates in the land markets is still a rather unexplored path.

Flood risk management, Green infrastructure and Land markets

Understanding how the land and property market reacts to flood risk, flood events and mitigation measures, especially Green Infrastructure is an imperative step towards exploring innovative financing mechanisms through land value capture. While there is not a one size fits all formula in measuring such impacts, there are several attempts made in this direction, some of which have been summarized in the following sections.

Flood risk, flood events and Property market

Measuring the impact of flood risk and flood events in the real estate market is not a straightforward process, as real estate values tend to fluctuate due to many factors which can be location-specific and therefore difficult to isolate. However, there are some generalizations which can be drawn from the existing body of literature that shed some light into the relation between FRM and land markets. Although attempts to establish a link between disaster risk and real estate market has been considerable, most studies have focused on the ex-post side of the event, therefore analysing the impact of a disaster after it has happened (Jung and Yoon, 2018). Nonetheless, it can be safely assumed that the potential risk of a disaster, when recognized, should be reflected in the market prices of real estate goods – buildings and land.

Bin and Polasky (2003) concluded that a common finding of various studies during 1985-2001 was that properties in floodplains² are on average 4% to 12% cheaper than comparable properties outside of the floodplain. Indeed, a study they conducted about Pit County, North Carolina, that was hit by Hurricane Floyd in 1999, causing torrential rains and flooding, concluded that the market value of similar housing units inside the floodplain was 5.8% lower than outside of it. Also, they point out that the sale value

² Floodplains are defined as areas that would flood in a 100-year flood event

reduction is higher than the capitalized insurance premiums, suggesting that some potential flood damages might not be insurable. One reason for this could be that floods cause non-monetary losses, including items with sentimental value or the psychological and physical hassle experienced during and after the event by those affected, which is difficult to monetise. However, this was not the case before the Hurricane event, when the sale value difference between housing units inside and outside of the floodplain were lower than insurance premiums. This might indicate that homeowners and buyers are not completely aware of the flooding potential and the cost of potential damage, therefore underestimate the risk of living in the floodplain (Bin and Polasky, 2003). Hence risk awareness can play a crucial role in terms of how much this risk affects the real estate market.

Considering the dynamics of the real estate market, the time elapsed after the disaster is as crucial as location and distance from the flood risk areas. Jung and Yoon (2018) have analysed the impact in real estate market of both the proximity to flood prone areas and the time passed after the inundations in Gyeonggi Province, South Korea, from 2008 to 2013. Their study finds that within 6 months after the flood events, its impact on the properties under investigation extends up to 300m from the inundated area, with the following rate: 0-100m from the inundated area suffered an average of 11% depreciation in price, 100m-200m suffered an average of 7.4% depreciation in price and 200m-300m suffered an average of 6.3% depreciation in price. In terms of the magnitude of such effects in time, within the 300m distance from inundated area, the properties were studied for the intervals of 1 month, 1-3 months, 6-12 months and more than 12 months after the flooding and the effect on market prices was depreciation by 57.6%, 49.2%, 45.9% and 33.4% respectively. After 12 months the effect of the event on the single-family housing values was negligible (Jung and Yoon, 2018).

While the negative effect of flood risk and flood events in land markets can be considered a common sense, the magnitude of this impact, in terms of value depreciation, geographical impact and time duration of the impact varies widely from one case to the other. In broad terms, Lamond and Proverbs (2006) describe four different scenarios of how flood risk affects property values. First scenario refers to a low risk area, where a weather event might negatively affect property values for a while, but they bounce back soon after because the probability of reoccurrence is low. Second, intense weather events in disaster prone areas tend to not affect the property market substantially, since the market already reflects the risk, or because of established public compensation programs or insurance schemes. Third scenario refers to extreme weather events in areas previously considered safe have a considerable and long-lasting effect in the property market since the area is no longer considered safe. However, the effect of natural disasters in property market values is closely linked also to the government interventions measures. Hence, the fourth case presented shows that market prices decrease temporarily after a disaster and increase even higher than before if public funds are allocated to restore the area and protect it from future natural risks.

Green infrastructure and Property market

Different from the impact of floods on the property market, the impact of green infrastructure in the latter is still in the early stages of research. This is mainly due to the limited experience with the implementation of Blue Green Infrastructure and therefore limited cases for empirical investigation. Nevertheless, inquiries on which factors affect more the decision from the demand's side and impact

more property values have concluded in results that might be relevant to consider when discussing about GI.

Classic economic theories of land rent are mainly based on simplified models of cities with a monocentric structure, where *ceteris paribus*, the value of land and improvements decrease with increased distance from the city centre. On the other hand, contemporary urban location theory recognizes that with advancements in transport options and technologies, as well as with the decentralization of functions within the city, land markets reflect a more complex pattern and might not necessarily decrease with increased distance from CBD (Balchin *et al.*, 2000). Quality of life and quality of urban environments are becoming increasingly determining factors of property valuation or depreciation, but their translation in economic terms has been challenging (D'Acci, 2018). Quality of life has been defined and redefined with every study focusing on it, however a common denominator of such definitions remains safety. Nevertheless, when it comes to disaster risk management, the multifunctional character of green infrastructure brings to the table, besides its role in providing safer environments, also recreational and landscape advantages, contributing to higher quality of urban environments and to its consequent reflection in the real estate market.

Facing increased disaster vulnerability in fast growing urban areas, the Chinese government launched in 2014 its “policy of allowance” promoting the construction of sponge cities, seeking to support more sustainable urban development models that will increase cities’ resilience and overall improve the urban environments and quality of life by mimicking natural processes. Shortly after, Wuhan city, one of the ten largest cities that suffer frequently from river and pluvial flooding, was selected as a pilot and scheduled to implement the sponge city working plan in 2 years’ time. Covering only CNY 1 billion out of the total cost of CNY 15 billion through a central government grant, the city of Wuhan is lagging behind in the implementation of the project and is searching for alternative ways of financing (Zhang *et al.*, 2018).

A study by Zhang *et al.* (2018) evaluates citizens’ awareness and perceptions on urban flooding and sponge city, and most importantly their willingness to pay. Eventhough this study cannot measure the actual impact of such a project in the real estate market, it has a substantial contribution in understanding what the public’s perception on the economic value of such interventions is and which elements of green infrastructure are the most significant ones in the public’s perception. Flood risk perception is a combination of the perceived exposure to the flood risk and the perceived consequences this risk might cause (Zhang *et al.*, 2018). While 16% and 23% of the 423 survey respondents claimed that they were impacted by floods respectively in their homes and workplaces, 73% of them responded they were affected due to the disruption of public transport, indicating that the impact of a flood event is usually much larger than the area physically affected by it. The majority of the respondents whose properties were exposed to flooding claimed that they suffered property blight, however half of them expected the property values to recover to their pre-flood levels if adequate flood protection measures were to be undertaken. Hence, most of the respondents were aware of the economic benefits of protective infrastructure in terms of safeguarding property values. Nevertheless, when asked about their appreciation towards the “sponge city” project, its multi-functional benefits, in terms of providing more green space coverage and higher quality of public spaces were ranked of similar importance to its flood mitigation role. This indicates that the impact of GI in property values is more likely to be higher than grey

infrastructure, given its multi-functional benefits, which complement its risk mitigation role, of which the general public might not be completely aware and informed. Indeed, 83% of the respondents assume that the values of their properties would increase with the implementation of sponge city, and half of them believe that this increase would be in the range of 2%-11%.

Indeed, proximity to green areas and pleasant landscapes can increase property values substantially, in some cases up to 117% in the case of Centennial Olympic Park, in Atlanta (American Planning Association, 2002). A study for the city of Turin reveals that the real estate prices can differ as much as +143% in areas very close to one another and with similar accessibility and distance from the city centre (D'Acci, 2018). Additionally, it was estimated that the real estate values decrease with 0.23% for each 1% increase in distance from city centre whereas they increase by 0.58% for each 1% increase in the quality of life³; attesting for a higher impact on property values of the quality of life than distance from city centre.

Ultimately, there is a growing body of literature that confirms the positive impact of the multi-functional benefits of green infrastructure, in terms of increased flood resilience as well as quality of life, in the property market. Yet, not enough has been achieved in exploring mechanisms through which this potential economic value created by GI implementation can be captured by public authorities to provide alternative ways of financing GI.

Land value capture and Flood Risk Management

Land Value Capture (LVC) has been widely investigated as a means to finance infrastructure and promote sustainable urban development. Conventional ways of providing infrastructure and services neglect the uneven distribution of costs, mostly covered by general public contributions, and benefits, largely obtained by landowners through windfalls (Smolka, 2013). In this regard, the goal of land value capture is to mobilize some or all of the increment in land value, which results from any effort other than that of the landowner's, for public use. Such increments might be the result of improvements in infrastructure and services in the proximity of the benefiting properties, or changes in land use and regulations which provide more development rights for certain properties.

Land value capture instruments are very diverse and some of them have been implemented for a long time, although not specified as LVC per se, but rather in the realm of taxes, fees or land management instruments. The table below is an attempt to summarize and classify the various LVC instruments and map their implementation internationally. Given the variety of instruments and practices, and their historic implementation, this summary is by no means comprehensive, but rather a general overview of LVC and the documentation of their implementation in literature.

³ In the cited study, the quality of life is calculated as the arithmetic average of factors such as: green, shops, quality of streets, buildings, squares, agreeable pedestrian areas and social context

TYPE	INSTRUMENT	BRIEF DEFINITION OF THE INSTRUMENT	EARLY PRACTICES	TYPES OF PROJECTS FINANCED	LOCATIONS	MAIN CHALLENGES
Financial/ Fiscal Instruments	Betterment levies/ Special assessment	A fee charged on the incremented value of a property attributable to a public investment Betterment levies are charges on real estate property owners who benefit from infrastructure improvements	1691 - New York	Infrastructure (mostly transport/road network)	Colombia Most countries in L.America have it in the law	* Definition of benefit area * Value increment attributable to public effort * Impact it has on real estate prices
	Developer exactions and Impact Fees	Developer Exactions: Developers required to install at their own expense internal infrastructure Impact Fees: For projects forecasted to have significant impacts on infrastructure beyond the project development areas	1970 North America 1990 UK Town&Planning act	Infrastructure	North America Chile UK (section 106) Guatemala Argentina Colombia Brazil	*impact fee formula
	Property tax	The Property Tax is a tax imposed by local government on the ownership or occupation of property.	Antiquity - Egypt, Persia, Babyllon, China 1st Cent BC - Roman Empire	It is usually not earmarked (can be used for different expenditures)	Almost in every country worldwide.	*Land vs. Improvements tax *Property value assessment
	Tax increment Financing/ Business Retention Strategy BID, TID	Consists in using the future flow of property tax increases generated by a public intervention to finance its costs	1952 - North America	Urban Upgrading/ Transformation	North America United Kingdom	*allows recovery of only a small portion of the value created *contributes to asymmetric service distribution

Urban Transformation	Land Readjustment/ Land pooling	Allows the merging and reconfiguration of lots in a given area in accord with a plan that increases their value and provides the land necessary for public uses	1791 - Washington DC 1934 - South Korea	New developments in periphery Slum upgrading Urban transformation Post-disaster recovery	Germany South Korea Japan	*Takes a long time *Citizen participation is crucial
	Cooperative Land Banking	CLB separates the private ownership of buildings from land ownership, with all the land becoming owned by a cooperative controlled by its residents. The double tenure created allows CLBs to capture the uplift in land values from urban development, which can then be used to make the cost of sites and services self-financing.	19th Century UK	Internal infrastructure and services within the CLB	UK	*Redefining the nature of property rights on economic basis
	Community Land Trusts	A community land trust is a non-profit organization formed to hold title to land to preserve its long-term availability for affordable housing and other community uses	1984 - Burlington	Social Housing	North America	*Depends on initial donation of land & operating grants
	Land Sharing	An innovative model of urban redevelopment and slum upgrading through sharing of land between profitable (commercial) developments and social housing for informal dwellers.	1970s - Thailand	Social Housing Internal infrastructure inside the land sharing area	Thailand Cambodia	*Requires a booming property market *Well established communities *Community organization and consensus *Intermediation from third parties *Appropriate physical/technical and financial feasibility studies

Asset Management	Public Land Management/Sales	Land sales represent a special form of capital revenue, which can be used to help finance general capital expenditures (usually related to new infrastructure)	1970 - World Trade Development Center (financed from land sold from Port Authority)	Major Infrastructure projects New developments Social Housing	US Denmark Netherlands Egypt	*Transparency and accountability *Short term instrument- limited impact
	Public land leasing	Revenues generated from leasing of public land with market prices can be used to cover infrastructure investment needs	China	Transport/Road infrastructure	China	*Applicability depends on the amount of public land available *Transparency and accountability
	Land Acquisition and Resale/ Compulsory purchase of land	Capturing the value created from acquiring private land, investing in infrastructure and selling of the remaining land at higher prices to cover infrastructure costs	1853 - Paris	Infrastructure	UK France	* Limitations on the powers of public authorities to purchase land not needed for public works
Other	Transfer of Development Rights	TDR severs the development value from the property and allows the owner to realize that value through more extensive development of other property.	1961 - New York 1995 - Sao Paulo	Historic and Environmental Preservation Flood Risk Mitigation	North America Brazil	* the value of the transferable development rights uncertain *Is TDR a just compensation

Table 1 Summary of LVC instruments applied internationally (Source: Table compiled by author based on Harrow, 1929; Peterson, 2009; Dye and England, 2010; Vetter and Vetter, 2011; Smolka, 2013; Blanco *et al.*, 2017; Salm, 2017)

Although experience with engaging LVC to finance GI is lacking, the scope of some LVC instruments have expanded with time to accommodate environmental objectives. The section below scrutinizes Transfer of Development Rights, an instrument initially used for historic preservation purposes, and later on adopted for the implementation of environmental protection agendas. Recent practices of TDR can be a starting point for further research on how this instrument can contribute to alternative financing for GI.

Transfer of development rights as a Land Value Capture instrument

Transfer of development rights (TDR) (or air rights/density transfer/purchase of development rights) is an instrument that falls under the Land Value Capture instruments utilized for providing more sustainable and environmentally resilient urban areas. TDR builds on the idea that property rights exist as a separable bundle of rights, such as the right to use, to farm, to build, to mine and the like, which can be transferred and/or can be made available for market transactions (Kaplowitz, *et al.*, 2008; Nelson *et al.*, 2012). TDR focuses especially in the right to develop and considers this right transferable from designated “sending areas” to designated “receiving areas”.

TDR operates under specific legislation that allows additional development potential in areas deemed appropriate for densification or other types of development benefits, defined as “receiving areas”, which developers can take advantage of when they provide in cash or in-kind benefits for off-site public benefits or compensation for off-site land conservation, in areas defined as “giving areas” (Pruetz, 2016). The specific legislation addressing the implementation of TDR is combined with zoning and/or land use regulations. Such legislation should regularize additional development rights in receiving areas, considering the maximum carrying capacity of receiving areas, as well as mechanisms of transferring such development rights from giving areas; be it through the creation of Banks or other mechanisms.

Traditionally used as an instrument to preserve farmland and environmentally sensitive areas, currently TDR practices have expanded their scope to serve various local government planning goals, such as creation of parks, green infrastructure, scenic views and landscape preservation, trails and other community benefits (Nelson *et al.*, 2012; Pruetz, 2016). Areas where such services are to be provided are defined as “giving areas”, where landowners, either voluntarily or compulsorily, participate in the program by selling their development rights to developers in “receiving areas”, either through direct negotiation, through the mediation of the local government or through a bank. Once this is carried out, a legal instrument is registered with the property deed in the giving area which permanently limits or freezes the development of land, in fulfilment to the predefined planning goals. This legal instrument is generally referred to as a conservation easement (Pruetz, 2016).

Receiving areas are areas where densification can occur beyond a predefined baseline. The bonus development can refer to residential density, additional land coverage, height, or other modifications that developers might deem as desirable. Evidently, the motivation to participate in the program should derive from extra benefit created for developers, having covered the costs of participating in the TDR program and of providing bonus development (Pruetz, 2016). TDR legislation includes methods and formulas to calculate the maximum TDRs that can be accommodated in receiving areas

and to establish a TDR value that is attractive to both developers in receiving areas and landowners in sending areas. It is important to bear in mind that TDR programs do not intensify development but rather redistribute according to more sustainable development models (Chiodelli and Moroni, 2016).

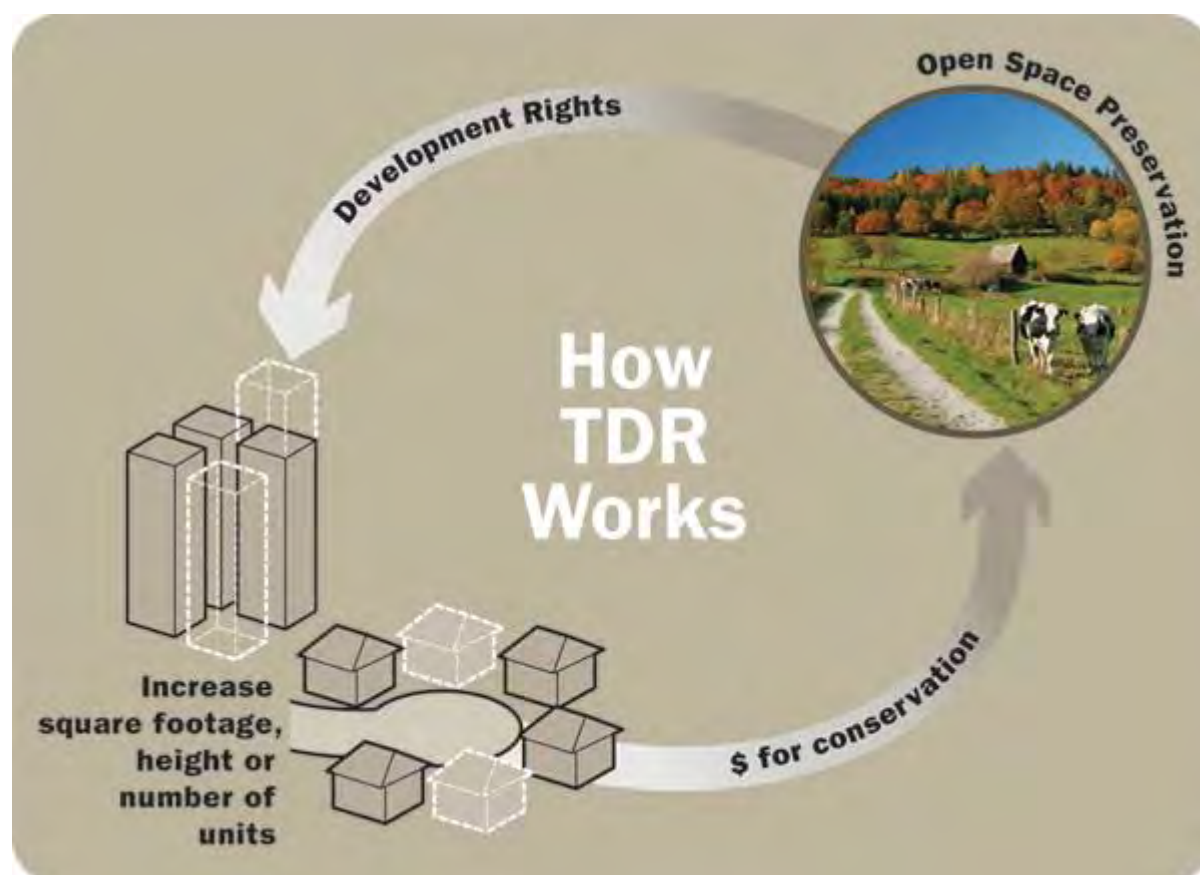


Figure 1 Infographic on how TDR works (Source: King County, retrieved from <https://www.kingcounty.gov/services/environment/stewardship/sustainable-building/transfer-development-rights/overview.aspx>)

One challenge of managing TDR programs is that the timing of issuance of TDRs in sending areas might not coincide with the timing of TDR purchase from developers in receiving areas. Hence, separation of TDR extermination from acquisition has called for intermediary institutions such as development rights banks (Stinson, 1996; Puertz, 2016). Indeed, TDR banks buy, hold and sell development rights to facilitate the process and create a mechanism of perpetually investing in TDR purchase in giving areas and support land conservation. For instance, TDR bank in King County, Washington, initially purchased TDRs using property tax revenues, and invested the proceeds from the sale of these TDRs to further purchase TDRs in other areas "...converting what would otherwise be a one-time use of public money into a perpetual revolving fund for preservation" (Puertz, 2016, p.5).

Facilitating Green Infrastructure provision through TDR

Stinson (1996) suggests that there are three main concerns that brought about TDR programs: pressure to develop historic landmarks, higher demands for open spaces in congested metropolitan areas and economic incentives to develop environmentally sensitive areas. TDR addresses such

pressures by reconstructing the economic incentives in land use. Indeed, the first TDR program sought to address the challenges of preserving historic landmarks in the high-pressure building market of New York in the early '60s (Stinson, 1996). Over time, many TDR programs were adopted to fulfil several development goals of local governments, many of which lean towards mitigation of climate change induced risks. Up to date, more than 320 cities around the world have implemented TDR programs, 283 of which in US, while the rest in 11 other countries such as Australia, Brazil, Canada, China, France, India, Italy, Japan, Mexico, Spain, and the Netherlands (Pruetz, 2016). More than half of these programs were designed to address environmental challenges and protect natural resources (Nelson *et al.*, 2012). Although the experience with TDR programs for flood risk mitigation is limited, such cases attest for the untapped potential of this instrument. Some coastal TDR programs, initially designed to protect the ecosystems of environmentally sensitive areas, have expanded their objectives to target adaptation to sea level rise. For instance, 13 out of 20 counties in Florida that have implemented TDR programs are coastal counties (Linkous and Chapin, 2014).

The High Line project in New York is a very accurate example of how a major GI can be implemented through the facilitation of TDR. The High Line consists of a public park built on top of an abandoned elevated train line, the implementation of which was rendered possible through a TDR program as part of the Special West Chelsea District in 2005. This TDR program unlocked the development rights of the giving area, namely properties underneath and immediately to its west of the high line, by encouraging their transfer to the receiving area, mostly focused on nearby Avenues 10 and 11 (City of New York, 2015). Receiving areas could increase their FAR up to 1 in some subareas and 2.5 in others. Through this program the city was able to provide an open corridor with numerous positive externalities in terms of environmental benefits and improved quality of life.



Figure 2 Figure 2 New York City High Line Park (Source: Picture on left retrieved from: <https://www.npr.org/2011/09/03/140063103/the-inside-track-on-new-yorks-high-line> , Picture on the right : <https://www.timeout.com/newyork/parks/highline>)



Figure 3 High Line TDR program (Source: City of New York, retrieved from: <https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/transferable-development-rights/research.pdf>)

While the standard measure of the success of TDR programs is the overall surface area of land conserved in giving areas, the Florida experience of TDRs evolved during 90's and 2000's towards further sophistication of the market of transferable rights and receiving area development. Ultimately, the success of TDR programs relies largely on the additional profits that developers take advantage of by participating in the program in the receiving area. Henceforth, refining the calculation of the developers' demand to exceed baseline development in receiving areas becomes central to the success of a TDR program (Puertz, 1997). However, whilst a couple of decades ago profits were linked with more square meters developed, today other modifications in the development, which might improve the quality of life and attractiveness of the area can be equally important. In this sense, the impact of GI in the market values of the nearby properties can be translated in increased potential to absorb more development right, but also in higher market values of the same development rights. Balancing

windfalls on properties benefiting from the implementation of GI with property blight of the properties whose development is limited or frozen because of the implementation of GI should be the next step of research towards new models of TDR programs.

Conclusion

Traditional grey protective infrastructure against flood risks are no longer enough to address the challenges that climate change is posing in many urban areas. Green Infrastructure is promoted as solution to more environmentally resilient cities based on a more holistic approach to understand and address the complex dynamics of social-ecological systems (Hansen and Pauleit, 2014). Within the last few years, GI has become popular with policy makers and public authorities as a way to integrate land uses in a more sustainable way. Its multifunctionality, including provision and connection of open spaces and green areas, makes GI even more attractive for the public, which might not always be aware of how GI contributes to ecosystem services and towards mitigating flood risk. Indeed, the study conducted in Wuhan revealed that when it comes to infrastructure for flood protection, citizens are more willing to pay for GI provision because of its effects on the quality of life and landscaping benefits, rather than because of its contribution to flood risk mitigation; a risk which many citizens are often not aware of or underestimate (Zhang *et al.*, 2018).

Empirical research on the impact of GI in land markets is still in initial stage, however studies on the factors that affect the demand side show that the quality of life and the quality of urban environments are becoming increasingly important factors, especially in the recent years when the effect of distance as a factor is decreasing due to technological advances and changes in lifestyle. Studies in cities in different contexts around the world, such as the experience in US, China and Italy, all show that the willingness to pay from the demand side, especially in residential areas, increases substantially when the quality of life, an important part of which are open and green spaces, improves in a given area (American Planning Association, 2002, D'Acci, 2018, Zhang *et al.*, 2018). The advantage of GI is that it provides open and green spaces, combined with other functions in terms of ecosystem benefits and increased environmental resilience towards extreme weather conditions. How can public authorities capitalized on this added value of GI, in terms of land market appreciation, to finance such infrastructures? This is a question that deserves more attention in public policy and academic research. The existing experience with Land Value Capture in financing mostly road infrastructure and public transport projects, can be transferred when it comes to GI provision for flood risk mitigation purposes. Transfer of Development Rights, an LVC instrument with an emphasis on land conservation, can be an attractive instrument in terms of cross-subsidizing property windfalls of the properties benefiting from GI and property blights of the landowners in properties where development shall be frozen to provide GI. TDR requires attractive land markets to subsidize land conservation and perpetually freeze development for GI provision. The positive impact that GI has on land markets of the beneficial areas presents an incentive for such areas to be designated as receiving areas, where additional development rights can be transferred to. Further research should explore such new models of TDRs and the legal, institutional and financial implications of implementing them for GI provision.

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Urban-legal Paradigms Supporting Post-Millennium Evictions: the Role of the Courts in Displacement Practices

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Abstract: Why is Brazil, a country with one of the most progressive and inclusive land legislations in the world, being accused of violating its citizens' constitutional right to housing? Why is the Brazilian Judiciary, despite all the legal mechanisms created by recent laws to reverse exclusionary patterns of land use, executing forced evictions of thousands of marginalized families? I argue that these violations and removals must be understood as legalized displacement. Namely, land dispossession practices are not only a direct result of the commodification of housing, but of a much broader discrimination process, in which the courts are playing a major role. Judicial dispossession can be read as a direct outcome of eviction mandates ordered by the courts. However, what makes it legitimate is not only the fact that it is ruled by judges, but that these practices are embedded within governmental, legal, and policy apparatuses. Drawing from Porto Alegre, a city with a tradition of participatory planning programs, this article will analyze how urban-legal paradigms support post-millennium evictions in Brazil by addressing how legal frameworks on land use and property rights are used to justify displacement. By employing archival research and discourse analysis, I show that courts are ignoring recent legal mechanisms created to ensure the constitutional right to housing in the country. I find that judges are mobilizing discourses that idealize private property regimes at the expense of alternative forms of tenure already established by paradigmatic land legislation. At stake here is the fact that these removals are expelling the vulnerable populations from the city. Lastly, I am calling into question the false distinction frequently made between evictions in the context of the Global South - perceived as violent conflicts involving mostly informal tenants - and similar processes in the Global North, often understood as part of more "legalistic" processes.

Keywords: displacement, right to the city, Brazil, eviction

Introduction

Why is Brazil, a country with one of the most progressive and inclusive land policies in the world, being accused of violating its citizens' constitutional right to housing? Why is the Brazilian judiciary, despite all the legal mechanisms created by recent legislation to reverse exclusionary patterns of land use, ordering the eviction of thousands of marginalized families? There is a substantial body of literature that argues that displacement is being caused by the financialization of housing. However, I hypothesize that these violations and removals must be understood as what I call *legalized displacement*, namely displacement practices that are not only a direct result of the financialization of housing and land, but of a much broader process of discrimination in which the courts are playing a major role. In this paper, I will analyze the apparent gap between the legal framework on land use and

its application in Brazil. My main goal is, thus, to investigate how these removals are validated through urban-legal paradigms or, as Gherner (2011, p. 131) puts it, how eviction can be perceived as an “act of governance rather than violation”. Thus, at stake here is a re-framing of rights and the infringement of the constitutional right to housing through judicial mandates that are challenging recent reformist laws on land and property rights.

Despite having one of the most progressive land regulations in the world, approximately six million households do not have access to adequate housing in Brazil (Fundação João Pinheiro, 2017). The Federal Constitution, established in 1988, declared housing a constitutional right. The City Statute, promulgated in 2001, reinforced that property rights should be subjected to the “social function” of landed property by creating mechanisms to prevent sub-utilization of urban parcels through instruments like progressive estate taxation and adverse possession law. Officially, these new laws enabled municipalities to demand that owners of vacant properties and idle land promote their immediate use. These decrees also produced the legal framework to ensure the right of individual and collective actors to claim formal tenure of urban parcels that they have occupied for more than five consecutive years. In practice, however, despite these legal apparatuses, judges are determining to evict thousands of families from abandoned private and public properties in central urban areas of Brazilian cities.

A growing body of literature argues that the banishment of the poor from the city is more than a simple outcome of housing commodification or a direct consequence of urban development projects led by the State (see Caldeira, 2000; Roy, 2017). Some authors suggest that displacement is increasingly being endorsed and carried out by judiciary systems on behalf of aesthetic norms or the “public interest”, at the expense of the urban poor who are criminalized in the process (Gherner, 2011; Bhan, 2016). With my work, I will elaborate on these displacement processes and reveal the discourses performed by the courts when ruling eviction cases. In this paper, I will answer the question: *How are legal frameworks on land use and property rights being used to justify displacement?* Although tenant security is also threatened by real estate speculation and other financial maneuvers, I claim that the state, particularly the judiciary, plays a major role in practices of dispossession. I argue that legal instruments created by recent legislation have provided the courts with legitimate reasons to issue eviction notices. Lastly, I show that judges are mobilizing political ideologies that condemn certain property regimes in favor of other models, thereby challenging land use legislation passed recently.

To reflect upon the legal discourse that it is being used to support displacement in Brazil, I ground my analysis in the case of Porto Alegre, the fifth most populous metropolitan areas (IBGE, 2012). I have chosen Porto Alegre because of its participatory planning tradition. The city has a past of progressive housing policies, community participation programs, and social justice movements that overlap with the tenure (for over a decade) of the *Partido dos Trabalhadores*, or “Workers Party” (PT), in its municipal government. To answer my research question, I conducted a discourse analysis of court records filled in Porto Alegre from 2001 to 2018 involving squatter settlements of private and public properties.

Historical background: land and property rights in Brazil

An assessment of Brazil's trajectories of land legislation and housing policies reveals that the State always had a fundamental part in both protecting and impairing the access to shelter of the urban poor. Like in many Latin American countries, the government in Brazil has played a central role in the housing sector (Bonduki, 1994; Villaça, 2000; Holston, 2008). In this sense, the 1988 Federal Constitution and the 2001 City Statute were paradigmatic as they opened a new chapter in Brazil's history of property rights, creating an innovative urban-legal framework to democratize the access to adequate housing and correct centuries of non-egalitarian and discriminatory land practices (Maricato, 2010). Nonetheless, recent legislation might also have had perverse consequences. Initiatives targeting land regulation, associated with social housing programs, might have increased social-spatial segregation and the risk of displacement. On one hand, these instruments gave more power to local authorities, including the judiciary, to displace and relocate people based on their settlement and tenure conditions. On the other hand, these laws, by enforcing the right to urban property and making more people eligible to hold land titles, also inflated the urban land market in Brazil and made millions of people more vulnerable to financial manipulations within the formal housing market (Fernandes, 2011).

After years of negotiations and mobilizations at all levels, the Brazilian Legislature passed the new Federal Constitution in 1988, giving municipalities more power in terms of urban land management and regulation. The document also created the concept of the *social function of property* “along with the recognition and integration of informal settlements into the city, and the democratization of urban governance” (Rolnik, 2011, p. 242). In the early 2000s, the federal government passed another important piece of legislation focusing on land and property rights, the paradigmatic 2001 City Statute. Macedo argues that, in terms of private property, the Statute “innovates by establishing preemption rights for local governments, whereby areas of interest can be demarcated in local Master Plans and potentially acquired by local governments for projects of social interest, such as low-income housing” (2008, p. 262). In addition, Fernandes argues that this Legislation offered local authorities a whole new set of instruments “to reverse to some extent, the pattern and dynamics of formal and informal urban land markets, especially those of a speculative nature” (2007, p. 213). One of these instruments was the *usucapião coletivo* (collective adverse possession law), allowing not only single actors, but also communities living in a vacant private property uncontestedly and continuously for at least five years to jointly claim its ownership. The Statute also created “grants for special use”, which is similar to *usucapião* law but applied to public land. Nevertheless, these legal tools might also have had the opposite effect, actually boosting spatial-segregation in Brazil. The 2001 City Statute's emphasis on property rights and land regularization might have made it more difficult for the urban poor to resist displacement. Land titling programs, for example, have incited the interest of major construction firms and investors in informal settlements, creating a bigger land market in Brazil (Alfonsin et. al., 2003).

The case of Porto Alegre

Most research on housing justice and inequality in Brazil until now has focused on cities like São Paulo and Rio de Janeiro. Even though Porto Alegre's metropolitan area is the fifth largest in the country (IBGE, 2012) and despite the city's history of progressive housing policies and participatory planning programs, limited attention has been paid to the state capital of Rio Grande do Sul. In

addition to hosting the first edition of the World Social Forum in 2001, Porto Alegre was also the first city in the world to apply the Participatory Budgeting program (PB), allowing residents to decide on the allocation of a share of public investments. The PB, implemented in 1989 by the Workers Party (PT), also encouraged popular articulation around themes like urban infrastructure and housing. In fact, Porto Alegre is the state capital in Brazil in which PT had its longest municipal term (1989 – 2003) (Fedozzi, 2001), in which the socialist administration helped establish several housing movements in the city.

Under the military regime (1964 – 1985), irregular tenants living in “inappropriate” zones (e.g. the riverside) would only be allowed to stay in the area depending on their “political behavior” (Baierle, 2007). When PT won the municipal elections in the late 1980s, however, the scenario changed. Under PT’s administration, the 1990 Organic Municipal Law was passed (instituting “concessions of right to use” and, thus, giving people the right to occupy vacant public land) and the Housing Cooperative Program was created in 1993 (giving technical support and legal assistance to housing groups, including land acquisition and regularization) (Alfonsin, 2005). PT’s strategy concerning land disputes in Porto Alegre was very clear: not to expropriate, but to mediate agreements between squatters and property owners (Fruet, 2005). When PT left the municipality, though, the new mayor revoked the Organic Municipal Law and instead of a land regularization plan, developed a mortgage program. In fact, during my preliminary fieldwork, evidence extracted from eviction court records indicates that in 2003, the municipal approach towards squatter settlements changed to the extent that local authorities would no longer expropriate private property, particularly “to avoid illegitimate land appropriations” (TJRS, 2017, p. 43). In fact, Soares and Sanches (2018) argue that today in Porto Alegre, the more organized and combative the housing organization is, the more the judicial and police forces are employed to dismantle what could serve as an example for others. As a leader of *Lanceiros Negros Vivem* squatter group told me informally during preliminary fieldwork in August of 2017, “the position of the current administration has changed towards us. Local authorities tend not to engage with the movements as they used to and many families are getting evicted just months after they squat” (female occupant).

Discussing Landscapes of Property and the Theories of Racialized Displacement

My paper addresses the economic, political, and judicial dimensions of land, housing, and property rights. I am approaching these themes starting from the premise that the legal space both produces and is produced by the social space. In other words, I assume that law is not objective, but, as Blomley (1994) argues, constantly echoing power structures and incorporating social and cultural systems. Thus, drawing from the literature on racialized displacement and property regimes through a legal geography perspective, I frame my research problem around the idea of *legalized displacement*. I am conceptualizing legalized displacement as an outcome of *judicial dispossession*, by which I mean eviction mandates ordered by the courts. What is significant about such mandates, however, is not only that they are ruled by judges, but that these practices are embedded within the governmental, legal, and policy systems. Evictions, in this case, are understood as legitimate actions and inserted in broader processes of racialized capitalism.

Racialized Displacement Processes

The market alone cannot explain the level of displacement taking place globally today. More than a direct and inevitable outcome of the commodification of housing, practices of dispossession must be addressed as discriminatory politics or, as Roy (2017) suggests, racialized displacement. Although concepts like the financialization of housing help us understand much of the urban transformations currently taking place across the world, this framework does not fully clarify the continuous entanglements between capitalism and racial discrimination. As Fraser summarizes, “exploitation-centered conceptions of capitalism cannot explain its persistent entanglement with racial oppression” (2016, 201, p. 163). According to her, “the subjection of those whom capital expropriates is a hidden condition of possibility for the freedom of those whom it exploits” (2016, p. 166). Roy also claims that foreclosure can be understood as mechanisms of social and racial banishment. While investigating the Chicago Anti-Eviction Campaign, the author found that banks confiscate houses located “at city’s end” (2017, p. A3). She argues that these processes hide discourses on models of ownership and embody not only a loss of property, but more critically, a loss of personhood. Similarly, Desmond (2016) concludes that eviction is a commonplace practice in inner-city black neighborhoods in Milwaukee. He argues that women are more than twice as likely to be displaced than men. Particularly black women tend to have less-flexible schedules, receive lower wages, and often are the sole providers for their family, preventing them from working extra hours to “work off” the rent. In sum, Desmond emphasizes that, while black men in the United States are locked up, “black women are locked *out* (emphasis added)” (2016, p. 121).

Racialized logics also shape state policies and justify courts’ decisions. Perry argues that, in the case of Salvador, Brazil, black women are disproportionally subjected to forced removals by local authorities. The evictions she investigated were allegedly being led in order to “make way for new structures that were meant to attract tourists to the city center” (2013, p. 49). However, the author argues that judges ordered the eviction of poor black women even when they presented the required documentation proving land ownership. She summarizes, “black women, especially those living in the poorest urban neighborhoods, traditionally have been consigned to a ‘de facto status of non-citizens,’ occupying not only the spatial margins of cities but also the socioeconomic margins as the poorest of Brazil’s poor” (2013, p. 115). Bhan and Ghertner also look at state-sponsored displacement in India, examining the fundamental role played by the courts in evicting the poor in Delhi. The former explains “the involvement of the courts rather than the state” (2009, p. 128) differentiates contemporary evictions in India. Similarly, Ghertner claims that judges confronted with the lack of proper documentation, abandoned previous bureaucratic prerequisite and statutory requirements for ordering evictions and “made the appearance of filth or unruliness in and of itself a legitimate basis for demolishing a slum” (2011, p. 287). While suggesting that some bodies, due to their limited mobility, are becoming more displaceable than others, Yiftachel argues that displacement is switching “from an act to a systemic condition through which marginalizing power is exerted through policy and legal systems” (2017, p. 3). He claims that urban planning has become a very powerful governing tool and that “planning (or lack of) provides the authorities with a set of technologies with which they can legalize, criminalize, incorporate or evict” (2009, p. 96).

Social and racial discrimination in the (re)making of the city is not new. Spatial segregation has always been present in urban planning, from Haussmann’s efforts to revitalize Paris to Moses’ attempt to redevelop New York. What has changed, on one hand, is the sophistication level of financial, policy, and legal instruments being used to exclude. On the other hand, discriminatory politics are

now increasingly hidden behind populist discourses, rhetoric that I intend to analyze in my dissertation.

On Property Regimes

The processes described in the previous sections are entangled with legal and social foundations of property rights. Discourses performed by the state, especially by the courts, validate certain tenure models while condemning others, ultimately producing dispossession (Ghertner, 2008; Bhan, 2013). Property regimes built around the idea of private and individual right, for example, might limit the access of the disfranchised to the urban space, untimely boosting socio-spatial segregation (Singer, 2010; Griffin, 2010). Therefore, frameworks on property entail not only claims to territory, but it also mobilizes concepts such as power and identity. There is a growing body of literature studying regimes of property focusing on the rhetoric associated with principles of ownership. Many authors discuss the challenges implicated in understanding private property ownership as the “proper” and acceptable mandate. In the next paragraphs, I will build on these scholars and elaborate on what Roy (2003) identifies as “paradigms of propertied citizenship”, in which certain prerogatives are being given exclusively to those who can afford to become homeowners.

Blomley (1994) uses the term “landscapes of property” to urge scholars studying property regimes to take into account not only the social scope of property but its historical and geographic dimensions as well. He criticizes the geographical alienation of legal studies and calls for spatialization of law, defending a closer look at the connection between the law and legal systems, including not only the effects of law upon space but also “the ways social spaces affect law” (2004, p. 99). Porter (2014) and Graham (2010) agree and claim that the notion of property needs to consider the relationalities embedded in it. The latter suggests that “property is not a thing but a relation of claims” (p. 403) while the former encourages us to reflect upon the significances of property within different legal and cultural discourses and practices.

In addition, it is important to think about the problems of ignoring or condemning alternative property models. Postcolonial scholars have already highlighted the danger of associating modernity to specific “modes” of space production. As Robinson puts it, the concept of urban modernity “has assumed a privileged link between modernity and certain kinds of cities” (2004, p. 709). Hence, besides challenging the dichotomies of informal-formal, illegal-legal as two disconnected systems (Sousa Santos, 2002; Roy, 2005; Benjamin, 2008), it is fundamental to acknowledge alternative mandates of property that are not necessarily related to the Anglo-American liberal model based on individual rights and ownership (Esteva, 2014; Leitner & Sheppard, 2018). In fact, Gillespie (2016) questions the universal applicability of Western standards of propertied mandates and proposes a new framework of thinking about property relations in different contexts by debating concepts such as tenure security, exclusion, and rights. He claims that “legal concepts of property need to be more place sensitive so as not to potentially undermine or destabilize existing and evolving social norms and conditions” (2016, p. 264).

By framing property around the idea of exclusion, Blomley argues that “property provides both a rationale for dispossession and a ground for its opposition” (2016, p. 594). In this sense, the American paradigm of propertied ownership was responsible for shaping socio-spatial boundaries in the North-American cities and excluding individuals that did not meet quintessential norms of residence (Roy,

2003; Wyly et. al., 2012). Roy, for example, asserts that “property citizenship for the select was made possible through the impossibility of shelter and social citizenship for all” (2003, p. 484). Furthermore, property territorialization embodies a specific form of spatial and social classification (Blomley, 2016, p. 597). As Gibson-Graham (1997) suggests, property is not a fact but an aspiration, and a very powerful one though.

Mobilization of judicial discourses in eviction cases

To understand the role of the judiciary in the displacement of squatter settlements, also called “occupations” by housing rights movements, I examined court records involving informal tenants in Porto Alegre. By conducting a discourse analysis of these documents, I clarified the arguments used by the courts to justify (and counter) forced removals. I accessed these eviction court records through the online database for the Rio Grande do Sul Court of Justice (TJRS), the tribunal responsible for analyzing lawsuits filed in Porto Alegre. Because I am primarily investigating how the courts apply legal frameworks established in the last two decades in Brazil, I analyzed only the decisions published since 2001. I used keywords like “property”, “repossession”, “occupation” or “land invasion”, and “collective” to narrow my search on the TJRS database to only include decisions involving squatter occupations. I discarded results with keywords such as “commercial”, “commerce” and “rural”. The results generated are summarized by Table 1 below:

Table 1: Squatter settlements-related eviction cases in Porto Alegre ruled by TJRS (2001 – 2018)

Year	Number of qualifying cases	Number of cases ruled against squatters
2002	0	n/a
2004	2	1
2005	3	3
2009	1	1
2014	0	n/a
2015	1	1
2016	2	1
2017	2	2
2018	1	1
Total	12	10

Data collected from TJRS *jurisdição* online database

TJRS is an appellate court that takes on appeals cases once the municipal court has issued a decision. Therefore, the number of actual eviction cases involving *ocupações* (“occupations”) in Porto Alegre since 2001 could be much higher. I chose not to investigate the decisions published by the municipal court because documents from this database cannot be accessed using specific keywords, but must instead include the name of at least one of the parties involved in the litigations or their lawyers.

Of the twelve cases I analyzed, only two of them had decisions that favored the squatters.

Decisions in favor of squatter settlements

In the two cases in which the judges¹ ruled in favor of the squatters, the decision was based on the premise that evictions would aggravate the “social problem” of lack of housing. First, in the lawsuit arbitrated in 2002, the court accepted the appeal of seventy families. The squatters were occupying a property owned by the Rio Grande do Sul Housing Company (*Companhia de Habitação do Estado do Rio Grande do Sul* – COHAB). They sustained that the property had been abandoned for over thirty years and, thus, was not fulfilling its *social function*. They also claimed that they had the *constitutional right to housing*, and it was the state's duty to grant it. The defendants’ lawyers also highlighted that carrying out with the removal would result in the eviction of dozens of families that would “be subject to complete abandonment, having nowhere to go”. (TJRS, 2002, p. 2).

The court responds to these arguments by stating that:

Although it is necessary to seek in the discipline of the civil law the legal subsidies required to solve controversies, one cannot forget the particularity of this new social fact [my emphasis], that of collective invasions, in which people organize themselves in movements that represent neither the solution of an individual problem, nor the interest in individual advantage or benefit, but the fulfillment of a basic need of a community [...]. On the other hand, the right to housing is constitutionally guaranteed and, unless proven otherwise, those who do not have a shelter to live in are in a state of need. (TJRS, 2002, p. 5).

One of the judges assigned to the case claims that he grounds his decision, accepted by the other judges of the case, on two legal principles: the court’s responsibility to the community and the theory of proportionality. The former refers to the fact that Judiciary needs to take a position on issues of strong popular appeal – “will the Judiciary only represent another instance of power against the citizen, or will it embody the last instance of power, in his favor?” (Idem). Finally, he also sustains that a judge must seek the “least harmful solution” and asks what are the least damaging answer in this case:

[...] to turn away from the needy families who find themselves in the property shooing them away with their junk and pain, or delaying the permanent resolution a little more showing understanding of the seriousness of this Brazilian drama, which does not generate irreversible burdens to the other party? (TJRS, 2002, p. 6).

In the second case determining the permanence of squatters in occupied property, ruled in 2016, the court had similar remarks. Although the judges do not make direct reference to the social function of property or the constitutional right to housing, they agree that evicting four hundred families from the private property they occupied would represent a “social problem of housing” (*problema social de moradia*). Thus, the judges allowed the families the right to stay put while waiting for a federal appeal.

¹ In TJRS second instance, usually three State Court judges, called *desembargadores*, deliberate. However, the ruling may be made by a collegiate of five judges or, in certain cases, even result from a monocratic decision.

Decisions against squatter settlements

The arguments used by the judges when ruling against squatter groups in the other ten cases are basically built around two main principles: the *indisputability* of private property and the fact that occupations constitute an *illegal act*. The application of these two different discourses, nonetheless, depends who owns the occupied property, a private or public actor. The latter justification is mostly used when the complaint is a public entity and, in these cases, judges usually emphasize the lawlessness of the “infraction” being committed by the “invaders”. They often claim that these squatter settlements are *unfair* in the extent that if the state were to guarantee the right to housing to all those who illegally occupy third party’s property, other marginalized citizens not adopting the same *occupation tactic* would not be entitled to similar privileges. (i.e. access to shelter).

However, when a private actor is involved, the argument is frequently centered around the premise that collective claims cannot surpass *individual rights* when it comes to property. When analyzing the ten verdicts evicting squatters, private land was the object of seven of them. One quote, in particular, stands out because it is repeated by one judge in two different decisions. Despite acknowledging the mechanisms created by the 1988 Federal Constitution and the 2001 City Statute, in these lawsuits registered in 2004 and 2005, he highlights:

Even when we understand that properties must fulfill a social function, it is not within the scope of a possessory lawsuit that the State should decide whether the owner was or not subtracting the property from its social purpose. If we accept the defendants' [squatters] argument, all landlords would be liable to lose possession - albeit only in the course of the proceeding - of their property to the homeless when the latter consider the land a socially unproductive property. The fact that a parcel is not occupied by buildings or plantations, even for a long period of time, clearly does not mean that the property in question lacks a social function; at least while the owner has not been yet questioned by the competent authorities about how he will give a proper social allocation to his property. What cannot be admitted, with the danger of implementing a new form of social and legal insecurity, is that those with no access to housing through planned invasions, executed in the dead of night, settle themselves permanently in duly registered and regularized urban parcels, on the basis - possible to be invoked in relation to any non-built plot of land - that the property is not meeting its social purpose. To admit this type of conduct would mean to ensure housing only to those who will have the organizational capacity to promote invasions, establishing a real parallel power to that of the State, which, evidently, is not fair, much less acceptable. (TJRS, 2004, p. 3; TJRS, 2005b, p. 5).

Moreover, in the 2005 lawsuit, after including in his monocratic decision that the squatters accuse the owner of not paying property taxes for several years, the judge claims that this *alleged fiscal debt* is irrelevant in litigations related to possessory claims.

In another case, while ordering the removal of seventy families, another judge maintains that “the principle of the social function of property, guaranteed by the Federal Constitution should not be analyzed in isolation, and should coexist harmoniously with the rules disciplined in the Civil and Civil Procedure Codes that regulate the matter” (TJRS, 2009, p. 5). The codes the magistrate is referring to are those that protect property rights.

Additionally, in a paradigmatic ruling due to the social relevance of the work developed by the defendant, a housing rights group protecting women's rights, the judges responsible for the case also emphasize private property rights. The squatter group, known as *Ocupação Mirabal*, a movement that shelters only poor women who have suffered domestic abuse and their children, was occupying a vacant private property owned by a religious institution. One of the magistrates, in the decision, praises the "socially relevant" work being performed by the group, but highlights that the occupied building is private *not public*. His remarks suggest that his decision could have been different if the contested property was owned by the state. Another judge who was part of the body ruling on the case claims:

However expressive the purpose of the movement is, the protection of private property and its social function is also a fundamental constitutional right. [...] The movement counts with my support as a citizen; as a Judge, my duty is to protect society, a context in which it is necessary to restricting infractions to principles such as social function and private property, values that constitute the foundations of personal and contractual freedom safeguarding the common good of society. Freedom does not exist, nor does it resist without property and its social function. (TJRS, 2017a, p. 9).

It is interesting to notice that one judge acknowledges the "efforts of local authorities", highlighting that the *political option* adopted by the municipality starting in 2003 has changed towards squatter settlements. This posture was to no longer expropriate "invaded" private land, "in particular for the purpose of avoiding unlawful appropriations" (TJRS, 2018, p. 43). This passage suggests that political ideologies, in fact, might influence judicial outcomes.

Finally, in one of the decisions involving private property, published in 2015, the court recognizes the *constitutional right to housing* as a fundamental right. However, judges claim that when ordering the eviction of the squatters:

We are not denying the validity of constitutional principles and norms regarding the right to housing or the dignity of the human person [but] it is necessary to consider the impossibility of rewarding the illegal conduct of the aggravating actor - who confessed to having invaded the property of a third party - to the detriment of the other part that obtained the property and exercised its ownership lawfully and regularly. (TJRS, 2015, p. 12).

In regard to the lawsuits involving the occupation of public property, two main arguments emerge. First, as previously indicated, the fact that these practices performed by squatter groups are *outlawed*. This type of discourse can be found in two passages in particular: "Although *legitimate* subjects of debate, it is not possible to admit invasion of public areas for the purpose of claim or protest" (my emphasis) (TJRS, 2017b, p. 11). In another ruling, the judge argues that "it is impossible to let them [squatters] stay in the property under the argument that it would be fulfilling with the *social function of the property*, since the article on the social function of property in the 1988 Federal Constitution does not protect those who enter, *irregularly*, in public property" (my emphasis) (TJRS, 2005a, p. 10).

The second premise used by the courts is that the judiciary is not the place to solve *housing policy* related issues:

Any solution for the relocation of the people who invaded the property, be they children, elderly, and pregnant, should be sought in the political arena, in conjunction with competent administrative agencies. The Judiciary cannot, in violation of the law that deals with possessory litigation, enter into an area of exclusive competence of the Executive Power. [...] The condition of social vulnerability is not exclusive to the group that invaded the public property, as social needs are not an exclusive problem of the Municipality of Porto Alegre, since they are present in absolutely all other states. (TJRS, 2016, p. 10).

The ruling presented above, published in 2016, is contradictory. The object of the lawsuit is a parcel owned by the Municipal Housing Department (DEHMAB) that was being occupied by three hundred families. The DEHMAB was trying to evict the families from the contested property claiming that the area would serve to accommodate other 1,300 families removed by the municipality from another area that was being required for the expansion of the local airport. Paradoxically, the judge ordering the forced removal of these three hundred families to shelter other families now displaced due to state-sponsored infrastructure works. In other words, while the court suggests that a solution for the relocation of squatters should be resolved within the scope of the Executive power determines the removal of these families to solve another “housing issue”. In this sense, the judiciary, as Bhan (2009) highlights, is becoming indeed the primary site of urban planning.

Conclusion

The question that guided this analysis was *how are legal frameworks on land use and property rights used to justify displacement?*. At stake here is not only the fact that evictions might be using to displace and exclude certain marginalized groups from the city, but, particularly in the case of Brazil, the *violation* of the constitutional right to housing. By addressing the judicial dimension of land, housing, and property rights, I showed that law is not neutral and detached, but, in fact, constantly reverberating power arrangements, including regimes of property. Drawing from the literature on property and displacement through a legal geography lenses, I reflected upon the notion of eviction as a legitimate act ultimately being used to control, plan, and rule. By grounding my analysis in Porto Alegre, I also showed how a city with a tradition of participatory planning is now witnessing the marginalization of the housing justice movement.

Therefore, when courts order the eviction of squatter movements, for example, they are not only ignoring the legal mechanisms created to ensure that Brazilian citizens have adequate access to housing. They are, in fact, violating these people’s constitutional right to housing, as tenure security is a key factor in one’s entitlement to adequate shelter. When the City Statute was established almost twenty years ago, people fighting for urban reform in Brazil became hopeful that private property regimes and land speculation would now be challenged. Nonetheless, I claim that some of the instruments supposedly created to fight dispossession, instead are being used to displace. In other words, as Bhan argues, displacement is occurring “through democratic processes rather than in their absence” (2016, p. 9).

With this preliminary investigation, I demonstrated how legal frameworks on land use and property rights have been mobilized for and against dispossession. Courts in Brazil are mobilizing political ideologies that condemn certain tenure models in favor of other property regimes, defying thus established land use legislation in their rulings. Data found on TJRS online database illustrates this.

Despite some limitations of this study (especially in regard to subset of lawsuits),² further investigation needs to be done with the other parties involved in these cases, particularly the squatter movements themselves and their lawyers. We need to understand how these poor people's movements are contesting displacement, including the legal remedies that their lawyers are mobilizing to contest evictions.

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² While randomly searching for eviction cases on TJ-RS online database I found that some cases involving squatter groups were not included in my initial study. This happened because the keywords I used to find these types of lawsuits are only applied to the summaries of the court records and not to the entire litigation document.

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Research on the Implementation Mechanism of Privately Owned Public Space——Planning Implementation of the Publicly Transferred Land in Fuzhou City 2008-2017

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Abstract: Public space is the core content of urban planning. Privately Owned Public Space refers to the contractual control of urban planning management through the land development process, by stipulating the land development rights (preconditions) to open the part of the space to the public. Privately owned public space separate the property rights from use rights of the land and provide public space through space sharing, taking the advantage of the cost control by the enterprises and property owners. The provision of the privately owned public space includes incentive zoning and prescriptive regulation. Incentive zoning is a kind of transaction behavior between the public interest represented by the government and private interests represented by private developers. Prescriptive regulation is the establishment of rules and regulations by the land transfer mechanism and property rights system, which is realized through cost transfer and space sharing. The empirical study on the implementation of the public space for private property rights for public land transfer in Fuzhou City shows that through appropriate institutional design, peace and harmony between public and private can be achieved, and the quantity, quality and service effect of public space can be improved. In the transition period of urban development, it provides a new possibility for the construction of public space in other cities.

Key words: public space; implementation mechanism; planning; property right

Introduction

Public space is the core content of urban planning implementation and management, and the quantity and quality of the public space always need to be improved to meet the needs of the city. As the main investor in the construction of public facilities and the main provider of public services, the city government is the main body of investment, construction and management of urban public space. In contrast to this, Privately Owned Public Space refers to the contractual control of urban planning management through the land development process, by stipulating the land development rights (preconditions) to open the part of the space to the public. Privately owned public space separate the space property rights from usage rights, and produce public space through space sharing, with the advantage of the cost control by the developers and property owners.

The privately owned public space first appeared in the United States in 1961 through incentive zoning (Kayden JS, 2000, Schmidt S. et al, 2011, Yang Z. and Xu M., 2013, Yoon H. and Srinivasan S. 2014, Yu Y., 2016), followed in Hong Kong, Taipei, Seoul, Tokyo and other cities (Qi Y., Yan Y. and Yang W., 2015, Dimmer C. et al., 2013, Yeung M., 2014). Cities in China

that carry out public space provided by incentive policy include Shanghai, Nanjing, Wuxi, Hangzhou, Guangzhou, Beijing, and Shenzhen (Tang S., 2016).

Till the end of 2014, the City of New York had built a total of approximately 3.5 million square feet (325,000 square meters) of privately owned public space in 332 projects through the incentive zoning policy, 98% of which were concentrated in Manhattan Island. Those projects were distributed in the densely populated downtown and middle town accounted for 14% and 30% respectively, effectively alleviating the lack of open space in densely populated areas (Yu Yang, 2016).

Concept of the privately owned public space

Urban public spaces such as streets, squares, and parks are not pure public goods, but rather a quasi-public goods with crowding. Space usage rights can be “exclusive” through space access control. That means the urban public spaces have the attributes of the club item—non-competitive but exclusive, non-exclusive for all members of the club but exclusive for non-club members, such as green space in the urban access control community, the theme park needing tickets to enter, etc. (Zhang K. and Du N., 2012).

If a city has a range of open spaces at different levels and can be supplied to the public in the form of well-designed and managed “club spaces,” it will be more efficient, livable and sustainable (Webster, C., Zhang, Bo., and Li J., 2008).

“Privately Owned Public Space” first appeared in New York in the 1960s. Kayden (2000) proposed that its meaning consists of two parts: “private property rights” refers to the land where the public space is located and /or the legal status of the building, the owners will continue to control the overall access and use rights of their private properties, and without the express permission of the owner, the citizens generally cannot obtain access and use rights. “Public space” means a tangible location on private property, and the owner has provided the public with legally binding access and use rights, ownership is maintained privately.

Privately Owned Public Space refers to the contractual control of urban planning management through the land development process, with the agreement on land development rights (preset conditions) and the public rights (some part of the land open to the outside world). Privately owned public space separates the property rights of the public space from the right to use, realize the production of public space by space sharing. In contrast, in other land transfer projects, the government handed over the construction and management of public spaces such as mountains or public green spaces around the project to the real estate developers, which were built and managed by the developers and remaining the public property rights. The maintenance of public property rights has not changed. Such situations also belong to the introduction of social investment to build public space, contrary to the privatization of public space, privately owned public space realizes the publicization of private space and is conducive to the realization of public interest.

Implementation mechanism of the privately owned public space

There are two types of the privately owned public space. The first one is that the government turns the responsibility for the construction of public space into a private burden, and transforms

the property rights of the public space into private ownership, thus shifting the responsibility for building public space, such as the public green belt along the urban roads and the rivers. The second type is the public space not within the government's construction plan, which is set up by land transfer and private development and construction projects to provide, a part of the private property but open to the public, such as street green space, squares, and public parking lot, etc. In the first case, the number of public spaces did not increase, the government shifted the cost, and the society participated in the joint construction of public space. In the second case, the number of public spaces has increased, and it is possible to improve the quality of public spaces and to make the distribution of public spaces balanced.

Regarding the supply of public space, Hughes (2001) divides the types of policy instruments provided by public space into supply, subsidy, production and regulation. The Chinese city government mainly produces tools in the process of expanding urban public space (Zhang Q., 2009), characterized by the government directly responsible for the production of public goods and services (Liu Z., 2010). Therefore, the emergence of public space in private property rights is a useful supplement to the current government-led public goods offering.

There are two main types of privately owned public space provision, one is incentive zoning and the other is prescriptive regulation. The premise of the implementation of the incentive zoning method is to ensure that the profits generated by private developers through the development of private public space is greater than the cost of their input. The incentive zoning method mainly meets this premise in two ways: one is to increase the profit of the developer; the other is to reduce the cost of the development. The increase in profits is mainly based on the floor area rate incentive policy; the reduction of development costs is mainly achieved by relaxing the planning conditions (mainly including the distance of the building red line, the proportion of the building base to the construction land and the relevant provisions on the building volume etc.) (Zhang, T. and Yu, Y., 2010). Some cities in China have also proposed similar incentives for zoning, such as Shanghai, Shijiazhuang, Harbin, Qingdao, Taiyuan, Lanzhou and other 16 cities (Li, J., 2016).

The implementation of incentive zoning is based on the private ownership of land property, separating the ownership and use rights of the public space, and trading the public space use rights with the public interest represented by the government and the private interests represented by private developers. Through negotiation, private developers give up part of the space – “right to use” and the government compensates by incentives. The risks of this kind of implementation are that case-based negotiations may bring market unfairness and political rent-seeking. The quality of public space is difficult to quantitatively evaluate. The increase of the volume-rate ratio, that is, the increase in development, brings negative externalities to the surrounding areas.

In contrast to incentive zoning, by the control detailed planning mechanism in China, the construction of public space can also be implemented through prescriptive regulation. The prescriptive management and control implementation mechanism is to include the construction requirements of the function, location and area of the public space in the land transfer contract. The specific form may be the textual expression or the statutory plan.

The technical content of the control detailed planning is transformed into the contract clause, which is essentially the additional responsibility of changing the control method of space from technical requirements to property rights. The implementation mechanism of this approach is

to transfer the responsibility and cost of the construction, management and maintenance of public space from the government to private property owners. The risk is that if the government abuses this method, it is actually evading its responsibility as the main provider of public goods, increasing the cost of land development and construction, and pushing up the land price. The construction cost and long-term maintenance cost are borne by the property owner.

Incentive zoning and prescriptive regulation have their own advantages. The method adopted by local planning management departments is based on actual conditions and should be clarified at the local regulations. In terms of the current control detailed planning and implementation management in China, incentive zoning and prescriptive regulation are applicable to different situations.

Under the system of planning adjustment, if the original floor area ratio is reasonable, there is still technical feasibility to increase the development volume, and incentive measures can be adopted, especially in the need to provide facilities and space involving major public interests such as subway stations. It is used to compensate for the loss of private property rights.

However, if the plot volume ratio is the maximum, then increasing the development volume will cause overload of public facilities and various social problems. If the system of planning adjustment is vague, it is necessary to adopt prescriptive regulation and to establish the requirements for public space construction before land transfer.

However, no matter which method is adopted, the policies and procedures are required to be clear, and stakeholders have the right to participate in the negotiation process and influence the results. If their interests are damaged, they should be compensated.

Fuzhou Private Property Public Space Practice

Taking the urban area of Fuzhou as an example, there are two types of implementation methods for privately owned public space, and in the “Technical Regulations for Urban Planning Management of Fuzhou City” (2000 edition), the floor area ratio reward for providing public space for construction projects has been stipulated, but in the planning and management practice since 2000, the Fuzhou Urban and Rural Planning Bureau has not approved a volume-rate awards project arising from the provision of public space. In the new edition of "Fuzhou City Planning Management Technical Regulations" (2016 edition), the contents of the relevant award regulations were deleted.

According to the statistical analysis of the planning conditions and related information of 261 plots of land sold in Fuzhou City from 2008 to 2017, 90 plots of land parcels with public space were clearly defined by means of prescriptive regulation, and the area of the privately public space was 737,235 square meters, accounting for 6.1% of the total land area (12,075,857 square meters). The total price of the privately owned public space through the land transaction is 9.6 billion yuan (CNY).

As far as the implementation effect is concerned, the public green spaces and the squares along the main road of the city have a good effect after being built, which has effectively supplemented and improved the urban public space system. Privately owned public parking spaces are not open to the public because they do not have uniform identification and management requirements, but only serve as public parking spaces in the community. After the unified transformation along the river landscape, the river green space is integrated and

connected to enhance the transformation to form a strip park. It is worth noting that there have not been any disputes or negative events in Fuzhou that have been brought due to the opening of the privately owned public space.

The prescriptive regulation mechanism for the privately owned public space in Fuzhou includes the following four basic elements:

(1) Information disclosure

The land transfer announcement is publicly released before the land is transferred, and the planning conditions such as the location, area, and function of the privately owned public space are clearly defined. All land bidding participants can obtain relevant planning condition information from the land administration department, including the relevant planning requirements of the privately owned public space, and calculate the land bidding cost based on this.

(2) Property rights

Different from the incentive zone, the method adopted by the prescriptive regulation is to add additional conditions of property rights of the project, open the specific space to the public through space sharing, and realize the production of public space through the additional responsibility of property rights.

(3) Technically feasible

The opening up of private property public space has two basic technical requirements: First, the open public space is located at the edge of the land, and the non-open part is relatively complete, such as at urban road intersections, along urban trunk roads, along urban riverside sections, at community entrance, etc. Excluding the open public space, the remaining plots remain intact and the rest of the plots can still be managed separately if necessary. Second, the open space is still an integral part of the overall land use. The economic indicators such as floor area ratio, building density and green space rate are calculated together with the rest of the land, and the overall indicators of the land are balanced through the design of the plan.

(4) Cost control

In the process of construction and management of public space, because of clear property rights and responsibilities, the construction cost is controlled by the real estate developer during the development and construction process, and the daily management is managed and maintained by the property company, which is beneficial to the advantage of the cost control of the market entity and improve the space quality and management efficiency.

The current implementation process also has the following problems:

(1) The construction of private property public space requires review as an important content in the planning management approval and acceptance, but the land and property registration management department does not indicate in the land certificate and title certificate when registering property rights. This is the most important institutional paralysis.

(2) The privately owned public spaces built in Fuzhou has not been clearly marked on the spot. There are no use regulations, notices, and corresponding inquiry system, which make the public lack information and guidance in the process of use.

(3) After the establishment of the privately owned public space, there is no public supervision and no law enforcement supervision. The management and opening of the privately owned public space, depends solely on the self-discipline of the property owners.

In response to the above problems, in order to ensure the implementation, the relevant

provisions of the public space should be clearly reflected in the property rights registration, the supervisory duties of the competent authorities should be clearly defined, and clear identification signs should be set up on the spot, and an inquiry and use information service system should be established, which is to facilitate public use and supervision.

Conclusion

Privately owned public space is actually realized through the mechanism of land development. Property owners bear the cost of construction and maintenance, and the public enjoys the public space. The privately owned public space of prescriptive control reflects the institutional characteristics of China's socialist market economy. As the representative of the land owner and the public interest, the government assumes the responsibilities of the organizers, negotiators, managers, and supervisors, and realizes the production of public space through policy formulation and system design.

The emergence of the privately owned public space, whether it is incentive or regulatory, is the construction of laws and institutions by public administration department. In the land transfer mechanism and property rights system, planning technology is transformed into policies and systems, through cost transfer and space sharing. The advantages of the privately owned public space are the clear property rights responsibility, the controllable maintenance and management costs. The essence of incentive zoning implementation is planning adjustment, and the implementation process of which is to negotiate from the bottom up. Prescriptive regulation is government-led, technically feasible, and cost-controllable, the implementation process of which is carried out from the top down.

Privately owned public space is only a supplement to public space, which is an increase method rather than an alternative one, and the government should not shirk the main responsibility for public goods.

China's land transfer system is separate from ownership and use rights. The ownership is owned by the state and the land use right is transferred. Due to the shortage of local government public construction funds, local governments hope to use social funds to build public space. The emergence of the privately owned public space has the legal basis and economic motivation. The case of Fuzhou can be used as an empirical demonstration of the effectiveness of the privately owned public space construction in densely populated areas of China.

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LEGITIMACY CRISIS OF THE VILLAGE PLANNING IN CHINA AND ITS RESOLUTION

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Abstract: Based on the three-phase legality theory of regulation, standard and morality of the new institutionalism school, the legal basis of village planning is embodied in three attributes: state legal empowerment, industry standard management and public interest expression. The introduction of the Urban and Rural Planning Law in 2008 has endowed the village planning with legal status from the national legislation level, and promoted the legitimacy structure of village planning towards integrity, which has made the village planning officially enter the era of "legalization". However, a comprehensive review of the development results of village planning over the past decade reveals that the current village planning legitimacy structure is now facing some major legitimacy crisis, such as the absence of subject under the contradiction of jurisprudence, the failure of planning caused by the deviation of technical rationality, and the dilemma of seeking a maximization of public interests. The legitimacy of village planning presents a crisis state of complete structure and incomplete function. To resolve the legitimacy crisis of village planning has become an important part of village planning towards public policy in the new era. Based on a comprehensive analysis of the original mechanism of crisis generation, this paper proposes the corresponding resolution paths as follows. Firstly, repairing relevant legal gaps in village planning. Secondly, establishing rational technical guidelines for planning. Thirdly, turning to "contractual village planning" with multi-subject affirmative, in order to promote the village planning legal structure to an ideal condition of form and function integrity.

Keywords: Legitimacy Crisis; Technical Rationality; Public Interest; Multi-subject Affirmative

Introduction

Legitimacy, originated from the western political science philosophical debates about "authority and obedience"(WU, 2011), is regarded as the legal foundation for the establishment of political order for the ruling class(Otfried, 2005). Later, Max Weber(1997) introduced the field of sociology to describe the institutional scenario in which social members identify with the value of political order and generally obey it. Weber believes that the source of legitimacy comes from the political order established by the ruling class. However, this empirical theory of legitimacy polarizes the political color of legitimacy and lacks the value judgment on the justice of political order(LIU, 2018). Based on the discussion on the value basis of legitimacy, Jurgen Habermas(2009) revised Weber's theory of legitimacy from the perspective of rational constructivism, believing that legitimacy should be first based on the values of justice, and then on the recognition and obedience of social members. The new institutionalism school represented by Scott(1998) introduced the theory of legitimacy into a more

secular behavior system and life scene, such as social organization, enterprise management and urban construction. He proposed *the three-phase theoretical framework based on legitimacy*(Table 1), which has become the basic paradigm for the legitimacy research of modern administrative management and social governance(Ying, 2016).

Table 1: Scott's theoretical framework of three-phase legality

Dimension of Legitimacy	Interpretation of Legitimacy Dimension
regulation	Recognition and empowerment of national laws and regulations
standard	Public affairs operation complies with the professional and industry related standard procedure requirements
morality	Operation of public affairs conforms to the moral cognition of social members

In terms of village planning, legitimacy is manifested as the empowerment of national laws, industry standard management and villagers' public interest expression. The empowerment of national laws not only gives the legal basis for government organizations to compile village planning, but also gives village planning legitimacy as a tool of public policy. Industry standard management ensures the value basis of scientific, fair and just contents of planning. The expression of villagers' public interest determines the obedience and recognition of village members to village planning. All three together constitute the village planning complete three-phase legitimacy structure. In the early stage, due to the lack of legal empowerment in national legislation, village planning in China was always in the administrative management stage of government departments, and its relevant rules and regulations were not binding enough to form a complete legal structure in a strict sense. Until 2008, a new version of the Urban and Rural Planning Law of the People's Republic of China(hereinafter referred to as the URPL) has incorporated village planning into the urban and rural planning system in China, giving village planning legitimacy at the national legislative level and providing legal support and institutional guarantee for the comprehensive formulation and implementation of village planning. At this point, the village planning really moves towards the structure integrity stage of legitimacy.

With a decade Implementation of the URPL, the popularization and implementation of village planning in China has been carried out nationwide. However, throughout the whole process of village planning from establishment to implementation to supervision, it is found that village planning is still faced with relevant conflicts and loopholes of laws and regulations, technical failure of planning establishment, implementation and management, relative deprivation of villagers' public interests and many other problems. Village planning is still in a state of complete legitimacy structure but incomplete function. In fact, as a policy tool for the grassroots people's government to macro-control the allocation of village resources, the three-phase legitimacy attribute of village planning has been regulated in the UPRL. To discuss the village planning legality lies in a rational speculation on the empowerment related legislation. *Therefore, based on the three-phase legitimacy theory framework of the new institutionalism school, this paper comprehensively reviews the evolution process of village*

planning empowerment, demonstrates the legitimacy crisis currently faced by village planning from the perspective of legitimacy, and explores the resolution mechanism of legitimacy crisis in combination with the new environment of village planning development in the new era, in order to promote the legitimacy of village planning towards the ideal state of formal integrity and functional integrity.

1. Empowerment process of village planning in China: "Compliance" towards "Legality"

Through a comprehensive analysis of the empowerment process of village planning in China, it is found that according to the difference in the rank of its empowerment law, it can be divided into two stages: "compliance" under the empowerment of administrative regulations and "legality" under the empowerment of national legislation.

1.1 "Compliance" era: village planning under administrative regulations

Long-term since, rural housing construction in China lacks reasonable planning guidance and rigid government control. The demand-oriented village construction is characterized by chaos, disorder and liberalization, which continued until the 1970s. Along with the reform of rural land system and economic development, the phenomenon of a large number of rural houses occupying farmland has gradually attracted the attention of the senior decision-making level of the state(Fang and Liu, 2006). Since 1979, the state council and the ministry of construction have successively issued a series of meeting communiques, technical specifications, management regulations, compilation methods and other guidance documents to guide the responsible subjects, behaviors and technical standards in the whole process of village planning, from establishment to implementation and supervision(Cao, 2012). The documents include two national work conference on rural housing construction, the Town Planning Principles (hereinafter referred to as "Principles"), the Rural Land for Building Management Ordinance(hereinafter referred to as "Ordinance"), the Village or Town Planning and Construction Management Regulations (hereinafter referred to as "Regulations"), the Village Planning Standard (GB50188-93) (hereinafter referred to as "Standard") and Town Planning Method (hereinafter referred to as "Method")(Table 2).

Table 2: Core contents and significance of relevant guidance documents on village planning from 1979-2000

Time	Document name	Core content	Significance of village planning
1979	1st national work conference	Earnestly plan, carefully design. Strengthening policy guidance to village planning and construction	First raise of village planning in the national document, marking that village planning was officially incorporated into the national public management system.
1981	2nd national work conference	Governments at all levels are required to "promptly formulate regulations to guide village planning and	The exploration of village planning goes deep into the level of system construction and explores the legalization of village

		construction".	planning under the legal construction.
1982.1	"Principles"	Construction must conform to the planning, which shall be compiled by the competent departments at various levels.	The legal foundation of village planning has been laid advocating establishment to system restriction.
1982.2	"Ordinance"	Make clear the system construction of village planning of establishment and approval.	Established the "compliance" status of village planning in the level of national administrative regulations.
1993	"Regulations"	Clearly delineate the responsible behaviors and subjects in the establishment, implementation, examination, construction and supervision of village planning.	Clearly delineate the responsibility subject and authority of relevant matters of village planning, which ensures the accurate operation of village planning.
1994	"Standard"	Clearly delineate the professional normative content and operational requirements of village planning.	Standardized the regional differences caused by the disunity of village planning in the past from the professional and technical level.
2000	"Method"	Same as the previous column	Same as the previous column

These documents officially incorporated village planning into the national public management system, promoted village planning from advocacy to institutional constraint, laid the legal foundation for village planning, and made village planning conform to the "compliance" situation of administrative rules and regulations(Kuai, 2010). At the same time, the implementation management of village planning has effectively stopped the chaos in the construction management of the vast rural areas and promoted the standardization and legal development of village construction activities.

1.2 "Legality" era: legal-rational empowerment from the URPL

The aforesaid "Regulations" are administrative regulations issued by the state council, while the "Principles", "Standards" and "Methods" are derived from administrative regulations issued by the state construction department, which are not strictly national laws. In this case, the three-phase legitimacy structure of village planning is in an incomplete state. Due to the weak effectiveness of the above documents, the village planning had to obey the other national laws in the process of comprehensive establishment and implementation, which leads to problems such as lack of motivation, obstacles in implementation and negative law enforcement. Therefore, in order to strengthen the legal status of village planning, solve the problem of rural construction and coordinate the economic and social development of urban and rural areas, the tenth NPC standing committee voted and passed the

URPL in 2007, which was fully implemented on January 1, 2008, marking that village planning officially entered the "legality" era of national legal empowerment.

As village planning is incorporated into the urban and rural planning system by the URPL, the "legality" status of village planning as a guiding document for village development and construction is strengthened, and the establishment, implementation and management of village planning move towards the rigid control stage. Under the legal effect of the URPL, various provinces and cities have issued corresponding regulations, guidelines and measures for village planning, accelerating the process of village planning in China. By the end of 2016, the number of administrative villages with village planning has reached 323,373, accounting for 61.5% of the total number of administrative villages counted. The number of natural villages with village planning has reached 830,335, accounting for 31.73% of the total number of natural villages counted (Figure 1). Village planning has entered the "legalized" development era.



Figure 1: Statistics of administrative and natural villages which compiled village planning during 2007 to 2016.

2. Legitimacy crisis of village planning: legal contradiction, technical deviation and interest dilemma

However, although village planning has obtained the legitimacy empowerment of national legislation, forming a complete three-phase legitimacy structure, there are still some legal principles, technical and moral gaps in its legitimacy structure, resulting in its legitimacy in a state of complete structural form and incomplete function. Village planning is facing a major legitimacy crisis.

2.1 Crisis of regulatory legitimacy: Dislocation, absence and offside of subjects under legal contradiction

As mentioned above, the administrative legitimacy of village planning is derived from the empowerment of relevant national laws and regulations, especially the legal empowerment of the URPL, which lays the legal administrative status of village planning. However, due to the conflict and ambiguity of relevant laws and regulations, village planning faces a legal crisis in the process of compiling and supervising.

2.1.1 Dislocation of establishment subject of village planning under the conflict of laws

First of all, it is the multi-conflict of various laws which leads to the dislocation of the subject of village planning. Article 22 of the URPL proposes that "The people's government of a township or town shall take charge of establishing the township or village planning", which clearly defines that the compilation and administration of village plans shall be vested in the people's governments at the township level. Village planning has become a policy tool for the local government to intervene in rural governance "from top to bottom". However, in accordance with article 111 of the Constitution of the People's Republic of China, "The residents and villagers committees establish sub-committees for people's mediation, public security, public health and other matters in order to manage public affairs and social services in their areas", means that the villagers' committee is responsible for its own public affairs and public welfare undertakings. The Organic Law of the Villagers Committees of the People's Republic of China (hereinafter referred to as the "OL") further clarifies the relationship between the people's government of townships and the villagers committee. Article 5 of the "OL" stipulates that "the people's governments of townships, nationality townships and towns shall give guidance, support and assistance to the work of the villagers' committees, but shall not interfere in matters falling within the scope of villagers' autonomy according to law. That is to say, the responsibility subject of public affairs and public welfare undertakings in the village should be the villagers' committee, and the people's government of townships can only guide and help without intervention. As a policy tool to coordinate the allocation of public resources in rural areas, village planning, like urban planning, expresses the value orientation of public interests(SHI, 2011), which should belong to village public affairs. Therefore, a certain legal conflict can be found between the "top-bottom" village planning system established by the URPL and the villagers' self-government system established by the "OL".

2.1.2 Absence of supervision subject of village planning under the broad laws

As a specific administrative act in urban and rural planning administration, planning supervision must obtain administrative license or legal remedy from relevant legal system when executing (He, 2011). However, the URPL only clarifies the supervision subject of village planning, while without the specific procedures of supervision and administration of the administrative action made specific provision. In this case, the supervision of village planning is often prone to the absence of grass-roots management bodies (Qi, 2011). *On the one hand, the matters involved in village planning and construction are complex and tedious, while the professional and technical personnel provided by the grassroots government are in serious shortage. On the other hand, the village planning and construction under a complex social relations network involves multiple interests, which easily leads to a negative law enforcement.* A survey in Lanxi city, Zhejiang province, proved that village planning professionals are mostly related to villagers, leading to their negative law enforcement behaviors of not dealing with and not punishing when exercising their regulatory powers.

2.1.3 Offside of construction subject of village planning under the fuzzy laws

Article 37, 40 and 41 of the URPL respectively make relevant provisions on the issuance of the planning license for construction land, the planning license for construction projects and the planning license for rural construction. The planning license for rural construction only requires enterprises, public facilities and public welfare undertakings within the planned area of the village to apply to the

people's government of the township or town according to the related laws. *But the relevant construction projects are not required to conform to the relevant content of village planning.* Such fuzzy terms directly reduce the legal effect of village planning, which leads to the possibility that the projects approved with the planning license for village construction in the village may still be inconsistent with the village planning content and break through the control content of the village planning. The survey found that more than 70 percent of rural land violations discovered in Hubei province in 2016 were approved with village construction planning licenses, with 60 percent of those in conflict with village planning.

2.2 Crisis of standard legitimacy: Planning failure caused by technical rationality deviation

The standard legitimacy is expressed as correct technical rationality in village planning. However, due to the deviation and dislocation of technical rationality, the planning is faced with great uncertainty in the establishment and implementation, which is likely to lead to the planning failure (Yu, 2004).

2.2.1 The uncertainty of standards for the establishment of village planning

One is the absence of national technical standards. With the introduction of the new town planning standard (GB50188-2007), the old version of the town planning standard (GB50188-93) was abolished at the same time. But the new standard is only applicable to the town planning and township planning outside the residence of the county-level people's government, resulting in the vacancy of the national mandatory technical standard guiding the village planning (Zhang and Ji, 2008). As the code of conduct and relevant content of village planning are not specified in the URPL, it can neither serve as the unified technical standard of village planning nor provide clear legal support for the content of village planning.

Another is the ambiguity of the content of local technical standards. Due to the lack of unified national standards, within the permission of the urban and rural planning law, provinces and municipalities in China successively issued corresponding guidelines (or regulations, methods, etc.) for village planning establishment as the standards for the compilation of local village planning. Although the establishment subject of village planning and its related contents are clearly defined in the local standards, the implementation, supervision, inspection and other management problems of village planning as well as the reward and punishment mechanism are not clearly assigned with responsibility (Table 3). As a result, uncertain elements appear in village planning and management, and village planning is faced with technical failure.

Table 3: Contents related to standards of village planning issued by some provinces and municipalities in China

Provinces/ Municipalities	Standard	Year	Contents of Implementation	Contents of Inspection & Supervision	Contents of Reward & Punishment
Beijing	Guidelines for village planning (trial)	2017	The implementation plan, responsibility	The supervision and inspection subjects and related	Defined the reward, without the punishment

			subject and technical requirements are not clearly specified	procedures are clarified	mechanism
Shanghai	Guidelines for the establishment of village planning (trial)	2010	The implementation plan, responsibility subject and technical requirements are not clearly specified	The supervision and inspection subjects are not clarified	Not mentioned
Chongqing	Technical guidelines for the establishment of village and town planning	2013	The implementation plan is clarified in guidelines 2.12 and 2.13	Not mentioned	Not mentioned
Jiangsu	Guidelines for village planning	2008	The implementation plan is clarified in the 4th chapter of the guidelines	Not mentioned	Not mentioned
Guangdong	Guidelines for the establishment of village remediation planning	2013	The implementation plan is clarified in the 6th chapter of the guidelines	The supervision and inspection subjects of village planning are not clarified	Not mentioned
Shanxi	Guidelines for the establishment of village planning	2014	The implementation plan is not clarified in the guidelines	Not mentioned	Not mentioned

2.2.2 Inapplicability of the methods and tools of village planning

The second kind of technical rationality deviation is the inapplicability of the methods and tools of village planning. That is to say, planning technology path dependence biased towards city orientation. Under the influence of modern urban planning thoughts, planners tend to directly apply the technical methods of urban planning in the process of village planning, while ignoring the differences between the working base map and the main body of village planning and urban planning (Table 4). As a result, village planning not only violates the "law of natural growth" in rural areas, but also does not conform to the values of "theory that man is an integral part of nature" in rural areas. Problems such as "urban community" and "villagers gathering and going upstairs" are prominent (Mei et al. 2016, Gu and Jiang, 2015).

Table 4: Differences of working base map and subjects between urban planning and village planning in China

Base map or subjects	Contents of planning	Urban planning	Village planning
working base map	Land ownership	State-owned land	Village collective owned land
	Land usage	Urban construction land	Village construction land and agricultural land
	Planning pattern	Mechanical form under guidance policy	Organic form in free growth
	Social environment	Profit-driven values	The values of harmony between man and nature
Working subjects	Participant	Government, developers, citizens	Village autonomous organizations and villagers
	Service principal	Citizens, developers	Village autonomous organizations and villagers
	Interest subject	Government, developers, citizens	Village autonomous organizations and villagers
	Construction subject	Government and market	Self-built

2.3 Crisis of moral legitimacy: Dilemma of maximizing the public interest

Habermas believes that the political order must be established on the basis of the value of justice, in order to obtain the universal recognition and obedience of social members. The basis of the value of such justice is the value orientation of public interest (Wang et al, 2007). As a public policy of the government to coordinate the allocation of various resources in the village, village planning is a public product involving the vital interests of all villagers. It should and must take the orientation of villagers' public interests as the initial motivation and the maximization of public interests as the final goal. However, in the actual implementation process, the village planning is often easy to enter the dilemma of maximization of public interests due to restrictions such as elite deprivation, operation of black box and symbolic public participation.

2.3.1 Village planning weakens the choice of maximization of public interests

On the one hand, the top-down village planning is motivated by the rural society, economy and land urbanization, and carries out administrative intervention in the allocation of spatial resources and the supply of public products, ignoring the expression of villagers' will and public interests, which results in the weak public interest attribute of village planning. Especially now, with the establishment of the village free economic market, the village has gradually evolved into a compound field of interwoven monetary interest relationship network and emotional interest relationship network. The maximization of private interests based on the principle of individual freedom has become the universal pursuit of social members. *In the establishment process of village planning, there is no balance of interests between the grassroots government, developers, villagers' self-governing organizations, villagers and other multiple subjects, and the "Pareto Optimality" of public interests cannot be achieved. Instead, it enters into the "Sen's paradox Paratian liberal"* (Wang and Li, 2010).

When the value orientation represented by the public policy cannot meet the interest demands of the whole society, the government can only choose to take the maximization of administrative collective interests or part of individual interests as the value orientation, and selectively ignore the multiple demands of the society members. *The village elites such as the village able person and the strong village collective become the biggest beneficiaries, whom also dominate the discourse power of village planning, project fighting and implementation. "Elite deprivation" and "operation black box" appear in the village planning and construction projects, which leads to the village interests from the maximization of public interests to the maximization of private interests.*

2.3.2 Village planning weakens the choice of maximization of public interests

On the other hand, the current laws and regulations have no clear statutory constraints on the public participation mechanism of village planning in terms of procedures and systems, and *there is no unified quantitative standard for the number and degree of participants, resulting in a large flexible operation space for public participation in the establishment process of village planning.* A village survey shows that village planning is often prepared without public discussion by villagers, and the publicity process of village planning only lasts for 15 minutes without any consultation from villagers.

According to "the Theory of the Ladder of Citizen Participation " raised by Sherry Arnstein(1969), China's village planning is still in the stage of "Tokenism" such as "Placation", "Consultation" and "Informing" (Figure 2), which is not true and effective public participation (Zhang and Zhou, 2015).

Such public participation lacks substantial public interest expression channels and planning feedback, resulting in a serious squeeze on the channels for villagers to express public interest. In this case, the villagers lose the main behavior ability and show low trust and resistance to the grassroots government, thus refusing to obey the village planning.

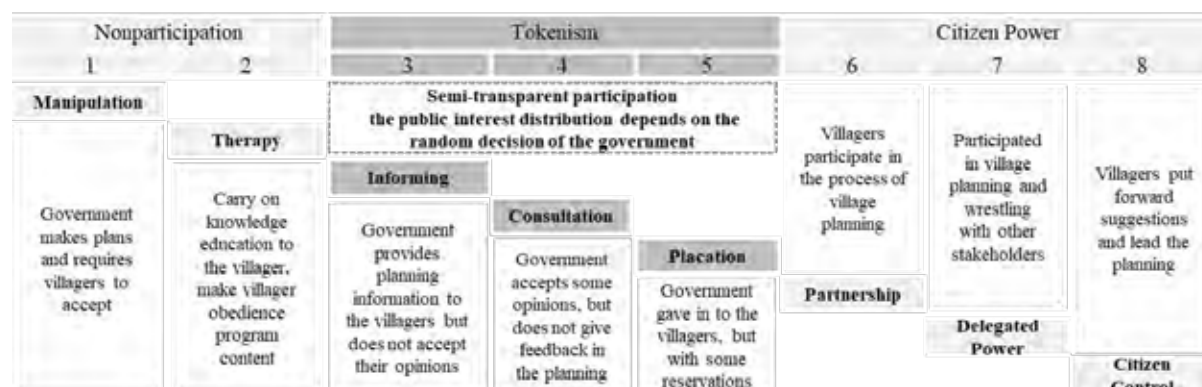


Figure 2: The Ladder of Villager Participation in current village planning in China

3. Resolution of the legitimacy crisis of village planning

To sum up, the legitimacy crisis of village planning comes from three directions. Firstly, the relevant conflicts and loopholes of laws and regulations. Secondly, the technical problems of planning establishment, management and implementation. And the last is the relative deprivation of villagers' public interests.

3.1. Legal remedy of the URPL

He Qiangwei (2001), a Chinese law professor, believes that the rationality of modern urban and rural planning comes from the empowering act of legislation, which directly affects the value basis of the legitimacy and rationality of the administrative act of urban and rural planning. That is to say, the legitimacy basis of the administrative act of village planning is directly related to the full range of empowerment laws and regulations. And the systematic loopholes of laws and regulations directly determine the legitimacy crisis faced by the later implementation of village planning. In accordance with the URPL, Administrative Procedure Law of the People's Republic of China, and Administrative Reconsideration Law of the People's Republic of China, villagers have the right to challenge the establishment and implementation of village planning and its legal status as a normative document, namely the legal right to carry out legal remedy(Chen and Liu, 2001). But in reality, the jurisdiction of this legal remedy cannot cover the national law. Therefore, *perfecting the URPL and establishing the legal remedy mechanism of village planning have become the top priority to eliminate the crisis of village planning legitimacy.*

Specifically, according to the Constitution, the articles of the URPL on the establishment, implementation, supervision and inspection of village planning should be reasonably amended, as shown in Table 5.

Table 5: List of amendments to relevant regulations of village planning in the URPL

Article No.	Original Content	Modify Principle	Modified Content
Article 22	The people's government of a township or town shall take charge of establishing the township or village planning, and shall file such planning with the people's government at the next higher level for examination and approval.	Add contents of villagers' participation in village planning	The people's government of a township shall take charge of establishing the township planning. The village autonomous organization shall apply to the people's governments of a township and town for the establishment of village planning. It shall take charge of establishing the village planning, or may entrust the people's government of a township or town with the establishment.
Article 41	To build facilities within a village planning area, the construction entity or individual shall file an application with the people's government of the township or town, which shall submit the application to the competent department of urban and rural planning of the people's government of the city or county for issuing a planning permit for rural construction.	Add contents of planning permit for rural construction must conform to the content of village planning.	To build facilities within a village planning area, the construction entity or individual shall file an application with the people's government of the township or town. The people's government of a township and town shall examine and verify whether it conforms to the village planning. If yes, the people's government of a township and town shall submit the application to the competent department of urban and rural planning of the people's government of the city or county for issuing a planning permit for rural construction.
Article 52	A local people's government shall report the implementation situation of urban and rural planning to the standing committee of the people's congress at the same level or the people's congress of the township or town, and shall be subject to the latter's supervision.	Add contents of supervision and inspection of village planning	A local people's government.....to the latter's supervision. The implementation of the village planning shall be reported by the villagers' autonomous organizations to the people's congresses of the townships and towns

3.2 Update the standard of village planning

With the revision of relevant provisions in the urban and rural planning law, the technical operation of village planning also requires the establishment of rational technical guidelines for planning, forming the legalization of the whole process from legal provisions to implementation. Therefore, the current establishment system, standard system and technical system of village planning need to be adjusted to meet the needs of the new era of village planning.

3.2.1 Reconstruction of the establishment system of village planning

The current four-level establishment system of village layout planning, village comprehensive planning, village construction planning and special village planning should be adjusted into a three-level system. *Specifically, the contents about village development goals, positioning and comprehensive layout of village layout planning and village comprehensive planning should be incorporated into the mandatory contents of the comprehensive planning at the next higher level as the legal basis for later village construction planning and special planning.* And integrate the remaining contents of the village comprehensive planning with the village construction planning into a new village planning. Ensure the consistency of village planning from planning to implementation, and serve as the guiding basis for special village planning.

3.2.2 Revising the standard system of village planning

Due to the absence of national standards and the chaotic characteristics of local standards, it is necessary to issue the unified national village planning standards as soon as possible and establish a rational village planning standard system to standardize the technical methods and achievements of village planning across the country. In view of the big differences in the social, economic, cultural and ecological environment of villages in various provinces and municipalities, the standard system of village planning need to be divided into mandatory and non-mandatory (Table 6).

Table 6: Revised standard system of village planning

<i>Standards in village</i>	<i>Mandatory or non-mandatory</i>	<i>Explanation</i>
Land use classification	Mandatory	The unified classification of land use shall be determined to ensure the consistency of the planning base map
Infrastructure allocation	Mandatory	Determine the minimum standard of infrastructure allocation according to the building climate zoning to ensure basic living needs
Ecological management	Mandatory	Determine the bottom line of village ecological control and unified demarcation standards for village ecological control areas to protect the ecological environment

Scale determination	Non-mandatory	The village scale should be reasonably determined according to the current population, economy and construction level of the village
Per capita construction land	Non-mandatory	The standard of construction land use should be determined according to the actual per capita land use in villages
Public facility allocation	Non-mandatory	The allocation standard of public facilities should be determined according to the scale and level of villages
Landscape control	Non-mandatory	The requirements for landscape control should be determined according to the actual situation of the village

3.2.3 Rectification the technique system of village planning

We should respect the "natural law" and "value rationality" of villages, get rid of the dependence of traditional urban planning technology path, establish a set of village planning results and technical requirements with strong applicability, and form a complete and specialized technical method for village planning, so as to provide technical basis for village planning in various regions.

3.3 Establishing a contractual village planning

How to give full play to the "public policy effectiveness" of village planning and realize the high overlapping of "policy effect" and "villagers' interests" has become an important basis for the moral legalization of village planning. Modern contract theory holds that village planning is an "inter-subjective consensus" reached by social members based on procedural justice, and also a "contract" result of free choice among multiple interest subjects. Achieving "contract equality" has become an important symbol of village planning towards public policy. From this perspective, village planning should adhere to the principle of contractual equality and achieve a relationship of equal rights among the multiple subjects, so as to achieve a fair result of village planning.

The way to realize the multi-subject equal rights in village planning lies in empowering the people. That is to say, it empowers villagers to participate in all processes of village planning, transforms villagers from marginal groups into behavioral subjects and decision-making subjects of village planning, and changes from "tokenism public participation" to "substantial public participation". The details are as follows:

First, a village planning team should be established, including village autonomous organizations, villagers and planners. Village autonomous organizations are responsible for entrusting planners to establish village planning and organizing villagers to participate in the process of the establishment. Villagers are responsible for coordinating their participation in village planning and making suggestions and interest appeals. Planners need to go deep into the rural site survey, widely collect the real needs of villagers. And they also need constantly feedback the needs and wishes of villagers into the planning scheme to maximize the expression of the public interests of villagers and village

autonomous organizations. Secondly, a fair "contract" should be sought among the grassroots government, developers and the village planning team, so as to balance the interest game among multiple subjects. Finally, on the basis of fair "contract", the village planning team, developers and the grassroots government jointly complete the implementation and management of "contractual village planning".

4. Conclusion

Although the URPL has promoted the legalization of village planning at the national legal level, and also given village planning the legitimacy as the legal basis and technical blueprint for village development from the perspective of national legislation. However, a series of problems still exist in the implementation of village planning, which are rooted in the imperfection of the three-phase legitimacy structure of village planning, the uncertainty of the implementation environment and the instability of the reality foundation. As a complex administrative act, village planning contains a complex process from abstract to concrete, from blueprint to implementation. In the future, further argumentation and analysis are needed to truly promote village planning towards public policies and ensure the legal status of village planning in the process of rural construction.

Numbering

1. Accept; [1]

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Track 15: Tourism, Public Spaces and Urban Cultures

Land use planning, tourism intensification and regulation of short term commercial visitor accommodation: the case of Edinburgh

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Abstract: Many cities globally have seen an expansion of short-term rental accommodation (via online platforms) as a means of increasing capacity and encouraging additional tourism revenue. This has led in some cases to concern for more effective regulation, for instance via land use planning, because of problems such as loss of amenity. There are also concerns that this has led to displacement of the supply of traditional residential letting, as well as a rise in overall rents and capital values. This paper considers the case of Edinburgh and the associated potential of regulation via land-use planning. It explores how such regulation might seek to minimise problems while retaining benefits arising from expansion of the overall tourism sector and associated revenue. However this is not straightforward, as evidenced by the significant variation in practice between cities this regard. In addition, there are significant associated problems related to the difficulties of detection, monitoring and enforcement in relation to letting activity. The experience of Edinburgh in these respects is instructive for many other cities globally which experience similar pressures.

Keywords: urban, regeneration, tourism

Introduction

The use of Short Term Lets and Short Term Commercial Visitor Accommodation (STCVA) has grown globally to a significant extent in recent years. In Edinburgh, the use of such accommodation has been particularly prevalent during the peak tourism months, especially August and December/January. Essentially, STLs comprise home-sharing (with a property or part of this being rented for a small element of the year but with the property remaining the primary residence of the owner) and Short Term Commercial Visitor Accommodation (with a whole property rented for a significant part of the year and not the residence of the owner) (Crommelin et al, 2018).

The use of STLs has been a way of expanding accommodation to meet the increased demand from tourists during peak periods (Swanson, 2018a). The contributing factors in relation to such growth include the increasing demand from tourists for accommodation which is more like a home than a hotel, with access to residential amenities such as a kitchen (Guttentag, 2015), as well as the increasing use of cheap air travel. The rapid expansion of such uses in many cities has been facilitated by the expansion of the 'sharing economy' (Ferrerri and Sanyal, 2018), with the rapid growth of peer-to-peer services which have allowed easy and rapid proliferation and delivery of STL, including for instance Airbnb and Booking.com.

While the specific causes and effects of STLs are context-dependent to a large degree, the outcomes in many cities have been similar and transformative, and have raised a series of common questions and issues in relation to implication for existing communities. Consequent approaches to regulation, for instance in relation to loss of amenity, have so far been varied (Gurran, 2018).

This paper considers the case of Edinburgh, in terms of the implications of the growth of STLs (focusing on STCVA), including the potential for regulation to ameliorate the problems caused, whilst allowing benefits (particularly economic benefits arising from increased tourism spend) to be maximised.

A significant factor in Edinburgh is the city's distinctive history of home sharing, because of the high seasonal variation of tourism in the city (arising from its history of the festivals essentially taking place in August, as well as the large numbers of tourists coming to the city for the New Year 'Hogmanay' festival). As a consequence, there has been a long-standing practice of many residents providing temporary accommodation for visitors. This kind of use – what may be called 'home sharing' – does not have a significant impact on wider housing and does not have the same level of implications on cities as does STCVA (Gurran and Phibbs, 2017).

In overall terms there would seem to be around 9,000 STL/STCVAs in Edinburgh, with these being largely concentrated in the centre of the conurbation; over half of all Airbnb bookings in Edinburgh occur within the city centre (Mitchell, 2019). This pattern of uses seems to broadly replicate evidence elsewhere in Europe (Colliers International, 2018). In addition, in Edinburgh, whole-property lets are the fastest-growing sector of STL/STCVA, and in 2017 the sector amounted to 20% of all visits to the city; there was also a 70% increase year-on-year in such visits during 2017 (Mitchell, 2019).

Impacts and issues

A range of impacts may be seen to have arisen from the growth in the above types of accommodation, globally as well as in the case of Edinburgh. Perhaps the most evident in many cities has been the effect on residential amenity, for instance in terms of increased noise, anti-social behaviour, and related concerns over security and safety (for both visitors and residents). Such effects are of course part of a wider process whereby tourism uses gain prominence over traditional residential uses. This and related factors are considered below.

Loss of amenity

The introduction of STL/STCVA may affect residential amenity in many ways, for instance via noise and anti-social behaviour, as a consequence of the fact that visitors lack the relationship to the area that long term residents have. An extreme case in this context is that of so-called 'party flats' with clear implications for noise and nuisance. Of course, for home-sharing, such issues are ameliorated since neighbours can complain directly to the permanent resident, who also would seem to have an incentive to ensure that visitor behaviour is appropriate since they need to maintain appropriate coexistence with neighbours.

A further issue in this context is the nature of the accommodation itself. In Edinburgh for instance a large number of STCVA arises in tenemental properties, which coincide with areas where there is high demand for visitor accommodation. Particular problems may arise in such areas as a consequence of their high residential density, and the prevalence of common areas which may be neglected by landlords. Indeed, some observers have consequently suggested that tenemental properties are unsuitable in principle for use as STCVA. Certainly, the effects of visitors arriving at unusual hours, and using keyboxes to gain entry to flats and perhaps being unaware of which flat they need to access, might be magnified in such properties. While local authorities do have powers in relation to addressing noise and anti-social behaviour, there may be limited enforcement in practice.

Maintenance

There are also issues concerning the need for building maintenance; in Edinburgh, this relates particularly to the common spaces within traditional tenements, particularly the communal stair or 'close'). The assumption is that the operator of STL/STCVA is less likely than a traditional resident to carry out the repair of such areas, and so

in a tenement which comprising a number of residents and/or STL/STCVA operators there may be a greater reliance on a smaller number of residents for essential maintenance. Indeed, there have been anecdotal accounts in Edinburgh of tenemental properties with only one remaining resident remaining, leading to severe disturbance in such cases.

Of course, it may be argued that it is in operators' interests to ensure that their property is well maintained so as to ensure that there is sustained demand for it (ASSC, 2018). But in normal circumstances priority for maintenance is less likely where a permanent resident is absent. In addition, commercial operators may visit properties infrequently, and they may outsource cleaning and waste removal services, leading to a loss of accountability for maintenance issues.

There are also specific factors pertaining to Edinburgh in terms of maintenance issues, since the concentration of STL/STCVA in the Old and New Town areas means that they are also concentrated in areas with a very high density of historic buildings, which are more liable for need for maintenance.

Safety

Equally, there are many concerns on the issue of safety, because operators of STL/STCVA may be less likely than permanent residents to take account of the need for safety certification fire regulations for instance. This may be compared to the need for compliance for the operators of hotel and bed and breakfast accommodation. As with maintenance, it may nevertheless be argued that operators should be incentivised to ensure appropriate safety arrangements are in place in order to ensure a sustainable business operation (ASSC, 2018).

Specifically, there is a range of safety legislation in Scotland for the private rented sector as well as traditional guest accommodation such as hotels, for instance for gas, fire and electrical performance as well as more general public health and safety; however, this does not apply to private residential accommodation used for STL/STCVA. This is a significant issue for instance in view of the potential for STCVA to provide de facto 'hotels' (albeit potentially unregulated), which can put visitors (as well as neighbouring residents) at significant risk. In addition, in the case of safety, residents operating STL home-sharing may in fact be at greater risk than commercial operators, since they may have lesser knowledge of legal requirements. While the ASSC requires members to have certificates in relation to safety of their accommodation (ASSC, 2018), many operators may not be members, and this anyhow would not apply to home-sharing STL uses.

Loss of housing

Many observers also highlight the potential impacts of STL/STCVA via the loss of available housing. STCVA attracts a higher investment yield than traditional longer term letting, so many landlords choose to 'convert' traditionally let properties to STCVA, possibly involving the removal of existing tenants, as well as the loss of opportunity for traditional letting when properties are put up for sale. Indeed, it may be suggested that this process has contributed to a net loss of 10% in the PRS housing sector in Edinburgh in recent years (Mitchell, 2019). Such a loss of housing has also been noted in London for instance, particular in terms of the loss of affordable housing for short term rent (Simcock and Smith, 2016).

In Edinburgh, these issues are compounded by the geographical concentration of STL/STCVA, with clear 'neighbourhood' effects in terms of loss of traditionally let or occupied housing evident in areas such as within the Old and New Town World Heritage Site. Nevertheless, arguments over loss of housing have been contested however with contrasting views asserting that housing supply in Edinburgh is not significantly impacted by STL/STCVA growth (ASSC, 2018).

Gentrification

It is also asserted by many that the growth of STL/STCVA has led to gentrifying effects for instance via the increased costs of housing (linked in turn to reduced supply). There would certainly seem to be clear evidence of such impacts in Edinburgh, and the proliferation of STL/STCVA would seem to be acting as a contributing factor to driving up property prices. This is linked in turn to broader arguments in relation to gentrification as a process, and in Edinburgh this is reflected in the increase in development of uses such as hotels in the Old Town for instance. These arguments are of course reflected in many other cities including in particular Amsterdam, Berlin, San Francisco, New York and Barcelona, prompting a range of regulatory responses (Brauckmann, 2017; Wachsmuth and Wiesler, 2018).

World Heritage Site

The case of Edinburgh is also distinctive because of the presence of the World Heritage Site, which coincides with the main area of concentration of STL/STCVA. This may be seen to exacerbate the potential damage to historical heritage in the city, as shown for instance by the proliferation of key safes (allowing secure exchange of keys) which are located on many communal buildings of historic value. Moreover, more broadly, the contribution of the increase in STL/STCVA in the historic centre of Edinburgh may contribute to a loss of community character which in turn may exacerbate the threat to loss of World Heritage status, particularly with Edinburgh's World Heritage Site being distinctive as a residentially inhabited site.

Taxation

There are also concerns in Edinburgh (similar to many other cities) over the loss of taxation revenue associated with increasing STL/STCVA since it is argued that there is significant non-compliance with regulations in this sector with respect to council tax and non-domestic rates for instance, though it is asserted by the ASSC (2018) that there is little verifiable quantitative evidence in this context. Certainly, however, in many other cities (such as Barcelona for instance), the growth of this sector would seem to have led in many cases to provision of what are in effect unregulated and untaxed hotels.

Wider tourism context

The growth of STL/STCVA is clearly part of a wider growth of tourism, which is often encouraged as a means of economic diversification, via making use of opportunities arising from the global growth in the tourism sector (particularly in contexts such as China). There is a strategic aim in Edinburgh to increase tourism in the city, with the 2012 strategy aiming to increase tourism numbers by one-third by 2020 (ETAG, 2012), though, clearly, this would seem likely to lead to sustained tensions with city residents. There have also been associated calls for a tourism tax to address the externalities resulting from increases in tourism numbers..

Certainly, the growth of STL/STCVA in Edinburgh offers a way of increasing accommodation for tourists without the need for significantly increased numbers of hotels. There is also a global trend for tourists to seek greater 'authenticity' in their tourism experience, which might be seen to be assisted by growth in STL/STCVA. In addition, such growth might be more dispersed throughout the city than traditional hotel and related accommodation, which could assist with wider dispersal of economic benefits (ASSC, 2018; Scottish Government, 2018).

Legislative context in Scotland

The growth in the provision of STL/STCVA in Edinburgh, as well as related concerns over the issues set out above, have led to calls for more effective regulation and control of the sector. This is also paralleled globally

(Edelman and Geradin, 2015). In the context of land use planning in Scotland, a current difficulty arises since STL/STCVA do not constitute a ‘use class’ for the purpose of requiring planning permission; consequently, where such a use is brought to the attention of the local authority for instance via planning enforcement complaints, this means that an individual decision must be made concerning whether the operation constitutes a change of use (Mitchell, 2019). This would seem to lead to inconsistent decision-making and confusion for the stakeholders involved; it would also seem to lead potentially to wasted resources applied to appeal processes.

These issues are particularly relevant for STCVA, since this can clearly be seen as distinct from normal residential use. Nevertheless, there is significant debate on this issue: some assert that STCVA (as well as STL) is compatible with a residential use class (ASSC, 2018), while others argue that all cases of STCVA should constitute a change of use. In fact the City of Edinburgh Council has produced guidance on this issue via its *Guidance for Business* (CEC, 2018); this sets out factors for consideration which include impact on local amenity; size, scale, frequency and pattern of the use; and the character of the area in which the use is located.

Future ways forward

Self-regulation

Some argue that this would allow several potential ways forward in the case of Edinburgh, with respect to the growth of STL/STCVA. In overall terms this is based on the assumption that markets have the capacity to regulate themselves (Gurran and Phibbs, 2017). Certain, in Scotland, the ASSC suggests that a voluntary code could be helpful (ASSC, 2018); nevertheless, membership of this organisation is not universal for STL/STCVA operators, and, in any event, the only reasonable sanction against non-compliance would be revocation of membership (Mitchell, 2019).

The Scottish Government’s Expert Advisory Panel for the Collaborative Economy (Scottish Government, 2018) considered proposals from Airbnb for self-regulation in terms of STL/ATCVA. Specifically, Airbnb argued that self-regulation could allow operators to let properties for up to 90 days per year (though not including the summer and winter festival periods). This has been criticised since the time periods appear to be generous (since in practice they could allow in excess of 150 days per year); and the self-regulation would of course not apply to other platforms hosting STL/STCVA.

Licensing

There would also seem to be significant potential for some form of licensing to be applied to address the issues identified above. As of 2019, the City of Edinburgh Council had requested the Scottish Government to ensure that the necessary legislation was passed to allow this to progress. Specifically, the local authority hopes to introduce a licensing requirement for STL/STCVAs which operate for over 45 days per year; a test for operators; and the potential for limitation of number of STL/STCVA uses within a geographical area of the city. These proposals would seem to have support from many stakeholders in the city (Mitchell, 2019).

Planning permission requirement

As a result of the increasing concerns in Edinburgh, the Scottish Planning Bill currently (as of 2019) progressing through the Scottish Parliament has included consideration of an amendment proposing a change in the definition of ‘development’ in law which would require a planning application for a change of use from residential to operation of ‘a dwellinghouse for short-term holiday lets’ (namely where this is not the sole or main residence of the owner, though the definition could take into account the threshold of a certain number of days per annum for letting), but this has been contested.. Such a provision would allow the local authority to produce relevant policies for instance to determine the overall level of STCVA; the areas where it is to be focused,

and areas deemed to be at risk from growth in this sector (Mitchell, 2019). The implementation of such proposals would arguably allow many outstanding issues to be addressed as well as bringing more consistency in the treatment of STCVA.

This leads in turn of course to the potential for framing of appropriate policy for instance to either concentrate or disperse STCVA uses, in what way. However, this is not straightforward. Arguments for dispersal suggest that this might reduce problems of erosion of amenity in the city centre for instance, as well as bringing economic benefits to more marginal parts of the city, via the (albeit limited) spending of visitors in local shops and on local services. The notion of dispersal of such uses would also seem to chime with the common strategy to address problems of tourism congestion in cities by moving tourists away from ‘honeypots’. Such a policy has been applied successfully in many cities such as Amsterdam, and has been suggested as a way forward for managing tourism impacts in Edinburgh. However, there is no clear consensus on where in Edinburgh STCVA might best be located in the future, in relation either to area, or to type of property. In relation to area, some suggest the need for alternative tourism zones within designated parts of the city (such as Leith), but equally of course there is also the potential for extreme dispersal, or a mixture of both of these approaches. In relation to the type of property, many commentators have suggested that tenemental property, widespread in the city centre, is not ideally suited to such uses, and that additional STCVA would result in disproportionate loss of amenity in areas that have a significant concentration of tenemental or flatted accommodation. This would further underline the argument for dispersal from the city centre.

Conversely, however, there may be cases where concentration of STCVA uses in the central areas of cities might be deemed appropriate, for instance where there is clear linkage to local services and attractions, or where there is limited public transport availability. What would therefore seem to be needed is further research in this context to ensure that policy going forward can be evidence-based to enhance its effectiveness.

Availability of data

An added advantage of the use of measures such as licensing and planning permission requirements would be the consequent increased availability of data in relation to the actual use of STL/STCVA, since the use of such data seems essential for the development of appropriate policy. At present the diversity of platforms in relation to STL/STCVA means that the generation of accurate data is difficult (Cockburn Association, 2018), and peer-to-peer platforms have not always been willing to share relevant data (Frenken and Schor, 2017). Hence, if data could be obtained directly from operators (for instance from licensing/planning permission requirements), this would assist greatly with the formation of appropriate policy (Mitchell, 2019).

Conclusions: legislation and policy

There are clear implications from the above discussion for the need for appropriate legislation and policy to address STL/STCVA. In terms of legislation, measures to require planning approval for operation of STCVA would allow the local authority scope to manage the development of these uses. This might be accompanied by a system of licensing. Such measures would have the potential to address to an extent concerns surrounding issues such as safety, and would have clear benefits for the collection of appropriate information. While measures such as these have relevance more generally in other contexts, the potential for some form of ‘model’ solution for regulation of these uses is contested.

On the one hand, the issues brought about by the growth of STCVA and STL would seem to be similar in many contexts globally, particularly between contexts with similar characteristics, such as historic cities with high (and growing) levels of tourism. This would seem to imply the potential for cross-national learning to develop good practice for application in different contexts. In addition, platforms such as Airbnb have emphasised the advantages of a ‘model legislation’ approach (at least within one nation state) whereby the same regulatory

approach can apply in different contexts (Ferreri and Sanyal, 2018). On the other hand, however, there are also clear arguments in relation to the importance of geographical and other specificities, which suggest the need for different local approaches. Nevertheless, of course, legislation in relation to planning requirements might be applied in national legislation, but applied via locally derived policy.

This leads to the potential need to develop policy via local authorities such as Edinburgh to set out where STCVA might best be located. Certainly, the provision of clear data in relation to existing provision of STCVA (coming for instance via licencing and planning requirements) could be very helpful in this respect. But the issue of location policy for STCVA could usefully be the scope of further research, since this issue involves potentially conflicting concepts and assumptions.. Clearly, further research in relation to the potential of such policy could be of benefit to many cities globally as well as Edinburgh.

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Evaluation of the Land Value Capture (LVC) experience in the City of São Paulo, Brazil

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Abstract: The use of Land Value Capture (LVC) tools has been advocated by many authors as way of financing public investment and projects. The rationale behind these tools is to capture part of capital gains on land derived from public sector interventions on urban development, such as infrastructure implementation or land use regulation change. They can be of great importance in very limited budget environments such as rapid urbanising countries that need to provide a great amount of infrastructure and urban services to accommodate urban growth. The City of São Paulo, Brazil, has implemented LVC since the 1980s through a wide range of different tools. The objective of this paper is to evaluate the implementation of two of these tools, Additional Building Rights Certificate (CEPAC – *Certificado de Potencial Adicional Construtivo*) and Additional Building Rights Levy (OODC – *Outorga Onerosa do Direito de Construir*), from 2002 until 2014. Rather than evaluating these instruments just from a revenue point of view, the work intends to analyse also how effective they are in reducing social disparities, considering the location and kind of investments done. This work was financed and present partial results of a Research Project funded by FAPESP (São Paulo State Research Support Agency), process # 2017/15256-1.

Keywords: urban planning, public policy, land value capture, São Paulo.

1. Introduction

1.1 Background

The discussion about the use of new urban planning tools based on land value capture (LVC) for urban projects financing in the city of São Paulo dates back from the 1970s. The experience of Spain, Italy, France and the USA had much influence in the study and proposition of a new legal framework separating the right to build from the right of property, based on tools such as Additional Buildings Rights Levy, compulsory urbanization, pre-emption rights and the Transfer of Development Rights (TDR)(São Paulo, 1979).

In these discussions, the concept of “Created Land” was highlighted, corresponding to the “any built area that exceeds a certain proportion of the plot area” (Azevedo Netto, Moreira, et al., 1977, p. 9). This concept arose in 1975 reflections that were being developed by several technicians of the public administration, mainly linked to CEPAM (Centre for Studies and Research of Municipal Administration of the State Department of Home

Affairs)(Moreira, De Ambrosis, et al., 1975). It was widely disseminated in the following years by CEPAM and IAB (Institute of Brazilian Architects), in seminars on the subject, and in the general and specialized press (Memorando, 1977).

Based on this concept, it was proposed to use three new instruments: a single Floor Area Ratio (FAR) for the whole city, the Transfer of Development Rights (TDR) and the proportionality between public and private land. On fixing a single FAR for the whole city, any exceeding built area above this FAR would only be possible by transferring the building rights from another area, either by the acquisition of these right from private owners, or from the Municipality, and in this latter case, either in cash or in the offer of other land of interest to the community.

In the case of the transfer of building rights, this would occur through certain rules set by Local Authorities. Finally, all this discussion was based on the proportionality between public and private land, in other words, the proportionality of population density, which would come from building densification, and the provision of land for public facilities, such as kindergartens, schools, health unities and public spaces, or for redevelopment projects. In the case of the TDR, the idea was also linked to the preservation of buildings of historic interest, as was already done in cities like Chicago and New York in the USA.

The City of São Bernardo do Campo was the first in Brazil to adopt the “Created Land” in its Master Plan, charging for any construction above the single FAR and depositing the money arose from these charges on a “Green Area Fund”, to be used to acquire land for public spaces and parks (Contador, 1977).

The concepts defined on this period would later base the creation of the Additional Building Rights Levy (OODC – *Outorga Onerosa do Direito de Construir* in Portuguese) to obtain resources for urban development. Rezende et al. (2009), in an article analysing the theoretical construction of the OODC, corroborate this idea, showing the evolution of the line of thought of the “Created Land” throughout the 1970s, 1980s and 1990s until the regulation of the OODC by the Federal Law 10.257 / 2001 (Rezende, Furtado, et al., 2009).

Also in the late 1970s, the Municipality of São Paulo itself considered the adoption of “Created Land”, as evidenced by studies developed by COGEP (General Planning Coordination), predecessor of SMDU (São Paulo Urban Development Department) (City of São Paulo, 1979). In addition to the study of foreign experiences, these studies presented analyzes of the economic, physical, legal and institutional aspects of the application of “Created Land” and the use of TDR in historical areas (Espallargas et al., 1979a; and 1979b).

The São Paulo Mayor Olavo Setúbal (1975-1979) even sent a bylaw project regulating the “Created Land” to the Municipal Council, however, the project was withdrawn from the agenda, under pressure from the Brazilian Minister of Finance, Mário Henrique Simonsen, who considered the instrument as inflationary (Memorando, 1977).

Over the years the concept continued to be discussed by the technical staff of the City Hall and in 1991 was incorporated into the proposal for Master Plan revision. This law project proposed the adoption of a single FAR equal to one for all the Urban Zone, with the exception of special zones and cases provided by law.

Densification areas were defined where the FAR 1:1 could be exceeded up to the limit of an available building area stock. The funds collected would be deposited in the Urbanization Fund (FUNDURB) and should be used as a priority in the execution of the ZEIS (Social Interest Special Zones – a sort of inclusionary zoning) programs, in the fulfillment of affordable housing demand, in the public spaces implementation, drainage works and roads of the structural transport system programs.

Despite the new concepts brought by this plan, it suffered great resistance from the real estate sector. The point was not to be against the single FAR, but to be against the value equal to one. For the industry, the FAR should be at least 2:1. Finally, at the time of presentation to the City Hall, entrepreneurs made strong resistance to keep the “rules of the game” unchanged, that is, the existing zoning (Antonucci, 2002). At that time, many criticisms were made by several people related to the real estate market, including architects that said that the adoption of OODC would render construction unviable in the city of São Paulo.

1.2 The Interconnected Operations (IO)

However, the concept of created land was only used in the city of São Paulo through the Interconnected Operation urban planning tool (Montandon, 2009). Established under bylaw 10,209/1986, this instrument allowed owners of land occupied by favelas or precarious housing to request the City Hall a major FAR than the allowed, provided they were obliged to build or to donate social housing to the favela population. The name interconnected operation came from the necessity of a married operation between the modification of the FAR, removal of the favelas and relocation of the population in the built housing units.

Subsequently, this instrument was amended by bylaw 11.773/1995, which allowed for the revision of the FAR and other land use regulation of any land in the city, with a financial counterpart linked to the Municipal Housing Fund (FMH). By this law, the revised FAR could reach 4:1 and the building could occupy 80% of the plot area (OR – Occupation Rate of 0.8).

In 1998, the State Public Attorney charged an ADIN (Action of Unconstitutionality) against the use of the IO by São Paulo Municipality in the State Court as it gave to the Executive prerogatives of zoning change inherent to the Legislative. The Court accepted the action and the use of the tool was considered unconstitutional in 2000.

2. Recent implementation of Land Value Capture Tools

2.1 The Consortium Urban Operations

Another urban planning tool that used the concept of the created land was the Urban Operation. The idea of this instrument emerged from a series of studies carried out by SEMPLA (City Planning Department), between 1983 and 1985. The dossier resulting from these studies defined urban operations as “integrated sets of urban interventions developed in determined areas of the city under the coordination of the municipality, aiming to obtain results relevant to the objectives of the Master Plan”, with the objectives of making feasible the production of social housing, urban infrastructure, public facilities with the participation of private entrepreneurs (City of São Paulo, 1985 *apud* Montandon, 2009 , p.15).

The above concept of Urban Operation was inserted in the proposal of the 1985/2000 Master Plan, but in the real plan, established by the bylaw 10.676/1988, its concept was simplified and its importance reduced, since the Interconnected Operation was already working.

The instrument was only implemented in 1995 with the creation of the Faria Lima Urban Operation in the bylaw 11.732/1995. According to its registration prospectus at the Securities and Exchange Commission: “The Faria Lima Urban Operation was the first to produce effective financial results, that is, to generate a self-financing

environment for the execution of the public interventions provided by the additional building rights levy, thereby without compromising the municipality budget”. (City of São Paulo, 2008, page 47)

In 2001, the City Statute, Federal Law 10.257/2001, ruled the Urban Policy Chapter of the 1988 Federal Constitution, included this urban planning tool, redefining it as a Consortium Urban Operation (OUC), which is “a set of interventions coordinated by local authorities, with the participation of the private entrepreneurs, which aims to achieve structural urban transformations, social improvements and environmental remediation of a given area” (Brazil, 2001, article 32, paragraph 1). In 2002, the PDEMSP - São Paulo Municipality Strategic Master Plan established nine urban operations (City of São Paulo, 2002, article 225, § 2o).

The changes introduced in the City Statute and the 2002 Master Plan allowed a new form of financial funding beyond the OODC. The CEPAC (Additional Building Rights Certificate) is a bond issued by the Municipality of São Paulo, marketed on the stock exchange, corresponding to an additional building area for any plot within the perimeter of a Consortium Urban Operation. Each CEPAC is equivalent to a certain amount of square meters for use in an additional building area or in modification of uses and parameters of a land or project.

There are currently four regulated urban operations in the city of São Paulo: OUCAB - Água Branca Consortium Urban Operation (created in 1995 and revised in 2013); OUCAE – Água Espraiada Consortium Urban Operation (created in 2001); OUC – Centro Urban Operation (created in 1997); OUCFL – Faria Lima Consortium Urban Operation (created in 1995 and revised in 2004).

Currently, there is already a great theoretical reflection on the use of this instrument in São Paulo. The criticisms range from the exclusionary effects due to the “expelling” of lower income population, increasing socio-spatial segregation (Fix, 2001; Maricato; Ferreira, 2002); through the privilege of real estate issues of private interest to the detriment of the public interest (Castro, 2006); the lack of an urban design and an emphasis on the great road works (Vilariño, 2006; Nobre, 2009); and lack of efficiency in the recovery of land value capture in comparison with the public investments made (Montanton, 2007).

Urban operations proved to be an instrument with a high financial attractiveness, since in nineteen years of implementation they managed to raise R\$ 6.3 billion (around € 1.4 billion), corresponding to an additional building area of 5.97 million square meters, averaging R\$ 1,050 per additional square meter (€ 233), and in the OUCFL (Faria Lima Consortium Urban Operation) was the one that most appreciated, with the initial market value of CEPAC varying from R\$ 1,100 in December 2004 to R\$ 4,000 in May 2010 (SP Urbanismo, 2014a).

However, with regard to investments, there is a predominance of road works of the amount spent on all urban operations in the city of São Paulo. According to municipal data, 43% of the money spent on public works on urban operation was on road works. The second largest expense was in land expropriation for the works, corresponding to 19% of the amount. Public transportation and social housing expenses together accounted for only 31% of the total (14% for the former and 17% for the latter), partly explaining the criticism received from the way in which the instrument has been used.

Another issue that seems pertinent is that the OUC (Consortium Urban Operation) collects more, and consequently concentrates more investments, where there is already a great interest of the real estate market. In this regard, the two operations in the Southwest Region of the city accounted for 89% of the total amount collected by all four operations. This represents a very large spatial concentration of investments, since the areas of these two operations together amount to only 2% of the area of the city and by definition of the City Statute the resources collected inside an OUC can only be applied within its perimeter. This increased the socio-spatial differentiation on an already very segregated city.

In the review of this instrument in the current Master Plan, part of these problems may be remedied, since according to paragraph 1 of Article 142 “at least 25% (twenty-five percent) of the funds collected shall be invested in social housing within the perimeter of the Urban Consortium Operation, preferably in the acquisition of land for the housing units” (City of São Paulo, 2014). However, the implementation of collective transportation systems was not considered in this review.

Another issue that may improve the implementation of urban operations reviewed by the Master Plan is that they have now a greater social control, since their management council has to be parity between the Public Power and civil society.

2.2 The Additional Building Rights Levy (OODC)

Despite its use in interconnected operations and in the urban operations, the Additional Buildings Rights Levy (OODC – Outorga Onerosa do Direito de Construir) only came to be ruled for the whole city in the 2002 MASTER PLAN, after its definition in the Statute of the City, which consolidated the use of the concept of created land at the National level.

Pursuant to this Law, “city Master Plans may establish areas in which the building rights may exceed the Basic FAR up to the Maximum FAR, defined by the plan, upon the payment of the levy, taking into account the proportionality between the existing infrastructure and the expected density increase in each area” (BRASIL, 2001). It may also establish areas in which alteration of land use may be allowed. A bylaw shall establish the conditions to be observed for the ODDC and change of land use, determining: i) The formula for the levy; ii) The cases that may be exempted from payment; iii) The counterpart of the beneficiary.

The 2002 Master Plans first ruled the OODC for the whole city and defined the Areas of Possible Additional Building Rights Grant, whereas the building rights to could exceed the basic FAR (Cab) up to maximum FAR (Cam). The additional building stock was defined for the 96 Municipal Districts of the city. All the resources acquired by this levy should be deposited in the FUNDURB (Urban Development Fund).

One of the major difficulties to implement the OODC at this time was the possibility to use a formula whereas additional building rights were given for free as well as the plot coverage was diminished, tool based on the New York Incentive Zoning of that city 1969 Master Plan. Certainly this device was placed in São Paulo 2002 Master Plan as a transition for the real estate market to become accustomed to the new rules.

The OODC concept was revised in the 2014 Master Plan. The additional constructive potential was considered as a legal right, owned by the City Hall, with urban and socioenvironmental functions, corresponding to the difference between the constructive potential used and the basic constructive potential.

The basic FAR was defined 1:1 to the whole city in accordance with the created land idea of the 1970s. After 12 years of OODC implementation, the real estate market has already become familiarized to the instrument. The maximum FAR 4:1 was defined for the Structuring of Urban Transformation Axes Zones (ZEU), in the some economic development incentive zones (ZOE), and in the social interest special zone (ZEIS). The consortium urban operations will define their coefficients, respecting the basic FAR of 1:1. In the rest of the city, the maximum FAR is 2:1, except for areas where it was already smaller than this.

Interestingly, if on the one hand the amount of additional area is very close to the additional area built in all urban operations, on the other hand, the amount collected corresponds approximately to 1/4, while the average

value per square meter corresponds to 1/3, demonstrating the power of land value capture of the OUC. This was due in part to the outdated Municipality Land Value Map, and in part by CEPAC being a financial asset not tied to a specific venture, being bought by banks and investors, who then resell it for a larger amount of money, valuing the bond.

With a new calculation formula and update of the Municipal Land Value Map, it was expected a considerable increase in the collection of OODC. According to studies by SP Urbanismo (2014b), considering an average of residential and commercial gross area increase of 3.7 million square meters per year, the expectation of net collection with OODC's counterparts was R\$ 480 million a year (€ 106 million), representing an increase of three times the of average collected so far (2011).

Regarding the expectation of additional built vertical area, the values seem to be consistent with what has been happening in the city of São Paulo. According to data from the TPCL (Land and Building Taxes Register), between 2002 and 2012, there was an increase of residential and commercial built areas of 41.5 million square meters or 4.15 million square meters per year, (SMDU, 2014).

However, the economic crises Brazilian economy underwent following the 2008 USA Subprime Crises impacted São Paulo real estate market, reducing the amount of collect money to the half of it as the construction sector is very susceptible to economic changes, being the first to decrease production in times of crisis, returning rapidly in times of economic growth.

3. Final considerations

The implementation of LVC tools in São Paulo presents controversial results in the experience of interconnected operations, consortium urban operations and the additional building rights levy.

In spite of the fact that, historically, the use of collected resources for social purposes (social housing, community facilities and public transportation) has increased, the analysis of its implementation has shown a tendency towards aggravating socio-spatial disparities in a city already segregated in the two first cases (interconnected operations and consortium urban operations).

In the case of interconnected operations, the construction of social housing in the outskirts of the city as a counterpart to changes in urban legislation represented the removal of the population from the favelas and precarious housing from a privileged location in the city center to the outskirt regions, lacking in services and urban infrastructure. In any case, the use of the instrument was declared unconstitutional.

In the case of consortium urban operations, the predominance of the use of the resources collected in large road works, some of which are exclusively dedicated to the automobile, demonstrates an option that goes against the objectives of the universality of public policies and social justice of the Master Plan, since only a third of the daily metropolitan journeys are carried out by this modal and precisely by the population of higher income (METRÔ, 2007).

In addition, the two most successful urban operations in the resources collection are located in the most highly valued regions and most endowed with urban infrastructure in the city, which is why they are of interest to the real estate market. Due to restrictions imposed by the City Statute, resources collected in the intercropping operations can only be invested within the perimeter of the operation.

In this way, instead of a “virtuous cycle”, a “vicious cycle” of investment-valorization-reinvestment-valorization is created, increasing socio-spatial disparities. The fact that these two urban operations represent only 2% of the area of the municipality and have almost four times more resources to invest than FUNDURB is another factor that demonstrates the distortion of the use of this instrument.

The 2014 Master Plan seeks to reverse these negative aspects defining that at least 25% of the funds raised should be earmarked for the acquisition of land for social housing within its perimeter, but did not define anything about the implementation of public transport systems.

Regarding to social justice and public policies implementation, the additional building rights levy is the only instrument that can contribute to these. The recent regulation obliging the municipality to invest 30% of the resources for the acquisition of land for the social housing production and 30% for the implementation of public transport systems, bicycle and pedestrian ways, ensures that 60% resources are invested in objectives that are in line with the social objectives of the Plan.

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Unintended outcomes of the marketized housing agenda in Sweden:

- the trolls that never were invited who we now have to deal with

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Abstract Max 150 words (now 164)

This paper discusses how the housing agenda in Sweden has been handed over to the municipalities, under the EU instructions. The marketized housing sector has resulted in unexpected local outcomes, or *trolls*, as for example private slum-lords, exploiting their properties to a maximum but with no local responsibility to the tenants. Also, a black market of temporary housing -or beds- is found, which often target vulnerable immigrants. Thirdly, private-public partnerships has emerged, often termed *business improvement districts* (BIDs), who collaborate locally in order to serve long time interests for the property owners, the tenants, the local business-owners and the wider community. In sum, the neo-liberal agenda is found to strengthen the local communities and partnerships, but the tools to deal with the anomalies still lies at the central state. The neo-liberal agenda needs to be anchored by place and local actors in institutional long-term relations in defined places. Results imply that the planning processes need to address this new landscape of actors, and processes.

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#14: Planning, Law and Property Rights

Introduction

“Housing mortgages are closed for a whole generation, they earn too little” the Swedish Daily News wrote 8th of June, 2018.¹ The conclusion comes from a report produced by the market leading national mortgage institute SPAB. The investigation was based on the top 20 municipalities and the prices for a 30 sqm flat, and the average incomes of 25-29 year olds, males and females. Even if the youngsters have saved up some capital, their salaries will most likely not meet the qualifications set out by the banking sector. The result is that young people will stay with their parents up to the age of 30, if they are not lucky to have parents that can deal with the lending issues. The ideal of social mobility which for long was a Swedish sign-mark is proved to be lost in history.²

How did we as a society end up here, and could we not foresee this situation? The situation in Sweden is only one example of many across the European continent. This paper aims to discuss how the marketized housing agenda in Sweden has resulted in a number of possibly unexpected local outcomes, which to some extent also spur illegal activities. Additional responses to these anomalies are local public-partnerships which in part form a counter-response, in the shadow of absent national urban policies. The paper will close with a discussion on how the absence of a thought through housing policy has invited some illegal *trolls*, where the civil society and the local governments now have to deal with the mess – primarily expressed in low-status neighborhoods. But as the citation above indicates, this paper elaborates on the conclusion that the consequence of the outsourced housing ‘issue’ or ‘package’ has diminished the welfare of a generation.

¹ *Svenska Dagbladet Näringsliv*, the Economy Section, 2018-05-05, p. 5.

² The same phenomena have been reported from Great Britain and many other countries across Europe. One of the latest examples is published in *The Guardian*, UK Surge for housing costs for poorest ‘worst in Western Europe’, March 21st, 2018.

The Swedish housing context in brief

The housing policy was for decades one of the core responsibilities for the Swedish state, and the country was “...successful in solving its housing shortage with a minimum of social dislocation.” (Goldfield 1982). Previous research has agreed that a typical retrenchment of the housing policy has taken place (Lindbom 2001), but I would take it even further to claim that a devolution to the municipal level took place in the 1990s, combined with increased reliance on the market forces.

The public responsibility and commitments to provide decent housing to segments with weak incomes constituted the prerequisites for the Million homes program in 1965 – 1975, a core mission for the Social democrats at the time. Generations after have disgusted these housing types and areas, regarding them as expressions of large-scale programmatic planning and disrespectful of peoples’ cultures, demands, living expectations and their own initiative capacities (Linton 2015; Eriksson 2001; Rådberg 1997; Le Corbusier 1987). Initially, they were often built for the labor population in areas close to industries in the mid-sized and larger cities. Since the larger refugee waves emerged from Latin Americas, Iran/Iraq, former Yugoslavia, Eritrea and Somalia, and lately also from Syria; these areas have had a large influx of various nationalities. Often, the Million program areas have been appreciated as the first step into the Swedish society, but during the past two decades the integration into the general labour market and society has slowed down. When these socio-economic vulnerable people have been destined into such geographically specific areas, problems have also followed in terms of degraded status of the Million program areas, higher levels of criminality, a common sense of unsafety, and poor management of the housing-stock.

When the Million program housings were built in the early 1970s, the government had destined large subsidies to the builders. These subsidies prevailed at a decreasing level, but when the financial crises set in during early 1980s and again in 1991 (when the *Riksbank*³ raised the rent to the banks to 500%), the state financial crisis was a cold fact. Following the trends around at the time, the state started a process of sorting the responsibilities; primary schools were decentralized to the municipalities;

³ Sweden’s central bank.

railways, post, telecom, electricity market and national airlines were privatised, as the state run drug-stores and the liquor monopoly (Norén Bretzer, Randrup & Persson, *forthcoming* 2019). As Sweden at this time was approaching the EU for membership, which got realised in 1995, the national political stand on the housing matters transformed from profound national engagement into a minimal. Even if it was not clearly spelled out, the intent of the policies were to adapt to the European common practices in the housing sector. The building subsidies were significantly reduced in 1994 and the former ministerial units *the Housing department* existed from 1974 until 1991. Between 1987 and 2006, a parliamentary committee existed as the *Housing committee*, but was later fused together with the *Civil committee*.

A more recent governmental committee report on housing policy from 2015 bear the significant name *EU and the municipalities' housing policy, SOU 2015:58, (EU och kommunernas bostadspolitik)*, which symbolises how the housing policy clearly is regarded by the Swedish state as a clearly municipal (and market) responsibility. This report primarily reads that the housing responsibility essentially is municipal, and that the EU regulations on assistance to market actors in the housing branch must be respected. Further, it states that the state itself possibly could assist (the municipalities) with legal and in rare circumstances financial help, primarily directed to weak markets. The state can also act as a partner for dialogue.

We should also bear in mind that the numbers of vacant dwellings were all-time high between 1994 up to 2000, which indicated a temporary over-capacity, and in those years houses were even torn down in some economically weaker municipalities with low employment opportunities (SCB 2012, p. 40 and SOU 2015:58, p. 20f). This situation contributed to the low willingness at the municipal level for quite a number of years to engage in any new housing developments.

A contrasting fact is that the National Board of Housing, Building and Planning has in numerous reports underlined the refurbishment needs in the existing housing-stock, and the urgent need for some additional 600 000 dwellings until 2025 (Boverket 2017:17). These volumes correspond to a new Million program investment, and the building activities have indeed increased, and the population

numbers have increased even more. The needs are especially large in the Stockholm and Malmö regions, where the prices have sky-rocketed on the private market, and the waiting lines for public housing is at least six, seven years in Gothenburg (Boplat Göteborg) and over 10 years in Stockholm (Bostadsförmedlingen, Stockholm). The Swedish housing-market has throughout the past 27 years changed in such a way that the number of detached homes have decreased with -3%, as has also the rented apartments. On the other hand, the coop apartments have increased by +6% throughout the period (Table 1).

Table 1. The Swedish housing market 1990 – 2017 (number and per cent)

Year	Detached Houses	Rented apartments	Coop apartments	Other	Dwellings Total
1990	1 874 233	1 554 457	616 078	0	4 044 768
2017	2 069 353	1 753 499	1 034 420	1 980	4 859 252
1990	46	39	15	0	100%
2017	43	36	21	0	100%

Source: SCB, Boende 2017, U166.

This has not occurred in an environment with fixed population parameters. Throughout the period 1990-2017, those aged 25-34 increased with 17%, 35-44 year olds increased by a modest 2 %, 45 to 54 year-olds increased by 24% and the last group on the labor market, 55-64 year olds increased by 37% (SCB, population data). [INCLUDE PARAGRAPH ON PRICE INCREASES, ABOUT 20 TIMES IN RUNNING PRICES, CONVERT TO FIXED PRICES] This is a core reason why the coop apartments have increased tremendously throughout the period. Newcomers to the housing-market have met a decreasing share of first-step rental apartments, and the other two alternatives, buying a home or a coop apartment would require a good bank-record and savings. Not all citizens who want to establish their lives, work-life and families would be advantaged in this new housing landscape, as the governmental commission wrote:

“There are significant entrance hinders for housing-seekers in the form of high housing prices. Long housing queues and the demands that the landlords are putting to coming tenants hinders some households to get acces to renal apartments. A growing group of housholds cannot get access to new built housing or to housing in the most attractive areas as their housholds are not eligble the bank morgages demanded to buy a home or any possibillity to get a rental home for

an affordable level of rent. Hence, there are groups in the society who risk to be secluded from parts of the housing-market. The housing needs may from a political perspective be seen as larger than what the citizens can demand, in particular when it comes to elderly, youth and newcomers.”(SOU 2015:58, p. 18).

The citation indicates an interesting awareness of the new privatised housing-political context, where access to housing to an increasing extent has been a matter of who has resources and access, and who has not. This exposé has also shown that there is a shortage of housing in Sweden under the present conditions, and that prices have increased throughout the past 27 years in such a way where we now are in a situation where the next generation stepping into the housing-market will see most of their welfare resources taken by the banks – if they ever will get a chance to enter. But the rest of this paper will not be about those who are making it, but about the unwanted consequences, the *trolls*, of this unbalanced housing situation. But before we enter this discussion more specifically, we will need a paragraph on methods and follow up with an ideological section on the neo-liberal thoughts in general and applied to the housing-market per se.

A methodological note

This paper is not a typical research paper, taking out a theory and some data in order to carry out disciplinary hypotheses testing. Nor is it a bunch of interviews collected in relation to an agreeable theoretical framework. This is a first draft that puts together the problem of housing shortages for socio-economic weak groups with the ideological theory-framework which at present seems to be more important for most political actors, than solving the housing problems for the mentioned groups. By collecting numerous of reports and news-paper articles as my initial data, I am starting to lay the ground for complementary interviews and other data collection. From having participated in the Urban investment program in early 2000s, to having done research in poor urban areas with the interest of energy efficiency, sustainable development, crime prevention and urban regeneration, an interest has slowly grown in what the back-sides of the de-regulated housing-market are, and the following harsh living conditions that follows, maybe not for evil but as a necessity. Documented fragments of these

activities therefore come from printed sources, but will in updated versions be complemented along the lines possibly suggested by the reader.

The neo-liberal agenda and how the Swedish housing policy disappeared

To be written later, but a tentative synopsis is:

- Sweden at a financial crisis, a Europe in retrenchment, combined with Thatcherism
- Neo-liberal ideology, according to theory, expectations and promises
- What was so attractive with neo-liberalism, as it was received in Sweden?
Risk-transfer over to the civil society, risk minimizing
- What did we miss? The ‘race to the bottom’ – and future generations?
Disconnecting the social control

Three trolls that came with neoliberalism, the Bad, the Ugly... and the Last Straw

The housing issue has up to now never been able to climb on the political agendas, as it is very complex and essentially fragmented at the municipal level, the regional level and increasingly so also at the state level. In 2014 a Housing crisis committee was appointed by the Chambers of Commerce in Stockholm and Gothenburg, chaired by Klas Eklund.⁴ In addition, the chair of the national Central Bank, Stefan Ingves, went to the media and asked for a parliamentary Housing Commission. The response came immediately from the Christian Democrat minister Stefan Attefall, who said that preparation work was under way.⁵ However, one governmental coalition later, to this date 2019 is an pressing issue slumbering underneath of the political ice. In the meantime, people and potential tenants need to go on with their lives. In the grey, and potentially black zones of the economy, we will

⁴ www.bokriskommitten.se

⁵ www.svd.se/bostadsminister-stefan-attefall-ingves-ar-inte-fullt-informerad

find the slumlords and the illegal trade with apartment contracts and even single bed spaces.

The Bad trolls – the Slumlords

Management has been the term a la mode since the early 1990s, used as a common recipe or treatment by engineers, business scholars, economics and the social engineers alike. But very little attention is brought to mal-management, neglected management or even illegal management. In the poorer urban neighborhoods in Sweden it has been practically known for decades that when housing estates become less attractive, maybe due to large investment needs or maybe because the jobs moved away and the labor-force took a different direction, unserious estate owners may come to the playground.

Example 1: Gamlestaden (The Old Town)

Gamlestaden was such a place, situated in Gothenburg at the west coast of Sweden, where the world-renown industries of SKF⁶ originates. This *Old Town* of Gothenburg had historically been abandoned for the New Town further down the river, and when SKF changed its HQ location, the housing estates of Gamlestaden decreased in attractiveness. To make a long story short – Gamlestaden became a place where poor people were located by the authorities, as for example refugees, drug-addicts or just ordinary poor. Many small private estate-owners were present in the area at the early 1990s, but the houses had not been maintained for a long time, and both the interior and the exterior were in desperate need of restoration. When the (Business Improvement District)⁷ BID Gamlestaden was initiated in 2001, it occurred at the background of degenerating social conditions, increasing criminality and drug use, and shootings at local restaurants.

⁶ www.skf.com/group/our-company/index.html

⁷ Partnerships between estate owners, business, civil society and the public sector has evolved in Northern America, the UK, Germany and is also emerging in Sweden. Various urban renewal initiatives have been around under labels of Business Improvement Districts (BIDs), Urban Improvement Districts (UIPs), Neighborhood Improvement districts (NIPs), Housing Improvement Districts (HIPs), Business Improvement Areas (BIAs) and Business improvement Zones (BIZs), among several commonly used terms (Meltzer 2012; Kreutz & Krüger 2011; Edlund & Westin 2009; Cook 2008; Hoyt 2005).

One initial type of problem identified was the frustration from the public estate managers that the often small private estate owners did not talk with one another, and they took the advantages of selling short-term or long-term housing to the Social Office, but they did not care about the actual living conditions in their houses. Some 18 years later, we know that the public estate owners and some of the private together under the collaborative umbrella BID, have invested in outdoor safety, indoor standards and neighborhood governance in dialogue with the residents. One of the main problems remaining, is that some estate-owners do not want to participate: for the sake of dramatization, let me call them slum-lords.⁸ This is also a way to differentiate the good landlords from the bad ones, those who collaborate with their tenants and the local community, and those who don't.

Example 2: Malmö

Let us move from Gothenburg to Malmö, also a harbor city at the very south of Sweden. In the area of South Sofielund, a centrally located area that have for long been known for its low living standards, but therefore not necessarily cheap rents. The local Estate Registry conducted a project where they were knocking the doors, house by house, to inspect the standards, the owners and the tenants (Figure 1).

⁸ This is not similar to the 'slum-lord' found in a shanty-town, or in shacks. They might be related, but the slum-lord in the Swedish context pays very little interest in the locality, as the person or the owner often is nationally or internationally based. See further <https://en.wikipedia.org/wiki/Slumlord>

Figure 1. Millionaires on slum management



Comment: The illustration is derived from Sydsvenskan 2011-04-17, page 4, part 3.

The illustration shows that it is possible to detect which owners neglect their responsibility to the tenants and to society at large. We have the regulations, and in combined efforts between state and local agencies, it is possible to act against these phenomena.

The South Sofielund example, and Gamlestaden, are only two among many examples. Similar problems are known from the citydistricts Bergsjön, Hammarkullen and Biskopsgården in Gothenburg, as in Landskrona. There are actors in this branch who just want to maximize profits for the least costs, their business idea is to buy up cheap housing, pay as little as possible for maintenance etc, and a few years later sell the stock when the general market has increased its prices.⁹ Even connections to criminal networks have been detected among the landlords, but it is important to recognize that there is a very broad scale between good and bad. Sometimes, when situations have gone too far, the municipality and its tax-payers have to buy-out these wrecks from the slum-lords, in

⁹ Skånska Dagbladet 2011-12-18.

order to start anew. This meaning that the tax-payers sometimes over-pay non-serious property-owners in order to get them out of the area.

The Ugly trolls – the housing traders

Another third type of activities which have been going on for decades is the trade with housing opportunities.¹⁰ It has escalated during the recent one or two decades of housing shortages. Such can be

- Trade with first and second hand apartment rental contracts
- Trade with official addresses of residence
- When contract-holders are renting out their apartments to second or third agents, taking an unmotivated surplus
- Bed-places per night on mattresses

The Stockholm police issued a report on the issue, identifying that in the distant city-districts of Älta and Fisksätra it is known that so-called *black rental contracts* are applied. The Stockholm Police (2015?) estimated that about half of all rental apartment changes relate to criminal activities (p. 7). They also mention that it seems as if the trade with *black contracts* is rather normalized among the population. Rental tenants are often aware of what they could get to give up their apartment, or change for a less attractive location – especially in relation to what they initially paid. The traded apartments bring a large share to the landlord, and the dealer and the register splits on a smaller share. It is not illegal to buy a black contract, but to sell, but only a handful has proceeded to courts. The business takes place with very low risks involved, and it is a way for criminal resources to find a way. The deficit in housing has turned into a neat business opportunity for those who want to clean their laundry well, without passing the tax-office.

¹⁰ This section is primarily based on Dagens Samhälle 2016-02-18.

The issue was noticed by the government in 2017, when a committee directive was formulated (dir 2017:9), and an SOU report was finalized 2017:86. There are many suggestions in a positive direction, but to the cost of increased control mechanisms, also for the obedient landlords. However, when contracts-holders have been proven to misuse their position, they may lose their contract, the commission suggests. At least this is a first step, it remains to be seen what effects it actually will get – both on the overall housing-market and on the rental queuing-time.

The Last Straw – can BIDs bring any order?

The historical exposé over the erased housing policy held together by the Swedish government depict a landscape which to a large extent have been handed over to the private actors in the roles as tenants, potential and actual coop owners, builders, housing estate enterprises (private and public). The initial promise was possibly to ‘minimize the state’, to bring order to the state in tight control of core responsibilities and to adapt to the European common practice – as it was understood by the Swedish government at the time.

What the national government did not consider was, whether there would be any free-riders out there, or actors that would not work for the common good in the housing estate branch. It has taken years to get a clear picture of what is going on in the slum-like districts, and what the driving forces and options are.

From a liberal theory perspective, citizens would become freer and also more care-taking about their properties if they were having the owning and managing responsibilities themselves. Hence, the state largely out-sourced this issue-area to the citizens. A different way to frame it would be that the state used a risk-minimizing strategy when the housing policy area was handed over to the public (ref.) This prediction may have been true for the majority of the population, or at least the share that have made great surpluses from buying and selling coop apartments throughout this market boom throughout the past 25 years.

But everyone did not become winners. This is clear now, when the next generation is trying to enter the market with empty hands. Not only refugees have difficulties under the present housing regime, but also youngsters 16-30, divorces single persons with or without children, and even widowed persons have problems. Further, if you are over 50 years of age, some banks will not allow you mortgages in order to buy a house or an apartment (if you have stayed in a rented apartment throughout this 'golden age'). The idea of 'freedom of movement' seems to apply to a rather limited group throughout this exercise, and what adds to the societal costs in this equation are that more or less illegal actors in this business to quite an extent end up on the winning side.

The New Urban Agenda signaled the importance world-wide to bring new alliances through public-private partnerships. Could such arrangements possibly contribute with anything new into this discussion? From the two examples mentioned, BID Gamlestaden and BID Sofielund, we learn that when the locally responsible actors, private and public, join together in a given district or location, downward spirals may deplete or change around. Yet, there is too early to draw any specific evaluations on these, as systematic such yet are absent. But these two have emerged in districts with many small estate-owners, who one by one is only there for the money. But when the municipality joins together with the more responsible actors, it becomes evident that there are a few free-riders around who do not apply to the rules of society. The situation constitutes a classical game-theoretical collective action dilemma (Ostrom 1990), as long as no one else collaborates, I will gain from taking part in any collaborative efforts. But when other actors around me become collaborators, I might loose from being the last person on-board. The possible expectations coming with the BIDs, at least as they operate in the Swedish context, these partnerships may take the control back over 'lost districts' and landscapes. We find such collaborations between estate owners in the country-side as well as in the urban contexts, but yet, much more need to be investigated and evaluated with regards to improved living conditions.

In Sweden, BIDs has emerged as collaborative forums evolving across actors related to a defined geographical area. We find BIDs in the three largest cities, Stockholm, Gothenburg and Malmö, but also BID-inspired collaborations in rural areas such as Vrångö, Floda and Örensköldsvik in the north.¹¹ These have often originated with place-related problems such as decaying neighborhoods, industrial areas in transition, aging population and an attractiveness lost. Not all places share the same expressions; but the problem boils down to the changing conditions, places, estates and local citizens remaining. With regards to planning, law and property rights – I did not mention that Sweden does not have a legal framework for its BID collaborations. Hence, there is still much room for experimentation and variation, but planning issues are definitively on the table among these private and public actors.

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Neoliberal Governance and Accumulation by Dispossession in Karaburun Peninsula, Izmir, Turkey

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Abstract: The transition to neoliberal governance brought along the transfer of the property or the right to use of natural areas to the private sector. Having undertaken the role of deregulation and reregulation, the state has provided the legal framework of new capitalist activities leading to the commodification and marketization of natural areas, which were previously non-commodified or non-marketized. In this way, the biophysical world has been encompassed in the accumulation process. On the other hand, with privatization or the assignment of use rights, unowned, state-owned, communally-owned areas have become spatial fixes for capital. Hence, the people living adjacent to, or in these areas, have been deprived of the right to use of them. Karaburun Peninsula is encompassed into this process especially after the 2000s. The forests, pastures, natural conservation areas, coastal and the sea, which were belonging to State or open to the use of local people, have been enclosed for, and exposed to the sustainable energy investments, fish farming, quarries, industrial agriculture, and tourism by private sector initiatives. So, the local people have been dispossessed by legalized transfer of use or property rights, as they can no longer sustain their daily practices and relations to nature to make their living.

Keywords: privatization, dispossession, enclosure, governance

Introduction

This paper aims to examine the regulatory mechanisms which support neoliberalisation of nature and dispossession of local people in Karaburun Peninsula. The Peninsula presents a very specific modality of “actually existing neoliberalism” regarding how natural areas were absorbed in capital accumulation, and how accumulation by dispossession occurs with neoliberal policies and practices. Neoliberalisation of nature in the Peninsula has been occurring by deregulations and reregulations but in vigorously contested ways in the national and local contexts, as it was lastly witnessed in Yaylaköy, a village settlement that was announced as “disaster zone” by a decree of Presidency in order to block local people’s resistance but to open the way of wind power companies. Privatization and marketization occurred by the allocation of pastures, forests, coastal waters, agricultural lands and natural protection areas and partly private properties to private firms at the expense of livelihood of local people. Private investments in industrial olive production, wind farms, fish farms, quarries, secondary houses are localized mostly in common biophysical sources of the local people. As the natural and common lands are commodified, so local people are dispossessed intensely.

The Karaburun Peninsula has been exposed to all general strategies and characteristics of neoliberalism as Bakker (2010) defined: privatization, real subsumption (intervention to biophysical processes and capacities), market proxies and marketization (see Ryterri and Puhakka, 2012, p. 256). In Turkey, especially by the 2000s, reregulations and laws about expropriation of private lands and allocation of common natural areas (the Treasury lands, State lands, public lands) to private investments have increased. This means that the lands at the disposal of the State were commodified (Adaman, Arsel and Akbulut, 2017, p. 4, see Özcan Cive and Arslan Avar, 2019, p. 18).

The reregulations in the laws such as Forest and Pasture laws are carried out to support investments in natural areas. Thus, the investments started to occur on natural areas by the allocation of common natural lands such as mountains, pastures and forests. The first regulations leading to privatization and marketization of natural areas were the Tourism Incentive Law (no. 2634) in 1982 and the Assignment of Institutions except Turkey Electricity Administration for Electricity Production, Distribution and Trade Law (no. 3096) in 1984. The former laid the legal framework for the development in natural areas and forests, the latter for deregulation of energy market and opening the way to allocation and leasing the natural areas to private sector. Secondary house development began at coastal line of the Peninsula as an early neoliberal practice, after 1990. The changes in the Forestation regulation paves the way of private forestations in agricultural lands in 1994. The pastures in the Karaburun peninsula were converted to olive groves by the support of that regulation, after 2006. Aquacultural production was privatized by the regulation in related law in 2003, and fish farms have increased in the coastal waters of the Peninsula. Wind power production began to be applied by the constitution of the legal framework for the sustainable energy sector, after 2005.

The list of allocated and expropriated parcel data was collected from state institutions (Chieftaincy of National Property and Karaburun Cadastral Office). The data of investments and their local overlaps with natural areas and private properties were analyzed by using GIS and KML data in ArcGIS. The synthesis map in Figure 1 is created by the authors. As to be seen in the figure, the allocation and the transfer of use rights of pastures, agricultural lands, forests, coastal waters and natural protection areas to private companies resulted in profound dispossession of the local people.

The article concludes that the neoliberal investments constitute on natural areas as agricultural lands, pastures, forests and natural protection areas, and seas under conservations of the Peninsula. Through the privatization and marketization of natural areas, private companies gain the usage rights of natural areas. On the other side, the private properties and the usage right of local people on State or common land are taken away. In this way, accumulation by dispossession occurs in the Peninsula.

Transition to Neoliberal Governance and Changing Property Rights on Natural Areas

As Harvey argues, by the 1970s, capital extends its limits and finds new places to overcome crisis (see Baker and Cohen 2014, p. 131). The state is restructured in a way of undertaking the role of supporting capital accumulation. On the one hand, deregulations were implemented for creating more competitive and free market. The state has withdrawn from public services and strict controls on nature, and the reregulations were applied for more flexible and consumer-friendly market such as decreasing state intervention and taxes, on the other. Privatization and marketization were promoted by cutting public services and investments. Also, the public services such as water supply, energy production were transferred to the private sector (Harvey, 2003, Jessop, 1994 see McCarthy and Prudham, 2004, p. 276, Castree, 2010, p. 10-11, Bakker and Cohen, 2014, p. 129-130). The new governance model, deregulations and reregulation are constituted to fulfill the new type of state's obligation for creating opportunities for the market.

Countries tried to adapt the legal framework to the new governance model that is created at local, national and global scales. Rescaling of management and government were promoted to achieve expanding capital circulation. Over-

accumulation of capital started to be transferred to new places which have natural and rural characteristics (Arrighi, 2006, Fletcher and Neves, 2012, Harvey, 2001 see Devine 2016, p. 638). During the process of rescaling and transition to a market-based system, the biophysical world gets involved in capital accumulation and became a subject for the global market (Castree 2003, 2007 see Duffy, 2008, p. 328). This means that untouched or common natural areas and resources exposed to more intervention for making profit. The property rights of the previously non-owned or communal owned areas were transferred to private actors, and enclosed (Castree, 2010, p. 10-11,18).

The enclosure of the natural areas and divestments of property and use rights on them are the characteristics of a new type of capital accumulation as “accumulation by dispossession” (Harvey, 2003). In so far as rivers, forests, pastures, etc. became harnessed to capital accumulation, the access of the local people, villagers, indigenous people, goat breeders to natural areas and common lands is prevented (Çoban *et al.*, 2015, p. 19-20, Mercile and Murphy, 2017, p. 1042 – 1043).

In this process, also the legal framework was created for the conservation of natural areas. The latter are enclosed by approval of the reregulated or newly enacted laws, or deregulation practices. Laws and regulations defined the use of natural areas with restrictions and opportunities, that is, for whom they would be restricted and for whom it is allowed to use. “Allowable natural destruction” was consisted of making profit on the natural areas (Apostolopoulou, 2014, p. 18 - 19). New types of institutions at the international scale were established for the conservation of natural areas and management of the global capital. The role of governments decreased and a part of their authorities were transferred to local and non-state actors like NGOs or councils in accordance with global conventions and contracts. In this way, a free environment was created for the capital with the change in the authority of control.

Having been exposed to deep commodification at the global scale, nature is no longer an “anchor” of capital. Rather, natural areas and features became “spatial fixes” for the new type of capital accumulation. Bakker (2004) conceptualizes environmental features, outcomes and circumstances subjected to capital accumulation as “ecological fixes”. Castree (2008) presents “environmental fixes” which include new governance mechanisms such as marketization and privatization of nature, reregulation, deregulation, flanking mechanisms, and commodification of communal, non-owned or state-owned lands, environmental degrading in the areas. Bakker and Cohen (2014) developed these concepts with spatial and scale dimensions, and they presented “eco-scalar fixes” as strategies to overcome the crisis and environmental degrading with managements on naturalized boundaries. Bakker and Cohen (2010) also show that the “eco-scalar fixes” are closely associated with environmental degrading and uneven development.

Neoliberalizing Nature: Turkey Experience

In Turkey, the neoliberalisation began in 1980 with 24th January decisions that defined a shift in economy from inward-oriented industrialization model to the global liberal economy (Temizel 2007, p. 76, Bal, 2011, p. 44). Accordingly, new laws were enacted for the privatization programs and marketization. The state began to cut financial support for public services, to promote activities for the growth of private sector through tax tariffs and low interest rates. Following the regulations for leading up foreign investments and commercial activities by the 1990s, foreign investments began to increase. One of the path breaking event in neoliberalisation in Turkey was the decrease in the central regulation authority of the State Planning Organization (DPT). Its some authorities were transferred to the Undersecretariat of Treasury (Temizel, 2007, p. 112). By the 2000s, the deregulation and reregulation began to increase for easing flexibility of market and privatization implementations. It follows that some important state institutions, which were suppliers of public services such as POAŞ (Petrol Office incorporated company which is petrol supplier company of Turkey in the past), TEDAŞ (the Incorporated Company of Turkey Electricity Distribution)

and THY (Turkish Airlines), were privatized according to the IMF (International Monetary Fund) contracts and programs (Bal, 2011).

In Turkey, as well as it was elaborately shown by Theodore and Brenner (2002) and McCarthy and Prudham (2004) in the European and the USA contexts, the government has undertaken regulatory and promoting role to develop the private sector (İşlar and Harris, 2013, p. 2, Özgül, 2017, p. 36) rather than rolled-back, as well. New laws were enacted or the existing ones were reregulated in order to provide the land demands of neoliberal activities. So began the use of natural areas, State lands and Treasury lands for this aim. For example, although the 1983 dated Expropriation Law (no. 2942) had been stated to be operated under the war conditions, it has been used as a mechanism to supply land for energy investments since the 2000s (Erensü, 2017, p. 125-127).

On the other hand, Turkey got involved to global scale neoliberal conservation through some international contracts and conventions on conservation of natural areas such as the Paris Climate Convention, Bonn Convention and Bern Convention. It follows that a legal framework for protection areas was structured by new laws like the Protection of Cultural and Natural Properties law (No. 2863) in 1983 in a way of adapting national policies to global context (Dağıstan Özdemir, 2005, p. 23-24). However, it was not necessary to wait so long until the restrictions on the use of natural areas were bent by the amendments in related laws.

Privatization and marketization of natural areas were made possible by new laws or the regulations in existing ones. This means that the scale of the capital accumulation was expanded. Tourism Incentive Law (no. 2643) in 1983 and the Assignment of Institutions except Turkey Electricity Administration for Electricity Production, Distribution and Trade Law (no. 3096) in 1984 firstly paved the way for allocating Treasury lands, forests and natural areas to private sector for tourism investments and electric power production. The Electricity Market Law (no. 4628) in 2001, and the Water Rights Agreement on Electricity Production in 2003, the Use of Renewable Energy Resources to Generate Electric Power Law (no. 5346) in 2005, and ensued amendments and reregulations in these laws increased the use of the natural areas. Industrial agriculture, quarries, energy infrastructures, “sustainable” energy production, alternative tourism activities, fish farming, private construction and operation of physical and social infrastructures were allowed even in natural protection areas and national parks.

Especially after 2000, Turkey undergo multidimensional spatial and governmental restructuring and rescaling resulting in profound changes in natural areas and their management. With the establishment of Development Agencies (law no. 5449) in 2006, the administrative boundaries were rescaled at NUTS II levels and redefined according to “economic regions”. And, strategic development plans began to be made for economic regions. With the Metropolitan Municipalities Law (no. 5216) in 2004 and the Fourteen Municipality and Twenty-Seven Provinces Law (no. 6360) in 2012, on the one hand the authorities of district municipalities were transferred to metropolitan municipalities, and the rural areas and their natural features were included in Metropolitan boundaries, on the other. Having been turned into “neighbourhoods”, villages are no longer subjected to Village Law (no. 237, issued in 1924). Regulation and rescaling of authorities and boundaries also changed property rights of villages and properties of “common village areas”, which were used to belong to “villagers”, were transferred to different central authorities.

The role of the Ministry of Environment and Urbanization is crucial in this respect. It was firstly endowed with the authority related to management, control and approval the plans on natural areas in 2011. Subsequently, its authorities about making upper scale and binding plans on the naturalized boundaries and administrative regions extended to the management and planning on the natural protection areas and special natural protection areas by the reregulation of related laws. The institution undertook also the authority related to the approval of the investments such as geothermal energy, wind farms, hydroelectrical power plans, quarries, etc. in the natural areas. The approvals should base on the Environmental Assessment Reports, related plan decisions and “public interest”. However, the regulation on

Environmental Assessment was changed, and its restrictions were decreased. Furthermore, the decision about the use of natural areas became more centralized. “Public interest” related to the investments is decided by the Council of Ministers. Lastly, in 2018, the decision about the “public interest” together with some other authorities of the Council of Ministries were transferred to the “Presidency” following the transition from Parliamentary system to Presidency system in Turkey.

Accumulation by Dispossession in Karaburun Peninsula

Karaburun Peninsula is a specific place for unfolding the neoliberalisation processes and their consequences in biophysical and social world. Almost the whole Peninsula excluding urbanized parts is covered by natural conservation areas announced after 1990. It has a significant ecology with natural protection areas, natural areas and resources with its biodiversity and vegetation. Bird species, plants and mammals (such as Posidonia seagrasses, Audion gulls and Mediterranean monk seals) are under protection by international contracts such as Bern Convention and CITIES. The whole of the Peninsula and the Ildırı bay are defined as an important natural area by Doğa Derneği (which is the partner institution of Bird Life International). Also, they were proposed as biosphere reserve area. Lastly, the Peninsula and the Ildırı bay and islands there in were announced as special environment protection region by the decision of the Presidency. However, let alone being protected, natural areas of the Peninsula have been encompassed into capital accumulation through neoliberal policies. They were privatized and marketized through deregulations and reregulations especially after the 2000s.

On the other hand, there had been 13 settlements with village status. These villages were included in the metropolitan municipality boundaries and gained “neighborhood” status through rescaling by the Law on Fourteen Municipality and Twenty-Seven Provinces Law (no. 6360) in 2012. The local livelihood is still based mostly on agricultural productions (olive, mandarin, narcissus, artichoke, etc.), goat breeding and associated products (local cheeses, goat milk and hair). Rescaling and transferring most authorities to central institutions brought about profound changes at the expense of nature and livelihood of local people in the Peninsula. The transfer of use rights of common lands, forests, pastures and peasants’ private lands to private companies through leasing, allocations and expropriations resulted in dispossession of local people.

By the 1990s, the secondary housing development that had been delineated on the coastal line began as an early neoliberal activity in the natural areas. It was laid down with the strategies of Tourism Master Plan and Çeşme - Karaburun Coastal Environmental Plan (1989). The ensuing plans, strategies and regulated laws support the development of the tourism and the secondary houses on coastal line and natural protection areas. The amendment of the Tourism Incentive Law (no. 2634) in 2003, opened the way of allocation of natural areas for ecotourism, cruise tourism, health tourism and sport activities. The proposals of the current environmental plans support the development with suggested transportation links through yacht ports and highways. The current Izmir Regional plan (Izmir Development Agency, 2013), Izmir-Manisa Environmental Plan (Ministry of Environment and Urbanization, 2013) and the West Izmir Master Plan (Izmir Metropolitan Municipality, 2018) support excursion tourism and alternative tourism activities in the Peninsula. Their strategies suggest to spread development in forests and Treasury lands. In this way, policies and plans which are carried out on naturalized boundaries provide the transferring of use right of the natural areas.

By the 2000s, industrial olive production, and the “sustainable” energy production from wind farms and their concomitant infrastructures began to spread through on unregistered or registered pastures. The amendment related to Forestation Regulation was announced in 1994. The regulation granted the use right of fertile agriculture lands for the forestation with special species like olive trees. An amendment in the same regulation in 2003 allowed the allocation of Treasury lands for plantation of these species under the name of “private forestation”. The pastures, whether

registered or not registered but having been used from immemorial past, are subjects of the law because they are classified as “agricultural land”. So, in the north of the Peninsula the unregistered pasture areas, which are Treasury or State lands and used by goat breeders in the winter, were transferred to private companies for olive cultivation. These areas were fenced. Goat breeders stated that their access to pastures, the water sources or to other grazing lands was blocked. Even their paths, which are owned by their ancestors, were closed. According to the accessible data, 1330.78 ha Treasury lands, which almost cover all pasture lands in the north of the Peninsula, and %3.51 of its total surface area, were allocated by private companies or entities (Figure 1). The agricultural statistical data shows a remarkable increase in the number of olive trees after 2006.

The project proposals for wind power generation in the Peninsula began in 2005. The allocation of Treasury lands and forestlands for “sustainable” energy investments became possible by the law on the Use of Renewable Energy Resources to Generate Electrical Energy (no. 5346) in 2005. Energy investments and their infrastructures began to be allowed in pasture areas by an amendment in the law in 2008. Also, by an amendment in the Environmental Assessment Regulation in 2014, the obligation of environmental assessment report for such investments was removed (Çoban *et al.*, 2015, p. 7). Some wind farms and their infrastructures started to be constructed and operated without completing, and even by violating, legal procedures in 2013. Positive environmental assessment report decisions were cancelled by the lawsuits based on expert reports stating that wind turbines have negative impacts on ecology and biodiversity of the Peninsula. Objections, lawsuits and legal procedures about environmental assessment report decisions, the licenses and plans of wind farms still continue. However, as it was witnessed in Yaylaköy, where pastures, agricultural lands, roads and paths to pastures and fields are occupied and destroyed by wind turbines and their infrastructure works, local resistance and legal procedures were blocked by the decree of Presidency announcing Yaylaköy as “disaster zone”. Through this decree, as the Lodos Energy Company’s director declares to Yaylaköy people, “after 20 years there would remain even no village called Yaylaköy” (Akdemir, 19.05.2019). For the decree on “disaster zone” requires the village to be evacuated and relocated.

There are 6 wind farms operated by private energy companies (Yaylaköy, Ayen, Çalık, Egenda, Öres-Fina) in the Peninsula. Existing 100 wind turbines are licensed and 46 not-licensed but under operation, or in the project stage (EPDK YEK list 2018, EPDK digital data 2017; Google Earth Satellite photos, 2018). Despite court decisions to cancel the operation of some companies, they continue to construct new wind turbines and infrastructures. The project areas cover %40 of the Peninsula, and the wind turbines are denser in Yaylaköy village. As shown in Figure 1, the wind farms and their infrastructure, especially roads, are located in forests, agricultural lands, pastures and natural protection areas, some of which are Treasury lands or property of Ministry of Forest, or private properties of villagers. At least 80 parcels of villagers were expropriated and allocated for the wind farm project. Indeed, as an officer from Karaburun Cadastre Office stated, there are more parcels allocated to wind farms, but all data about these parcels is not accessible (especially, in the Mordoğan Wind Farms, the Egenda and Ayen Energy Wind farms, and the parcels in Tepeboz and Bozköy as the parts of the Karaburun Wind Farms by Lodos Energy).

The conflict is not only between local people and wind energy companies. Industrial olive producers and wind farm companies are controversial about property and use rights on unregistered pastures, which are the property of Treasury. Some wind turbines were constructed in the Treasury lands, which olive producers had leased for private forestation previously by the way of allocation. Indeed, the constitution of wind farms in the areas allocated to olive groves seriously violates the law of Reclamation of Olive Cultivation and Budding of Wild Olive Trees Law. The law prohibits construction and industries less close than three kilometers to olive groves. Thus, deregulation is observed in the Peninsula besides reregulation practices for transferring rights of properties for capitalist activities on already privatized nature.

The wind farm areas almost wholly overlap with registered or unregistered pastures, and other natural areas. Wind farms are enclosed and the access of local people to forests, pastures, even to their agriculture lands was prevented. Cultivated fertile lands and the roads to agricultural lands were destroyed during the construction and infrastructure works. According to the data of parcel lists taken from Chieftaincy of National Property, Karaburun Cadastral Office and data from www.parselsorgu.org, the expropriated private properties are mostly agricultural lands. The enclosed olive groves, which had been reclaimed on the pastures allocated to private companies, had already cut the access to winter grazing lands. Wind farms prevented the access to the grazing lands which are used in summer period by goat breeders in Bozdağ mount and Yayla. Also, the goat breeders declare that milk fertility and the number of goats decreased because pastures and grazing lands have been narrowed down. The agricultural statistical data confirm the decreasing milk production (from 1038 tons in 1996 to 917 tons in 2015) in spite of the increasing number of goats (from 21470 in 1996 to 35600 in 2015). It is also observed in the agricultural statistics that the croplands, vineyards and fruit production decreased as citrus and olive production increased (TMOBB, 2012, Karaburun City Council, 2019).

Besides the lands of the Peninsula, the sea is marketized by the way of transferring the use right of the sea and coastal waters. In the west of the Peninsula, Gerence gulf and the Northern coast of the Peninsula through Parlak, are enclosed by fish farms. There are 34 fish cage groups in the areas which are run by 10 private companies in 2018 (Google Earth, 2018, Directorate of Provincial Agriculture, 2018) The fish farms have 42.590 tones production capacity. The companies (such as Agromey and Akuvatur incorporated companies) generally export aquacultural productions to other countries such as the Netherlands, Greece, United States, etc., and they have offices in these countries. The development of the fish farms began previously, in the early neoliberal period. However, coastal waters began to be privatized, and the fish farms began to increase gradually after the revision of Aquaculture Production Law in 2003. Then, the Potential Areas for Aquaculture Work Facilities Protocol defined the Gerence gulf as an aquacultural production area, and prohibited the local fisheries in the area in 2008. As a response to the protest and lawsuits, the fish farms moved to offshore in 2012. However, the East of the Peninsula is still prohibited for local fishery. In 1998, 13 villages and 248 houses were depending on the fishery activities in the Peninsula (see IZTECH, 2005). There are currently 6 settlements where fishing activities are carried out. The settlements are located in the west of the Peninsula, and some of them have urban characteristics (Karaburun Centre and Mordoğan neighborhood).

Some activities like mining are supported by the laws before the neoliberal period. The Mining law had already allowed mineral search and extraction in natural areas. Following the deregulation in mining sector, such activities in natural areas were further supported by the laws, as mentioned before. Currently, there are 3 companies and entities (Kulesan, Polat Mining and Ali Tekin) operating a mixed concrete plant, clay quarry and quarry. They are localized in natural areas, and near to olive groves or coasts in Mordoğan and Yaylaköy. The companies have international connections. Two quarries in Eğlenhoca and Kösedere were previously closed, in 2017 and 2018. Despite that the quarries violate the Reclamation of Olive Cultivation and Budding of Wild Olive Trees Law, they were approved without fulfilling the requirement of environmental assessment in 2012. The agricultural lands of local people are damaged during the construction or the mining operations. Also, the use rights on State lands are transferred to private actors. Thus, mining facilities which are integral to the global economy are carried out while the livelihood of local people is under the threat.

The current plans suggest both conservation and use of the natural areas and resources of the Peninsula. There are various proposals about the conservation status of the Peninsula in Izmir West Master Plan, Izmir-Manisa Environmental plan and also Integrated Coastal Plan for Whole Izmir, while plan decisions support the investments especially in wind farms and fish farms. Plan notes suggest improving wind energy potential of Izmir, and also of Karaburun without any specific restriction. It is only necessary to obtain opinion from the local government. All development and implementation plans about wind farms are based on these plan decisions. Also, Izmir West Master

Plan suggests moving the fish farms to anywhere in the Peninsula, although all coastal waters of the Peninsula is under conservation by Izmir-Manisa Environmental Plan and international conventions. The Integrated Coastal Plan for Izmir suggests a solution for logistics of fish farms which must settle on natural protection areas. However, the suggestion is not for the conservation of the natural areas, but rather for easing the operation of logistics of aquacultural production. Furthermore, the plan suggests the reregulation of the Forest law, and reduction of the classification of the first degree natural protection areas for the approval of logistic services and construction on these areas. Thus, the plan aims to transfer the use rights of coastal and natural protection areas to aquacultural production companies through reregulation in the laws. As a result, the plans in naturalized boundaries or regional scale support the investments, and propose reregulation and deregulation practices. Hence, they are defined as “eco-scalar fixes” to promote accumulation by dispossession in the Peninsula.

On the other hand, the rescaling processes which extended through the natural areas occur in the Peninsula. The policy making authority and management of the Karaburun and their natural areas were transferred to firstly Metropolitan Municipality by the laws no. 5216 and no 6360, and the status of the villages change into neighborhoods in 2012. Also, the situation about boundaries that are included in the Metropolitan area brought along some problems in common village lands and their property and use rights. However, the Ministry of Environment and Urbanization has already undertaken the approval of the investments and management of the natural areas since 2011. As a result of the efforts in the last 5 years, the whole of the Karaburun Peninsula with Ildırı islands and bay were announced as Special Environment Protection Region with 823 numbered Presidency decision in 15th March 2019.

Although this decision seems to have increased natural protection, the legal background of the Special Environment Protection Regions is not so sufficient to prevent the investments and land allocations for neoliberal activities. The announcement brought along rescaling authorities and boundaries in these extended and naturalized boundaries. Authority of making plans, approval for investments, and the allocation of lands in these boundaries were transferred to the Ministry of Environment and Urbanization. Sustainable energy investments and their infrastructures in Special Environment Protection region, national parks, natural protection areas, etc. had already been approved by the revision in the law on the Use of Renewable Energy Resources to Generate Electrical Power in 2010. Besides, in Karaburun, deregulation process began to occur with starting newly purposed wind farms in Yaylaköy without doing management plan for the Special Environmental Regions. Although the law sets an obligation that “the whole scale plan must be done after the announcement of the Special Environment Protection Region”, the additional plans for newly proposed wind turbines and their infrastructure were not cancelled, and the construction of wind turbines has been continuing.

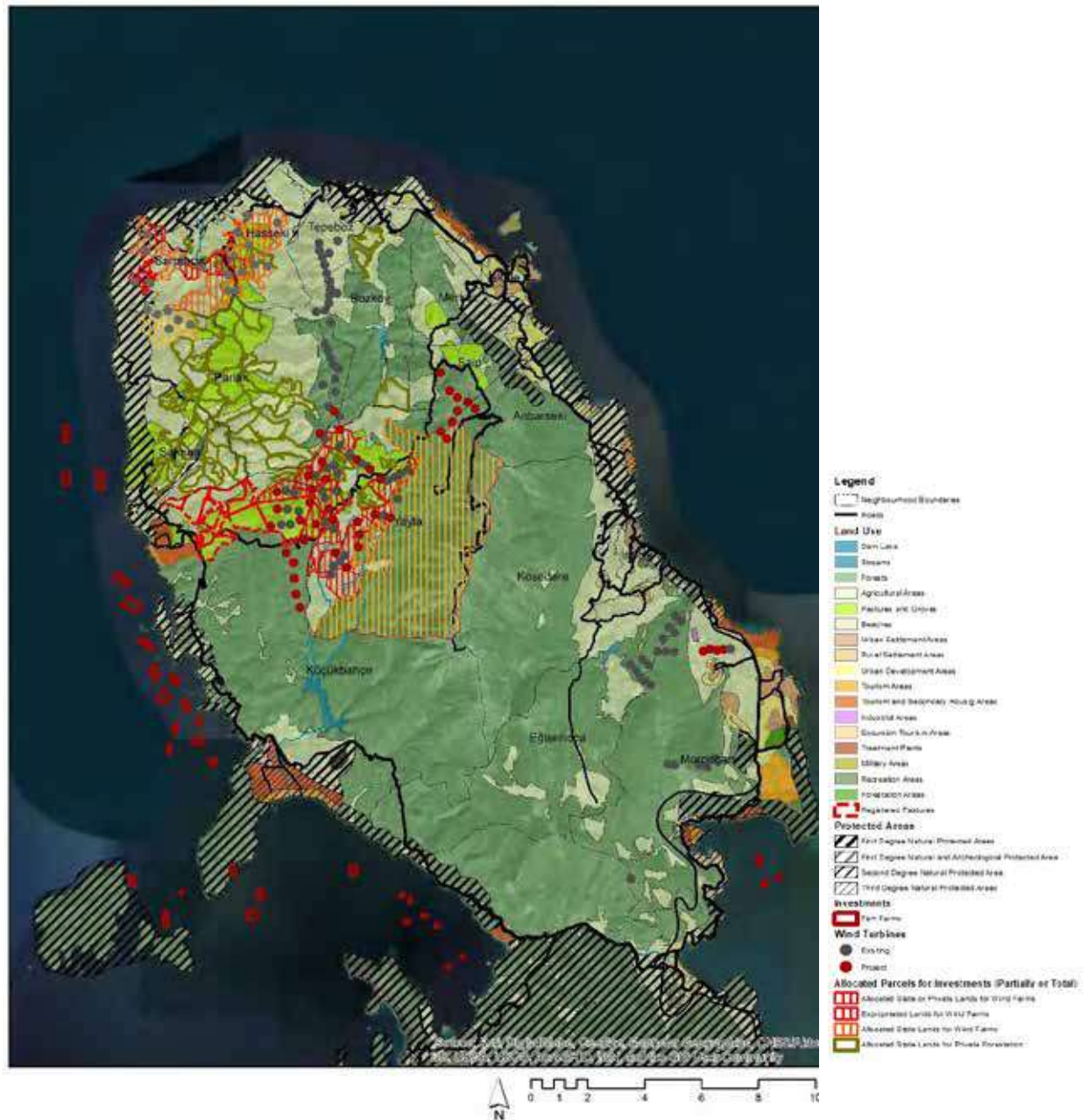


Figure 1. Investments, Natural Areas and The Parcels associated with Transferring Property Rights

Source: Produced by analyzing and processing the digital data of 2014-2023 Izmir Manisa Environmental Plan (2013), EPDK Wind Turbines KML Data (2018), listed parcel data by Karaburun Directorate of National Estate and Karaburun Cadastre Office (2018), Google Earth Pro 2018 by using ArcGIS by the authors

Conclusion

The natural areas of the Karaburun Peninsula began to be marketized and privatized through the transfer of use rights to private companies under the auspices of neoliberal policies in Turkey. Conservation as well as use of the natural areas increased and intensified in parallel with deregulations and reregulations about natural areas. After 2005, the implementations of the neoliberal policies increased market proxies such as wind power generation companies. The coastal waters in the west of the Peninsula were privatized and marketized under the support of the reregulation in the Aquacultural Production Regulation and related regulations. Besides, olive groves reclamation narrowed down pastures used by the local goat breeders from immemorial past after 2006, and the local production in the Peninsula shifted to industrial production by private companies. Secondary housing has already developed on the coastal line, in the early neoliberal period; however, the support of alternative tourism investments increased by the proposals for new transportation links and strategies in current plans (after 2010) which are made in naturalized boundaries, or economic boundaries.

Reregulation of the laws corresponds to “environmental fixes” Castree proposed. They are tools and mechanisms operated to privatize the natural areas such as forests, natural protection areas, agricultural lands, sea and pastures. The natural areas of the Peninsula, which are non owned or communally owned lands such as unregistered pastures and forests, were allocated, and private properties of villagers were expropriated for capital accumulation, thus dispossessed the local people.

On the other hand, Cohen and Bakker (2014) redefine “environmental fixes” as “eco-scalar fixes” for the sake of emphasizing the scalar, spatial and naturalised characteristics of the “environmental fixes”. Karaburun Peninsula has been directly affected by the rescaling and restructuring of boundaries and authorities in Turkey. The nature of the Karaburun Peninsula is firstly delineated for tourism and alternative tourism development in the Izmir Regional Plan. Then, it was included in the Metropolitan area, and the boundaries were naturalized when it was announced as Special Environment Protection Region. Through this last decision, the authorities and management of use, and property of lands on natural areas and common lands (as unregistered pastures and common village properties) became more centralised. The Coastal Environmental Plan for Çeşme and Karaburun, the Integrated Coastal Plan for Izmir and future plans on Special Environmental Protection Region which are made on naturalized boundaries appear as “eco-scalar fixes” in the Peninsula. As the natural areas including the commonly used assets are harnessed to capital accumulation through “eco-scalar fixes”, so local people of the Karaburun Peninsula are dispossessed.

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Masters of Transition?

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Abstract:

My grandmother lived in six different regimes. Influence of Austrians, then Germans and later on Russians on Czechs and Slovaks - with Jewish flavor until the 40th - framed Central European region and its spatial planning culture in the XX century. One may say people living there supposed to be masters in transition. The paper presents outcomes of a qualitative comparative research of planning law in the central European region and seeks possible lessons to be learned to tackle with upcoming challenges. The study demonstrates - based on data from residential development in the Czech Republic - the impact of social and economic changes to statutory (regulatory) planning system and its instruments. Transition from socialist to capitalist system combined with current and upcoming challenges (sustainability, hazards, social changes etc.) creates colorful puzzle to be disentangled. There were many attempts to address these issues in different ways but it does not seem the light at the tunnels' end might be seen. After almost 30 years of democracy in the central European region there is permanent legislative uncertainty in the construction business there. This depreciates private savings and diminishes competitiveness of the country. Nevertheless, there were and are examples of legislative interventions which try to tackle the never ending transition.

Keywords: planning, construction; public and private; planning legislation; central Europe

Introduction

My grandmother lived in six different regimes. Six regimes, three times under foreign authority. I did not pay attention to that fact when I was young. It was just the way it is in complicated location of central Europe. But the fall of iron curtain in 1989 changed the scale of thinking of people living there. The „eternal times with Soviet Union“ suddenly changed to „temporary times“ for my generation.

Regimes go away, people stay

Habsburg Monarchy (I)

But let's start chronologically. In 1904, when my grandmother was born, Habsburg „Kaiser“ reigned in Bohemia. The legal framework has been stable for dozens of years, last time improved by Metternich in middle of XIX century. The society lived almost 100 years without serious troubles except of stormy 1848 and a short conflict with Prussia in 1866. Exactly in the same year the very first planning rules were introduced in Bohemia (10. 4. 1886 No. 40 z.z., valid for Prague, Pilsen and Budweiss). The law commenced the longest and the steadiest period of planning regulation which

lasted in fact until 1949. Building code from 1866 and its modifications founded basic principles of public building legislation in the modern way, anchored its basic legal institution and set up rules for building permitting, change of buildings, rules for construction supervision as well as final construction inspection. The first rule had rather a police character to prevent damages or hazards impending from construction activities. In the same time the rules limited the ownership rights of citizens, which was new in building industry. The building code was the only document in this field to regulate construction business and fixed the competence of building authority and regulated sanctions for building offenses. The rules were simple, very much pointed to reach the goal in straight way. Therefore it was not complicated to become a builder or even a developer. An example: a secondary school professor Mr. Edvard Benes purchased a plot in a suburb of Prague in 1904 and with a help of his mother-in-law financed the construction of house of flats. The income from rents helped him to survive when he dedicated his career to work on dismantling of Habsburg monarchy during the World War I. And he succeeded to found a new state: Czechoslovakia.

Czechoslovakia (II)

The new state brought a second regime in which my grandmother spent her productive life. Czechs call this period 1918 – 1938 *The First Republic*. Czechoslovakia was a democratic country with very high level of parliamentary democracy and juridical power. Nevertheless the legislation was based on Austrian model, which was step by step improved. The new government tried to propose a new building code, but the works were never completed. Since 1919 the new state approved every year so called „construction traffic act“ to streamline market discrepancies, particularly in housing stock. The country dealt with housing shortage right after the WWI. The shortage became critical namely after the Big Crises in 1929. The legislation focused on programs of development of so called minimal apartments for people in need. Czech architectural scene took actively part in housing shortage solution, many architects entered into left or even communist oriented groupings. And the former professor – developer became the second president of Czechoslovakia in 1935.

Protectorate of Germany (III)

The interruption of democratic development came with occupation of Czechoslovakia in the eve of the World War II. When Hitler entered Prague on March 1939 – this was the third regime in my grandmother's life, he changed everything. The most visible change which occurred in the very first moment was change of driving cars left to driving right. This indicated further changes. Planning became also a focus of new rulers. In the times when many respected planners sit in SS-headquarter in Berlin and served the Nazis, there were made several practical changes in Czech building legislation. The land use planning principles adopted from Germany were implemented to structure the settlement system (this approach remained in socialist period too). The very first rules for financing of municipalities were introduced (decree No. 109/1942 Sb.). Planning committee for City of Prague was established.

Czechoslovakia rebirth and clinic death (IV)

My grandmother was 41 when World War II ended. A short period of three years (the fourth regime) combined with presence of Russian „advisors“ in the country between 1945 – 1948 determined the destiny of reborn Czechoslovakia. This period was too short for new building legislation activity. Nevertheless the Czech experts who had no real job during World War II were working on new legislation for a restored state.

The socialist state 1948 – 1989 (V)

In 1948 after communist putsch begun another period of planning legislation. This was the fifth and the longest lasting regime my grandmother lived in. The early communists building code came already in 1949 (No. 280/1949 Sb.). As mentioned earlier its base was created in left oriented groups during the war and later on. The next codes (No. 84 and 87 /1958 Sb.) outlined a qualitative new approach of land use planning where spatial issues are solved in their complexity in contrary to older types of plans focusing on specific land and its regulation. Since then the socialist law distinguished between private and state builders, whereas the private construction was limited to individual family housing only. Socialist building legislation evolved a system of decrees and restrictive norms (hygiene limits first of all) which tied up the construction business and converted towns into „block of flats“. The branch (transportation, heavy industry, agriculture, forestry etc..) way of thinking in planning and legislation settled in that time (and survived till today). The socialist bureaucracy changed the building code once more. The new law from 1976 (No. 50/1976 Sb.) was a modern type of planning and building legislation. There were long discussions in construction industry including evaluation of international experiences prior the final approval of the code.

Last transition – from socialism to capitalism (VI)

My grandmother died on April 1990, four months after election of Vaclav Havel as Czechoslovak president. He was very much involved in planning issues not only because he had many friends among architects. Havel believed that a suitable order in the society, an order in a broader sense, may re-establish stability of democratic system. The planning in the Czech Republic was faced with a question how to react on completely changed vision of the goals of the society [Maier, 1998].

Central European context

Czechs were in similar situation like their neighbours in central European region. In post socialist countries that now form the eastern member states of the European Union there was a general vision of the society from the early nineties to catch up to the developed West. The dream of reaching the level of western European economic development and living standards was the main driver for economic transition and EU integration [Salamín, 2015]. Post-communist states initially had to embrace the substantive concept of the rule of law drawing on liberal and democratic values, which became a valid ticket for ‘The Return to Europe’ journey [Priban, 2017]. In spite of modest convergence, however, the difference between the West and the East has remained dominant until today.

In the last three decades, post-communist states experienced a fascinating political journey, from using the rule of law concept in the most general way as an early signal of the coming constitutional

and political transformation, to specifically (as EU Member States) addressing the problem of the supremacy of EU law and its effect on emerging national democracy and constitutional sovereignty. In other words, they moved from asking the question ‘which rule of law?’ to the question ‘the rule of which law?’ [Priban, 2009].

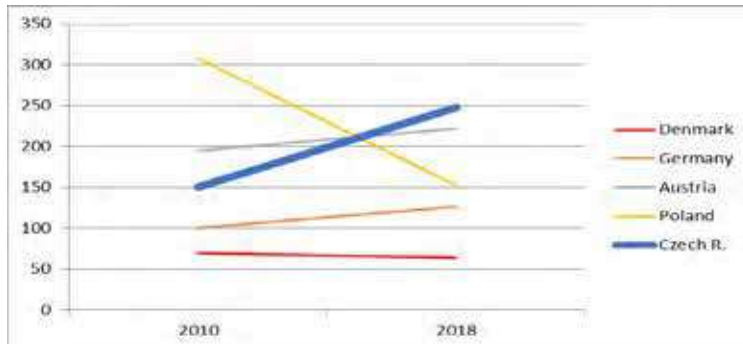


Figure 1: Length of building approval process in central European region in days, *source: World Bank, 2011 and 2019*

In the field of planning legislation every country went through a complicated process.

Slovakia brings to mind former Czechoslovakia situation from the thirties of XX century. After almost 30 years after the change to capitalism there is no new planning legislation. The Slovak building code is still based on the Czechoslovakian 1976 Building Act. In the meantime, so many changes were adopted that the concept is hardly distinguishable. But the principle of two stage decision making process based on land use plan reminded. As a reaction of way out in complicated cases (highways, international private industry projects) the Slovak parliament passed the code No. 175/1999 Sb. about „key investments“ which can be declared - if meeting certain conditions - publicly beneficial. The point is that the state government may declare finally any project as publicly beneficial even though it does not meet any criteria.

Hungary made benefit of regulatory instruments which worked even in the socialist time [Albrecht, 2014]. Their approach is investor friendly oriented, housing policy is market led [Tosic, 2013]. The branch planning view is very strong, spatial planning sometimes might have a service function only.

The most courageous way had chosen Poland. After several years of negotiations the government decided to follow German way of planning system with conceptual land use plan (obligatory for authorities only) and regulatory plans (obligatory for individual builders). This reform from 2003 was painful, there is still a lot of criticism there [Ossowicz, 2014], but the code placed Poland to a level with readable planning approach which is attractive to international businesses.

Case study: new planning legislation vs. housing

The young democratic state adopted the take-over policy and relatively quickly updated the building code form 1976 to new political circumstances without meaningfully touching the procedures (No. 262/1992 Sb.). As soon as the country waked up form high inflation and collapse of heavy industry new

foreign investments occurred [Sykora, 1994]. The building code was not able to cope with that pressure and had to be modified even twice a year. Finally, a principally new code was adopted in 2006 (No. 183/2006 Sb.). Unfortunately, it did not help much and since then 23 modifications and 2 major amendments (No. 257/2013 and No. 225/2017) had to be approved. More and more tasks were and are put on the arms of building authorities. As soon as the load becomes critical a reaction from responsible bodies suggests another improvement of the law which supposed to shorten the process. But, as a rule, new fields of unexpected troubles are created. Example – one process which was manageable by building authority in hours (a half page of text) was replaced by a qualified legal statement of a new authority which requires several days of work (four pages dealing with the same content).

This spiral of interventions led to housing shortage in larger cities, first of all in Prague. The Figure 2 shows the relationship between housing development in Prague, mortgage index and GDP growth. There is an evident slowdown in construction business in the last 5 years in spite of fact that the economy is flourishing and mortgage rates are lowest ever. Many argues [ARTN, 2019, OECD, 2017], likely by right, that the reason is the complicated Czech legislation.

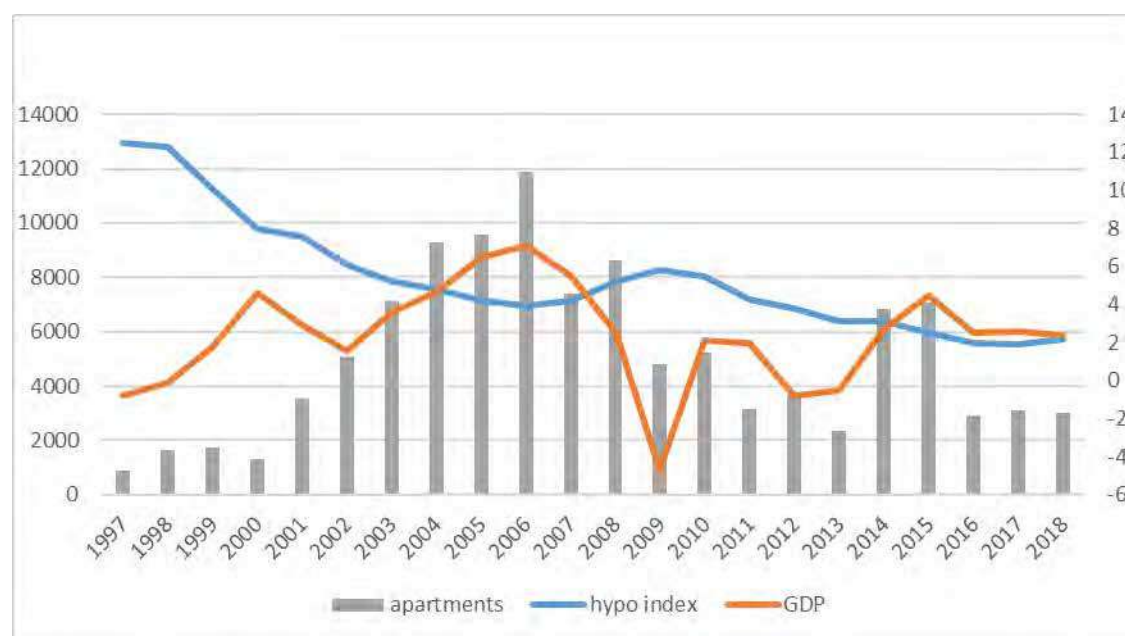


Figure 2: Housing development in Prague, hypo index and GDP in the Czech Republic, source: Czech National Bank, 2019

And it is likely true. The building code has an overlapping field of other 80 codes (environment, infrastructure, agriculture and forestry, transportation, preservation etc.). There supposed to be submitted about 40 to 60 statements of different bodies prior any decision making. The planning process and adjacent following permitting process works if there are no doubts or obstacles on the way to realization. In small towns where there is a lack of investment and any new project is welcomed to improve the quality of life (housing, creation of new working places) the legislation works well. But in large cities or in complicated locations the system is not able to generate outcomes (approval or refusal) in reasonable time.

The getaway of the current status is an attempt to change the building code fundamentally after 12 years of its validity. The key argument is that the system breaks away from itself and is not functioning anymore. The opponents argue that the building industry as well as the society got used to the legal framework of the valid code form 2006 and any principal changes open new fuzzy legislation fields.

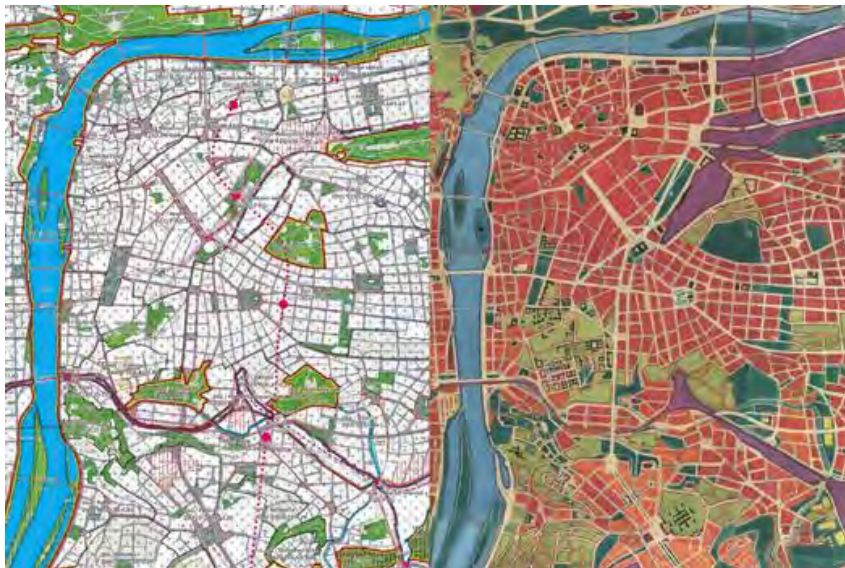


Figure 3: New Metropolitan Plan proposal (left) vs. current valid land use plan of Prague (right),
source: IPR Prague, 2019

Another attempt to escape from the paragraph labyrinth is simplification of current rules. One speaks about change of planning paradigm [IPR Prague, 2018]. An example is the new Metropolitan Plan of Prague, which is being designed and discussed. The old functional approach was refused and replaced by structural approach (compare in the Figure 3). The city, in this plan, consists of 3D structures and the agreement about the use of land is to be reached by meeting criterion of beauty and sustainability. The traditional colours on plans were replaced by zones of kindred structures.

Conclusions

The sketched case of planning in transition shows that planning is a complicated matter very deeply anchored in the legislation culture and tradition of individual countries. International models cannot be simply copied as the construction code is said to be as complex as civil code. Code is anchored in dozens of other acts, in administrative proceedings, in taxation, in sovereignty principles of municipality etc.

Planning legislation shall follow not only the best know-how but also reflect the behaviour patterns and habits of its users. If there is not enough time, measured in decades, transition flavour mutes the attempts to find an agreement in the society.

Somehow the history in our country repeats: major transition in the society followed by a good will to change is combined with using an old but known system anchored in refused regime from practical

reasons. Finally, the old system is refused however (an endless) search of a new one begins risking that no majority can be reached.

Being a member of European Council of Town Planners I noticed when informally discussing with my foreign colleagues that planning legislation is very fluent one and almost nobody is really satisfied with current status of respective building code. There is slow but permanent movement of planning legislation, coming either from construction industry, environmentalists, or motivated by economy of the country. But it seems to me that there is one country with a very stable system with almost no audible complain. It is Germany. I asked this question to prof. Schmidt-Eichstaedt, one of the key experts of German building legislation. He stated that any attempts to change or modify the German planning system failed as the expert community appreciate stability and predictability more than any other expected positive / practical outcomes. I guess it might be a lesson for us, transition masters. Transition makes you flexible, creative, aspiring for the better future, but it does not target predictability – one of the key issues of proper spatial planning.

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Implementation Problems of Social and Technical Infrastructure in Turkish Settlements

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Abstract: In urban settlements, social and technical infrastructure has a critical significance. There are three main problems related to social technical infrastructure in Turkish settlements: their site selection in local plans, the provision and implementation and sustainability of social and technical infrastructure areas. Problems about site selection in local plans and the provision emerged as a result of the adoption of neoliberal policies. Problems about implementation and sustainability of social and technical infrastructure areas can arise with plan changes and plan notes. The paper is focused on the third problem. That is, the paper aims to analyze how social and technical infrastructure areas were used for out of purpose on Istanbul case. For this, plan changes in the last ten years are examined. The findings are important for the holistic evaluation of social and technical infrastructure in urban areas.

Keywords: social and technical infrastructure; provision; implementation; Istanbul, Turkey

1. Introduction

Urban areas are places where individuals live and their accommodation, transportation, education, health, worship, socio-cultural needs are interacted and together in urban areas. Social and technical infrastructure areas are the areas where individuals meet all their needs except accommodation, and they play an important role for cities and citizens. All functions in the city are in constant interaction and have a dynamic structure. If the number and type and location of the social and technical infrastructure are shaped according to the housing population, physical and economic characteristics and social structure, it provides a regular and balanced development of the dynamic structure of the city (Cetiner, 1991). The need for social and technical infrastructure to be provided by public or private sector varies according to the planning approach. The financing of social and technical infrastructure areas by the public or private sector also changes on a national and local scale. The quality and quantity of social and technical infrastructure areas affect the welfare and economy of the city (Ennis, 2009).

In Turkish settlements have three basic problems relate to social technical infrastructure. First is related to the site selection of social and technical infrastructure areas in local plans. Second is related to the provision of social and technical infrastructure. Third is related to implementation and sustainability of social and technical infrastructure areas.

Firstly, site selection of social and technical infrastructure areas in local spatial plans is significant problem. They are determined in a way that it can respond effectively to urban needs according to

traditional planning approach. Neoliberal policies directly affect the site selection criteria that affect the city structure (Turk, 2017). While public institutions are aimed to maximize the social benefit in site selection, the private sector pursues a maximum profit-making policy. It is stated that the facilities belonging to private enterprises or non-profit organizations prioritize the principle of efficiency and efficiency and weaken the approach of equality and accessibility for all people (Pakoz, 2014). In parallel, site selection of social and technical infrastructure areas directly affects the land values and the city economy.

Secondly, there are also problems related to the provision of social and technical infrastructure. According to the traditional planning approach, public services and facilities are provided by the public under the welfare state approach. The social and technical infrastructure areas respond to the needs of the citizens in terms of quality and quantity, and they are established in public lands and operated by public institutions, and it results as positive (Cetiner, 1991). With the adoption of neoliberal policies in the 1980s, the situation has changed. Cities have become a part of capital and power for the state and have been used as an income tool. With the influence of neoliberal economic policies, special social and technical infrastructure areas have increased. Private land development tools are being used much more than public land development tools. For example, the study on health facilities demonstrates that the number of private health facilities has also increased (Pakoz, 2014).

Thirdly, there are problems in the stage of the implementation and the sustainability of social and technical infrastructure in Turkey. Social and technical infrastructure areas can be used out of purposes with plan changes and plan notes that are not properly implemented. After the implementation of local plans, that means the transition of the social and technical infrastructure areas to public ownership, these areas can be used out of purposes.

This paper focusses on the third problem. That is, the paper aims to analyze how social and technical infrastructure areas were used for out of purpose on Istanbul case. This paper contains six sections. Second section gives the definition and significance of social and technical infrastructure areas in general. Third section includes social and technical infrastructure areas in Turkey. This section is divided into three parts. While first part gives legal structure, second part explains the implementation tools. Third part gives using social and technical infrastructure areas out of purpose. Fourth section includes the analysis. Fifth section explains the findings of the analysis. Last section is devoted to conclusion.

2. Social and Technical Infrastructure Areas

The cities have a settlement hierarchy and is grouped as follows; housing, housing group, small neighborhood (10 housing groups), neighborhood (5 small neighborhoods), primary school (2-3 neighborhoods), district (2-3 elementary school settlement), urban unit (2-3-4 districts) (Cetiner, 1991). It is stated that the main infrastructure areas like administrative facilities, social facilities, cultural facilities, educational facilities, health facilities, technical reinforcement areas are required for the urban unit (Cetiner, 1991). Social and technical infrastructure areas are determined according to the standards, but it differs for each country and city and it is stated that generalization cannot be made (Eker and Ersoy, 1980). Social and technical infrastructure areas are grouped as education, health, green and sport fields, management areas, socio-cultural facilities and transportation, and the site selection is important (Ersoy, 2015). Social and technical infrastructure areas are beneficial services that ensure the continuation and development of living conditions in the urban areas. Social and technical needs need

to be addressed together and it is important to improve the conditions of the city (Alnsour, 2016). For example, the importance of green areas, is well known. It is stated that the parks need to be supported in terms of transportation and should be planned by considering their distance. At the same time, the needs of the population addressed in the design of these areas need to be taken into consideration. Management and protection is important after the application (Guo et al., 2018). As it is understood, all social and technical infrastructure areas, such as parks, are in constant interaction and have a dynamic structure. It needs to be planned as a whole. Access distances should be taken into consideration and emphasized that the city should be designed according to the needs of the city. Protection and management play an important role in ensuring sustainability.

Social and technical infrastructure areas and social benefit have an important role in increasing the quality of life of the city and the inhabitants and providing justice and equality. Plans are made for the purpose of public interest. Social benefit is taken into account in the planning and implementation of social and technical infrastructure areas. It should not be made according to the benefit of a particular group or individuals. Planning, implementation or changes in social and technical infrastructure areas should also take into account the interests of the whole community. In addition, the quality of life of the city and its inhabitants is directly proportional to the quality and quantity of infrastructure areas. The purpose of urban planning as improving the quality of life (Ciftci, 1999). The provision of social and technical infrastructure in an equipped manner ensures that individuals are happy in the city where they live (Tas et al., 2017). While the cultural sector, which is one of the social and technical infrastructure areas, affects the urban economy, it also emphasizes the role on the quality of life (Koramaz and Koramaz, 2017). For example, green areas, which are one of the social infrastructure areas, are directly influential on human health (Pouya, 2017). The open green areas have a balancing role with their economic, ecological, social, social and physical aspects and increase the quality of life of urban residents (Tepe, 2018). In addition, the importance of social and technical infrastructure in terms of ensuring justice and equality is emphasized. Infrastructure areas, easy, convenient and accessibility in the choice of places to be more qualified, efficient and cheap service will be provided to more users (Ciftci, 1999). Increasing accessibility and quality of educational facilities, which is one of the social infrastructure areas, provides equal opportunity (Turk and Dokmeci, 2017). Accessibility and effectiveness should be taken into account for all individuals of the society in order to ensure social and technical infrastructure and justice and equality. Infrastructure areas should be equal and accessible to all people as they aim to meet the needs of all individuals of the society (Pakoz, 2014). The presence, absence and quality of infrastructure services affect the city's welfare and the city economy and help the real estate market. For the realization of these objectives, infrastructure services should be widely and easily accessible (Ennis, 2009).

3. Social and Technical Infrastructure Areas in Turkey

3.1. Legal Structure

Given the legal process in Turkey; settlements and structuring in these settlements; plan, science, health and environmental conditions to be compatible with the Reconstruction Law No. 3194 land use is provided. Within the framework of this law, there are regulations in which plans and plans are changed according to which criteria are defined and standards are specified. These standards are valid for urban areas at whole of country. In this context, the first regulation, the Regulation on the Principles of Plan Making was published in 1985 and numbered 18916 and entered into force. The Regulation on Making

of Spatial Plans published in 2014 no: 29030 has been repealed. Finally, the Planned Areas Development Regulation was published in 2017. The Planned Areas Development Regulation covers the areas in the implementation of local spatial plans and there is no general definition in the form of social and technical infrastructure areas. In the Regulation on Making of Spatial Plans, social and technical infrastructure areas are defined under sub-headings, and minimum standards and minimum field sizes are determined according to different population groups. The first article of the Regulation on Making of Spatial Plans is that the minimum standards and field sizes of urban, social and technical infrastructure, specified in the ANNEX-2 Table of this Regulation shall apply. This material is compatible with the regulatory planning system determined in Turkey is noted that areas of general social and technical infrastructure and standards based preparation to be applied. The second clause of the Regulation on Making of Spatial Plans is that in accordance with the principles determined by the Ministry of minimum standards or if the top level land use plan at the province level is determined by the standards determined. These two items contradict each other and it is observed that the transition from the regulatory planning system to the planning approach based on discretion is observed (Erdem Okumus and Turk, 2017).

In Article 11 of the Regulation on Making of Spatial Plans is that: If the minimum size for the use of education, health and religion in the local spatial plan revisions and changes is not enough as minimum size as in this regulation, area size is determined by plan in accordance with the proposal or opinion of the relevant public institution. With this article, it is possible to implement the practices which are not in compliance with the standards by taking the opinion of the related institution and also the investors do not have to provide the required size in case they adhere to the general standards (Erdem Okumus and Turk, 2017). In addition, in the Regulation on Making of Spatial Plans, the phrase “*made by public or private sector*” is included in the definition of social and technical reinforcement areas. Thus, the privatization of services and areas is normalized and the public cannot give these services. Public and private enterprises need to be defined separately and the provision of these services by the private sector hinders the use of public spaces for public benefit (TMMOB Chamber of City Planners, 2014).

3.2. Implementation Tools of Social and Technical Infrastructure in Turkey

These services are provided by public institutions as well as in the welfare state understanding so that social and technical infrastructure areas can be accessed and used equally by all. Since urban areas are predominantly private, public access is ensured by the public institutions. Tools that used to implementation of local plans and the transferring to public ownership of these areas are in Turkey; ‘voluntary method’, ‘expropriation’, ‘land readjustment’ and ‘plan notes’. The acquisition of these areas can be made by public power or by the consent of the people.

Voluntary method is a means that is applied depending on the consent of the person and the others are carried out by public power. The method of voluntary abandonment is an instrument that is applied with the consent of the owner, and it is converted into a parcel of land parcel by dividing or joining. In practice, it is a method used to obtain the building permit of the property owners. The demand of the owners of the property is the function of provincial cadastral parcels as defined in the local spatial plan. Depending on the size of the parcel, assembly or division is applied (Turk, 2003b). However, 15th and 16th article of Reconstruction Law no 3194 describes how to perform the process of land assembly and division, which, in contrast to what is perceived in practice, is not a method used to create urban plots (Turk, 2003b). However, due to the existence of exceptions to the regulations, it is a method used by

the municipalities to produce the parcel as land readjustment (Turk, 2003a). Since the necessary areas for social and technical infrastructure are provided free of charge, the municipalities are attracted to the owners of the property from which they have been granted the permission of local spatial plan. But it enriches owners with little interruption (Ersoy, 2005). This situation may create inequalities among the owners (Turk, 2003a).

Land readjustment is also referred to as the dough method and all parcels in regulation area are assumed as a whole, and then plan is implemented like single parcel. Some public services are free of charge up to 40% as contribution percentage. According to Reconstruction Law No. 3194, public services and public use areas are divided into two sub-groups. Public service areas such as primary and secondary schools affiliated to the Ministry of National Education, road, square, park, car park, children's playground, green ground, place of worship and police station are obtained as free of charge as contribution percentage with up to 40% of the scope of land readjustment. The second group of areas are allocated to public facilities such as hospitals, kindergartens, recreation areas, municipal services or other facilities. The areas in the first group are the services of the local government and the services under the second heading are mostly the duties and responsibilities of the central government or provincial administration (Turk, 2003a). While the land readjustment method is using, social justice is provided for share the areas to all those who benefit from the service for the second group (not regulating contribution percentage (DOP in Turkish)) areas (Ersoy, 2000). The owner of the property cannot sell or use it for any other transaction because the public parcel is functionally publicized until the parcel is publicized (Kocak, 2014). In addition, this method provides the implementation of the plan as a whole (Meshur, 2008) and the city development planned (Turk, 2009).

The expropriation is the tool used for public services, regardless of the consent of the owners of the property, for the payment of the cost of public services. Expropriation is defined as the acquisition of property by public legal entities and institutions by paying the price in cash (excluding some privileges) in accordance with the decisions of the immovable and resources of the private persons for public benefit (Ersoy, 2005). It is used to obtain areas that are not covered by the contribution percentage when using the tools of land readjustment. In cases where the contribution percentage is more than 40%, this method is used for the areas in the first group. The expropriation of the property required for public investment in small projects accelerates the project (Boztoprak et al., 2015). However, in case of a budget shortage, the integrity of the plan deteriorates and the implementation of the plan may be prolonged. An application that limits or even eliminates the right to property causes the property owner to be expropriated because he does not provide the property owner with the opportunity to acquire immovable property. It is stated that expropriation is a method that causes long, expensive and unequal among individuals (Ersoy, 2005). In addition, all shareholders during the expropriation of the shares that are shared after the land readjustment can cause the process to be prolonged since they are negotiated and purchased (Turk, 2003a).

Plan notes, the implementation of local spatial plans are organized, the plan is considered as a whole. Plan Notes are not a detail of the plans, but an essential part (TMMOB Chamber of City Planners, 2016). It is defined as a binding section that provides spatial form and order for the application in order to explain and regulate the plan decisions. He states that the plan notes are a whole with the plan decisions, they are related to the local spatial plan and they aim to give detailed information about the local spatial plan (Turk, 2018). In the case of more than 40% of the social and technical infrastructure areas determined in the local spatial plan, municipalities should be expropriated, but these methods are

not implemented due to lack of budget (Turk, 2018). Alternative solutions are very attractive for municipalities since they do not offer bargaining opportunities for the real estate owners of the existing implementation methods (Turk, 2003a). This means that these methods are attractive for the municipalities, so that they solve the problem of expropriation cost of municipalities as well as obtain public space free of charge (Turk, 2003a).

According to the first paragraph of Article 1 of Protocol No. 1 of the ECHR (European Court of Human Rights), it is stated that a person may be deprived of his property or property only from the public interest. It is understood that the confiscation of the property of the persons can only be carried out with the reason of public interest. These areas, which are obtained both by public power and with the consent of the person, cannot be used except for the purposes specified in the Reconstruction Law no 3194.

3.3. Using Social and Technical Infrastructure Areas Out of Purpose

Plan changes can be made in order to change socio-economic conditions and to eliminate some problems encountered (Sesli and Karadavut, 2009). However, in practice, it is emphasized that the plan changes are not made in accordance with the main purpose (Hasol, 20008). Disregarding public interest, future concerns and the changes in plans made according to the interests of certain groups reveal negative results in the urban areas (Sesli and Karadavut, 2009). Plan notes are all together with the plan decisions and provide detailed information and explanations about the plan decisions during the implementation phase. However, with the plan notes, social and technical reinforcement areas can be used outside the scope of the plan. If the owners of the property are more than 40% of the areas corresponding to the public use, they do not leave the volunteers, so the plan notes and the owners of the property are compromised (Turk, 2018).

There are various reasons for the privatization policies of the states or public-private cooperation, especially for finance, but evaluating the social and technical infrastructure areas of the public in this context may lead to the use of these areas beyond the objective (Emoh et al., 2016). It is stated that social and technical infrastructure areas, which are in the hands of the public, can be used for non-objective changes that are not appropriate for their purposes (Kokturk, n.d.). It is emphasized that the social and technical infrastructure areas of the public have been transferred to the private sector in order to privatize and support the investor (Hasol, 2008). The areas where privatization practices are most effective under the neoliberal policies are the areas where the public is traditionally maintained. In these applications, the public interest is ignored and the urban area is used as a rent vehicle (Erdem Okumus and Turk, 2017). Social and technical infrastructure areas are transformed from public service to investment decisions that contribute to market economy. In this way, public spaces are transferred to private property or by the investor for public service. These practices are trying to provide convenience to entrepreneurs in the private sector, but planning legislation is prevented and ignored (Erdem Okumus and Turk, 2017).

Planning is a process which consists of planning and implementation stages and it is a successive process that triggers each other in both stages. In this section, the use of the social and technical infrastructure areas outside can be evaluated under two sections. First is interventions to social and technical infrastructure areas with plan decisions. These interventions can be categorized under three parts. First part includes changes related to social and technical infrastructure areas against to the standards defined in the regulation. Second part contains changes land use functions of social and technical areas. Third part includes interventions related to increase in development rights for provision

of social and technical infrastructure areas. Second interventions state using social and technical infrastructure out of purpose after plan implementation. These interventions can be categorized under two parts. First parts include transferring to private person or private sector. Second part contains changes of function related to social and technical infrastructure areas after plan implementation (See Figure 1).

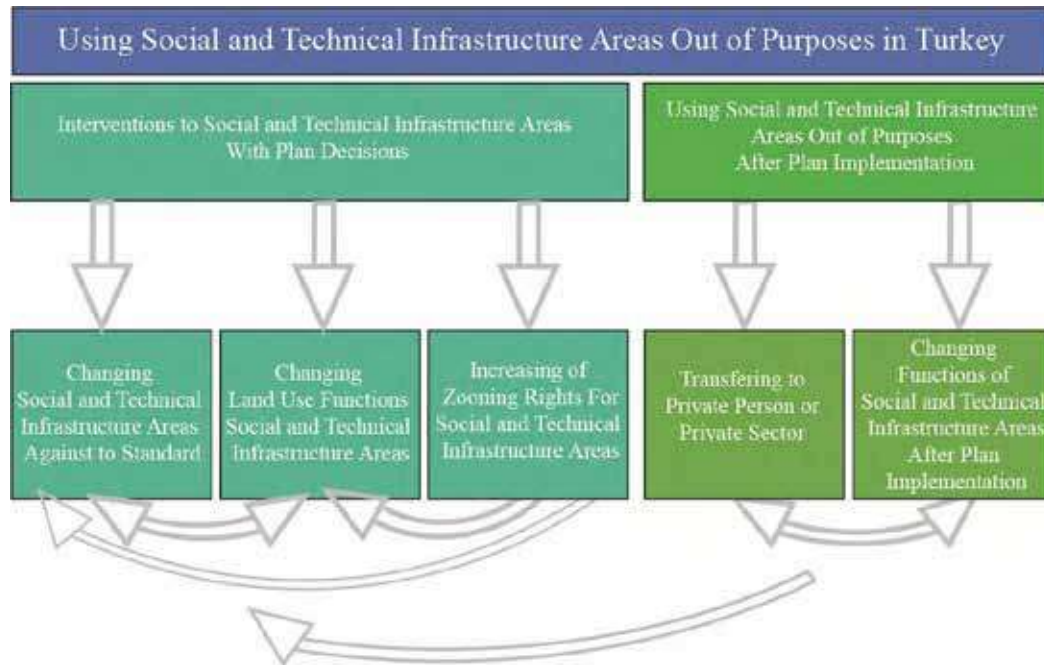


Figure 1: Using social and technical infrastructure areas out of purposes and their relations (Source: Illustrated by the author.)

4. Analysis

4.1. Research design

In order to select sample areas, the local spatial plan and plan changes, which were planned in the Istanbul Metropolitan Municipality Council between 2008-2018, were examined. The Planning Directorate has benefited from the data in the IMOS (İmar ve Şehircilik Otomasyonu (Zoning and Urbanization Automation)) system and has been detailed according to the Parliamentary Decisions within the scope of the analysis. After the examination, the selection was made among the areas according to the usage groups. Five type of problem is defined about using social and technical infrastructure areas out of purposes. A total of 25 sample areas were selected for each of the five problem mentioned above. In the sample areas, the results of using social and technical areas out of purpose were analyzed.

In the analysis of the results of the using social and technical infrastructure areas out of purposes; plan modifications and plan notes were examined. The files of the selected areas, council decisions, plan changes, plan objections and plan proposals were reviewed. After the examination, the social and technical infrastructure areas (social benefit, quality of life and justice and equality) were analyzed and their results were analyzed in the areas selected for each subheading ('changing social and technical infrastructure areas against to standard', 'changing land use functions social and technical infrastructure areas', 'increasing of development rights for social and technical infrastructure areas', 'transferring to

private person or private sector’ and ‘changing functions of social and technical infrastructure areas after plan implementation’). As seen Table 1, there are lots of result in urban areas.

Social Benefit		
Life Quality	Man-Made Environment	Plan Integrity
		Population and Structure Density
		Regional Transportation
		Local Transportation
	Social Environment	Land Value
		Income
		Need
		Service Quality
	Economic Environment	Land Value
		Service Price
		Supporting Investors
		Privatization
	Health	
	Ecology	
Fairness and Equality	Accessibility	
	Income	
	Public Policy	Public Use
		Privatization
	Compliance with Reconstruction Law no.3194	

Table 1: Results of Using Social and Technical Infrastructure Areas Out of Purposes (Source: Illustrated by the author.)

4.2. Findings

According to the analysis of interventions with plan decisions to social and technical infrastructure, increasing the development right with the plan notes results negatively in terms of fairness and equality with aspect of compliance with Reconstruction Law no.3194. In addition to not complying with the Reconstruction Law no. 3194, increasing the development rights with plan notes can also result in a change in function and a change in the standard of social and technical infrastructure areas. Increasing the development rights with plan notes is a method that provide easiness in practice. This method is developed as a result of inadequate implementation due to lack of budget, the rights of the property owner are protected and even the right to additional development right can be granted. However, with this practice, social benefit is not taken into consideration and it causes the production of rent. It reduces the quality of life and may result in the deterioration of urban identity. At the same time, this decision, which disrupts the integrity of the plan, also results in the plan becoming dysfunctional.

The social benefits are not taken into account in the plan changes that are examined. It is seen that the changes have positive results in the economic environment (although some of them are individual) with the analyzed aspects. It can be stated that positive results are observed in terms of quality of life in terms of economic environment in the examined areas. However, in the built environment; plan integrity, population and structure density, transportation, in social environment; land values, income, needs aspects emerge negative results and it can be expressed that the quality of life is decreasing. In the examined areas, fairness and equality cannot be provided mostly through the examined aspects. In transferring to private person or private sector, there is more negative result than in changing functions of social and technical infrastructure areas after plan implementation. Changing land use functions

social and technical infrastructure areas (sub-group of interventions with plan decisions to social and technical infrastructure) is differentiated with changing functions of social and technical infrastructure areas after plan implementation as aspect of that areas are in public property. In case of transferring to private person or private sector, there can be privatization of the public areas. These areas are acquired in public ownership for public benefit reason. Privatization may result in both changing the ownership of these areas and using these areas out of purposes. In cases where there is no change of ownership, the private sector operates the public areas.

As a result of the field analyzes, the most negative result is in the increasing development rights with the plan notes (sub-group of interventions with plan decisions to social and technical infrastructure). These practices are unlawful by the judiciary. In the context of the using social and technical infrastructure areas out of purpose after plan implementation, it is seen that more negative results occur in the urban area when transferring to private sector or person.

In conclusion, social and technical infrastructure areas are using out of purposes with plan decisions. These situations lead to negative results in terms of life quality and social benefit. Increasing in development rights with plan notes are not in accordance with the Reconstruction Law no 3194. Besides, social and technical infrastructure areas are using out of purposes after plan implementation. This causes more negativity in terms of quality of life, social benefit and justice and equality. But in many aspects, it increases the quality of life economically with the analyzed aspect as individually.

5. Conclusion

Social and technical infrastructure has a critical significance. There are three main problems related to social technical infrastructure in Turkish settlements. The paper aims to analyze how social and technical infrastructure areas were used for out of purpose on Istanbul case by examining plan changes in the last ten years.

Plan changes can be made out of purposes both in planning stage and implementation stage. Moreover, plan notes are also used out of purposes in planning stage. Interventions with plan decisions to social and technical infrastructure areas can be with both plan changes and plan notes. ‘Increasing development rights for the areas’ occurs with plan notes. ‘Changing the areas against to standard’ and ‘changing land use functions of the areas’ occurs with both plan notes and plan changes. ‘Increasing development rights for the areas’ causes the another two. Using social and technical infrastructure areas out of purposes after implementation also cause ‘changing the areas against to standard’ and ‘changing land use functions of the areas’. There is more problem in this stage that these areas are in public ownership and are purposed public benefit.

All problems result negative effects on urban areas as aspect of social benefit, life quality and fairness and equality. Plan integrity, population and structure density, transportation, land value, income, need, service quality and price, supporting investors, privatization, health, ecology, accessibility, public use and compliance with Reconstruction Law no.3194 are the issues of using social and technical infrastructure areas out of purposes.

Within the scope of this paper, the suggestions developed for the identified problems are as follows:

- In order to control the density resulting from plan change, it is necessary to limit the density of the plan notes and plan changes. If a plan change is made, a plan note should be added as to maintain the current precedent.
- Within the scope of transferring the increasing value in the urban space to the public, the protocols with the private sector should be transparent. The balance between the private sector's income and the benefit it provides to the society needs to be established. In order to achieve this, the protocols (planning agreements) should be placed on the ground in Public Law. Plan notes should not include expressions that disrupt plan decisions and the plan notes prepared in this way should not be approved and applied.
- The development programme of municipalities should be mandatory. In case of failure to prepare the development programs, it is necessary to define clearly what kind of problems will arise.
- As the projects and plans that direct the development of space in the city also direct the preferences, lifestyles and needs of the inhabitants, it is necessary to ensure the participation of the citizens in the decision-making process that encompasses the whole of the city, as well as to increase the sanction power of the local government. In this context, raising awareness of the citizens is also of great importance.
- After implementation of local plans, with plan changes, it can be observed that the transfer to the private sector or the person. In parallel with the quality of service within the scope of public-private cooperation, the price of services also increases. Since planning is the first priority to ensure public interest, the price of the service should be taken under control as publicly available
- Intelligent management, which is a component of smart urbanism, will provide transparent and participatory decision-making policies. In addition, the use of virtual reality applications in the implementation of the plans will enable the understanding of the results of the plans in the third dimension. The effect of the plan changes on the main plan decisions can be determined in this way, the main plan decisions and the results that may emerge in the urban space can be determined before the implementation.

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PA16

Tourism, public spaces
and urban cultures

Interrelation between inclusivity of public spaces and social cohesion: Metamorphosis of a historical park in Ankara, Turkey

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Abstract: Public spaces with different degrees of inclusiveness and exclusiveness are critical in both attaining and sustaining social cohesion between diverse groups, thus achieving coherent community life from neighborhood to city scale. This paper aims to examine the notion of social cohesion through the lens of the inclusivity of public spaces. Providing a model for the qualitative assessment of the inclusivity/exclusivity of public spaces, this research assesses the largest historic park in Ankara, *Gençlik Park*. It studies the metamorphosis of this park from its heyday to 2018 regarding the four dimensions of access in relation with design, management, control and use processes, as well as the contextual aspect of the inclusivity-exclusivity continuum of public-private spaces. It argues that the inclusive nature of public spaces evolves over time along with the local and global contexts within which the public space is set and bounded. Revealing multiple, site-specific and interrelated driving forces behind the inclusivity of the public space, it shows how the original design of the park has been modified, and how this affected the inclusivity of the park, and the social cohesion in the city.

Keywords: public space; social cohesion; inclusivity; Ankara

Introduction

Public spaces are inevitable components of cities. Bringing together different groups of people regardless of their class, ethnic origin, gender and age, and performing as the arenas of social interaction, they help the formation of the richest quality of a multi-class, multi-cultural and heterogeneous society. They carry out educational, informative and communicative roles to strengthen public life. People coming from different segments of the society interact and learn about each other in public spaces. Therefore, public spaces with different degrees of inclusiveness play a critical role in both attaining and sustaining social cohesion between diverse groups to achieve a coherent community life at neighborhood, district and city levels. This paper aims to discuss the interplay between social cohesion and inclusivity of public spaces, first by providing a model of inclusivity for the qualitative assessment of public spaces, and second by using this model to assess the inclusivity of the largest historic urban park in Ankara, namely *Gençlik Park (GP)*. As a city-scale park, GP was built in the 1930s along with the nation-building ideology of newly-founded Turkish Republic to create a modern, secular and Westernized society and to build a social cohesion and unity among different segments of the population. This paper examines the metamorphosis of GP, its changing inclusivity over the last 90 years, and thereby its impacts on contributing the social cohesion in the city. It relies on qualitative and quantitative

evidence (archival documents, direct observations, a survey of 180 questionnaires and in-depth interviews with the sixteen old park users), involving a mixture of primary and secondary data.

The inclusivity model of public spaces

Public spaces, by nature, are inclusive and pluralist (Tiesdell and Oc, 1998; Williams and Green, 2001). The *inclusive public space* can be defined as possessing four mutually supportive qualities of *access*: Physical access, social access, access to activities, and access to information, discussions and intercommunications (Akkar, 2005). *Physical access* is the access to the physical environment (Tiesdell and Oc, 1998). Public spaces are inclusive, as long as they allow everybody to be physically present with the availability of entrances and universal design principles which its accessibility and connectivity to paths of circulation and a variety of public and private transport modes (Akkar Ercan and Memlük, 2015).

Social access involves the presence of hints and signals, in the form of people, design and management elements, suggesting who is and is not welcome in the space (Carr et al., 1992). *Visual access* or *visibility* of public spaces, symbols used or represented within these spaces and feeling of safety and comfort affect social accessibility of public environments (Carr et al., 1992; Rishbeth, 2001). Likewise, the emotional bonds between individuals or groups and environments generate symbolic meanings and cultural importance of the places, with which public spaces help form personal or collective histories and memories, leading to the creation of place attachment (Rishbeth, 2001), and a sense of continuity for a group or a society (Loukaitou-Sideris, 1988). Binding the individual members of the group or society together, these feelings enhance social unity and cohesion (Lynch, 1992; Moughtin, 1999). Similarly, the design, activity and management of public spaces need to reflect the needs, values and aspirations of all social groups from different ethnic, social and income levels to ensure the provision of inclusive public spaces (Rishbeth, 2001).

Public spaces are also inclusive, as long as they accommodate a variety of activities accessible by the publics. As the societies become highly multiplied, diversified and differentiated and the distance between social groups widens, the need for multi-functional public spaces arises. The more variety of facility the public spaces comprise, the more inclusive they are (Akkar, 2005).

Access to information, discussions and intercommunications means the availability and accessibility of the information about the design, development, management and use processes on public spaces. Inclusive public spaces are places where the information, discussions and intercommunications regarding these processes are truly open to all (Akkar, 2005). This requires the presence of inclusive and participatory public spheres, guaranteed by the public authorities (Akkar and Memlük, 2015). By facilitating renegotiations between the publics and public authorities, such arenas enable the meanings and functions of public spaces to change in conformity with citizens' needs and interests (Akkar, 2005), and reinvigorate society through collective action (Madanipour, 2010). Language should not be a barrier to access development and use processes of public spaces (Rishbeth, 2001).

This *inclusivity model* can be understood at the physical and procedural levels. The first three access dimensions of this model are *physical*, as they primarily denote the accessibility of physical space, whilst the fourth access dimension denotes a *procedural accessibility*; i.e. the access to the design, development, management, control and use processes of urban space (Akkar Ercan and Memlük, 2015). These two levels of access should overlap to achieve *inclusive public spaces* (Akkar Ercan and Memlük, 2015). Public spaces ideally should be inclusive to protect cultural diversity, create the spatial experience of democracy, reduce the potential social conflicts of the society, promote an urbanism of tolerance and social cohesion, reintegrate a socio-spatially fragmented city, expand citizenship, empower community, and get people involved in the governance and maintenance of their cities and public spaces (Madanipour 1999; Shonfield 1998). To achieve these higher values and objectives, the

inclusion of all segments of the public in the physical and procedural public spaces is crucial (Akkar Ercan and Memlük, 2015).

Four access dimensions of this model offer valuable empirical tools to define an *ideally inclusive public space* and to assess the inclusivity capacity of a public space. Since the relationship between inclusive public space and exclusive private space is a *continuum* rather than a dichotomy, it is possible to define public and private spaces with different degrees of inclusivity/exclusivity (Akkar, 2005). Therefore, regarding four aspects of access for a specific time-period, the extent of 'inclusivity' of a public space depends on the degree to which the public space physically and socially is open to all, and the activities occurring in, and information, discussions and intercommunications about the design, development, management and use processes are accessible to everybody (Akkar Ercan and Memlük, 2015; 2019).

As the change in public spaces is inevitable, their inclusivity levels or qualities evolve in time in relation with the local and global contexts (Akkar Ercan and Memlük, 2015). This premise underlines contextual aspect of the *inclusivity-exclusivity continuum* of public-private spaces. The characteristic contexts of places and how they vary from one city to the next determine the inclusivity qualities of public spaces. The *spatial or locational context*, including the location of the public spaces in a neighborhood, district or city, their distinguished features such as their morphology, natural invariants and the characteristics of their surroundings and urban fabric, identifies their inclusivity or exclusivity (Akkar Ercan and Memlük, 2015). The changes in these features in time also impact on the inclusive/exclusive nature of public spaces. The *political economic context* –i.e., the political institutions, the political environment and the economic system of a society- influences the physical form of a city, or urban space, in addition to the governance processes of its design, development, management, control and use (Akkar Ercan and Memlük, 2015). Likewise, the changes in society, the economy and the prevailing politics in a city/society can impact on the inclusivity or exclusivity levels of the public spaces. Last, the inclusivity/exclusivity level of public spaces is (trans)formed within a *historical context*; it can be shown and communicated through the history that has shaped them, requiring continuous interpretative mediation. Urban design process is a process which begins long before contemporary development proposals are dreamt up, and these in turn build upon a very long history that continues to inform processes of change through to today (Madanipour, 1997). Thus, we have to look at the inclusivity/exclusivity of public spaces as a *historical continuum*, which begins with a look to the past (Akkar Ercan and Memlük, 2015). How far a space is inclusive or exclusive is shaped by an accumulated history of experience and practice, although the change in the level of inclusivity or exclusivity depends on local and global contexts. Despite globalization, this change sometimes can be very place-dependent (Akkar Ercan and Memlük, 2015). For these reasons, looking at the inclusivity qualities of public spaces through a historical context is critical, as will be shown in the example of GP.

Evolving inclusivity of GP from its heydays to today

GP is a 27.5-hectare park located at the south-west of the historic city center of Ankara, namely Ulus. The Park is surrounded by important landmarks of the city, such as the Central Station to the southwest, large sports complexes and Ataturk Culture Centre to the northwest, Opera House and Symphony Hall to the south, public and government buildings and a bus station to the east, the Central Bank and the Radisson Hotel and the famous *Vakıf* apartment building with two historic theatre halls to the north. The history of GP goes back to the mid-1920s (Uludağ, 1998; Akansel, 2007). The transformation of this swamp into an urban park and its tale of inclusivity can be examined under four major historic periods: 1925-1950 representing the park's early years, 1950-1980 characterized by its heydays, 1980-2005 covering its declining period and the period after 2005 corresponding to its regeneration (Memlük, 2012).

This paper, suggesting an inclusivity model for the assessment of public spaces, has depicted how the inclusivity of GP has changed over the last 90 years within the spatial, political-economic and historical contexts of Ankara. Studying four subsequent periods regarding four *access* dimensions in relation with the design, management, control and use processes, it found that GP's inclusivity has changed in every historic period according to the spatial, political-economic and historic contexts (Akkar and Ercan, 2015). Between 1925 and 1950, along with the nation-building ideology of the newly-founded Republic, GP was designed and built as an inclusive and democratic park to build a social unity and cohesion among different segments of the population (Kasaba, 1997; Bozdoğan and Kasaba, 1997; Akansel, 2007; Demir, 2006; Özdemir, 2009; Cantek Şenol, 2012). From the 1950s to the 1980s when Ankara became a dual city with the rural migration and the emergence of squatter poverty neighborhoods along with the liberalization policies and the transition to multi-party democracy, GP became more inclusive and democratic for the upper and middle classes, but less inclusive for the new urbanites; i.e. rural migrants, squatters dwellers (Bozdoğan and Kasaba, 1997; Akkar Ercan and Memlük, 2015; 2019). Between the 1980s and 2005, along with the degeneration of Ulus, the rapid urban sprawl of Ankara, and the rising dominance of Islamic wing party in the local politics, which pursued the disinvestment policies on the Park to erode its historic and cultural values, thereby its early republican identity, GP became less inclusive for the upper and middle-income groups, but more inclusive for the low-income classes, squatter dwellers and the marginal groups (Akkar Ercan and Memlük, 2015; 2019). Since 2005, GP has become more inclusive and democratic for low and middle-income conservative groups, but less inclusive and democratic for its previous users –mostly coming from secular, middle and upper-income classes, and particularly *new middle* class (Akkar Ercan and Memlük, 2015; 2019).

Throughout these years, the lack of public involvement in any renewal or regeneration schemes/stages of the park have undermined the GP's *inclusive* and *pluralist* qualities. The absence of the GP's procedural accessibility in any historic period has always resulted in the dominance of some segments of the urban population with their hegemonic cultural symbols and values. Every time GP was renewed, its authentic, cultural and historic values and the collective memories about the Park have been compromised and eroded to an extent. This ultimately resulted in the (re)configuration of a public space which has served for the benefit and enjoyment of some groups, while deliberately disregarding and excluding the needs and values of others. Consequently, although the city should be a network of historic and new public spaces, it has turned into another sort of network, where public space ghettos or fortified public spaces of the rich and the poor, the conservative and secular sections of the society, with distinct patterns of consumption, have been built through the past and current municipal policies. This has continuously entailed the spatial segregation and polarization, impinging adversely the ideal inclusive qualities of the public spaces of Ankara. However, especially public spaces in cities should be used to spatially harmonize all the social, economic and cultural differences in a society, and to generate new social solidarities among inhabitants related to their common and individual future.

The lack of procedural accessibility of GP in any historic period has caused not only the neglect of the historic and cultural values and images of the park, but also the loss of both the sense of place attachment and the collective memory among the (older) citizens. This has ultimately resulted in the erosion of a sense of continuity, social unity and cohesion, and strengthened social exclusion and stratification. However, the symbolic meanings and cultural importance of public spaces generated by the emotional bonds between these places and their users contribute to the creation of the sense of continuity for a group or a society; and these feelings ultimately bind the individual members of the group or society together, and enhance social unity and cohesion (Loukaitou-Sideris, 1988; Lynch, 1992; Moughtin, 1999). Histories and elements constituting the identity of public spaces therefore should be well-preserved to foster social inclusion, social coherence and unity.

Conclusion

The analysis of the GP's changing inclusivity over the last 90 years leads to several conclusions. First, the inclusivity/exclusivity of public spaces is not only the problematic of contemporary public spaces. Instead, it has always been a conflicting issue if the inclusivity of public spaces is examined in a historical perspective. Although genuinely inclusive public spaces might be very rare in reality, it is possible to find various types of public spaces with different extent of inclusivity and exclusivity. As in the case of GP, the *inclusive* nature of a public space might change and evolve depending on the *time* dimension, depending on the local and global contexts within which the public space is set and bounded (Akkar Ercan and Memlük, 2019).

Second, the approach that conceives the inclusivity-exclusivity continuum of public-private spaces within a historical context reveals *evolutionary* aspect of this continuum (Akkar and Memlük, 2015; 2019). As in the case of GP, the inclusivity/exclusivity of public spaces acquires a continuously evolving process. This continuum is not static and unchangeable, but instead varies circumstances and attitudes change. Additionally, it is not uniform and undifferentiated, but rather has several components and forms. Hence, the inclusivity of public spaces is a *dynamic* concept, which is continuously (*re*)shaped in time within particular local and global contexts, including historical and cultural trends, diverse modes of governance, regulation, political priorities and the political and market forces. It evolves continually, but at the same time, established components of inclusivity –four dimensions of access- are confirmed again and again over time. For this reason, inclusivity of public spaces has a *plural* character that appears through a *time* perspective (Akkar and Memlük, 2015; 2019).

Third, the production of inclusive and democratic public spaces is the outcome of political process. As shown in the case of GP, the political group which gains power in local (or national) politics affects the inclusivity level of public spaces. Thus, the inclusivity/exclusivity levels of public spaces are arguably determined by the political forces and power relations. Public spaces are political arenas (Akkar Ercan, 2007), actively fought over by groups with seemingly irreconcilable ideological visions (Carmona, 2010). The inclusivity/exclusivity nature of public spaces is (*re*)shaped through on-going processes between the interests and values of opposing political, social and economic actors. Creating inclusive and democratic public spaces therefore requires the recognition of a democratic model where decision-making processes of public spaces would effectively enable the publics not only to project their own preferences, values and inspiration, but also to listen to and be appreciative of those of others. Such inclusive decision-making processes will engage a broad range of publics in the process of shaping the public space, and help them to understand and recognize a diversity of interests and perspective among the publics (Paddison and Sharp, 2007). An inclusive decision-making process requires to:

- find new mechanisms of communication and collaboration that will allow the inclusion of the multiple publics,
- have a political authority, which is willing to ensure the continuous presence of democratic and egalitarian procedural accessibility by giving all segments of the public the opportunity to raise their voices and opinions about the public spaces (Akkar and Memlük, 2015; 2019).

With an inclusive decision-making process in which deliberations are used as the mechanisms to endure a consensual rather than authoritarian style of interaction, it is more likely to generate and maintain inclusive public spaces that will ultimately help achieve social cohesion and reduce socio-spatial fragmentation and polarization in contemporary cities (Akkar and Memlük, 2015; 2019).

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Where the streets have names

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Abstract: The subject of street names can be interesting to understand a country's history. The choice of a street name testifies to a country's interest towards a topic: as, for instance, naming the high street after a renowned patriot, a war hero or a scientist. Over the years various countries renamed streets or squares to make a statement in favour or against a particular historical period. This paper seeks to study the toponymy of Italian streets. By analysing the toponymy database published by Istat, it aims to: rank street names from most to least frequent (by municipality); classify them according to broad categories (*e.g.* geographical names, politicians, scientists, saints, etc.); georeference them by municipality. This work allows the author to consider the ranking of streets and the reasons behind it. First, the ranking shows the relative importance of a street name. It highlights Italy's young history: an emphasis on the capital cities, on the *Risorgimento*, on the Italian language. Secondly, the classification shows the recurrence of some themes: the most important categories are cities, politicians, WWI references, and *litterati*. Lastly, showing the location of street names on a map also allows to make a geographical analysis of Italian toponymy: some names could be more frequent in specific regions than in others due to the influence of local traditions, to political reasons, etc.

Keywords: street names; location; categories; history

Introduction

Street names define a country's identity. As a subject, toponymy is interesting in that it helps to understand a country's history. This article seeks to describe the toponymy of Italian streets, both by reflecting on the frequency of names and categories, and by showing and analysing their location. After a short look at the state of the art, it exposes the methodology and goes on to discuss the result of the research. The discussion opens with the first 100 street names ordered by occurrence. This is followed by the description of the various overlapping categories according to which the first 100 street names can be classified. A look at the first 20 names in each region concludes the discussion. Some concluding remarks and suggestions for further development close the article.

State of the art

This work draws on an article published by the German newspaper *Zeit* (Biermann *et al.*, 2018), which studies the street names in Germany. The authors, together with a service provider, worked on data harvested from the OpenStreetMap open-source database. They programmed a searchable database of the over 450,000 street names in Germany, which anyone can research on their website or download for free. In doing so, they noticed some interesting patterns on the

distribution of street names. Some of them are located only in specific parts of the country, such as in former East Germany. The most common street names refer to abstract concepts, such as *school*, *garden* and *main* street.

This result is different from what happens in Italy, where the most common street names refer to a person, a place, a significant date, etc. Azaryahu (1996) states that commemorative street names have a role “in substantiating the ruling socio-political order and its particular ‘theory of the world’ in the cityscape” (p. 312). This is in contrast with places like the United States where street names are simply alphanumeric. In the past, street names were chosen with regard to local history and topography. The use of other non-local names started in France in the 18th century and diffused in the rest of Europe after the French Revolution and the reign of Napoleon, during which many streets were renamed.

In terms of renaming streets, Drozdowski (2014), looks at how the street of Kraków, Poland, changed their names across the 20th century, under three powers: Nazi, Soviet and Polish. In particular it looked at street name changes in the city centre in 1934 (Polish), 1943 (Nazi), 1964, 1985 (Soviet) and 1996 (Polish). It concludes that, through the years, “the street names in Kraków have provided visible, distinctive, and daily reminders of the historical and socio-political intentions of those governing that space” (p. 76).

An article by Oto-Peralías focuses on street names as socio-cultural data and shows the example of Spain with regard to religiosity. Instead of looking at single street names, the author elaborates an indicator of religiosity. It concludes that “street names actually reflect the local community’s social and cultural values” (p. 18).

Therefore, it can be safe to assume that toponymy is an interesting field. General studies are common but in-depth studies on a country, city or topic can shed new light on unexplored fields. Bearing this in mind, one can proceed with the analysis of the Italian case.

Methodology

This article, similarly to Biermann *et al.* (2018), aims to study the toponymy of Italian streets. In 2015, the Italian National Institute of Statistics (Istat) published toponymy data that derive from their data elaboration and control activities for the 15th Population Census (Istat, 2015) and which include, along with the names and codes for region, province, municipality, locality:

- the street type designation (*e.g.* via, viale, piazza, strada);
- the street name;
- the house number.

Unfortunately, this data is provisional, as it only includes 7456 municipalities (92%) out of 8092¹ and two-thirds of the house numbers. Moreover, not all street names are standardised: for

¹ This was the number of municipalities as of the 2011 census. Since 2012, a rising number of municipalities have been merging with one another. As a result, at the time of writing, the number of municipalities is 7914.

instance the street name *Giuseppe Garibaldi* may appear as the full name, as an abbreviation or as a surname only, either *G. Garibaldi* or *Garibaldi*.

Therefore, an extensive work of standardisation was carried out for the most common street names, that is, those occurring in at least 10% of the Italian municipalities (around 750). A further standardisation was necessary for the names occurring in at least 10% of each region's municipalities to take into account specific names in Italian regions.

In the case of some street names some generalisations were made, such as:

- *Santa Maria* contains all the denominations of Saint Mary, including *Addolorata*, *Annunziata*, *Beata Vergine*, *Immacolata*, etc.; by counting all the street names, Santa Maria would have reached first place, but when counting one occurrence per municipality it moved to the sixth;
- *Sant'Antonio* refers to the most popular saint Anthony in Italy, known as Sant'Antonio da Padova, and includes all the unspecified *Sant'Antonio*;
- *San Giovanni Battista*, being the most popular Saint John in Italian religious culture, includes all the unspecified *San Giovanni*;
- *Martiri della Libertà* includes all the denominations related to martyrs and fallen for the sake of freedom (including, for example, *Caduti della Libertà*);

The street name data was elaborated with the SAS (version 9.4) statistics software, which helped to extract, standardise and rank street names. The first 100 street names were extracted, together with their one-time occurrence in each municipality and ranking. This data was joined to the geographic municipality data (point-shaped data) with the open-source GIS software QGIS (version 3.4), to create maps showing the location of street names.

Discussion

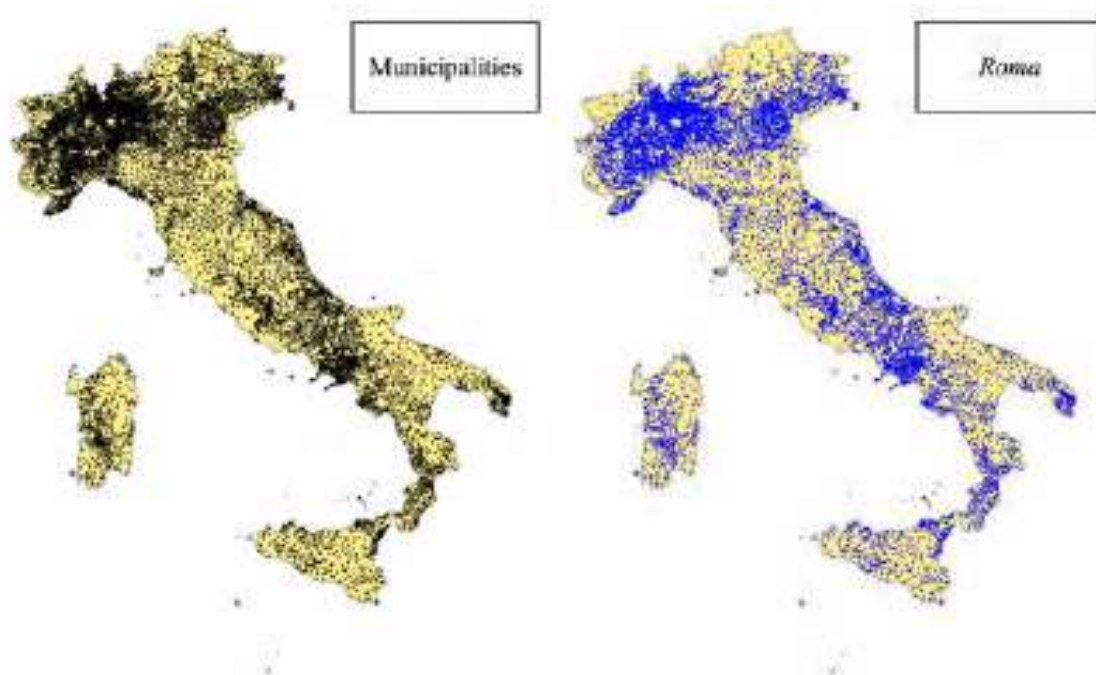
The following table (Table 1) shows a list of the first 100 street names by occurrence in Italian municipalities (each street name appears only once in each municipality: e.g. *Via Roma* and *Piazza Roma* count as one occurrence).

Rank	Street Name	%	Rank	Street Name	%	Rank	Street Name	%
1	Roma	76,92	35	Ugo Foscolo	20,24	68	Raffaello Sanzio	12,53
2	Guglielmo Marconi	55,43	36	Alessandro Volta	20,17	69	Martiri Della Libertà	12,49
3	Giuseppe Garibaldi	53,66	37	Vittorio Emanuele II	20,04	70	Isonzo	12,39
4	Giuseppe Mazzini	44,38	38	Galileo Galilei	19,98	71	San Giuseppe	12,38
5	Dante Alighieri	43,54	39	Giacomo Puccini	19,97	72	Pietro Mascagni	12,20
6	Santa Maria	40,50	40	Cristoforo Colombo	19,90	73	Giuseppe Di Vittorio	12,16
7	Giuseppe Verdi	39,18	41	Gioachino Rossini	19,89	74	Vittorio Alfieri	11,99
8	Giacomo Matteotti	37,93	42	Monte Grappa	18,37	75	Pace	11,94
9	Camillo Cavour	37,41	43	Sant'Antonio	18,31	76	Gorizia	11,86
10	IV Novembre	35,53	44	Repubblica	17,92	77	Filippo Turati	11,84
11	Papa Giovanni XXIII	34,51	45	XX Settembre	17,74	78	Pietro Nenni	11,82
12	Alessandro Manzoni	32,31	46	San Martino	17,29	79	San Giovanni Bosco	11,71

Rank	Street Name	%	Rank	Street Name	%	Rank	Street Name	%
13	Aldo Moro	32,12	47	Sandro Pertini	17,01	80	Fratelli Cervi	11,61
14	Antonio Gramsci	30,74	48	Vincenzo Bellini	16,38	81	Giotto	11,25
15	Cesare Battisti	29,75	49	Michelangelo Buonarroti	16,28	82	Carlo Alberto Dalla Chiesa	11,17
16	Alcide De Gasperi	28,80	50	Francesco Petrarca	16,24	83	Fiume	11,16
17	Piave	28,51	51	Risorgimento	16,11	84	Goffredo Mameli	11,05
18	Vittorio Veneto	27,36	52	San Giovanni Battista	15,81	85	Grazia Deledda	10,80
19	XXV Aprile	26,84	53	Silvio Pellico	15,33	86	Firenze	10,74
20	Chiesa	25,62	54	Armando Diaz	15,28	86	Fratelli Rosselli	10,74
21	Giacomo Leopardi	25,30	55	Torino	14,90	88	San Michele	10,47
22	Giosuè Carducci	24,95	55	Belvedere	14,90	89	Fratelli Bandiera	10,45
23	Umberto I	24,26	57	San Pietro	14,79	90	Giovanni Falcone	10,39
24	Trieste	24,02	58	Milano	14,78	91	Palmiro Togliatti	10,34
25	Trento	23,28	59	Nazario Sauro	14,48	92	Gabriele D'Annunzio	10,23
26	Giovanni Pascoli	22,91	60	Don Giovanni Minzoni	14,22	93	Santa Lucia	10,21
27	Leonardo Da Vinci	22,72	61	John Fitzgerald Kennedy	14,07	94	Nino Bixio	10,11
28	Europa	21,51	62	Salvo d'Acquisto	13,36	95	Luigi Pirandello	9,98
29	San Francesco d'Assisi	21,45	63	Italia	13,18	96	Amerigo Vespucci	9,90
30	Libertà	21,14	64	XXIV Maggio	13,14	97	Antonio Vivaldi	9,76
31	Enrico Fermi	21,11	65	Don Luigi Sturzo	13,10	98	Giovanni Verga	9,71
32	Castello	20,72	66	Venezia	13,02	99	Napoli	9,68
33	I Maggio	20,40	67	Gaetano Donizetti	12,73	100	Guglielmo Oberdan	9,64
34	San Rocco	20,28						

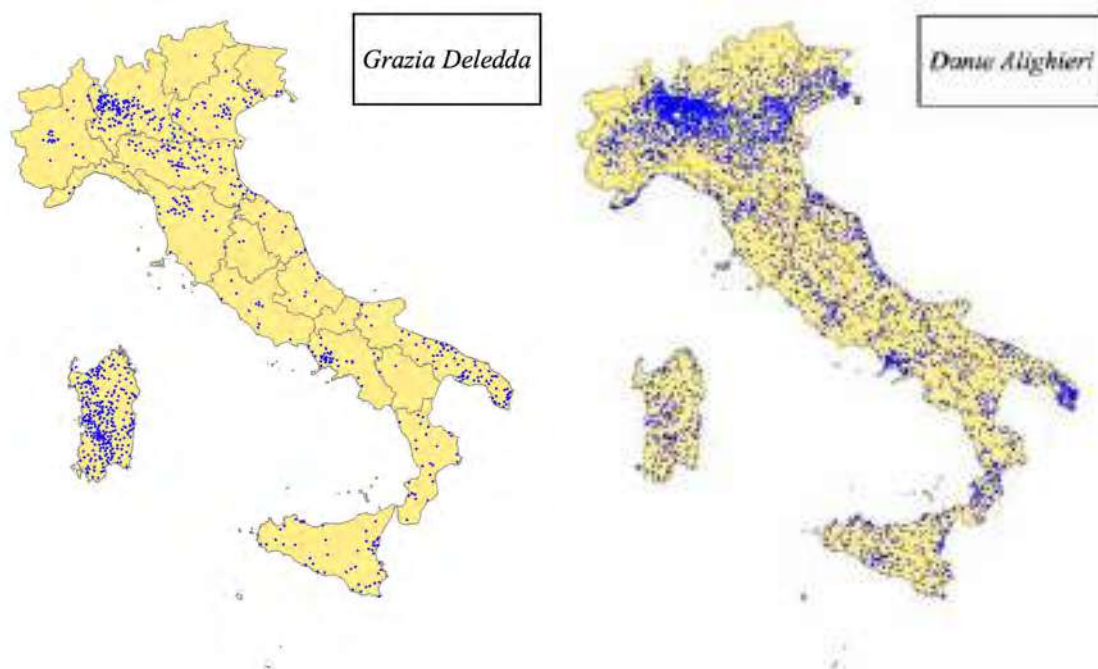
There is a variety of categories within the first 100 street names. For the purposes of this article the broad categories are, in no particular order: gender, places, scientists, patriots, politicians, artists, literati, seafarers, priests and religious people, significant dates, military people, heads of state (both kings and presidents), World War I and II, and victims of Mafia. It is worth noting that some street names fall into more than one category. For instance, *Monte Grappa* (#42) refers both to a place and to the setting of one of the final battles of World War I in the Italian front.

Roma, the capital city for almost 150 years, ranks first (77% of municipalities), as the comparison between figures 1 (municipalities) and 2 (*Roma* street name) shows. The name of the capital city is less frequent in *Valle d'Aosta* and in *Trentino-Alto Adige*, two autonomous regions where the main languages are French and German (mainly in the province of *Bolzano-Bozen*) respectively, and therefore have a different toponymy based on local names. The other two former capital cities of Italy are in lower positions. *Torino* (#55) was the capital of the Kingdom of Sardinia and then became the first capital of the new country in 1861. Five years later the capital was moved to *Firenze* (#86). *Roma* became part of Italy in 1870 and was made the capital the following year.

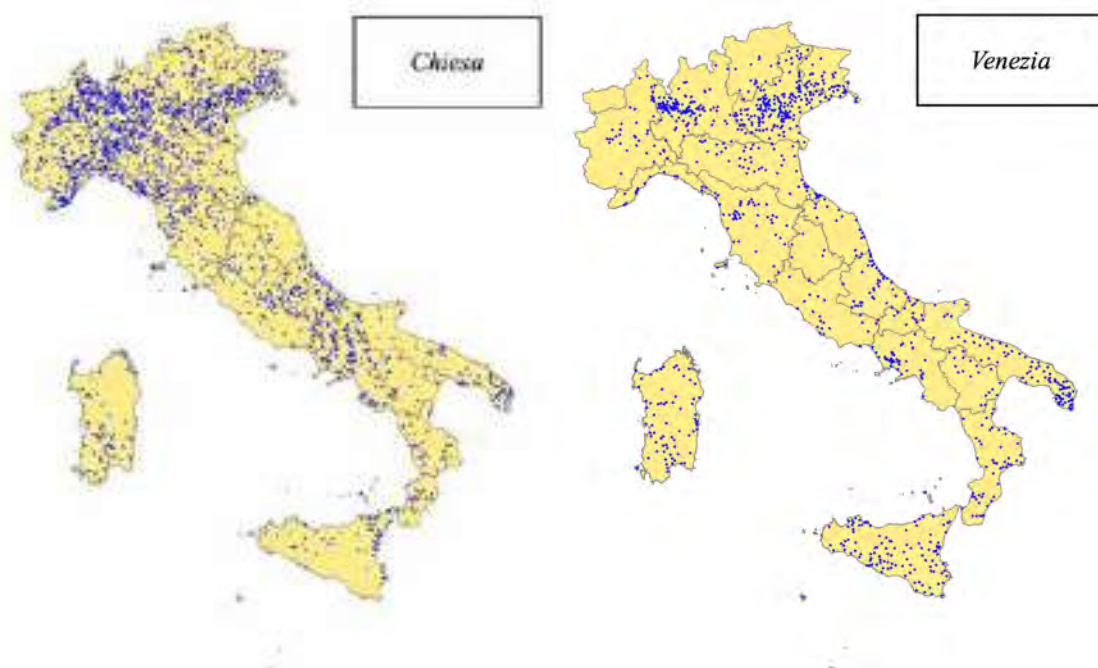


What is striking in terms of gender is the large majority of male figures – 68% – and subsequently the very small presence of women, which are only three among the first hundred: *Santa Maria*, a widely followed saint and religious figure, is in sixth position. The second woman, ranked 85, is *Grazia Deledda*. She was a Sardinian writer who lived between the 19th and the 20th century and was awarded the Nobel prize for literature in 1926, the second Italian writer and the only woman to do so. Lastly, a few positions down is *Santa Lucia* (93), a martyr known for protecting the blind, who lived in Siracusa in the 3rd century A.D. Another 29 street names are not related to people and therefore are gender neutral.

As expected, *Grazia Deledda* street names (figure 3) are mostly located in Sardinia, her home region. In comparison the most frequent literate, *Dante Alighieri* (figure 4), is present in most of the country and is ranked fifth. The category of the literati contains 14 names among which the most important are: *Alessandro Manzoni* (#11), *Giacomo Leopardi* (#21), *Giosuè Carducci* (#22) and *Giovanni Pascoli* (#26). The former is famous for his novel *I promessi sposi*, but also wrote poems, which is what the other three writers are mainly known for.



Place names represent another highly frequent category, with 19 occurrences. Other than the capital cities, frequent place names are *Chiesa* (#20, figure 5), which highlights the importance of Catholicism in this country, *Europa* (#28), which refers to the continent, and *Castello* (#32), which emphasises the presence of castles, fortresses and towers in many towns. Among the cities, it is worth noting *Venezia* (#66, figure 6), highly concentrated in the north-east of Italy.



Many place names overlap with another important category: street names relating to World War I. Other than *Monte Grappa*, cited above, these are *Piave* (#17) and *Isonzo* (#70), two rivers upon which many battles were fought, *Vittorio Veneto* (#18), a town named after the final victory of the war, *Trieste* (#24), *Trento* (#25), *Gorizia* (#76) and *Fiume* (#83), four major Italian cities that were part of Austria-Hungary until the end of the war. The World War I street name category has

13 occurrences, among which the most notable are: *IV Novembre* (#10) and *XXIV Maggio* (#64), the dates marking the end, in 1918, and the beginning, in 1915, of the conflict respectively; *Cesare Battisti* (#15) an Italian patriot born in Trento, at the time in Austria-Hungary, who fought with the Italian army and died during the war; *Nazario Sauro* (#59), born in Istria, followed a similar fate; *Armando Diaz* (#54), the general who led Italy to victory after the defeat in Caporetto. On the other hand, World War II plays a smaller role in Italian toponymy, with only three occurrences. The most notable is *XXV Aprile* (#19), the day of Italy's liberation from German occupation, marking the end of the war for the country.

The category of politicians plays an important role, with 16 occurrences. The ones which are among the first ten positions are related to the *Risorgimento* period, roughly 1848-1870: *Giuseppe Garibaldi* (#4), *Giuseppe Mazzini* (#5), *Camillo Cavour* (#9). They all contributed in different ways to the unification of Italy, which eventually took place in 1861. *Giacomo Matteotti* (#8) and *Antonio Gramsci* (#14) were both opponents and victims of Fascism. *Aldo Moro* (#13) and *Alcide De Gasperi* (#16) are influential figures of the Republican era, the former killed by the Brigade Rosse.

In a strongly catholic country, it is not surprising to find saints and religious people among the street names. Apart from those already cited above, some notable names are: *Papa Giovanni XXIII* (#11), one of the most popular popes of the 20th century, *San Francesco d'Assisi* (#29), the saint patron of Italy, *Don Giovanni Minzoni* (#60), an antifascist priest who was killed at the beginning of the regime.

The category of artists contains 12 street names, with the composer *Giuseppe Verdi* (#7) at the top of the list. Other important figures are the polymath *Leonardo da Vinci* (#27), the composer *Giacomo Puccini* (#39), the sculptor, painter, architect and poet *Michelangelo Buonarroti* (#49).

The “patriots” category partly overlaps with the politicians and the World War I ones. The first patriots that were neither politicians, nor war heroes, are the *Fratelli Rosselli* (#87), two antifascist brothers who were killed in the vicinities of Paris. They are followed by another set of brothers, *Fratelli Bandiera* (#89), heroes of the *Risorgimento*: Venetians, they attempted a revolution in Calabria, but were captured and executed.

The most significant dates have already been covered between the two world wars, apart from *I Maggio* (#33), May Day, and *XX Settembre* (#45), the date when Rome was seized from the Papal States and became part of Italy.

Although with only five occurrences, the category of scientists contains street names among the first half. *Guglielmo Marconi*, the pioneer of radio communications, is in second place, while *Leonardo da Vinci* is already covered among the artists. The other three scientists are the physicist *Enrico Fermi* (#31), the chemist and physicist *Alessandro Volta* (#36) and the astronomer *Galileo Galilei* (#38).

Some street names are devoted to what could be called abstract concepts: *Libertà* (#30), which is freedom, and those who died for it, *Martiri della Libertà* (#69); *Repubblica* (#45), the form of government that Italy chose after the end of WWII; *Risorgimento* (#51), the age of change that brought about the unification of Italy in the 19th century; *Pace* (#75), which likely conveys the desire for peace after two world wars.

Heads of state, be they kings or presidents, are the next category. At the top, we find *Umberto I* (#23) and *Vittorio Emanuele II* (#37). The latter was the first king of Italy but chose to keep the number he had as king of Sardinia. The former, his son, was assassinated by an anarchist in 1900. *Sandro Pertini* (#47) was the most popular president of the Republic of Italy. He is followed by another popular president, albeit a foreign one: *John Fitzgerald Kennedy* (#61), the US president who was assassinated in 1963.

People from the military form another category, containing, apart from World War I generals and patriots: *Salvo D'Acquisto* (#62), a *carabiniere* who traded his life for that of twenty civilians who were about to be killed by the German army during the occupation of Italy; *Carlo Alberto dalla Chiesa*, a general who was killed by the Sicilian Mafia for his work against organized crime. Another victim of Mafia is the judge *Giovanni Falcone* (#90), who presided over one of the largest trials against the Sicilian Mafia and was killed for it.

The last category in terms of occurrences is that of seafarers: *Cristoforo Colombo* (#40), is the Genoan explorer who first set off to discover America. The continent was named after *Amerigo Vespucci* (#96) who realised that the discovered land was a new continent, not part of Asia as previously assumed.

It is also interesting to look at regional differences in the frequency of street names. Table 2 below illustrates the tag clouds of the 20 most frequent names for Italy as a whole and the 20 regions.



1-Piemonte	2-Valle d'Aosta	3-Lombardia	4-Trentino-Alto Adige
5-Veneto	6-Friuli-Venezia Giulia	7-Liguria	8-Emilia-Romagna
9-Toscana	10-Umbria	11-Marche	12-Lazio
13-Abruzzo	14-Molise	15-Campania	16-Puglia
17-Basilicata	18-Calabria	19-Sicilia	20-Sardegna

Roma is still the most frequent street name in the majority of regions. A notable exception is Valle d'Aosta, where local names are more frequent. In some regions new names that did not make it to the national top 100 show up. It is the case in Trentino-Alto Adige for *Damiano Chiesa*, a patriot who, just like *Cesare Battisti* and *Nazario Sauro* was executed for treason by the Austrian military. Similarly, Veneto celebrates the *Alpini* military corps, who fought on the Austro-Italian front. Friuli-Venezia Giulia features among its first twenty street names *Ippolito Nievo*, a local writer who strongly believed in a united Italy and wrote a novel about it. The seven *Fratelli Cervi* were part of the *Partigiani* in Emilia and were executed by the Nazi. *Gabriele D'Annunzio*, a famous writer born in Pescara is featured in Abruzzo. *Giustino Fortunato*, included in the twenty most frequent names in Basilicata, was a politician who advocated for the development of the south of Italy. Moreover, the 17th century philosopher *Tommaso Campanella* hailed from south Calabria. Sardegna remembers many local notables, among which it is worth mentioning *Eleonora d'Arborea*, a local leader in the 14th century who updated the main group of laws of the region.

Analysis

By looking at street names in Italy, it is possible to interpret how Italy sees itself as a country. Since street names can only be given to people who died at least ten years before (PARLAMENTO, 1927), it is obvious that toponymy nods to the past. Another reason is that cities and towns do not expand as much as they did, for instance, after WWII, so there are fewer streets to be named. Italy places a lot of emphasis on its patriots and politicians, those people who helped shape the country through ages such as the *Risorgimento*, the world wars and the birth of the Republic. Places, cities, rivers and countries are also often honoured with a street name.

There is a lot of emphasis on the world wars period, mainly the first, likely because it was fought on Italian soil and led to the annexation of Trentino-Alto Adige and Venezia Giulia. The emphasis on WWII is caused by the importance of the *Resistenza* from 1943 to 1945, when the war was formally over but most of Italy was occupied by the Nazi forces and gradually liberated by the Allies, while the *Partigiani* resisted to the occupation.

In a strongly catholic country, saints, popes and religious people in general are also widely featured among street names. In opposition, scientists get a comparatively smaller recognition. The Italian language served as a uniting factor for a country that is only 150 years old: this is why literati are largely celebrated in roads and squares. Artists and musicians are also largely featured, highlighting the prominent role of Italians in art in the past centuries.

Concluding remarks and future developments

This article sought to analyse street names. It looked at the first 100 street names by occurrence in Italy and discussed their various and overlapping categories. It also observed the differences among regions for the first 20 street names. The analysis tried to summarise the themes emerging from the discussion.

The study of street names in Italy proved to be a very interesting topic. There is scope for further analysis, for instance at the municipal level in larger cities. It could be interesting to associate the street name to the actual position of the street instead of the municipality as a whole, similarly to what was done by Biermann *et al.* In this way one could observe whether street names are located near street names of the same category (*e.g.* a neighborhood in Rome features street names of European cities) or if the most significant street names are located in the town or city centre (*e.g.* street names such as Roma and Garibaldi are often given to the high street or the main square). Moreover, a further strand of research at the municipal level could be the analysis of name changes over time, for instance to substitute controversial street names after the end of Fascism or to allocate a street to a local notable who died recently.

The data provided by ISTAT proved really useful and easy to associate with the location data of each municipality. It would be even better if it was better standardised and associated with the actual position of the street. OpenStreetMap, being an open-source database, could be an useful starting point for an in-depth study of the street names of a city. In terms of standardisation, a future update of the existing data or a new release after the next census data is published should be expected.

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Transitional Approach for Enhancing Place-based and Collaborative Policies, towards an Evolutionary Dimension of Cohesion Policy

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Abstract: The paper proposes a new perspective in the design process of tailored development policies via the innovation boost. Stemming from the current debates on regional diversification together with the emerging role of the city in pursuing local innovation ecosystem, the aim is to explore new development policy configuration in which the evolutionary framework prompts the response of different territories to continuous shocks. The relevance lies in bridging Resilience, as an ongoing process of change rather than a recovery to a (pre-existing or new) stable equilibrium state, with Diversification, as a leverage of regional resilience to absorb shocks, and Evolutionary Theory based on “continuing and progressive change”. In this perspective, the innovative aspect stems from conceiving Transition Management (TM) as a keen strategical approach to translate the combination (Resilience, Diversification, Evolutionary Theory) into policy design and implementation. The paper is a place to present the TRENd project expected to construct a platform on the basis of capturing resilience and evolutionary path as policy design factors to push forward the state-of-the-art of approaches to innovation policy. This paper introduces the background and rationale of the TRENd project, analysing the academia’s discussions on the S3 implementation in EU regions to find the existing gaps in the current EU Cohesion Policy. It then presents the TRENd approach, discussing its objectives, methodology, conceptual framework, and implication. Finally, it draws a brief conclusion and offers suggestions for the upcoming research activities.

Keywords: TRENd project; transition management; resilience; diversification

Introduction

A stark spatial development unevenness throughout the EU regions, which has been widening, has put the efficiency of the current EU Cohesion Policy under question. As the graph below shows (Figure 1), there is a considerable variation in the regional GDP per capita (in terms of purchasing power standard) both in the EU and within the Member States. Pushing the reforming process of Cohesion Policy forward, therefore, proves to be an urgency for the post-2020 regional policy programming for creating new reliable industrial paths that represents a crucial challenge for both first-tier and lagging regions, and shift from structural-change oriented programming methodology to one with an evolutionary perspective. This paper intends to introduce a new perspective in the design process of tailored development policies that are more adequate in responding to local needs via the innovation boost. With this new perspective, it is aimed to respond to the current debates concerning the post-2020 EU Cohesion Policy programming which have focalised around the following issues (Bachtler *et al.* 2017):

- “Innovation ecosystem” is increasingly aspired by cities and regions alike. This is due to the ongoing structural change across the EU that requires a different policy and institutional focus on “ecosystems” of open, interconnected, cooperative multi-stakeholder networks for developing strategic partnerships. Such an ecosystem is critical to respond rapidly and flexibly to continuous technological, market and social changes during the structural change;
- The environment conducive to the development of innovation ecosystem must be tailored to adapt to specific national, regional and local contexts. Meanwhile, in order to be adapted to the actual needs of different territories, policy packages need to be designed and delivered with an integrated and coordinated approach at national, regional and local levels;
- Development strategies that are differentiated or place-based are badly needed especially at local level to promote adaptation to the specific shocks on regional economies generated by globalisation and market integration require.

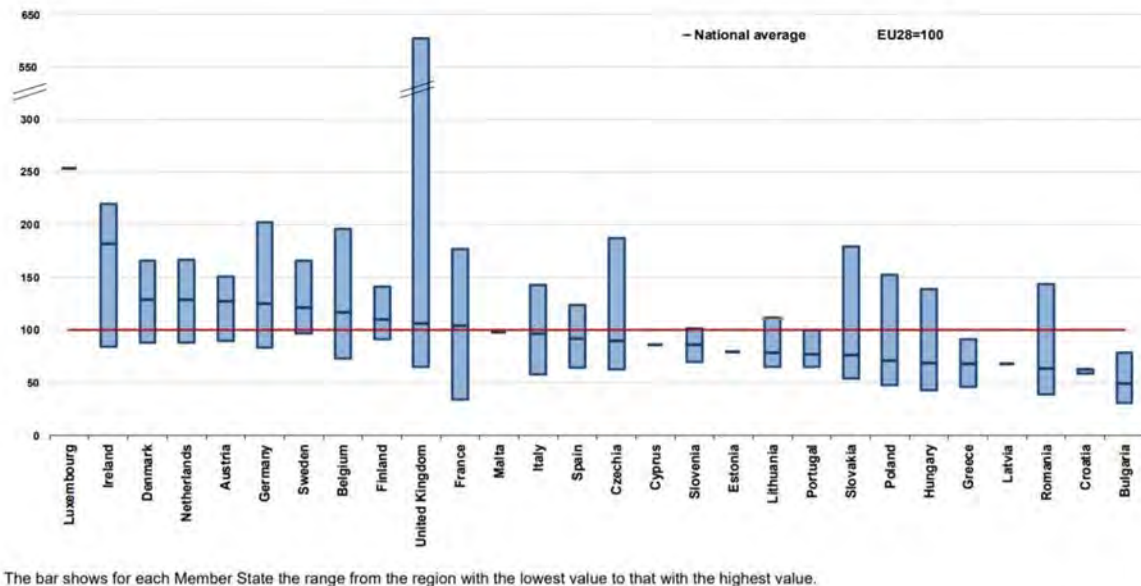


Figure 1: Variation of regional GDP per capita within EU Member States in 2017 (in PPS, EU28 = 100).
Source: Eurostat (2017).

To curtail these economic disparities, the EU regions are challenged to develop their growth trajectories in a way to avoid the “me-too effect”: the intention of underdeveloped regions to adopt smart specialisation strategies (S3) – derived from more developed regions – which are too ambitious for their potentials (Bevilacqua *et al.* 2015).

In a very short time, S3 has experienced an extraordinary success becoming a policy hit from academic concept. It represents a suitable example of “policy running ahead of theory” (Foray, David, & Hall, 2011). A posteriori, an analysis on the first wave of RIS3 implemented across the European Regions, Capello & Kroll (2016) identifies a manifold group of “fragilities” which impedes S3 to fully address its objectives across both wealthy and lagging regions.

1. Smart Specialization agenda fails to provide a suitable answer for regional contexts endowed with weak levels of connectedness, entrepreneurial spirit, size in terms of

- market potential, industrial diversity, quality of local governance and a critical mass of capabilities to develop collective learning processes;
2. From the first evaluations of RIS3 plans, emerges a widespread lack of capacity for the identification of new related activities which impedes to diversify the technological domains around local historical specialization patterns. The authors warn that in many backward regions there is an increasing tendency of “lock-in”. Regional Authorities face difficulties in upgrading the quality of existing specialization through a creative and appropriate diversification process.
 3. Taking into account the Italian lagging regions, the two authors raise doubts about the appropriateness of specialization patterns for the future development of these regions, traditionally characterized by few or no local research institutions and with no critical mass in high-tech activities.
 4. Despite it is desirable to relocate peripheral regions into the global value chains, sometimes this is out of the local policy makers’ sphere of control. The presence of Multi National Enterprises (MNE) in those regions is limited to a few subsidiaries which are not able to draft their own strategy which, conversely is set by international headquarters placed in different regions.
 5. Considering local Small and Medium Sized Enterprises (SME) with a weak absorptive capacities and creativity, the only actors able to take part at the regional strategy making process are the stakeholders in local science.
 6. The authors warn also front-runner regions can have difficulties to target effectively the EDP. The choice of priorities can be very limiting when the regions are endowed with a wide number of specialisations.

In sum, the authors conclude that “the smart specialization strategy has failed to explain concretely how the concept could provide a common political rationale for a socio-economically and territorially diverse set of regions and nations facing different place-based challenges and different innovation modes, hence, quite legitimately, different general policy agendas” (Capello & Kroll, 2016). Consequently, the endeavour of the EU Cohesion Policy to pursue a change-oriented methodology through a new regional innovation policy has been nuanced by continuous shocks and crises. These, in turn, increased regional and territorial disparities across the EU.

As debated, the urgency to adopt game-changer regional policies is an issue perceived by both wealth and lagging regions. Regarding the translation of the current EU Cohesion Policy, on the one hand, the first-tier regions used to be highly specialised in certain sectors, putting themselves at risk of becoming path-dependent and potentially victims of “lock-in” phenomena. In this respect, we recall the “cluster lifecycle” approach (Fornahl & Hassink, 2017, Pronesti & Bevilacqua, 2018). On the other hand, the lagging regions are exposed to risks of multiple nature (Annesi *et al.* 2018). Those regions would eventually cope with the need of transforming risks into opportunities in compliance with the window of locational opportunity (WLO) approach.

In this respect, the robust branch of literature concerning the Evolutionary Economic Geography (EEG) becomes useful to this narrative since it points out the need to discover a “novelty” intended as a new, promising set of economic development trajectories. In particular,

“evolutionary economics deals with the long-term processes of changing economic structures, more in particular with the increasing variety of technology and organisations, and with the strategies of economic actors to adapt to changing structures, that is strategies to survive” (Lambooy & Boschma, 2011. P.113).

This paper adheres to this EEG backdrop constructing an improved approach to the design of regional innovation policies in the post-2020 EU Cohesion Policy reforming process. This preliminary analysis explores how the structural change – largely advocated in the EEG view – can be addressed at a strategic regional policy level. Therefore, we recall the most recent milestones in this literature branch.

Capello and Lenzi (2018) propose three pathways towards the new path creation, including creation, diversification and upgrading (*ibid.*) as is shown in Table 1. Their interpretations are based on the conceptualization of three main archetypal innovation patterns: “science-based pattern”, “creative application pattern”, “imitative innovation pattern”. In their framework, they emphasize a pillar of the EEG, the path dependence as it “affects structural dynamics and therefore the possibility to move from one trajectory/paradigm to another, and how such moves can occur” (p.5).

Table 1: Creation, diversification, upgrading and regional learning trajectory dynamics: indicators. Source: Capello & Lenzi (2018).

Pathway	From Basic to applied science trajectory	From applied to basic science trajectory	From informal to formal application trajectory	From passive to active imitation trajectory
Creation	Making the best use of existing excellence niches in applied sciences <i>Indicator: no GPT patents for capita</i>	Making the best use of existing excellence niches in basic sciences <i>Indicator: GPT patents for capita</i>	Making the best use of technological niches <i>Indicator: Patents for capita</i>	Attracting new economic (MNC) activities <i>Indicator: FDI penetration rate</i>
Diversification	Emerging research activities toward basic science fields <i>Indicator: Continuity of the knowledge base</i>	Enlarging research activities toward basic science fields <i>Indicator: Originality of the knowledge base</i>	Enlarging local production towards technology-oriented modes of innovation/industries <i>Indicator: Technological diversification</i>	Enlarging local activities to related ones <i>Indicator: Related variety in local sector</i>
Upgrading	Enriching the knowledge base in basic science fields <i>Indicator: Specificity of the knowledge base</i>	Enriching the knowledge base in basic science fields <i>Indicator: Generality of the knowledge base</i>	Formalizing the knowledge base <i>Indicator: Citations received per capita</i>	Redirecting local production to more complex goods <i>Indicator: GVA in (medium) high-tech sectors</i>

Note: FDI, foreign direct investments; GPT, general-purpose technologies; GVA, gross value added; MNC multinational cooperation.

All in all, the authors emphasize the multidimensional nature of the evolutionary process the regions need to change their economic structures. Consistently, the following section proposes the research background to unfold a novel regional policy approach needed to support the diversification.

Research Background: Transition with Resilience for Evolutionary Development

As debated the academics from the EEG group seek to find out policies successful to accomplish what policy makers request: “regional diversification” as a strategy towards the path creation (Neffke et al. 2011). According to Boschma (2017), the diversification patterns in EU occur upon related and unrelated pathways. In this respect, we recall the “proximity” (Boschma, 2005) along with “the

related variety” (Frenken et al. 2007) as significant milestones in the economic geography studies. Up to date, the latter has been the centre of an extensive literature that emphasises the opportunity to develop economic linkages on industries related to the existing portfolio. On the one hand, the related diversification is found to be a more common phenomenon in regions (Boschma et al. 2017), indeed is one of the rationales underpinning cluster policy (Porter, 1990). On the other hand, the unrelated diversification seems still uncharted in terms of policy guidelines, monitoring/evaluation and spatial outcomes.

The strategic approach to regional diversification has been the object of several debates in both academic and policy arenas. A novel strand of literature recalls the transition management (TM) to explain the “reorientation of existing functions in terms of forms and nature, prompting a change in their main organizations, arrangements, aim and scope” (Capello and Lenzi, 2018). In this view, the innovation has to be considered as an outcome of “bricolage” (Boschma et al. 2017) where all actors (e.g. quadruple helix) contribute to share and recombine resources towards a new path creation.

The TREnD (Transition with Resilience for Evolutionary Development) research project drafts from the preceding MAPS-LED (Multidisciplinary Approach to Plan Smart Specialization Strategies for Local Economic Development) project, which pointed out the territorial dimension of innovation in Smart Specialization Strategy (S3) steering process and how S3 can be translated into spatially-oriented local development policies. Despite the novelty of the S3 concept, MAPS-LED highlighted how S3 implementation process needed an evolutionary approach to face continuous changes, crisis and shocks. Accordingly, the TREnD project reveals the need to diversify regional economic portfolio, which is deemed crucial by EU regions. The most advanced regions tend to minimize their own extent of being “path dependent” and so preventing the hazardous risk to fall into the “lock-in” phenomena. At the same time, the lagging regions seek to adopt the S3 towards filling the gap with their wealthier counterparts.

Plenty of evolutionary economics strive to explain the creation of novelty otherwise known as new (industrial) “path creation”, which is understood as:

“... an iterative construction process where networks of distributed actors jointly create new market segments and user profiles, adapt regulations, lobby for subsidies, or define new technical standards and thereby ultimately create the conducive environment that helps a new industry develop and prosper in a region (Garud and Karnøe, 2003, Garud et al. 2010)” (Boschma *et al.* 2017).

While Capello and Lenzi (2018) carried out a strategic analysis on the terms seeking to explain the interplay between knowledge base and territorial assets, Boschma and others (2017) elaborate on the difference between regime and niche creation, which does not have to be confused with unrelated diversification. Within this backdrop, they point out four types of regional diversification (Table 2). They describe each type of institutional work needed (maintenance/creation), the risk to be borne, the key actors to embed, and the interplay between local and global value chain.

In sum, there exist gaps in the existing knowledge on regional diversification, and bridging it with transition management looks promising and viable. In fact, Boschma and others (2017) discuss the distinction between Transition Studies (focusing on niches contending the regimes) and the Evolutionary approach (focusing on the novel sector in a defined territory). The bridge between those two narratives can disclose important but still uncharted research avenues. Second, the spatial

outcomes of regional diversification remain largely uncharted. Finally, the policy approach concerning lagging regions in view of path creation would add significant value to the policy agenda.

Table 2: Types of regional diversification. Source: Boschma and others (2017)

FUNCTION	DEFINITION
Replication	most conservative diversification logic in which a region develops related industries by adopting a technology that is institutionalized in a global socio-technical regime
Transplantation	a diversification trajectory in which a region develops an industry unrelated to its knowledge base and institutions, yet based on adopting a regime technology from the global system
Exaptation	diversification logic where new applications are discovered for existing knowledge or technology
Saltation	concept of saltation leading to a new niche would refer to an innovation that is not only new to the region but also new to the world.

The TREnD Approach

Conceptual Framework

The TREnD project's rationale is to provide critical mass to manage the continuing and progressive change by building a logical framework featuring metrics of Resilience and TM. In this view, the project is expected to move forward the current state of the art by building an “innovative bridge” among the nature of diversification, the extent of “resilience and TM” processes implemented.

The overall objective is twofold: 1) to adjust the exiting evolutionary perspective for a more integrated spatial planning able to coordinate the regional and the local level for making and delivering tailored development policies with a place-based approach; and 2) to introduce an evolutionary perspective to the post-2020 EU Cohesion Policy by constructing an improved approach to the design of regional innovation policies that incorporates transition management (planning) and resilience building (governance). Such an objective stems from the fact that, facing the ongoing social and economic transformations, a region or urban system's ability to respond to crises and shocks by changing its structure and function is critical to sustainable local development. To strengthen this ability, regional economic resilience needs to be leveraged through adopting and implementing Transition Management (TM) strategies and developing new growth paths, namely, economic diversification.

Regional economic resilience has been heralded as “the ability of a system to adapt, reorganize itself and change its path of growth” (Kakderi & Tasopoulou, 2017; Martin, 2012). This definition, among others, embeds the Schumpeterian belief which rejects equilibrium-based economic approaches. In fact, the concept has recently been interpreted in an evolutionary perspective “as a permanent process of adjustment and change, and the positive contribution of change to structural improvements” (Wink, 2014). Alike the cluster life-cycle, resilience-building processes can be interpreted as continuous trade-off between a shift in the short run towards unfolding a new growth path, namely the “adaptation”, and the capacity of the system to adapt in the long term, marked as “adaptability” (Pike, Dawley & Tomaney; 2010). These two concepts along with the knowledge base inherent of the

territory, seem critical to explain the nature of the regional economic variety, namely unrelated/related (Boschma, 2015). In fact, regional economic variety works as a “shock-absorber” and it is directly proportional to resilience at diminishing the local-input-output linkages (Martin, 2012) and, in turn, the exposure to the risk of “path dependency”. Despite a growing interest on the regional economic resilience, and its relevance in explaining “the capacity of a region to develop new growth path” (Boschma, 2015), the concept deserves to be better defined in respect with a time framework regarding the resilience processes, with their legacy from the past trajectories, their place-based metrics, their impact measurements.

Based on the above considerations, the aim is addressed to construct a ground-breaking approach to meet the need of EU regions to diversify regional economic portfolio. This is proposed to be achieved by deploying TM as a fundamental instrument to translate the combined Resilience-Diversification-Evolution logic into policy design and implementation. To achieve this objective, the research project seeks to:

- identify and examine the factors enabling or hindering the TM strategies at a governance standpoint;
- assess the territorial features critical to enable a resilient-building process;
- unveils the unexploited potentials for “re-shaping trajectories” disclosed through the windows of local opportunities due to the external shocks to which regions are continuously exposed.

In order to achieve these goals, the TREN project, grounded in its multidisciplinary network and partnerships, is designed to carry out joint research activities on the following topics:

- Innovation in transition management and resilience concept from an evolutionary economy lens;
- Innovation in transition management and spatial planning through a territorial dimension approach;
- Resilience Capacity building in the aftermath of external shocks.

The ultimate goal of this research project is to construct an Open Access Toolkit (OpenAT) for the European Post-2020 Cohesion Policy in response to the widening spatial development disparities across Europe. Dedicated to policy-makers and policy-users (e.g. regional authorities, academics, stakeholders and urban advocacy groups), the OpenAT is expected to enhance the regional administrative capabilities to trigger, implement and manage Transition Management (TM) strategies towards resilient-building processes. To better support the implementation of TM strategies at different regional/local levels, the OpenAT will provide a set of indicators regarding: 1) context, 2) result, and 3) performance. In a broader sense, the OpenAT will serve as a “capacity building” platform able to not only spread knowledge about regional economic diversification, but also spur social innovation.

Grounded in a robust literature review covering evolutionary economics, resilience, transition management and spatial planning, the TREND project adopts a mixed method research approach. Quantitative data, including statistical, geographical and demographic data gained from official and public statistical data warehouse at different geographic levels (city – regions – country – EU- non-

EU), are interpreted with the support of qualitative data, gained through on-line and face-to-face interviews of public and private stakeholders; and by means of surveys, such as observation, reports and inquiries.

This mixed method research approach is crucial to case studies, which are to be developed through data gathering (e.g. interviews and surveys) and data analysis (e.g. social network analysis). It is also supportive of spatial analysis to help gauge the effect of the “space/place” on related/unrelated diversification through indicators, previously deducted from literature. These indicators will be later projected into GIS mapping database to help link the theoretical framework to the territorial/urban dimension of Cohesion Policy in an evolutionary perspective.

Theoretically, the TREN project bridges 1) Resilience, perceived as an ongoing process of change rather than a recovery to a preexisting or new stable equilibrium state (Simmie and Martin, 2010), 2) Diversification, defined as a leverage of regional resilience to absorb shocks, and 3) Evolutionary Theory based on continuing and progressive socioeconomic change (Krugman, 1996). The logic is, based on the evolutionary theory. Socioeconomic change is in essence an evolution process whereby regions increase their capacities to mobilize resources and knowledge in adapting to their changing socioeconomic environments (Sanderson, 2015). To effectively respond to crises and shocks engendered by the ongoing structural change across the EU and transform crises and shocks into opportunities, the regional capabilities in triggering, implementing and managing Transition Management (TM) strategies need to be reinforced by diversifying regional economies. TM therefore can be conceived as a medium for Entrepreneurial Discovery Process (EDP) by deepening the understanding of S3 in shaping the policies for regional economic development. What is crucial in developing transition agendas, it is critical, *mutatis mutandis*, in the diversification process, for regions to harness opportunities while absorbing shocks, thereby driving “resilience-building” processes. All in all, the TREN project puts forward an evolutionary development concept that integrates transition management and resilience building in various territorial contexts towards a reforming process of the post-2020 Cohesion Policy.

The TREN theoretical framework envisions the TM strategies as “co-evolving processes which progressively build up toward a revolutionary change on the long term” (Rotmans et al. 2001, Frantzeskaki & de Haan, 2009, Loorbach 2010). Originally adopted as a strategy to manage the “transition” towards a more environmental-friendly development model (e.g. decarbonisation, reducing emissions, etc.) in cities and regions, TM is adopted within the scope of this research project as a tailored approach to drive the diversification through the resilience-building process. In this backdrop, the regional economic resilience is conceived as “the ability of a region or urban system to change its structure and function rapidly and successfully in response to a shock” (Simmie and Martin, 2010). This definition marks a theoretical progress, as resilience is popularly perceived as the “capacity of a systems to retain its organisational structure following perturbation of some state variable from a given value” (Perrings, 1994, p. 30). Simmie and Martin (2010) have the merit to embed an evolutionary perspective in the realm of resilience. They define “adaptation” and “adaptability” as two key concepts:

Adaptation refers to the adaptive capacity of regions within their own strong specializations and established paths. This so-called “positive lock-in” brings benefits to a region in terms of positive local externalities, but is perceived to undermine the “adaptability” of a region simultaneously: the prime focus on adaptation and reproduction of existing local structures

would negatively affect the ability of regions to develop new pathways. This “negative lock-in” may arise due to a lack of potential local sources of recombination but also because of myopia, inward-looking local networks, institutional lock-in, and sunk costs. (Xiao et al. 2017, p. 17)

The rationale behind TM aims at adjusting and adapting towards long-term solutions and defines it as “a form of intelligent long-term planning through small steps based on learning and experimenting” (Rotmans and Loorbach, 2010). By deploying an explorative and design-oriented approach, the TM moves at the crossing of complex systems with governance. It tends to generate participative co-evolution processes towards triggering broader scale innovations through small-scale actions. However, its complexity lies in the multiple domains, scales and levels at which transitions occur. In compliance with a cooperative ethos, the TM approach aims at engaging different actors in the context of policy making. In the EDP process likewise, the so-called “front runners” (individuals, companies, local governments) are considered catalysts for supporting the transition process by spreading in wider circles a shift in mind-set labelled as “transition visions”. Those front-runners are invited to take part in the “transition arenas” where stakeholders intervene upon a multilevel networks logic. In the early phase, the arenas are entitled to develop transition agendas (strategies and tactics) according to common beliefs shared by smaller groups of participants. Afterwards, broadening participatory process, they set operational and reflexive activities under a cyclical framework. During each cycle, TM processes tend to contend with the regime assumed as “the dominant culture, structure and practice embodied by physical and immaterial infrastructures” (Loorbach, 2007) through four main steps of the cycle: pre-development, take-off, breakthrough and stabilization. TM processes generally take place under five phases (Table 3) (Frantzeskaki et al. 2011).

Table 3: Transition Management phases. Source: Frantzeskaki et al. (2011)

Phases	Key activities
1. Preparation & Exploration	<ul style="list-style-type: none"> A. Transition Team Formation B. Process Design C. System Analysis D. Actor analysis (long-list and short-list of relevant actors) incl. interviews E. Set up Monitoring framework
2. Problem structuring & Envisionaning	<ul style="list-style-type: none"> A. Transition Arena formation B. Participatory problem structuring C. Selection of key priorities D. Participatory vision building
3. Backcasting, Patways & Agenda Building	<ul style="list-style-type: none"> A. Participatory backcasting & definition of transition paths B. Formulation agenda and specific actions
4. Experimenting & Implementing	<ul style="list-style-type: none"> A. Dissemination of visions, pathways and agenda (transition narrative) B. Coalition forming & broadening the network
5. Monitoring & Evaluation	<ul style="list-style-type: none"> A. Participatory evaluation of method and content (process) B. Reflection on vision & strategy C. Monitoring interviews

TM processes tend to promote the emergence of niches defined as “potential sources of radical system changes (e.g. establishment of a new regime), TM aims to provide niche actors with the space and

resources for experimentation” (Rauschmayer et al. 2015). Consequently, “such niches protect radical innovations against market selection and institutional pressures from a regime and allow actors to learn about these novelties and their uses through experimentation” (Boschma et al. 2017).

Expected Results and Implications

Through a continuous refinement of the conceptual framework and assessment methodology for resilience building and evolutionary economy into a TM tailored-planning, the TREnD project will be able to correlate the theoretical approach stemming from the evolutionary economy topic with the necessity to give a practical explanation of resilience and transition in terms of indicators and metrics (Figure 2).

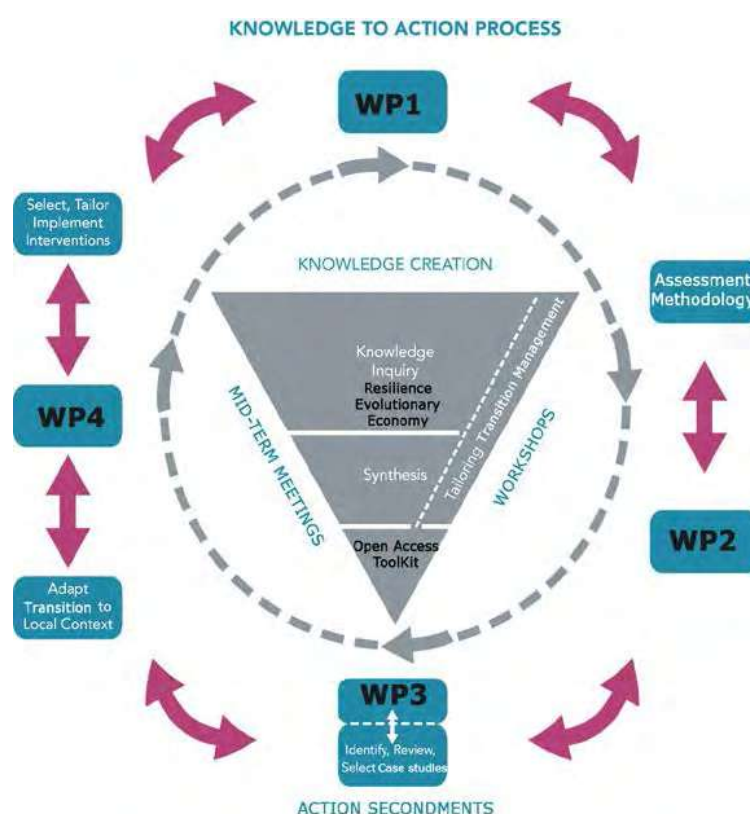


Figure 2: The work flow from knowledge generation to action. Source: The Authors.

The TREnD research project is first expected to produce a novel concept encompassing “resilience-building” processes and TM strategies based on the Evolutionary Economy’s assumptions. Grounded in the data gained through retrospective longitudinal studies addressing ongoing trends and, in a broader time framework, past or current transition trends both in the EU and US, the framework will identify main challenges, hindrances and drivers of transitions and resilience-building processes. The characterization of regions will be defined with a set of socioeconomic indicators concerning the past development trajectories (e.g. path dependency) and the local degree to shift towards a related/unrelated diversification. In so doing, it will pave the way to pursue ground-breaking objectives, to be achieved through a rigorous and evidence-based empirical work. With an evolutionary perspective, the analysis will be based on retrospective longitudinal studies addressing ongoing trends and, in a broader time framework, past or current transition trends both in the EU and US.

Second, the TREnD project's theoretical framework is to be linked to the territorial/urban dimension of the Cohesion Policy in an evolutionary perspective. In so doing, it will help unveil the impacts of the territorial aspects in regard of resilience-building processes towards new equilibria, namely, new territorial development patterns and trajectories. Much emphasis is to be put on governance aspects regarding the resilience building process, including local networks, transition arenas, and role of external actors. Meanwhile, the place impact on the diversification process is to be gauged by means of spatial analyses.

Third, an evidence-based and users-oriented framework is to be created, based on the selected case studies, with respect to the spatial factors and governance affecting the opportunities to set up local "path-reshaping" processes. The window of locational opportunities (WLO) disclosed in the aftermath of shocks are to be fully exploited to design tailored TM by analysing case studies with the "backcasting" approach. This will lead to the provision of a set of evidence-based guidelines on how to transform external shocks into latent opportunities to re-orient local development trajectories.

In a certain way, the starting point in designing the innovative bridge between regional economic resilience with transition is to apply a local/urban perspective to disclose the forces able to drive the evolutionary development at regional level. Finally, the OpenAT is to be constructed based on the interpretation of end-user's feedback and information, and on this basis the metrics of TM are to be upgraded and the resilience building to be implemented and tested through the OpenAT.

Conclusions

In the post-2020 European Cohesion Policy, policy packages need to better integrated and coordinated and delivered at national, regional and local levels to curtail increasing regional disparities. Therefore, a strengthened multilevel governance conducive to a more reactive and responsive public administration is largely needed in a knowledge-based society. This is because, public intervention is important to increase higher impact R&I outputs, leverage more knowledge and ideas converting into products and services.

This high experimentalism endeavour by TM processes seems to fit well with the need of cities and regions to drive economic diversification and discover new development trajectories. However, the extremely adaptive nature of processes, the long-term period framework (minimum 25 years), and the large variety of variables affecting the strategies might constitute relevant flaws of the existing TM concepts. In fact, TM processes do not show explicitly "clear-cut objectives or normatively defined principles to steer the process of transition dynamics towards a more sustainable world" (Rauschmayer et al. 2015). Finally, taking stock of past experiences, the large scale systemic changes due to TM still seem questionable (Loorbach, 2010). These are all the gaps in the existing concepts concerning transition management to be filled by the upcoming research activities of the TREnD project.

The TREnD project focuses on the creation of an open access toolkit on the basis of an interactive platform which shares data with different users, policy makers and end-users. The objective of knowledge transfers into actions created by research activities will be used in order to provide new services for local communities of entrepreneurs, local policy-makers and public authorities. The project addresses a theoretical framework aimed to bridge regional economic resilience with

Transition Management in an evolutionary economic perspective. Including the evolutionary approach toward the discovery of “novelty” is proposed through a strategic endeavour to challenge the current regime to disclose “niche markets”. In this view, the TREN D project will significantly contribute to the manifold literature streams which discuss the diversification upon the concept of related variety, relatedness, and niche/regime narratives. Unveiling the real forces/agents that at urban scale work in creating different forms of adaptation is supposed to reinforce the regional diversification towards an evolutionary dimension of Cohesion Policy.

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Spatial distribution characteristics of cultural tourism in historical regions: a case of Shaoxing Ancient City based on POI data

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Abstract: As an important industry to achieve sustainable economic development, the role of cultural tourism has become increasingly prominent. The concentration and dispersion of various functions in the urban often reflect the distribution of different activities. It has become a crucial topic to consider how to respond to changes of urban function and balance the regional cultural protection and tourism economic development in historical areas for urban studies. In order to realize the comprehensive management and dynamic supervision, the article provides a method for analyzing cultural tourism in historical regions by using big data. In this work, we obtain the POI data of Shaoxing ancient city in China from Gaode map, combine them with GIS spatial analysis function and summarize the spatial distribution. In order to quantitatively identify the urban single and mixed functional area, the article also illustrates a way to reclassify the POI data and use the RGB color method to visualize the functional diversity index. The result shows that (1) With a tendency of decreasing from the road to the periphery, Shaoxing Ancient City function is relatively distributed in the marginal areas rather than in the central parts, especially in the traffic distribution square. (2) It is confirmed that the larger the functional density and diversity, the higher the public awareness of the historical blocks in Shaoxing Ancient City. (3) From the perspective of functional mixing, cultural function shows a high ability to be mixed with the tourism, but the spatial distribution of the two is still relatively discrete, which has not yet formed a good collaboration in Shaoxing Ancient City. (4) Compared with the network electronic map, the quantitative identification method provided by this study is more precise and accurate.

Keywords: cultural tourism, distribution characteristic, POI data, historical region

1 Introduction

Historical region is the birthplace and carrying heritage areas of special city's memories with a profound cultural background, also attaches great importance to residents' daily life. For many years, historical regions have always been a focus and difficulty in the protection of urban cultural heritage. Under the guidance of local government, most ancient cities are currently actively protected through developing cultural tourism, which seems to be a main trend to realize the regeneration of regional vitality and cultural revival. However,

as a dynamic cultural heritage, changes in urban functions brought about by tourism economic development cannot be avoided. Cultural tourism promotes urban economic development, but also brings a series of challenges including government's or resident's supervision, proportion of tourism and non-tourism economic, the choice of profitable subjects, urban development intensity norms and so on.

China, with thousands of years of history, has its own unique historical cities, regions and streets. Although local regional departments have tried to take various protective measures, that cannot avoid some embarrassing situations happening in these areas. We could easily find that some historical places are protected as a cold exhibition hall with no popularity and vitality, while others are urgent for "high-speed" economy developing without control. Excessive commercial development will accelerate a spread of "gentrification" or destroy truly historical landscape, regional context and genius loci. Eventually, it would probably be a biggest trigger of changes and differentiation in urban social communities (Zhang, 2017). How to search for a balance between protection and tourism development in accordance with changing functions in ancient cities? How to make history and culture live on through planning management? Apparently, finding a method to identify good ways of sustainable urban development has always been a crucial topic to consider in recent studies.

However, most of present traditional historical planning, relying on past statistical data and field investigation with high waste of labors, fees and times, are unable to quickly obtain the accurate spatial location or boundary information. With the deepening of the information network, many scholars have tried to explore the spatial distribution characteristics and laws of urban active points within the city through big data (Chi, Jiao, Dong, et al., 2016, Ning, 2016). In recent years, there have been more and more urban studies based on the data of POI (Point of Interest), which provides a new idea for functional identification for historical regions and spatial distributions analyzing between historical protection and tourism economy in the context of authenticity.

2 Data and methodology

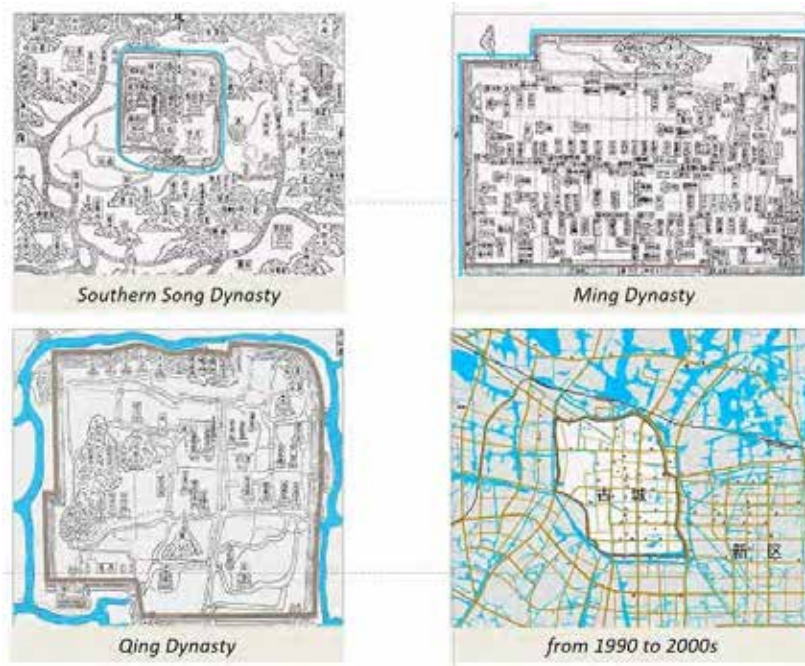
2.1 Research area

This paper is based on the POI data from Gaode map in Shaoxing, China as an example. Shaoxing is one of the most ancient cities all over the world with a long history of more than 2,500 years. In 1982, Shaoxing was listed as one of the first state-list famous historical and culture cities in China with rich cultural heritages, which is called as "a natural museum without walls" until now. Suffering from several dynasties' expansion and evolution, there has been not much changes occurred in urban spatial patterns since Goujian City in King of Yue, even organization of modern cities has influenced traditional landscapes of Shaoxing(Figure 1). This research is focused on Shaoxing Ancient City (29°97' to 30°03'N, 120°56' to 120°60'E), with a total area of about 8 km².

2.2 POI data

The POI data of Shaoxing in December 2018 was obtained in the research. A total of 31,405 POIs were obtained, including 14 major categories, such as catering service, shopping service, science, education and culture service, scenic spots, public facilities, enterprises, etc. Each piece of POI data includes the information such as the name, category, address, latitude and longitude. From the perspective of urban management to be consistent with refined requirements, POI data in historical landscape sites can dynamically observe the city in time with its current description ability of facility locations at a microscopic scale. On the other hand, quantification and visualization of POI data can not only easily analyze quantitative functions of ancient sites, but also better reflect resource allocation characteristics of mixture areas to balance the relationship between urban historical protection and tourism economic utilization.

Figure1 Spatial patterns of Shaoxing Ancient City in dynasties



2.3 Methodology

The paper processed the POI data as follows: Firstly, according to the Gaode API platform, we obtained the all POI data of Shaoxing Ancient City in approximate latitude and longitude coordinate range, and then selected by Excel with polygon frame and using the ArcGIS 10.2 spatial analysis platform. Secondly, we tried to classify specific contents including name, type, address, latitude and longitude, etc. Referring to the definition of administration and public services (A) and commercial and business facilities (B) in “Code for urban land-use classes and Standards of planning construction use (GB50137-2011)”, the POI points that are not related to the research were removed, after which we got a total of 6101 POI data in Shaoxing Ancient City. Finally, POIs were divided into six functions including catering business, enterprises, culture education, hotel accommodation, local-consumer places and leisure-oriented entertainment (Table 1).

Table1 Main information of a POI data coding B023F02NIB

<i>item</i>	<i>details</i>
<i>POI code</i>	<i>B023F02NIB</i>
<i>Name</i>	<i>Landscape Life Square</i>
<i>Type code</i>	<i>060101</i>
<i>Type</i>	<i>Buying service</i>
	<i>Marketing</i>
	<i>Shopping mall</i>
<i>Reclassified function</i>	<i>local-consumer places</i>
<i>Address</i>	<i>No. 6 Yuecheng Beach, Shaoxing City, Zhejiang Province, China</i>
<i>Latitude and longitude</i>	<i>120.581254, 30.02023</i>

In order to facilitate the mixing of statistical functions, the research region was divided into 797 100m*100m grids as a research unit because of the spatial intersection of POI data types. Referring to a nature recognition of each functional unit, the index frequency density and type ratio were constructed to identify the functional

properties according to relevant researches (Chi, Jiao, Dong, etc., 2016). The formula for calculating the degree of functional mixing is as follows: $F_i = n_i / N_i$, $C_i = F_i / (\sum_{i=h}^6 F_i) \times 100\%$.

In this formula, taking POIs of type i as an example, we called it iPOI. n_i is a number of iPOI in a certain research unit. N_i is a total number of iPOI. F_i is a frequency density of iPOI in the total amount. C_i is a frequency density of iPOI, which is a percentage of the frequency density of all POIs in the research unit. To easily analyze the degree of mixture, taken the value of C_i in a research unit more than 50% as a criterion, after which the whole research units were divided into three categories as single-type, multi-type and no-data regions. If the value of C_i in a research unit was more than 50%, the unit could be evaluated as a single land property and determined by a type of POI. If the value of all C in the unit was less than or equal to 50% and larger than zero, the unit could be identified as a mixed property, which was determined by two mainly types of POIs with the largest proportion. If there is no POI in a research unit, the unit could be judged as a no-data region.

3 Spatial distribution characteristics of Shaoxing Ancient City

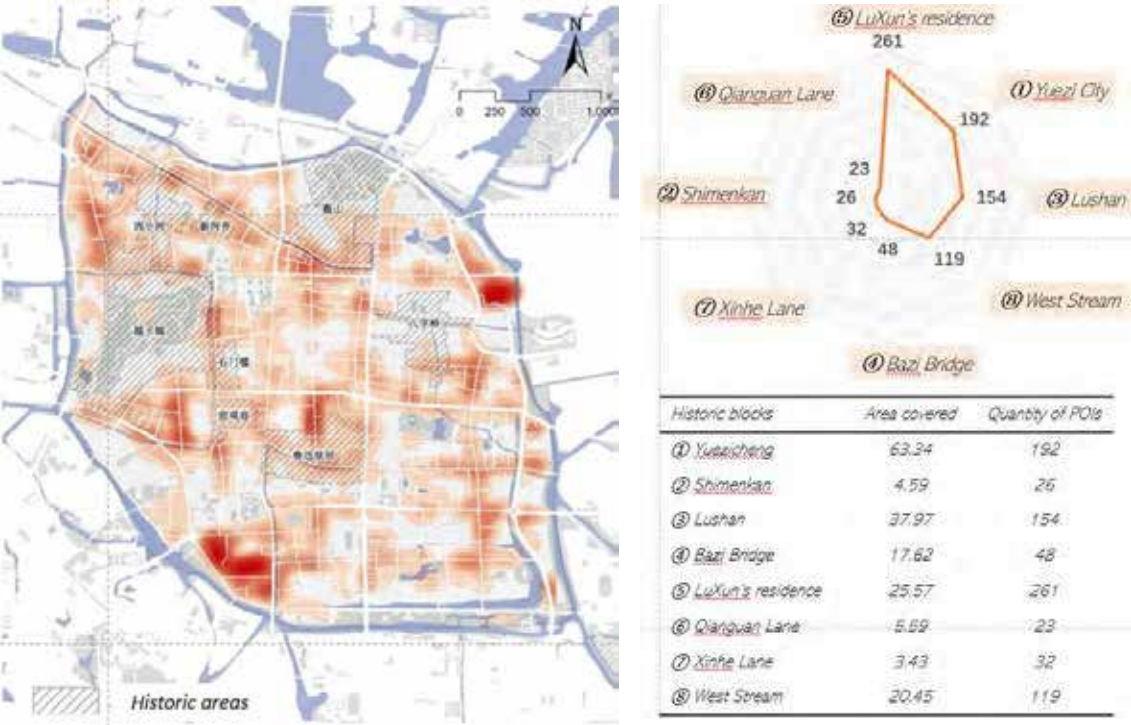
3.1 Overall functions

Based on the GIS platform, the POI point data is superimposed on the road network, water system, and mountain data to perform nuclear density analysis. It is found that the overall function of the ancient city mainly shows the following characteristics (Figure 2):

- the spatial agglomeration showed the characteristics of "large scattering and small concentration". It was obvious to find some structure patterns of scattering points in the center of the ancient city and agglomeration of edge areas. The peak of functional agglomeration density was located at the entrance and exit of the ancient city, such as the intersection of Jiefang Road and Huancheng Road on the south side, Huancheng Road and Shengli Road on the east side, Shengli Road and Huancheng Road on the west side. At the junction of the ancient city area and other areas, it is easy to attract commercial accumulation and different consumption by forming functional intensive regions.
- urban development in series was expanded and distributed along road axes. Density of functional agglomeration showed a gradient decline from roads to the periphery, while main city roads such as Jiefang Road radiate to the east-west was forming clusters around the edge. For example, Fushan Street and Xinjian South Street are clustered around newly built intersection blocks, radially connected by the edge of some historical streets.
- The historical block was surrounded by functional clusters. The higher the level of cognition, the more obvious function agglomeration and infiltration. According to the scope of the Year 2020 historical protection plan announced by Shaoxing Municipal Planning official website, there are eight historical blocks were officially confirmed, named as Yuezicheng, Shimenyu, Lushan, Baziqiao, Lu Xun's residence, Qianguanxiang, Xinhenong and Xixiaohe. As can be seen from Figure 3, every historical block covered a large number of cultural property by attracting accumulation of functions. However, due to the protection policy, the high-density function cluster was close to historical blocks without truly coincidence. Points of interest in a city mainly come from the network electronic map, so that each POI represents some degree of influence and attention. To some extent, the more POI data are gathered, the more intensive the economic, social and cultural activities in the region are and the more recognizable they are to the public. Through the spatial connection tool of GIS, the POI

data are linked with historical blocks. It was found that a total POI data of Luxun's former residence, Yuezhicheng and Jishan are ranked in the front with relatively high public notice, while relevant statistics of other historical districts were far apart. To add that, because Shimen occupies limited area, it was considered together with Yuezhicheng due to geography.

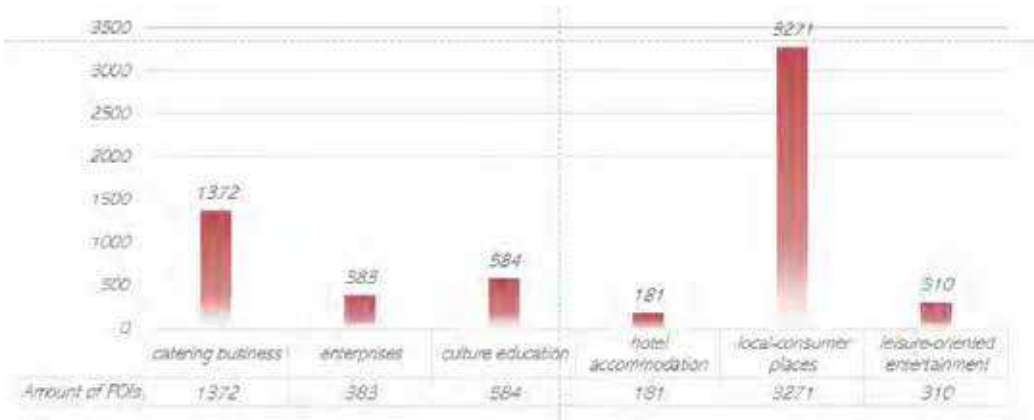
Figure2 Overall spatial distribution characteristics of Shaoxing Ancient City



3.2 Different functional types

Through nuclear density analysis of various functional areas, it was found that different functions was organized as different spatial distribution patterns(Figure 3).

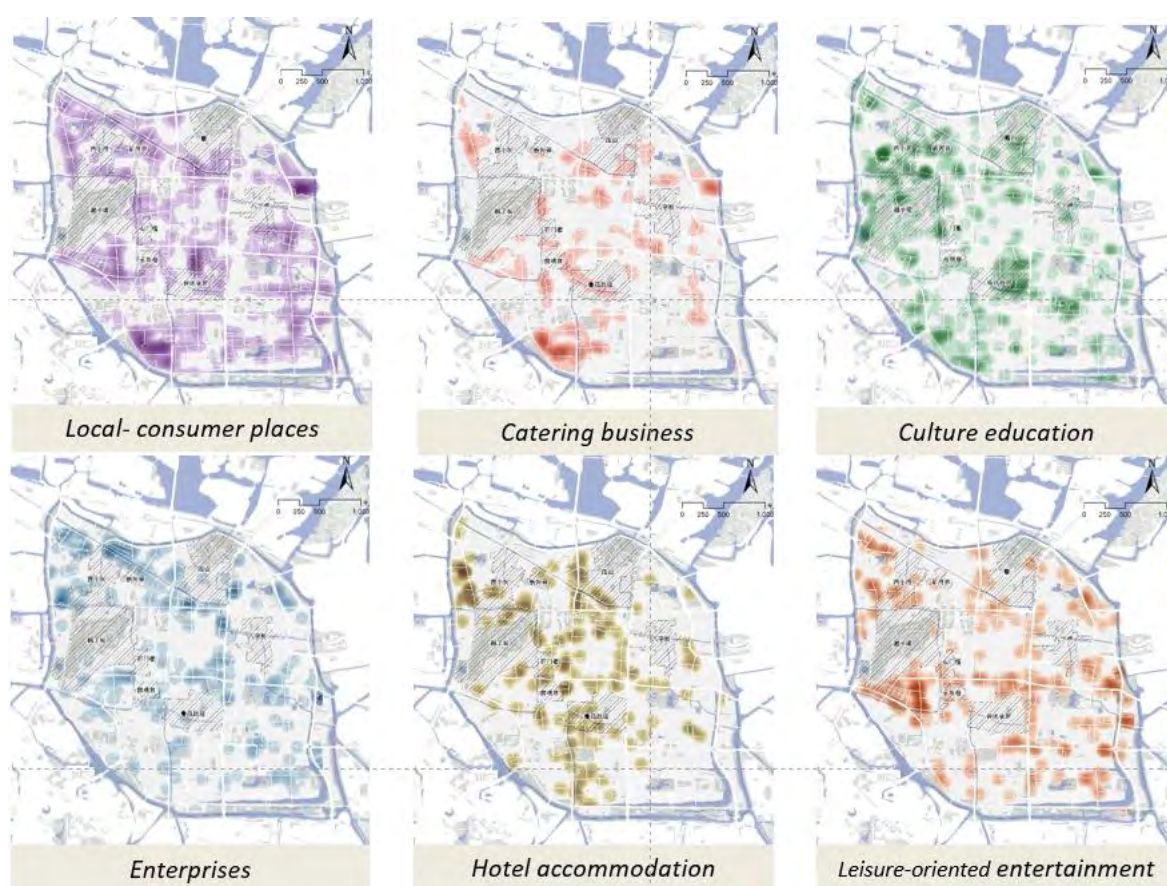
Table2 Quantities of different types of POIs in Shaoxing Ancient City



Catering business were mainly distributed in large shopping malls and characterized by point-like gathering. Catering varieties accounted for more than 60% of local non-local catering, teahouses, Jiangsu and Zhejiang cuisine accounted for about 23% of local restaurants, concentrated in historical districts or old streets. The cluster

was obvious at the junction of Xinhe Lane and Jiefang Road in the north of the company and pattern scattered in other places, which might be led to the reason about classification of logistics and transportation. Culture education includes social groups, education associations, schools, etc. Shaoxing has been prosperous in humanities for thousands of years and has a high degree of integration with historical blocks, but museums, exhibition centers and other functional facilities displayed to the public accounted for a relatively small proportion. Hotel accommodation was mainly located around Jiefang Road, indicating that tourists would more likely to choose main transport streets as a place to have a rest. Comparing with the current situation of land use, it was implied that hotel owners mainly relied on commercial facilities with low compatibility in residential areas. Entertainments for leisure and recreation show a typical characteristics of central distribution and peripheral concentration. Contrary to hotel accommodation, the spatial distribution of local-consumer place was widespread with better compatibility of multi-type land use, because it was mainly located near residential areas aimed at local people.

Figure3 Spatial distribution characteristics of different functions in Shaoxing Ancient City



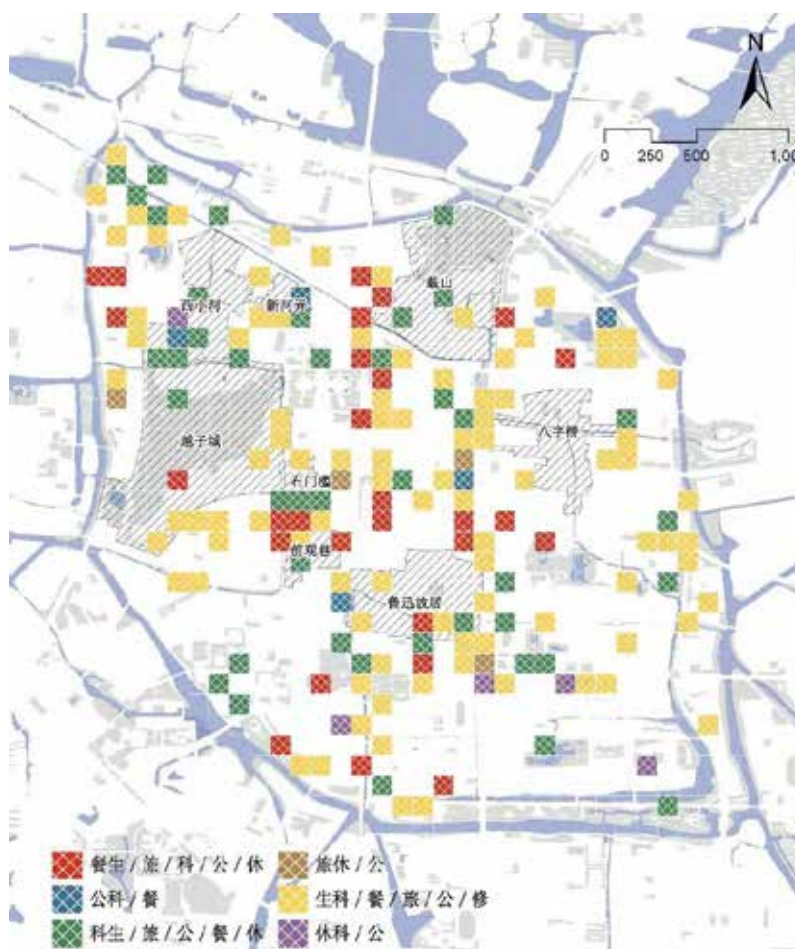
3.3 Units of functional mixing

According to statistics, there are 449 single-type functional units, 177 multi-type functional units and 171 non-type functional located in mountain or water sites. After further quantitative identification and visualization, the specific types of single functional area and mixed functional area can be distinguished.

- A single-type functional unit represents more than 50% of a certain POI type in a research unit, and its functional properties are determined by first-ranked type of POI data. In this paper, there were 6 single-type functional units, namely local-consumer place (54.8%), culture education (20.7%), catering business (15.8%), enterprises (3.6%), leisure-oriented entertainment (3.3%) and hotel accommodation (1.8%). Local-

enterprises, hotel accommodation and other functions is relatively low. It indicates that the former had a high compatibility, while the latter was relatively simple for the crowd.

Figure5 Multi-type functional units in Shaoxing Ancient City



4 Discussion

In recent years, the cultural development of Shaoxing Ancient City has entered a bottleneck period. According to the research report, residents and tourists are not aware of the historical environment of the ancient city as a whole, and the development, protection and display of cultural relics and historic sites are relatively simple (Zhu, Qian, 2018). In September 2018, the "Regulations on the Protection and Utilization of Shaoxing Ancient City" was approved by the Standing Committee of the Provincial People's Congress. The "Regulations" pointed out that there is a contradiction between the actual needs of the protection and utilization of Shaoxing ancient city and urban development, especially the problems of overall, physical state, activation protection and utilization. Therefore, it is imperative to re-examine the specific function use of Shaoxing Ancient City and analyze its protection and utilization.

- Generally speaking, Shaoxing Ancient City presented the spatial distribution characteristics of central distribution and functional agglomeration in marginal areas. Functional agglomeration density decreases from road to periphery gradient. It undertook the collection and distribution of external traffic at the junction of ancient and other areas, and was also a functional agglomeration area with emphasis on development and utilization.

- From the point of view of the protection of historical blocks, Shaoxing Ancient City paid attention to the original ecological protection, based on the living and shopping functions for residents, and there is no large-scale development and utilization. On the other hand, the public awareness of historical blocks is strongly related to the functional density and mixing degree. The public awareness hotspots of Lu Xun's former residence, Cangqiao Street and Shusheng's former residence are more obvious than other blocks, while the degree of functional expansion is low.
- The ancient city had abundant cultural tourism resources and high degree of mixability with other functions, but its development layout was scattered and shows obvious singularity, which had not yet formed the spatial layout of the whole city in series. In the context of the overall ancient city life, governments could try to take science and education culture as the guidance to promote the transformation and development of traditional residential space, and enhance the spatial penetration intensity of historical, landscape and cultural resources and external propaganda.

5 Conclusion

Existing research generally believes that the mixed use of urban functions can guide the orderly development and utilization of cities, increase interpersonal communication, improve regional vitality, and promote sustainable urban development. The complexity of cities and their internal structure make it more and more important to study the distribution of urban population density, and big data provide some new technical means for this theme. However, the traditional land use data is mostly planar and cannot accurately represent the actual situation of regional functional mixing. Based on the quantitative and visual analysis of the POI data of Shaoxing Ancient City, some conclusions could be drawn more easily.

The planning pattern and architectural art of the historical area have formed a unique regional cultural phenomenon (Ruan, Shao, Lin, 2002). Under the principle of urban authenticity, integrity and readability, the protection of historical ancient cities must be carried out. To carry out reasonable updating and utilization, it is also necessary to sort out the correct concept of understanding. Based on the objective data of POI, this paper needs to be further deepened and systematic, especially from the concrete empirical cases to analyze the relationship between social space and material culture involved in urban functional transformation. Only by linking the changes in historical space, cultural values and social consciousness can we truly show the “face”, “character” and “personality” of culture heritage through a good way of tourism economic developing.

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‘What else?’: Community Perspectives on Tourism-led Urbanization in Spiti, India

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Abstract: The remote Spiti Valley in northern India, is experiencing a tourism boom, which, in turn, is fuelling a construction boom in the villages of the region. The region offers a unique landscape – a rocky high altitude desert with splashes of greenery. Rare wildlife can be spotted in winters, with the region under a cover of snow. Perhaps the most important component of the region’s cultural attractions are the monasteries of Tibetan Buddhism. Today the fragile Himalayan ecosystem is threatened by the rapid urbanization and increasing tourist loads. Social structures and cultural practices are under stress. Two questions lead this project. (a) What are the community’s aspirations and concerns with regards to tourism and urban development in the Spiti Valley? (b) Why, despite witnessing undesirable urban outcomes in numerous Himalayan towns, has very little changed in terms of tourism policy in this sensitive region? The study examines attitudes towards tourism in Kaza, a small town in the Spiti Valley, facing rapid urbanization as a hub for the fast-expanding tourism sector. Based on a survey of residents and business-owners (N=420), and in-depth interviews with key informants, the paper reports the principal narratives in the region on the themes of growth and sustainability.

Keywords: Sustainable tourism, Community based tourism, Himalayas, Small towns

Background

Spiti valley (also known as Spit) is located in the ‘Lahaul and Spiti’ district of the state of Himachal Pradesh in northern India. (Figure 1 shows a map of the area.) The town of Kaza is the main administrative center (known as a subdivisional headquarter) in Spiti. The valley can be accessed from two sides. The Eastern route, through Shimla, is an all-weather road that remains open throughout the year. The Western approach, through Manali, is not properly paved. Systems for clearing the snow in winter months do not exist. Consequently the route remains closed until well into spring when the snow begins to melt.

Spiti is known as a high altitude desert. Located at the height of 12,000 feet above mean sea level, Spiti features snow-capped Himalayan peaks, rock formations, wide valleys, lush agricultural patches amidst the dry rocks, pristine lakes, unique wildlife (most significantly the snow leopard), and perhaps most

importantly, solitude and the feeling of having left it all behind. The seabuckthorn plant is grown widely in the area and processed in various formats (soap, drinks, ointments etc.) for its health benefits.

The population is predominantly Buddhist. Monasteries are important social institutions. According to convention the second son of every family is sent to the monastery for religious training. *“The local population (ca. 10,000) belongs to one of the three Buddhist sects Gelukpa, Shakyapa, or Ningmapa, is related by blood, and shares a common Tibetan dialect”* (Mishra et al., 2003, p.595 original emphasis). Figure 2 shows the location of some of the main monasteries in the Spiti Valley. Handa (2014) provides an excellent description of Spiti’s society and ecology in a book-length examination of the region.

The economy of the region has primarily been ‘agro-pastoral’. “The main agricultural activities begin around mid-April with ploughing and sowing, following which the irrigation channels are repaired and the sown fields leveled for irrigating. The fallow lands are also ploughed around this time” (Mishra et al., 2003, p.598). In recent years tourism has risen sharply. In addition to spectacular landscapes of the upper Himalayas mentioned above, Spiti offers options for trekking and adventure sports, magnificent Buddhist monasteries, and a rich Buddhist-Himalayan culture featuring unique food, crafts and festivals. (Figure 3 shows Dhankar Monastery perched on a mountain top at 12,774 feet above sea level.) Numerous hotels and ‘homestays’ have opened up in Kaza and around the Spiti valley. Ancillary services such as tours, travel bookings, taxi and transportation, food and retail have also received a boost. Not surprisingly, Spiti is witnessing a construction boom at the moment as homestays and guest houses race to build new structure, add floors, or simply renovate, in preparation of the tourism boom. Meanwhile the lower Himalayas in India are littered with towns that have become victims of their own success. The larger concern driving this research is the need to break the cycle and find a way to keep Spiti and Kaza from going down the same path.

Sustainability of values, place and practice

Tourism development promises economic benefits for communities, especially in places with few economic resources, but often brings unwanted consequences for society, culture and the environment.

Perhaps more than any other economic activity, tourism has an intricate interrelation with natural and cultural heritage. Tourism depends on the availability and quality of heritage and related resources. At the same time, uncontrolled tourism development may lead to the degradation of cultural and natural heritage, ultimately eroding the potential for sustaining tourism. (Coccossis, 2009).

This relationship has been studied in numerous contexts and is well understood (Cater, 1995; Faulkner and Tideswell, 1997; Garrod and Fyall, 1998; Scheyvens, 1999; Neto, 2003; Coccossis, 2009; Hunter, 2009; Williams and Ponsford, 2009). Tourism activity, if not properly controlled, can easily diminish the value of the natural or cultural resources, from which it is generated in the first place. Garrod and Fyall (1998) inquire whether “the unfettered growth of tourism inevitable kill the goose that so many are hoping will lay them a golden egg?” (p.199). Known as tourism’s ‘resource paradox’ (Williams and Ponsford, 2009, p.396), this idea points to the need for models and practices that promote sustainability.

Several key ideas have emerged in response, such as ‘sustainable tourism’, ‘ecotourism’, ‘carrying capacity’, ‘community-based tourism’, ‘responsible tourism’ and ‘pro-poor tourism’. It is not feasible to conduct an exhaustive review of all the literature on these terms. Arguably the two broad concepts of ‘sustainable tourism’ and ‘community-based tourism’ have received the most critical attention. These are discussed in greater depth below.

By the 1990s, the dangers of unplanned growth were clearly evident in the tourism sector, as were the direct impacts on natural and cultural assets. The need for sustainability - of the resources *and* their long-term business potential – was perhaps felt urgently. In this context, the idea of ‘sustainable tourism’ attempted to bridge tourism promotion and sustainable development (Butler, 1999; Hardy et al., 2002; Cole, 2007; Clarke, 2010; Lee, 2012; Carr et al., 2016; Budeanu et al., 2016; Dangi, 2016). Defining ‘sustainable tourism’ (much like sustainable development) has been a contested matter. To put it succinctly, sustainable tourism aims to develop tourism while preserving the destination’s resource base for future development (Lane, 1994; Hunter, 1997).

Although a seemingly significant step forward in thinking about tourism, the idea of ‘sustainable tourism’ has been critiqued on various grounds. The following issues are the most prominent: (i) lack of a clear definition, (ii) difficulty translating principles into practice, (iii) parameters not easy to measure, (iv) undervaluing the role of the community, and, not least, (v) losing touch with the goals of ‘sustainable development’ (Cater, 1995; Berry and Ladkin, 1997; Garrod and Fyall, 1998; Hunter, 2009; Scott, 2011). These tensions are experienced all the more acutely in developing countries where resources scarcity is already a challenge and institutions of planning and control tend to be weak.

In particular it is important to note that there is broad consensus in literature that for tourism to be successful the local community must be engaged and invested in the planning and management of the destination. This understanding has given rise to the idea of ‘community based tourism’ (CBT). Proponents of CBT see the community - the guardians and stewards of the local tourism resources – as

the principal agents of sustainability, and beneficiaries of the tourism industry. The main objective is to empower communities, through equitable distribution of resources and benefits, by supporting collaborative practices and participatory methods. CBT is considered particularly important for building capacities and capabilities in poorer communities. Faulkner and Tideswell, 1997; Scheyvens, 1999; Simpson, 2001; Byrd, 2006; Salazar, 2012; Matarrita-Cascante et al., 2010; Giampiccoli and Kalis, 2012; Sutawa, 2012; Tolkach and King, 2015; Richards and Hall (2000) summarize the argument for community-based understanding of sustainability.

Communities are a basic reason for tourists to travel, to experience the way of life and material products of different communities. Communities also shape the 'natural' landscapes which many tourists consume....without community sustainability, tourism development cannot be expected to be sustainable (Richards and Hall, 2000, p.1).

Community based tourism has received its share of criticism with doubts have been raised about tokenism in participatory models, distortions in distribution of benefits, exclusion of others by the power elite, political manipulation etc. (Goodwin and Santilli, 2009; Joppe, 1996; Blackstock, 2005). Yet community participation in tourism development is seen as a vehicle for empowerment, sustainability and development.

The existing literatures on both 'sustainable tourism' and on 'community based tourism' miss out on an important aspect of sustainability. Most of the literature sees 'sustainability' (at any level) as comprised of social, economic and environmental dimensions. Durovic and Lovrentjev (2014) have compiled an extensive survey of literature, where each of the three dimensions is explored in depth.

In much of the literature, little attention is paid to the mutually constitutive interactions and interconnections between the three dimensions of sustainable tourism. Sorely missing from scholarship is a deep understanding of how society, culture and ecological systems are bound together *in* places and communities, *through* values, practices and everyday life. Theories and models of sustainability are likely to remain flawed, if the concept is approached as a set of discrete elements, that are measured separately using 'indicators', without appreciating their interconnectedness. This study attempts to show how adopting a socio-spatial outlook to understanding human ecology can help gain insights for the development of tourism.

Tourism in Himalayan towns

The Indian Himalayas are dotted with a number of attractive 'hill stations'. These small- and medium-sized towns (in comparison to metropolitan centers in South Asia) were mainly summer destinations for tourists from the plains. With investment in infrastructure and growing incomes of the middle class the

tourism sector grew rapidly since the 1990s. Unfortunately, while provincial (state) governments continued to push tourism, local governments were unable to keep up with the pace of urbanization. Unplanned urban growth, fuelled by entrepreneurial construction, became the bane of these hill towns. Studies from various town, across the Himalayan belt, tell the same story of tourism-led development leading environmental damage, lower quality of life, and, ironically, a diminishing quality of experience for tourists. Himalayan towns like Kullu, Manali, Shimla, Dehradun etc. have benefited tremendously from tourism, but have become overcrowded and polluted in the process. The promotion of the tourism sector seemed to have been done without forethought to issues of infrastructure, capacity, culture or environment. The warnings have been sounded by a number of scholars, specifically for the state of Himachal Pradesh, where Spiti is located (Jutla, 2000; Batra, 2001; Kirch, 2002; Kuniyali et. al., 2003; Singh and Mishra, 2004; Singh, 2008; Gardner et. al., 2015; Kumar and Pushplata, 2017). More literature is available for the Himalayan states of Jammu and Kashmir, Uttarakhand, Sikkim and Meghalaya amongst others. Many would argue that tourism centers in the Himalayas have lost their identity in the process of growing tourism. Water shortages, traffic jams, noise, poor air quality, deforestation and visual pollution are commonplace. But the development of tourism has brought jobs, taxes and business opportunities to these cities. Laissez-faire treatment of tourism has also, therefore, been popular amongst voters. Kaza is poised to go down the same path, exposed to what Holden (2009) calls the “environmental ethics of the market” (p.373). One of the last remaining areas untouched by unbridled commerce, and home to a unique culture and way of life, Spiti raises cause for concern.

Despite the phenomenon being repeated in all major hill stations, the ‘resource paradox’ problem has proven to be intractable. Elected representatives find it risky to apply any measure of control on an industry that brings prosperity to their constituencies. Capacity for urban and environmental planning is weak at the local level. Financial resources are limited. And once the door is opened investment floods in too quickly for regulation to keep up. There is a need for two bodies of literature to be considered in tandem. We know that tourism promotion in places like Spiti can cause great harm to the ecology and culture of region. There is also a growing understanding of the need to study the urbanization dynamics of small- and medium-sized towns. It is high time to give special consideration to small towns that have limited capacity for planning but must deal with the responsibility of managing high-value tourism resources, both cultural and environmental. Creative institutional solutions will be required. It might not be sufficient to rely on buzzwords that are not uniformly successful to begin with.

Methodology

Two questions lead this project. (i) What are the community's aspirations and concerns with regards to tourism and urban development in the Spiti Valley? (ii) Why, despite witnessing undesirable urban outcomes in numerous Himalayan towns, has very little changed in terms of tourism policy in this sensitive region?

This study uses mixed methods to answer the research questions and report comprehensively the nature of urbanization in the small rapidly growing town. A household survey (N=420) was conducted gauge the residents' opinions on tourism and development in the Kaza and the Spiti Valley. Survey respondents included 253 men and 167 women. The sample was selected by visiting homes (door-to-door), making sure all areas of the town were covered. The survey sought to garner perceptions on the effects of rapid urbanization, and prospects for the future of the tourism sector. 15 semi-structured in-depth interviews were conducted with residents to triangulate findings of the survey and to obtain a deeper understanding of their everyday lives and opinions. Not least, observations in the town of Kaza were compiled on annotated maps and complemented with photographic documentation. The next section discusses findings from the survey and interviews keeping in mind the idea of the 'resource paradox'. The analysis attempts to bring out the tensions between the local population's aspirations and trepidations.

Needs and opinions

The survey asked local residents to rate their satisfaction with service and facilities (on a scale of 1 to 5 (1 indicating poor and 5 indicating excellent). Figure 4 shows the various categories of services, along with the average scores awarded by men and women. The overall average is indicated for each category. Scores are low across the board, with 'higher education', 'mobile phone services' and 'access to the internet' receiving the lowest scores. The scores awarded by men and women were comparable in all cases. These results are discussed in greater depth in this section.

The survey shows that people are aware of the costs and challenges of economic growth. It is less clear if respondents understand the difficulty of obtaining economic growth without putting social and environmental sustainability at risk. When asked whether tourism will bring prosperity to Spiti, an overwhelming majority (88%) of the respondents answered in the affirmative. Respondents cited employment opportunities, growth of the size of the economy, and new business openings as the main benefits of the growing tourism sector. There is no doubt in the community that the tourism sector is the future of the region, and is necessary for achieving a better quality of life. The small minority that had reservations on the question indicated that more tourism would mean more pollution (waste, garbage, noise etc.), threats to indigenous culture, and increased pressure on scarce resources.

The same question was approached from a different angle by invoking a comparison with Manali and Shimla – small cities in the same province that have been overrun by tourism. Opinions were divided. It was noted by a large number of people expressed the need for caution. Manali and Shimla were reported as having better infrastructure and facilities (particularly for health and education), markets where “everything is available”, “fresh fruits and vegetables”, tourist attractions, greenery, jobs and business opportunities. The responses showed a sense of awareness amongst respondents that they were living in a backward, underdeveloped area, even in comparison with two medium-sized towns. At the same time, however, imagining Spiti going down the same path caused a great deal of concern. Ironically, Manali and Shimla were also seen widely as expensive, polluted, commercialized, overcrowded, and over-exploited. Respondents were wary that Spiti might face a similar fate. “Spiti must grow similarly – but sustainably – in a balanced way, limited way”. “Spiti should not get crowded”. “Preserve culture and environment”. Growth, but in a restricted, controlled manner, is a popular idea. This is discussed in greater detail later in the paper.

Table 1 summarizes the most frequently reported needs for the community. The table shows two groups of needs. ‘Primary needs’ were reported most frequently in the survey and stressed upon in interviews. ‘Additional needs’ were expressed by fewer respondents, but their saliency has been verified through observations. These needs still exist, even though people do acknowledge and appreciate the development works that have transformed the region over the last 20-30 years. It is widely expected that growth of the tourism sector could pave the way for other investment and infrastructure upgrades. The aspirations are tempered, however, by the fear of rapid change and its destructive effects. The second column of Table 1 shows the main concerns. Each point listed in the table is discussed in the following sections. The desire for a better quality of life is palpable, and so is the fear that rapid change might destroy everything that is beautiful in the region.

Primary needs

Water

The fieldwork for this project was conducted in the summer of 2018. The region (far beyond Spiti) was reeling under conditions of drought and chronic water shortage. (Figures 5 and 6 shows low water levels in Spiti.) Interviews conducted in these conditions show that the risks of exceeding the environmental carrying capacity of the fragile ecosystem are felt by the community in a direct and immediate manner.

Snowfall had been sparse in the previous winter and the Spiti river, fed by melting ice in summer months, was running low. In Shimla (erstwhile ‘summer capital’ of British India), a popular summer destination in the same province, water shortage was causing riots. The local narrative was clear that a large part of the blame lay with tourists and hotels. When water resources were scarce the tourism sector was seen as exacerbating the problem. In Spiti, numerous hotels and homestays have sprung up, particularly in the last 2-3 years, and provide valuable additional income to families. But they are at the risk of becoming victims of their own success when water runs dry. Although no comments were made against tourists on account of their contribution to water demand, respondents did point out that the situation was not sustainable unless reliable piped water supply is ensured to all homes. Both the amount and quality of water were mentioned in interviews.

Access and connectivity

Roads have been improved periodically in Kaza and around the Spiti Valley. Large sections, however, still remain unpaved. Moreover as traffic increases there are new concerns regarding capacity and safety. With regards to safety respondents brought up the issue of surface quality, influx of drivers not used to mountain conditions, and poor street lighting. Figure 7 shows a market street in Kaza. The road surface is not properly paved, with traffic and construction activity growing every summer.

Spiti can be approached from Manali and from Shimla. The approach from Shimla is in good condition and remains open throughout the year. The approach from the Manali side, however, is unpaved and makes for very uncomfortable rides. At several points along the way smaller automobiles run the risk of getting stuck in water, leading to traffic jams that last for hours. In winter the road from Manali remains closed as the snow cannot be cleared. These issues were brought up by respondents, along with the need for more regular air services, especially in the winter months. Kaza is served by a helipad for emergency landings. But residents would like to see more regular helicopter services to and from Kaza. Residents would also like to see more frequent bus services to nearby towns and to Shimla and Manali.

Education

When asked about their hopes for the next generation (open-ended question, no options provided), as many as 92% of the respondents mentioned better education. Through interviews it became clear that people rued the absence of an institute of higher education. The lack of education options, it was felt, was taking children far away from their homes. As a result, not only is the community losing youth and talent, but also its traditions and way of life.

It was also felt that the lack of business training was causing locals to be left behind in the tourism boom. This aspect is discussed further in the next section, on ‘employment’. Several respondents indicated that because of the lack of education locals are left with few options for securing their livelihoods.

Employment

The lack of work is the biggest worry for residents of Kaza after infrastructure shortages. Jobs are hard to find locally. The economy is growing fast due to tourism, but this has not brought the expected benefits to local people. Due to restrictions on acquisition of property on outsiders, it has become common practice for entrepreneurs from outside the region to lease properties in Kaza and around Spiti to operate businesses. Most of these businesses are in the sectors of food, hospitality, retail, tourist services (such as organized tours, adventure sports etc.) and social entrepreneurship. The businesses tend to bring employees from their place of origin – mainly due to kinship. Deeper motivations vary and could include trust, creating opportunities for younger members of the family, suppressed wages etc. As a result locals feel left out of the economic opportunities coming to the region. Further, as mentioned earlier, locals feel that they are not benefitting enough from either partnership or transfer of skills. One respondent was clear in his evaluation. “Bringing outsiders to work is not good. Locals should be able to find work and benefit from the tourism growth.” Another respondent seconded the opinion. “We would like locals to benefit from the business opportunities created by tourism.” The community is already discussing ways to insist on partnerships between locals and outsiders as an alternative to simply leasing land.

Communications and Internet

Another piece of critical infrastructure lamented by many respondents was mobile communications and Internet. Although mobile services are available, there is only one provider (government-owned BSNL) and coverage is patchy at best. Internet connectivity, through the same provider, is poor to non-existent. A tourism-based economy will find it difficult to prosper in the absence of reliable telecommunications and Internet services. Moreover the digital divide tilts the playing field in favor of businesses that have large networks and multiple offices, allowing sales and other business functions to be conducted elsewhere. Small local businesses will struggle to compete in such a market. It is also embarrassing for the larger polity for a section of the population to remain effectively disconnected the Internet.

Additional needs

The issues identified above were mentioned most frequently in the survey and interviews. In addition to these, several other needs were mentioned, with less regularity. These include better health care

(including more doctors and better local facilities), reliable electricity, better banking facilities, support for traditional agricultural practices, sports facilities, and a new petrol pump (gas station).

Many of the needs discussed above may be considered as falling within the domain of state welfare for a remote region with a low population density, and few resources. There is an expectation, however, that growth of tourism will add economic weight to the region, which could, in turn, propel the government to upgrade infrastructure and services. As one man put it in an interview, “If tourism grows but the people of Spiti don’t grow, then what’s the use?” The desire for greater tourism revenues is tempered with a great deal of anxiety regarding the unintended consequences of economic growth. Certainly rapid development threatens environmental quality in the region. It is important to note, however, that respondents feel a pressing need to guard the identity of the community and its individuals.

A way of life at stake

After discussing the improvements they hoped to see in Spiti, respondents were asked what they would like to not have change. The answers illustrate the connectedness of people, place and practice. The very identity and way of life of the community is threatened if tourism is allowed to grow in an unplanned manner, as has been the case in many other towns in the Himalayas. To be clear, the word ‘identity’ did not appear in the question. Further, not a single respondent used this word in answering the question. This was not an attempt by the respondents to define themselves as individuals or as members of the community. As indicated above, the responses represent a degree of reflection on the most cherished aspects of life in Spiti, to which people are attached, and which they consider worth saving. It is only upon analysis of the survey data that it becomes clear that for this community self-concept is tied very closely to their way of life.

Table 3 shows some of the responses received in the survey. But it would not do justice to the people of the region simply to enumerate these answers. It is important to consider the connections between these ideas, and the coherent narrative they provide of a sustainable and rich way of life. Three aspects of the way of life can be discerned from survey responses and interviews – (i) values, (ii) practices, (iii) the environment.

The idea of ‘peace’ is particularly important to understand Spiti society. The word is mentioned in the context of faith, community life, personal values, and negotiating everyday life in a difficult climate and sparse landscape. “We like the peace up here”, says one interviewee, referring at once to the mountains, the solitude, the pace of life, and the practice of faith. A strong sense of community, too, is a thread

running through the various aspects of the local way of life. One respondent, a businessman from outside Spiti, expresses his admiration for the people of Spiti. “People here are honest and nice. They will not give you an unfair deal to make a profit. The local culture is special. People help each other.” These values do translate to practices of agriculture and architecture, both of which were carried out traditionally with shared labor. The importance of community is evident in personal values, collective practices, and in the work of living in a high-altitude desert. The notions of ‘peace’ and ‘community’ are perhaps the most important pillars of the local way of life. It is no surprise then that when threats are expressed, they can be traced back to one of these two ideas.

Being at peace with nature is Spiti’s definition of sustainability. Mud-brick architecture, agriculture based on traditional crops following the natural cycle of snowfall and melting ice, sharing labor, protection of wildlife (particularly the Snow Leopard) are all examples of environmentally sustainable practices drawn from the idea of ‘being at peace’.

All anxieties expressed with regards to the potential negative fallout of tourism development (summarized in Table 2) may be seen as the fear of the collapse of one of the two pillars – peace and community. Community member expressed concerns of cultural changes occurring due to the influx of tourists. Monks at the local monasteries expressed similar views. A senior monk at Tabo monastery was concerned about the apathy of the younger generation. In particular, he is troubled by the preoccupation with digital screens, the growing culture of partying, and the influence of the drugs in the state (even though it has not yet become a major phenomenon in the Spiti region). “Our culture and traditions are being diluted.” Another respondent adds, “the locals are changing by looking at tourists.”

The consumer economy threatens to destabilize traditional communitarian practices, such as building houses by sharing labor. An outsider, who runs a hotel in Kaza, shared his insight regarding local culture and the risk it faces. “They are very content and self-sufficient people. More money brings more insecurity. You see more consumer options you start thinking about what you can buy and afford.” The potential risk of the consumer economy was also noticed by the monasteries. “These days people are spending their days looking at other people’s news and pictures. That is a world of lies. They are losing touch with their own life. Young generation has no time for the monastery. No time to participate in ceremonies. At the ceremonies also they are on the phone.” He says the last line with a laugh.

The effects of commercialization is not limited to personal values. There is a materiality to this social change. Concrete houses have replaced the mud brick houses that are the traditional architectural form in

this part of the world. Mud brick houses have thick walls, are good for retaining heat inside the house in winters, easy for people to construct for themselves by pooling their labor, and relatively cheap to build. But concrete is taking over, despite being less than optimum for the local climate. It is stronger, allows taller structures, and can be built by hired workers brought in from other parts of the country. The dilution of the values goes hand in hand with the changes in material culture, and, in turn, with environmental concerns.

The tension between economic growth and fear of loss of cultural values is not new.

Ambivalence, tensions and local resistance emerge in the process of commodifying culture at Goo-Moremi village. Some local people embrace the commodification of their culture into a tourism product because of anticipated socio-economic benefits whereas others resist cultural commodification as a result of fears that it may devalue their culture and belief system. (Mbaiwa, 2011).

Similarly, Joseph and Kavoori (2001), writing on Pushkar (Rajasthan, India), assert that “tourism is perceived as a threat to “tradition” and religion even while a large segment of the population is dependent on its economic benefits” (p.998).

In Spiti, the concern over “dilution” of culture and identity is deeply connected with everyday life and environmental sustainability. Moreover, there are already issues of distributive justice, inclusion and community engagement. Thus planning for tourism in Kaza and the Spiti region must be approached as the “wicked” problem that it is. It is not simply a matter of calculating the correct *number* of tourists. A very fine line separates the appropriate level of tourism exploitation from its excess.

A contribution of this study is to highlight the interconnectedness of social, cultural and environmental dimensions of tourist destinations. Although it is well established in urban planning, geography and allied fields, this lesson seems to be underplayed when it comes to tourism policy. Durovic and Lovrentjev (2014), for example, have compiled an extensive survey of literature, looking deeply at the social, economic and environmental dimensions of sustainability. There is, however, no acknowledgement of the ways in which these dimensions of sustainability are connected *in communities* through values, practices, and everyday life. Any understanding or evaluation of sustainability remains incomplete, if the concept is approached as a set of discrete elements, that are measured using ‘indicators’, and without a thick understanding of their interconnectedness.

Paradoxical prescriptions

The challenge of the balancing act is illustrated by the variety of policy directions being suggested by the various stakeholders. Caught between the desire to leverage tourism for the development of the region, and aware of the risk of destabilizing the way of life altogether, community members have curated a number of narratives that attempt to strike the balance between growth and sustainability. The three narratives discussed here are instructive for understanding the tensions at play.

Good tourist/ bad tourist

Opinions of community members regarding increasing versus controlling tourism seem evenly split. A recurring theme is the imagined good tourist/ bad tourist dichotomy. “Tourism is good, but some tourists are bad.” This, perhaps, is true of any popular destination. In Spiti, however, this truism is mentioned not simply as an analytical statement, but rather as a proposal for segregating the good tourists from the bad tourists. The narrative attempts, a bit crudely, to bridge the gap between wanting tourism and avoiding its negative consequences. It follows inevitably that people try to define ‘the ideal tourist’. In the words of one respondent the ideal tourist is “respectful and culturally sensitive”. Another voice added that “tourists must also understand this area and the people who live here.” While there is merit to promoting “responsible tourism” options, such a policy can hardly contribute to the selection of a certain type of tourist.

Regulate the number of tourists

This narrative points to a cleft in society. Those in favor of this option tend to be people who have already established a business. They only stand to lose their margins if competition increases, especially if bigger players arrive in the market. The vast majority of locals, still waiting to benefit directly from tourism or from state investment, seldom hold this view. In addition, many respondents also held tourists responsible for promoting a permissive culture, drugs, pollution, noise etc. Although mass tourism could cause or exacerbate these problems, regulating the number of tourists may not be a sufficient control. Nor can we be sure that there are no other policies available to contain such problems. Moreover, it still leaves open the question of the aspirations of those who have not yet benefitted from the lucrative tourism sector. It is useful also to remember that local representatives will be sensitive to voters’ demands.

The Bhutan model

Tourism in Bhutan is closely controlled to preserve the ecology and culture. Bhutan “took a cautious approach towards tourism, designing a policy of ‘high-yield, low-impact’ tourism, aimed at providing high quality service to wealthy tourists who are interested in and sensitive to Bhutan’s culture and traditions (Brunet 2001). The objective of the policy is to generate revenue and achieve economic self-

sufficiency, but prevent cultural pollution (Reinfeld, 2003). As a sovereign nation Bhutan is able to control the number of tourist visas issued, and is also able to set certain requirements (such as planning the trip through local tour operators) in order to obtain the visa. It is clear why the ‘Bhutan model’ appears attractive to anyone concerned with controlling tourism growth. It regulates the number of tourists, while ensuring expenditure, and also, to an extent, filtering through only those tourists who are really interested in the country. India, however, allows free movement of citizens within the country. Domestic tourists are by far the majority of visitors in Spiti (as in all major tourist attractions across the country). Granting access to a select few individuals is not an attractive idea politically or economically. Nor is it possible for any authority to insist on employing certain services to visit the area. Again, we see the desire for growth and professionalization of tourism, but without exceeding limits.

Conclusions

Infrastructure

The infrastructure needs that have been mentioned by community members in our extensive survey should be prioritized. Water, electricity, internet, mobile communications, health, higher education, roads and banking are indispensable – whether seen in terms of human development or tourism. In addition, there should be an immediate enhancement of the region’s city and regional planning capabilities.

Avoiding dependency

The title of this paper is derived from words spoken by a respondent in an interview. Speaking about the lack of higher education and the difficulty in finding jobs, he said his children would probably work in the tourism industry when they grow up. “What else?”, he added. This lack of choice points to the inevitable dependency that will be created on the tourism sector if the benefits are not diverted towards overall development of the region, including other economic sectors and traditional sources of income – including crafts and agriculture.

Community at the center instead of carrying capacity

Bringing revenues to the community and spreading the benefits to the entire community should be the economic goal of tourism development. The long-term growth of the entire community is more important than the profitability of the businesses of an elite minority (Brohman, 1996).

The more that local residents gain from tourism, the more they will be motivated to protect the area’s natural and cultural heritage and support tourism activities. If they do not benefit from tourism development, they may become resentful (Liu, 2003, p.466).

That said, however, the community should be able to continue to practice their way of life without having to succumb to tourist expectations. Promoting cultural tourism also runs the risk of essentializing and commodifying the local culture to suit the tourists' vision of authenticity. Writing on the successful transformation of Yogyakarta into a tourism destination, Dahles argues that "the policy of 'quality' tourism which offers carefully constructed and controlled tourist experiences" (2001, p.vii) led to losses in equity and welfare of low-income groups. As Richards and Hall (2000) put it,

[t]he realisation that the community itself has become an object of tourism consumption has in turn encouraged some communities to reproduce themselves specifically for tourists. Through the process of site sacralisation, whole communities can begin to identify themselves with the way in which they are 'named' and 'framed' as tourist attractions. (Richards and Hall, 2000).

But the choice is not simply between preserving a way of life and promoting tourism, or finding a way to do both at the same time. The real challenge facing policy-makers is to grow tourism in a planned manner versus letting it grow entirely under market forces. It is the latter approach that has destroyed other mountain destinations in the region. Preserving culture exactly as it is now (or as it was practiced by previous generations) may not be a viable option. Nor is it tenable, given the aspirations of the people, to allow society to get left behind in this age of digital divides. Local business, entrepreneurship, innovation, and capabilities will suffer. Planning the growth in a participatory manner will at least give stakeholders an opportunity to direct future growth, to inscribe their values in the vision, and to offer a strong counterpoint to consumerism.

Focus on interconnections

Based on the foregoing discussion - on the connectedness of values, practices and the environment – it is necessary that policies are made first and foremost to preserve the most essential elements of the traditional way of life. In particular, the state has to create institutions to support agricultural practices, local architecture, wildlife conservation, Monasteries, festivals and self-governance. Only on a strong foundation of these aspects of society can we build a model of tourism for Spiti and for other Himalayan destinations.

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Figure 1: Map of the Spiti region

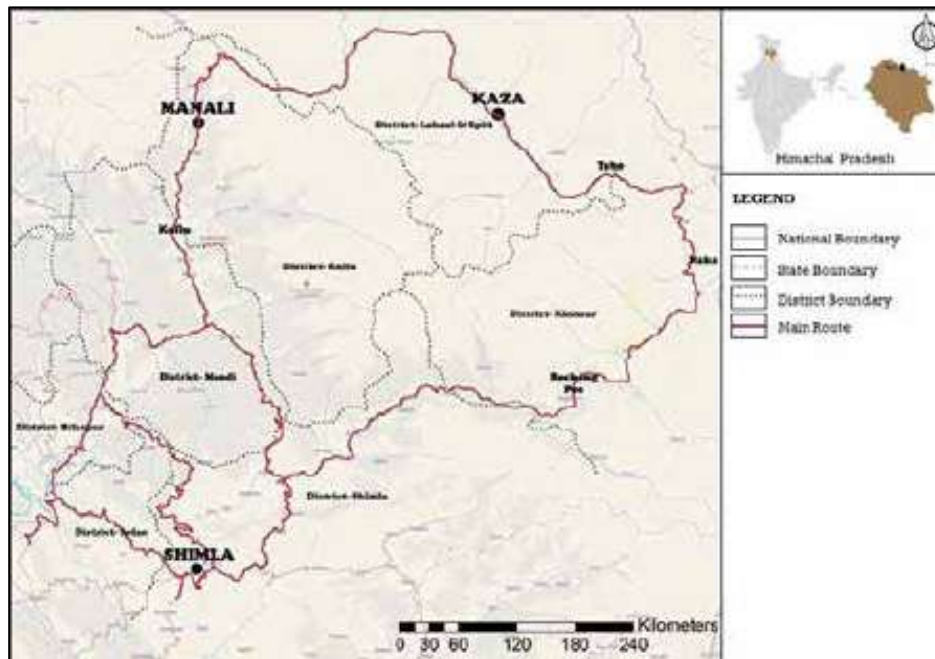


Figure 2: Monasteries in the Spiti region

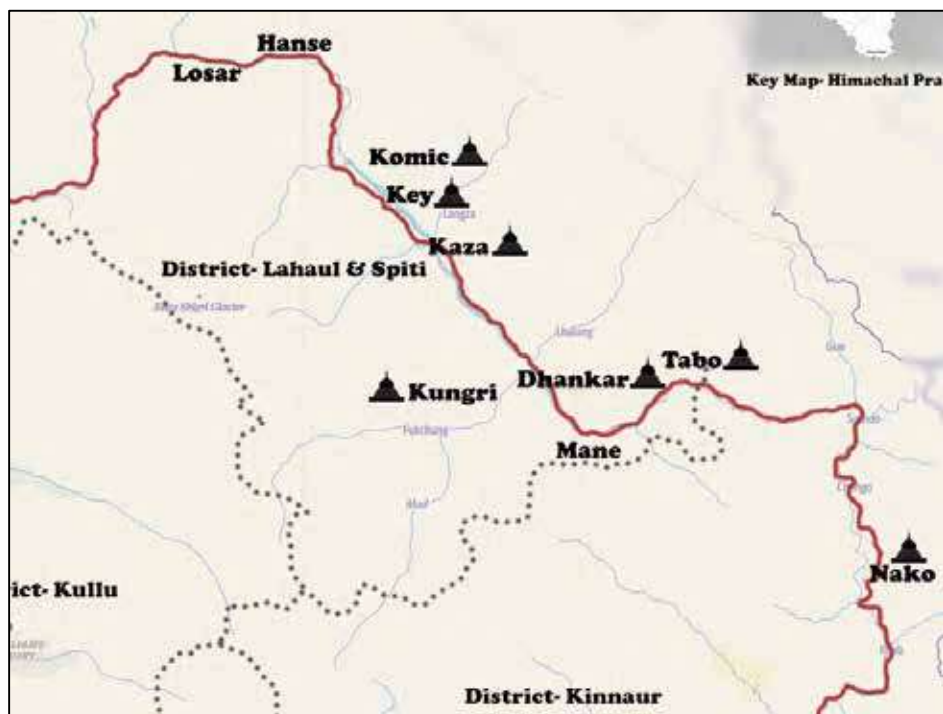


Figure 3: Dhankar Monastery, 12,774 feet above sea level



Figure 4: Averages for satisfaction with services (1:poor, 5:excellent)

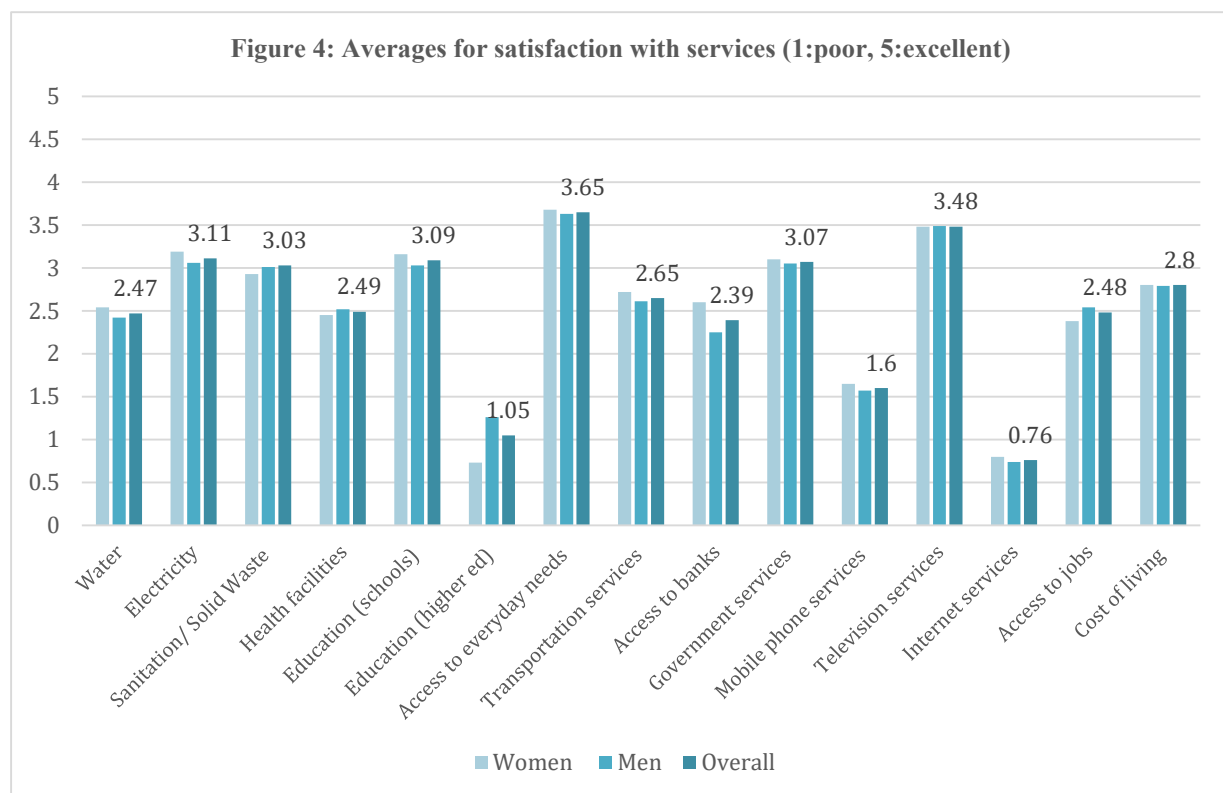


Table 1: People's needs and perceived threats of rapid economic growth	
<i>Primary needs</i>	<i>Threats</i>
Water	Crowds
Access and connectivity	Pollution
Education	Stress on resources
Employment	Commercialism
Communications and Internet	
<i>Additional needs</i>	
Better healthcare, more doctors	
Electricity	
Better banking facilities	
Support for agriculture	
Sports facilities	
Petrol pump	

Table 2: Aspects of local way of life considered necessary for protection	
<i>Values</i>	
	Peace
	Honesty, Politeness, Humility, Innocence
	Hospitality, Helpfulness
	Strong sense of community
	Respect for elders
<i>Practices</i>	
Traditions	
	Festivals
	Dance, dress, rituals, customs
Buddhism	
	Second son becomes a lama
	Faith structures society
Language	
	Bhoti language, Tibetan script
Architecture	
	Monasteries
	Mud-brick construction
Agriculture	
	Barley, peas, potato, seabuckthorn
<i>Environment</i>	
	Landscape
	Wildlife

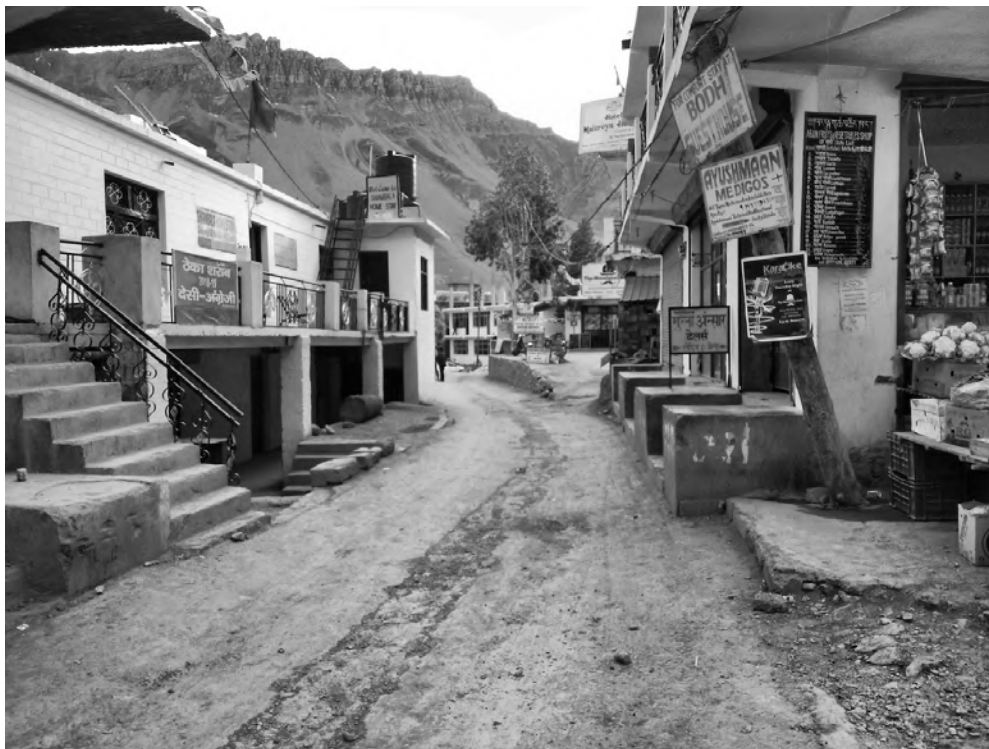
Figure 5: Spiti river, running through the high altitude desert



Figure 6: Channel that drains into Spiti River, dry due to low snowfall in the winter of 2017-18



Figure 7: Market town of Kaza



How well can privately owned public spaces (POPS) facilitate social interactions in Taipei City? A case study of the community residents' daily life

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Abstract

In Taiwan, the high-density urban environment is the normal urban form as many highly populated counties. The concerns of possible impacts of vertical-developed cities have long discussed for several decades. Since the 1980s, in order to improve the urban environment and increase open spaces, the Taipei City Government granted additional floor area bonus as incentives in exchange of the private developers providing privately owned public space (POPS) for public use. Nevertheless many studies identify that the openness and the publicness of most POPSs are lower than expected. However, other concerns such as the possible external costs of the urban environment i.e. the decline of public service quality, more energy consumptions, increasing residential density, and skyline destruction derived from the additional floor area bonus as incentives for POPS are still to be studied. Early local research regarding the POPS usually focused on the usage of such space, and has given advices on design details. There is a lack of discussion about the impacts on the social behavior of residents by the POPS. Hence, this paper will discuss the possible impacts of the POPS on the social interactions (social relation). We will conduct questionnaire survey and field studies at the selected communities with more POPSs in Taipei. The research results will expect to gather some information about how can POPS benefit residents daily life at the community level and provide policy feedbacks on future POPS in Taipei.

Keywords: privately owned public space (POPS), People-environment fit, social connection

INTRODUCTION

To achieve the goal of improving the urban environment and the capacity for disaster prevention, some building site owners in high density cities can apply for additional floor area bonuses (bulk reward) in exchange for converting part of the private property into privately owned public spaces (POPSs). It is considered as an

effective approach to improve the quality and quantity of existing open space system in many highly urbanized metropolitan areas around the world. In the case of the New York City, since 1890s, a lot of skyscraper builders have joint the competition to build building taller in height and larger in volume and resulted in degradation of urban environment and living quality. As a result, the 1916 zoning resolution came to create a sense of openness, also known as “light and air,” at street level. Further, the Voorhees draft in 1958 proposed the first concept about POPS. “In order to bring more light and air into streets surrounded by tall buildings, as well as to create more usable open space, a bonus device has been established to encourage the setting back of buildings from the street line.” (Kayden, J. S., 2000) Likewise, Taipei as the capital of Taiwan encounters similar problems of poor open space provisions due to the high density built environment and economic development pressures. In addition, the city cannot expand its border due to the limit of basin and range topography geographically. The urban grows close to saturation, so it cannot afford more construction of open space land. Hence, Taipei City Government has been seeking alternatives to improve open space system and adopting approaches of authorizing extra bulk bonus in exchange of POPSs since 1980s.

The promotion of POPS has been encouraged for nearly 40 years until now. However, there was lack of evaluations of the actual contributions that POPSs provided. Questions such as “does it achieve the goal of improving open space system?” or “how well-managed are these POPSs?” popped out frequently. More importantly, “how can those POPSs actual serve citizen’s social life?” Common problems discovered in the New York Cities are poorly management of the POPS environment and quite a lot of POPSs are not open to the public. Nonetheless, scholars and citizens have frequently questioned the effects of POPS. The common criticisms are: the restriction of social interaction, the exclusion of “undesirable” groups and the partiality for private benefits (Kayden, 2000; Mitchell, 2003). The most common critique is of their accessibility to the public. For instance, studies regarding the POPS mostly focus on user experience at the individual POPS sites. 2006). Moreover, in 2014, Taiwanese citizens held “Occupation of POPS Movement” owing to protest the authoritarian ban on entering privately owned public spaces.

Therefore, in this paper, we extend our series discussion of the actual contributions of POPSs in Taipei City. Since 2015, a three-phase study structured by three planning and design spatial level, city level, district level, and street block level has conducted. At the city level phase, we focused on understanding the spatial function of POPSs in the urban planning contexts to further confirm the planning goals and purposes of POPS from urban open space system perspective. A total of 483 POPS sites from 1983 to 2013

was our selected research target sites. In the second (district level) phase, we discussed the relationship between site planning, the pedestrians flow and accessibility of POPs. Finally, in the third phase, from user's benefit perspective, we focus on how can POPs contribute to connecting people's social life.

Literature Review

1. The Planning Regulatory Background of POPs

The intention for legalizing the establishment of POPs was good, but many have questioned the role of POPs in the whole open space system in a city due to the lack of instructions in the statutory plans such as master plan and detail plan. Figure 1 illustrates the related regulations for open space system in urban planning and POPs in Taipei city. It is clear that the location and function of POPs was not carefully considered and clearly defined at master and detail plan level. A POP is only an additional patchwork in the open space system. Also, according to the zoning plan and land use control regulation, there is no instruction regarding where and how to allocate POPs. Thus, there is no evaluation tool available for measuring the possible effect and contribution of each POPs.

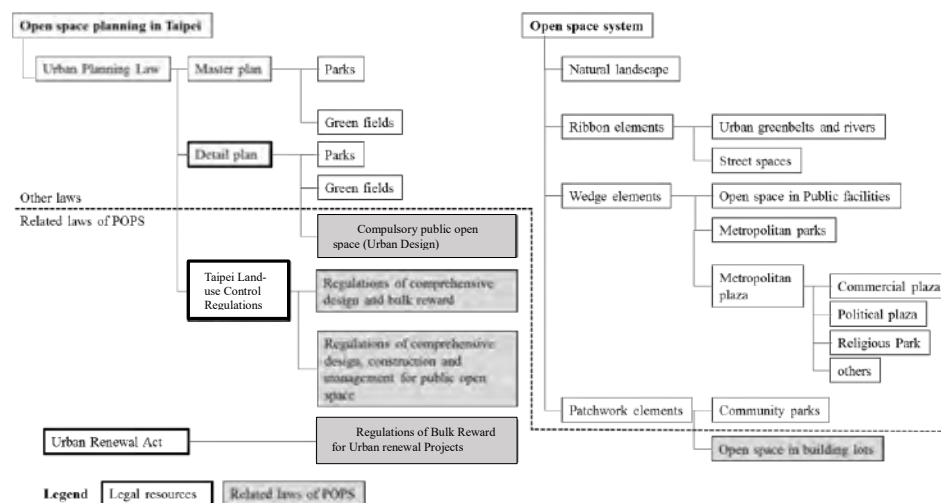


Figure 1. The relationship of POPs, regulations and open space system

As a result, in 1997, POPs became a concerning issue regarding to the location and poor managements. After that, regulations on Taipei Land Use Control were amended to cancel the bulk reward, extra floor area rewards for new residential building construction projects. Until 2014, doubts and concerns of POPs arose again and many reported illegal usage or poor management of existing POPs in order to avoid public

usage. On the other hand, over the past decade, the developed ratio of public open space in the statutory plan has only increased 7.9% from 43.0% to 50.9%. By 2014, there are still half of open space proposed in detail plan failed to develop. That is to say, the planned open space system has difficulty to be realized and also each district ended up with very low average open space. For instance, the green resources per capita of the five districts, Wanhua, Zhongzheng, Songshan, Da'an, and Datong, are lower than 10 m². These districts are mostly located in the eastern part of the city. They are all old developed quarters with poor public facilities in quality and quantity as well as lower social economic status. For such deprived areas, it is most impossible to provide public open space due to fully developed built environment. Hence, although current policies encourage urban renewal projects to provide POPS in exchange of bulk rewards, the actual amount and quality of POPS provided is still questionable.

We argue that although POPS has long been ignored by the statutory plan system, the ever existence of POPS is no doubt a trade-off between private floor areas and public right of POPS usage. To keep POPS open for public use is to practice public justice. It is also land owners' obligation to keep it open for public. In addition, the locations of POPSs were chosen on the basis of the laws without considering the entire planning scope.

2. Related research of POPS

Research on POPS traditionally tends to focus on different aspects of the issue: the legal approach discusses it in relation to floor area ratio incentive policies, and often cites New York City as a model of this system; from the perspective of Economics, the emphasis is on the shift of urban spaces from the public realm to private ownership; the Urban Design approach analyses the spatial arrangement of POPSs, and their relation to the built environment (Kayden, 2000; Webster, 2007; Wei, Z. C., 1994). In Taiwan, however, research on privately owned public spaces tends to be less complex, only discussing urban design aspect, quality of the urban environment, and user behaviour when evaluating the „publicness“ of such places, and pays less attention to issues of supervision and property rights (Tung, Y. Y., 1999; Chiang, W. C., 1993). Besides, research is mainly based on observation of individual cases, hence lacking in objective, quantitative indicators derived from a large sample, which arouses doubts of subjectivity, and makes it impossible not only to get a full view of POPS, but also to use the results as a basis of evaluating the publicness of POPS in general. Furthermore, since user preferences and behaviour differ significantly in Taiwan and in other parts of the World, therefore it is not possible to use international indicators to evaluate the

degree of public access to POPS in Taiwan (Wei, Z. C., 1994).

3. Person-Environment Fit (P-E Fit)

Person–environment fit (P–E fit) is defined as the degree to which individual and environmental characteristics match (Dawis, 1992; French, Caplan, & Harrison, 1982; Kristof-Brown, Guay, 2011). It is considered to be similar with ‘the theory of supplementary fit’. Based on compatibility that derives from similarity, a person fits into some environmental context because he/she supplements, embellishes, or possesses characteristics that are similar to other individuals in the environment (Kristof-Brown & Guay, 2011) It is also believe that urban dwellers could develop various P-E fit patterns according to their surrounding environmental settings. Thus, as Jane Jacobs emphasizing on appropriate design elements such as openness and inclusiveness in the public realm can create good place for people to meet, we argue that it is crucial to examine the P-E fit level of current POPSs to see what spatial pattern works and what don’t.

METHODOLOGY

1. Phase One: Evaluation of the spatial distribution pattern of POPSs and relationship between other public-owned open spaces

Many local research have examined the possible effect of the individual POPS on its local users and discovered problems in terms of limited usage and poor management of POPS in case study. On-site observation or questionnaires are most frequent methods adopted. However, only very few have debated about the relevance of entire POPS system with open space network. Spatial analysis was rarely adopted at city scale in discussing POPS issues. (Yoon & Srinivasan,2015)

This study is conducted at both urban and local scale to discuss the relationship between existing POPSs and the public open space system. Thus, we selected 6 administrative districts in Taipei as our research sites based on the amount of existing POPSs, similarity of spatial contexts and average open space per capita. (Figure 2) There are 315 public open spaces and 228 POPSs available in the selected research area. The average size of each POPS is 1314.25 m².

At city scale, this study discuss the suitability of POPS location in terms of overview on open space system in Taipei city by using bivariate local Moran’s I analysis. We adopted and revised the method by Yoon & Srinivasan (2015) and study the

relationship between the lack of public open space and the provision of POPS in each district. We would like to confirm and identify the types of the possible misallocation of the POPS in 6 districts in Taipei City. The result of Spatial Correlation analysis and bivariate local Moran's I analysis can identify the compatibility of open space system and allocation of POPS in each district. Four types of compatible combination are categorized. (Figure 3) In the phase two, at local scale, we further selected two types out of four in the previous stage to conduct field investigations on the spatial layout of each POPS in order to observe the level of openness and usage characteristics of POPS in different district according to the compatible types of public open space and POPS. Wanhua District, with lack provision of both public open space and POPS, and Songshan District, with both abundant public open space and POPS were selected as research sites in the second phase.

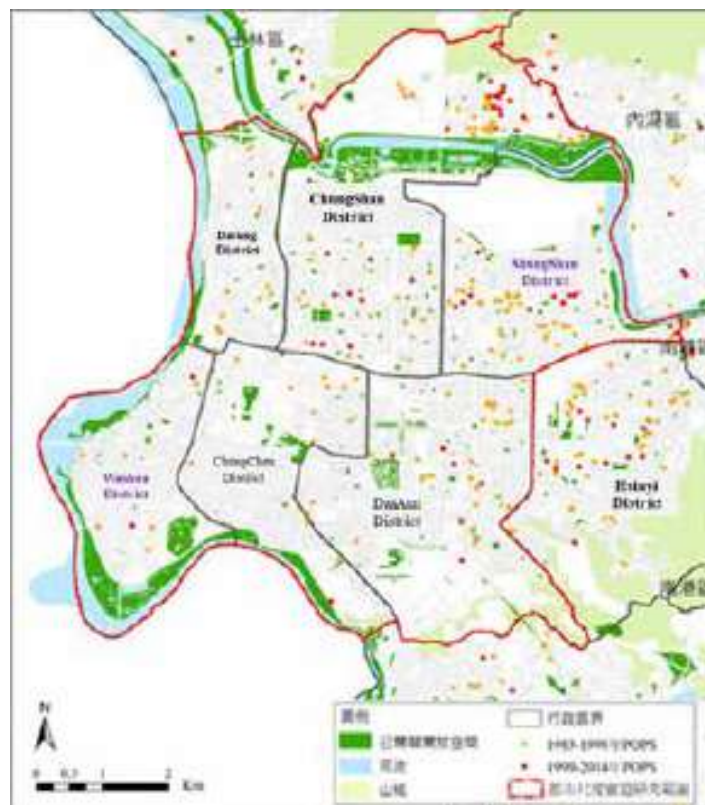


Figure 2 The Selected Research Districts and distributions of public open spaces and POPS

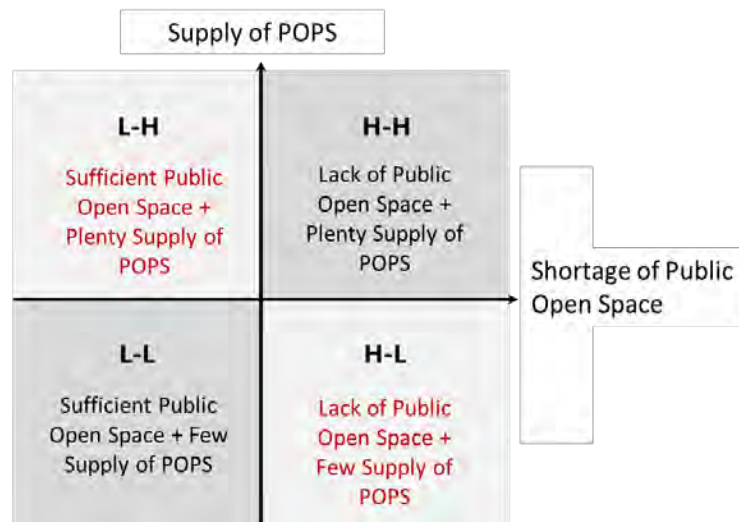


Figure 3 City-level Open Space System bivariate LISA analysis results

2. Phase Two: The Pedestrian flow and site plan of POPSs

Among the existing 483 POPS sites in Taipei City, we further use urban and local scales to discuss the publicness and accessibility of existing POPSs. In urban scale, we evaluate the accessibility and connectivity of the location of POPSs by using the Space Syntax Analysis in order to explore whether the POPS can enhance the pedestrian flows. In addition, at community context, on-site investigations of the design and usage of POPSs through Visibility Graph Analysis method in Shinyi District and Zhongshan District were conducted. (Figure 4) AutoCAD and Depthmap software were applied. (Figure 5) The main point of investigation is to document the actual quality of POPSs from user perspectives.

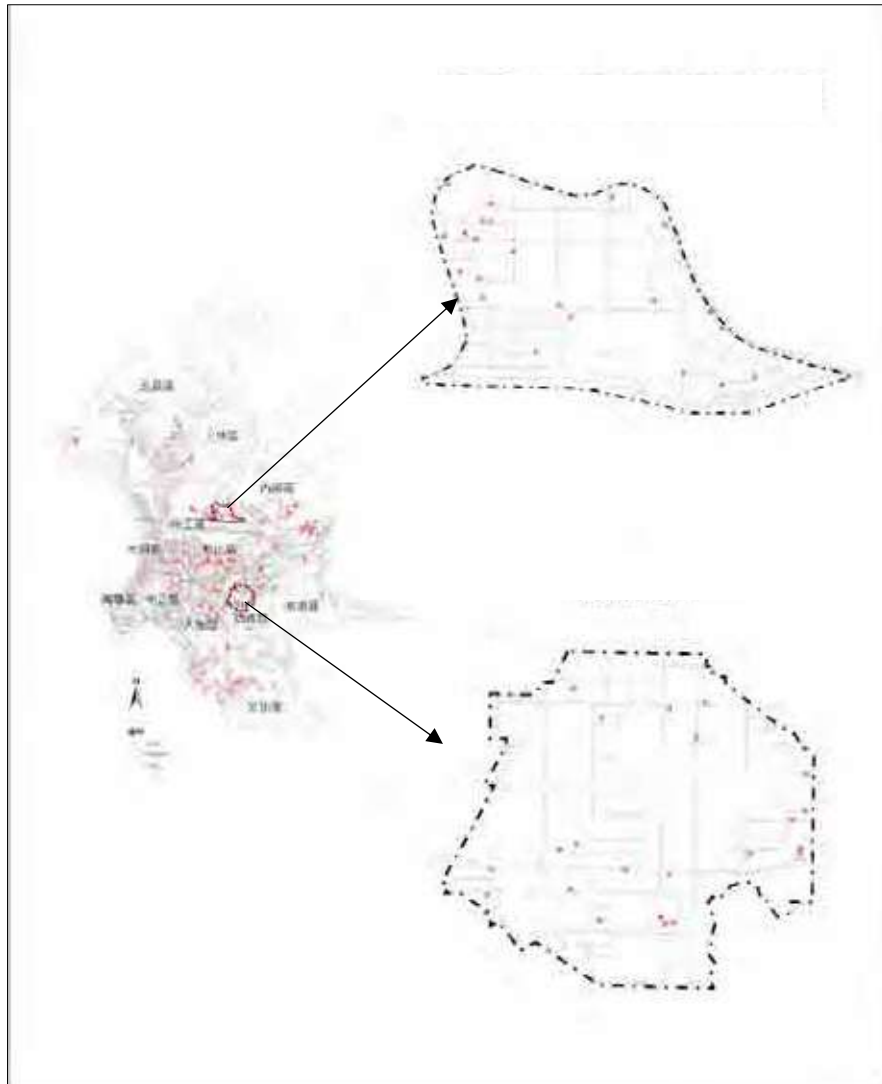


Figure 4. Site selection for Space Syntax Analysis

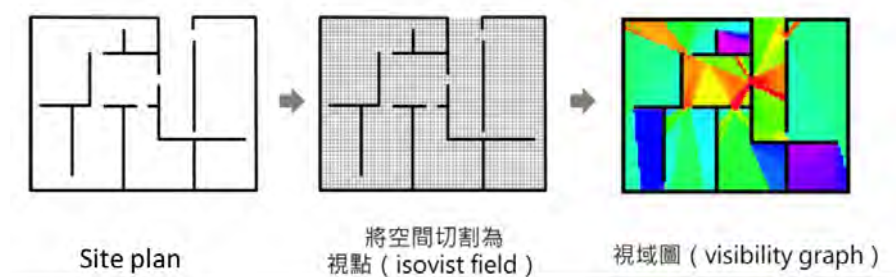


Figure 5. Visibility Graph Analysis

3. Phase Three: P-E fit evaluation

Owing to the lack of user-experience study feedback to the design guidelines of the POPS, as a result, design concepts applied in POPSs in Taipei City are mostly from developers' perspectives instead of users' perspectives. By applying the P-E fit theory

and environmental psychology, we argue that it is necessary to obtain the actual information of P-E fit level of POPSs in Taipei City. Through user's questionnaire and focus-group interview of local residents, we could identify the users' purposes and activities occurred in the selected POPS sites. Also what kind of design elements of the POPS facilitate the social connections among users and what failed.

RESULTS AND DISCUSSION

1. The relationship between POPSs and other public-owned open spaces

It is our argument that a good POPS should be able to compensate to the shortage of public-owned open space provision by the planning tools at city or district level. Hence, master plan or land use zoning plan should instruct the location choice criteria for POPS to instruct POPS happening at the preferable location that benefit the whole open space system. However, the result of bivariate LISA indicates that the current distribution pattern of POPSs has no correlation with the citywide open space system. The High-Low (H-L) area, which means the area lacks of both public open space and POPS, gathered in Wanhua district. However, the developed ratio of land use of open spaces is 99.5%, indicating difficulties to provide sufficient public open space by the city government. That is to say, the demand of open space in the Wanhua district is still high but we can only expect POPSs to meet the demand. On the other hand, the Low-High (L-H) area, which means that such area has sufficient public open space and more than enough POPSs, mostly locate in Songshan district. The spillover effect of oversupply open space can be also considered as a waste of resources. Therefore, whether POPS in Songshan district achieve the intended purpose, which is to improve open space environment, have to be verified by local scale analysis.

At local scale, the main point of field investigation is to obtain the spatial form and user behavior information in L-H and H-L areas to further initiate the dialog between quantity and quality of open spaces. Wanhua district belongs to H-L area, and it has a long development history and most land has already built up. Because it lacks of public facilities and public open space, the real estate price is lower than other district. There are only a number of POPS located in the Wanhua district mostly existed for more than 20 years. The design of such POPS 20 years ago were lack of openness and connections to public areas. Clearly, with limited available land to acquire as public open space, it is even more important to promote POPS in Wanhua district. As one of the priority areas for urban regeneration, land use plan of urban renewal project should

address the need for POPS and provide more incentives, i.e. bulk rewards, for private developers to provide POPS. Also, urban design code should require the design contexts of POPS to ensure the openness and publicity of the POPS.

On the other hand, most residents in the L-H area enjoy good open space environment in both quality and quantity. It has sufficient POPSs as well as public-owned open spaces. It might raise another concerns such as over-supply of open spaces and inequality of planning gain. For instance, most of the POPS located too close to other public open space and it will cause user competition and result in under-use of both good quality open space.

2. The Pedestrian flow and site plan of POPSs

According to the fundamental purposes of providing POPS, the location choice of open/public space can have significant impact on connectivity of the overall pedestrian network. In other words, the location and spatial configuration patterns of POPS in each development site can be a facilitator for the overall enhancement of pedestrian environment.

From the comprehensive survey of POPS conducted in our research, different design approach and spatial configuration patterns would affect actual usages of POPS. For instance, the plaza type POPS is more attractive for local people, but the utilization rate also related to its design for the level of pedestrian friendly. Furthermore, we compare the POPS developed by different developer, government and private, and realize that POPS developed by private developers usually has poor openness than the one provided by public developers.



Figure 6. Shinyi District Case: Pedestrian flow and POPS

The Space Syntax Analysis conducted in two districts where POPSs mostly clustered further confirms that the existence of POPSs in both districts enhance the connectivity and pedestrian flow. For instance, in the Shinyi District, by adding all POPSs to the connectivity evaluation, the average connectivity value (C_n) increases from 4.422 to 4.674. Also, the average global integration value (R_n) increases from 0.709 to 0.803. (Figure 7.) It is to say, at the district level, when considering granted permission of POPSs, local planners should take the location and the potential contribution to the overall pedestrian connectivity into account.

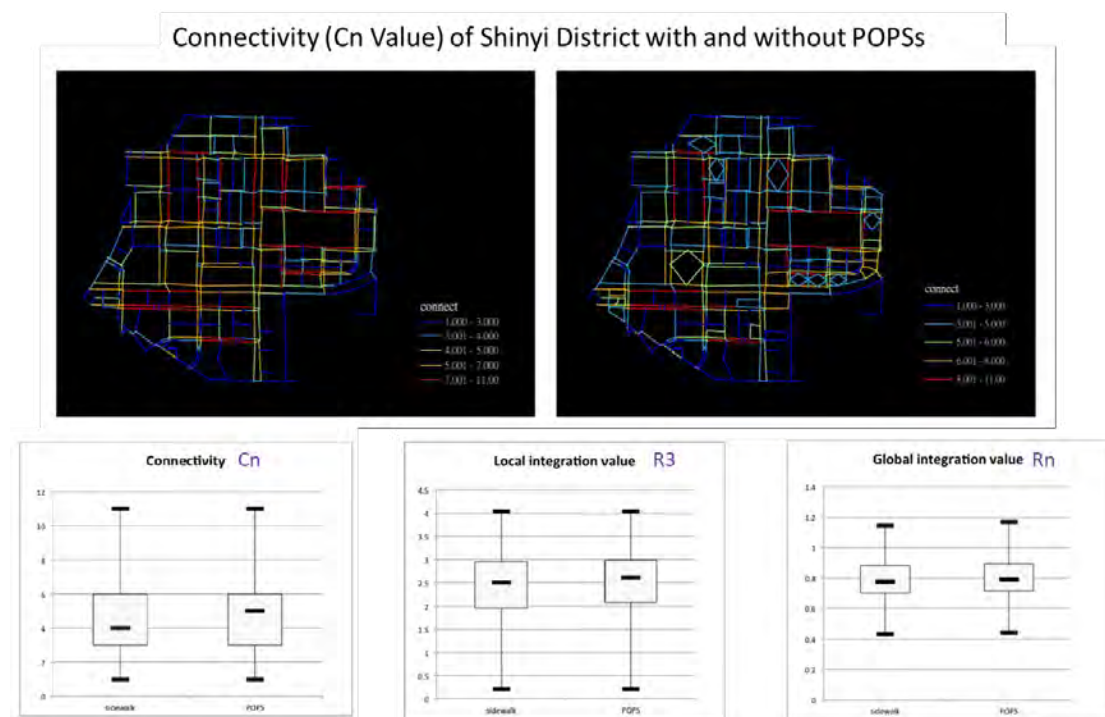


Figure 7. Space Syntax Analysis result of Shinyi District

3. The activities and the design of POPS

The other important expectations of POPS is to promote social interactions and activities at the single site level in terms of place-making. However, a place has to be visible first for people to have interactions in it. In the cases of Taipei city, we realize that although the regulations required the POPS to open to the public and property owners to design the place accessible for the public, most of them still intentionally 'design' to be less visible for users from outside. Eight spatial configuration types of POPS were selected to do the Visibility Graph Analysis in Shinyi District. Figure 8 illustrates the result of one case. The POPS in the following case was allocated at the

back-side of the main building and away from the main road. The visibility graph map indicates the POPS was not visible from the main road where most pedestrian would pass by without noticing the existence of such public space. As a result, very few activities occurred in the POPS and it is almost impossible to enhance the social interactions between POPS users.

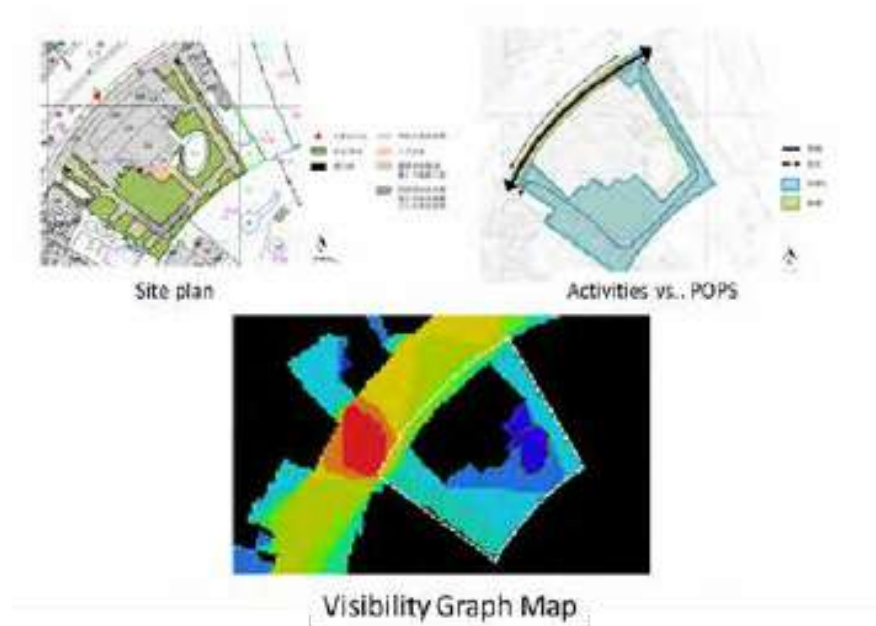


Figure 8. Visibility Graph Analysis

CONCLUSION

This paper presents the results of our 3-phase systematic research of the actual function of POPSs in different spatial level. First, we examined the relationship between existing POPSs and the public open space system in the Taipei City. Second, we evaluated whether the POPS can enhance the connectivity of public spaces and provide a better walkable path network for urban pedestrian at district level. Thirdly, we investigated the design and spatial configuration of POPS in each development projects to see if such space can enhance the social interactions.

The research results confirm that POPSs in Taipei fail to function in terms of fulfilling urban planning aim and enhancing public interests. At urban master plan level, there is no overall considerations of the possible collaboration between public-owned and privately-owned public space. According to the LISA analysis result, Wanhua district, the most deprived area, lacks both open space and POPS but Songshan district, the prosperous area in the city, has too many POPS and public open space at the same time. This raise a concerning issue of the fairness of public interests due to the

inequality of public space distributions. Hence, there is an urgent need for city-wide planning, design and locational guidance for POPS. From local scale investigation result, the plaza type POPS and POPS developed by government have better design quality than the other type and could stimulate more activities in it. Also, the location decision of the POPS in single building site should be further examined before the permission granted in order to ensure the visibility of such areas for all citizens. Finally, due to the housing price and real estate market will influence the developers' decision of providing POPSs, as a result, the distribution of POPSs don't match the demand of open space. Therefore, this study recommend that floor area incentive standard should be different according to the availability of existing open space. More incentives should be granted in the area which lacks of publicly-owned open space. The concept and purpose of open space system, both public-owned and privately-owned, should be included in detail plan as a guiding principles. In addition, in urban design review process, we should require proper location choice and design for future POPSs to facilitate the positive social interactions among users.

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Analysis and Research of Urban Street Functions Based on GIS

: A Case Study of Xuhui District, Shanghai, China

Luning DAI

Abstract: In the context of the shortage of public space resources in large cities, the concept of "Street Space Renaissance" has been reintroduced, and the social attribute of urban streets as public space have been reemphasized. Street vitality is one of the main indicators to evaluate the social attribute of urban streets, and it is also the main target of urban street design and control in recent years. In this paper, GIS technology is used to evaluate the vitality of streets of different functional types, which makes up for the deficiency of ignoring the functional properties of streets when evaluating the vitality of streets by spatial syntax. This paper takes the Xuhui District of Shanghai, China as an example and comprehensively analyze urban facilities' POI data of different functions (commercial, office, residential and public service facilities, etc.) to identify the density, mixing degree and the dominant nature of the street functions, and using the three indicators to identify the characteristics of urban streets. The research found that: (1) In the area of Xuhui District, according to different types of infrastructures' POI data, the streets present different functional features. (2) At the overall level, the street vitality shows a certain correlation with the mixing degree and density of the street functions. For example, the streets in the northwest of Xuhui District bordering with Changning and Jing'an District are more active. On the contrary, the vitality of the streets' in the southern part of Xuhui District and the eastern part near the Huangpu River are generally weak, whose overall development are not perfect. (3) At the meso level of street vitality, the street sections at the intersection are more dynamic than the middle sections. (4) Xuhui District has the highest proportion of streets dominated by the functions of public services and public management, followed by commercial and business streets, and finally residential streets. In general, Xuhui District has strong public functional features and high public service capabilities.

Keywords: Street function, street vitality, street function density, street function mixing degree, the functional nature of the street, GIS, POI

1 Introduction

As the main carrier of urban traffic, the street mainly bears two attributes in the development process of the city: the transportation as the medium of communication and the sociality of the public space function^[1]. Different street patterns represent different social and economic needs. In the era of pre-management, the street forms all showed small-scale, network-interlaced features, accompanied by a narrow road width^[1]. This community-level street organization served the town life at that time, such as the Beijing City Square in Qing Dynasty of ancient China and the streets of medieval European cities^[2]. However, this street pattern has gradually declined with the rise of motor vehicles. People's requirements for regional accessibility have gradually increased. In order to adapt to large carriages and trams, the streets have gradually widened, and the infrastructure properties of the streets have gradually surpassed the public space. Social property dominates. People's feelings about the initial "city" culture of the street are gradually decreasing. In recent years, the concept of "revitalization of street space" has gradually been brought forward, and the social attributes of the streets as the public life stage of the citizens have begun to be re-emphasized by the public^[3]. The functional layout of the street determines the vitality and nature of the street, which in turn determines the value and atmosphere of the surrounding plots.

At present, the research on the functional layout of the street level is mostly related to the

vitality of the street. It is considered that encouraging the diversified activities in the street is an important method to improve the attraction of the street. The decrease in the diversification of street functions is the main reason for the decline of street vitality^[5]. At present, the quantitative research on street function and street vitality in academia is mainly based on the use of facility POI and mobile phone signaling data proposed by Ying LONG et al to establish street vitality quantitative evaluation methods^{[4][6]}, and there also are methods based on SD method and the field investigation method from the human perception to describe the street vitality more qualitatively^{[7][8]}. However, there is still not to many methods on quantitatively measuring the vitality of street functions and determining the nature of streets.

This study mainly uses the POI data of urban diversified facilities to determine the vitality of the street from the mixing degree of street functions (that is, the degree of diversification of street functions) and the density of street functions, and further determines the dominant nature of the street through the proportions of each function of the street. This paper aims to conduct a more comprehensive study of the function of urban streets from the above two dimensions, and then to discover the characteristics of spatial function layout of the study area through the street level.

2 Research scope, data and main functional indicators of urban streets

2.1 Research scope and data

(1) Research scope

The scope of this study is Xuhui District, Shanghai. Xuhui District is located in the southwestern part of Shanghai's central city. Xuhui is one of the central urban areas that completed the renovation of the old district in the early time. The railway, waterway, interchange and elevated roads in Xuhui District crisscross, so Xuhui is the main thoroughfare for the city center to enter and exit the districts including Minhang, Fengxian, Pudong New Area, Jinshan, Qingpu and other provinces such as Jiangsu, Zhejiang, Anhui, Guizhou and Guizhou. The interior construction and development of the streets system in Xuhui District is relatively complete, and the urban functions are more diverse and complex, which is more in line with the theme and requirements of this research.



Figure 1. Location map of Xuhui District, Shanghai

(2) Data source

① Road network: The road network of this study is drawn according to the main and secondary roads of Baidu map, and the node is interrupted for the research in the later GIS platform.

② POI map data: In the "Shanghai Street Design Guidelines", it is mentioned in the street function that "passenger transportation is mainly divided into four purposes: commuting, business, life and leisure." In the sixth chapter "Vibrant Street" suggests that functional compounding is one of the primary goals of street furniture^[9]. The classification of street function types by Long Yu et al. is divided into eight categories after screening for POI: government agencies, transportation, commerce, education, corporate, residential, green space and others^[4].

This paper sets up the street function evaluation indicators based on "Urban Land Classification

and Planning and Construction Land Use Standards (GB50137-2011)”, and divides the collected urban multi-type facilities into five categories (see Table 1).

Table 1. POI data classification of urban facilities in Xuhui District, Shanghai

Category	Content
A (Public Management and Public Service)	Administrative institutions such as government agencies, libraries, hospitals, schools, etc.
R (residence)	Residential
B1 (commercial)	Commercial service facilities such as shopping malls, supermarkets, restaurants, bars, beauty salons, pedicure shops, etc.
B2 (business office)	Business office building
G (green space)	Parks, street greens, etc.

2.2 Main function indicators of the street

Measuring the vitality of the street and judging the functional nature of the street in the area are the two ultimate goals of building the street function indicator system. Details as follows:

(1) Street vitality indicators - Street function density, Street function mixing degree

Based on the analysis of five types of urban facility POI data, this paper first measures the street functional density and street function mixing degree, and then derives the first-level indicator—street vitality based on the above two secondary indicators.

① Street function density, defined as the ratio of the total number of POIs to the length of each street within the 50m buffer range on both sides of the street.

② Street function mixing degree, according to the definition formula of Ying LONG et al, which can be expressed as:

$$\text{Diversity} = -\sum(\pi_i \times \ln \pi_i), (i=1, \dots, n)$$

In the formula, Diversity represents the functional mixture of a street, n represents the number of categories of the street POI, and π_i represents a certain type of POI.

The proportion of POIs in the street is normalized. The normalization method is the ratio of the number of POIs in the street to the number of all kinds of POIs in the researching area.

(2) Determination of the functional nature of the street

Defining a certain type of POI exceeds 50% of the total POI in the street radiation range, then this type is the dominant function of this street; if each type of POI on the street is more balanced, there is no more than 50% of the POI, then the street is determined to be a mixed type function; if there is a street that does not judge the proportion of the POI type, it is determined to be of an unknown nature.

3 Street vitality measure

3.1 Analysis by different function types

Based on the five types of urban POI data, namely public service and public management, residential, commercial, business office and green space, the characteristics of the sub-function types of urban streets are analyzed. Measure the number of POIs of each functional type facility in Xuhui District, and use the GIS platform to form a thematic map, and then analyze the spatial layout and characteristics of different functional types of streets (Figure 2).

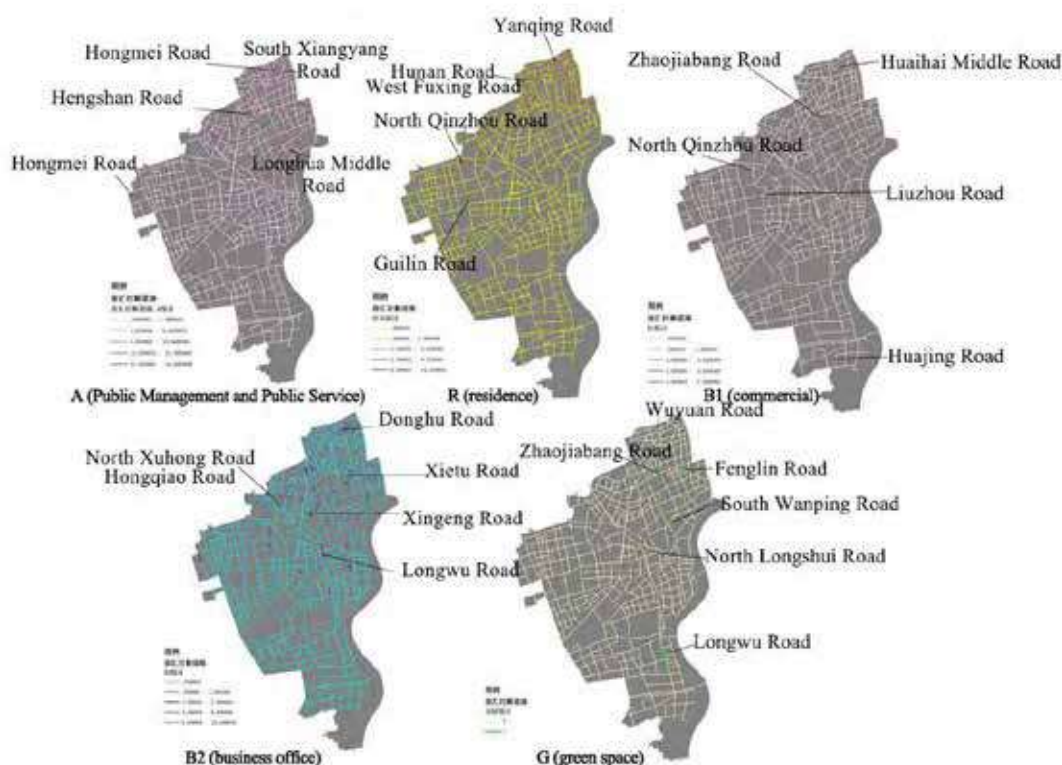


Figure 2. The quantity distribution of five types of facilities' POI in Xuhui District

(1) Public service and public management

The selection of public services and public management urban facilities in this study mainly includes administrative agencies, cultural facilities (schools and libraries), hospitals, etc. The analysis shows that in the Xuhui District as a whole, the number of public service and public facilities in the north is significantly larger than that in the south. The most prominent streets are Huaihai Middle Road, Xiangyang South Road, Hengshan Road, Longhua Middle Road and Hongmei Road. Among them, Hongmei Road is covered by Shanghai Xinmei Art Museum and some science and education cultural facilities in the Caohejing Development Zone. Hengshan Road is located in Xujiahui, Shanghai's vice center. It has relatively complete public service and public facilities. Longhua Middle Road The outstanding performance is due to the concentrated layout of various cultural facilities in Xuhui Riverside.

(2) Residence

The distribution of residential functions in the streets of Xuhui District is similar to that of public services and public facilities, mainly concentrated in the north; but at a more micro level, the streets with dense residential buildings are distributed in the periphery of public service and public facilities. The situation of planning layout in reality, such as Huaihai Middle Road.

(3) Commercial

The performance of Xujiahui streets' commercial functions is different from that of public service and public facilities which gather in the North District. From the entire Xujiahui area, each district has a prominent street in the number of commercial facilities: Zhaojiabang Road, Zhaojiabang Road is an east-west traffic trunk, with various types of commercial plazas and hotels, as well as Liuzhou Road in the Weihe area, and Huajing Road in the Huajing area. Forming the respective commercial centers of each large area meets the realistic requirements of planning.

(3) Business

The streets with more layouts of Xujiahui business facilities are offset to the south, including Longwu Road, Xuhong North Road and Hongqiao Road, Xingeng Road and Nandan East Road, and Donghu Road in the north. The Hongqiao Business District has a radiation impact in Xuhui District.

(4) Greening

The distribution of the streets in Xuhui District with a lot of greenery (parks) is mainly close to the Xuhui Riverside, forming a strip-shaped line. There are north to south including Wuyuan Road, Qijiattun Road, Fenglin Road, Wanping South Road, Longshui North Road and Longwu Road.

3.2 Street vitality measurement

The measure of street vitality is mainly considered from two aspects: the density of street functions and the mixing degree of street functions. Among them, ① street functional density refers to the ratio of the total number of various facilities within the 50-meter buffer zone on both sides of the street to the length of the street, ② the formula of the street function mixture is as mentioned above, $Diversity = -\sum(\pi_i \times \ln \pi_i)$, ($i=1, \dots, n$).

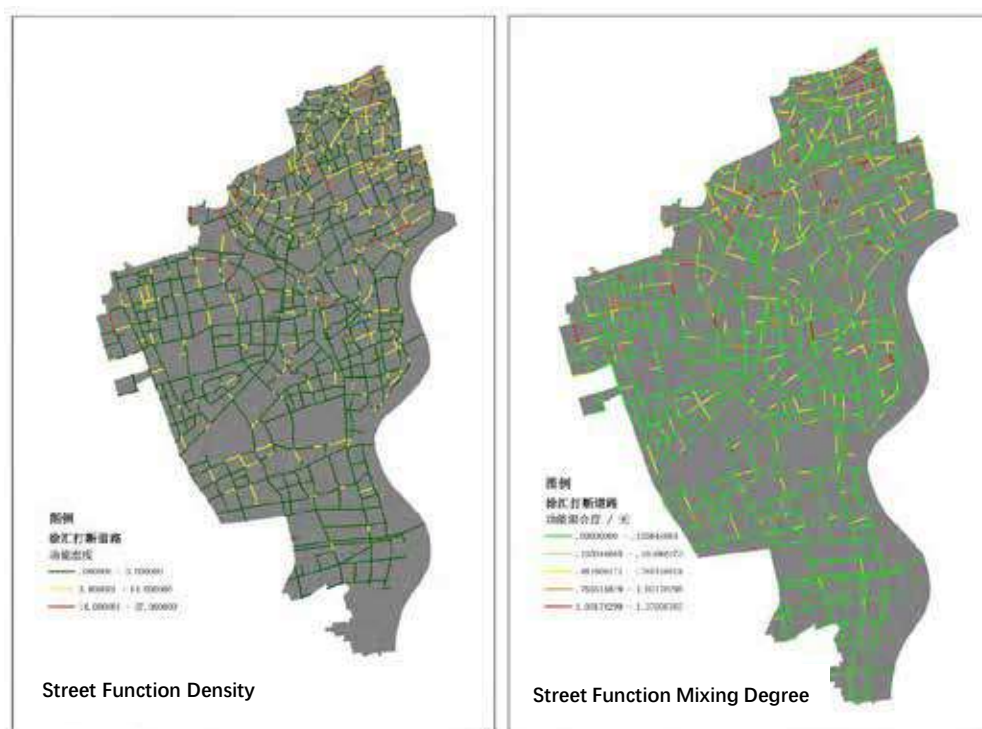


Figure 3. Street function density and street function mixing degree

The density and the mixing degree of street function map are formed by the superposition of five types of POI facility data.

Based on the above two sub-indicators, they are weighted and superimposed at a ratio of 50% each, and finally form a thematic map of street vitality and its nuclear density (Figure 4). From the maps, it can be found that Shanglin Road and Guilin Road around Huaihai Middle Road, Xuhong Road, Xietu Road and Caohejing Development Zone are all high-energy streets. From the analysis of the entire administrative area of Xuhui District, the northern and western parts of Xuhui District are areas with high street vitality, while the opposite is true for the southern part of Xuhui District

and the riverside area. Among them, the number of facilities in the southern part of Xuhui District (Huawei District) is very small, and the overall level is weak. The public service and public management and greening facilities in the Xuhui Riverside area perform well, but in residential, commercial and business areas. Functional development is weak, which directly reduces the function mixing degree of streets in the area.

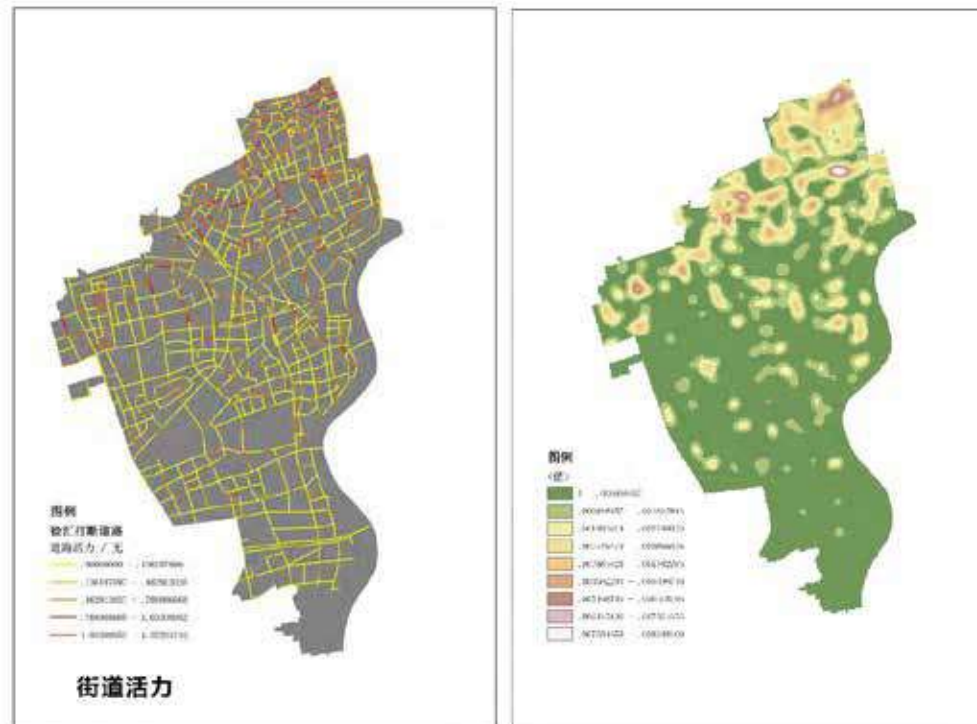


Figure 4. Street vitality and its nuclear density map of Xuhui District

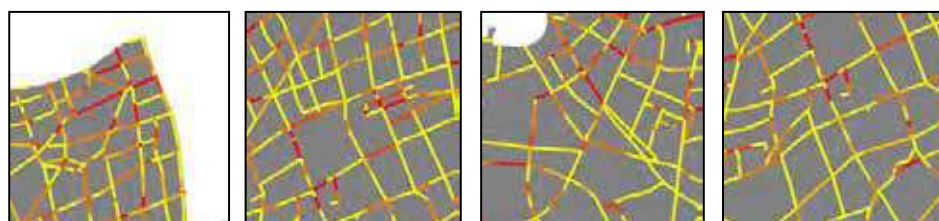


Figure 5. Street vitality at the intersection of Xuhui District

When breaking the road, this paper breaks a street into three sections according to the intersections at both ends, and finds that even in the same street, the streets at both ends of the intersection are more energetic (Figure 5). This aspect reflects that in the layout of various types of facilities in the city, the overall tendency is to arrange facilities around road intersections with better accessibility to obtain higher popularity and consumption.

4 Identify the functional nature of the streets

According to the criteria for determining the nature of urban streets mentioned above, the nature of the streets in Xuhui District is divided into four categories (there is no street dominated by the functional nature of green space), and a thematic map of street nature is established on the GIS platform (Figure 6). After excluding streets of unknown nature, the results showed that the number of the function nature of public service and public management streets accounted for up to 50.64%,

the residential nature of the streets accounted for 15.18% of the total, the commercial nature of the streets the least, accounting for 0.28%, the nature of business office The streets accounted for 31.21% of the total.

Therefore, within the scope of Xuhui District, the number of non-profit public service and public-managed streets accounts for the largest proportion, followed by business and commercial streets with offices and markets, and finally residential streets. It is found that in the Xuhui District, the public social property of the street is strong. Most of the street functions in Xuhui District are for the public service. The number of streets dominated by residence is not large. In addition, there are very few streets dominated by the nature of commercial facilities. This shows that in the configuration of facilities on both sides of the street, the number of facilities mainly based on commercial shopping consumption is very small. This function is usually associated with other functions such as office and residence. Such as the use of configuration, such as Huaihai Middle Road K11 and other commercial office square development model.

At the level of the inner area of Xuhui District, the streets of various natures in the north are more balanced and more complex in the south. This is related to the development of the southern district, and various facilities, especially commercial and business office facilities.

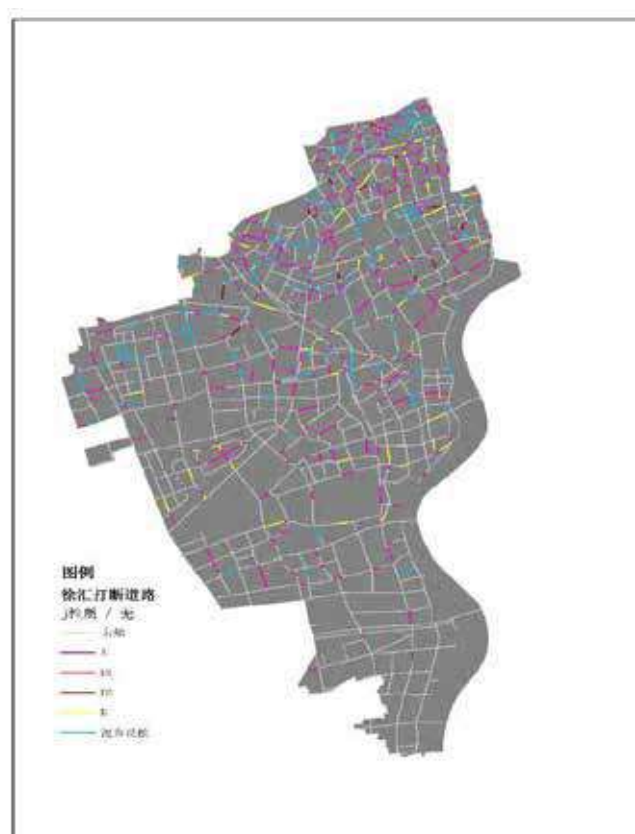


Figure 6. The functional nature of the street

5 conclusions and discussion

From the perspective of street function, this paper conducts quantitative measurement and judgment on the street vitality and street functional nature of Xuhui District in Shanghai through the analysis of POI data of various facilities in the city. This paper mainly uses the GIS big data

analysis method, which is different from the traditional method based on spatial syntax analysis of street vitality, and it is more explanatory than the latter^[4]. At the same time, this study aims to construct a street vitality assessment system at the urban level. The street function density and street function mix are the two main sub-indicators of street vitality; the two sub-indicators are based on five categories (public service). It is superimposed on POI data of different cities with public management, residence, business, business office and greening.

(1) Main conclusions

This study mainly draws four conclusions:

- ① In the scope of Xuhui District, the street functions under different types of POI data are different. The streets with outstanding public service, public management and residential functions are mainly concentrated in the north. And all small areas have several outstanding performance commercial streets. Streets that perform better in commercial are shifted to the south part of Xuhui District, and the streets with outstanding greening functions are distributed along the riverside.
- ② In the overall vitality of the street, the streets in the northwest of Xuhui District are adjacent to Changning District and Jing'an District. On the contrary, the streets in the south of Xuhui District and the riverside are generally weak, and the number of facilities in the city is small and the mixing is low. The overall development is not perfect.
- ③ At the local level of vitality of the street, the street sections at the intersection are more dynamic than the middle section in the street.
- ④ Through certain evaluation indicators, the functional nature of the streets in Xuhui District is identified. It is analyzed that the streets with the same public service and public management nature in Xuhui District have the highest proportion, followed by the commercial and business office streets, and finally the residential streets; therefore the function of streets' in Xuhui district of the district has strong public attributes and a high service capacity for the public.

(2) Disadvantages and improvements

In this study, only Xuhui District of Shanghai was selected as a single research object. Without horizontal comparison, other objects should be added to the future research to conduct comparative analysis of multiple cases, making the nature of the research object more prominent.

At the same time, the article has not tested the relevance of the segmentation type of POI data and the correlation between various POI data and street function vitality indicators. In the future, we can further study the impact of various POIs on the final street vitality index and conduct in-depth analysis.

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By no place to public space: a new resource for Capua

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Abstract: Capua is one of older cities in Caserta province and today its socio-economic, spatial, social, economic and settlement disequilibrium is clear. The analysis done discloses functional, social and physical degradation of the city and the missing of identity, mixed with phenomena of urban disorder and social and environmental degradation. Very often, infrastructures and social services miss as well. This deficit of public space takes to the creation of denied territory, localized in urban and rural areas. The area of ex assistance camp for foreign refugees – Ex C.A.P.S., our case study, is between the historical centre and housing buildings realized over the 80s-90s. Thanks to Law Scelba (1952), ruling assistance to refugee, this area is destined to a "Campo di Accoglienza", used to host refugee coming from East Europe. Nowadays, the area is not destined for anything and is a state of abandonment and misses its identity. It is neither an empty nor a dismissed area. It might be considered a non-place, without any value, any functional link with the context and with no social aim. It is a marginal place since Institutions have ignored it for years. The aim is to revitalize this area starting from its criticalities, such as accessibility, green and parking areas, services, infrastructures and the missing of social integration through the creation of a big urban park full of utilities and housing buildings. As for accessibility, pedestrian, cycling and driveway paths have been thought to improve it. The last, and maybe the most important, criticality deals with the missing of social integration since the area is not functionally connected with the context. A mixed housing park has been created in order to overcome this criticality. No distinction between public and private buildings has been done in order to achieve a social, functional and housing mix against mono-functionality of peripheral areas.

Keywords: public space, disequilibrium, revitalization, mixité

Introduction

The following work aims at the creation of a recovery project for the area called Ex C.A.P.S., that is the ex assistance camp for foreign refugees, a public space taken away from the population and become denied territory. It is an area of 132,863 square meters, in the shape of a very elongated rectangular trapezium, located in the municipality of Capua along the Via Martiri di Nassiriya. The first phase of the research consists of a historical investigation that clarifies its evolution, its urban structure and in particular its resources and its problems. The second phase consists of a territorial study of the city of Capua in the PTCP, to understand the inclusion of the same in the provincial context and in particular to know the directives in place. After a territorial analysis, we moved on to the study of the existing and existing urban planning tools in order to understand the choices of the administrations and the related effects that these have had on the morphology of the city. The study of the area is the next step both from a regulatory and urbanistic point of view. Finally, a proposal is made for an intervention aimed at revitalizing the same and aimed at the development of sustainable tourism.

1. Capua: resources and problems

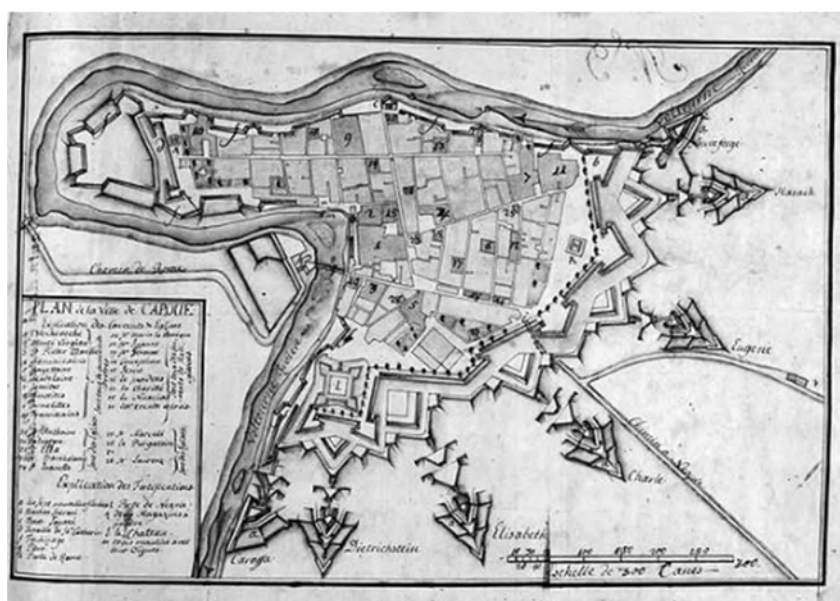


Figure 1. Plan de Capoue [Fonte: Joseph Jerome De la Lande, 1807]

Capua possesses considerable naturalistic-environmental and landscape assets that affect the municipal territory: the Volturno river and the area subject to landscape constraints at the foot of Monte Tifata and Monte dei Lupi, which also includes part of the hamlet of Sant'Angelo in Formis and the two SCI areas "Volturno e calore Beneventano" and "Monte Tifata" (Figure 2-3). Moreover, considerable historical and cultural heritage should not be underestimated: the architectural and monumental elements of value including the bell tower of the cathedral and the towers of the *federiciana* gate. In this context, a strong tourist-religious value is given by the nearby village mentioned above, where are located the Benedictine Basilica, a religious complex of medieval origin candidate to become a UNESCO¹ World Heritage Site, the cathedral of St. Stephen and Agatha founded in '856 but rebuilt in the tenth century. Therefore, the tourist potentialities of the territory are to be considered great, linked to the fruition of the rich naturalistic-environmental and architectural patrimony as well as to the rediscovery of the small historical centre rich in identity and traditions.



Figure 2. Basilica di Sant'Angelo in Formis



Figure 3. Monte Tifata

¹ The application was submitted by the National Commission of Unesco Italy, after a careful analysis in the context of the selection of Mibact.

The city of Capua, as Robotti (1996) writes, shows the liveliness and originality of a compact urban environment, an authentic small capital of the Campania hinterland². The courtesy of the context is enhanced by the uninterrupted presence of both the bishop's seat and the military complexes. In Capua, in fact, works ranging from the Roman age to the nineteenth century, such as palaces and green spaces, churches and convents, barracks and fortifications, merge admirably. All this is enclosed in the wide bend of the Volturno river and in the mighty sixteenth-eighteenth-century bastion walls. The first inhabitants were of Campania, Lombard, and Latin origin; they came in 856 from the Roman Capua, today's S. Maria Capua Vetere, an Etruscan town later destroyed by the Romans. This was rebuilt and had a flourishing life throughout the imperial period, but was devastated again after the invasions and destruction of the Visigoths and Vandals. The earthquake of 685 caused serious damages and changed its appearance. In 817 the ancient Capua became a gastaldato and later - in 841 - a modest county to the dependence of Benevento, but later the Saracens destroyed cities and surroundings. It was after such devastation that the Capuan community moved to the banks of the Volturno. Of another Capua, indicated with the name of Sicopoli, we have news around the year 823. It was a small town built near the sources of Triflisco on a hill of Mount Palombaro overlooking the plain of Campania and much of the valley in which flows the Volturno. After the destruction of ancient Capua, Sicopoli then began to take the name of Capua³. Abandoned Sicopoli, because of the numerous fires that made it unsuitable for defense, the community founded in 856, in just two years of work, Capua Nova in memory of their ancient city from which they fled after the looting Saracens.

Since the foundation of the new city (856), in fact, the importance of the strategic position of the settlement has been understood both with respect to the Volturno river and with respect to the two main road axes of ancient times, the Via Appia and the Via Latina. In particular, the relationship with the Volturno was decisive for the economic life of the city, as it was not only a defensive element but also a source of wealth, as it was navigable at least until the end of the Middle Ages, constituting a fundamental communication route for trade.

The prevailing original character of Capua is to be found first of all in its role as a fortress to defend the territory, which allows us to interpret the magnificence of the city and at the same time its peculiarity as a bulwark city. The Capuan economy, however, went into crisis after 1860, when the city was deprived, after the unification of Italy, of its strategic military role and, at the same time, the progressive restructuring of the transit routes and the development of the railways made it lose that prosperity linked to the favorable geographical position. Moreover, the interruption of the fortification works that the Bourbon government had undertaken led to a sudden drop in the demand for labour, which was an important source of alternative employment to work in agriculture. With the post-unification crisis of the ancient productive structure, agriculture remained the driving sector of the local economy, even if the particularly fertile soils produced to a lesser extent than their potential, due to the backward methods of cultivation, the absence of adequate irrigation systems and the existence of large swampy areas. The economic crisis was also reflected in the demographic trend: from 1871 to 1901 the population increased by only 969 units. The industries were few and small, being mainly small quarries and brick factories located in the outskirts of the city. The only large industrial plant was the Military Pyrotechnic Laboratory, moved in 1857 from Naples to Capua, located in the castle of Carlo V.

The loss of the ancient role upset not only the economy but also the structure of the city. The walls were now useless and harmful to urban development outside the walls of the old town, while the many buildings that housed barracks, convents and welfare facilities connected to them, deprived of their original functional use, were abandoned to progressive degradation or underwent a series of functional changes. In the period between the First and Second World Wars the social and economic situation went through a positive phase, as some large industrial plants were established. In 1938 the sugar factory was born, then the cellulose factory - which in 1948 gave way to the Pierrel pharmaceutical industry - and a series of plants for the

² Robotti C., 1996, *Capua. Città d'arte*, edizioni del grifo, pag. 7.

³ "Capuae quae est Sicopolis" as writes Leone Ostiense, *Cronaca*, libro 1, cap. 26.

processing of hemp and residual products. Since the 1930s, with the construction of the second bridge over the Volturno, the development of urban areas outside the city walls began. From that moment on, we can talk about a real historic center distinct and separated from the new neighborhoods. One of the districts that today, however, still are in situations of maximum degradation is that to the south of the city, where there is the former CAPS area.

2. Capua in the PTCP

The Territorial Coordination Plan of the Province of Caserta⁴ is based on the principle of environmental recovery and requalification to protect the physical integrity of the territory and the landscape (Figure 4).

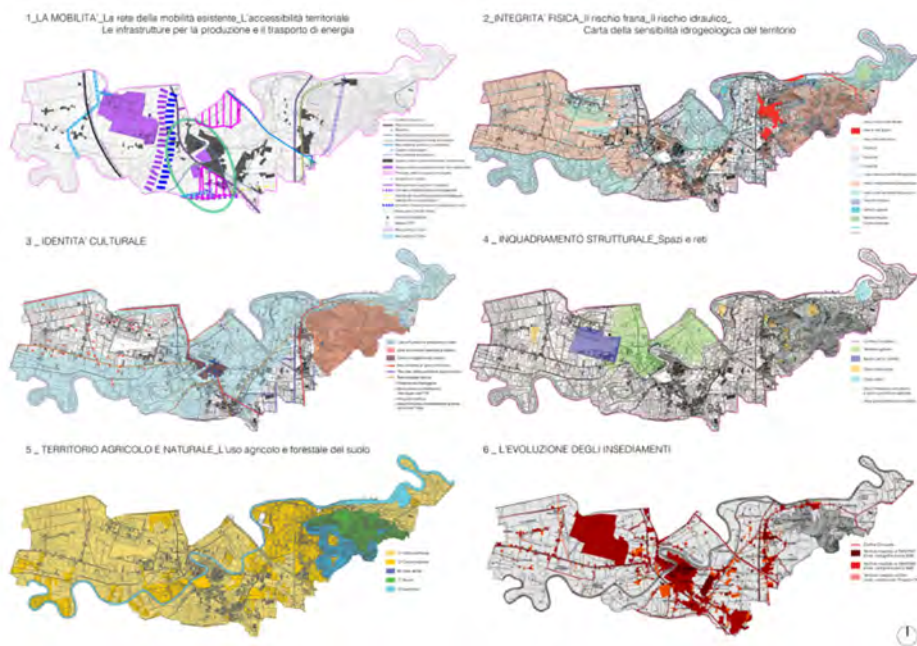


Figure 4. Summary of the Caserta PTCP [Source: author's work]

The analysis work at the base of the PTCP of Caserta has shown, first of all, strong socio-economic and territorial imbalances that characterize the provincial settlement structure. The PTCP divided the provincial territory into six settlement areas⁵ and the municipality of Capua falls within the "Settlement area of Caserta". This area is characterized by a deficit of public, a large amount of "denied territory" and includes the conurbation Caserta, formed by the interweaving of settlements grown around the Via Appia, from San Felice to Gate Caserta and Marcianise, Santa Maria Capua Vetere to the modern Capua. The first objective of the PTCP of Caserta concerns first of all the correction of the tendential settlement pressure that afflicts the areas of conurbation and defines a precise regime of sizing of the municipal plans aimed at stopping the population growth and the consequent congestion of the municipalities with higher density. The action of rebalancing is configured as an essential objective of the PTCP, starting from the consolidation of the settlement weights, which is required to contribute to all municipalities in the province to a certain extent, regardless of real growth and demographic trends⁶.

The PTCP also documents that the settlement imbalance has been accompanied by extremely worrying phenomena of urban disorder, environmental degradation and wear and tear of territorial resources,

⁴ Approved by Deliberation of C.P. n.26 of the 26 aprile 2012.

⁵ Rules of the PTCP, Title I. General provisions, Art. 2, Settlement areas.

⁶ Preliminary Report, PUC 2018, A.1.2 - Provincial Territorial Coordination Plan.

specifically resulting not only from the extent, but also from the morphology, of the settlement developments that have taken place in recent decades and their practical implementation, which is often approximate and out of control. These problems are being solved by focusing on a polycentric type of "discontinuity of inhabited centres in the countryside", based on the differentiation between open rural territory, to be taken away from any form of incongruous expansion, and "urbanised territory", to be reconstituted. It should also be noted that the "denied areas" of rural and open space are not only those polluted by illegal landfills, but also all those in which activities and buildings are located in clear contrast to the environmental values of the context, and in general all areas affected by critical issues that await urgent resolution.

The PTCP attributes a fundamental role to the rational re-use of the "denied areas" present in urban agglomerations, which are the same as the "denied areas" scattered throughout the open rural space mentioned above. They are all those areas belonging to both the urban system and the open space system, without a uniquely defined function and marked by clear signs of degradation⁷. The recovery of these denied areas is the instrument through which the receptive/habitative capacity of some districts can be increased, or the equipment and services can be integrated. In the municipality of Capua 114 denied areas have been catalogued (Figure 5), for a total of 125.45 ha and the PTCP has classified these areas in:

1. Urban areas;
2. Areas of infrastructure relevance;
3. Areas of open space;
4. Quarries;
5. Areas with waste accumulation;

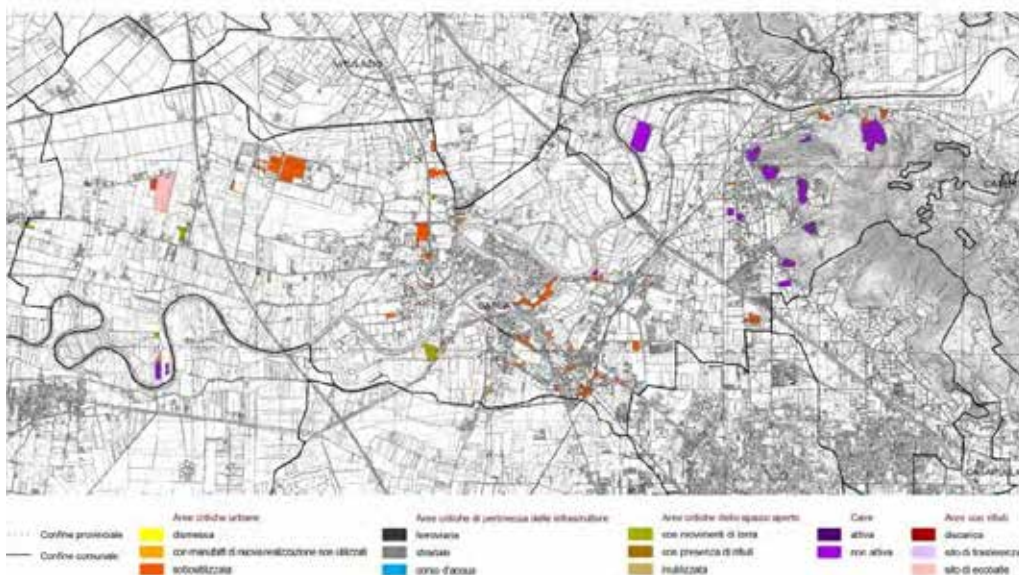


Figure 5. Mapping and classification of denied areas of Capua [Source: author's elaboration]

Analyzing the map, it can be seen that there is a strong prevalence of urban areas denied underutilization and prevalence of active quarries, but in the municipality there are other areas that although being abandoned and decommissioned are not present in the table of PTCP, as they are waiting for the programs of redevelopment

⁷ PTCP Caserta Report, *The territory of illegality, The denied areas*, p. 222.

and/or enhancement planned for these to be implemented. This is the case of the area under study, the ex C.A.P.S..

Another issue to be resolved in the PTCP is the lack of civic identity, often accompanied by a real lack of equipment and social services, which affects the suburbs and – more generally – the recent developments in the urban fabric of many municipalities in the province. As far as the historical centres are concerned, the PTCP provides for this:

1. recovery;
2. the rehabilitation and upgrading of settlements.

3. Capuan urban planning instruments: from the PRG to the PUC

The cornerstone of the urban planning instruments in force is the General Regulatory Plan (PRG) adopted by the municipal administration in 1972 and in force since 1976 (Figure 6).

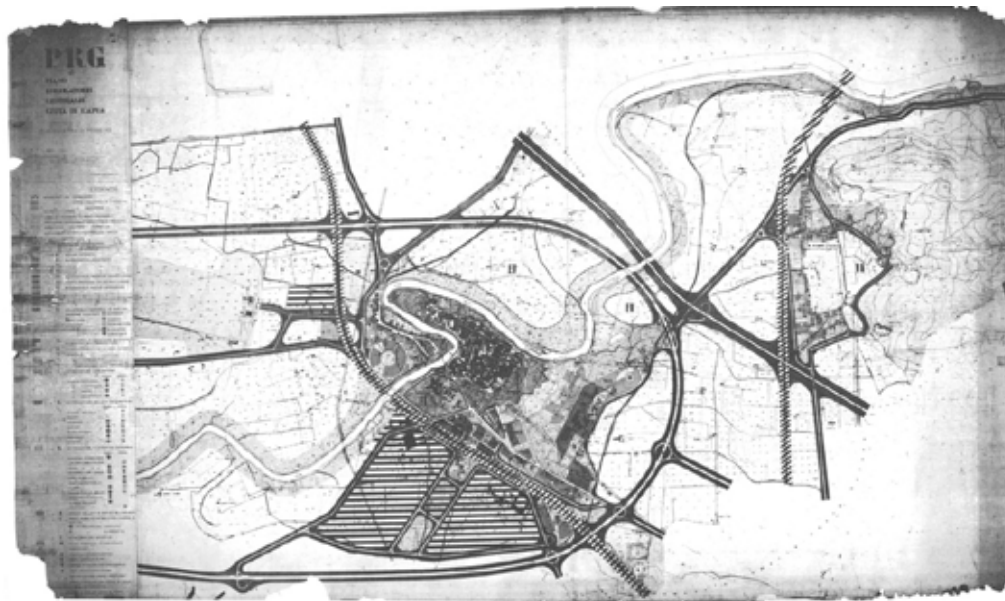


Figure 6. PRG 1974 [Source: Municipality of Capua]

Downstream of the PRG, several residential interventions have been carried out with the instrument of the Zone Plan⁸. In addition, there are three variants specific to the PRG:

1. a first one adopted in 1977, in force in 1978 but returned by the Campania Region without a conformity visa, concerned only zone D3 for production activities;
2. a second one, adopted in 1986 and in force in 1987 but returned by the Province of Caserta in 1993 with negative results, concerned the establishment of the CIRA (Italian Centre for Aerospace Research);
3. a third, adopted in 1994 but returned to the municipality with negative results in 1996, concerned the production areas.

⁸ Article 19 of Law 328/2000 identifies the Zone Plan as a strategic tool for the governance of territorial social policies. The Plan is the instrument through which the Local Authorities redesign the integrated system of social services that the Area has, with reference to the strategic objectives, the tools to be used and the resources to be activated for its implementation.

From these problems, in fact, the need arose to prepare for the City of Capua a new tool for planning, management and regulation of future arrangements for the entire municipal territory, on the basis of the latest regional legislation constituted by the Regional Law n.16/2004 on "Rules on the government of the territory", the PUC (Municipal Urban Plan). Capua has been involved in three proposals of PUC:

1. The first proposal, in 2010, in which it was decided to start the drafting of the P.U.C. and the R.U.E.C. but, it was evaluated with "negative result" due to differences with the higher-order spatial planning and with the state and regional legislation in force. This concerned mainly the pursuit of a balanced and sustainable development of the settlement system; the redevelopment, reorganization, reprogramming of the territory and the settlements and finally the improvement and strengthening of transport networks recognizing the strategic importance of the same.
2. The second proposal, in 2012, adapted to the observations accepted, as well as to the opinions of the Superintendence, the authority of the Basin of the Liri-Garigliano and Volturno Rivers and the ASL Caserta, concerned mainly the preservation of the quality of the residential destination; the reuse of disused containers; incentives sustainable and environmentally friendly energy policies.
3. The third proposal, in 2018, which contains the key strategic points, such as the improvement of urban quality and living conditions, the revitalization of the existing city and regeneration of the built through the recovery of the old town and the redevelopment of the different districts of the city, in order to encourage a cultural tourism of the city; the impulse to socialization in order to make Capua an attractive and liveable city and finally the sewing up of the suburbs.

3.1. The disused area of the former C.A.P.S.

In the territory of the Municipality of Capua, located in a central urban area between the Old Town and the settlements built in the 80s and 90s, there is a large area of state-owned property known as "Piazza d'Armi" because in past centuries was used for military exercises by the many troops in the city. Within this area, there is also a large complex called "ex C.A.P.S.". (Figure 7) that from the early '80s until 1989, the year of the fall of the Berlin Wall, was used as a reception camp for foreign refugees coming, mainly, from the countries of 'beyond the curtain', mostly refugees waiting for visas to emigrate to the United States, but more frequently to Canada or near northern Europe⁹.

⁹ de Filippo E., Strozza S., 2012, *Vivere da immigrati nel casertano. Profili variabili, condizioni difficili e relazioni in divenire*, Franco Angeli, pag. 60.



Figure 7. State of play of the former C.A.P.S. area [Source: author's work]

However, at times, the centre also hosted the so-called Vietnamese "boat-people" and, between 1986 and 1988, a significant number of Polish refugees. Pugliese and Sabatino write about this area: "Moving on to the province of Caserta, it should be remembered that it immediately attracted attention as one of the first and main nuclei of foreign immigration in Italy from the beginning. This is due to various reasons including, not least, the presence of the Capua refugee camp where some immigrants, especially those from Eastern Europe, had settled"¹⁰. With the so-called "Scelba" Law of 1952, the procedures aimed at the creation of the C.A.P.S., to be located in Capua, on an area owned by the State, consisting of several buildings and their infrastructure, were started. Today, most of the area of Piazza d'Armi continues to be used for agricultural purposes, the area of the Camp for Foreign Refugees Reception, since its closure on 31 December 1990¹¹, has not been used officially, has not in fact a destination for use and for several years is in a state of complete abandonment.

All the Municipal Administrations that have taken turns in recent decades have had in their programs the ambitious goal of acquiring the municipal heritage not only the former C.A.P.S., but also the entire area of Piazza d'Armi. Thus they prepared programs and projects for the redevelopment of the site, which, for its strategic location, is a crucial point for the development of the city and the entire district:

- in 1998, the Municipality of Capua, for the first time, expressed its willingness to acquire the area called C.A.P.S. to allow the construction of a second level D.E.A. (Department of Emergency and Acceptance) hospital complex. In the state of the year, the P.R.U.S.T. (Programs of Urban Rehabilitation and Sustainable Development of the Territory) is proposed, in which the urban restructuring of Piazza d'Armi has been foreseen, foreseeing the realization of a great urban park surrounded and integrated by other structures and the forecast of the lodgings of the E.R.P. (public residential building);
- in 2002, the municipality of Capua, in addition to confirming the forecast of a hospital area to house the D.E.A. of level II already planned, provided for the location of a hotel and some areas of public housing type agreement;

¹⁰ Pugliese E., Sabatino D., 2009, *Emigrazione e immigrazione*, Guida editore, pag. 96.

¹¹ Calvanese F., Pugliese E., 1991, *La presenza straniera in Italia. Il caso della Campania*, Franco Angeli.

- in 2005, all the initiatives mentioned, unfortunately, did not reach a positive result, both for the intrinsic economic difficulties, but also, and above all, for the administrative-bureaucratic obstacles connected with the onerous procedure of acquisition of the state property area;
- in 2006, the Municipality ordered the start of the procedure aimed at the contraction of the loan for the above purposes, intended to finance the expenditure necessary "for the acquisition of the area called ex CAPS for the construction of the new hospital;
- in 2009, in order to redevelop the entire area, the Municipality expressed its intention to acquire the entire area owned by the State, with a total surface area of 132,863 square meters, in order to be able to create both the second level hospital structure and an articulated intervention of urban redevelopment and social activities;
- in 2010, a portion of the former C.A.P.S. area (about 38,160 square metres) was identified as an area of the municipal territory on which to build, as a variant of the PRG, Social Residential Building settlements;
- in 2013, with the enactment of Legislative Decree n. 69 of 21 June 2013¹², converted into Law n. 98 of 09.08.2013, and in particular, with the provisions of art. 56 bis¹³ on "state property federalism", it was decided that the Municipality had the opportunity to acquire the entire former C.A.P.S. area free of charge;
- in 2014, the Regional Director of the Agenzia del Demanio transferred, free of charge, to the Municipality of Capua, pursuant to art. 56-bis of Legislative Decree n. 69 of 21/06/2013, converted with amendments by Law n. 98 of 09/08/2013¹⁴, the full and absolute ownership of the property called "Ex Piazza d'Armi - ex Campo Rifughi rate";
- subsequently, in September 2014, the Public Works and Urban Planning Sectors of this Municipality completed the elaboration of the intervention program for the enhancement and transformation, after reclamation, of the area of municipal property called ex C.A.P.S., which provided for:
 1. the reclamation of the entire area as identified above (132,863 square meters);
 2. a programme for the enhancement and transformation of the area, providing for the subdivision of the entire lot into two distinct areas of intervention: the first, with a total surface area of 93,763 square meters, intended for equipment and services at local and territorial level. The second, with a total surface area of 39,100 square meters., is intended for residential construction, with a share of Public Residential Building (E.R.P.) equal to 70% of the total volume, of which 20% to be allocated to Social Residential Building (E.R.S.) and a share of Free Residential Building equal to the remaining 30% of the total volume;

To date, the PUC has confirmed the enhancement of the area with this "tool" introduced.

4. The C.A.P.S. area in the instruments in force

The area ceded by the State Property Office to the Municipality constitutes most of the original settlement of the area of the former C.A.P.S., with the exception of the area pertaining to the Chapel of San Cristoforo and the adjacent structures already used by the Pastoral Centre of the parish of S. Roberto Bellarmino, and the part occupied by the C.A.P.I. (Civil Protection Centre) of the Prefecture of Caserta. The area, located in the

¹² *Urgent measures for economic recovery.*

¹³ Art. 56-bis. *Simplification of procedures concerning transfers of real estate to local and regional authorities.*

¹⁴ Law no. 98 of 9 August 2013, conversion, with amendments, of Decree Law no. 69 of 21 June 2013. *Urgent provisions for the revival of the economy.*

municipality of Capua along the Via Martiri di Nassiriya near the Appian highway S.S.7, measures 132,863 square meters in total; it has the shape of a rectangle trapezium greatly lengthened. Numerous buildings, most of which were built in the 1950s, stand on the same particle. Part of the buildings have been demolished over the years and the resulting piles of unselected rubble are still present on site; the remaining part of the buildings are in a precarious state of maintenance and neglect. The lot has direct access from the municipal road via Martiri di Nassiriya, which runs along the border on the longest side. There are several buildings on it, built at different times, all in a very poor state of preservation and many even destroyed, with a total covered area of about 46,300 square meters and a total volume of about mc. 97,060 (Figure 8).

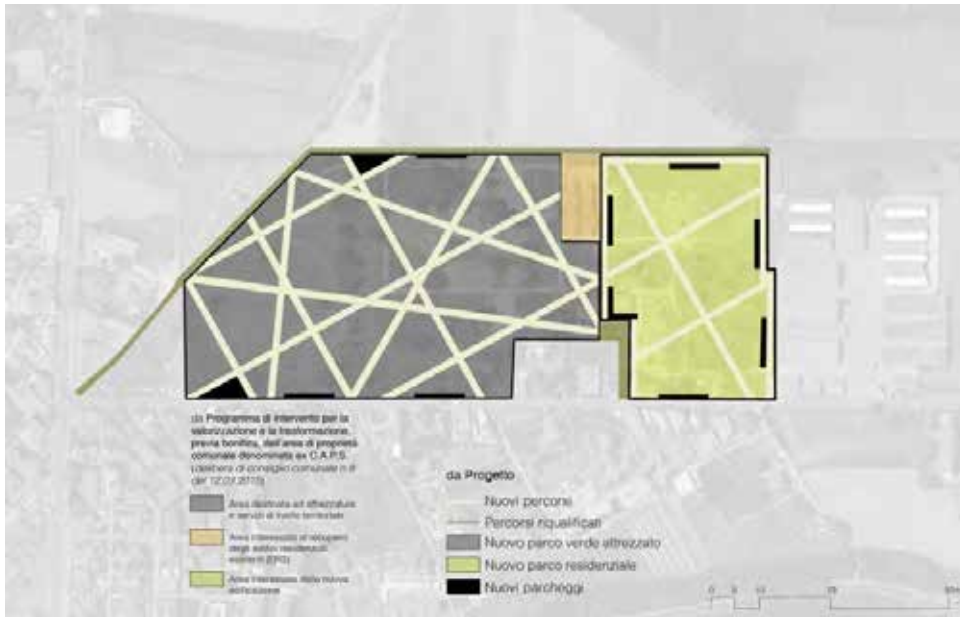


Figure 8. Performance elements of the former C.A.P.S. area [Source: author's work]

From an urbanistic point of view, in the current PRG¹⁵ (Figure 9), the soil is classified:

- for the most part as: "Br2" area, (Refugee Camp) to be renovated;
- for a part as: zone "I", equipped public park and green core;
- for the additional quota as: zone "G1", district collective equipment.

¹⁵ Approved by DPGRC n. 3889 del 26.10.1976.



Figure 9. Current PRG excerpt [Source: Municipal development programme for the former CAPS area]

In the PUC adopted in 2012¹⁶ (Figure 10), instead, the area is classified as zone "BR3"- Urban restructuring already planned, governed by art. 15 of the NTA, which reads: "The BR3 Zone includes the area of the former refugee camp (C.A.P.S.), including the share already identified by resolution of the Civil Code n.4. of 26.02.2010 for the interventions referred to in Article 7, paragraph 4, of Regional Law no. 19/2009 and subsequent amendments and integrations, intended for social housing. In this area are allowed interventions of urban redevelopment and restructuring for destinations of collective and social use.



Figure 10. Excerpt from the PUC adopted by resolution CC n.41-2012 [Source: programme of municipal development of the former C.A.P.S. area].

¹⁶ with deliberation of C.C. n. 41 of the 31.07.2012.

Finally, in the 2018 Preliminary PUC (Figure 11), the C.A.P.S. area, is part of the evolving city, namely the enhancement of the former C.A.P.S. is planned. In fact, the preliminary report speaks of the refugee camp as an area "today the object of reconversion and requalification programmes also for social housing purposes"¹⁷.

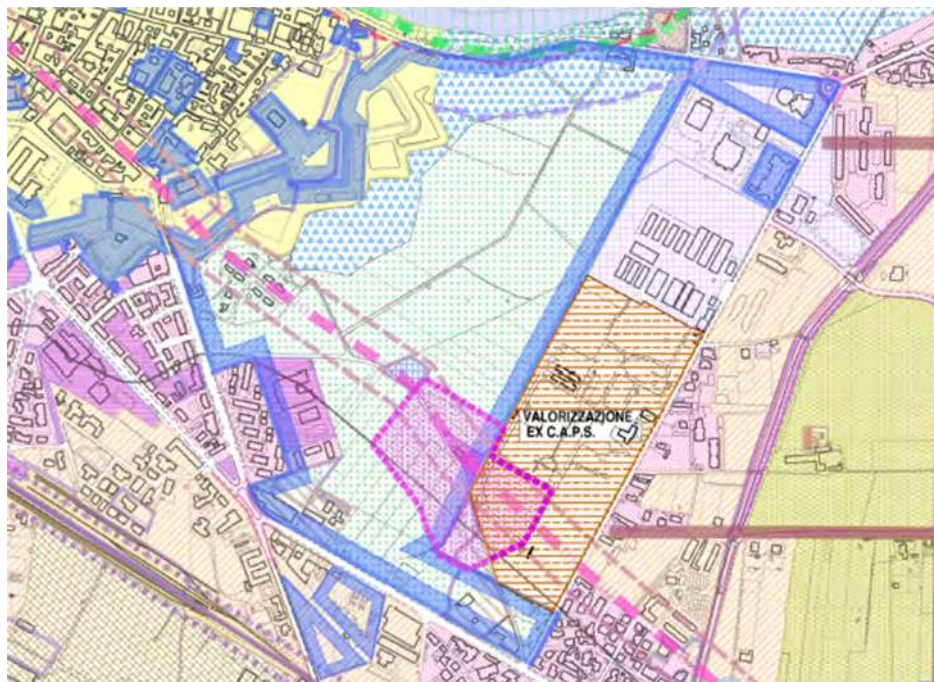


Figure 11. Proposed excerpt from PUC 2018 [Source: Environmental and settlement transformability]

The area is not affected by any type of superordinate constraint.

5. The recovery project

A careful urban analysis of the area, accompanied by historical research, has allowed us to identify the particular elements, potential values and the many critical points of the area, on which to base the guidelines of the recovery project. At the end of the cognitive process, this project aims to make up for the lack of public space that leads to the creation of denied territory, to revitalize an area of great degradation for the city and consequently to create a large public space, absent from the municipal territory, that leads to the development of sustainable tourism that combines urban park and widespread cultural heritage.

This area of 132,860 square meters, has strong critical elements: first of all, most of the buildings that were present in the area, are no longer existing due to a demolition occurred in 2016 for improper use of the same and illegal occupations by Roma families. Of the buildings present in the area of 2016, only two remain today, subject to building recovery (3,350 square meters). Secondly, accessibility is greatly reduced, since it is possible to access the area only through the main road, via Martiri di Nassirya. There are two other roads that do not serve as access to the area while surrounding it and are, via Lazzaro di Raimo, almost an open-air landfill and a road parallel to the main road, accessible only for a small stretch, while the remainder is a dirt road. The green in this area is practically non-existent, or rather, the area is now completely surrounded by greenery, but a degraded green and abandoned, such as to prepare for improper use and neglect. Further discomfort is given by the lack of parking, with the exception of the space in front of the entrance to the former refugee camp and the roadsides used as parking. Another important point is the inadequacy of neighborhood services, with the exception of the sports hall, the elementary school "Former refugee camp"

¹⁷ Preliminary report, PUC 2018, A.0.5.1 - *From the current PRG to the PUC: evolution of urban planning and its impact on spatial planning*, p. 18.

and three churches, the church of San Cristoforo, the Temple of San Roberto Bellarmino and the Sanctuary of San Lazzaro, there are no other standards. Finally, in order to revitalize this area, a large mixed residential park has been created, where the public, social, and private buildings will be included without any distinction between the types of buildings. In fact, the aim was to create a mixture of these in the pursuit of the social mix, so as to unite the housing functions by contrasting the monofunctionality typical of urban suburbs. As a functional mix and a building mix, they allow social mixing.

- the redesign of pedestrian and bicycle accessibility;
- the integration of services and equipment of the district, currently non-existent;
- the creation of a mixed residential park to restore life to an abandoned area, in order to promote social and functional integration;
- the creation of a large urban park to give new green spaces cared for and equipped for the population. (Figure 12)

Figure 12. Project sketches [Source: author's work]

urban one and the residential one, separate but connected. This urban redevelopment then enters the empty and abandoned spaces of the urban blocks so as to create an improvement in the quality of life and a strong increase in green areas for the enjoyment of all citizens, residents, and non-residents.

If this is generally the enhancement project, it is actually divided into two major projects: the equipped urban park and the residential park (Figure 13).



Figure 13. Masterplan of the recovery project for the former C.A.P.S. area [Source: author's elaboration]

5.1. The equipped urban park

Of the 132,860 square meters of the entire area, 90,410 square meters, from "Programme of intervention for the enhancement and transformation, after remediation, the area of municipal property called ex C.A.P.S." are intended for equipment and services of territorial level. An important functional recovery for the area has been thought of with the creation of an urban park equipped for the inhabitants of the area and beyond, a real pole of attraction (Figure 14).



Figure 14. The equipped urban park [Source: author's elaboration]

The main focus is the realization of a series of accesses, located on all sides, which serve as a connection between the area and the surrounding environment. On the main road, 7 accesses, 5 pedestrian and 2 cycle paths have been created; on via Lazzaro di Raimo 6 accesses, 3 pedestrian, and 3 cycle paths have been created and finally, with the redevelopment of the perpendicular road to via Lazzaro di Raimo, another 4 access points, 3 pedestrian and 1 cycle path will be placed. In other words, the cycle-pedestrian route represents the structuring element of the entire project. The whole project is equipped with parking lots, 3 for cars and 2 for bicycles, to fill the previous and total absence of the same. The green, of course, will be the master. In fact, there will be various green areas, located in various points of the park and having various functions, outside the main function of public green, such as:

- a large play area;
- a dog area;
- a large structure which will become a large restaurant with panoramic views of the ramparts;
- a large sports area, with football pitches, tennis courts and a track for athletics;
- a picnic area, which is a real meeting point and aggregation for families;
- a circular structure with a sinuous course which has various functions:
 1. Reading and relaxing sessions;
 2. Stage for theatrical performances or concerts;
 3. A real square, a meeting point in the core;
- paved surfaces, acting as a square, scattered throughout the entire lot, with large trees and circular seats that surround them;
- urban markets, located in 2 points of the park, with direct sale of products grown in nearby urban gardens, located in various areas of the area.

Other areas will be left to public green areas with expanses of trees. (Figure 15)



Figura 15. Project concept [Source: author's elaboration]

5.2. The residential park

The concept behind the residential park project was to pursue the social, functional and housing mix to eliminate the distinctions between the types of buildings, instead creating a mixture of public, social and private buildings, so as to unite all residential functions, creating a large residential park (Figure 16).



Figure 16. The residential park [Source: author's work]

Of the 132,860 square meters of the entire area, 42,450 square meters, from "Programme of intervention for the enhancement and transformation, after remediation, the area of municipal property called ex C.A.P.S." are intended to residential. Of the share of existing buildings, before the demolition, there are only two remaining construction, which are the subject of recovery program building (3,350 square meters). The remaining part will instead be allocated to new construction (39,100 square meters), of which 15% will be allocated to non-residential construction (services), 25% to Free Residential Building and finally 60% to Public Residential Building. The public and private residences will not be separated in this project, but on the contrary one of the central themes will be the search for the mix, both functional and social, mixing the functions of housing (public and private), with those of work, consumption, leisure, contrasting the monofunctionality typical of urban suburbs. This is not the traditional mix (services, residence, activities), but an innovative mix that includes leisure, sport, culture and entertainment, integrating functions not only within individual buildings, but throughout the city (multiuse city) so as to trigger a cascade of virtuous processes of revitalization and redevelopment of the surrounding urban contexts. It is possible to reach this park thanks to the opening of a long axis that connects via Martiri di Nassirya with its parallel, redeveloped. Perpendicular axes intersect on this axis, so as to allow access to the park from all points. All the buildings are equipped with greenery, pertinent car parks and a large underground car park. As planned, services have been designed in the area, such as the kindergarten and the ecological island to make the park liveable, organized and equipped.

Conclusions

This work aims to recover a very complex area that is neither an urban void nor an abandoned area. An area that has lost its identity, which has gone from being a reception camp for foreign refugees to being an area denied to social use. It could be defined as almost a non-place, a private place of value, of functional link with the urban context. In fact, it has now become a marginal place, mainly because of years of disinterest on the part of public institutions. The same institutions, only after years of neglect and consequent degradation, have become interested in the area. In fact, this condition began in the 90s with the closure of the refugee camp and ended only in 2014 when it was decided to proceed with the demolition of the buildings in the area, with the exception of 2 buildings subject to recovery and establish a program of valorization so far not completed. The urban project developed, adhering to the conditions prescribed by the program, gives precise solutions for each area (Figure 17).



Figure 17. Project masterplan with zoom [Source: author's processing]

If the specific aim is to give a new image of this area, it has been tried to demonstrate that it is possible to comply with the rules, the needs of the population, the identity of places and transform a non-place, from problem to resource for the city of Capua. Resource created through the recovery, the transformation of the former C.A.P.S. in a place no longer "EX", a place with its own life, converting this degraded area into a new urban centrality. A large equipped urban park and a residential park with all the related services and equipment have been designed, with a deep focus on greenery, accessibility and connections, trying to give this area a functional mix, characterized by the presence of large urban services; a mix that includes leisure, sport, culture, integrating the functions not only within the area, but throughout the city. The functional mix is accompanied by a social mix that was created through the residential park and where there are no distinctions of housing type but public, social and private buildings. They all are mixed together to counteract the monofunctionality typical of urban suburbs. All this has been designed to give this area a socio-economic as well as historical-artistic usefulness, so that this heritage becomes a tourist attraction; attractor of a sustainable tourism able to preserve the environment, the community, the economies and the local cultures. A set of practices and choices that do not harm the environment but enhance it, promoting sustainable economic development and also contributing to the improvement of the quality of life of resident

Attributions: Within the present contribution, which is the result of the authors' common drawing up, personal contributions can be identified as specified as below: paragraphs 1-4 (Claudia de Biase), paragraph 5 (Irene D'Agostino), Abstract, Introduction and Conclusions joint drawing up

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The impacts of sharing platforms for tourism on spaces and communities: the possible role of place-based regeneration processes

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Abstract: Within the national and international scenario, the phenomenon of sharing economy in tourism is strictly linked to the “shadow hospitality” models, spread on platforms such as: Airbnb, Homelidays, Wimdu (Travel like e local), Vrbo (Vacation rentals by owner); Kid&Coe, HouseTrip, OnlyApartements. This new trend in tourism needs to be investigated in terms of impacts on local communities, public spaces and urban cultures. The so called “Airbnb effect” is influencing the housing sector, the typology of commercial facilities, and the local productive traditions. Several initiatives - both at municipal and communities level - started recently in European cities affected by these phenomena and different policies and measures were adopted for: protecting the housing accessibility, regulating the real estate speculation and stopping the expulsion of residents. In line with this perspective, the paper will discuss the following research questions: How to investigate the impacts of the shadow hospitality on cultural, social and economic environment of the urban areas affected by these phenomena? How a place-based regeneration process could contribute to re-balance economic opportunities and risks produced by sharing platforms in tourism, by dealing with the loss of authenticity of public spaces and the gentrification trends?

Keywords: sharing platforms; tourism; place-based regeneration; local communities

1. Touristification: lever for development or urban degeneration?

In the last decades, tourism encompasses multiple new destinations, thus becoming one of the fastest growing economic sectors in the world and a driver for socio-economic progress. Tourism has become one of the major players in international commerce, and represents at the same time one of the main income sources for many developed countries. “This global spread of tourism in industrialised and developed states has produced economic and employment benefits in many related sectors - from construction to agriculture or telecommunications” (UNWTO, 2018).

Tourism, and cultural tourism in particular, draws upon artistic, historical, environmental and human resources of the territory, and in turn contributes to local development and to the enhancement of the pre-existing heritage. The attraction of tourists ranks high in urban agendas, strategic planning documents and in policies geared towards the preservation and the enhancement of cultural heritage, job creation and the revitalization of stagnant economic sectors. As an economic sector, tourism constitutes a large portion of the economic output in well-established destinations and in art cities. On the other hand, marginal or economically weak areas seek to attract tourists as a panacea to counter depopulation and the dissolution of traditional economic activities. UNWTO forecasts international tourist arrivals to reach 1.8 billion in 2030 (UNWTO, 2011).

This tendency has been observed and analyzed in scientific literature across different disciplines and is widely accepted. It has been observed that tourism has brought both positive and negative outcomes in different geopolitical contexts. Whether – and to which extent – tourism is a sustainable industry is hotly debated (as seen in figure 1). On the one hand, more people than ever are able to visit art cities – as opposed to the privileged travelers of the *Grand Tour* – and the hospitality sector grows exponentially. On the other hand, however, tourism exerts an undeniable pressure upon morphologically and socially fragile area and endangers vulnerable cultural heritages. The latter risk stressed the need for a differentiated understanding of the phenomenon and for an appropriate management thereof. A recent survey conducted by the World Tourism Organization (UNWTO) and IPSOS (June 2019) finds that, generally speaking, urban dwellers are in average supportive of tourism. At the same time, it points to the urgency of identifying management strategies to address the emerging challenges that come with increased tourism demand¹. Looking at 15 countries worldwide, the UNWTO report shows a positive picture of local residents’ perceptions towards urban tourism, identifying what residents consider to be the best ways of managing rising numbers of tourists and highlighting different attitudes to urban tourism amid different socio-demographic groups². “In order to make sure that urban tourism continues to benefit local residents, it is fundamental to implement sustainable policies and practices. This includes the regular monitoring of residents’ attitudes towards tourism and factoring them in the tourism agenda.³” More specifically, with regards to potential measures to address growing tourism flows in cities, residents across the 15 countries consider ‘improving infrastructures and facilities’ as the most effective. In Hungary, 89% of respondents stressed this measure as the most adequate, followed by Italy (80%) and Argentina (79%). In a similar way, “creating experiences and attractions that benefit residents as well as visitors” is the second most preferred management strategy, and extremely popular in all countries (82% in Canada and Hungary; 75% and 74% in Argentina and Republic of Korea, respectively) (UNWTO and IPSOS, 2019).

¹ The UNWTO/IPSOS Global Survey is based on the IPSOS online omnibus survey conducted between December 2018 and January 2019. The research is based on the responses of 12,000 respondents in 15 countries – Argentina, Australia, Belgium, Canada, France, Germany, Hungary, Italy, Japan, Poland, Republic of Korea, Spain, Sweden, United Kingdom and United States of America

² Regarding the results of the survey, tourism’s impacts are valued most positively in Australia, Argentina, Sweden, the Republic of Korea and Spain. Young respondents (under 34) exhibit a stronger awareness of both the positive and negative impacts of city tourism, in contrast to older respondents (over 50) who perceive the negative impacts less. Younger respondents are also more likely to be in favor of more restrictive measures to manage increased tourism demand. Among older respondents, only 5% think that tourism promotion should be stopped, and only 8% favor limiting the number of visitors in their cities as compared to 12% and 16% of younger respondents. (UNWTO and IPSOS, 2019)

³ UNWTO Secretary-General Zurab Pololikashvili (<http://www2.unwto.org/press-release/2019-06-03/unwtoipsos-global-survey-local-residents-remain-largely-positive-urban-tour>)



Figure 1. UNTWO Sustainable Development Goals. Source <http://tourism4sdgs.org/>

Recent debates highlighted the additional challenges posed by the diffusion of collaborative economy platforms in the tourism sector. This, together with cities competing to be included in the network of low-cost airlines, change the trajectories, the habits, and the supply of touristic destinations.

In this framework, the paper addresses one of the most discussed problems in recent years: the so-called *shadow hospitality*. Although this phenomenon is almost always identified with the platform *Airbnb*, the latter is only the most famous but surely not the only provider of tourist apartments. Other examples include: *Homelidays*, *Wimdu* (*Travel like and local*), *Vrbo* (Vacation rentals by owner); *Kid & Coe*, *HouseTrip*, *OnlyApartements*, just to name a few. In the absence of appropriate regulations, the supply of such accommodations has grown enormously and in a disorderly fashion.

In contrast to traditional hospitality management, the so-called “shadow hospitality” (HOTREC, 2014) eludes governments’ coordination and control efforts. Among these, particularly important are security and legality controls which otherwise apply to regular operators in the tourism sector. Shadow hospitality thus operates in legal loopholes and exploits the advantages created by deregulation.

According to a recent survey, carried out by the Italian hospitality association *Federalberghi*, 397,314 accommodations were available in Italy in August 2018 (Federalberghi, 2018). This shows an average annual increase of 37.6% since 2016, and of 45.7% since 2013, when the platform only had 60,589 flats available. Originally, *Airbnb* established itself as a provider of “shared” travel experiences, whereby tourists could interact with their hosts and thus as an opportunity to experience destinations in a more authentic manner and to explore the identity of the visited places.

Within few years, however, Airbnb has grown exponentially and turned into the opposite of what it once stood for. It is no longer a complementary source of income for households who diversify the hospitality supply and provide “authenticity”. Particularly in large cities and in well-trodden touristic destination, the growth of Airbnb is gradually leading to the emptying-out of old city centres and to the expulsion of their residents and of traditional activities. The abandonment of old city centres, in turn, leads to a loss in these places’ identities: whole districts have become dominated by hospitality and food enterprises.

Furthermore, the Federalberghi survey argues against several common conceptions about Airbnb. Notably it disputes that: Airbnb grow where the supply in hospitality is lacking; that it provide supplementary forms of the income for the owners; that tourists “share” their experience with the owners and finally that hosting be overwhelmingly an occasional activity. Often, landowners do not manage apartments and holiday homes themselves, but hire sophisticated firms to do so.

This assessment seems convincing. It highlights the problem and effectively calls on institutions to act. However, it does not point to the distortion of places determined by the arrival and diffusion of Airbnb: whole buildings almost without residents, and entire neighborhoods geared only to shops and catering for tourists. The following pages reflect on the evolution of collaborative platforms for hospitality in the tourism sector and on the dynamics that they are generating in the different types of tourist destinations. If geared solely towards the earning of short-term profits, we argue, tourism can impoverish cities and territories and destroy their identity rather than work as a factor of local development and as a channel for the enhancement of cultural heritage. The expulsion of the resident population in favor of tourism hospitality, the destruction of local traditions in favor of a standardized tourist offer, and the elimination from the market of traditional economic activities can be considered indirect consequences of the diffusion of platforms such as Airbnb. In fact, in attractive areas, these platforms seek to favor tourist flows by not respecting zoning regulations.

This scenario will be discussed here through a reflection on sharing economy platforms in the tourism sector. These are analysed in the context of growing reactions in cities where this kind of tourism has been growing the most. The paper ends with a proposal to elaborate a process of urban and territorial regeneration based on endogenous resources as a possible way to avoid the dispersion of cultural and social capital of touristic areas. This approach presupposes a “counter-cyclical” adaptation, so that the tendency may be still inverted and thus prevent re-generation efforts to result in de-generation.

2. Collaborative economy and sharing platforms: key aspects

The collaborative economy (Acquier, Carbone, & Massé, 2017) aims to generate value through relational capital. It is often linked to platforms (Evans & Gawer, 2016) that facilitate new entrepreneurial models by building a market open to the temporary use of goods or services. These are often provided by private individuals or firms (European commission, 2016). However, such entrepreneurial models are not always geared towards a tight relation between economic and social progress. In terms of identity, economy, and local communities, their impact on cities and territories is highly significant concerning the rights of the resident population, the protection of travelers, the social and occupational equity of the different urban areas, but has not been quantified objectively. The uncontrolled growth of tourist flows, the alteration of the real estate market, and the lack of

adequate regulations often diminishes the intrinsic value of the places and feeds into social conflicts as well as into imbalances in consolidated markets.

Whether fair and sustainable development in a territory is possible depends on its ability to create value, particularly shared value. According to Porter & Kramer, "The concept of shared value can be defined as policies and operating practices That enhance the competitiveness of a company while me advancing the economic and social conditions in the communities in which it operates. *Shared Value creation focuses on identifying and expanding the connections between societal and economic progress*" (Porter & Kramer, 2011).

In the light of these reflections, it seems useful to analyze the topic of the tourist fruition of the territory by looking at the contribution of the different economies which, thanks also to the use of new technologies and internet, have different tools to develop and spread quickly. This "chain reaction" generates changes in cities and territories, which have both positive and negative impacts on local development. "Sharing", "experience" and "circular" economy are growing economic forms which share some features. Generally speaking, these are oriented to new consumption logic. Within this logic, growth is oriented towards the internet and on the market's needs, as well as towards ever-changing communities and territories. In doing so, this new tourist supply seeks to offer unique and authentic experiences by at the same time optimizing the use of human, environmental, social, and economic resources.

Against this background, it is necessary to define how these new and less structured economic models impact on the planning and management of the territory. Mirroring the new and unpredictable changes in the relation between firms and territory, research in urban planning and economics has produced several research methodologies and approaches (Calafati, 2009; Polanyi, 2010; Zamagni, 2007). Territories are increasingly impacted upon by economic initiatives based on co-creation processes. The theories of reference for these practices are based on a multidisciplinary and multicultural contamination, as well as on horizontal interactions between actors and users. The aim is to experiment with more streamlined and flexible development models, thus mirroring societal changes.

In particular, the so-called "sharing economy" model (Schor, 2016) is booming, as shown by data on gross total revenues in the European Union of collaborative platforms and service providers (28 billion euros in 2015). Since 2013, there has been considerable growth. This bulged in 2015 following investments in large platforms, which has expanded the boundaries of their activities. A first estimate shows that the collaborative economy is increasing its turnover from 160 to 572 billion euro (European Commission, 2016)

In Italy, the phenomenon is growing, too. Recent studies (Sharitaly, 2016, 2017) have traced the sector's impacts and the growth in different branches of the Italian economy, including from housing to transport, from tourism to welfare, to culture, finance, Science and work. Through this research, Sharitaly seeks to gauge the potential of the sharing economy towards new forms of regulation aimed at collaborative users and entrepreneurs. These researches are collected in the annual report of the "Collaborative platforms map", along with further data on the sharing economy in Italy. From the data revealed 125 active platforms in 2017 (Sharitaly, 2017).

Also other economic phenomena, such as on-demand services, the “rental economy” and the peer-to-peer economy (Bauwens, 2005) and collaborative consumption (Botsman & Rogers, 2011) may fit in under the “sharing economy” umbrella. This empirical broadness expands the boundaries of its still growing theoretical and policy articulations (Friel & Rabbiosi, 2016).

Particularly, the collaborative platform (Cerreta, Daldanise, & Regalbuto, 2017), as an application model, enables the provision of differentiated services. Through technological support (e.g. websites or mobile apps), services can scale up, be useful and original. These platforms have the following common attributes: They are p2p (peer to peer); they allow the exchange or the sharing of goods, objects, money and spaces; do not select the staff; and they enable transactions through a reputation system. Also, platforms can be used to access a resource temporarily without cash transactions (as in Timerepublik), or with a money-mediated transaction (such as on Airbnb and Gnammo). Some make it possible to trade one resource in exchange for another without monetary transactions (such as Baratto Facile, Zerorelativo), or to use alternative currencies such as time and credits (such as Reoose, Timerepublik, Sardex). Others allow users to donate or exchange used item (as on Sharoola, Subito.it, EBay).

Within the framework of "sharing" platforms, the phenomenon of "Tourism and Shadow Economy" (Federalberghi, 2018; Hotrec, 2014) highlights two crucial aspects related to the growth of non-hotel hospitality services:

1. A normative aspect: Legislation to guarantee an actual sharing experience and to avoid damaging the local market. Regulations should adapt the current management rules and integrate them with new norms to protect customer, workers, and the broader community;
2. An urban aspect: The change in identity linked to the environmental, cultural, social, and economic impacts that the new models of hospitality have on cities and on their old city centers.

In this perspective, the diffusion and the increase of these models in the tourism sector shows how the sharing economy is becoming more and more rooted in urban life. This is because the new forms of digital technology connect people and goods through new forms of network which often may not be monitored. Unfortunately, sometimes this translates into a mere *rhetoric* of sharing, whereby the exchange of goods online promotes the otherwise very usual logic of profit maximization (Ferreri & Sanyal, 2018) rather than an authentic touristic experience based on actual cooperation between residents and "temporary citizens" (Comitato Matera 2019, 2014).

3. The “Airbnb effect” on European cities

Under the label of "collaborative tourism", a multimillionaire business has quickly established itself. The latter is based on two pillars (Acquier et al., 2017): Low-cost flights and Airbnb (along with several similar portals, such as HomeAway). As transactional-type platform, Airbnb has indeed been very successful within this strand of "platform capitalism" (Srnicek, 2017). However, this economic drive has amplified the negative impacts of mass tourism on cities.

The data below (as seen in figure 2) ranks European destinations by amount of listed accommodations, share of entire houses/apartments for rent, and incidence of listings with "high

availability" (i.e. for three months or more). It shows that about 40% of the hosts offers several apartments, and that 64% of users carry out this activity for more than 4 months/year. This business model has removed apartments from the regular housing market. In Europe, Airbnb's sales volume grew by 14% in 2015, and by 24% in 2017. In 2016, thanks to reservations in 191 countries, the worldwide turnover amounted to 1.7 bn dollars (Sole 24 Ore – Zanini, 2018). In response, several European cities have introduced restrictions and regulations.

City	Total listings	Entire house/apartment for rent	High availability
London	49,348	51.2%	58.8%
Berlin	20,576	50.0%	38.2%
Barcelona	18,531	46.6%	63.9%
Paris	61,152	86.9%	34.4%
Rome	25,275	60.1%	91.4%
Athens	5,127	83.2%	91.6%
Venice	6,027	74.9%	87.1%
Amsterdam	18,861	79.5%	28.1%
Brussels	6,192	64.6%	57.8%
Copenhagen	20,545	80.7%	37.6%
Dublin	6,729	47.0%	49.9%
Edinburgh	9,638	56.8%	57.4%
Madrid	16,313	63.4%	64.7%
Málaga	4,853	76.3%	85.3%
Mallorca	14,858	87.5%	94.4%
Manchester	868	41.3%	83.8%
Trentino	1,847	77.3%	92.0%
Vienna	7,893	67.3%	67.0%

Figure 2 Data on Europe's main tourist destinations (source: InsideAirbnb, April 2018)

Globally, the "Airbnb effect" has worsened gentrification. The contraction of housing supply and the increase in costs radically affects the social fabric of these areas, transforms entire neighborhoods into spatially widespread hotels and theme parks to the extent that, since 2014, large European cities introduced new regulations to sanction breaches to the preexisting zoning regulations. Among the first cities to adopt containment policies are Barcelona, Paris, Berlin and Amsterdam (Sole 24 Ore – Zanini, 2018). These cities acted to safeguard housing accessibility, regulate the market of listings and stop the expulsion of residents from city centers. Some cities have witnessed vehement protests against these forms of tourism, including demonstrations and street protests. The protests focused on the role of such platforms in fostering real-estate speculation and altering the historical and architectural character of the city.

These include cities such as Lisbon with its historic *Alfama* neighborhood, the city's original urban core where the poor lived outside the city walls. When residents are expelled by owners who seek to make profits with Airbnb, the traditional shops and craft shops disappear to make way for fashion stores or souvenirs for the visitors. In the same city, in the historic district of *Mouraria*. *Mouraria* is the birthplace of *fado* and crucible of lively and essential cultures of the "other" *Lisboetaes*: the

Brazilians, Africans, Chinese, Indians and the many others. Here, local associations resist the pressure of tourism and the reaction of residents has been triggered (as seen in figure 3).



Figure 3 Lisbon – Mouraria (source: the authors)

Similar processes took place in many European tourist destinations, such as Venice and Barcelona, where residents must seek new homes and where the lack of regulation of worsens conviviality and social fabric in the historical centers. Entire districts are transformed into tourist areas without authenticity (Corporate Europe Observatory, 2018). In Madrid from 2005, the city center has lost over 15,000 inhabitants. The influx of tourists in famous neighborhoods such as Lavapiés dilutes its identity as an ethnically mixed place.

The report "UnFairbnb" (Corporate Europe Observatory, 2018) shows how the platform contributes to the strong increase in housing prices and creates pressing neighborhood problems to such an extent that the issue has been the subject of new strategies in several European cities.

Barcelona no longer issues permits for short-term rentals in the *Ciutat Vella*, which caused a conflict between the municipality and the company, which had to pay a 600,000€ fine. The protests and clashes were eventually reconciled into an agreement between Airbnb and City Council in order to fight together illegal listings. In response to widespread protests, the municipality issued a special masterplan, the PEUAT – “Plan Especial Urbanístico de Alojamientos Turísticos” (Barcelona City Council, 2017). This plan, based on an analysis of the phenomenon, divides the city area in different zones: the city centre, where no new reception facilities may be opened (red zone). Other zones indicate less central areas where such initiatives are permitted, but in a limited fashion. In Paris the fight against for-profit real-estates, called "ATMs", ushered the so-called "compensation rule": This rule forces the owner of an apartment that has been withdrawn from the regular rental market, to buy a commercial property and turn it into housing. This rule was strengthened in 2014 thanks to two

provisions. On the one hand, it was stipulated that the newly purchased properties should be in the same neighborhood. On the other, property registration became compulsory.

In response to the rapid growth of the phenomenon, the city council of Berlin has frozen the issuing of new permits to rent apartments and houses in May 2016. From then on, it was strictly prohibited to use such properties for short-term housing and this resulted in a lawsuit between Airbnb and the city. After the victory in court, the regulatory framework has been reinforced by a bill that has increased fines for illegal listings, thus bringing back a total of 8,000 apartments to the long-term rental market.

The city council of Amsterdam initially signed an agreement with Airbnb to simplify the rental of apartments and houses but capped its duration to two months per year. In return, Airbnb should have helped the authorities to counter illegal hotel accommodations. However, the number of complaints was so high that it was difficult for the city to monitor them: most ads seemed to break the rules because the offered accommodations were available for more than two months. In 2017, despite company's willingness to cooperate, the authorities have arranged that all guests must register with them and, in January 2018, the permitted period was reduced to one month a year only.

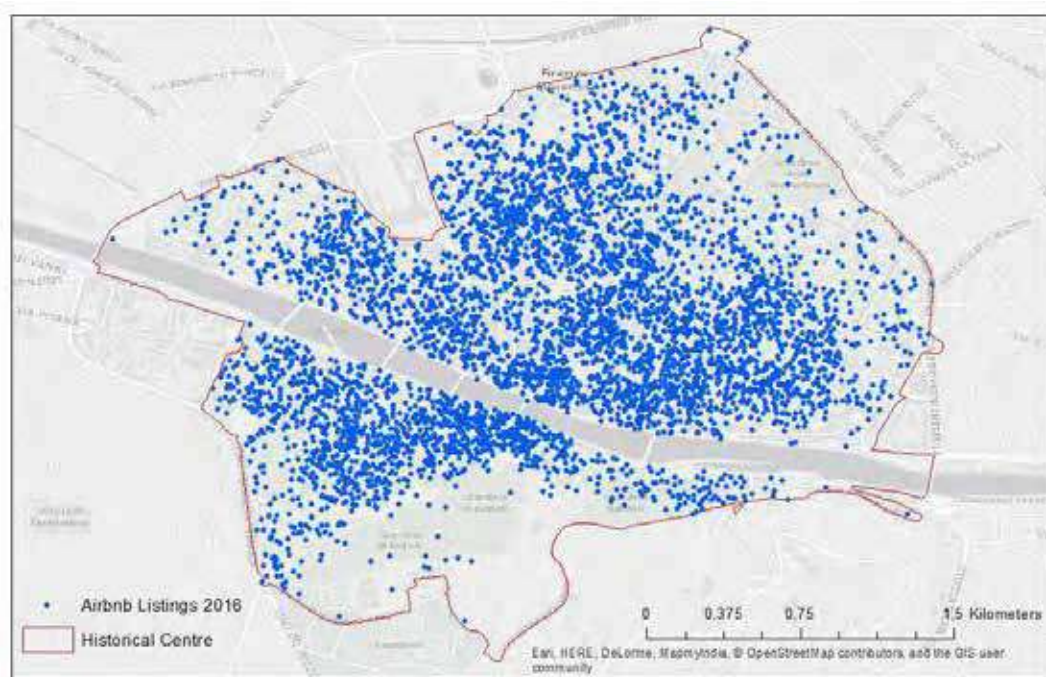


Figure 4 Spatial diffusion of Airbnb listings in the old center of Florence (source: LADEST, 2018)


Different sources label these transformation the “Airification” of cities (Ladest, 2018). These include International online data collection projects such as "Inside Airbnb" (Cox & Morris, 2018), an online tool that monitors the impact of Airbnb on urban communities, or AirDNA of MarketMinder (an integrated platform for vacation rental insights) and national searches such as that conducted by LADEST (Historical territorial Economic Data Laboratory) of the Department of Political Sciences of the University of Siena. These studies argue that low cost rents affect not only the traditional tourism business but also the morphology of the main historical centers worldwide. In Florence, one in five apartments in the historical center of the city is listed on Airbnb (as seen in figure 4) soon disappears definitively from the regular long-term housing market (Sole 24 Ore – Tremolada, 2017). LADEST

analyzed the spatial and economic aspects of the real estate market in several Italian historical centers, with particular reference to 13 cities: Bari, Bologna, Catania, Florence, Genoa, Matera, Milan, Naples, Rome, Siena, Turin, Venice, Verona. The search uses a large database to trace the listings on the platform in the years 2015 – 2016.

The phenomenon creates revenues without a real redistribution of wealth, since homeowners continue to gain whereas weaker social strata grow increasingly poorer. The SET network (Sud Europa di fronte alla Turistificazione – Southern Europe in the face of Touristification) seeks to investigate this phenomenon by analysing data about the downsides of “collaborative” tourism and to propose alternative courses of action. For example, in Florence’s old center, the SET network highlighted the dominance of multinational funds behind the city’s hospitality supply there.

In Naples, there are currently 8,714 Active Rentals. The largest rental channel are Airbnb (83%) and Homeaway (11%). 6% of the offers are listed on both (AIRDNA, 2019). The Municipality of Naples has not introduced any relevant measures. The only initiative worth mentioning is the creation of a Municipal Identification Code (Codice Identificativo Comunale – CIC) for non-hotel hosting facilities. Such a code, however, is neither mandatory nor incentivized. As a result, few homeowners get such a code, since doing so would likely mean having to withstand controls on sanitary facilities, construction permits, etc. The Municipality has recently produced a document for the “Estates General on Tourism” (Stati Generali del Turismo), called “Marketing plan for the strategic development of Naples as a [touristic] destination” (Piano marketing per lo sviluppo strategico della destinazione Napoli). The document has been commissioned by the managing company of the city’s airport, GESAC. According to the researchers of the SET network, however, the data upon which the document builds does not allow the definition of concrete guidelines for the strategic development of the city.

INTERVIEW WITH ALESSANDRA CAPUTI



THE MANIFESTO

1. Home
2. Retail
3. Work
4. Public space
5. Environment and Health
6. Mobility and Infrastructure
7. Religious Tourism
8. Public Real-Estate
9. Usage of regional and European funds
10. Participation

MISSION

The SET network (Southern Europe In the face of Touristification) is an initiative born out of the experience of some European cities which faced several negative effects of mass tourism. Its manifesto focuses upon the main critical aspects of Southern European experiences.

GOALS

To study the phenomenon and identify negative aspects. To propose data-based alternatives and analysis.

23 cities involved



ACTORS

Students
Retailers
Workers
Unemployed people
Professionals

BENEFICIARIES

Citizens (weaker social strata)

Contacts: <https://www.facebook.com/SetNapoli/>

ANALYSIS OF THE SITUATION IN NAPLES

- Rents have increased by 9% in the old centre and in the surrounding areas.
- Local retailers were forced to close down, while shops for tourists and non-residents have become widespread.
- Activists at the labour help desk of the [social center] “ex OPG” signal the diffusion of illegal or underpaid labour in the tourism sector.
- Pollution caused by cruiser ships moored at the harbour – in turn due to the dock not being electrified.

Figure 5 Interview with Alessandra Caputi (SET network – Naples Chapter)

Within the Naples chapter of the SET network, of which Alessandra Caputi is a member (see interview in figure 5), the network's research concentrates on the legal framework concerning three types of non-hotel tourism (short-term stays, B&B, holiday homes) in order to elaborate – together with the city's II district - relevant proposals to be ultimately submitted to the Municipality. Within this European scenario, Airbnb has set up a national initiative to generate positive economies for territories and local communities, probably in response to the many protests moved against the platform.

The plan "Borghi Italiani" (Italian villages), sponsored by the National Association of Italian Municipalities (Anci) was developed in collaboration with the competent Ministry (Airbnb, 2017). This plan envisages the enhancement of more than 40 towns realities and of their underutilized assets both in inland areas and in historical villages. The initiative targets paths with limited numbers of hotel accommodations and which still have spontaneous and authentic forms of hospitality. The aim is to introduce travelers to small Italian towns with their landscapes and knowledge in order to promote sustainable tourism as an alternative to traditional routes and new forms of local economy.

The three pilot villages, where initiatives take place in networks between partners, municipality, associations and local communities (based on the model introduced by the municipality of Civita di Bagnoregio) are: Lavenone in Lombardy, Civitacampomarano in Molise and Sambuca in Sicily. The idea is to open up an accessible space through the platform. The profits are then devolved to the maintenance of historic sites and other cultural projects to support the village at national and international level. The dedicated website thus becomes a tool for territorial marketing for increasing the competitiveness and the attractiveness of these places. The municipalities concerned are: Aieta (Calabria), Apricale (Liguria), Asolo (Veneto), Barolo (Piedmont), Bevagna (Umbria), Bitti (Sardinia), Città Sant'Angelo (Abruzzo), Cividale del Friuli (Friuli Venezia Giulia), Dozza (Emilia Romagna), Étroubles (Valle d'Aosta), Furore (Campania), Mezzano (Trentino Alto Adige), Moresco (Marche), Pisticci (Basilicata), Poggiorsini (Puglia), Sabbioneta (Lombardy), San Casciano dei Bagni (Tuscany), Sperlonga (Lazio), Savoca (Sicily) and Torella del Sannio (Molise). Other twenty villages will follow suit and be promoted by Airbnb on social media through a dedicated communication plan.

Against the background of research and practices on urban and national tourism policies, we want to focus on this phenomenon, given the huge wealth of small centers and marginal areas that characterizes Italy. In this vein, the aspects linked to web communication are not sufficient to define a local action plan that is capable of innovating this heritage in order to make it economically, socially, physically sustainable and productive. However, we argue that an "integrated" transformation of the status quo of these areas may become a sustainable local development model, if it is geared towards creativity as a structural aspect of each dialogical or participation-based process that integrates the perceptions, the interests, as well as the human and social capital of a territory (Bozeman, 2007).

Airbnb itself, at least on this aspect, is currently trying to enter a less aggressive segment of the market. This segment is more in line with strategies aimed at rediscovering the territory through experiential and culturally Conscious tourism, i.e. one that is linked to local traditions and to material and intangible cultural heritage. Indirectly, this move works towards the valorization of the *heritage communities*. The latter, indeed, identify creativity as a relational and Community entity that succeeds

in producing multiple values, including economic ones, by using the potential of yet unexpressed heritage – Faro convention, art. 10 (Council of Europe, 2011).

4. Genius loci and place-based approaches to urban regeneration

The outlined scenario suggests that a tendency is under way. Although it has not yet been systematically investigated with appropriate comparative empirical investigations, its structural elements can be summarized. On the one hand, we mentioned market studies to trace the evolution of the forms of collaborative tourist hospitality. On the other hand, we offered an overview of interventions of local authorities on issues specifically related to its impacts on the socio-economic fabric of the cities. The resulting picture suggests the need for a regulatory system to "govern" the phenomenon, especially concerning the industry of tourist hospitality, the real estate market and the urban services sector. This new kind of tourism hospitality initially carried the promise to share benefits and to experience places in a more authentic fashion as opposed to mass tourism. In the absence of shared and up-to-date rules, this is turning into an aggressive business model. This model threatens to:

- Create conflicts and infringe on the rights of industry operators and of users;
- To frustrate the expectations towards a culturally and environmentally conscious tourism;
- Irreversibly alter the settlement dynamics and the defining characteristics of the tourist destinations (the *genius loci*).

Regarding the first issue, the analysis of local authorities, of the SET network and of the work of other similar NGOs, highlights the necessity of issuing relevant legislation in order to direct planning and balance the effect of market-led initiatives that heavily impact on communities and on those activities that are not strictly related to tourism. It also signals the presence of conflicts between traditional tourism operators and those active in the so-called shadow hospitality, as well as between traders and users, residents and visitors, and lastly between global and local strategies.

The second issue, which emerged by quali-quantitative and statistical studies, highlights the question of the traveler's perspective and the betrayed expectations of a non-standardized experience-tourism. The original ideas of these platforms – that of a non-standardised tourism, of a “traveller” who is in touch with local cultures and traditions – has been swallowed whole by a globalized business model managed by large multinational operators. In a similar vein, local communities lost the opportunity to grow culturally or economically through tourism. These betrayed expectations has translated in the rise of opinion movements, initiatives by local authorities, and also riots and adverse campaigns. On this point, the broad research and practice tradition on cultural tourism, slow tourism, and experience tourism, offers useful interpretations and solutions (Chambers, 1997; Faccioli, 2015; Fullagar, Markwell, & Wilson, 2012).

The third aspect, although strongly interrelated to the other two, presents peculiarities and complexity transverse to requires a significant cognitive, interpretative and operative effort. The question of identity, a controversial and multidimensional topic, is interpreted here in a key local identity as "genius loci" (Norberg-Schulz, 1980), i.e. as a set of relationships and interactions between city,

landscape, and people that help define the culture and the values of a community. Concerning the perception, the quality of the places, and urban design (Isaacs, 2000), shifting from the term “genius loci” to the “sense of place” describes an aspect that transcends the place itself and characterizes the atmosphere and the quality of its environment thus giving a feeling of wellbeing (Jackson, 1994). This is “the spirit of place” (Barnes, 2004). This approach interprets the concept of identity dynamically, i.e. as a tangible and intangible cultural heritage that changes with its community. The “genius loci” is thus understood as a dynamic process between conservation and innovation, and where perceptions are the main tool to ensure the authenticity of change (Jive'N & Larkham, 2003) within Urban planning (Hayward & McGlynn, 1993; Tibbalds, 1992).

Local policies, as well as national and supranational strategies, often combine measures for the enhancement of cultural heritage with the promotion of tourist fruition. This is seen as a fruitful avenue to acquire the economic resources necessary for its survival and for local development. At the same time, however, the pressure of tourist flows on fragile urban systems – e.g. in Venice – and phenomena such as *museumification* and *Disneyfication* - typical of art cities - tend to transforming their defining features into an oleographic stereotype. The combined effect of current trends in cultural tourist destinations, the distortions induced by the market, and the current dynamics urge us to clarify the relations among:

1. The diffusion of collaborative platforms in the tourism sector and in urban services;
2. The growing pressure of mass tourism on urban areas;
3. The dilapidation of social and cultural capital of large parts of cities.

Apparently, the positive cycle of tourism-led regeneration seems to be followed by the excess of touristification might produce negative impacts that overwhelm the positive ones. We suggest that defining the threshold to activate a counter-cyclical process is of paramount importance for qualitative research on the topic. These thresholds are fuzzy in nature and must be interpreted together within regeneration processes, as long as identity and territory are multidimensional components essential to activate innovative productivity processes (Cercola, Bonetti, & Simoni, 2009) and new models of value creation are important goals (Porter & Kramer, 2011).

In this perspective, a process of urban regeneration geared towards the enhancement of the endogenous physical, functional, economic and cultural resources may be the turning point of strategies, plans and policies that draw on the local identity and renew it by preserving and innovating them at the same time. This would allow to overcome the stereotype-identity pair that crystallizes and banalizes the touristic “product”. In this perspective, an important step towards a place-based regeneration process is to identify what defines the genius loci in terms of tangible cultural heritage – the physical elements i.e. the backbone of the cultural landscape – and intangible cultural heritage – the host of traditions, activities, and relationships that constitute the lifeblood of this landscape and of the communities that feed it.

Place-based strategies for urban regeneration must therefore adopt an integrated approach and identify the *genius loci* that local communities recognize in order to make the territory vibrant and authentic. This helps preventing the juxtaposition of stereotypes of a falsified identity. Recent international guidelines on the historical urban landscape issued by the Historic Urban Landscape (UNESCO, 2011), show the importance of synergy between landscape and integrated approaches to

transformations implemented in locally to guarantee the efficiency of the policies aiming both at the valorization of the genius loci and at the development of new forms of sustainability.

In line with HUL methods (UNESCO, 2011), it is crucial to analyze the system of relations linking the processes of urban regeneration to the valorization of the historical-architectural heritage (Esposito De Vita & Trillo, 2014), thus leveraging on the concept of culture and of sharing as activators of local micro-economies (Daldanise, 2017). Whether HUL strategies are successfully implemented depends, therefore, on the presence of a strong cultural base of the city, which stimulates cooperative approaches towards achieving a general interest oriented, on the one hand, to enhance and preserve the local cultural roots and, on the other hand, to increase local competitiveness in the global scenario (Imrie & Raco, 2003) through innovation.

These goals integrate themselves well with places-based approaches that combine public goods and services. Such services must be adapted to the place and stimulate and combine local preferences and knowledge through the participation of public institutions, also establishing links with other territories. This approach particularly highlights the role of places and of historical and architectural identity for local development (Barca, 2009). It does so by adopting a long-term development strategy in which the place in its entirety is considered, including the preferences of people, natural and cultural circumstances, social ties as well as informal and formal institutions. We consider this approach useful to nudge the collaborative platforms of the tourism sector back to their original experience-based goals and away from its distorted version based on easy profits and unfair competition. The Municipality of Matera, European Culture Capital 2019, seeks to prevent this tendency by defining, with the support of the CNR, appropriate measures to manage tourism flows attending the event. This city embodies a peculiar urbanisation process whereby the so-called “Sassi” (stones) – a cave system used for dwelling purposes – is now a UNESCO heritage site and the center of an extremely relevant cultural project (figure 6).



Figure 6 Matera (Italy) “Sassi” 2019, picture by the authors

In this context, a long-sighted administration is currently seeking to design policies to encourage tourism-led development in the city without damaging its delicate cultural, social and environmental tissue. Precisely this complexity makes Matera the ideal laboratory to test the feasibility of an adaptive, cyclical, and place-based regeneration. These preliminary reflections require further investigation to fully grasp the systemic relations and reconstruct the network of interdependencies between the actors involved. However, even this cursory overview sheds light on place-based regeneration as a possible reaction to the problems highlighted above. Drawing on the identity expressed dynamically by local communities, place-based regeneration will be able to protect the inhabitants and the various economic actors involved from some of the distortions mentioned above while at the same time activating the endogenous cultural resources. Re-generation, indeed, means to trigger a process that respects the profound identity of the places and of their communities, that allows the development of an authentic and sustainable tourist offer, and to avoid the trap of short-lived stereotypes.

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Reading the city through the lens of urban standards.

The case of Ponticelli, East Naples.

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Abstract: In occasion of the 50th anniversary of the Decree 1444/68, an intense debate has refocused the attention to the original tension of the Law towards the right of the city. By the application of the Decree it has been possible to reconstruct a new geography of Italy, variegated and diversified. In this scenario, the south of Italy is conspicuous by its lack of equipment, that can't permit an evaluation of the social impact because it's an interrupted process. The purpose of the present study is to observe and analyse how the spatial welfare system of southern Italy has been built, examining the study case Ponticelli, in the eastern periphery of Naples. Through the outline of two stories, it will investigate the construction of the public city in the degraded areas, among tensions and social inequalities. The first one is an institutional tale, which looks at the process of application of the decree; the second one is an informal tale, which reads the practices and the processes of use and appropriation of these lands. Thus, the current paper aims to rethink about the validity of the normative tool in an urban and social condition characterised by continuous and uncertain evolution. Additionally, the research attempts to find alternative and spontaneous forms, bordering illegal practices that can be found in urban areas, in absence of public intervention, such as subsidiary processes of guarantee of the right to the city.

Keywords: urban planning standards, urban practices, land reserves

Foreword. What do we talk about when we talk about urban planning standards?

The urban planning standards are a normative device introduced in 1968 at national level through the Decree (DI) 1444/68. It was intended to ensure, through reference to a quantitative value (18 sqm/inhabitant), the creation of a specific category of public spaces and thus curb urban speculation occurred after the Second World War, improving the quality of individual and collective life. The collective equipment defined as urban standards – schools, parks and open spaces, collective services and car parks – therefore represent the formalization of a right to the city. They have been realized

mainly in growing areas, to equip the public city and to compensate for the lack of collective equipment within the already urbanized areas. They have therefore helped to build the periphery of the public city according to the modern urban model.

The instrument of urban planning standards, understood by local governments as a mere numerical quantity to be respected in the sizing of the zoning plan, is now ineffective in responding to the social and urban condition in deep global change, in continuous and uncertain evolution, according to needs and desiderata that characterize contemporary lifestyles in a very different way from those defined 50 years ago. Today, the theme of urban planning standards raises several questions concerning, on the one hand, the disjointed heritage of equipment, its management and reuse; and, on the other hand, the failure to implement that "collective infrastructure" as a guarantee of high levels of livability (Gabellini, 2001; Munarin and Tosi, 2011).

Historical Background. Fifty years of urban planning standards

"The patient research for the physical and concrete dimensions of individual and collective welfare started before the Welfare State" (Secchi, 2005) is still nowadays a crucial point of the urban discipline. The phenomenon of equipment of the city, as a heritage of '900, remains one of the main features of the contemporary European city (Munarin and Tosi, 2011).

In occasion of the 50th anniversary of the DI 1444/68, in the last year a debate has been animated in ministerial and academic domains, which refocused the attention to the horizons in the sense of the decree – the only national policy on the 'public city' about citizen rights recognised by the Constitution¹ – in the original tension towards the right to the city. Among the different initiatives, the academic group "Laboratorio Standard"² led a research which has: crossed the cultural and of interdisciplinary context roots of the Decree; it has also built reports on the role of the normative device in the equipment of different Italian cities and territories by means of the production of "standard spaces" as deposits of grounds as well as of collective and public artefacts (Renzoni, 2018); finally, the research group has developed possible experimental hypotheses towards a rethinking of the normative tool, that is able to adapt to the transformations and challenges presented by contemporary society³. National and local seminars⁴, meetings with representatives of the academic world and of the local and regional administrations have been the occasion to create an atlas of cases and questions, problems and innovative devices. Urban performance and quality, legislative reduction, and limits of the parametric value – unable to meet the increasingly complex needs and desires – are the concepts where the focus of the discussion on urban planning standards has been put today and in

¹ From an intervention of Carlo Alberto Barbieri at the 15th edition of INU (Istituto Nazionale Urbanistica) Urbanpromo "Progetti per il Paese" at the plenary "*Standard urbanistici e servizi ecosistemici. Il ruolo del verde per la riurbanizzazione della città contemporanea*", Triennale di Milano, November, 20th 2018

² The research group "Laboratorio Standard", patronised by SIU (Società Italiana Urbanisti), is a spontaneous group of different universities composed by: Cristina Renzoni, Paola Savoldi (DASU, PoliMi); Maria Chiara Tosi, Stefano Munarin, Alessia Franzese (dCP, Iuav); Giovanni Caudo, Mauro Baioni, Nicola Vazzoler (Darc, Roma Tre); Sara Basso, Elena Marchigiani (Dia, Università di Trieste).

³ National SIU seminar "*Cinquant'anni di standard urbanistici (1968-2018). Bilanci, questioni aperte e ipotesi nella direzione di una riforma possibile*", December, 12th-13th 2018, University Iuav of Venezia

⁴ For further information please visit: www.standardurbanistici.wordpress.com

the past decades⁵. The design of new maps as possible, some of them concern the change of the demand – variable, fragmented, dynamic – other maps deal with the dynamics of reuse/conservation/management of the supply (Gabellini, 2018) – inappropriate, obsolete, no longer just public but often of negotiating nature. Following the urban federalism, Regions from 1970s have taken different orientations, shaping a new Italian geography, which is variegated and diversified in terms of number of facilities, application of the procedure, used tools, urban forms created, practices of use, processes of regeneration of the inherited legacy from the application of the normative tool, innovations ‘within and beyond the logic of the standards’⁶. Consequently, a disarticulated national image has emerged following three patterns: first, the overproduction of “standard spaces”, that faces the problem of reconfiguration of the urban material inherited; second, the pattern crushed by the ‘pressure of the parameter’, unable to respect a too severe numerical value in the planning process; third, the pattern of under-equipment and informal city.

According to the logic of overcoming the urban planning standards, the “*progetto di suolo*” has been defined by Bernardo Secchi: “a large part of the *progetto di suolo* concern the standard areas, that is the areas meant to provide the city with collective equipment, that now are not linked tiles among each other [...]. However, the *progetto di suolo* does not reduce the public spaces to mere standardised quantities. Urban design and administrative planning practice, during the past decades, have shown how the principles and the objectives that rule the formulation of the law might be, in fact, betrayed” (StudioBresciaPrg, 1998). *Progetto di suolo* described by Secchi goes beyond the reductionist notion of to which urban planning standard has been attributed in urban planning practice, which is a non-secondary cause of semantic poverty of the contemporary city (Secchi, 2006). This latter, in turn, has generated fragmentation and lack of sense of urban parts space. Within the *progetto di suolo*, there is in between spaces, which cannot be eliminated or reduced to technical spaces (Secchi, 1986a); it shows attention to the dimension of everyday life, to the articulation of the space in sequences of recognisable, comfortable, and safe places. This kind of project does not only deal with quantities but with the quality of things, that is detail quality. “Recovering the spirit of the Decree, the *progetto di suolo* considers urban planning standards as materials which more most properly public and collective part of the city can be built” (StudioBresciaPrg, 1998). *Progetto di suolo* represents the ‘urban excipient’ (Munarín, 2010), in which it synthesizes collective infrastructure. “This is certainly the opportunity to deal with it: i.e. when the pressure for the construction of huge quantities of dwellings, in addition to the existing ones becomes weaker, while the pressure for the ‘modification’ of the existing is still strong” (Secchi, 1986a).

In this paradigm shift, where the city does not expand but rewrites itself, the city can be conceived as a recyclable resource. The topic of the transformation of parts of the city that have concluded a cycle of life, that are not going to work as in the past and are not going to host the same populations, leads to consider the recycle of the city as a fundamental strategy that crosses scales and themes of the contemporary urban question (Viganò, 2011). If on one hand the ‘cycle of modern’ can be considered

⁵ For additional details, please read: Collection “*Welfare urbano e standard urbanistici*”, (Roma: Officina); Contardi L., edited by, 1999, “Trent’anni dopo... Tornare a ragionare sugli standard urbanistici”, in *Urbanistica Dossier*, n.21; Falco L., 1987, *I nuovi standard urbanistici*, (Roma: Edizioni delle Autonomie); Falco L., 1977, *Gli standard urbanistici*, (Roma: Edizioni delle Autonomie).

⁶ Expression often used to classify the innovative aspects in the normative tool, in Caceres E., Chicco P., Corrado F. Falco L., Madrigal M., 2003, *Servizi pubblici e città. Gli standard urbanistici nelle legislazioni regionali e nella pianificazione locale*, (Roma: Officina).

as concluded, on the other, the entity of the legacy inherited from it, the legacy of urban planning standards, represents a central and crucial point.

To support this approach, there are the recent regional legislative measures on land use containment, to progressively reduce those parts of land that are not yet urbanised, in coherence with the European objective of no-land take by 2050. In this scenario, the guarantee of spatial quality in designing public space is considered as one of the main objectives of the legislative measures⁷. Nonetheless, for the interrupted, incomplete parts of the cities, where the cycle of equipment – an expression of the modern paradigm – has not come to an end and in which it is no longer possible to recover the gap between time, space and policies, which are the possible future cycles of life?

A Different-speed Italy

In its partiality, the “trip to Italy” described above shows a national geography “divided by the Apennine Mountains”, where “the great territorial room of the country”⁸ – the Padanian megalopolis – is characterised by comparable cycles of equipment of the modern public city, policies and reconfigurations.

The South of Italy is conspicuous by absence, lack of allocations, unfinished works, abandoned areas, (as a result of the reiteration of the bond of expropriation which was not been followed by an effective realization), unauthorised building phenomena (which make it the Decree impossible to apply). The political-urbanistic events which affected the Southern territories, the peculiar conditions of presence/absence of collective equipment only allow partial comparisons with other Italian cases.

Therefore, if on one hand the ‘standard spaces’ realised in the south raise shared questions, linked to the obsolescence of heritage, to the managing and designing of new cycles of life in terms of performance, according to the variation of the demand (as in the current national debate), on the other, the condition of absence – or suboption – of equipment does not allow to consider the evaluation of impacts and conflicts as a constant method of work and innovation (Gabellini, 2018), for a rewriting of these urban materials within regeneration processes, which cannot properly contribute to the debate on the revision of the legislative instrument, according to the parameters assumed on general scale.

Within the Black Box⁹: Ponticelli extra-ordinary city

Also in Naples, the decree on urban planning standards has contributed to shape the peripheries, fostering the process of urban polarisation, social and spatial inequalities in access to services and

⁷ In reference to the normative text of Veneto Regional Law L.R. 14/2017 “*Disposizioni per il contenimento del consumo di suolo*”, the first one region introducing the European indications in legislative normative in Italy.

⁸ See Clementi A., Dematteis G., Palermo P.C., 1996, *Le forme del territorio italiano*, (Bari: Laterza).

⁹ The title is referred to the intervention by Laura Lieto and Enrico Formato “Out of the black box. Per una critica degli standard tra eterogeneità e differenza. Il caso dei beni liberati a Napoli” during the SIU seminar “*Standard a misura. Regole, attori, esperienze*”, University Roma Tre, February, 16th 2018

facilities that should have improved the quality of individual and collective life. The inadequacy in the public managing together with the complexity of the city itself – here and elsewhere – have turned an inclusive and improving tool into a discriminatory and marginalising element.

The intervention on the existing identifies the city as a matter of facts conceived by another; the starting point is therefore “the logical understanding established by someone else” (Boesch M., 2018) to outline future paths of the possible: i.e. reading the signs of the territory in terms of palimpsest (Corboz, 1983) of formal and informal practices, regulatory and spontaneous, natural and anthropic.

In order to observe from the inside a phenomenon of equipment of a southern reality and investigate the possible causes for which analogous normative processes have led to different outcomes (Secchi, 1986a), the study case of the neighbourhood of Ponticelli, in the eastern area of Naples, has been selected. Ponticelli as “standard-city”, built according to specific relations (i.e. buildings height/street width) and quantities (i.e. squared meters/inhabitants) which represent the heritage of the modern principles. Ponticelli as a residential city, with a population of 50.000 inhabitants. Ponticelli as a palimpsest and mixture of urban history – ancient farmhouse district, agricultural areas, public city. Ponticelli as a land of heterotopia, urban space organised as a campus, which conceives the ground as mere support of elements, with specific functions and specific temporalities (Secchi 2006; Foucault 1984), a peculiar land between dissolution of the industrial city and harbour activities of the productive city.

Through the delineation of two stories the research aims to retrace the construction of the public city in an area rhetorically known as “urban hell” (Camerlingo, 1986; De Lucia, 2018), an area of degradation, tensions, social inequalities: a formal story on one hand, that looks at the institutional process of application of the Decree, on quantity and consistency of inherited spaces; an informal story, that reads the practices and processes of use and appropriation, on the other.

The Formal Story: blending place, plans, and policies

In the attempt of reconstructing a timeline, the process of equipping the city, that has crossed the plans, has been observed through the lens of urban planning standards, starting from the date of emanation of the DI.

The story begins in 1969 when an initial survey by a Ministerial commission, led by Minister Occhiuzzi, declares as illegal or abusive the near totality of buildings realized in Naples from the end of Second World War (De Lucia and Jannello, 1976), including public city settlements. This image shows the seriousness of the situation of emergency of “environment destruction and of the terrible conditions of life characterising a large part of the population. Where the near totality of buildings is illegal it is not conceivable demolishing the whole city”. Naples as an extra-ordinary city.

The story of Ponticelli area is the story of an ancient farmhouse and of an agricultural centurial plan¹⁰ (Pagano, 2001) transformed in a huge public city equipped with a delay compared with the Italian season of "great generation" (Secchi, 2005). A story that is made during the '80s, which sinks its roots in the first interventions Ina-casa¹¹ of the after War and crosses the plans followed through the time by means of rewritings of the Peep plan 167¹² from 1964 on. The first variant to the Peep plan, designed by architect Franz Di Salvo, is absorbed by the new zoning plan in the 1972. The settlement matrix was exasperatedly linked to the car, the lands were separated by the motorway road network through public equipment. "The periphery continued to be conceived as totally available as if they were working in the desert, ignoring pre-existing settlements, but creating a new urban image, technologically updated on the large-scale values" (Dal Piaz, 1986).

The zoning plan of 1972¹³ started a systematic transformation of the city in the tertiary sector, articulated in a series of headquarter centres, where Ponticelli was clearly privileged for number and consistence of the aforementioned centres and for the connections at the superior level. It considers the eastern side as a periphery supposed to host infrastructures, equipment, and services necessary to the whole city, without any particular care for the inhabitants who were already living there. "The new Ponticelli was proposed as a fragment of a 'different city', nestled in an urban city of bulky and unsuitable infrastructure installation". Peep settlements are organised as a marginal neighborhood, largely provided with public areas and public use areas but with no integration at all with the previous ones" (Dal Piaz 1986; Vittorini, 1986). In 1976 the "Piano Quadro dell Attrezzature" (Framework Plan of social Equipment) was drawn up as a tool to properly adapt the existing zoning plan to the regulation on the urban planning standards. It was never approved but it will contribute to the formation of the group "ragazzi del piano" (Corona, 2007), i.e. the young urban planners directed by Vezio De Lucia, that will develop, on the political wave of major Bassolino, a new idea of city with environmental matrix. This experience has been mentioned because it represented a formative moment of detailed knowledge of the Neapolitan reality, in particular, of discovery of its peripheries, leading to the drafting of the "Piano delle Periferie" in 1980. That is, a plan for the recovery of the historical centres of the ancient farmhouses, annexed to Great Naples by the end of the 1920s¹⁴, as "a construction of *the city within the city*, as a plan meant to create a continuous rethinking of the main hypotheses along which we moved in the 1960s with the construction of the public city" (Secchi, 1986a). The earthquake of November 23rd, 1980 represents a turning point for Naples as it changes times and perspectives of urban development of Ponticelli.

The earthquake has played the role of accelerator of all the processes of centre-periphery social redistribution already occurring (Benevolo, 1982; De Lucia, 1989). But above all the authority, the normative instruments, the extraordinary fundings of Special Law 219/81¹⁵ for reconstruction allowed

¹⁰ The Sebeto river valley, swampy in previous times, was characterised by a centurial structure of the territory with the rotation of "quinari" along the slopes of the Vesuvius as a testimony of the ancient process of agricultural appropriation of the volcano slopes and that marks, at the same time, a full appropriation of it (Pagano, 2001)

¹¹ Public social housing program.

¹² Public social housing program by the Law 167/62.

¹³ Last plan approved by the Ministry on March 31st. The day after urban planning domain is transferred to the regions.

¹⁴ "Since then, those lands started the downhill to the hell, progressively abandoned to degradation, without any service of public spaces"(De Lucia, 2018).

¹⁵ The title VIII of the Law L.219/81 (artt. 80-85) foresees the realisation of 20.000 dwellings together with the urbanising works mainly in napolitan territory; interventions made in a unitary way and in primary and secondary urbanization services also referred to the arretrated need; detection of the areas to expropriate in exception to the existing urban planning

the shaping, in record times, to a series of ordinary interventions elaborated in previous years (Camerlingo, 1986). The Piano Straordinario di Edilizia Pubblica (Pser)¹⁶, which incorporates the indications of Chapter VIII of the Law, allowed the realisation of ordinary plans through extraordinary sources, thus implementing the Recovery Plan for Peripheries (Piano delle Periferie) and carrying on the Peep 167 Plan for Ponticelli that, until then, proceeded slowly.

For the dimensioning of the urban planning standards, it was decided to increase the values provided for in the DI in order to meet the previous need of equipment and green spaces. The Pser allowed to produce the public city, with social equipment realised at the same time as the housing (Cederna, 1987). It is a historical turning point for the equipment of the whole city of Naples: i.e. 99 schools satisfy the demand of the whole periphery, 32 sport facilities, 95 collective equipment. Especially as regards the natural open spaces, there is a considerable increase: i.e. 30 among green areas, local and urban parks with an increase of 132,7% compared with the existing endowment, raising the quantitative data from 0.11 to 2.19 sqm/inhabitants. Despite the substantial increases, the parametric data of the city scale still remains rather underestimated. Naples as a city of absence.

In Ponticelli the Pser realises 3750 accommodations (30% of the total forecasts) through 3 consortia of cooperative and state-owned companies; for the equipment, the forecast is 20 sqm/inhabitant for the recovery plan and 38 sqm/inhabitant for the new built Peep plan. It can therefore be considered as a standard city. Investigating the forms assumed by the Peep plan realised since 1981, it can be stated that it derives from a second version of the Peep plan, in 1979. This latter abandons the ambitions of the ‘great signs’ of the 1960s in favour of a clearer and more elementary settlement organisation, a grid, in response to the very trivial criteria of managerial nature among the consortia. The emphasis is maintained on the interdistrict roads with motorway features, whereas the dimensions of the macroblocks tend to encourage the realisation of out-of-scale complexes, with the structuring element of “cis”¹⁷ as a central axis of the settlement. The areas are divided into urban sub-district areas, each of which hosting a share of equipment, not equally distributed. The Pser, that will only take action on some urban sub-district areas and on the completion of others (i.e. area 11 of Ponticelli), assigns a non-secondary role to the public equipment planned. In the designing of the planvolumetric map¹⁸ some limitations can be recognized, the effect of which setting are still visible today: “the aim is recovering the importance of the delimitation of spaces with “qualifying set” constituted by buildings, borders and fences; that is to say, the recovery of the importance of the delimitation of the city” (Vittorini, 1986).

normative with a building index of 200 inhabitants/hectare; expropriation increased up to 70% compensation; the mayor is nominated as special commissioner. The realisation times are exceptional: within 15 days the areas are detected, in the next 15 they are given in concession, by means of agreements, to cooperative companies and consortia that deal with expropriation, planning and assignment of the accommodations, according to the economic criteria established by CIPE (Comitato Interministeriale di Programmazione Economica).

¹⁶ For the data reconstruction referred to the PSER (Extraordinary Plan of Housing) the following literature has been consulted: Dal Piaz A., 1982, “Il programma straordinario nel quadro delle vicende urbanistiche della città”, in *Edilizia Popolare* n. 166; Di Biagi P., 1986, edited by, “Napoli. Costruzione e ricostruzione della città”, in *Urbanistica* n. 83; Pres. Cons. Min., 1988, *Il recupero dei centri storici della periferia napoletana*, dossier INU Conference, Matera; De Lucia V. 1989, *Se questa è una città*, (Roma: Editori Riuniti); Corsi E., Franco C., 1991, edited by, *Da terremoto al futuro. La ricostruzione a Napoli. Il titolo VIII della Legge 219/81*, (Napoli: Electa); Corona G., 2007, *I ragazzi del piano*, (Roma: Donzelli).

¹⁷ Integrated centre of services.

¹⁸ The instrument to which Peep plan was subjected within the Pser, for the realisation; for Ponticelli, the group coordinator was Marcello Vittorini.

In the 1990s, in Major Bassolino's time, a process of protection of the physical integrity of the territory and of environmental quality started, according to an ecosystem vision which anticipates of some by decades the concept of no land take¹⁹, conceiving the territory as a resource (Corona, 2007). During the first '100 days' several parks and facilities are completed and opened to the public (De Lucia, 2018) to the slogan "each neighborhood of the periphery must have a park as big as the Municipal Villa in Naples".

The zoning plan approved in 2004, currently in force, provides two different production paths of standard spaces: i.e. a direct one, through public-private agreement for public use equipment, or through the transfer of areas and the realisation of equipment in the implementing planning. The plan of transformation for Ponticelli includes a series of implementing acts with the purpose of 're-founding'²⁰ the eastern city of Naples, "made of a chaotic urban mosaic but provided with conspicuous resources of available public spaces". Since the end of the 1990s, there has been a collection of scenerios, visions, calls for tenders and projects for the Ponticelli area, which today can be considered as tensions towards the future, utopias that have never been realised. Most of them are 'standard spaces'²¹. Ponticelli as an interrupted city.

At the end of the first tale, there is a reference to the guideline document for the drafting of new urban plan, published in March 2019, where the issue of the urban planning standards crosses through the visions of city proposed. Above all, the passage "from public city to city of public use, to city of common goods and civic uses" is highlighted as an evolutionary key of the definition of "urban collective infrastructure": the forms of innovation on urban planning standards aim to capitalize on the experience of bottom up experimentation, recognised and institutionalised from the local government²² as forms of the management of city as a common good.

The Informal Story: between practices and spaces

The second tale is an attempt of field exploration. By shifting the point of view from zenith to horizontal, it tries to observe the territory through the lens of collective equipment at present tense, between practices of use and conditions of degradation. Even though still in an embryonal phase of the research, it is still possible to get a first description of "Ponticelli as a city of people", still partial and introverted.

Between gigantism of settlements and the oversized roads allocation, in an excess of separation, a series of obstacles – fences more or less permeable to the eye – encloses and detects the collective equipment, often vandalised, sometimes unused, squalid, devoid of maintenance and care, without any quality and comfort. The 'standard spaces', fragmented or united in clusters, often appear inaccessible

¹⁹ In the zoning plan, approved in 2004, the C zones, expansion areas, are absent.

²⁰ See Council of Naples, Report on the variant to the general regulation plan, chap.6 (pp. 468-475), on www.comune.napoli.it/urbana

²¹ The Sebeto Park, the PalaPonticelli, the House of Music, Culture, and Events.

²² It is here referred to the following deliberations: dcc 29/15 "Adotta una strada"; dcc 7/15, dgc 893/15, dgc 446/16 for the collective managing of public and the recognition of citizen experiences of self-managing of public spaces to the advantage of local collectivity; dgc 458/17 on the temporary use of abandoned public equipment, for the purpose of valorisation of the public, unused legacy through the creation of urban civic communities.

and unaccomplished but sometimes it is just a mere perception. The gap between quantity and quality of the collective infrastructure is all there. The dimension, the scale, the distance between “parchi urbani”²³, roads, facilities and people make the urban space suspended: “not contemplated, not foreseen, removed, mankind finds itself alone at the top of the work and then disappears” (Wu Ming, 2018). An uninhabitable city. Almost a city without inhabitants. Nonetheless, people are in fact there and they manipulate and appropriate space, claiming a right to the city that has been betrayed.

The state of apparent abandonment allows spontaneous practices to colonize places: i.e. forms of informal re-appropriation, more or less virtuous, like a shred of vegetable garden land that an inhabitant has cropped in a public park, opening a gate in the fence that separates his house from the park; other times illegal, like transforming a linked bound to an urban park in toxic waste landfill. Other ones can be recognized as place-making and bottom up processes. This is the case of De Filippo Park, a 12-hectares local-scale park, apparently another fence inherited from the modern equipment. Realised at the extra-ordinary time of Pser²⁴, inaugurated and closed due to a lack of funds for the maintenance, after a period of improper use by criminal system, in 2015 it is entrusted by the municipality to the day care centre for addictions by ASL (i.e. the Italian NHS), called ‘Centro Lilliput’, for the creation of an “urban garden of health”, for curative and social reintegration purposes of drug addicted people. The management for rehabilitation purposes is associated with the re-appropriation by the local community, through the signing of an agreement between municipality and committees of free citizens for the assignation of spaces to be adopted and re-cultivated. This ‘micro-tale’²⁵ of urban planning standards tells about a process of activation, triggering and care of collective equipment, whose main value is in the recovery of the local identity and in the pedagogical function of the urban space.

The ‘presence’ of a heritage of equipment, such as the Decree spatial deposit, is also associated to the rarefaction of the unused space, of the in-between lands (Russo, 2012) waiting for the hopes-utopias-tensions to come true in the form of urban projects. They are fragments of ‘third landscape’: i.e. this “reserves of land” bring back to the generative principle of the decree, where original character had the aim of guaranteeing to the cities a reserve of unbuilt areas of public domain, regardless of the effective realisation within reasonable times and in absence of a public land policy (Falco, 1987; Chicco, 2003).

Marginal Notes on the presence/lack of equipment

On rhetorics. On one hand, there is a perception “at first glance”: a city-neighborhood-dormitory, a social hell, the mediatic reputation. On the other, “the controversy that prevails over the analysis, the passion that does not leave space for doubt, the side taking that does not allow to deepen the issues, to make comparisons, to place every idea and result into a proper perspective” (Secchi, 1986b). From another point of view, the observation from above and from a closer perspective, through the

²³ . In Naples, the term “parco urbano” is usually referred to a cluster of residential buildings, usually enclosed within fences; they might be defined as “gated communities”.

²⁴ The sub-district 5, geographically barycentric in the Peep plan 167 in Ponticelli.

²⁵ The micro-tale has been reconstructed through interviews with professor Maria Federica Palestino, Diarc Unina, and with citizens that adopted areas within De Filippo park met there.

reconstruction of the normative events and the survey in the field, shows a daily reality that is made of the presence of equipment as a deposit of a physical heritage, of social networks, of forms of activism, of lands of possibility in form of waiting lands.

On urban planning standards. If the cycle of equipment according to the forms and methods provided by the Decree can be considered concluded, as it is linked to a limitless growing phase of the urban areas, the number gap, i.e. of the lacking quantities, however, cannot be recovered. If at a neighbourhood scale, the equipment has more or less satisfied the parameters established by the Decree, even though repeating the mistake of gigantism also for the equipment, the reflection needs to be brought back to the comparison between a local dimension of a presence (which is satisfied but still inadequate) and the urban and metropolitan dimension of absence (strongly underequipped), between quantity and quality, between standards and *'progetto di suolo'*. From this point of view, the case of Ponticelli can contribute to the national debate, showing comparable and common features to other Italian situations.

On urban planning. Thus, which kind of urban planning for the 'middle lands', still waiting? The storytelling of the two tales allows a definition of different images of the city: i.e. Ponticelli as an extra-ordinary city, only realised through actions and policies beyond the ordinary, but also extra-ordinary case for the phenomenon of equipment that has affected it. Ponticelli as an interrupted, incomplete, fragmented, awaiting city: a physical and political condition of inertia which generates segregation and social discomfort. Ponticelli infernal city, as an accumulation of urban wastes. Ponticelli as a present city, which reacts in a daily and spontaneous way to the condition of degradation and forgetfulness where it is relegated.

Non-conclusion

The image of an interrupted city allows to outline possible research perspectives. If the periphery can be assumed as a steady, historicised urban figure (Bianchetti, 2003; Russo, 2008), Ponticelli emerges in its hybrid position for the condition of presence/absence, unfinished, as an 'open work', where each part still has an uncertain status: if it is undiscussed which are the 'hard' parts (Secchi, 1984), the 'malleable' ones, in the inertia of the waiting, have hardened to the perception, structuring the urban landscape of this part of the city. "The quality of the space that crosses the time is not the neutrality (as defined by the modern project) but generosity, open structure, belonging to social networks" (Viganò, 2011). If "incomplete" can be considered as typical Italian style, we can assume 'freespace' as a verb or commandment that stimulates new ways of seeing the world, inventing solutions that provide for well-being and dignity of all inhabitants (Aravena, 2018): rewriting the city will mean being an open work, rather than a closed, accomplished system. The question 'time' becomes for Ponticelli a 'new urban question'. It is necessary to contrast the waiting of long term and wide-ranging planning with short timeframes and minimal interventions, contrasting to all that a greater flexibility in regulations, space and use. In a metabolic vision, assuming the postulate of Ponticelli as resource-city can allow to interpret the presence/absence of collective equipment as materials to be reinterpreted in new cycles of life. Can these materials define a new, albeit unsteady, image of the city?

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Antifragile Practices to Design Social Dialogue in Contemporary European Public Spaces

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Abstract: European territories are crossed by an uneven transition that highlights a new geography of inequalities, fragilities, and fragmentations. Public spaces are one of the core features of European culture and today a number of events undermines their everyday body-scale dimension, exacerbating risk perception. This paper shows some preliminary outcomes of my ongoing PhD research, that digs a new spatial-relational strand involving the concept of *antifragility*. Introduced in opposition to the notion of fragility, antifragility describes the capacity of getting better from shocks taking advantage of volatility by dealing with randomness, disorder, and unpredictability. Holding this perspective, the paper deepens some specific antifragility features (i.e. the ability of learning from errors, the capacity of gaining from disorder –maintaining a certain degree of uncertainty–, as well as optionality and redundancy as methods to reduce shock exposure). The spatial value and design potential of these features is investigated through some remarkable public spaces recently built in Europe, so to show not only the potentialities of antifragility as a design issue, but also that public space is still the best environment in Europe to activate new urban dialogues –considered as the sum of social actions and spatial forms that co-design publicness.

Keywords: Contemporary European public space; antifragility; social and spatial justice; new planning and design tools

1. Introduction. Public Spaces as a key-factor in rethinking European territories

Europe is now facing a profound transformation, whose outcomes have still to be built. Indeed, what is already visible about the current change is not encouraging: it makes Europe a network of territories in crisis (Bianchetti *et al.* 2015). This crisis is deeply diversified across European territories, highlighting a new geography of spatial and social fragilities, inequalities, and fragmentations. Further, it goes widely beyond the economic boundaries and its strict involvements, as it is a crisis of meaning that questions the issue of European –open– identity.¹

¹ “There isn't an all-European culture” (Hobsbawm, 2007), indeed, Europe hasn't a bounded identity, but an open one, made of multiplicities, differences, exceptions, incompleteness, and contrasts. European identity took shape over time through accumulation, addition, superimposition, rarely replacement or elimination. It is based on a strong urban culture,

Since a decade, public institutions, academia, private agencies, as well as practitioners and informal groups are working on an unprecedented number of studies, researches, awards, and activities concerning contemporary European public space. I argue that this proliferation is symptomatic and that it could suggest the centrality of public space in the general rethinking of European territories, in order to consciously face the current epoch-making transformation. Hence, on the one hand, public spaces are the *loci* of presence –even for the powerless–, and thus of relations as dialogue, conflict, sharing, reciprocity (Cogato Lanza and Pattaroni in Bianchetti *et al.* 2015), and, finally, of difference considered as a right (Lefebvre 1996; Cogato Lanza *et al.* 2013). In particular, difference has an intrinsic creative value (Bauman 2005) able to make life more intense, moreover public space is the place where differences can be supported in starting a meaningful dialogue. On the other hand, public spaces are one of the core features of European culture (CCCB and Gray, 2015) and they should be intended as repository of *mixophilia* as well as space of resistance to *adiaphorisation* phenomena, considering mixophilia as the ways in which the city prompts attraction and tolerance toward strangers and adiaphoria as moral indifference (Bauman, 2005; Bauman and Donskis, 2013).

During the last decade public spaces deeply changed. The increasing presence of new technologies transformed the way collective spaces are experienced, furthermore the transformation of uses made spaces more flexible, variable, and temporary than in the past, embodying a continuous and perpetual resignification (Tornaghi and Knierbein, 2015). Today, beyond the progressive cordon off of many public spaces, a number of events has increased the attention on the topic of urban public spaces control in Europe. The terrorist attacks all over the continent, as well as the institutional reactions to different forms of urban social contentions (Neguerela Del Castillo in Bianchetti *et al.* 2015) undermine the everyday body-scale dimension of public space, exacerbating risk perception and bringing mixophilia in danger of being lost (Bauman in CCCB and Gray, 2015). With the increasing sense of insecurity all the charming aspects of urban life, such as spontaneity, surprise for unforeseen, and adventure are jeopardised (Bauman, 2005). Thus, public space has become place of crisis representation, but, thanks to its open and inclusive nature, it is also the potential playing field of a change-maker social dialogue.

1. 1 Contents and contribution of this paper

Starting from these premises, this paper shows some preliminary outcomes of my ongoing PhD research, that intends to dig a new spatial-relational strand by testing *antifragility* (see section 2) as an operational design issue applied to public space, so to give rise to a highly transferable and applicable approach in architecture and urban design practice. The goal is not so much to produce new design tools, as rather to further articulate the “framework” (Lévy, 2007) of sustainability in spatial design disciplines (see paragraph 2.3). I argue that antifragility could be helpful to look at the current moment of fundamental change for society. In particular, when design of public spaces is concerned, it could be particularly useful to consider antifragility as a design issue. Indeed, being open to all, public spaces

considering urbanity as a concept of self-limitation of rights in respect to cohesion, feeling that city belongs to everybody, in a dimension of sharing (Zucchi, 2015).

are the places in which all the things that nourish antifragility –such as complexity, chaos, disorder, randomness, etc.– are more massively present.²

Thus the next section of this paper introduces the notion of antifragility from a theoretical point of view, presenting its origins, the reasons for which it is useful to discuss about fragility –and, consequently, about antifragility–, the relationship among fragility, antifragility, and robustness, as well as how antifragility could profitably substitute resilience in pairing with the framework of sustainable development. Then, by means of some remarkable examples of recently built or renovated public spaces in Europe, section 3 examines a number of antifragility features, that could be usefully applied in design disciplines, notably in architecture and urban design. In conclusion, section 4 presents some final considerations and opens up to future developments of my ongoing doctoral research.

2. Antifragility

By writing of antifragility I refer to Nassim Nicholas Taleb’s neologism, first proposed and widely examined in his book *Antifragile: Things that Gain from Disorder*, published in 2012. Taleb, statistician expert of randomness, probability, and uncertainty, introduced the term antifragility to describe the “functional opposite” (2012, p.17) of fragility. Namely, fragility and antifragility are intended as opposite poles of the same spectrum. The author states that the opposite of fragility is already present in our daily life, although no name has been previously coined to describe it. Robustness is commonly mistaken for the opposite of fragility, even if it is not. In keeping with possible misunderstandings, antifragility is sometimes confused with resilience, even if they are utterly divergent. This second section of the paper delves into the notion of antifragility and inquires how it differs from robustness and resilience. But before getting into these issues, a focus on fragility has to be done.

2.1 Why discussing about fragility?

The argumentation that follows focuses on fragility starting from a spatial example: the renowned public space of Superkilen. Superkilen is located in Copenhagen –more precisely, in the multicultural neighbourhood of Nørrebro– and it has been designed by the art collective SUPERFLEX together with a joint team of architects, urban, and landscape designers –BIG and TOPOTEK 1. During the 2000s Nørrebro was notorious as the most restive neighbourhood of the city, being the stage for violent social clashes. Thanks to an attentive municipal governance, an integrated urban and social development programme has been developed for Nørrebro, in order to work on social co-existence issues. The realisation of Superkilen (2007-12) has been part of this programme. Indeed, through a participatory process that involved people from all the ethnic groups inhabiting the neighbourhood, Superkilen transformed a 4 hectares wedge –*kilen* in Danish– in an intriguing system of public spaces that celebrate cosmopolitanism. Today, seven years after its completion, Superkilen is still widely considered as a successful case of participatory design, and violent clashes are just a bad memory. But can designers – as well as promoters and other stakeholders– assess the risk of negative events that could affect the

² These characteristics should refer at least to all open collective spaces of public property. Indeed, chaos, disorder, and complexity are strictly excluded from the so-called *privately owned public spaces*, that are silently multiplying all over the world. See the work of Jeremy Németh, as well as of Matthew Carmona *et al.* (2010, 2012, 2014).

conditions and usability of this place? Some measures can be undoubtedly taken to face the most probable negative events. However, even a common event as vandalism, riots –or a typical Danish flood– can happen in an unpredictable way or concomitantly with other situations, causing unexpected damages.

So, if it is not possible to robustly determine the consequences of a probable event, is it then possible to predict more rare events? For Taleb the answer is negative. Indeed, he argues that, by its very nature, risk is not precisely measurable, and a sheer number of circumstances are not predictable at all –being unexpected as black swans (2010). Thus, Taleb suggests a shift of focus from risk assessment, to the analysis of existing fragility features. Notably, Taleb avers that: “It is far easier to figure out if something is fragile than to predict the occurrence of an event that may harm it. Fragility can be measured; risk is not measurable [...]. This provides a solution to what I’ve called the Black Swan problem—the impossibility of calculating the risks of consequential rare events and predicting their occurrence. Sensitivity to harm from volatility is tractable, more so than forecasting the event that would cause the harm” (2012, pp.4-5).

To work on existing fragility features –and thus on antifragility solutions– means to make the most of what is already present. Fragility features are measurable and, furthermore, no prediction is needed. Hence, unlike risk assessment, a decision-making process based on fragility and antifragility features involves a *nonpredictive* logic: “By grasping the mechanisms of antifragility we can build a systematic and broad guide to *nonpredictive* decision making under uncertainty in business, politics, medicine, and life in general—anywhere the unknown preponderates, any situation in which there is randomness, unpredictability, opacity, or incomplete understanding of things” (2012, p.4).

Even though Taleb has never explicitly mentioned the work of Albert Hirschman, I suggest that Taleb’s *nonprediction* attitude has an interesting overlapping to Hirschman’s *possibilism*. Hirschman started to develop his notion of possibilism from his book *A Bias for Hope* (1971) in which he states that: “I have of course not been disinterested in claiming equal rights for an approach to the social world that would stress [...] the possible rather than the probable. For the fundamental bent of my writings has been to widen the limits of what is or is perceived to be possible, be it at the cost of lowering our ability, real or imaginary, to discern the probable” (1971, p.28). In the early 90s, during an interview published in the book *Passaggi di frontiera* (1994), Hirschman claimed that, throughout his career of Development economist, he has always been more interested in exploring the domain of *possibility* rather than the one of *prediction*. This means to focus the attention on the real –or perceived– possibilities that something –good or bad– may occur. Rephrasing with Taleb’s lexicon, this means to adopt a nonpredictive attitude, by working on fragility and antifragility features that are present in a specific situation –even when they are latent resources.

2.2 Fragility, robustness, and antifragility

Taleb affirms that fragility can be described as “*what does not like volatility*”, adding that “*what does not like volatility* does not like randomness, uncertainty, disorder, errors, stressors, etc.” (2012, p.20). Consequently, the opposite of fragility gains from volatility, as well as from randomness, uncertainty, disorder, errors, stressors, and so forth. To explain this theoretical statement, Taleb gives the example of a package to be sent (2012, p.40-41). Namely, a fragile package is breakable –so it should be handled with care–, while a robust parcel does not break –as it remains unharmed regardless of how it is handled.

Thus, robustness is not the opposite of fragility, as the opposite of a fragile package is a parcel that gets better from being mishandled. As no name has already described this condition, Taleb purposes to call it antifragility. As seen in Figure 1, fragility and antifragility are relative terms, they are opposite poles on a spectrum, while robustness is not part of it. Further, the perfect robustness is an ideal condition, but in real circumstances one can just be robust up to a certain point.

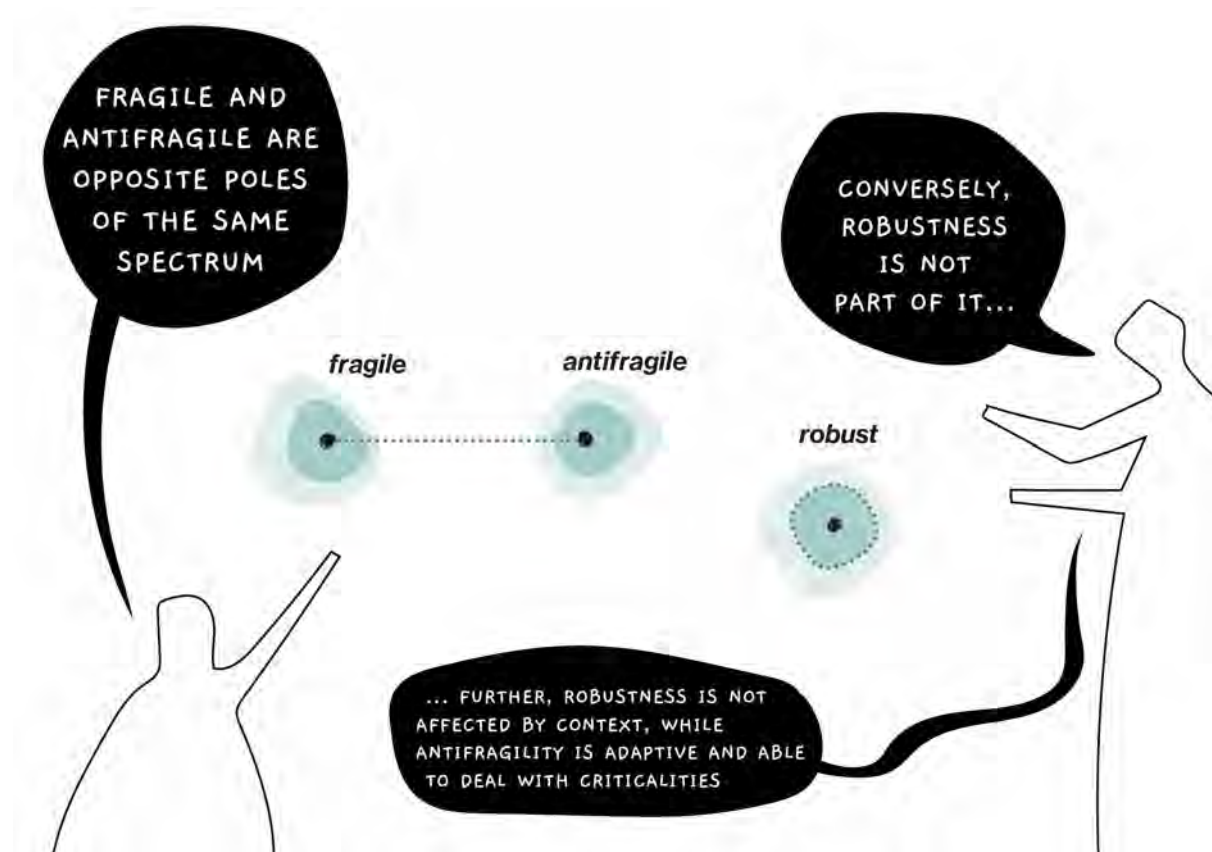


Figure 1. The relationship among fragility, robustness, and antifragility. Elaboration by the author.

Investigating the relationship among fragility, antifragility, and robustness is not an exercise of abstract thinking. On the contrary, it allows to bring into focus a wide range of practical implications that affect the decisions we make as well as, I would suggest, the spaces we design. Taleb argues that, in many cases, to acquire some antifragility features is more advantageous than to reach a certain level of robustness. Indeed, robustness is a safe condition, but it is not affected by context, while antifragility is context-sensitive, it is adaptive and able to deal with criticality. An antifragile system is ready to change and to take advantage of stress, disorder, imperfection, error, chaos, and chance. The next section of the paper exemplifies some of these aspects by means of spatial cases. But before coming to examples, the current section continues with some theoretical observations. The final aim is to clarify why investigating antifragility is a fruitful operation, indeed antifragility “makes us understand fragility better. Just as we cannot improve health without reducing disease, or increase wealth without first decreasing losses” (2012, p.11).

2.3 Antifragility, resilience, and sustainable development

In 2007, the French geographer Jacques Lévy wrote a short but significant article about sustainable development on EspaceTemps.net, an interdisciplinary online journal of social science. Lévy stated that “sustainable development is more of a framework rather than a standpoint within a debate. In other words, sustainable development is more of a language than a discourse”. The concept of resilience is frequently associated with the “language” of sustainable development (Rees, 2014). But, by looking at this pairing from the point of view of the flow of time, it is possible to identify an inconsistency between the two notions. Indeed, on the one hand, sustainability is literally the ability to sustain indefinitely over the course of time. Whereas, on the other hand, resilience –a notion originally coined in the domain of Systems Theory– is the ability to restore a previous condition after a shock. Thus, resilience concerns the capacities of re-establishing and reinstating, it involves a movement on a close path that permits to come back to the start. To come back means to openly contradict the linear becoming of time and, consequently, to be incompatible with a sustainable development inscribed in the linear becoming of time. On the contrary, antifragility is linked to the becoming process, as it involves the concepts of change and improvement. To design means to project an idea in the future, in order to build something never existed before. So, the notion of resilience could be profitably substituted by the one of antifragility in association with sustainable development.

2.4 Antifragility as a nomadic concept

Taleb considers antifragility as a highly transferable concept, emphasising its possible application far beyond the study of uncertainty. Throughout his book, he introduces heuristics that allow a system to gain a certain level of antifragility. These heuristics are transformative actions and they reveal traces of a design attitude that I try to start grabbing in this paper. Although just a few efforts have already been done to use antifragile heuristics in architecture, urban design, and planning, antifragility has already been fruitfully applied in several scientific fields as physics, biology, computer science, and transportation planning.³ The spreading of antifragility across different disciplines encourages its

³ An empirical systematic application of antifragility in architecture, urban design, and planning is still missing. One of the first efforts has been made by Tanzil Shafique from the pages of *Studio* (2015), where he proposed antifragility as a possibility to re-situate contemporary urbanism. Ivan Blečić and Arnaldo Cecchini have been working on the role of antifragility in urban planning field (2016, 2017, 2019). However, their work concerns the proposition of a general notion, no direct relation with public space has been inquired. Up to now, the only effort bridging antifragility to public space, is an article by Mark Brown (2017), an urban planner active in the United States who wrote germinal remarks on North American public spaces, focusing on security and flows issues. Further, Strong Towns, a movement active in US and Canada, dedicated a section of its blog to design-oriented reflections on Taleb’s book.

A cluster of interests has been aggregating around the relation between antifragility and design in critical contexts. In this sense *Fragile/Antifragile: Shigeru Ban + VAN, the Voluntary Architect’s Network* (exhibition by Microma, Turin, 2014) opened the way by using antifragility as a metaphor to describe the socially engaged work of Shigeru Ban. Camillo Magni has referred to antifragility to comment some contemporary architectures in the Global South for *Casabella* (2015). More recently, Cherubino Gambardella has considered antifragility among a list of concepts selected to describe some of the most interesting contemporary architectural and urban projects on peripheries all over the world.

comparison with the definition of nomadic concept. According to Isabelle Stengers' definition (1987), a concept is nomad when it *propagates* from a scientific discipline to another one. Stengers argues that *propagation* takes place in different ways. Indeed, the nomadic concept can be:

1. A metaphor: a concept used in a new field of study, even if its definition is still referring to the starting field of study –Stengers calls it propagation as diffusion;
2. A pure concept: a notion grafted in a new field of study, in order to build new theories in the new field and the definition of which can be given inside the new field of study, without referring to the starting one –Stengers calls it propagation as epidemic;
3. A pirate concept: an absolute interdisciplinary concept, free from any bond with local concepts and single fields of study.⁴

Thus, is antifragility a metaphor, a pure concept, or a pirate concept? As written at the start of this section, antifragility has been coined at the beginning of the current decade. Thus, the *propagation* is still ongoing. However, I would argue that, considering the current point of *propagation* in the aforementioned disciplines, antifragility is half-way between a metaphor and a pure concept. Indeed, antifragility is characterised by a number of widely applicable heuristics that make it a potential pure concept. As far as pirate concepts are concerned, they just set up a tight group, further, many external factors could influence the admittance within this group. Time will tell if antifragility could be a pirate concept. For the moment, I am interested in highlighting that antifragility is a potential operative concept for several disciplines, and, in particular, for design disciplines –including architecture, urban design, and planning.

3. Antifragility as a design issue

This third section of the paper presents a set of case studies. Each of them concerns a remarkable example of recently built or renovated public space in Europe, and it has been selected to investigate a particular feature of antifragility. The value of these case studies has already been recognised by international architecture critics, indeed two of them have been mentioned by the most important awards for contemporary European architecture: the *European Union Prize for Contemporary Architecture – Mies van der Rohe Award* and the *European Prize for Urban Public Space*. Furthermore, in this paper each case has been selected for its capacity to reinterpret a previous open space –through space and processes– in an innovative way that breaks with the *status quo*.

Up to now, this investigation involves a simplification, as these spaces have more than one characteristic that deals with the notion of antifragility. However, the choice of isolating a single feature for each case

On this topic, Gambardella –with *Annali dell'Architettura e delle Città foundation*– has organised *Periferie Antifragili* (conference, Naples, 2018) and *Metropoli Novissima* (exhibition, Naples, 2018).

⁴ For instance, the French geneticist Michel Veuille (Stengers, 1987) considers the notion of correlation a pirate concept.

is a first attempt to show the potential of antifragility as a design issue, as well as to understand that a number of antifragility features are already –unwittingly– present in spatial projects. In particular, the following paragraphs focus on some antifragility features mentioned by Taleb, as the ability of learning from errors, the capacity of gaining from disorder –maintaining a certain degree of uncertainty–, as well as optionality and redundancy considered as a method to reduce shock exposure. Among all the antifragility features already recognised, these are the most directly connected with spatial design. But this list is just a start, ready to be discussed and implemented.

3.1 Learning from errors. The case of *Place de la République* in Paris

Starting from the traditional recommendation *learning from errors* and its corollaries –according to which stressors, errors, and their consequences can provide powerful information–, Taleb avers that the fundamental heuristic of *trial and error* has to be kept in the foreground. Indeed, “the random element in trial and error is not quite random, if it is carried out rationally, using error as a source of information. If every trial provides you with information about what does not work, you start zooming in on a solution –so every attempt becomes more valuable, more like an expense than an error” (2012, p.81). Furthermore, learning from others’ mistakes is vital. For instance, if a single individual fails, its error can still be a lesson to be learned by its community.

The antifragile attitude is the one that, after slipping up, takes advantage of the lesson learned from its mistake, and moves on “enriched with a new piece of information” (2012, p.83). More in general, “antifragile loves randomness and uncertainty, which also means –crucially– a love of errors, a certain class of errors” (2012, p.12). By writing about “a certain class of errors”, Taleb refers to small and diffused mistakes, a frequent little variability, namely the opposite of an isolated major shock. He writes that “such variability helps improve the system (hence the antifragility). A week with declining earnings for a taxi driver [...] provides information concerning the environment and intimates the need to find a new part of town where clients hang around [...] a small (nonterminal) mistake is information, valuable information, one that directs him in his adaptive approach” (2012, p.97). *Fluctuat nec mergitur* (2012, p.113), as Latins said.

Fluctuat nec mergitur is also City of Paris’ motto and, during the recent renovation work for *Place de la République*, this motto was written in capital letters along the fences of the square’s building site. No writing could be more appropriate, as the renovation of Parisian *Place de la République* by French architects TVK is a true example of how to learn from errors, in particular from past errors –that is to say the previous configuration of the square–, as well as from current small mistakes –the daily variability– by means of a blog that acts as a permanent observatory of the square.

Originally realised during Haussmann’s renovation and located among the 3rd, 10th, and 11th *arrondissement*, during the 20th century *Place de la République* had been progressively downgraded to the level of a huge roundabout. It had become a sort of traffic junction among seven main urban axes. Both private and public transports had increasingly colonised almost all the surface of the Haussmannian square, making pedestrian space marginal and devalued.

In 2009-10 the City of Paris organised an ambitious competition to entirely rethink the square. TVK won the competition and, in 2013, the realisation of their design project was completed. The new configuration has remodelled *Place de la République* as the largest pedestrian square of the city –280 x

120 meters, approximately 2 hectares—, subverting the spatial proportion between transport area – reduced from 2/3 to 1/3 of the total surface— and pedestrian space –increased from 1/3 to 2/3. By so doing, the square harmonises the metropolitan scale of transportation systems together with the local scale of pedestrians, as well as the magniloquence of its Haussmannian dimensions with its everyday uses.

The square is conceived as a wide and continuous pedestrian surface, composed by different tones of grey concrete slabs and characterised by a “serene balance of the mineral element and a horizontal ground”, as TVK states on their website. The prevalent horizontal dimension is even underlined by the few vertical elements that are present, as the aligned masses of treetops that shade pedestrians, the 19th century monumental statue of Marianne that orients gazes and fluxes, and a café located in a glass pavilion that seems to float on a reflective pool. The entire square constitutes a *plateau* that TVK considers as “an urban resource, available and adaptable for different uses”. Further, the designers state that the entire redevelopment of Place de la République “is based on the concept of an open scene with multiple urban uses”. Indeed, today the square hosts a great variety of daily uses, as well as informal public gatherings, institutional parades, mass demonstrations and protests.



Figure 2. Place de la République: left, learning from past errors; right, studying current daily variability. Elaboration by the author.

As seen in Figure 2, TVK has not only learned from past errors by redressing the spatial configuration of the square, but, together with the City of Paris, they have also decided to continue learning from present configurations, uses, and mistakes, by establishing an open online blog that works as a permanent observatory of the square. In fact, the blog *republique.tvk.fr* is a dialogical virtual space that

documents the survey of the renewed space by means of pictures, videos, interviews, and drawings. Far from being a neo-functionalist tool, the blog reports daily uses as well as exceptional uses of the square, also documenting unexpected uses and temporary appropriations of the spaces. The aim is to provide the necessary adjustments to be made along the way, as well as to build a repository of information for future projects.

3.2 Gaining from disorder. The shared space of Sonnenfelsplatz in Graz

Errors and stressors are just two specific components of what Taleb calls *The Extended Disorder Family (or Cluster)*. Thus, by saying that antifragility gains from disorder, the author refers to “(i) uncertainty, (ii) variability, (iii) imperfect, incomplete knowledge, (iv) chance, (v) chaos, (vi) volatility, (vii) disorder, (viii) entropy, (ix) time, (x) the unknown, (xi) randomness, (xii) turmoil, (xiii) stressor, (xiv) error, (xv) dispersion of outcomes, (xvi) unknowledge” (2012, p.21).

In this paragraph I would emphasise a spatial interpretation of gaining from disorder and chaos. When someone is immersed in a disordered or even chaotic space, he/she has to compensate the surrounding sense of uncertainty by being vigilant and staying focused. The popular Shared Space approach goes in this direction. Indeed, it aims to design more liveable and human-sized streets by introducing a certain degree of chaos. To reach this goal, shared spaces seek to minimise the separation among pedestrians, cyclists, and drivers –in favour of the slowest– by removing traffic signs and by weaken the difference among sidewalks, cycle paths, and roadways. The absence of traditional street rules produces a greater sense of uncertainty. For instance, it is no longer completely clear who has the precedence at some point, thus drivers and cyclists are inclined to slow down, with a general increase of awareness and alertness. As it is well known, the first spaces of this kind were conceived in the early 80s by Dutch engineer Hans Monderman. Since then, they spread to the extent that, in 2003, *European Shared Space Project* was established, leading to the development of specific shared spaces policies and design approaches. Today this kind of spaces are widespread in Anglo-Saxon Countries as well as in Northern and Central Europe and, despite criticism, an actual reduction of accidents has been found.

As other Shared Spaces, Sonnenfelsplatz in Graz is interesting because it tests the importance of self-regulation in a chaotic context. Sonnenfelsplatz has been built by the municipality between 2009 and 2011 and, being part of the European Shared Space project, it has been the first case of shared space in Austria. The square is located in a neighbourhood strongly characterised by the presence of University’s buildings, and it is close to the border between the compact inner city and diffuse tissues. Sonnenfelsplatz –approximately 3.000 square meters–conveys five busy streets and has an average of 15.000 motor vehicles per day. In particular, during peak hours, it has an average of 1.000 motor vehicles, 3.000 pedestrians, and 600 cyclists per hour (Schönauer *et al.*, 2012). A quite crowded square for a city of 435.000 inhabitants. In order to make the square more liveable and to decrease the number of accidents, the municipality of Graz has introduced the idea of a shared space through a number of participatory sessions together with inhabitants, city users, University’s personnel and students, followed by live training phases on the field. The participatory process has led to a collective welcoming of shared spaces solutions, that have involved de-regulation of traffic as well as introduction of seatings. Further, the perimeter of the square has been delimited by an uneven sequence of stripes miming the projection of the buildings that delimit Sonnenfelsplatz, in order to suggest –but nothing more than suggesting– a safe area for pedestrians and cyclists’ rest.

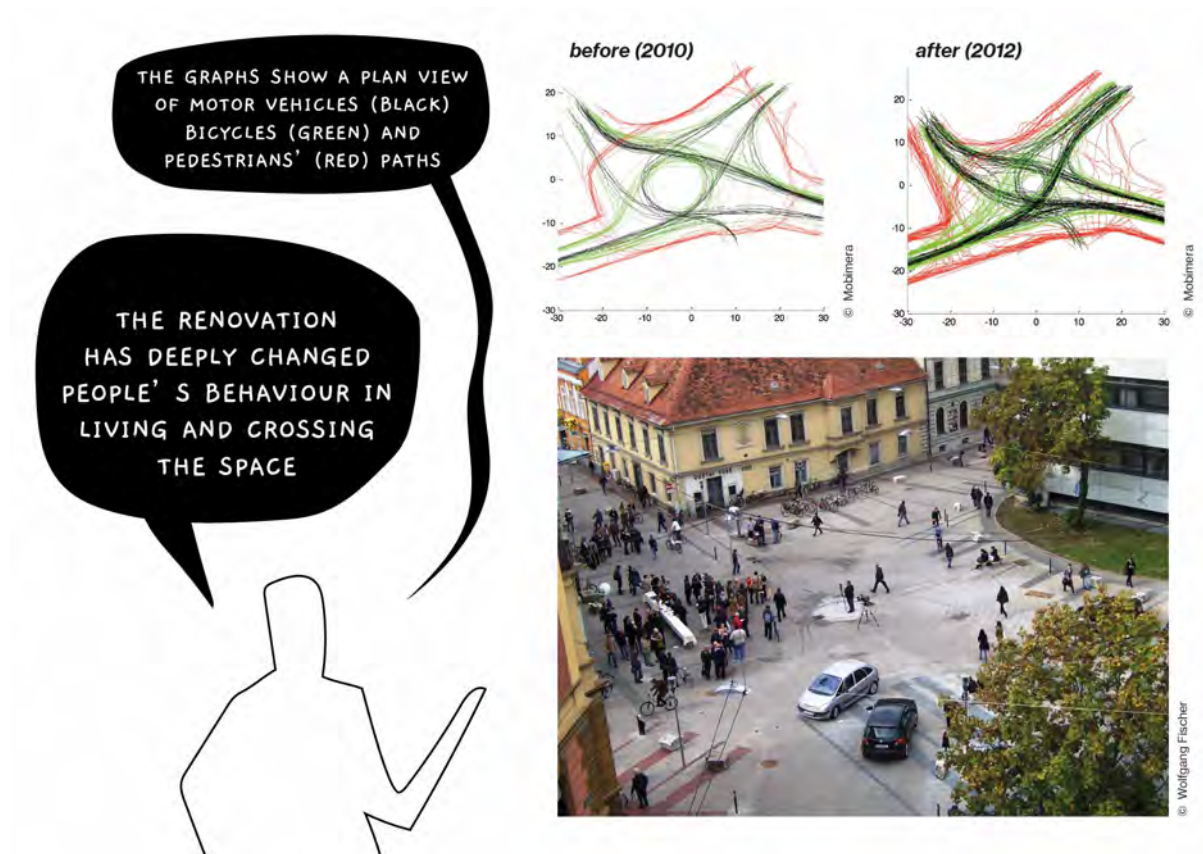


Figure 3. The shared space of Sonnenfelsplatz in Graz. Elaboration by the author.

Spatial self-regulation is not an invention of Shared Spaces. It is an ancestral behaviour. Nevertheless, shared spaces have the merit of its introduction in contemporary planning of public spaces. Besides, Sonnenfelsplatz is a useful case to be considered as it has been the subject of a traffic survey conducted immediately before and after its renovation (2010-2012). As seen in Figure 3, the survey was led by Mobimera –a Viennese consulting start up working in the field of urban road design and traffic organisation– and it showed that Sonnenfelsplatz redesign has deeply changed people's behaviour in living and crossing the space. Indeed, already in the first year after the renovation, drivers, cyclists, and pedestrians' paths smoothed in a more fluid configuration, motor vehicles systematically decreased their speed, the perception of safe areas deeply increased, car accidents significantly decreased and no accident involving pedestrians was registered (Schönauer *et al.*, 2012).

3.3 Optionality and redundancy to reduce shock exposure. The case of Superkilen in Copenhagen

An antifragile behaviour is the one that preserves the possibility of choosing, changing, adapting, and keeping options open. In this direction, Taleb states that “the fragile has no option. But the antifragile needs to select what's best –the best option” (2012, 197). Further, optionality –namely the possibility to have more options– “will take us many places, but at the core, an option is what makes you antifragile and allows you to benefit from the positive side of uncertainty, without a corresponding serious harm from the negative side” (2012, 184). In particular, the author introduces redundancy as a particular – simple– case of optionality. A redundant system has some kind of extra features, that could apparently

seem a waste of resources, but that can turn into precious reserves ready to use in case of need, shocks, unexpected events, and so forth.

In order to delve the spatial value of redundancy, I propose to return to the renowned case of Superkilen, already introduced in paragraph 2.1. Indeed, Superkilen is an interesting example of redundancy. Along approximately 700 meters of length, Superkilen keeps changing its morphology to establish a meaningful dialogue with its contexts. In this regard, one of the chief designers, Bjarke Ingels from BIG, says: “[w]hen we looked at the topographic map, there were somehow already three parts. We just transformed them into the *Red Square*, the *Black Market*, and the *Green Park*” (Steiner, 2013, p.25). Each part has a colour in its name, as it is the main colour that characterises its soil. Another of the chief designers, Jakob Fenger from SUPERFLEX, avers that the three coloured soils are “a sort of backdrop for the objects collected from different places” (*ivi*). These “objects” are the main feature of Superkilen. People of all nationalities living in the neighbourhood have been called to suggest an amazing and special object to represent their nation, culture, and tradition. Designers asked for objects “which usually furnish cities –ranging from litter bins, benches, manholes, bicycle racks, play and sport items, street lighting to ads (light boxes), bus shelters, a fountain, and even to sculptures” (*ibidem*, p. 13), and, after a process of selection, some objects have been directly transported from their country of origin and installed with the direct help of neighbourhood residents –thus triggering a deep sense of identification with the space–, while others have been reproduced on site with small variations. As a result, 108 objects and 11 new trees have colonised the space of Superkilen, creating “emotional connectivity” (*ibidem*, p. 16) and even “deliberate conflicting constellations, such as soil from Palestine and a manhole from Israel next to one another” (*ibidem*, p.18).

This process of summation, juxtaposition, inclusion, and incorporation of various objects has its roots in Cabinets of curiosities –*Wunderkammer*–, passing through English landscape gardens –as suggested by Martin Rein-Cano from TOPOTEK 1 (*ibidem*, p.30), and after through kitsch amusement parks as Tivoli Gardens in Copenhagen and Epcot Centre in Florida –as claimed by Rasmus Nielsen from SUPERFLEX (*ibidem*, p.31). Further, Bjarke Ingels from BIG adds that “[t]hings somehow fuse, and I think this was the case with Superkilen. I would like to call this ‘inclusivism’, [...] but different from the way that it does not become *Frankenstein*. In the beginning we said ‘lets the dogs loose and see what happens’[...]. There were moments of elegance and a lot of moments of incompleteness. But still, it has become much more tasteful than I had actually imagined” (*ibidem*, p.72). This kind of operation of summation is antifragile as it introduces an interesting degree of redundancy. Indeed, if a few of the 108 objects composing Superkilen are damaged, broken, ripped out, or simply under maintenance, they do not prevent to use the space, that will still be full of objects, uses, and possibilities. Further, many of the items are shaped so that they are versatile and can also be used for other purposes –i.e. a bench as a sport item, a bicycle rack as a game for children, and so forth. Superkilen’s redundancy of objects also provides a rich and varied experience of the space even if not all objects would ever be realised, in this sense Bjarke Ingels from BIG states this very clearly “The *Black Market* should get a bump. That is a quite successful little element. On the *Black Market* we wanted to create a little shelter. Unfortunately, this has not been realised yet, and it may never be. If it comes to the worst, I think the park can survive with just the bump” (*ibidem*, p. 25-26). Redundancy takes place also on a broader level. Indeed, the three parts composing Superkilen –the *Red Square*, the *Black Market*, and the *Green Park*– are deeply different from each other in terms of typologies of spaces, soils, materials, and so forth. Consequently,

the temporary impossibility to access one of the three parts –i.e. the *Green Park* after a typical Danish flood– will not prevent to enjoy the other two parts –featured by more impermeable soils.

4. Conclusion

This paper has investigated a number of antifragility features by means of recent projects of European public spaces, in order to start inquiring the spatial value and design potential of antifragility. As argued at the beginning of the third section, these features are just a start. Many others are presented in Taleb's writings and, more in general, in writings that have already tried to graft the notion of antifragility in other disciplines. Further, my work will not just be limited to the spatial interpretation of some features already identified. It will define features that make public spaces antifragile places to enhance existing local environmental and social resources, relate contexts, and generate new ecological and relational interactions as formative elements to strengthen culture and design of European collective dimension. To do so, two general considerations will be kept in mind all along the development of the work. The first one concerns the strategic role of public space. Indeed, if public space is a place of sharing, of reciprocity, and, ultimately, a space of democracy representation, then it has to be considered for contributing in framing a new bio-political project (Viganò, 2018) that will shape the future of European territories. The second one starts from the considerations of paragraph 2.3, notably from the suggested pairing between sustainable development and antifragility. In this sense, ecological and environmental dimensions are more and more inseparably intertwined at different scales with social concerns. Thus, a critical reading of contemporary European territories that considers overlapping dynamics and articulations among ecological, environmental, and social priorities, could be useful in understanding the nature of contemporary European public spaces.

Acknowledgements

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RESEARCH ON MULTI-LEVEL PUBLIC SPACE SYSTEM PLANNING STRATEGY IN HISTORICAL AND CULTURAL BLOCK BASED ON THE CONCEPT OF "COLLAGE CITY"—— TAKING BEIJING MOSHIKOU HISTORICAL AND CULTURAL BLOCK AS AN EXAMPLE

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Abstract: In China, historical and cultural blocks serve as the material carrier of traditional culture and resident life in the city, as well as an important area for protecting local culture, inheriting historical culture and displaying urban style. In the transformation and renewal stage of the city, the protection and renewal of historical blocks has become a hot topic of research and discussion. Based on the life and leisure needs of residents in historical and cultural blocks, this paper firstly interprets the concept of ‘collage city’, emphasizes the integration and coordination of spaces and surrounding population demand, land use function and style, and proposes a planning idea. Secondly, taking the Beijing Moshikou historical and cultural block as an example, realize the diversified and systematic public space system through the three-level planning of ‘node-tour line-region’. Meanwhile, we plan festival activities to promote neighbourhood relations and tourism development, and encourage community residents to participate in the planning process through time series construction. In the end, in the historical and cultural districts, the use of collage techniques to promote the integration of multiculturalism, coordinate the balance between tourism development and residents' lives, and achieve sustainable urban transformation.

Keywords: Sustainable urban transformation, Public space, Landscape technique, Public participation

1 Introduction

In China, historical and cultural blocks serve as the material carrier of traditional culture and resident life in the city, as well as an important area for protecting local culture, inheriting historical culture and displaying urban style. However, due to the rapid development of the city, the historical and cultural blocks have been built for a long time. Historical and cultural blocks generally have problems such as backward infrastructure, narrow living space and poor sanitary conditions. The weakening of neighborhood relations and the lack of public activity space, the harsh environment and the lack of care for vulnerable groups have led some aboriginal people to be unbearably and gradually moved out, eventually making the neighborhood community gradually lose its vitality. Memory ^[1]. Therefore, in the transformation and renewal stage of the city, the protection and renewal of historical blocks has become a hot topic of research and discussion. However, the current historical and cultural district renovation projects often focus on tourism development and economic benefits, and are not based on

the daily life of the original residents in the neighborhood. The reconstructed neighborhoods are too commercialized and socially isolated, eventually leading to these. The renovation project has not achieved the expected economic and cultural benefits, nor can it meet the basic daily living and leisure needs of the residents. Historical and cultural blocks often have scarce public space, not only in small numbers, but also in problems such as unreasonable distribution, low diversity, and inadequate functional facilities. Under such restrictions, the drastic new green space is neither realistic nor rational [2]. Therefore, on the basis of completing the protection and restoration of historical and cultural blocks, it is the main content of this paper to use multi-level and time-series public space system planning to reshape traditional culture, display urban style and enhance living environment.

2 The concept of “Collage City”

The concept of “collage city” comes from Colin Rowe's book *Collage City*, which he believes that urban form always changes in a small and gradual way, and the culture of the old town is different. The cultural accumulation of the period and the multiculturalism contradict each other to form a collage [3]. The concept of “collage city” opposes the demolishing of cities in the name of modernization. It believes that cities should self-renew in different segments without losing the whole, and should pay attention to the continuation of historical context and style. "Collage" is a design method that respects historical things. By using existing things and old things to create, you can perfectly integrate the future, present and past things to form new things. The core content of the “collage city” concept is summarized as follows [4]: 1. The city is a product of historical synergy. Anyone's understanding or influence on the city is fragmentary and partial, and the whole city is partly partial. Formed by patchwork. 2. Cities are complex and diverse, and space should be the product of society and people based on their interpretation of absolute reference and traditional values. 3. "Collage" on the level of urban "technology" means that spatial design should be based on respect for urban texture, deal with specific situations in a variety of ways, and achieve harmony with the surrounding environment, rather than conflict. 4. Actively advocate the "bottom method" to analyze and Cognitive cities. 5. “Collage” can be a strategy to impart reality, change, movement, behavior, and history through Utopia's ultimate unchanging vision.

3 The idea of public space planning in historical and cultural blocks under the concept of “Collage City”

3.1 Coordination with the needs of the population

For the diverse use demands of people, the public space features a variety of functions such as rest, exercise, children's recreation, cultural display, party negotiation, etc. Compared with large parks, the use of small public spaces is more humanized and closer to the daily life of community residents. Based on the concept of “collage city”, the planning of public space system in the historical blocks should fully coordinate the relationship between the public green space and the functional needs of the old city, and arrange the green spaces with multiple functions in the urban area to make the spaces of each function coordinate with each other. Emphasize the interactivity of each monomer between the public space system and ensure the functional integration of the space system to meet the diversity needs of the residents of the area.

3.2 Respond to the function of surrounding land

Due to the flexible layout of small public spaces, the service objects are nearby people, and the surrounding environment is complex. The surrounding areas of public spaces may be office areas, residential areas, and commercial areas. Therefore, the use of people and surrounding environment should be fully considered. Under the guidance of the concept of “collage city”, the relationship between green space and surrounding land should be fully considered, focusing on functional connection, texture integration and layout coordination to form an organic space system. The specific planning and design can determine the focus of the public space function planning according to the surrounding land use function, and consider the surrounding land use planning and green space system planning, thus exhibiting a multi-dimensional unified urban micro green land function carrier.

3.3 Setting off with cultural landscape style

The culture of historical and cultural blocks is the cultural accumulation of different periods and the interweaving of multiculturalism. When excavating the cultural characteristics of the historical blocks, it is necessary to continue the historical and cultural connotation and traditional style, and also to enhance the era of the old city. As a carrier of culture, public space bears the role of protecting cultural diversity. In the design of public space, the cultural features of the urban area are extracted, and the language and cultural meaning of the venue design are given to form a dynamic open space with urban regional characteristics. Incorporating local regional cultural characteristics into public space not only can display the unique characteristics of historical and cultural districts, but also help to increase the cultural identity and local sense of belonging of local residents.

3.4 Collaboration with the urban renewal plan

The construction of public green spaces is not only related to the effect of optimizing the surrounding human settlement environment in the near future, but more importantly, it will directly affect the reconstruction of the long-term pattern of green space in historical and cultural blocks. The planning and construction of public space system is an organic process of “point-to-face”. The “Collage City” concept focuses on sustainable and progressive public space planning and construction, and in this process, moderately and systematically protect and update the living environment resources of historical blocks. Promote the continuity and stage of the historical and cultural district renewal process through public space, and restore and revitalize the vitality and vitality of different historical and functional spaces in historical blocks^[4].

4 Multi-level public space system planning——taking Beijing Moshikou historical and cultural block as an example

4.1 Research scope

Moshikou Historical and Cultural Street is located in the northwest of Shijingshan District in Beijing, at the southern end of Xiaoxi Mountain, and belongs to the shallow mountainous area of the city. According to the scope of protection of the historical and cultural blocks of the model mouth determined by Shijingshan District, this study covers Shimen Road in the west, Jinding North Street

in the east, Fahai Temple Forest Park in the north, and Nankou in the south. It has Yongding River Canal. Through, the total area is about 56.8 hectares.

4.2 Spatial classification of potential construction

Through on-the-spot investigation, the “corner space” existing in the historical and cultural blocks of the model port is explored as a potential space that can be developed into a micro green space. As seen in Figure 1, according to the current land use function and utilization situation, these potential spaces are divided into forest land, park green space, courtyard space, streetside public space, waterfront space, parking lot, construction site, and waste land . These potential spatial layouts are scattered and have a public nature. On the one hand, they provide space for daily life and social interaction for residents, on the other hand, they are also an important element to highlight the characteristics of the community and human settlements in the historical and cultural blocks of the model. The conversion of these potential spaces into public spaces is of great significance for enhancing the living environment, community identity and belonging.

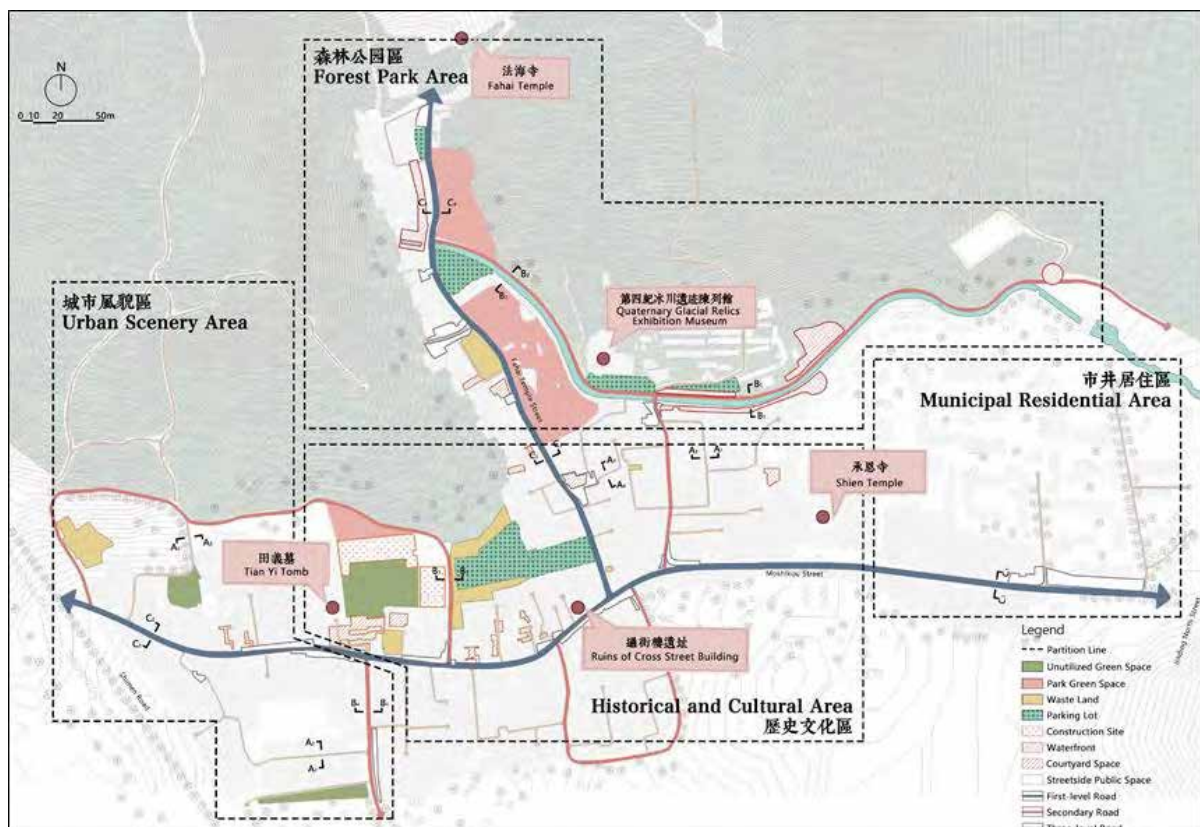


Figure 1 Schematic diagram of the current potential spaces

4.3 Node level public space planning

There are many “corner spaces” in the development of the Moshikou block. Converting these scattered point spaces into green space is a strategy for transforming the green areas from the node layer. Although these green spaces are not large, it is evenly distributed and easy to reach, and the transformation from the nodes can have an immediate effect. After evaluating the potential space within the site, it was found that the Moshikou historical and cultural block was partially in good

condition and has many public spaces (such as parking lots, cultural attractions, parks, shelters, etc.). As seen in Figure 2-4, different ways of creating catalyst nodes, combining green space and rationally utilizing free space are adopted for different situations.

4.3.1 Creating catalyst nodes

Public space has the role of “point-to-face”. Catalyst nodes can play a “catalytic effect” to stimulate and guide the surrounding resources and potential, thus driving the vitality of the neighborhood. Therefore, the potential space is screened and four micro spaces are selected as the catalyst nodes. The size of the four catalyst nodes is about 1000 m², which is suitable for the pocket park. It is suitable for public activities and can achieve the effect of point-to-face. The site selections of the catalyst nodes is located in the west, north, central and eastern parts of the site, and are at key positions in each zone, which can stimulate the vitality of all quarters. There are public service buildings or cultural relic sites around those sites, which have a certain flow of people and are more conducive to the attraction of the catalyst node. With the theme of interactive experience, green ecology, historical humanities and cultural creativity, the four catalyst nodes create four different thematic catalyst nodes, which become the vitality points in the block and create possibilities for attracting multiple formats. For example, in the interactive experience-themed catalyst node, the residential activity stage and the interactive tea seat are designed to provide social space and display space for residents and foreign tourists, and to promote and attract drama and dance and cultural products.

4.3.2 Sharing courtyard space

According to the public courtyard space of residents, the courtyard space is integrated, and each household both has its own space and public space shared by residents after designing and combining those fragment and separate spaces. Residents' demands for courtyard space is that they must have independent use space (such as placing sundries, planting flowers) and convenient public spaces (such as traffic, and sitting). Therefore, open the public courtyard space of residents, dismantle the simple houses and walls that are built randomly, re-dividing the private space and public space of the residents and improve the accessibility of the courtyards between some residents' courtyards or courtyards, and build a public space shared by residents. This type of public space is only used to serve multi-family residents around the courtyard space.

4.3.3 Reasonable use of free space

Reasonable use of free space is a reform strategy for parking lots and other abandoned spaces, that is, reorganizing the existing waste space and parking lot, releasing unused space, opening the wall to facilitate pedestrian entry in the street, and flexibility make use of the free space of the parking lot as a public space. According to the survey, the parking area of the model port is large, the greening is small, and the space is not fully used. Therefore, it is possible to release a space that is not effectively utilized, and a movable planting pond, a flower pond, a seat, and the like are placed in the space. When the parking volume is small, this space becomes a green leisure space for tourists and residents to stay. When the parking demand is large, the facility can be moved at any time to resume the parking function.



Figure 2 Interactive Experience Living Room



Figure 3 Green Ecological Kitchen



Figure 4 Collage Culture Wordshop

4.4 Tour line level public space planning

The streets and water systems in the Moshikou historical and cultural blocks have strong spatial characteristics. The integration of their potential space to form a continuous linear green space is the main strategy for tour line level transformation. The linear green space can enhance the connection between different public spaces, green spaces and cities, and expand the contact space and interface between the city and nature. At the same time, as seen in Figure 5, by integrating the potential space along the street and widening the street boundaries, the problem of pedestrians can be solved while accommodating public activities such as booth sales, cultural exchanges, leisure recreation, etc., adding certain infrastructure and creating rich and interesting street space. For the residents' streets and waterfront trails, two ways of renovating the street space and the façade and continuing the waterfront space were adopted.

4.4.1 Enrich street space and facade

After the preliminary investigation, it was found that due to the special geographical environment of the shallow mountain where the model mouth is located, the residential space and the street on both sides of the street have a large height difference, forming steep ridges, platforms and retaining walls, which cannot be used as a public space. Therefore, by optimizing the street façade and transforming the steps and retaining walls on both sides of the street, the streetside public spaces are created and the street boundaries are widened. The streetside spaces with high difference are taken as the object of reconstruction, the retaining wall next to the street is digested, the ramp is set, and the slow-moving road is expanded by using the high-end residential space. The use of walls and space under the steps for three-dimensional greening creates a public space where people can stay and create greenery.

4.4.2 Continuing waterfront space

Continuing the waterfront space is the transformation strategy of the space beside waterfront trails, that is, excavating the waterfront space on both sides of the river, and forming a continuous green

corridor through the integration of space. The Yongding River diversion canal in the Moshikou block is Between the block and the mountain. Although there are waterfront roads which can be used, the waterfront space is totally neglected, and there is no continuous green space and road system of traffic diversion. Space, increase seats, plants, small squares, scenic walls, pedestrian walkways, etc., to form a continuous strip of green space, to lay the foundation for the formation of green roads. By continuing the waterfront space, the waterfront green landscape can Be enhanced, so as to better connect people with mountains and waters, and to close the distance between man and nature.



Figure 5 Culture and Creative Corridor

4.5 Regional level public space planning

Through the transformation of the public space at the node level and the tour level, the points and lines of the public space are no longer scattered and isolated, but can form an organic green mesh system at the entire regional level of the pattern and history and cultural blocks, driving the organic updating of the block. From the perspective of the tour system, various types of point-like micro-green space connect the main landscape nodes of the city, ensuring the continuity of the green open space. They form a network that provides a richer function and a more diverse landscape for the urban green space to form a system for building a tourable space. From the perspective of ecological pattern, when the urban green lands develop to a certain scale to form a green network, the city and the shallow mountain are well connected, which will certainly exert positive ecological benefits, including mitigating the heat island effect, improving air quality, and increasing species diversity. And a series of positive effects such as reducing building energy consumption^[5], greatly enhance the high-density urban ecological environment, thus forming a green complex in the shallow mountain block. From the perspective of cultural shaping, the public space system carries a variety of neighborhood culture, and the historical and cultural system of the block is inherited and improved. Residents can carry out various cultural activities in the public space, thus forming a multicultural exchange and sharing space and cultural display space.

4.6 Event planning

By planning social organization activities, government organization activities and residents spontaneous activities, enriching the lives of community residents, it can also attract tourists, and the economic benefits brought can also be invested in the next step of construction, as seen in Figure 6. Activities include:

1.Social organization activities. Including the Arbor Day, Spring Tour, Beijing Design Week, etc., which can attract a large number of enterprises or colleges to participate in the construction of the Moshikou historical and cultural blocks, which can becomes the carrier of multicultural communication.

2.Government organization activities. Including community green plant distribution, plants science cognitive activities, talent competition, marathon competition and other activities. By organizing such activities, the government can enrich the residents' lives and promote the relationship between the neighborhoods, as well as enhance the visibility of Moshikou historical and cultural block, so that more tourists can know the Moshikou and join in protection and renewal work.

3.Residents spontaneous activities. Including spontaneous activities such as morning market, mountain climbing, and walking. Through the construction of the public space system, the quality of the green outdoor space of the model port will be improved, so that the historical and cultural district of the model port can better become a good place for residents' living and tourists to relax.

After the planning of the event, the residents of the community as well as the tourists and enterprises and the government can participate in the construction process , and it can also promote the neighborhood relationship. The economic benefits brought by the development of the tourism industry can also provides economic support for the further protection and renewal work of Moshikou block.

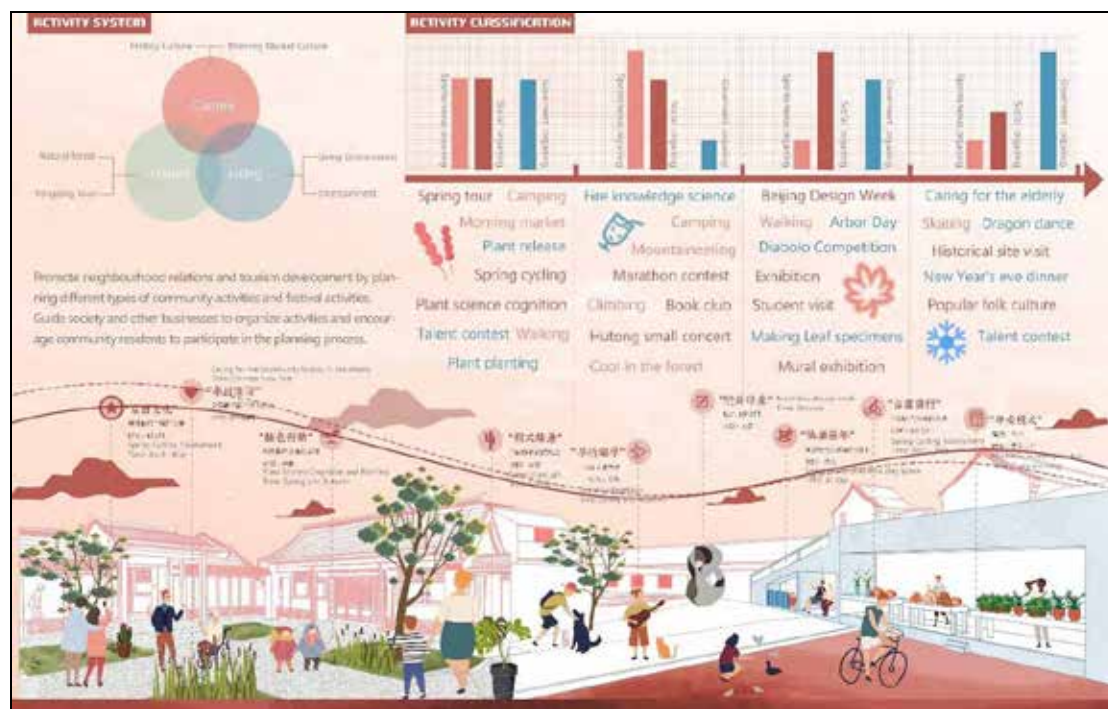


Fig.6 Events Planning

5 Summary

The transformation of the public space in the traditional historical and cultural blocks is mainly to attract foreign tourists, to make renovations in the public space of the neighborhood from the aspects of tourists' sightseeing and shopping experience, ignoring the quality of local residents' life qualities. Professor Pu Yisan once said that , “Once historical blocks have lost their traditional lifestyles and customs, they have lost their 'life authenticity'. Instead of the real people’s activities attached to these historical sites, In a sense, it is another kind of falsification behavior, and the block will lose its original historical charm.” The author believes that the construction of historical and cultural blocks should not blindly pursue the restoration of the antiques, and should respect the residents’ lives in the block. From the perspective of the needs of tourists, we will solve the various needs of the local residents, such as building living and leisure space, continuing the good cultural atmosphere, creating a beautiful and humane living environment, which also can meet the tourists' perception and experience of the venue living environment. .The public space planning idea based on the concept of “collage city” emphasizes the rational and coordinated systematic design plan. From the overall perspective, it proposes the plan according to the sequence and stage, pays attention to constructing a sophisticated and perfect public space system, and gradually promotes the healthy development of the block. This paper also hopes that this plan can fully mobilize the surrounding resources and potential, and make the neighborhood and the surrounding have a organic linkage, and build a public green space system of the city's overall area with a integration goal, gradually improve the urban green space system structure, and build a harmonious symbiosis between human-beings and nature.

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Tourism ,public spaces and urban cultures

Urban Public Space Design from the Perspective of Environmental Behavior——A Case Study of the round-city-park in Xi'an

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Abstract: Urban public space provides the place and environment for leisure, entertainment and social intercourse for residents, and it is an essential part of urban composition. In the process of building public space, we should pay full attention to the use value of public space to people and people's perception of public space. Through the use of various dynamic elements in public space, the space environment can play a guiding role in human behavior, and create a city public space that corresponds to the behavior of communication activities. Based on the theory of environmental behavior, this paper deeply interprets the interaction between space environment and human behavior, and analyses the characteristics of human behavior in urban public space. It also elaborates the influence of environmental behavior on public space in combination with Xi'an Circle Park, and explores the ways of constructing urban public space with local historical and cultural characteristics, so as to improve the quality of urban public space.

Keywords: Public space The round-city-park in Xi'an Environmental Behavior

Introduction :

With the development of the city and the improvement of people's living standards, the existing urban public space is more and more difficult to meet the citizens' cognitive and use needs of public space. With the development of environmental behavior, people gradually attach importance to the study of the relationship between human and environment. On the one hand, urban public space conforms to the characteristics of human perception and cognition, on the other hand, it also closely corresponds to the characteristics of human behavior, which can meet the needs of different levels of human beings. Therefore, relying on the theory of environmental behavior, the study of urban public space planning and design is in line with the new requirements of urban development. Through the study of urban public space planning and design, this paper summarizes the influencing factors and design principles of urban public space quality, and adds theoretical basis based on environmental behavior perspective to the field of urban public space planning and design. It is conducive to the future design, use, protection, management and development of public space, while positively affecting the new style of the city.



1.Origin and Research Progress of Environmental Behavior

The concept of "environmental behaviour" was first proposed by American scholars Prochansky and Iterson. Environmental Behavior focuses on the artificial environment, which pays attention to the relationship between environment and behavior, and studies the relationship between environment and behavior as a whole, emphasizing the interaction between them. Environmental Behavior is called Environmental Psychology, but the scope of Environmental Behavior seems to be narrower than that of Environmental Psychology. Environmental Behavior combines the relationship and interaction between human behavior and its corresponding environment. It pays attention to the relationship and interaction between environment and human's explicit behavior, so it is more applicable.

In 1968, the Association for Environmental Design Research was established in Europe. In 1969, the Journal of Environment and Behavior was published. Many research centers were formed and gradually became the largest number of academic groups engaged in environmental-behavioral research and application. By the end of 1950s and the beginning of 1960s, the study of environmental behaviour began to rise in Europe. In 1979, psychologist David Canter founded the Journal of Environmental Behavior, which and the Journal of Environment and Behavior are the two most influential periodicals in this field so far. Environmental Behavior began to be introduced into Asia in the 1960s. It was first studied in Japan and developed rapidly in the 1970s.

China started late in the field of environmental behaviour research. In the early 1980s, relevant theories and research methods were introduced from Europe, America and Japan, and began to be applied in the field of architecture. In the field of environmental behavior, Professor Li Daozheng's Introduction to Environmental Behavior, which systematically introduces the relevant theories of environmental behaviour, is the main theoretical book in the field of environmental behaviour. Professor Xu Leiqing's "Human Engineering and Environmental Behavior" combs environmental behaviour, and makes a detailed study of the theory and application of human engineering. Similar studies include Environmental Behavior and Human Engineering, compiled by Zhang Yuming, Zhou Changliang, Wang Hongshu, Liu Yuchu and Wang Xueyi, which has made in-depth studies on the theory of environmental perception and the theory of the relationship between environment and behavior. In addition, Professors Xu Leiqing and Yang Gongxia's Environmental Psychology and Professors Hu Zhengfan and Lin Yulian's Environmental Psychology play an important role in guiding the theoretical research of environmental behavior. With the development of environmental behavior in China, the number of books and academic papers on environmental behavior is also increasing.

In summary, the research practice of environmental behaviour in China is relatively late, and most of the research methods and contents focus on theoretical research content. The research of empirical cases still needs to be deepened.

2.Necessity of Organic Combination of Environmental Behavior and Public Space Planning and Design

From the perspective of human visualization, urban public space is not only designed and constructed by human beings, but also realizes its use function value by human beings. The relationship between them is an interaction and interaction.

Through the related theories of environmental behaviour, we can find that the main reasons for the limitations of urban public space environmental design are: in the early stage of urban public space planning and design, most decision makers and designers do not do enough in some basic research work, and they do not have a good understanding of the regional cultural background, user age and social

stratification, physiological and psychological demands and even social and economic development. The comprehensive consideration of the influencing factors such as the objective law of exhibition is not meticulous enough, which leads to that the public space environment presented in front of the users can not fully meet the various practical functional needs of various groups of people; at the same time, in the design process, the users are not placed in the main position of public space construction for relevant discussion and research, and the real meaning of "people-oriented" can not be penetrated. In the whole planning and design process.

Therefore, from the user's point of view, it is necessary to take environmental behavior as the basic theoretical support, and combine the research methods of literature review, case analysis, on-site investigation and comprehensive evaluation. Firstly, the specific design elements that may have a direct impact on the urban public space environment should be identified. On this basis, the behavior and needs of the users in the empirical cases should be analyzed and summarized. The results are summarized and refined, and more reasonable design strategies and objectives are formulated to meet the needs of different types of users for various activities, so as to maximize the use value of urban public space.

3.Study on the Development of Public Space of Xi'an Ring City Park

Xi'an Circum-city Park is located in the periphery of Xi'an Ming City Wall. It is a three-dimensional park which includes Xi'an City Wall, Moat and Circum-city Forest Belt in Ming and Qing Dynasties. Xi'an Circum-City Park relies on two elements of Moat and Ancient City Wall to construct. Because of the obstruction of the city wall, the development space is relatively small. In the South Gate of Xi'an Circum-City Park-Suzakumen Section, around the city wall, the Plaza central attractions are connected with a series of small attractions in the form of riverside walking belts. In some large squares, thematic sculptures are arranged to form large public recreational space through the combination of static environment such as landscape, sculpture, sketches and waterfront buildings. (Figure 1)

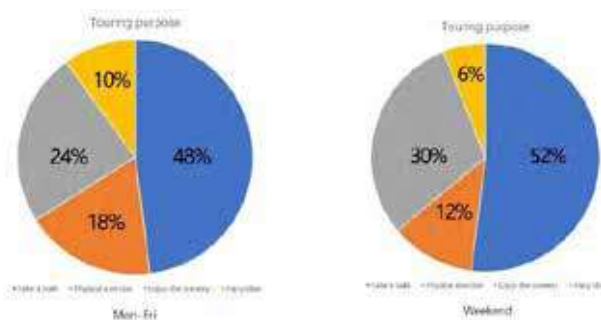


(Figure 1 Xi'an Ring City Park)

The biggest characteristic of Xi'an Circum-city Park is to design with the city wall, which not only retains the original style of the ancient capital, but also enlarges the urban public space. With the development of the times, the design methods of Xi'an Circum-City Park are constantly innovating and changing, forming the landscape of the city wall. With the gradual improvement of Park facilities, the number of tourists is also increasing. From the current effect, the city wall has become the symbolic structure of the park, the defensive function of the old city wall has changed, and it is well integrated into the urban public space.

4.Environmental Behavior and Space Analysis of Ring City Park

According to the questionnaire on the behavior of tourists in the park around the city, the age composition, sex ratio and purpose of tourists are studied and analyzed. It was found that from Monday to Friday, 48% of the respondents wanted to walk, 18% of the visitors wanted to exercise, and concentrated in the morning and evening. 24% of the visitors enjoyed the scenery, while the remaining 10% were friends gathering and chatting. On weekends, 52% of visitors are for walking, 12% for exercise, 30% for enjoying the scenery, and 6% for party, chatting and so on. (Figure 2)



(Figure 2 Questionnaire charts)

According to the theory of environmental behaviour, people have different requirements for the environment in every activity. Spontaneous activities and social activities are particularly dependent on the quality of the space environment. Most of the activities in public space are mainly spontaneous and social activities. In order to build urban public space, it is necessary to make rational use of the elevation difference of the site, plant diversified, and provide space for users to communicate with each other, so that people will not feel lonely, alienated, or uncomfortable, and then build a suitable dynamic space environment.

Spatial communication includes some space for communication, such as entrance space, square space, garden space, etc. In the design of the entrance area of the park around the city, considering the influence of people flow, traffic flow and other factors, a number of square lawns are laid out, which effectively realizes the transition from public space to semi-public space. Through the layout of the archway, visitors are attracted to the park by its unique appearance and historical logo. Array of trees at the entrance of Xi'an Circum-city Park. Under the big trees, people can stop and rest. Residents can talk and cool down. It is a more ingenious and applicable arrangement to make trees and not grasses, because this arrangement enlarges the use of space. In the objective form of material existence, the combination of vegetation and water surface elements can provide people with a more comfortable space environment in a long, wide and high range, and improve people's satisfaction.

At the same time, the tree array isolates the noisy urban main roads from the urban parks, and also serves as a transition from public space to semi-public space. Considering the difference of terrain elevation, different vertical elevation differences are often used in public space. Steps and retaining walls are used to layout the site and separate the space. The management facility building in the park around the city is a city landscape building which integrates urban green space and functions. At the spatial level, it is highlighted that the city wall, as the background of the park around the city, is the product of history and culture. Under the environmental conditions of the city wall and the famous historical and cultural city, attention should be paid to the distinction of primary and secondary, and the ups and downs and scattered space environment should be constructed.

The moat has a sinking hydrophilic entrance, new docks and landscapes on the South bank. These facilities are bricked and built by ancient methods. Near the bridge deck, there are new decorations and changes. On the basis of the original trees, many new trees have been planted. (Figure 3)



(Figure 3 City Moat)

Many theme sculptures have been added to the central part of the park. The setting of these landscape sketches has become the focus of the central square. There are some shaving burdens in the living customs of the old Xi'an people, as well as living scenes and appliances such as selling water, oil tea, storytelling, walking birds, Qin opera culture and so on. Concentrate on reflecting the commercial culture, catering culture, opera culture and folk culture of old Xi'an. When visitors come to the moat, they have a concept of Xi'an's life and culture. They can really feel the taste of the ancient city of Xi'an, recall the history and experience the contemporary era. (Figure 4)



(Figure 4 Sculptures in the Park)

In addition, the space environment should play a guiding and enlightening role in human activities. By combining the important natural environment elements such as water body and green space with people's activities, we can create more excellent activity space, enhance people's communication, and enhance the vitality of public space. The five-in-one "Wall, Lin, River, Road and Lane" has become an important landmark symbol with historical and cultural characteristics of Xi'an. Witness historical memory, store cultural spirit, enrich human experience, influence modern life, improve the overall environmental image of the city, and provide people with more leisure facilities and public goods of high social value.

Around the moat of the ring park, through the blending of wharf landscape and hydrophilic space, the paving way and decorative style of the ground and bridge deck conforming to the characteristics of cultural accumulation, retaining and supplementing the decorative echoes of trees and grasslands, and

actively giving play to the guidance of space environment to people's willingness and way of activities. In the design of the park around the city, the city wall, as the core of historical elements, often appears as a composition element. Through the intersection of different trees, high or low, the city wall presents in different forms in front of visitors. Looking from a distance, it seems that it is shaded by the big trees in front of it. Looking from a close angle, it is tall and lofty.

5. Discussion on Promotion and Development of Public Space around City Park

5.1 Complete and reasonable transportation system

Systematic integration of the traffic system around the city park, full consideration of the outdoor public space scale, create pleasant, comfortable pedestrian and space, create functional organic series, visually unique charm of the pedestrian system space, for people through walking to carry out exchanges, leisure, entertainment, shopping and other activities to create space conditions, foil the vitality of creative space atmosphere.

5.2 Overall Planning of Ground Form

The division of hard and soft media, the choice of material texture and the design of pattern and color will make people feel the space intuitively. Therefore, in the design stage, it is necessary to divide the functional space according to the basic elements of the node theme and the use function of the park around the city, through the application of different materials and the transformation of the laying style, to create the vitality of the ground space, and to guide people to carry out different types of behavioral activities from the side.

5.3 Overall Planning of Activity Sites

On the premise of guaranteeing its diversity, the public activity space in the park around the city should provide sufficient quantity, comfortable and safe activity facilities according to the users demand for behavior activities; at the same time, reasonable control and selection should be made on the site scale and layout according to different use functions, so as to carry out for users of different types, age groups and cultural backgrounds. Various types of activities create positive conditions.

5.4 Landscape greening is exquisite and diverse

Environmental landscape design should meet the needs of people's visual sensory enjoyment, and integrate the needs of people's behavioral activities into it. Through the rational collocation of plant vertical level and the rich change of seasonal color, and combined with spatial nodes and functional themes, the landscape facilities such as sketches and structures are designed to create a good ecological environment and achieve the overall upgrading of the environmental landscape.

Epilogue

Today, with the rapid development of urbanization in China, the quality assurance of urban public space is becoming more and more important. It is the material basis for promoting a healthier and harmonious social life. The overall quality of public space construction directly affects the city's comprehensive competitiveness and public satisfaction. Therefore, urban decision makers, builders and users all pay special attention to it. It is an important guarantee for building an environment-friendly city and realizing the scientific development of human settlements environment to excavate the characteristics of urban public space and improve the quality and taste of public space in combination with environmental behavioral research.



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The role of the local in improving cohesion and spatial justice

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Abstract: Joint development is a collaboration construction between a transit agency and real estate operated by government and private individuals. Mostly focused on transit-oriented development (TOD) which ensures dense, walkable, mixed-use development near transit and at the same time improve the transit system. With China's national policy on prioritizing the public transit development, now is the critical time to achieve a sustainable urban form through implementation of Transit Oriented Development (TOD). Higher residential densities in the vicinity of transit station will make residents more likely to use public transit and support local economic activities. Based on the TOD principle of designing high-quality mixed-use areas that are pedestrian friendly, it facilitates socioeconomic and cultural diversity. A case in Jinqiao Community, Pudong New District, Shanghai, was chosen to better illustrate the win-win cooperation based on the involvement of social group in the TOD transformation case analysis. The proposal greatly contrasts with existing developments and try to integrate land use with transit and to include the public groups' ideas in the transit-oriented concept. The proposal greatly contrasts with existing developments in the way to develop transit-driven land and how the public groups' ideas are included in the transit-oriented concept. The public group encourages self-organization and promotes place-branding. Meanwhile, this third-party concerns about public participation, continues to play the role of public spaces in promoting a diverse, equal and democratic urban cultures.

Keywords: Joint development, Self-organization and place-branding, public participation, social group

1. Joint Development and Social Groups

Joint Development refers to a strategic orientation in which companies and their partners participate in market competition in a joint way in order to achieve their respective strategic goals. This strategic situation enables them to collaborate and complement each other and solve problems due to resources and many issues caused by insufficient ability. In urban development, it refers to the cooperation between transport agencies and real estate operated by the government and individuals. The main focus is on transit-oriented development (TOD), ensuring intensive, walkable, multi-purpose development while improving transportation systems.

Joint development is a development activity based on public-private partnerships that balance public and private demands. The risks mainly include risk sharing among partners, government risk control over projects, and joint development company (enterprise) control of project risks. [1] In traditional joint development, the government generally acts as a transportation planner and developer (enterprise) for real estate development. It is difficult to strike a balance between stakeholders, especially when they have different opinions or imbalanced interests. As a third party, social groups represent social forces,

can coordinate the interests of all stakeholders and make the project balanced, and achieve a balance between the state, the market, and the society, and its own experience also contributes to joint development.

Since the 1990s, statements about joint development and TOD have begun to appear in China's relevant research and planning practices. With rapid development of China's cities and the construction of transportation infrastructure, joint development has received increasing attention in China. Due to different national conditions, political systems, travel habits, and land systems, there are still limitations in current Chinese development and localization practices of joint development. How to rationalize the joint development based on Asian cities is the latest topic. On this basis, if we can introduce social groups in joint development, it is evidently a new opportunity for Chinese urban management.

2. Policy background

2.1. Policy Background of Pudong New District

The following paper will discuss the role of social groups under TOD mode in the background of Pudong New District in Shanghai.

Now that the urban sprawl of Pudong New District is finally achieving its geographic limit, existing urban neighborhoods are finding a way to absorbing its share of the region's growth, which stimulates regional planners to relocate land use patterns to better boost economy as well as residents' satisfaction of living standards. Accumulating number of citizens choose to pay higher rent to live closer to work and amenities. This trend helps increasing regional sustainability, but low-income transit riders in the suburban areas are thus sacrificed which exacerbates social and economic inequality. The district government has been working on the public transport system to adjust overall urban layout and solve the spatial contradiction.

Pudong New District has evolved an extensive public transport system during its past 29 years' rapid development. By 2020, the proportion of public transportation in Pudong Central District will be increased to 55%, and the average commuting time of residents will be shortened to less than 45 minutes¹ because of the efficient implementation of public-transport-priority strategy.

Some parts of Pudong New District are now achieving marginal benefits. On one hand, the lack of supportive land use policy inevitably led to the tidal flow of the employment population, the pressure of which cannot be alleviated by merely setting up traffic stations. This requires TOD mode to guide multi-functional land use mode in surrounding area. On the other hand, the macro-zoning act, merging of Nanhui District into Pudong New District in 2009 for example, has become a new trend in Chinese urbanization. Strengthening cooperation from north to south and reducing urban disparity through the means of public transport, TOD mode will be of great benefit to reintegrate the regional resources.

¹ Shanghai Municipal people's government, 2016, 13th Five-Year Plan of Shanghai Comprehensive Transportation.

2.2. Background of public participation demand in Pudong New District

At the same time, Shanghai shoulders the pioneering roles in experimenting public participation in community governance. Tremendous efforts have been taken to explore how bottom - up requirements could be practiced in an overall regional joint development.

'*Colorful Community*' initiated by Pudong New District government proposed the "multi-governance" mode, in which residents' autonomy serves as core content, professionalism that comes from social groups' participating, and finally a platform built by the government departments for indirect participation in community governance.

For example, more than 1000 residents participated in the Jinqiao Jiahong colourful community project. Based on responding to residents' needs, the design scheme built up a passage between residents and neighborhood committees, meanwhile the spatial experiences of residents on their way home were improved through a gallery, and the facilities for diversified activities are also provided for the community. (Figure 2-1)



Figure2-1 Residents participating in the design scheme

Source: http://www.sohu.com/a/288094096_728328

TOD mode and community participation have mature practicing modes abroad. Because of the commonweal of public transport, the benefits of public transport construction are very limited during the operation process, especially in the start-up stage. Meanwhile, public participation means sharing community responsibilities and results. For example, Bethel New Life, an autonomous social group based in a Chicago community, it builds a transit system and residential venues by raising \$10,000 through local churches. While resolving the financing problem, it also better combines residents 'wishes with TOD.

3. Joint development introduces social group “City 360” ——Taking Jinqiao Community in Shanghai Pudong New District as an example

3.1. Project

The case of this paper selects the comprehensive urban center of Jinqiao Community in Shanghai Pudong District as an example. The plot is the center of all major industrial blocks in Pudong New District, with Jinqiao Export Processing Zone in the south, Waigaoqiao Free Trade Zone (national level) in the north, large residential area in the west, and Cao Road industrial area in the east. The imbalance between housing and jobs leaving regional commutes slow and unreliable before the project.

Meanwhile, as the plot is adjacent to Jufeng Road subway station. Combined with the Pudong New District's superior planning, it supports the district-level public service facilities of Jinqiao Center and the professional production service functions of the surrounding modern industrial parks. It has the best conditions for joint development and TOD design.



Figure3-1 Industrial distribution around Jinqiao Community in Pudong New District, Shanghai

Source: Author's self-drawn

The focus of this case is on how to prevent the original neighborhood relationship under high development intensity in joint development. In Jinqiao community of Pudong, the main contradictions are the following three points.

Firstly, how traditional urban space and social relationships can be preserved. The original urban space is a traditional Chinese courtyard. Local residents are worried that the new design will destroy the original neighborhood culture and social relations. Secondly, the relationship between multiple groups is very tense. The formation of the master plan did not involve the residents' participation nor fully consider the interests of the residents. Therefore, the entire process cannot be supported by local residents. The removal of the original building encountered great obstacles. Third, the multi-actors are complex and so are their social relationship. The internal and external conditions of the original plot are thus complicated. On the one hand, the function of the upper planning must be satisfied. On the other

hand, the land has the conditions for TOD development. In addition, the composition of multi-actor is very complicated, including high-tech talents, nuclear families, low-income people, and landless farmers. Therefore, the requirements for functional integration and social attention are very high.

3.2. The role of City 360 as a self-organization and its place-branding

The City 360 is committed to taking the combined advantages of Shanghai Tongji University's comprehensive professional integration, starting with urban regeneration, using qualitative analysis (definition, classification, case and policy orientation) to identify problems, using quantitative analysis (research, data, Interviews) to analyze problems, using simulation processes (platform interactions, fixed-point uploads, resident votes) to generate methods and using big data methods to solve problems. Based on the reality and existing needs of China's leftover space, combined with case classification, the “City 360” platform was developed to build a core interactive platform based on big data and artificial intelligence, so that joint development from singularity to diversification.

City 360, as a social group, intervenes in its own program platform (see figure 3-2), through several simple options (such as spatial scale, green area, material, presence or absence, etc.) to generate drawings, and promote residents to participate in the production plan.

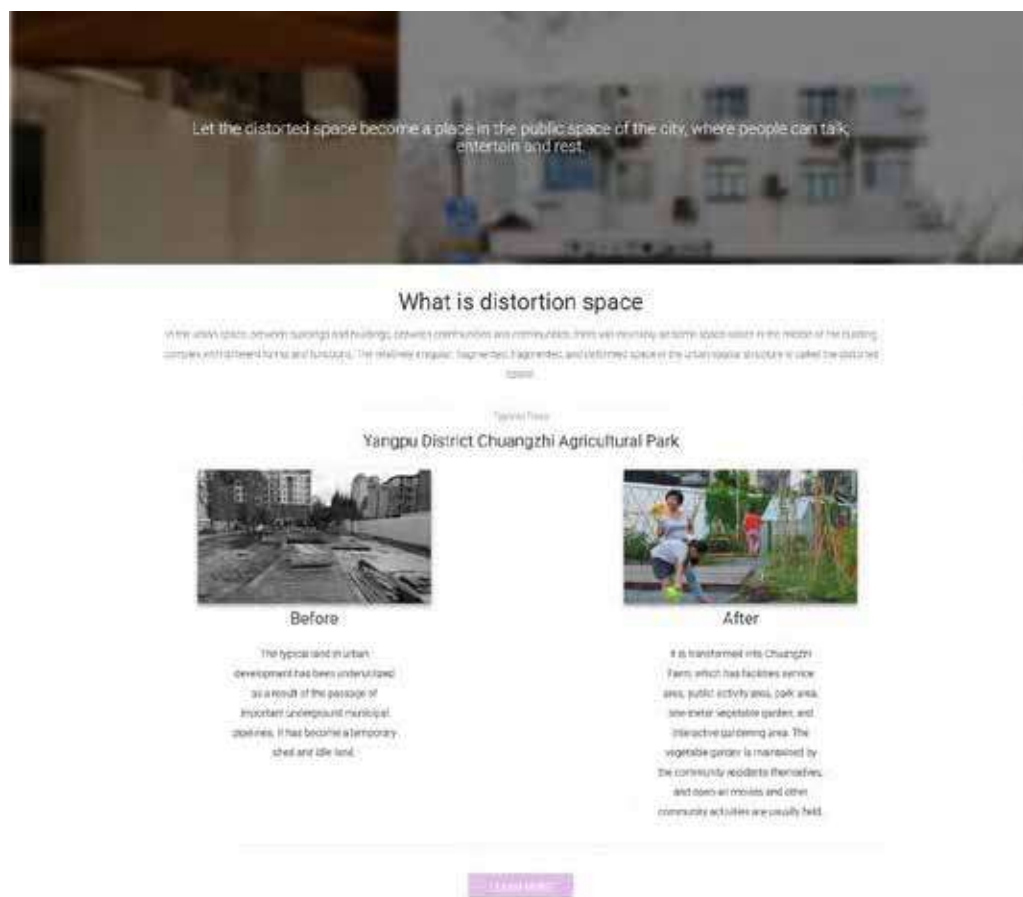


Figure3-2 Community demand docking platform based on big data and artificial intelligence - City 360

Source: https://www.city-tech360.com/city360_web/

This approach solves the problem well among the developer, the government and the local residents, because that the generated drawings are a good expression of local residents' wishes (see figure 3-3).



Figure 3-3: Residents meeting in Jinqiao Community, Pudong, Shanghai

Source: Photo taken by Author

In addition, in order to solve the comprehensive contradiction mentioned above, in terms of spatial form, on the one hand, the TOD node is adopted to adopt a high-intensity development mode. The office buildings, business offices and residences are connected by corridors, which formally reflects the uniformity of the courtyard and the continuity of the streamline (Figure 3-4).

On the other hand, the building adopts an enclosed space, which forms a good transition between the surrounding traditional space texture and the central business area. The architectural form is consistent with the surrounding small neighborhoods in terms of spatial form, and is transparent to the central public activity space, further strengthening the spatial and psychological connection (Figure 3-5).



Figure3-4 TOD node development

Source: Author's self-drawn



Figure3-5 Unified form of courtyard

Source: Author's self-drawn

3.3. Guidance strategy

City 360's attendance in the design and planning process results in a more efficient traffic-oriented joint development process and a better overall transformation effect. As a social group devoted to enhancing bottom-up public cohesion and spatial justice, City 360 in return gain itself place-branding. It is specifically embodied in the following 5 parts.

1) Spatial integration

In the whole design, the commercial complex set up at the top of the TOD transportation hub is taken as the regional landmark, as the skyline of surrounding area is governed by its height, which impressively strengthens the visual sense and highlights the regional identity. As for the core area, the square formed by the subway entrance and exit of traffic hub undertakes the highest density of people, estimated to be witnessing to over 48,000 daily boarding's. It will be an area unprecedented in the region and space of more urban diversity. Corridors are set up at specific points to connect commercial, residential and business areas in an all-round way, enriching the walking experience, giving green land back to the pedestrians of region, and solving the original traffic jamming and land splitting problem.

The pedestrian-oriented regional planning uses the 15-minute community-life circle as the basis for the program, allocating northern and eastern communities within 15-minutes' walk from the central public transportation hub, emphasizing the importance of infrastructure improvements to local residents, creating first and last mile connections that enhance the access and mobility of surrounding communities.

2) Public participation in decision-making

A successful TOD design needs extensive support from local residents. City 360 has played a role in connecting the public with the official, the regional planning with the resident' feedback. The whole process is critical to community involvement and adherence to local policies as well.

City 360 is committed to the needs of Jinqiao local residents and sensitive to the local identity and major industrial blocks nearby. Through exploring the travelling habits, consumption level and living needs of the original residents, the design more effectively reflects the requirements of the citizens, enhancing the geographical character of the design, and also widely increasing the public participation, promoting the creation of a pluralistic, equal and democratic community atmosphere. helps to rebuild the transport/land use language, in addition to a simple understanding of TOD, Metro and local leaders have allowed for a more detailed, sensitive and pragmatic approach to growth and resiliency.

3) Reciprocity of economic interests

Social groups can effectively balance the interests of all parties and use their own resources to communicate with other developers, which is conducive to obtaining extensive financial support to make up for the lack of funds at the early stage of the project and obtain good marketing performance



and long-term benefits. The gradual generation of regional benefits will inject economic value into the social groups in the medium term and later stages, achieving win-win interaction of economic interests.

4) Good cultural propaganda

As City 360 has the advantages of marketing planning, public relations media, exhibiting and large-scale event planning, this advantage will play an important role in the promotion of the core District. TOD transport hub has established a new regional landmark image in the open space, and landmark image is more conducive to attracting the surrounding office, business, transportation, culture and gathering the tourism crowds and their interaction. From residents' perspective, City 360 partnered with the local community to develop the first step in the public participation, and they worked together to develop guidelines that are sensitive to local issues. At the same time, the successful urban regeneration mode of the region will also enhance the branding of social groups.

5) Close responds to the policy

As the center of the main industrial sectors of Pudong New District, this planning unit takes public transport as the guidance and develops multi-functional land use pattern, which accelerates the establishment of an integrated structure for the joint development of urban and rural areas, and also promotes the development of "*city-industry integration*" and "*urban-suburban integration*"² under the policy guidance of Shanghai Municipal Government. Also, Shanghai has adopted a *15-minute community-life circle* as one of the most important measures to enhance the competitiveness of the city which is used as a tool in the TOD case to update the regional residential communities. Functionally, it not only serves as a comprehensive urban center in the north part of Pudong, but also serves as the production and service function of the modern industrial parks, responding to the policy guidance of Jinqiao as the city's Deputy Center in Pudong New District. On the whole, the policy adherence and planning strategy is pushed by City 360 as a social group, promoting democratic approach under the policy guidance.

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4. Summary

This case, focused on relocating the original community, contrasts with existing developments and try to integrate land use with transit and to include the public groups' ideas in the transit-oriented concept. The process centralizes a platform organized by City 360 as a social group for bridging the developer, the government and the local residents. Meanwhile, this third-party concerns about public participation, continues to play the role of public spaces in promoting a diverse, equal and democratic urban cultures.

² Shanghai Municipal people's government, 2016, 13th Five-Year Plan of Shanghai urban and rural development integration.

The whole design takes a holistic view, recognizing that communities surrounding transit hub need far more exploration that deals with spatial and psychological connection, public participation, interests' balancing, cultural propaganda and policy responding. But the spirit is that it takes a closer look into people's behaviors, how to plan from a human scale, how people get around and finally how to approach a long-term community justice.

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Museum of London - a City Museum in Transition

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**** author can supply latest version of this work-in-progress ****

Abstract: The Museum of London (MoL) is one of the world's largest and best-curated collections. It was formed fifty years ago from the merger of two rivals: the archaeologically oriented Guildhall Museum, representing the antiquarian harvest from intensification of the central business district, which coincides with London's ancient core municipality; and the London Museum, metropolitan in scope, eclectic in its collections, oriented towards the scale and diversity of the modern city. From its formation MoL has sought to combine and reconcile these strands, making it - as IUAV expert Prof Donatella Calabi notes - a seminal example of a modern city museum. MoL's purpose-built home in the architecturally famous Barbican complex suffers from a fatal defect. Its entrance on an elevated deck is inaccessible, limiting visitor numbers. After several unsuccessful attempts to open up ground-level access, the museum has decided to relocate. MoL seized the opportunity to acquire two halls formerly belonging the wholesale meat market at Smithfield, in a prime visitor location close to the massively enlarged railway station at Farringdon, meeting point of London's north-south and east-west Crossrail routes. The new premises combine spacious ground levels under high domed roofs with deep cellars intended for cold storage of meat. Plans for the transition are well advanced with MoL scheduled to reopen its doors in 2023. The paper discusses the challenge of relocating the Museum from a purpose-built modernist structure on an elevated deck, to buildings that are larger and older, with street access from all sides; and the consequent choices for organisation and presentation of the collections. We see how those basic questions of urban museology which fuelled the rivalry between Guildhall and London collections a hundred years ago continue to exercise the MoL's curators today.

Keywords: city museums, London, urban history

Introduction

The UNESCO-funded International Council on Museums, ICOM, has a special sub-network of museums that are in and about cities, called CAMOC – the International Committee for the Collections and Activities of Museums of Cities. CAMOC publishes an online review three times a year and its annual workshops, hosted by member institutions around the world, have taken place in Moscow (2005), Boston (2006), Vienna (2007), Seoul (2008), Istanbul (2009), Shanghai (2010), Berlin (2011), Vancouver (2012), Rio de Janeiro (2013), Göteborg (2014), Moscow again (2015), Milan (2016), Mexico City (2017), Frankfurt (2018) and most recently Lisbon (3–4 May 2019), courtesy of the Museu de Lisboa. Though city museums are no more than a minute subset of the vast category of museums that are located in cities and sometimes named after them, they are often highly visible as bearers of a city's collective memory and contributors to its contemporary brand image. My paper discusses one of the oldest and largest city museums, the Museum of London. Though London hasn't so far hosted a gathering of fellow-institutions, it provides an important reference point for them, all the more so as the museum is in the process of relocating from its present purpose-built premises to a new and much larger home in a pair of former market buildings, with all that implies for a shake-up of the displays, the collections, and the entire scope and purpose of the museum.

In a comparative perspective, city museums can be said to have sprung from two distinct starting-points. On the one hand, they originate in early modern 'cabinets of curiosities', miscellaneous collections of items received, inherited or churned up out of the ground through the ceaseless process of urban development. Local patriotism has a strong antiquarian dimension. The demand to display and explain a city's memorabilia lies at the origin of many important collections. But interestingly for us, the other stimulus has come from the rise of municipalism and town planning movement, with its belief that cities are collective personalities who should actively shape their futures, and its corollary that citizens need to understand and appreciate

their civic past. Early twentieth century pioneers such as Patrick Geddes in Edinburgh and Marcel Poëte in Paris attached great importance to museums as promoters of collective awareness. In this sense, a city museum was to the municipalist movement as the great national capital collections were to the rise of the nation-state: a shrine to territorial identity.

The challenge of reconciling these different rationales continues to absorb curators and directors today, and is the topic of much museological discussion in CAMOC gatherings and publications: what priority should be given to display of archaeological collections ? Should material be chronologically ordered or grouped thematically ? How can the multi-ethnic diversity of modern cities be reflected and hegemony of dead white men avoided ? The museologist Rainey Tisdale, who describes herself as an ‘independent curator and think tank of one’, suggests that museums are finding it difficult to adjust to twenty-first century expectations and mores: many ‘seem to be operating under an outdated 20th-century model and are having trouble articulating and demonstrating their public value. The public doesn't necessarily want to learn what history museums want to teach them, and they don't necessarily want to learn in the ways that history museums are offering.’ Her diagnosis points towards a more people-centred approach, mirroring the diversity of contemporary urban residents (Tisdale 2013).

For an alternative perspective we need look no further than IUAV where for the past decade a distinguished Venetian, the historian and activist Prof Donatella Calabi (fig.1) has led an important comparative study of the role of city museums in Europe. Her prolific writings include major contributions to the history of the Venetian Republic, the cities, ports, shops, markets and streets of Europe, the historiography of cities and city planning, and the seminal work of Marcel Poëte. In her work we find an emphasis on the importance of the museum within the urban public realm, which is the topic of Track 15 of AESOP's 2019 Venice conference, Like Hannah Arendt, she sees the public realm both in terms of materiality of buildings and urbanism, and as a

dimension of human thought. Physically, she wants a museum to hold up a mirror not just to the historic core beloved of archaeology but to the larger reality of the contemporary metropolis in its entirety. Her focus on the built fabric leads naturally into the realm of maps, designs, drawings and images, and from there into the digital universe of virtual urban realities – a different but no less challenging path for museological practice (Calabi 2012).



fig.1: Prof Donatella Calabi, IUAV

2. *Origins of the Museum of London*

The history of MoL is engagingly narrated in Francis Sheppard 's book *The Treasury of London's Past* (1991). Today's institution originates in two very different collections. These echo the archetypal origin narratives of museum history, but with

an additional difference caused by the great peculiarity of London's local government history, in which the original mediaeval city corporation has resisted enlargement, retaining its territorial limits and its charters of autonomy while modern London has grown up around it. So when we speak about 'the City', or the Square Mile, we refer to a territory that corresponds more or less with the two-thousand-year-old Roman settlement of Londinium, and its thousand-year-old Corporation; whereas when we speak about 'London' we refer to the entirety of the metropolitan area inside its encircling green belt, with its subdivision into 33 boroughs since 1963, and its overall Mayor and Greater London Assembly since 2000 (Davies 1988, Hebbert 1997, Travers 2002).

Like many city museums, London's has its earliest origins in the collection of ancient objects acquired through the centuries by the historic municipality. As well as a port and a centre of commerce, the Square Mile began in the eighteenth century to develop a specialist vocation as an international financial capital. The continuous churn of redevelopment as homes and workshops were displaced by offices and trading floors brought to light a stream of archaeological findings. Shepherd describes the initial reluctance of the commercially-minded City authorities to engage with archaeology and accept stewardship of historic findings. From 1826 the library of the Corporation of London's mediaeval Guildhall did provide space for a fast-growing collection of 'antiquities and curiosities', but had no curatorial policy. For example, the City of London showed no interest in the astonishing Roman findings collected by the local antiquarian Charles Roach Smith (fig.2) which went instead to the British Museum in 1856. Not until the later nineteenth century was there a change of attitude in the City towards conservation of Roman and mediaeval remains, and acquisition of artefacts. In 1890s the library collection was organised for public display and opened as the Guildhall Museum, publishing its first catalogue in 1903.

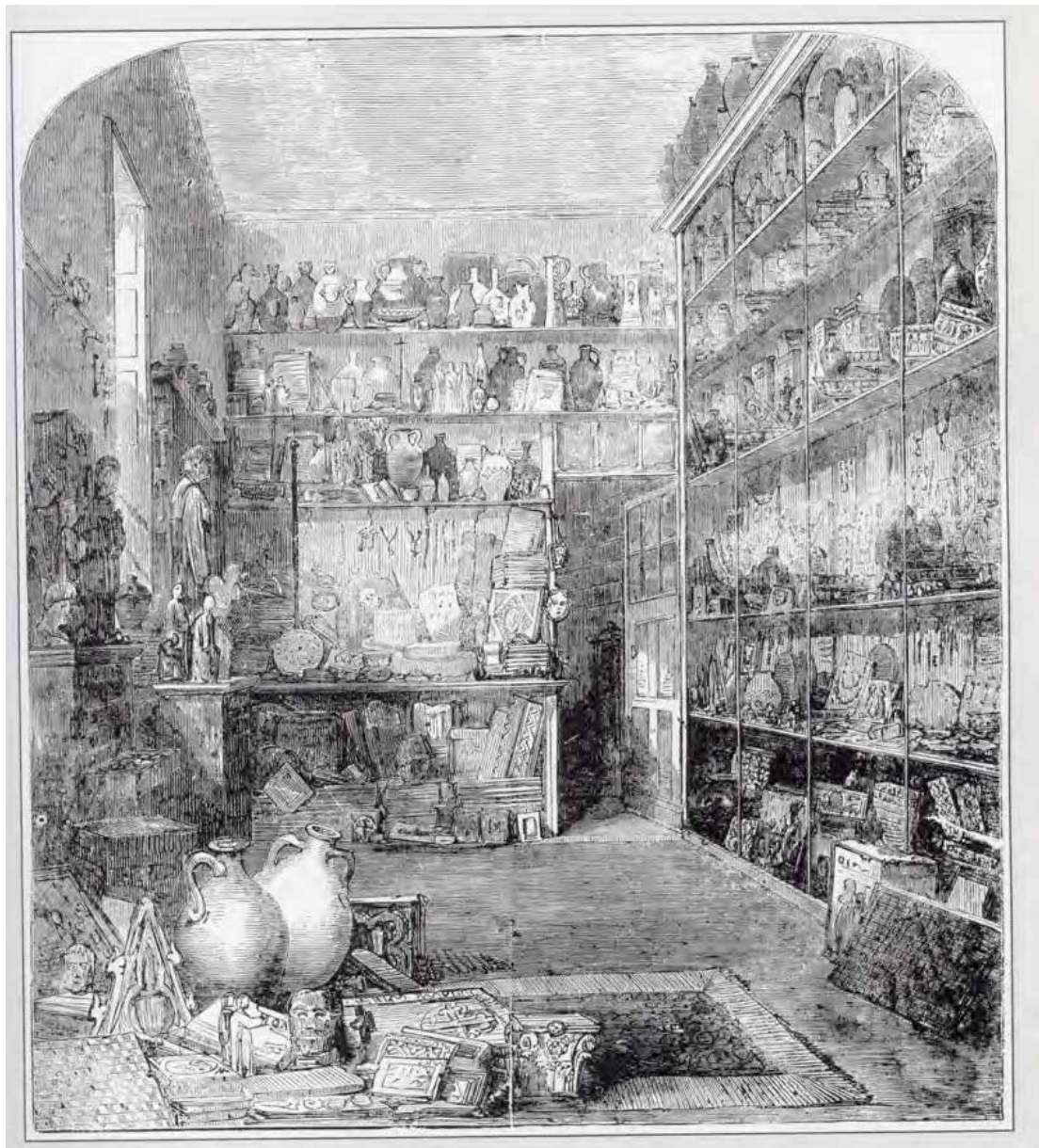


Fig.2 Antiquities of Roman London collected by Charles Roach Smith

London's second city museum was launched in 1910. The London Museum was the brainchild of two wealthy aristocrats, Lord Harcourt and Viscount Esher, who had visited Paris together in 1890 and contrasted the scope and vitality of the Musée Carnavalet with the Guildhall Museum's parochial interest in the antiquities of the Square Mile. They conceived a museum for the whole metropolis, past and present, containing

‘everything which could be collected of historic interest connected with London from the earliest times: pictures, china, costume, arms, engravings, miniatures, snuffboxes, manuscripts . . .’

Harcourt brought plutocratic connections through his marriage to Pierpont Morgan’s niece, and Esher as a courtier brought royal patronage and the offer of accommodation in Kensington Palace, as well as loans of Queen Victoria’s collections of dolls, for whom she made the costumes, and sets of her ceremonial robes. Shepperd describes how the notions of a ‘royal treasure box’ and ‘London Carnavalet’ were fused under the inspired leadership of the Museum’s first Keeper, Sir Guy Laking, a fashionable playboy and collector of antique arms, whose father had been Queen Victoria’s physician and confidant (1991, 45). Laking robustly deflected complaints and legal threats from the City of London, who claimed a breach of the Corporation’s ancient chartered privileges. He had a flair for showmanship which quickly established the Museum in the public imagination. In 1912 when workers digging the foundations of the London County Council’s headquarters on the south bank of Thames opposite Westminster discovered the remains of a Roman boat, Laking supervised the excavation of the 22-ton keel and ribs and led them ceremonially back to his Museum at Kensington Palace (fig.3). From the Franco-British Expo at White City in 1908-9 he acquired some spectacular tableaux by the model-makers Thorp of London, including a display of the Great Fire of 1666 with electronic fire effects that remains popular to this day.



fig.3 Sir Guy Laking, First Keeper of the London Museum

The London Museum's positive policy towards collection was continued by Sir Mortimer Wheeler, Keeper from 1926 to 1944, who combined an outstanding archaeological reputation with a commitment to gather 'all classes of material from every period'. He pioneered the Museum's fashion and costume collections, and had a foresight to acquire a hansom cab at a time when such vehicles were still plying the city's streets. Relocated to Lancaster House, Wheeler built up the museum both as a visitor attraction and a centre for urban research. He brought in London Society, *Survey of London* and the Royal Archaeological Institute as tenants, but his proposal

in 1927 for a merger with the Guildhall Museum fell on deaf ears. The two establishments continued to exist in rivalry, tempered by an understanding that the Guildhall would limit its acquisitions to the Square Mile, leaving the rest to the London Museum.

Both museums were bombed out during the Second World War. The London Museum reopened in 1951 in its former base at Kensington Palace, readmitted by Royal Warrant on the understanding that its lease was temporary. Guildhall Museum reopened in 1955 in the Royal Exchange beside the Bank of England, likewise on an interim basis. The fact that neither of London's city museums possessed a permanent home revived discussion of a potential merger. Negotiations began in earnest in 1959, with central government acting as broker, and by 1963 a board of governors was already meeting, with Viscount Harcourt in the chair and six members appointed by the government, the Corporation of London and the London County Council respectively, each party being committed to contribute an equal share of capital and running costs (*Antiquity* 1963). A site for the museum's new home had been identified in the vast area destroyed by wartime bombing north of St Paul's Cathedral, beside the roundabout that terminated 'Route 11', the London County Council's dual carriageway along London Wall, and immediately to the south of the City Corporation's ambitious comprehensive Barbican redevelopment (City of London 1959). Legislation followed in 1965, building started in 1971, the Queen Mother laid the foundation stone on March 29th 1973, and 'the largest urban-history museum in the world' (Lewis 2019) opened its doors on December 2nd 1976.

The Museum of London since 1976

The Barbican was designed by the young architectural partnership of Geoffrey Powell, Joe Chamberlain and Christoph Bon. Followers of Corbusier, they conceived the entire site as a megastructure with residential towers, educational, cultural and social facilities linked by a series of elevated decks and walkways, releasing the ground and

subterranean levels for vehicle circulation, parking and storage. In the Modernist boom of the Sixties the Barbican's upper-level pedestrian system triggered proposals to extend the typology of podium and tower development across the fabric of London. Though these plans were quickly abandoned elsewhere (Hebbert 1991) a vertical segregation concept continues to dictate patterns of movement around the Barbican today.

The Museum of London was the work of another young architectural team, Philip Powell (no relation) and Hidalgo Moya. The design incorporated the Barbican's elevated pedestrian deck, with the complication that their museum had to be wrapped around the retained livery hall (at street level) of the Ironmongers' Company. No less committed Modernists than the Barbican designers, their approach was less dramatic and more humanistic and people-centred (Saumarez-Smith 1995). They preferred white walls to Brutalist shuttered concrete, believing that design should aim above all to avoid stress through a simple circulation plan, easy ramps between levels, full-length picture windows opening onto gardens, and 'attractive but unassertive' settings for displays (Powell & Moya 1966). In their concern with internal user comfort the architects gave less thought to the external aspect of the Museum of London, relying on a large drum containing a sunken garden in the middle of the Route 11 roundabout to give visibility (Fig.4).



fig.4 Powell and Moya's scheme in 1966

Unlike Powell and Moya's subsequent work at Wolfson College Oxford, or Chamberlin Powell & Bon's adjacent Barbican project, the design was not well received. The lack of a formal entrance at ground level proved problematic from day one, when the H.M. the Queen arriving to inaugurate the Museum had to enter via the shuttered steel delivery bay on London Wall. The roundabout rotunda with its sunken garden soon became rat-infested and was externally perceived as 'an ungainly building like a pillbox ready to repel invaders' (Owen 1998). The upper-level walkway system continued to baffle visitors, despite repeated schemes to improve signposting and way-finding. Staff were frustrated by the constraints of an internal plan designed explicitly to prevent 'museum fatigue' by making all visitors follow a single route through the city's chronology, from prehistoric to modern times (fig.5).

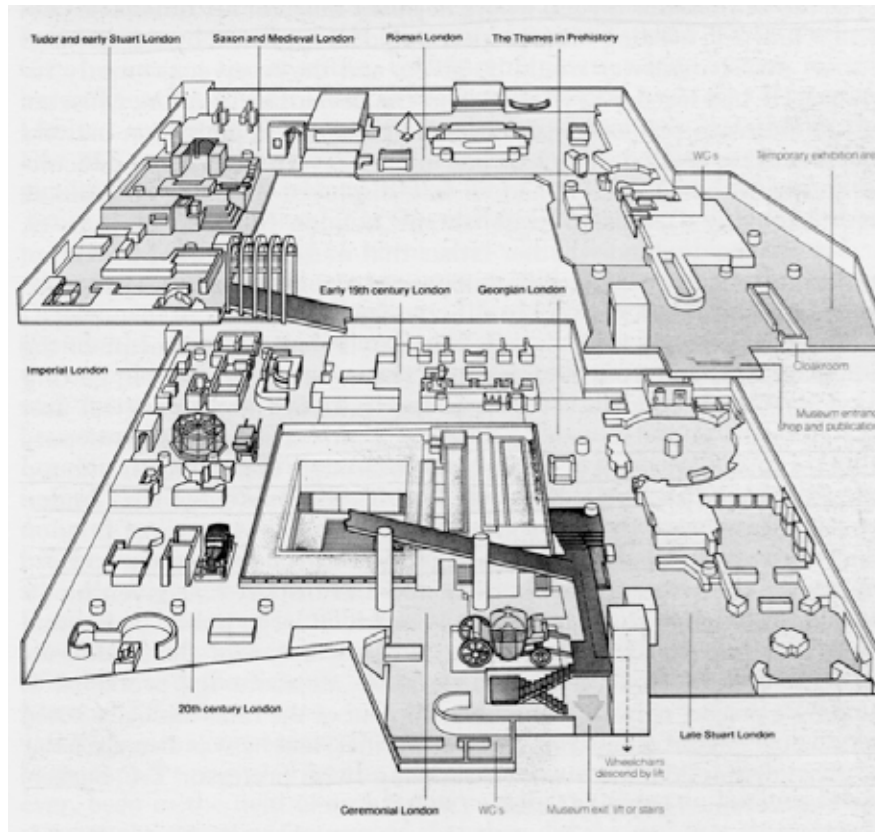


fig. 5 Powell & Moya's internal layout of the Museum of London

Since its opening in 1976 the Museum has had several refurbishments. The nineteenth century coverage was completely overhauled in 2001 under the directorship of the historian Simon Thurley (Werner 2001). His successor the architect and museum designer Jack Lohman initiated new galleries of Modern London, expanding the museum's display area by 25% (*Design Week* 2009). No sooner had they opened than a further phase of refurbishment and expansion was announced, involving building over the top of some surviving fragments of the city wall of Roman Londinium. The project was to be financed through the construction of a new office tower beside or over the main entrance on London Wall (*AJ* 2011). But in 2012 the arrival of a new director, Sharon Ament, brought a radical shift of strategy: instead of struggling to further expand the tight envelope of the Powell and Moya building, the Museum of London would find a new home.

The Move to Smithfield

Sharon Ament was recruited from the Natural History Museum where as Director of Public Engagement she managed annual visitor flows of over four millions. An exponent of 'stretch thinking', she aimed to double the Museum of London's visitor numbers from 900,000 to 2 million and expand the schools programme to reach every child in the city. In the tradition of Guy Laking and Mortimer Wheeler, she emphasized the need for contemporary as well as historical coverage, making her mark with acquisitions such as Thomas Hetherwick's Olympic cauldron immediately after the London Olympic Games of 2012, and 'fatberg' of congealed grease and wet-wipes that was found to be blocking the sewers of Whitechapel in 2017. Every aspect of her agenda for the Museum of London underlined a need for more space.

Fortuitously, the City Corporation possess at Smithfield a former market hall, derelict for forty years, that enjoys protected status as a historic building, having been saved from insensitive commercial redevelopment by the intervention of the House of Lords. The General Market dates from 1876, has a handsome domed interior generously illuminated by a clerestory lantern and is lined externally with street-facing shops and market traders' premises (fig.6). Its immediate neighbour, the Poultry Market, was destroyed by fire in 1958 and rebuilt in the 1960s with Europe's largest clear-spanning roof of reinforced concrete: this virtuoso shallow dome was engineered by Ove Arup and is also listed (fig 7).



fig.6 Smithfield : the General Market

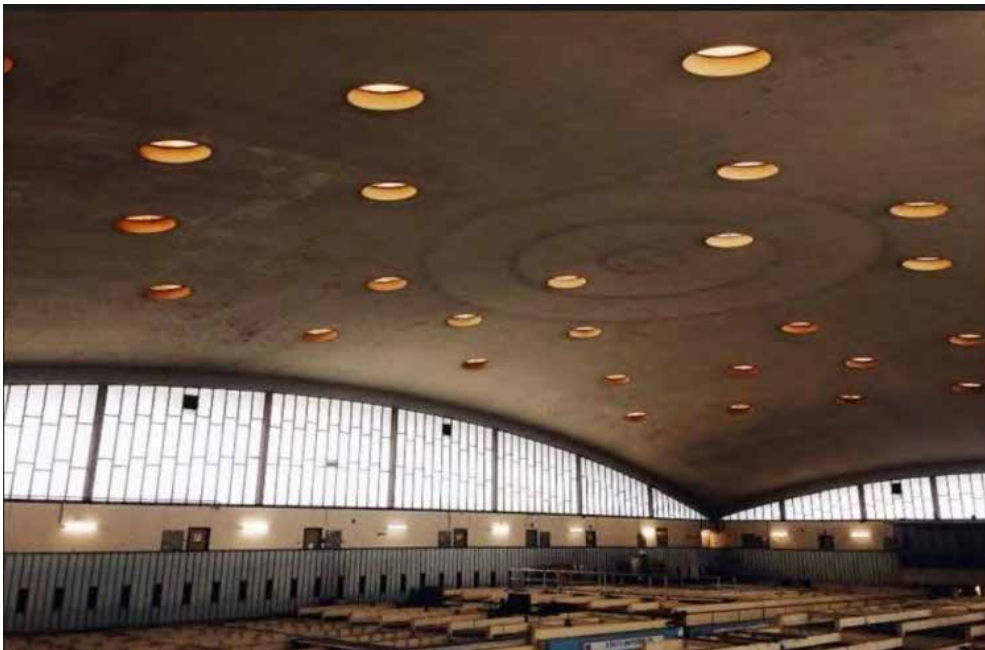


fig.7 Smithfield - the Poultry Market

The Poultry Market is about to be vacated by the relocation of the wholesale meat trading to new facilities in outer London. In terms of location, the two buildings could hardly be better, sitting nearby the mediaeval foundations of the Charterhouse and St

Bartholomew's Hospital, and immediately beside (indeed partly over the top of) the Farringdon Station complex which is about to become a point of prime metropolitan centrality as the intersection between London's east-west Crossrail line and the north-south Thameslink (Hebbert 2014). Furthermore, the successful growth since 1990 of a rival financial office district to the east, at Canary Wharf, has encouraged the City Corporation to reconsider its priorities and emphasize other values besides the single-minded pursuit of commercial profit: there is a new emphasis on residential liveability, on quality of the public realm, and on the City's still remarkable concentrations of historic buildings, educational facilities and cultural performance spaces. Investment in the relocation of the Museum of London to Smithfield has become part of a larger rebranding programme known as Culture Mile. In a press release dated March 28th 2019 Catherine McGuinness (Policy Chair, City of London Corporation) is quoted as saying: 'Our ambition is to redefine the Square Mile - already established as a leading global financial centre - as a world class destination for culture, creativity and learning'. The press officer's Note to Editors adds: ' Culture Mile is a corner of London's working capital where creativity is fast becoming the most valuable currency' (City of London 2019). Symbolically, an art installation now marks the closure of one of the high level walkways which radiated from the Barbican (fig. 6).



fig.8 Korean house by Do Ho Suh on the Wormwood St walkway, April 2019

Work is now proceeding for the design of a new Museum of London scheduled to open in 2023. The principal architects are Stanton Williams, designers of the Royal Opera House Covent Garden and University of the Arts at Kings Cross, and since both markets are listed, the design team also includes the historic buildings specialist Julian Harrap whose projects include Nicholas Hawksmoor's church of St Anne, Limehouse, the Neues Museum Berlin, and Sir John Soane's Museum in Lincoln's Inn Fields. The physical resource at their disposal is enormous, since each market building has a deep basement for refrigerated storage, besides a multiplicity of exterior street-facing units. The present intention is to divide the spaces into six time-zones, 'imagined', 'temporary', 'deep', 'real', 'present' and 'past' (fig.9): interpretation strategies for each zone are being mapped out even as I write.

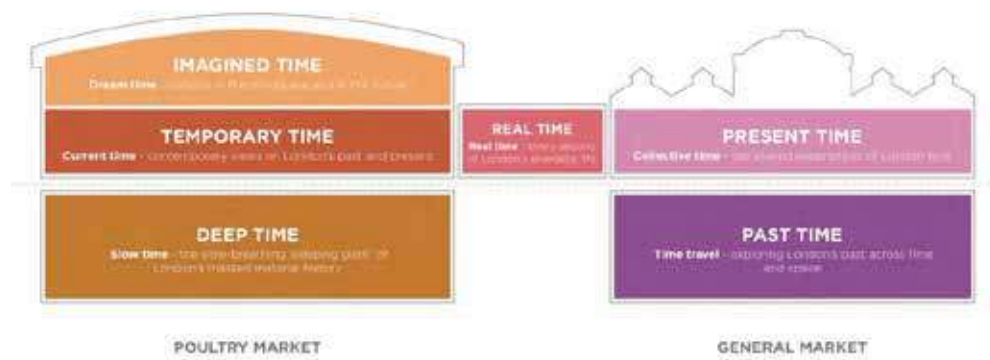


Figure 9 The Museum of London's initial master-plan for Smithfield

Over the summer of 2017 the museum launched its proposals to the public with a festival that celebrated both the richness of its historic collections and its rapport with modern living Londoners. The market buildings were dressed with billboards featuring portraits by Vicki Grout, leading photographer of the London grime scene (fig.10). The captions elided the name of the establishment into 'Museum of Londoners'.



Figure 10 : Smithfield General Market, Summer 2017

Conclusion

The Track 15 Call for Papers encourages us to think about the importance of urban public space. As explained above, city museums have developed in part as conscious effort to enrich the public realm and enhance the collective memory of the spaces and the townscapes that we share (Hebbert 2005). Donatella Calabi's work addresses the many museological choices that have to be made in curating and displaying city collections, the balance between archaeology, history, living memory, contemporary reality and the future, between tourists and locals, young and old, digital and concrete, morphological and people-centric. The Museum of London's imminent transition from the Barbican to Smithfield involves all these choices and more. That's why this paper can be only a work in progress. Watch this space !

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Suitable renewal and space organization methods of historic town in the transition period: a case study in China

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Abstract: China's urban planning and construction have stepped into a transition period, with three major characters, which are transitions "from efficiency demand to humanity demand", "from perceptual planning to rational planning", and "from incremental expansion to inventory planning", this bring new demands to urban space planning, especially historic towns in China. The previous planning approaches caused some problems to historic towns, some of them were turned into tourist attractions, some of them were abandoned by natives. Most of them are facing the problems: how to develop sustainably with the consideration of the natives? How to demonstrate cultural heritage in a proper way? With the demands of transition period, this paper studied a typical historic town in Jiangsu province, China. First, this paper summarized the three characters of the transition period of China. Then through the study on the typical case, the paper summarized the problems caused by the previous planning approaches, which were missing of the original life pattern, narrow use of resources and inefficient use of public space. In order to solve these problems systematically, studies were made on three key parts "resource understanding", "function activation", and "space organization". Firstly, on resource comprehensive understanding aspect, multi-dimensional resource understanding and excavation system were construct, which expanded resource understanding ideas, and offered resource discovery system, to adjust the old perspective of economic optimality. Secondly, on function activation and implantation aspect, a function activation system taking people and value as the double core was construct, which expanded function organization ideas, and offered a function activation system. Thirdly, on coupled spatial renewal aspect, an embedded planning model facing urban renewal was construct, which condensed spatial renewal main points, and improved renewal planning ideas.

Keywords: historic town; resource understanding; function activation; space organization

1. Research background

Suitable renewal of historic town is a worldwide hot research topic in urban and rural planning research fields, and is getting a continually increasing attention in China. China's urban and rural planning and construction have stepped into a transition period, that bring new demands to the related works on historic town. With the demands of transition period, how to develop sustainably with the consideration of the natives? How to demonstrate cultural heritage in a proper way?

2. Characteristics of transition period

There were three major characters of transition period, which are transitions “from efficiency demand to humanity demand”, “from perceptual planning to rational planning”, and “from incremental expansion to inventory planning”.

2.1 From efficiency demand to humanity demand

In 2017, General Secretary Xi Jinping emphasized in his report to the Nineteenth National Congress that China has entered a new stage, and the main contradictions in our society have been transformed into the contradiction between the people's growing need for a better life and the unbalanced and inadequate development. In his important speech on July 26, General Secretary Xi Jinping pointed out that people's lives have improved significantly, their yearnings for a better life have become stronger, the needs of the people have diversified, have multi-level and multi-faceted characteristics, and they hope to have better education, more stable work, more satisfactory income, more reliable social security, higher level of medical and health services, and more comfortable living conditions. Beautiful environment and richer spiritual and cultural life. "Good life" and "human needs" have become the key words to be considered in social development at this stage (Leung *et al.* 2019). How to plan reasonably based on human needs is an important direction to be studied in the transitional period.

2.2 From perceptual planning to rational planning

With the rapid economic development of China, problems such as the spread of urban diseases, the similarity of urban styles and features, and the decline of the quality of human settlements have become increasingly prominent. Academician Wang Jianguo believes that how to achieve future-oriented "sustainable development" through "rational planning" in China's urban development is an important issue that needs to be considered and solved at this stage of urban development (Wang, 2018). The traditional perceptual planning method has some problems in our long-term planning practice, such as implementation failure and subjective decision, which cannot meet people's requirements and expectations for the quality of life at this stage.

Academician Wang Jianguo, on the basis of analyzing the development frontiers of urban design at home and abroad, put forward that there is a new trend of urban design development characterized by digitalization. "Human-computer interaction" is an important development direction of urban and rural planning and construction in the new stage, which requires efforts and exploration in the direction of "scientific analysis and guidance of spatial planning". Academician Wang believes that the design process of "human-computer interaction" can emphasize the combination of value-based creative design and multi-source data management and control. Rational planning can solve the problems of insufficient systematic grasp and subjective judgment in traditional planning and design, and integrate database and quantitative planning into urban planning and control.

2.3 From incremental expansion to inventory planning

With the improvement of the understanding of land resource shortage and the reflection on the development mode of growth doctrine, the transformation of urban development from "incremental

expansion" to "stock optimization" has attracted extensive attention from the government and all sectors of society. The state has put forward the requirement of delimiting the boundary of urban growth. The 13th Five-Year Plan (2016-2020) pointed out that the efficiency of resource utilization should be greatly improved, the total amount of construction land should be effectively controlled, the increment of construction land should be reduced year by year, and the management of restrictive indicators should be strengthened, and the double-control action of total amount and intensity of construction land should be implemented. Incremental and stock planning have become the inevitable choice of urban planning (Yang, 2017).

In recent years, there have been some practices and explorations of stock planning, including a new round of general planning for Shenzhen, Shanghai, Beijing and other major cities, as well as detailed planning such as regulatory detailed planning, urban design and renewal planning.

Inventory planning conforms to the overall idea of the transformation of urban development from "incremental expansion" to "tapping the potential of stock" (Ge *et al.* 2017a). It is a kind of planning that takes the stock space of built-up areas as the object and optimizes the adjustment as the main content without adding new construction land. Firstly, the concept of inventory planning is based on the realistic background of strict control of new urban construction land at the national level. Secondly, the inventory planning takes the stock space as the object, including all the land and buildings in the built area, such as the land and buildings with good or bad use status. Thirdly, stock planning should fully respect and make use of the current situation, take optimization and adjustment as the main content, encourage "acupuncture-type" planning, and avoid large demolition and construction.

3. Typical case study and main problems

There were problems caused by the previous planning approaches, which were missing of the original life pattern, narrow use of resources and inefficient use of public space.

3.1 Location

As seen in figure 1, Hushu town is situated at the east of Nanjing, which is one of the economic prosperous cities in China. The research area is about 27.13 hectare. Hushu Town was founded in the Western Han Dynasty 2000 years ago. It began to prosper in Ming Dynasty, which played an important part in the development of economy of the city. Because of the spread of cities, it is facing the stress of land-use transformation and missing of the original life pattern. There are seven intangible cultural heritages. Nanjing salted duck and manufacturing method are the provincial intangible cultural heritages. Zhou Gang mahogany carvings are the municipal intangible cultural heritages.

Hushu town embodied the culture of Nanjing and is also one of the Hui communities in Nanjing. Due to the lack of guidance in construction for many years, the original texture of villages has changed, the decline and reconstruction of old buildings have increased, and the cultural ecology of old town has been damaged.



Figure 1 Location of Huahu town in Nanjing

3.2 Material space

There are lots of historic factors in Hushu town, whose history is connected with the main city. As seen in figure 2, historic factors include historic buildings, historic streets and alleys, historic trees and so on. According to the investigation, there are 1400 buildings in this town, which include one provincial, seven municipal and seven district-level protection units and other outstanding historic buildings. All the historic buildings were built before 1980. Because of lack of correct renewal methods, some of them are at the edge of damage, which were made of local material. And they scattered among the normal buildings (Ge *et al.* 2017b).



Figure 2 The overall style and features of Hushu town

3.3 Population structure and cultural tradition

According to the official data, there are about 3347 people in Hushu town, nearly half of which are external population. Most of the natives moved to the new town in the north. Only old and some poor people are still live in this old town. Some of the traditional festivals are kept here. But the traditional life-style changed a lot.

3.4 Missing of the original life pattern

The existing historical value-oriented method of functional activation lacks consideration of human needs, which tends to use museum and exhibition hall to show historical value. According to the survey, the existing functions of Hushu town were composed of protection function, tourist oriented commercial functions, low-quality residential function, and some even mixed with industrial production functions. On one hand, the existing functions can no longer meet the needs of residents for a better life, and there was a phenomenon of residents looking forward to move out. On the other hand, the existing function lacked the combination of various resources of the towns, and can't display the unique value of the town well.

3.5 Narrow use of resources

The focus of resources understanding is mainly on the historical value of built-up areas, while the value of a wider variety of resources is indeed neglected. On one hand, because lack of systematic understanding of the resources of the town, historic residential area in the center of the town suffered serious protective damage. The local government renovated some historic buildings on both sides of the main streets, which totally did not conform to the local architectural characteristics and destroyed the traditional style of the streets in the area. On the other hand, other available resources have been neglected because of insufficient historical value, many of them can be used to enhancing the vitality of the town.

3.6 Inefficient use of public space

Spatial organization of public space lacks systematic combing. Due to the lack of systematic sorting out of space, the blind expansion of space development has destroyed the traditional space texture, the traditional landscape along the river has been destroyed, and private construction has been serious. At the same time, the old town's internal traffic chaos, the original traditional bluestone pavement was replaced by cement pavement. Because inefficient use of public space, the living environment is difficult to meet the requirements of comfortable living standards.

4. Multi-dimensional resource understanding method

On resource comprehensive understanding aspect, multi-dimensional resource understanding and excavation system were construct, which expanded resource understanding ideas, and offered resource discovery system, to adjust the old perspective of economic optimality. multi-dimensional resource understanding and excavation system include comprehensive screening, classified evaluation and value extraction.

4.1 Comprehensive screening

The available resources can be divided into material resources and intangible cultural resources. According to the different classification criteria of “scale, time and form”, the material resources have many kinds of classification methods, as seen in table 1. The resources of the town can be divided into 18 sub-categories by interpreting them from the three dimensions. According to the dimension of time, intangible cultural resources can be divided into three categories: intangible cultural heritage, characteristic intangible cultural resources and innovative intangible cultural resources. Overall, the resources of the town can be divided into 21 sub-categories, and arranged in a certain order one by one, forming a list of available resources screening. The investigation and screening of resources according to the list can effectively excavate the resources of the town in an all-round way.

Table 1 Classification of available resources of historic town

Classification basis	Classification Contents
Scale division	Macro-resources, meso-resources and micro-resources
Time division	Historical resources and characteristic resources
Morphological division	Linear resources, planar resources, point resources
Carrier division	Material and non-material resources

After resource screening, it was found that the resources of Hushu Town covered 12 of the 21 sub-categories. Among them, there are many resources in many subcategories. For example, the medium-sized linear historical resources include two items: water network system and spatial pattern, and the micro-point historical resources include two items: ancient wells and ancient trees. Each item may contain several specific resource points.

4.2 Classified evaluation

In the process of resource classification and evaluation, it is necessary to carry out specific evaluation according to different resources. Firstly, classify the primary screening resources, merge the resources to be evaluated properly, and merge all the primary screening resources into several special evaluations according to the needs. Then, establish a targeted evaluation system according to the different evaluation contents. Each special evaluation method and evaluation system should be different according to the different objects and importance of evaluation.

Through proper classification and merger, all resources of Hushu Town are summarized into 6 evaluation aspects, including “historical context analysis, spatial pattern analysis, historical relics combing, street spatial evaluation, water network evaluation, and building evaluation”. In the process of delimitation of special evaluation, emphasis should be laid on different levels of importance.

4.3 Value extraction

Value extraction refers to the further refinement and generalization of available resources on the basis of resource evaluation, and the extract available resources and values into concise and clear items of resource value. Resource value abstraction is based on the results of resource evaluation. After evaluation, more than two resource values can be extracted from the larger value of resources. The smaller value of resources can also be combined with one resource value from several resource evaluation results. The significance of value extraction is to further sort out and summarize the

evaluation of resources, and to further clarify the value of available resources. By extracting the evaluation results of six resources in Hushu Town, the total value of resources is summarized as follows: typical example of Nanjing culture, ideal landscape form, and unique architecture.

5. function activation

On function activation and implantation aspect, a function activation system taking people and value as the double core was construct, which expanded function organization ideas.

5.1 Combining with resources to enrich functional contents

Integrating human activities into functional organizations can enrich the functions of historic town, such as natural value recognition based on sightseeing activities, natural value exploration based on learning activities, intangible cultural experience based on leisure activities.

5.2 Increasing human participation

The inheritance of town value can’t be separated from people's cognition, feeling and memory. It enriches people's understanding and experience of town value and is conducive to the display and inheritance of local value.

6. Space organization methods

On coupled spatial renewal aspect, an embedded planning method facing urban renewal was construct, which condensed spatial renewal main points, and improved renewal planning ideas, as seen in figure 3.

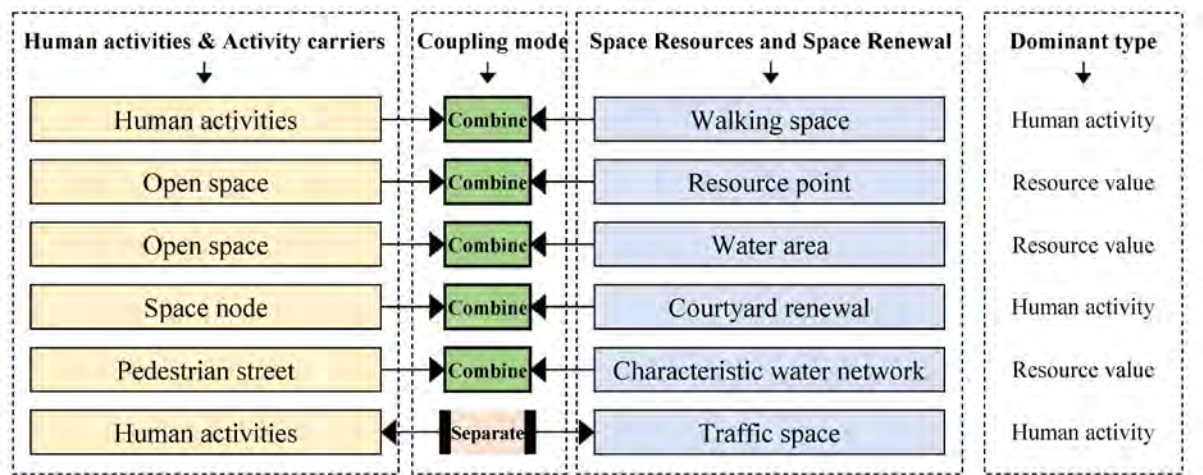


Figure 3 Embedded planning method facing urban renewal

6.1 Combine human activities and walking space

The combination of human activities and walking is a combination of linear elements and other elements, as well as a combination of functions and linear elements.

The planning emphasizes the combination of human activities and walking, and takes the walking system as the carrier of the spatial framework. On one hand, the walking system is the best carrier of public functions. On the other hand, the space and texture of historic town and streets are more suitable for walking. The main space nodes and active streets are processed on foot. Planning links all kinds of point and area elements in the town through walking system, including cultural protection units, characteristic buildings, historic wells, historic courtyards, water, open space and so on. The main public functions of the planning are also combined with the walking system.

6.2 Combine open space and resource points

The combination of open space and resource points is a combination of area elements and point elements. Planning emphasizes the combination of open space and resource points, including cultural protection units, historic courtyards, historic wells, excellent buildings and so on. Firstly, the combination of open space and cultural protection units will expand the open space. Secondly, combine open space with historic courtyards and historic wells. Through investigation and evaluation, it is found that there are two excellent historic courtyards and two historic wells in the town, and the location of historic wells and courtyards is relatively close. In combination of them, two new open spaces are added. Thirdly, combine open space and excellent architecture. Through the evaluation, it is found that there are nearly 100 excellent buildings in the town, and new open space is added in the dense areas of excellent buildings.

6.3 Combine open space and water resource

The combination of open space and water resource is a combination of area elements and area elements. Planning emphasizes the combination of open space and water resource. The water network system is one of the characteristics of the town. There are two large water pools around where a lot of human activities carried out. The planning combines the current water resource and expands the open space.

6.4 Combine courtyard renewal and space nodes

The combination of courtyard renewal and spatial nodes is a combination of area elements and area elements. Planning emphasizes the combination of courtyard renewal and spatial nodes. There are four areas in the planning core space: two cultural protection units and two water pools. Planning select the courtyards around the core space with better status to renewal, and improve the quality of the core space.

6.5 Combine characteristic water network with pedestrian Streets

The combination of characteristic water network and pedestrian streets is a combination of linear elements and linear elements. The planning emphasizes the combination of characteristic water network and pedestrian streets. Water network system is one of the important characteristics, which has the characteristics of distribution along streets and lanes. Planning protect the characteristics of the water network, following the spatial characteristics of its distribution along the street, expands the existing water network, and pays attention to its combination with pedestrian streets.

6.6 Separate human activity space from vehicle space

System coupling is not only the combination of systems, but also the separation of systems in space. The separation of human activity space and vehicle space is a kind of separation coupling relationship. The planning emphasizes the separation of the vehicle space from human activity space. Through investigation, it is found that the streets in town is not suitable for driving, and vehicle space will interfere with other space and functions, so the vehicle space will be limited outside the main space, and the driving and walking will be separated. There is a main street in town, which has a great impact on the quality of cultural protection and the surrounding areas through the core space; moreover, there are often various types of agricultural motor vehicles entering the town, which have an impact on the quality of the living space and cause damage to the bluestone pavement. Specific treatment methods include the pedestrian treatment of motor lanes and the construction of three parking around the town.

Acknowledgements

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The Study on Spatial Interventions for Aging Communities in Tourism-oriented Historic Districts from the Perspective of Spatial Territoriality

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Abstract: Aging-in Place represents the primary model of elderly housing in China. The current rapid urbanization has impacted the center city of Suzhou, one of China's most important historic towns, and its elderly communities. The populations have changed under this circumstance. The city has witnessed the influx of new migrants from other cities and provinces for economic opportunities and tourists from all over the country for its historic legacies on the one hand, and the outflow of young adults to the new districts and other cities surrounding Suzhou on the other. As a result, the elderly residents have accounted for nearly 45 percent of the total population in the Old City.

This paper examines the issue of spatiality for aging population using both qualitative as well as quantitative methods, and focus on Suzhou's historic district of Pingjiang. It reveals that the rapid commercialization and the increase of the tourist has squeezed the urban and community spaces of elderly populations, and the spatial ambiguity and disorder have created further conflicts between different demographic groups. All these are challenging the original Aging-in Place model. The paper analyzes the behavior logics behind these phenomena, and proposes several urban design strategies at the micro-scales related to different aspects of the current situation including place identity, territorial division, and symbiosis of population that are intended address, which hopefully could restore the environment for Aging-in Place.

Keywords: Spatial Territoriality; tourism-oriented historic districts; Interventions for Aging Communities

1. Introduction

The central historic districts in Chinese cities are full of tourist attractions, resulting in the mixed functions of tourism and residence in these communities. However, the increase of tourists in these historic districts has impacted the living function, which significantly hurts the interest of local residents.

Affecting by traditional concepts of providing support for the elderly and the reality of the facilities shortage for the elderly, Aging-in Place plays the dominant role in the life of city elderly in China. The current rapid urbanization has impacted the center city of Suzhou, one of China's most important historic towns, and its elderly communities. The populations have changed under this circumstance. The city has witnessed the influx of new migrants from other cities and provinces for economic opportunities and tourists from all over the country for its historic legacies on the one hand, and the outflow of young adults to the new districts and other cities surrounding Suzhou on the other.. For example, the aged residents in Suzhou Pingjiang district already reached 45% in total population. Their daily life, especially the quality life in public space, is negatively affected by the tourism development, becoming worse and worse.

In terms of the perspective of spatial interventions, this paper studies the living space for aging population in the historic district of Pingjiang, Suzhou. It focuses on following issues: 1) the public spatial living needs for the aged group in Aging-in Place model; 2) the evolution of public spatial characteristics in Pingjiang district and its influence to elderly residents; 3) the improvements of elderly's public space in Pingjiang district.

2. Research Subjects

Suzhou has more than 2500 years of history. As a famous historical street in Suzhou, Pingjiang Historic District sits in the north-east of Suzhou with outer city moat in the east, Lindun Road in the west, Ganjiang Road in the south and the East Baita Road in the north. It approximately covers a gross area of 116.5 hectares.(See as Figure 1) .This area, with traditional city layout, original local architectural style and the living habits, is the best preserved zone in ancient city of Suzhou so far(Wen Huachuan,2009). The core value of this region lies in the integrated preservation of the double-chessboard layout of Suzhou, with the streets and rivers going side by side while the water and land routes running in the parallel, making the true embodiment of Pingjiang Map of Southern Song Dynasty (1229 AC).

Pingjiang Historic District is abundant treasures of Chinese classical gardens and historical relics. Both Humble Administrator's Garden and Lion Grove Garden are the UNESCO World Cultural Heritage. Moreover, there are many museums, including the famous Suzhou Museum designed by I.M. Pei and the national cultural relic protection unit, Palace of King Zhong of Taiping Heavenly Kingdom. There are more than 40 ancient dwellings which have been put on the list of control and protection by local government. Some of them are the former residences of bureaucrats, rich merchants, or cultural celebrities, showing particular architectural features, such as the carving building in North Zhangjia Street and the Pan Mansion. With the remains of rivers, bridges, lanes, traditional dwellings, ancient memorial archways, old trees and wells, Pingjiang Historic District presents a charming picture of waterside town style, with small bridges over the flowing rivers



Figure 1 The location of Pingjiang Historic District

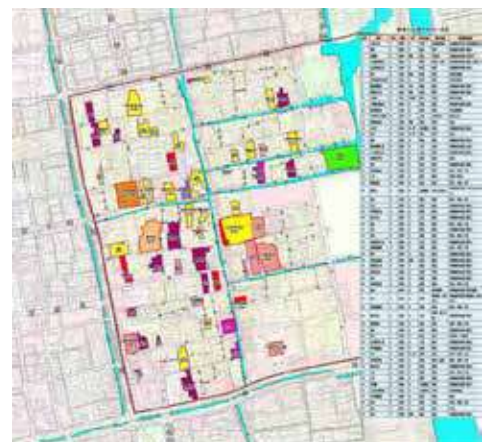


Figure 2, The distribution of Historic Preservation

and white walls and dark tiles. (See as Figure 2 and Figure 3)



Figure 3 The scenery of Pingjiang Road and Canal

In 2001, the overall protection of Pingjiang Historic District started, which aimed at the preservation of the original appearance of Pingjiang Street and preventing the destroy of environment. After 3 stages of protection work: the testing project (2001~2004), the environmental renovation project (2004~2006) and vitality cultivation and regeneration project (2006~now), the population density of Pingjiang Historic District reaches 16.1 thousand/square kilometers. The proportion of residents aged beyond 60 within the district turns into 45% in total population. These senior residents became the protagonist and their life style constitutes unique cultural features in the historic district. Most of them are low income families and Ageing-in Place model became their only choice for pension. However, the success of historic and cultural tourism in this area brings large amount of visitors in, which negatively impacts the local residents, especially senior residents. The most serious contradiction between tourists and elderly residents was caused by spatial ambiguity and disorder, because the increase of tourist has squeezed the public street space of elderly population. Hence, the elderly feels seriously threatened due to the spatial sense of belonging and domain has decreased continuously.

Before the tourism development in Pingjiang Historic District, an interdependent balance exists between the original district and the seniors who are living inside. On the one hand, local residents ensure the preservation of cultural inheritance and life style, promoting the level of preservation in historic districts. On the other hand, a livable district can provide elderly equipped infrastructure and cultural and culturally psychological dependence. Unfortunately, this kind of balance was gradually broken by the tourism development.

3. Research Perspectives and Methodologies

3.1 Territory

Territory is viewed as space occupied and defended by animals, where there are particular defensible resources. The act of possessing and defending territory from appropriators can be regarded as territorial behavior. Territory includes three types: Primary Territory, Secondary Territory, and Public Territory.(Zheng Ying, Gu Kouyuan, 2011)

Territorial Behavior is a very universal phenomenon in our society. J. Edney points out, “ This involves exclusiveness, marking, individualization and identity of physical space, possession, protection , exclusiveness, mark, personality and role.(J. Edney, 1990)

3.2 Alienation of Territory and Public Space

Territoriality is behaviors and cognitions embodied by individuals or groups, which is based on cognitions of the real spatial ownership. Different types of territories meet different motivations and needs. Therefore, people will select specific territorial types of public activities according to types and needs of participated activities. For tourism-oriented historic districts, territoriality refers to right statements of fictitious territories by residents, tourists and businesses that freely use or occupy the space. Territoriality can differentiate justifiable users and unjustifiable users in the area, allowing justifiable users relate each other to form a regional community.

Oscar Newman points out: Residents are willing to protect the space they feel they belong to and take some measure to control it from unauthorized intrusion.(Oscar Newman,1972)Being user entities in historic districts, residents, tourists and businesses always declare their rights for certain territories of public space. Such kinds of right announcement lead to different territorial behaviors and various ways of spatial use. Different territorial behaviors are the games among the three groups indeed and will engender the alienation of spatial usage. The group of residents is in a disadvantage position because of the capital power and government’ s guidance.

For these reasons, it is necessary to straighten out the mechanism of the interaction between space and behaviors, as well as to understand types of territorial behaviors and spatial characteristics of seniors in tourism-oriented historic districts. By moderately spatial interventions, the guidance of territorial behaviors will be set up, which ensures the transformation from spatial alienations to spatial justifiable usages by different groups and improves the spatial quality for aging communities in tourism-oriented historic districts.

3.3 Research Methodologies

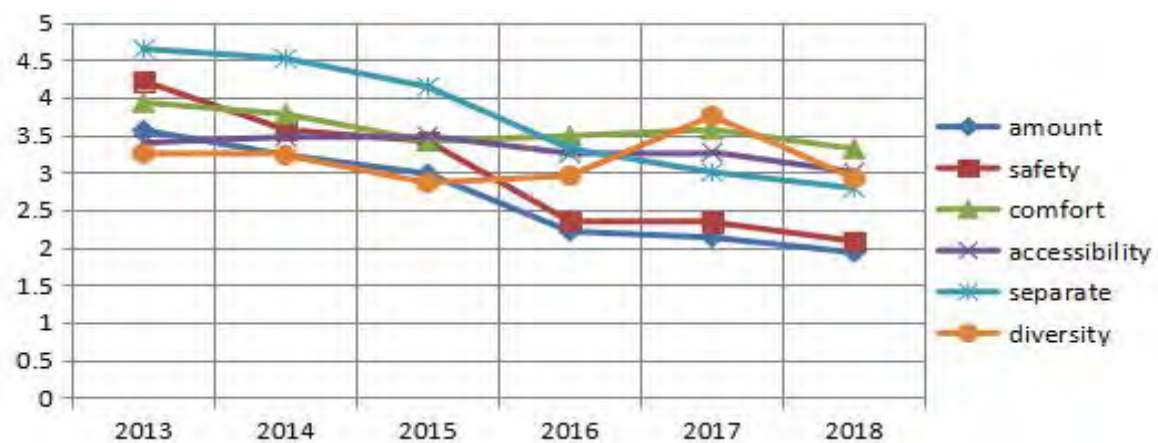
This study applies with three research methods to investigate senior residents’ activities in Pingjiang Historic District, including behavior maps, questionnaires, and interviews. The survey checks out the public spatial utilization and population distribution in Pingjiang Historic District from 2013 to 2018. The research steps are as follows: A. Use degree of spatial satisfaction to evaluate the needs of space by questioning the public spatial needs of 361 senior residents randomly in Aging-in Place model within 6 years. B. Conduct the investigation on public spatial nodes in Pingjiang Historic District as observation points by using the method of behavior maps and observation approach, which helps understand the change of the public spatial utilization for elderly.

4. Research Results

4.1 The Changing Needs of Public Space for the Elderly

The water and land routes running in the parallel is the most important feature in Suzhou spatial pattern. The Chinese traditional public space composes of a series elements of street-lane-courtyard. Four levels of spatial composition exist in the daily living space of elderly residents: main street-lane-courtyard-building. Different degrees of spatial control lead into the unique spatial system for elderly residents: public-semipublic-semiprivate-private. Spatial elements, main streets, lanes and courtyards, together build the public space for seniors.

There are six public spatial needs for elderly residents in Aging-in Place model: spatial amount, spatial safety, environmental comfort, spatial accessibility, spatial separate and spatial diversity. From investigations on the public spatial utilization and population distribution in Pingjiang Historic District from 2013 to 2018, seniors shows different levels of satisfaction to six public spatial needs. The results of investigation demonstrate: the satisfaction degree of spatial amount declined from 3.56 in 2013 to 2.19 in 2018; the satisfaction degree of spatial safety decreased from 4.21 in 2013 to 2.08 in 2018; the satisfaction degree of spatial separate degraded from 4.64 in 2013 to 2.97 in 2018; the other three aspects of public spatial satisfaction almost stay the same during these 5 years.('As seen in Table 1)



year	amount	safety	comfort	accessibility	separate	diversity
2013	3.56	4.21	3.93	3.39	4.64	3.25
2014	3.23	3.56	3.77	3.47	4.52	3.23
2015	2.98	3.41	3.41	3.48	4.14	2.86
2016	2.21	2.34	3.48	3.25	3.31	2.95
2017	2.13	2.33	3.57	3.27	3.00	3.75
2018	1.93	2.08	3.31	3.00	2.79	2.92

Table 1 Public Spatial Satisfaction Degree for Elderly in Pingjiang Historic District

Above results show that spatial amount, spatial safety and spatial separate become the significant criteria for evaluating elderly's public spatial quality. Therefore, this paper mainly concentrates on reasons of survey results:

A. the increase of tourists

The elderly's daily public space has been continually invaded by increasing tourists, causing the decline of elderly's public spatial quality in spatial amount and spatial safety. According to the statistics, the visitors in

Pingjiang Road are over 4 million per year. The peak daily reception reached 60 thousand people during typical peak seasons and weekends. Huge amount of visitors has squeezed the public space for elderly residents, leading the sense of crisis for spatial safety.

B. the enlargement of commercial area

The commercial space spreads all over the Pingjiang Historic District, from streets and lanes to courtyards, which seriously disturbs the regular daily life of senior residents in their public space. From 2013, the commercial space keeps expanding from two sides of Pingjiang Road to those small lanes that are perpendicular to Pingjiang Road. Furthermore, the local homestay also increased dramatically every year. These commercial activities interfere with local residents' daily life space. Thus, those semiprivate spaces, such as lanes and courtyards, are totally exposed to visitors. Elderly lost their public spatial safety and spatial separate.

Those node spaces that can accommodate varied activities became the favorite places by retailers for business usages. Such kind of commercial behaviors also occupy the seniors' recreation space, which left many unsatisfied.

C. the tourism needs for local experience

Being the best preservation district in Suzhou, the original life style and local spatial experience are important factors in attracting tourists in Pingjiang Historic District. Visitors' curiosity about traditional living space causes more and more troubles to elderly. The spread of tourists to every corner around the district persistently disconcert those public space and life style for elderly residents. The original residential function was replaced by the homestays and hotels, leading tourists into the most private space for elderly and disturbing their daily use for public space. Hence, tourism not only causes problems of environment pollutions and noises, but also lowers the life quality in the community.

4.2 Territory Behavior of Public Space under the Co-existence of Diversified Groups

Tourism expansion in historic districts takes huge impact on locals. The composition of population turns from solely residency status into diversified groups, including residents, retailers and tourists. The usage of public space also transformed from fully owned by local residents to share by residents, retailers and tourists. Consequently, all kinds of behaviors in varied territories occur in space.

The territorial behaviors of different groups in public space present four types of "Occupation" on street and lane spaces: Space Possession, Space Occupancy, Space Invasion and Space Defense. Space Invasion and Space Defense are a set of relative concepts, representing the acts of declaring domain territory by a group people. Space Possession and Space Occupancy describe the ownership of space sovereignty in different time duration. The former one is a long term and permanent behavior to occupy space, which privatizes the space. The long-term outdoor storage of private stuffs or expansion of buildings will take over parts of public space. Although they still belong to public properties, others cannot use them anymore. For example, some retailers transformed the street space into parking lots or outdoor



Figure 4 Space Possession

teahouse. Space Possession becomes the main reason for breaking the continuous of elderly spatial public system, resulting in the space privatization and fragmentation.(See as figure 4)

Space Occupancy refers to those behaviors of stay in a short period, such as a rest taking, chess playing and Tai Chi playing. These temporary stay activities usually avoid public spaces using by others, which means current public spaces are difficult to be shared with others. Space Occupancy can either be the proper use of space, or be the alienated use of space. Thus, spatial ambiguity and disorder were created for elderly, which became the primary reason for those elderly residents who lack spatial belonging. The conflicts generated during the spatial use process among local senior group, the commercial group and the tourist group. This spatial use process represents the Space Occupancy process of different groups.

Space Invasion means someone enters into others' functional space and uses the space temporally. This is an injustice behavior for space occupancy, such as seniors have their daily activities in commercial outdoor teahouse, and tourists intrude into elderly's' private courtyards.

Space Defense is spatial restrictions for preventing others' Space Invasion, which represents a behavior of justice. For example, the installation of fence by retailers avoids non-consumers entering into the teahouse area. Local residents place temporary obstacles or markers to prevent the entering of visitors.

Through long-term observation on territorial behaviors in public space of Pingjiang Historic District, the typical territorial behaviors of different groups are shown as Table2:

Table2 Typical Territorial Behaviors of Different Groups in Public Space

Groups	Space Possession	Space Occupancy	Space Invasion	Space Defense
Seniors	<ul style="list-style-type: none"> ● Enclosure activity spaces 	<ul style="list-style-type: none"> ● Playing chess ● Playing Tai Chi and squaring dancing ● Having a rest ● Airing the clothes 	<ul style="list-style-type: none"> ● Non-consumers entering into the retailer's seats area for resting 	<ul style="list-style-type: none"> ● Placing temporary obstacles
Retailers	<ul style="list-style-type: none"> ● Delineation of parking lots ● Enclosure spaces with fences ● Arrangement of outdoor seats 	<ul style="list-style-type: none"> ● Placing merchandises temporarily ● Mobile booths 	<ul style="list-style-type: none"> ● Homestays entering into residential living space 	<ul style="list-style-type: none"> ● Placing fences
Tourists		<ul style="list-style-type: none"> ● Shopping ● Resting 	<ul style="list-style-type: none"> ● Entering into private courtyards 	

Above four territorial behaviors is the process of long-term interest game and district autonomy, causing the difference in usage of district public spaces by different groups. In this process, the power of capital is often stronger than that of society. The seniors in districts take in a disadvantaged position so that their activity spaces are squeezed and intruded. Finally, the loss of public space became the decline of satisfaction degree of public space and life qualities. Thus, the public spatial intervention for the aging group also decreased in this kind of historic districts.

4.3 Public Space Transformation for Aging Group Caused by Territorial Behaviors

After the rising of large amount of tourism and commercialization in historic districts, public space for aging group delivers the characteristics of fragmentation and ambiguity. This lowers the safety and belongs of public space. The main features are as follows:

A. the Change of Space System

The communication space among the elderly has shrunk sharply, which develops from early three-level spatial system (main street-lane-courtyard), to two-level spatial system (lane-courtyard). Some seniors only have courtyards as semiprivate space.(See as Figure 5)

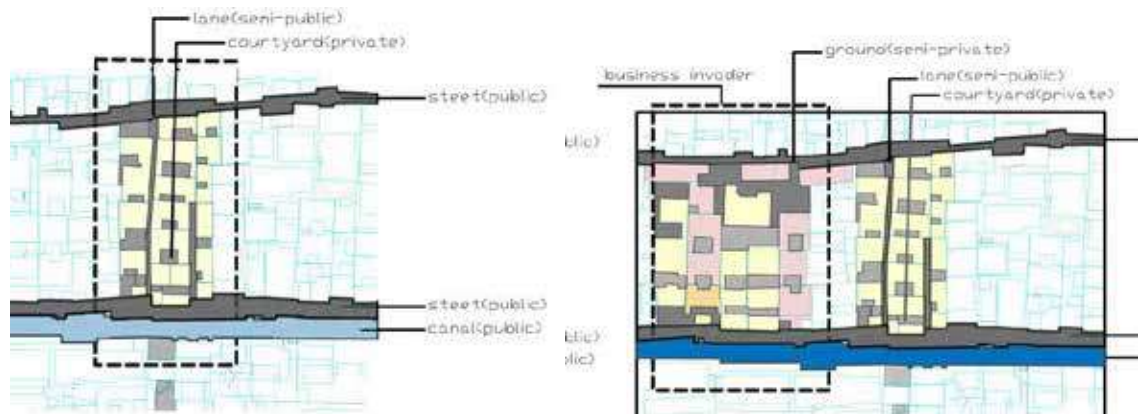


Figure 5 the Change of Space System

B. Decrease in Spatial Scale

The commercial space keeps expanding along main street and river sides that are originally part of the public space for seniors. Behaviors of Space Possession and Space Occupancy turned the residential space into commercial space, reducing the amount of public space for the elderly.

C. Lack of Node Spaces

Most traditional street spaces are linear spaces and are short of node spaces. These existing node spaces are essential activity space for the aging group for the usage of morning exercises, evening exercises and squaring dancing. However, the massive influx of visitors caused the occupation of node spaces by retailers and tourists. According to the statistics, the node spaces for the elderly have reduced 50% since last 6 years.

D. the Competition for the Spatial Usage in Periods of Time

The investigation shows seniors transit trip rule in Pingjiang Historic District differs from other districts. Aging residents like morning activities from 7:00-9:00 and mostly they lack of public activities at night. Seniors in China love strolling and squaring dancing. These excises take in both morning period and night period. However, due to the Space Possession and Space Occupation by tourists and retailers for whole day in the historic district, the aging group in Pingjiang Historic District cannot enjoy the night public activities like seniors in other residential districts. 60% elderly dissatisfied with this phenomenon..('As seen in Table3 and Table4)

Table3 Statistical Analyses of Public Space Users (Weekends)

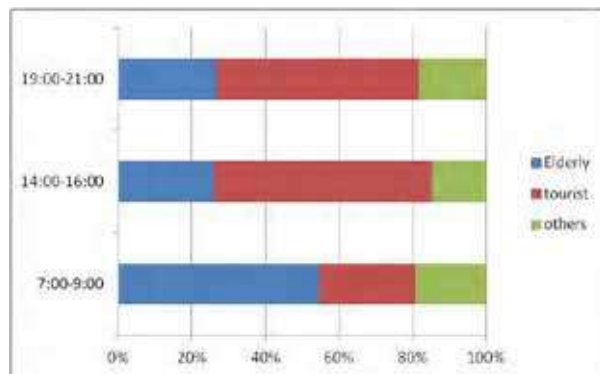
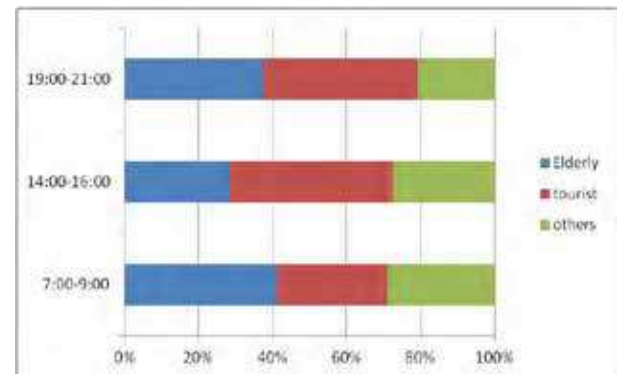


Table4 Statistical Analyses of Public Space Users (Work Days)



Above researches reveal that effective methods can be applied to restrict Space Possession and Space Occupation by tourists and retailers. The appropriate ways help reduce the Space Intrude to public space for the aging group, which also become the main approaches to improve spatial interventions for the elderly in historic districts. These effective strategies and methods will be discussed in what follows.

5. Urban Design Strategies from the Perspective of Territoriality

5.1 Separate Managements in Different Territorialities with the Spatial Limitation for Commercial Development

The expansion of commercial spaces is the main reason for contradictions and conflicts. Therefore, commercial spaces should be limited within certain areas, such as spaces along Pingjiang Road and Pingjiang River. This centralized layout not only maintains the existing organic culture style and residential space, but also improves the spatial performance and balances the economic development and local residential life. It's also necessary to restrict the commercial development in secondary lanes and original living spaces. Special development areas can be designed to enhance the vitality of districts, as well as to realize the economic performance. Spaces used for homestays and hotels can look for complete courtyards for adaptive design so that the fragmental interventions of space usage can be avoided. Moreover, this will reduce the interference with the elderly in semi-public and semi-private spaces.

5.2 Place Identification by Reintroducing Residential Life Style into Commercial Space

In most historic districts, tourism development becomes a necessary way to ensure the district vitality and economic development. Furthermore, it is also an important approach to share the tangible heritages. Urban design needs to consider the roles played by the elderly to maintain the exiting organic cultural style. Moreover, the design work should commit to create shared public places so that different groups can co-exist in different level of public spaces. Specific recommendations are as follows: Urban design should reduce the pursuit of maximum economic benefits in the main street and reintroduce life style of the aging group into commercial space; Lifestyle business can be moderately added into the street and lane spaces; Mixture of different businesses can accelerate the integration among residents, tourists and retailers, enhancing the place identity of the elderly.

5.3 Live Harmoniously by Accommodating Seniors and Tourists in Public Node Spaces

The participation of social activities is a significant way to improve the social capital of the elderly. Design work for active spaces can be achieved in primary node space in the district for providing public activities for the elderly, such as bridges, river banks and street pavilions. Meanwhile, activities can be planned within these spaces for the elderly and visitors to participate by community building, such as listening and singing the Pingtan, appreciating Kun drama and playing chess matches. By the end, the increase of public space participation behavior of the aging group can help achieve harmonious coexistence of different groups.

5.4 Enact Policies to Improve Social Responsibilities of Business Practitioners

The act of urban administration policies not only clarifies the spatial attribution, but also encourages the social responsibilities of business practitioners. In terms of different spatial needs for different groups, urban design methods can be applied to identify the public space attribution, especially spaces along Pingjiang Road and Pingjiang River. Thus, the design can reduce unjustifiable Space Possession and Space Occupation so that each group is in their proper place. Those business practitioners, who are willing to offer public space to the aging residents, should be rewarded in spaces, as well as give tax incentives. This kind of policy can guide businessmen to take social responsibilities.

6. Conclusion

Aging-in Place model within tourism-oriented historic districts is the important carrier to ensure the cultural inheritance. It promotes cultural connotation and realizes the harmonious coexistence of residence and tourism. This model builds an ideal life style in tourism-oriented historic districts. From the perspective of spatial territory, this paper analyses life style and public spaces in historic districts, which provides design and management ideas for urban planners, architects and government. The study not only improves the spatial interventions for aging communities, but also promotes the tourism quality in historic districts.

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Track 15: Tourism, Public Spaces and Urban Cultures

Sustainable tourism and public space - a case study of Skeppsholmsviken 6 in Stockholm, Sweden

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Abstract: The visitor industry is considered a primary industry for Swedish economic growth today. Official strategies and goals for the industry focus mainly on quantitative aspects such as number of visitors, number of jobs in the visiting sector, or total revenues from the same. Despite a large body of evidence showing that urban tourism can have unintended consequences of a less desirable nature, public documents categorically present the idea of more visitors to Stockholm as something leading to positive outcomes. A discussion or mention of social or economic change to a city's residential character and heritage is hard to find in written or spoken discourse. By studying an on-going conflict related to a project that might bring more visitors to an already well-exploited area in central Stockholm, this paper aims to explore what role a society sustainable tourist strategy can or could play for decision making when urban development impacts public space. The paper employs complementary strategies of qualitative enquiry through interviews, discourse analysis and desk based research.

Keywords: Public space, sustainable tourism, economy of tourism, visitor impact management



1. Introduction

The economy of tourism has an important role to play in Europe's urban economies. In a post-industrial age where the number of hires in traditional industries is decreasing in parallel with growing numbers of urban residents, the visitor industry can add considerable economic value, particularly in the form of job creation and investments. Stockholm is doing well on this front; it is the leading destination for growth in Scandinavia and overnight stays are increasing steadily (Tillväxtverket, 2019a). This trend can be expected to continue given the above 5 per cent growth of non-European tourism to Sweden during the last few years, and the global growth of tourism, expected to stay at approximately 3 per cent per annum reaching 1.8 billion by 2030 (Tourism in Sweden report (UNWTO, 2011).

The combination of increasing visitor numbers arriving to consume space in our cities, together with the economic opportunities this presents to those benefitting from the visitor industry, inevitably translates into economic and social consequences for these spaces. One less attractive consequence is the challenge to high-quality public space, which in turn has impact on a city's social sustainability (Gehl, 2010). Public spaces may change in their conditions for accommodating different groups of people in a city over time. Changed conditions then also means changed conditions for distinct social and economic groups, for adjacent urban areas, and those visiting or passing through (Carmona, 2010).

Definitions for public space therefore remain fluid and contextual, and no universal grammar exists for public space, other than that it can be defined as a *public good*. What emerges instead are complex questions such as "Who is entitled to design and define public spaces? What are the impact such spaces have on our cities? How do such places create meaning for the people who occupy them? Should our modern public spaces remain public and public goods and if so, whom do they serve?". In tandem, the quality of public space is an important factor influencing whether a tourist returns to a city. Visitors generally experience a city by foot and increasingly by bicycle. They are usually attracted to streets and open spaces that are clean, safe, vibrant and attractive (van der Zwan, 2016).

Over tourism can substitute these qualities with overcrowding, decreased safety and increased littering. As observed in cities like Barcelona, Amsterdam and Venice, where over tourism as a phenomena is well studied, these externality costs are often born by local residents who resort to claiming their right to the city, i.e. public space, through angry protests and hostile behavior towards visitors (Brenner, 2009). Stockholm has only a few locations where mass tourism occurs during the summer season, one being the centrally located and medieval *Gamla Stan (Old Town)*, another being the city's Southern side of the Royal National Park, also known as *Djurgården*. While Stockholm is yet to experience over tourism on a citywide scale, local media has spotted signs of local distress by residents (Karnatz, 2019).

By studying an on-going conflict in the municipality of Stockholm this paper aims to make a critical investigation of whether a strategy for a socially sustainable tourist industry has a role to play in how the office for city planning in Stockholm manages developments that impact public space. The case relates to the expansion of a well-known amusement park located on Djurgården. The proposed expansion plans are developed by the city's urban planning department together with the amusement park. The city's urban planning committee oversees and ultimately approves or vetoes the plan. The current expansion plan has been criticized by residents and experts on heritage and urban planning due to its perceived excessive impact on the Royal National City Park's visual, cultural and spatial environment.

To provide a theoretical framework for the case, we turn to a set of critical urban theory lenses, shaped over time by constructivism. Theoretical concepts from tourism studies and visitor impact management theory are explored for phenomenal understanding of the research problem.

2. Urban conflict analysis

In the introduction to ‘Cities for People, Not for Profit: Critical Urban Theory and the Right to the City’, (Brenner, Marcuse, & Mayer, 2009), the editors highlight a need to construct “cities that correspond to human social needs rather than to the capitalist imperative of profit-making and spatial enclosure” (p.2). Critical urban theory has come a long way since its early versions, but the quote exposes its origins in urban Marxism, still evidently clear in the allusion to the socio-economic dichotomy of user-needs versus the capitalist imperative driven by profits.

Early forms of critical urban theory were spearheaded by post-Marxists like Henri Lefebvre (Lefebvre, 1968), Manuel Castells (Castells, 1972), and David Harvey (Harvey, 1976). Along the lines of classic Marxist theory, their work took opposing material interests of the capitalist ruling class and the working class as the heart of power struggles. This theoretical framework built around material asymmetries and economic determinism, also known as historical materialism, has a number of shortcomings, among them the rigid model of class struggle. It would allow for analysis of only a very narrow selection of conflicts in our contemporary urban spaces (Brenner, Marcuse, & Mayer, 2009).

Admitting that urban politics is highly diverse and inevitably situational has been key to for the theory to bring in the element of sociologically and culturally constructed dimensions of conflict and explain conflicts that earlier theories had a hard time to accommodate (Marcuse, Imbroscio, Parker, Davies, & Magnusson, 2014) (Brenner *et al.*, 2009). For example, social constructivism allows critical urban theory to account for cultural hegemony, as in the organization of consent, along the lines of Gramscian thought (Barrett, 1991).

There are hence a multitude of forces, power relations and politico-institutional arrangements that may contest, reinforce or support profit-oriented strategies in a city. The constellations formed in one way or another depend on each agents’ relation to the exchange-value (profit-oriented) or use-value (everyday life) of a given urban space (Lefebvre, Kofman, & Lebas, 1968) (Carey & Harvey, 1975) (Logan & Molotch, 1987) (Sassen & Lynd, 2017). This is helpful to understand why some public private constellations are formed around ideological and policy positions taken as natural and given, while they are in fact social constructs motivated by those who somehow benefit from them (Howarth, 2015). A clear example of this is the neo-liberal approach towards economic growth and urban development.

Differently from capitalism which is an economic system, neoliberalism adds a layer of complexity to capitalism by going beyond the mere profit making imperative (Chun, 2019). By consisting of “a theory of political economic practices” (Harvey, 2007:2), neoliberalism inherently generates power constellations and normative frameworks that, perhaps inconsistent with its supposed origins in liberalism, aren’t always liberal (Thorsen & Lie, n.d.). Based on the primary tenet that the state’s fundamental legitimacy is to safeguard private property rights and that markets are best regulated by their own market mechanisms, subscribers to these ideas are likely to adhere to the idea that growth is an end in its own right.

The emergence of neoliberal growth constellations has been contested by theories like Lefebvre’s ‘The Right to the City’ (Lefebvre, 1968) and later ‘Whose right(s) to what city?’ by Peter Marcuse (Marcuse, 2012). Lefebvre’s work, contesting the anti-social and homogenizing consequences of postwar Fordist urban renewal projects (Brenner *et al.*, 2009), goes hand in hand with Jane Jacobs efforts to save traditional urban neighborhoods in American cities. In a less theoretical but nonetheless less important manner, Jacobs vividly illustrated the

processes behind a wave of neo-liberal real estate and infrastructure reforms in the 60's and 70s that threatened and removed several traditional neighborhoods in New York, typical examples of vital local life made up of residents and visitors alike engaging in a plethora of activities, as preferred by residents themselves (Jacobs, 1961).

Hence, critical urban theory comes to terms with the present as well as with its historical legacy to understand the causes of things to be able to change them (D'Amato, 2006). In line with Marcuse's suggestion from *Cities for people not for profit*, critical urban theory is able to approach citizens' right to the city through a method of "exposing, proposing and politicizing" (Brenner *et al.*, 2009:37).

2.2 Urban Tourism and Visitor Impact Management Theory

The increasing affordability to travel by air and to stay in cities is placing unprecedented pressure on European cities, particularly those with historic city centers where mass tourism is more and more common (Goodwin, 2017). Early theories looking to account for the impact tourism can have on a destination includes Butler's model of the evolution of a tourist area (BUTLER, 1980) and Doxey's *irridex* (irritation index) (Doxey, 1975). As seen

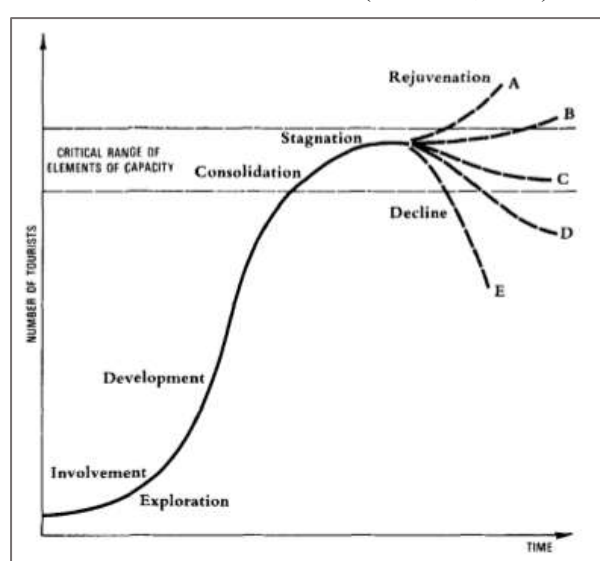


Figure 1: Illustration of the Tourism Area Life Cycle (TALC)

in Figure 1, the former describes how a destination changes as their visitor industry grows and starts molding local characteristics. A critical point in this model is when a destination leaves the *Development* stage, when a well-defined tourist market area begins losing control of how the visitor industry impacts the city, and moves into the *Consolidation* stage. This stage is characterized by increased signs of resentment from local population, as residents are deprived of their neighborhood's authenticity and total numbers of visitors still increase (Upchurch & Teivane, 2000). This is a practical example of where social sustainability fails. If a destination's authenticity is substituted by commercial homogeneity easily found in other destinations, the given place loses its *unique selling point* (USP) for attracting visitors.

Doxey's *irridex*, on the other hand, describes the emotional stages of residents as visitor numbers increase and gradually saturate residents' environments (Doxey, 1975). Common reasons for increased levels of residents' annoyance is increased nuisance by rowdy and numerous tourists (littering, drunken behavior, loud talking and shouting at night etc.), traffic and infrastructure congestion, or extreme seasonality of visiting crowds. Both theories have their limitations but they illustrate a reality experienced by many destinations and can be useful for an analysis of social impact.

The concept of *carrying capacity* can be defined in economic terms as the maximum number of visitors that can be accommodated at a constant quality of their experience (Fisher & Krutilla, 1972:420). Excessive use of a city's resources will inevitably lead to a reduced quality of experience. Resources that must be used in a sustained fashion are both tangible and less tangible such as public space, infrastructure, authenticity, culture and heritage. When they are consumed in an unsustainable fashion, consequences can include overcrowding, crowding out and displacement of local residents, changes in the local character of a locality, 'trincetization' of the local commerce, wear and tear of public infrastructure, and increased rental costs (Glasson, Godfrey, & Goodey, 1995).

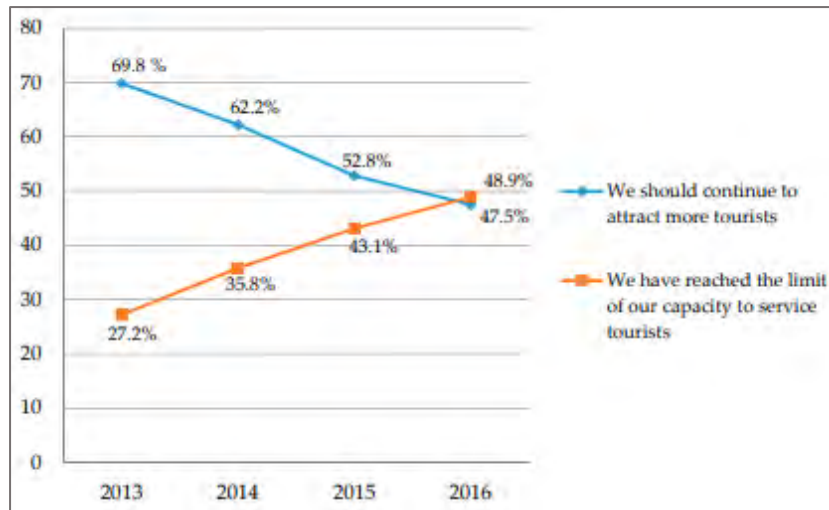


Figure 2: Graph of public opinion on capacity to serve tourists.

In Barcelona, some of these unintended consequences have characterized neighborhoods with high visitor frequency. The case of Barcelona illustrates how quickly public opinion can turn as a result (Alvarez-Sousa, Alvarez-Sousa, & Antonio, 2018):

3. Case

To understand the role of a sustainable tourism strategy vis-à-vis planning and public space we look at an ongoing case where a detail plan for exploration of a plot in central Stockholm is being developed. As seen in Figure 3, the plot is located in the red-dotted circle on Djurgården, encircled by the green dotted circle. Djurgården is located on the South side of the Royal National Park, and receives 15 m visitors every year. Visitors arrive mainly during the summer months. Djurgården is an area of both historic and economic importance. Historically it was part of the Swedish King's hunting grounds, and today it hosts a number of popular museums and scenic places in the park (located along the blue dotted line in Figure 3).

The Royal National City Park is classified as a national interest area due to its history and unique green space in the center of the city's urban archipelago. Due to its classification as an area of national interest, the park comes with a distinct legal framework, written to protect the space and heritage (Sporrong, 2018).

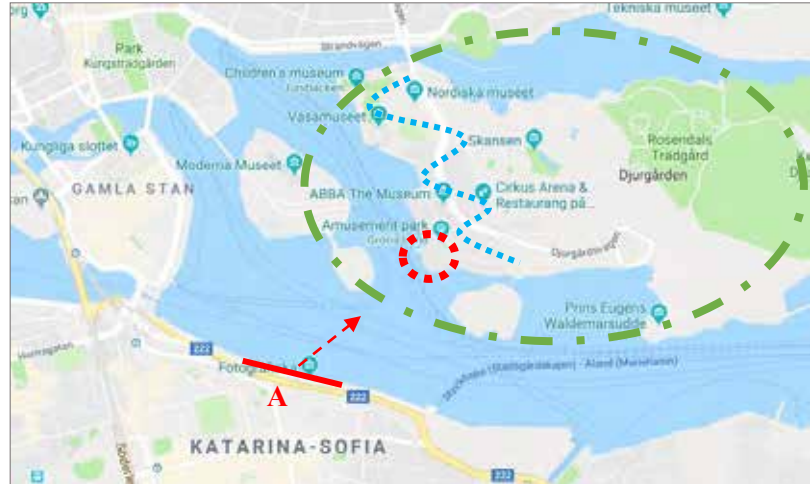


Figure 3: Map over Stockholm urban archipelago and part of Djurgården

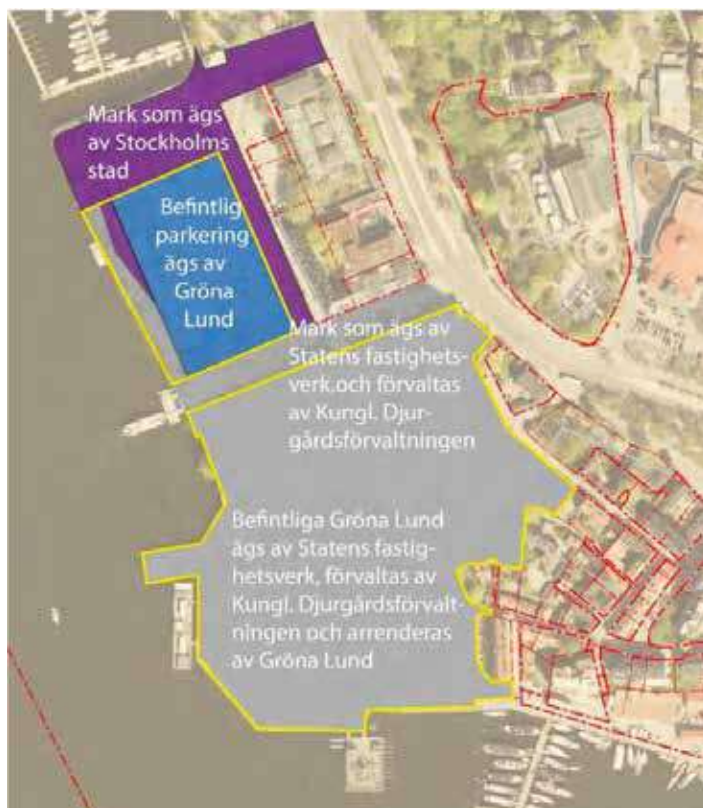


Figure 4

The owner and developer of the plot is *Parks and Resorts*, the owner of a number of Swedish theme parks. The plot under development (blue area in Figure 4) is adjacent to the amusement park *Gröna Lund* (located in the grey area in Figure 4), owned and managed by Parks and Resorts. The grey area between the water and the plot is a strip of shoreline Parks and Resorts has expressed interest to acquire and privatize. The purple space in Figure 4 is owned by the Stockholm Municipality.

Gröna Lund has been a part of Stockholm since 1883. Until 2006, when it was acquired by Parks and Resorts, it was managed as a family affair. Since then, the pace of densification of rides and constructions of new roller coasters and other attractions (currently 30 in total) increased significantly. The park is also host to an intense



Figur 5. Gröna Lund is located centrally in the heart of the Stockholm archipelago. Its visibility can be further illustrated by the view in Figure 5, seen as from point A in Figure 3.

entertainment schedule during the summers; around 70 evening concerts are held in the park during the summer seasons. Some events attract close to 20 000 visitors. At these times, traffic congestion and pedestrians cause large crowds and overcrowded public transport, particularly after shows.

The amusement park receives around 1.7 million guests, concentrated to the summer month when the park is fully engaged. During the winter months the amusement park is closed. Most

visitors come to Gröna Lund during evenings and weekends to go for roller coaster rides and to attend concerts. Parks and Resorts wants to expand the existing amusement park area into the plot that is to be developed. According to the current detail plan for what the plot would contain, the space would be used for similar rides and the sort of mechanic environment as the one occupying the existing amusement park area.

3.1 The conflict

Many characteristics of the conflict resonate with the *right to the city* theory where neoliberal interests conflict with residents feelings cheated on their space and heritage. While urban struggles for social justice and access to space have traditionally been characterized by a strong dichotomy of financial inequality, this case is different in that a group of influential residents has led the movement against the current detail plan.

The conflict regarding how the plot should be developed took its current proportions late 2018. It was around September/October when residents in the neighboring area of Gröna Lund took notice of the detail plan for the plot, its contents, and that it had reached its final stages of public audit before political approval.

A detailed development plan outlines and describes what the landowner is allowed to do and construct on the plot. The document is designed by the city's urban planning department (Stadsbyggnadskontoret), and approved by the city's urban planning committee (Stadsbyggnadsnämnden). The planning department is responsible for ensuring all concerned parties, including citizens, have a say when a development plan is designed. The process of allowing for input, critique or feedback on a detail plan is called *samråd*, and can be translated as *joint consultation*.

Aware of the advanced stage of the detail plan, the resident group organized themselves in an association called *Friends of Djurgården*, with the intent to change the technical content of the plan. They also engaged and gained the support from a number of local neighborhood societies specialized in urban planning and heritage, and urban planning and heritage expert organizations.

According to the residents association and their supporters, issues with the detail plan included planned permission to build new rides of a height that would impose excessively on the city's skyline (up to 60m high) and Djurgården's appearance; activities leading to increased and excessive noise pollution for neighboring residents; and an intensification of visitor numbers to the park during already overcrowded times. Part of the critique was a

claim that the property owner (Parks and Resorts) must be able to in a reasonable manner cater for their visitors rather than using the public space surrounding the park for large crowds leaving the park, or waiting in line to enter. By enlarging the Gröna Lund, residents feared crowds would further spill out on streets, sidewalks and green areas in a way that severely obstructs passage for children, pedestrians and people on bicycles.



Figure 6

Additional resistance to the detail plan is related to what was perceived as misleading illustrations of what the detail plan could come to materialize into. As seen in Figure 6, the original photograph from the detail plan illustrates a white, translucent roller coaster on the new plot to the left. The red thick rectangle was added to indicate height of 60m high rides. The thin line indicates 35 m height to show how much below what was technically allowed the plan chose to show, and it

serves to outline the area along which construction could be developed. Discontent over this led the Friends of Djurgården and their supporters to file a lawsuit to the Parliamentary Ombudsman claiming the visual content was not realistic in demonstrating what the proposed technical framework would actually allow for.

Finally, the plan suggests privatizing the shoreline, which is unusual in Stockholm; direct access to the water is generally considered part citizens' rights as part of the city's public space. There are several previous cases where private landowners on Djurgården have allowed public access to residential land along the shore, to ensure this principle. The solution proposed in the detail plan, to ensure pedestrian access along the shore, would be a footbridge for people to walk on, about 20m away from the shoreline.

In their attempt to change the content of the detail plan, the residential association led an effort to meet with staff from the planning department, politicians from the planning committee, and representatives from the County Administrative Board. A Facebook page was initiated to raise awareness of the cause.

Instead of proceeding to approval by the planning committee, the detail plan is now under development with the planning department again. Once reassessed, the plan will once again be made public for feedback before passing on to the planning committee for its evaluation and potential approval.

4. Results and analysis

To collect information on whether a socially sustainable tourist strategy exists in Stockholm and whether it could influence the planning and management of public space, the methodology of choice was discourse analysis. Spoken and written language was collected through interviews and desk based research of mainly reports and newspaper articles as content for analysis. Interviews were held with all relevant stakeholders, including the developer, the municipality and the opposing civil society groups. Experts and stakeholder organizations from the visitor industry were also interviewed.

4.1 Policy Framework

The policy framework for Stockholm's tourism industry is mainly composed by the Ministry of Enterprise and Innovation (Näringsdepartamentet), and the Swedish Agency for Economic and Regional Growth (Tillväxtverket), in collaboration with government owned promotion company Visit Sweden AB. Specific for Stockholm is Visit Stockholm AB, a daughter company to Stockholm Business Region, owned by the Stockholm municipality.

Other important actors for a sustainable tourist strategy are business associations like Visita AB and Royal Djurgården. They provide services such as technical assistance and strategy support to businesses from the visiting industry. Visita, together with the associations for trade and transport industry, as well as Visit Stockholm, own Swedish Tourism (Svensk Turism AB), a private company and partner of the state and the state owned marketing company Visit Sweden AB.

The planning department and planning committee have little or no relation to stake holders from the visitor industry, nor do political officials have experience with working with Visit Stockholm. Mobility and increased visitor numbers are hardly spoken of according to those interviewed, and none of the above named organizations tend to be contacted for consultation during the development of detail plans. Executive capacity and mandate to plan for the built environment is located with these departments, separate in structure and practice from those promoting and targeting increased visitor numbers in the city.

4.2 Whose right to what city?

Several actors from the area of heritage and planning who were consulted by the planning department and the developer during early stages in 2015 feel disappointed by the state of the development process as it stands today. This is compounded by a regret of not having asked more questions about the proposal and what it would entail and allow for in detail from the start. A sense of feeling 'naïve' and that 'one should have known' were mentioned several times.

Generally, however, opinions of the amusement park are positive. Its management has been known as being collaborative over the years, and most people interviewed agree that 'the kids need a place to have fun'. What is seen with less optimism is the gradual development of a family owned amusement park into a corporately owned mechanical entertainment center driven mainly by what is perceived as profit expectations and a desire to expand. Similarly, many share that the omission of important information on what the developer intends to develop, combined with the image description mentioned in section 3. (Case), points to a lack of honesty from public officials in the planning department, and a desire to liaise with developers to meet their requests, rather than the interests of civil society. As a result, those who signed the lawsuit did so as much as an act of principle to correct not only an immoral issue of not complying with technical requirements of a detail plan, as an opposition to the actual height of the rides.

Additional complaints about the planning department were illustrated by reference to reports and journalistic material scrutinizing questionable approaches to developing detail plans (Ingo, Berglund, & Perner, 2018) (Andersson, 2016). Claims are made that rather than regulating and leveraging an investment friendly climate to promote holistic growth on a city wide scale in Stockholm, the planning department has overseen developments and investments guided by exchange-value instead of standards for urban planning to maximize increased use-value for residents.

Perhaps this is related to what some people refer to as perceived arrogance and lack of interest for wellbeing by the planning department. When claims related to wellbeing are made, for example the right to rest at night, officials have been said to respond to such claims by stating higher noise levels at night as something unavoidable when living in a city. Similarly, when asked how one is to explain how a proposal can anger citizens to such a degree, the answer does not consist of a motivation of why the technicalities of the detail plan have been designed in a given manner, rather, the view is that it is impossible to please all stakeholders. The consequences of the current plans could hence mean increased stress levels for those living on Djurgården; however, the needs of Gröna Lund are perceived to be prioritized by officials from the planning department.

4.3 Social sustainability and carrying capacity

While the words ‘sustainability’ and ‘tourism’ do coincide in most tourist strategies for Stockholm, the term *sustainability* seems to refer to environmental aspects almost exclusively. Some references are made to social sustainability by the Swedish Agency for Economic and Regional Growth (Tillväxtverket, 2019b), but interviews produced little content in the way of concrete steps to achieve buy-in from residents, how to transform residents into a *host community*, or cost-benefit analysis.

This is a questionable way of strategizing for sustained visitor quality given there is wide consensus that visitors come to Sweden for the Swedish life style, even for banal things like looking at dads with strollers¹. Most visitors coming to Stockholm, local or national, have interest in accessing heritage in some way (Glasson *et al.*, 1995). A city like Stockholm has its own morphology in the shape of watersides, structure and traditions, which provide a framework for identity for the visitors and residents alike (Glasson *et al.*, 1995) (UNESCO, 2013). Edward Relph (1976) develops the idea of place and identity as:

“While place meanings are rooted in the physical setting and its activities, they are not a property of them but a property of human interaction and experiences of those places” (Relph, 1976:47)

To put a price tag on what cultural heritage and historical architecture is worth; the recent Notre Dame fire was enlightening. Over a 1 billion Euros were collected, the bulk from brands intimately related to the historical city brand of Paris. In other words, a USP worth preserving.

While political official and representatives from the municipal planning units were in general not familiar with the complexity of over tourism or the possibility that we could see it here, actors from the visiting industry’s private sector organizations showed a clear preference for quality over quantity. The expressed this by, for example, questioning strictly quantitative goals such as “doubling the number of overnight stays” or increasing

¹ so called *latte-pappa*, the stay at home fathers seen with their strollers while meeting up with other baby daddies to have a latte.

revenue by 80 per cent. In a few cases this also came with critiques of Visit Stockholm's quantitative focus: "What do they really say about growth or wealth?"

One of the difficulties when developing detail plans for Djurgården is how to interpret the legal framework for which developments are allowed in the Royal National City Park. While the framework is based on values intent on protecting the park and its environment from disruptive changes, concrete regulations such as height limitations are absent. Rather, directives are rather loose, such as expressing that new construction is only allowed as long as it does not intrude on the park landscape or cultural milieu. This leaves much room for interpretation of the master plan, which is ultimately of the planning department's discretion since no external advising organizations or experts have a veto over their detail plan decisions. An example of room for interpretation is that the master plans indicates existing actors in the event area of Djurgården, including Gröna Lund, are allowed to "develop". This is interpreted by the planning office as the right to expand with few limitations on height and density, and privatization of the shoreline. The latter, however under used under current circumstances, constitutes public space.

Interviews with stakeholders accompanying the development plan, many of which have engaged with the preservation of the Royal National Park for many years, align with a case of 'popularizing' an area associated with heritage to be one of broader appeal unrelated to any specific aspects of heritage or identity. As expressed by Glasson *et al* in his book from 1995, "it is a process that inherently comes with simplification of a given location's depth or story to tell. Contrary to how one might interpret such a process of 'democratization' of space, it transforms a city's heritage – which belongs to all its residents – creating a space instead designed for a specific group" (Glasson *et al.*, 1995). In this case, that specific group is the visitors of the amusement park Gröna Lund.

5. Discussion

Studies of how tourism influences cities is nothing new, it has been the topic of researchers for many years (Canestrelli & Costa, 1991) (BUTLER, 1980) (Van Der Borg *et al.*, 1996) (Glasson *et al.*, 1995). Nevertheless, social impact, as one of the more complex aspects of impact to measure, is only now beginning to gain traction in policy and strategy formulation. Public officials in a number of cities are agreeing that it is naïve to look at the visitor industry as one that should roam free from oversight, strategies and management. Even in the capitalist mecca of the world, regulations concerning commercial activity are put up to protect a location's character (San Francisco Planning Department, 2014). When it comes to regulating receiving capacity, the number of cities regulating Airbnb rentals is increasing; Barcelona, Amsterdam, Paris and Los Angeles are a few with municipalities creating stricter legislation for the platform industry (Lagrove, 2018).

However, in cases where local governments speak in terms of sustainable tourist strategies, it is done admitting sustainable is a concept that is linked to tradeoffs. To the distraught of residents, these are often the ones carrying the onus of the tradeoffs before more creative solutions to conflicting interests and regulations are put in place. This often occurs after economic and social externalities have reached a more permanent nature in the form of crowding out of local economic activity and local residents, or touristification of neighborhoods (Bakker, 2019). Planning then becomes remedial and reactive (Doxey, 1975).

The municipal planning office and the marketing agencies promoting growth of the visitor industry are conceptually and ideologically distant from the idea of regulation, improving reinforcement of regulation that controls the impact of tourism on local economy and social fabrics. Perhaps this is due to weak data on how the city is reacting to the increased number of visitors. The city needs instruments that can provide adequate data that overnight stays and airline arrivals simply cannot do. The managerial toolkit policy makers require must include forecasting capacity that can tell us something about qualitative information (cultural and economic behavior, for example) rather than the quantity of tourists we are receiving. Using tracking techniques is one way. Royal Djurgården is doing something of the kind already as a first innovative step to ensuring socially and environmentally sustainable development of the park's full potential.

It is perhaps due to place dependency that noticeable awareness of qualitative goals and aspects of growth was found when speaking to professional associations such as Visita AB and Royal Djurgården. Such actors are important partners for the city's planning office as increased collaboration could harness the interest in preserving the quality and authenticity of Stockholm while catering to needs for sustained and adequate growth in parallel. Place dependent actors conditioned to a certain environment have nothing to gain from over tourism. There are other examples of this. In Venice, the most powerful lobby group against the unregulated existence of Airbnb is the association of hotels. Crowds over a certain point is simply not good for business.

Successful examples of sustainable management of public space vis-a-vis both residents and visitors require participation of all impacted stakeholders, as well as management, enforcement and communication by relevant authority (van der Zwan, 2016). Denmark is another example where tourism strategies aiming for quantitative goals have been substituted by destination strategies with a more qualitative focus. Differently from a tourist strategy, a destination strategy goes beyond the idea of the 'tourist' as a separate stakeholder, and approaches urban management in a holistic way in that planners recognize that increased mobility of both local, national and international travelers needs to be observed for socially sustainable planning (Wonderful Copenhagen, n.d.) .

The focus on quantitative goals, rather than qualitative aspects in strategies for Stockholm's tourist strategies points to the absence of a socially sustainability for the visitor strategies. The lack of communication and coordination between the planning office and the departments developing the visitor industry weakens the social

sustainability of how Stockholm is developing further. As observed, this causes developments to emerge that fail to consider needs of the city's main attraction; its authenticity and local culture. Lack of coordination also undermines one of the pillars of the Visit Stockholm's tourist strategy, namely to make residents 'informal hosts'. This goal is less likely to be attained while another government department develops proposals for the visitor industry that make a considerable group of residents and citizens disappointed, angered and cynical about they operate.

Failing to appreciate a holistic approach to how to create urban growth will continue feeding beliefs of immoral and partial behavior on behalf of municipal representatives. For each case of popular resistance to infrastructure development that disregard public space, infrastructure limitations or architectural heritage, instead leaning in favor of private developers' interests, the question of sustainable urban development is likely to increase in its level of political urgency. In a worst-case scenario, it can turn into a politically divisive issue instead of something that unites residents.

Residents and tourists alike increasingly look for a unique and authentic experience. To deliver this a destination must take on tradeoffs in economic growth in some locations and for some stakeholders. When properly managed, historical landscapes can leverage tourism and the service sector to increase welfare, while motivating protection and endurance of economic and social diversity, as well as a place's residential character. It is therefore a fair claim to say that to attract a sustainable and desirable visitor industry, while validating those who call it home, carefully protecting and managing the identity of a place becomes an imperative (Ashworth & Voogd, 1990) (UNESCO, 2011).

The questions we are left with is how a practical framework that enables a socially sustainable strategy is to look. What can be induced is that effective visitor management requires effective communication and collaboration between potentially conflicting interests. One way of doing it could be to include representatives from the visitor industry as an assessment area in the early stages of deciding whether a request for a detail plan should be approved for full development. What structures are conducive to allowing for this, and how effective is collaboration without executive mandates? It remains to be seen; the first step for the municipality of Stockholm is to consider what a socially sustainable strategy could look like.

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Suppressing urban creativity: displacement of the art spaces out of the mainstream cultural scene of Istanbul

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Abstract: Istanbul's contemporary cultural scene has been struggling with the displacements of long-established cultural assets due to the applications of top-down urban redevelopment and renewal projects. In particular, the stigmatization of the city's long-established cultural spaces as a non-profit places and the de-functionalization of their buildings through long-term closures and neglect have appeared as a political strategy of urban policy makers to legitimize the replacements of public spaces by profit making private spaces. In this paper, as focusing on one recent case of the displacement of the Emek Movie Theatre that has symbolically important place for Turkey's local cinema scene through the application of urban renewal project, I investigate the reasons that the survival and resistance tactics of the bottom-up agencies failed to evolve planning processes into a communicative and collaborative structure. It is aimed to evaluate the drawbacks of the non-communicative and non-collaborative governance structure arising in the urban policy scene of Istanbul in the generation of urban creativity. The study will underline the importance of non-mainstream cultural scene in the development of Istanbul's creative and innovative capacity along with contributing to enhance the status of bottom-up urban players in the public spaces of cities. Thus, it draws an attention towards sustaining urban environments with the vision of innovative and positive nature of bottom-up urban practices, and contributes the debates on how the urban processes in Istanbul are democratized by the participation of bottom-up urban actors in formal planning and urban development processes.

Keywords: bottom-up urban actors; urban regeneration; top-down urban planning; urban governance

Introduction

Cultural heritage and assets are more implicated in the policy structures of cities in parallel with more prominent emphasis on innovation, knowledge and economic competition within policy issues. They play instrumental role in positioning cities as a cutting edge creative city that competes with other global cities (Trosby, 2001; Florida, 2002; Chhabra *et. all.*, 2005; D'Auria, 2008;). Contemporary modes of urban governance, on the other side, increasingly rely on the agencies other than formal governmental structures (Carley, 2000; Schmitter, 2002; Haus and Heinelt, 2005, Bennett, 2009); however, cities continue to confront with the challenges of maintaining a satisfactory urban governance model that can aid to improve the quality of complex urban projects as well as complex decision-making process. These urban projects include big and distributed infrastructural projects, new routes for new transportation centers, highly contested environmental projects as well as the

projects that require major changes in cultural heritage and assets of cities with the concept of creating new commercial areas. The bottom-up agencies add new dimensions in these urban redevelopment processes as the actors of urban change with the capacities of creating new places and enhancing community relationships. That subject has been already discussed in various cases (Vivant, 2010; Colomb, 2012; Bain and Landau, 2017). The exemplified cases in these studies show that bottom-up agencies act as a catalyst for creating adoptive and responsive pathways to changing and challenging urban conditions. The case study of events in Berlin organized by the interdisciplinary cultural centre Zentrum für Kunst und Urbanistik demonstrates that the intermediary role of artists in urban development have challenged the exclusion wrought by the overriding forces of global capital through co-opting artistic creativity to increase citizen involvement, transparency and legitimacy in urban development processes (Bain and Landau, 2017). In this regard, urban governance that can able to involve bottom-up actors, who provide real support to integrate creative insights to this kind of complex urban projects would foster scenarios of community engagement and collaboration, and thus, add adaptive and co-evolutionary flexibility to urban environments.

The urban renewal and regeneration projects in Istanbul that were subject to civil response shows that the city still faces malfunctions in the governance of multiple stakeholders from civil society in the social and cultural dimension of urban development. The national government structure in Turkey still has a significant influence on metropolitan development through policy making although transition to global economy has led to reduction in government's proactive role in the economy and society (Uzun, 2007). The urban renewal and urban redevelopment projects increasingly rely on spatial and cultural heritages of the city while the operationalization public-private partnerships in these projects has been gaining importance. These projects, however, illustrate that these partnerships cannot operated through forms of governance. Indeed, the types of collaborations with the actors from civil society have been visibly neglected.

This paper aims to discuss the disablement of governance mechanisms in the decision-making processes during the Renewal of Serklydoryan urban plot and re-build of Emek Movie Theater in the proposed new shopping mall in Beyoğlu, Istanbul which was subject to policy intervention of public-private partnership. Through the examination of non-communicative and non-collaborative attitude of the local and central planning bodies towards the long-standing bottom-up response towards the top-down processing of that project, the paper considers the only strategy of local and central governmental bodies to allocate all historical and cultural heritage in the urban core to private commercial developments as a suppressing factor on enhancing creativity at local level even though Istanbul's frequent reference to creative city and growth exemplars.

Istanbul's Creative City Approach and Self-Generated Cultural Dynamics

The changing and challenging conditions of 21st century stimulate new developments in Turkey's cultural and creative scene. The use of the 'creative economy discourse' in Turkey was first taken up national level by the Turkey's government in the beginning of 2000s. Turkey joined the eEurope+ Initiative for developing strategies and an action plan to become an information society in 2001. The policy-oriented cooperation projects that aimed at strengthening infrastructure for knowledge based urban development were proposed as concrete objectives of Turkish cities. Virtually increasing number of cities in Turkey uses the concept of creative city (or one of its variants) in their politics,

policy, advocacy and practice. The e-Turkey initiative was established as a part of this attempt. Economic growth in Turkey between 2002 and 2011 also contributed to this initiative.

In this vein of Turkey's liberalization and creative economy interest nationwide, arts and culture started to be not considered marginal to economic life and not dependent on public subsidy. Promoting culture and investing in cultural industries appears in the policy agendas of the city to compete in the contemporary knowledge-based economy. Government bodies were moving towards enhancing the socio-economic impact of cultural life while enhancing creative industries. Turkey's cultural scene has also witnessed an increase and diversification in the number and type of cultural actors starting from the late 1990s. Along with the established state-owned cultural associations and institutions, the private and semi-private initiatives also accelerated in different forms of cultural spaces (Ertürk, 2010:9; Bakbasa, 2010:14). This stimulated collaborations with private and governmental institutions for taking shared actions in cultural scene.

Istanbul, as globalizing city, has adopted to use creative industries as strategic tool for urban management for last two decades (Öztürk and Çıracı, 2015). Istanbul Greater Municipality made first cultural and creative industry classification in two groups of activities in 2005: culture based activities and business services. This can be considered an attempt to understand the city with the contribution of the economic activity stemming from creativity and culture to the city's economy. This classification includes the commercial forms of culture and creative activity (culturally industrialized entertainment activities_, like theatre, music and film) and also the service businesses like advertising selling creative skills to other businesses, manufacturing businesses that feed into cultural products and the retail of creative goods). This tendency was also motivated by the fact that Istanbul has been selected to be the European Capital of Culture (ECoC) in 2010. A series of arts events and cultural festivals have been taking place during this special year, and an important symposium, Creative Cities and Industries in the 21st Century, was scheduled for November 2010. The government allocated large amounts of funding to create new cultural offerings and to host year long cultural events. This upspring in the city's cultural scene stimulated the formations of new cultural actor-initiated interventions, notably the emergence of bottom-up art organizations. The bottom-up groups had chances to build new organizational arrangements to establish their own autonomy and to allow ways of interaction with the public in the city. Consequently, new models of cultural actors found their place in the city's cultural scene. Their emergence in the city's cultural scene, in turn, increased the local capacity to mitigate and adopt new realities and challenges for local cultural scenes.

Despite this course, however, the enabling conditions for the development of self-initiated mechanisms started changing after 2010. Public investments and the organizational excellence in building the infrastructure for cultural and creative industries in Istanbul dramatically drew back. The government could not reap the expected political benefits of holding the title of the ECoC. The government was even negatively publicized due to the lack of preparedness in the face of some social challenges.

The country's significant shift towards more liberal and out-ward looking economic policy also dominantly operated through the subsequent urban transformations of that decade, culminating, especially in large cities, in the development of shopping malls as alternative retail spaces to traditional markets and stores on a shopping street (Erkip and Özuduru, 2015). The related legislation on 'The Protection of The Deteriorated Historic and Cultural Heritage through Renewal and Re-use'

(act 5366 released at 2005) has been put the historical and cultural heritage of Istanbul to controversial position (Enlil *et. all*, 2011). Istanbul's urban landscape has been rapidly marked by private- public partnership driven urban renewal projects taking place especially in its historic sites. Based on this law, eleven urban areas within historical and architectural value have been subjected to the urban renewal projects; and six of them, Tophane, Tarlabası, Persembepazarı, Cezair Street, Galata Tower and Beyoğlu Municipality and their surroundings and the Serklydoryan urban block, are located in Beyoğlu (Çoşkun, 2016: 56). As regards to the issue of revival of unused and decaying cultural heritage in Beyoğlu, the projects worked on similar urban models re-program and rebuild the existing built fabric with the new concept of retailing, which occasionally embodied itself as big shopping malls integrated into new offices, residences, entertainment and cultural centers.

For many critics (İslam and Enlil, 2006), the intricate machinery of this law and its legislations did not trigger positive effects on urban protection and reinforcement of social dignity and equality since the independent small retails and existing neighborhood or building dwellers were left vulnerable and insecure and usually unorganized and there was a lack of integrated urban policy for developing strategies to make the dwellers and retailers resilient. Hence, it is frequently declared that the local authorities have exposed mere control on the use of the deprived areas of Istanbul through arbitrary expropriation. In this way, these properties either private or public would have been endowed to the new users. Through employing urban renewal and re-use projects, the property ownerships were easily exchanged; and this paved the way for putting the private interest over the public good in these places.

It is clear that there is a significant challenge caused by the emerging multi-voice economic and cultural scene in the city on the future of urban commons and the central and local planning bodies' creative city initiatives and plans and their underlying rationales about regeneration of cultural heritages. Currently, the empowered agents in the cultural and urban scene, including municipality, private sector and central government nor took important steps for institutionalized dialogue on constitution and implementation of urban and cultural policy areas or generating vision of civil life adapted to the city's changing economic life. The lack of institutional mechanisms also prevented developing a collaborative decision making processes for proposing solutions for enhancing creativity in the city.

The case of renewal of Serklydoryan urban plot and re-build of Emek Theater in new shopping mall

The phenomenon of renewal of Serklydoryan urban plot and re-build of Emek Theater in new shopping mall was long-before on the agenda of urban policy makers; and its sell for commercial development has been vocalized in media since 1994. In 2005, the *Emekli Sandığı* (Retirement Fund-ES) announced to sell the Serkldoryan urban block (Yapı Dergisi, 2005). The implementation of new project, however, was delayed until 2010. Along with the renewal of Cerle D'Orient building under the Law on Protection of Cultural and Natural Property, the re-build of shopping mall on the remaining part of urban plot, where the Emek Movie Theater was located, have anticipated from its beginning by civil society. The civil response not only came from the professional bodies that approached susceptible to the contractual practices between public and private subjects and design practices but also individuals and social groups frequenting the theater, in particular, cinemagoers and cinema-workers including artists, producers, and audiences. This civil opposition depends on two

major concern: (1) the transfer of public property to private ownership to re-build and to manage it as a private property by operationalization of built-transfer-operate model would produce range of physical and social displacement processes (2) the relocation of theater on top the newly-build shopping mall would undermines the authenticity of the theater building and cause the loss of information of collective value. These impacts prompted civil society to form movements to engage and speak up about the increasing impacts of harsh urban regeneration projects they were facing. The civil society groups were organized under some initiatives; *Emek Bizim İstanbul Bizim (Emek is ours İstanbul is ours)* and *İstanbul Kültür Sanat Varyetesi* were leading the processes. Despite these events; the iconic cinema building was demolished in 2013. Later on, Kamer Construction Company completed the urban renewal of Serkldoryan urban plot in 2016 through re-constructing a new shopping complex covering all the land of this urban plot. In this complex, the Serkldoryan building was only kept through restoration, the back part of the building including the Emek Movie Theater demolished and rebuild as a part of shopping complex. The Emek Movie Theater is now on the top floor of this new shopping complex, Grand Pera.

The case that the strong social response against the project could not have evolved into an influential civil society-based organization in city planning points out different dimensions of crisis between municipal bodies, city leaders and civil society: (1) de-personalization of local and central governmental bodies to the right of society on the future of cultural heritages sites (2) obstacles preventing the civil initiatives to evolve from social movement to soft-infrastructure at city level. Although the influence of civil society groups would play significant role in devising new policies in regeneration of cultural heritage sites, the personal engagement of the citizens and the commitment of national and local governments to cooperate with civil society groups seem to be still rather marginal in the process of Turkey's urban planning practices.

The enduring role of Serkldoryan urban plot and Emek Movie Theater in Beyoğlu's urban everyday routine

The Emek Movie Theater on *Yesilcam* Street (formerly *Devaux*) was located on the Serkldoryan (Cercle D'Orient) urban plot in Pera, which has been actively part of urban social life since the second half of 19th century. The Pera neighborhood, northern extension of Galata neighborhood was mainly Levantine neighborhood with the establishments of churches, schools, institutions and new associations. In 1884, the construction of Cercle d'Orient (Serkldoryan) building in the heart of Pera made this urban plot unique destination of bourgeois urban life. The building was one of new social associations for Ottoman-elites and non-Muslim Levanters came together to socialize (Baruh, 2016). In 1896, the Ottoman Bank took the building from its owner Abraham (Karakahya) Pasha since he did not pay the borrowed the money back. The bank owned this building until 1919. During this period, the whole urban plot accommodating the Serkldoryan building with its backyard become to used as a recreational and cultural center as the dead-end street next to the Serkldoryan building decided to widen and open towards back of the urban plot. The Staking Place was built at the back of the building in 1909. It was actively used for not only for skating but also other performative activities such as talks, circuses, sports and cinematographic performances, and the skating palace was then converted into a theater in 1918. Lately, the use of electricity in Istanbul has initiated the opening of movie theaters in the same urban plot.

After the decline of Ottoman Empire and the first years of the establishment of Turkey Republic, this

urban plot continued to be a recreational spot in the cultural life of the city; and it began to transform into a movie theater zone. The establishment of Melek Movie Theater (Emek) in the Staking Palace building was dated back to 1924. Two other cinemas (Ipek/formerly Opera and Sumer/formerly Artistik) located in this urban plot in 1930s. These two movie theaters with their renewed names served as movie theaters until 1955. The major changes in the cultural and social landscape of Beyoğlu were happened due to the decline of non-Muslim communities living in Istanbul. The wealth tax of 1942 has changed the general profile of property ownerships in the district and caused economic disempowerment of non-Muslim communities. As a result, The Serklidoryan urban plot with its all-cultural and commercial facilities has brought by the municipality (Aktar, 1996). The transition of the urban plot from private to public, however, did not prevent the cultural and commercial importance of the plot. There were still active three cinemas, eight commercial stores at the entrance floor of Serklidoryan building and the social club.

It is widely stated that the economic decline and leaving of non-Muslim population and the settlement of Anatolian immigrants in the empty places caused the decline in both urban environment and cosmopolitan cultural life of Beyoğlu. However, the rise of local cinema industry from 1930s till 1980s held some synergy in Beyoğlu despite the city's declining cosmopolitan profile. According to Kula (2015), it was still privilege to go the Melek Movie Theater and eat some cake in the Inci Patisserie in 1950s even though Beyoğlu has experienced decline in his cultural life. This urban plot was sold to the Emekli Sandığı (Retirement Fund-ES), the main social insurance institution for public servants of Turkey in 1957, and the institution has renewed all the three-movie theaters in the urban plot. They have continued to serve as movie theaters as Emek, Ipek and Kucuk Emek Movie Theaters. The Ipek Movie Theater has then taken over by the Istanbul Municipality Theater, and served as a comedy theater hall until 1975. Similarly, the Kucuk Emek Movie Theater was used for Municipality Concerts.

The Serklidoryan urban plot and its surrounding became a heart of the self-emerged movie theater urban zone in Beyoğlu. This zone was accommodating 11 out of 30 movie theaters in the city from 1920s to 1950s. Some of them were closed; some were re-named and new ones added on the list during this period. It has, indeed, enlarged towards proximate locations with increasing numbers of movie theaters (Özlü, 2016). Besides movie theaters, the related facilities and all the networks were established around this area, and this urban area, namely Yesilcam has actively functioned as a heart of movie industry of Turkey. There was also increasing number of local movie production companies in Yesilcam, and approximately 300 movies have been locally produced and distributed other cities in a year in 1950s.

Besides being a movie theater, the Emek Movie Theater has gained specific symbolic value with events, public gatherings and screened movies it housed. It housed leftwing concerts and screening alternative movies for years. The art pursuers formed bottom-up civil society groups have had a key role in shaping these events. The theater's progressive causes have provided the backdrop for small, courageous revolts: the first big public 1 May celebrations after the military coup of 1980 took place there in 1987. The Emek, it has turned out, was more of a meeting place strengthening sense of community in cinema scene than a movie theater. At this point, the theatre created a loyal 'public' coming regularly to this place, following the events and meeting people who think like themselves. This place was not a given public space; however, it might be considered as place with public role through bundle of network relations produced through collective actions (Fırat and Bakçay, 2012).

Globalization period led the cinema sector in Istanbul to re-structure itself with the inclusion of international companies and the rise of television and advertisement sector after 1995. This reflected on the spatial organization of the cinema sector. The clusters of production companies have begun to spread through the centre of metropolitan area. The central role of Beyoğlu in the film industry has been decentralized as a result of the location preferences of production companies in Şişli and Beşiktaş neighborhoods (Dursun, 2009). The social and cultural life, however, tended to not spread out as much in these recently developed creative precincts. There was still a strong tendency for locating art festivals or cultural events in city centers with strong historical and cultural links; and the Beyoğlu urban area was still a prominent figure in terms of engaging cultural and art activities. Until 2010, the Istanbul International Film Festival used the long-lasting movie theatres in Beyoğlu, most of which were demolished today, like Emek, Yeni Rüya, Atlas, Beyoğlu and Yeni Melek movie theatres (Say, 2016:28). Although the audiences of these events could be defined as very small proportion of Istanbulites, defined as middle or upper-middle class, these theaters have been stages for stories not seen either publicly funded and commercial private cinemas. The Emek Movie Theater has housed the opening and closing ceremonies of the festival for almost 30 years until it closed its doors to the moviegoers in 2009 due to the decision of renewal.

The bottom-up response to the renewal of Serklydoryan urban plot and the re-build of Emek Movie Theater in the new shopping mall

Since 1994, the speculations on the sell and rebuild of the Serkldoryan urban plot as a new commercial site encountered persistent opposition not only from professional chambers, non-governmental organizations, but also from the civil society. In particular, the civil society groups include both individuals and community groups frequenting the Emek Movie Theater and its surrounding urban environment in their daily urban practices and the ones demanding their right to decide over the fate of the city whose cultural and historical heritage. Here, an attempt is made to critically re-visit the existing debates on community groups' cultural heritage right activism in urban renewal and redevelopment process.

In 2010, the one-day use of the theater for the opening ceremony of Istanbul Film Festival staged political action and social protests against the demolition of the Emek Movie Theatre taken by the Istanbul Film Festival audience. Following the aborted three years of building between 2010 and 2013, there was ongoing legal battle against the implementation of the project. Several platforms including architects, planners, art critics, academicians, and art historians have founded to raise awareness and garner support against the project. Moving the theater without comprising the quality and value of its original set-up on the top of the newly built shopping mall is the mantra for this project to legitimize the renewal plan in the public sphere. The apparent lack of transparency in planning process, however, could not satisfy the civil society groups' and the professional chambers' concerns.

The Emek Bizim Istanbul Bizim Initiative was one of the leading figures in forming creative protests against the project. In 2011, they led the event that has occupied the Demiroren Shopping Mall, which was constructed in similar way opposite the Emek Movie Theater. In their slogans and banners, their right to the other neo-liberalized spaces, especially those replaced non-mainstream cultural spaces were highlighted (Özdüzen, 2017). In March 2013, the initiative occupied the theater while the contracting company was de-constructing the existing theater structure to rebuild shopping mall. This

initial unauthorized event organized by the initiative demonstrated that there was still time to save the theater from demolition. This event has followed by creative protests with the involvement of various community groups, including cinemagoers, cinema workers, artists and local residents. Public gathering and speeches by prominent figures has made. In April 2013, their protest was faced with extremely tight response with water canons and teargas from the police. This direct state intervention results in the evolution of political activism against the project transformed many of citizens into critical and activist cosmopolitan individuals. More people also fuelled the creation of a collective identity and a network of solidarity and resistance. The following wave of resistance and protests launched the Occupy Gezi Park Upspring in May 2013.

Conclusive Remarks

The case of the renewal of Serklydoryan urban block and re-build of Emek Theater in new shopping mall becomes a great example of the civil society's attempt to participate in urban planning, particularly in the controversy urban regeneration areas. Other relevant cases from Istanbul also support the idea that there is significant civil concern towards the strategy of local and central planning bodies that allocates all historical and cultural heritage in the urban core, including theaters, residences, public and private properties designated for other uses, to private commercial developments without engaging any negotiation with civil groups. This case also presents that the role of civil society groups encompassed the shared-values and lifestyles of citizens through gatherings, meetings and protests. Even though these groups have received support among citizens, the governmental bodies did not choose to recognize the voice of community and engage their attempts in urban regeneration process. This process, however, progressed in a destructive manner through undertaking reactive strategy.

It is important to highlight that this missed opportunity to create a base for a participatory planning approach prevents accommodating civil society aspirations for future of the Emek Movie Theater. Over the past decade, diversity of bottom-up practices are increasingly, on the whole, actualized in many cities around the world by different initiators, such as community groups, political activists, artists, entrepreneurs, individual volunteers and so on. The ones that aim to maintain their own positions to the challenge of urban problems can provide new forms of urban space uses, improving their urban living conditions and creating new urban commons. The presented case in the paper, however, prevents the capacity of bottom-up agents to adopt and to influence urban processes and local planning bodies; and the suppress of their creative capacity created barriers for the emergence and survival experimental urban space uses and solutions punctuating the city's landscape. The challenge of proposing adoptable urban model in Beyoğlu that can adjust the disturbances related to the emerging city marketing discourse requires battling the structural disadvantage of globalized retailed system in the city. The bottom-up tactics producing new images and narratives can come up with new opportunities for traditional small businesses to be up their game in the sector. If the civil response to urban regeneration is translated into a system of variety of urban actors interacting within network of governance, this system can generate truly differentiated and special solutions for urban developments.

This not only about finding good solutions for urban redevelopment but also dealing with the complex issues in an ongoing networked, fragmented and empowered world. In case of the Emek Movie Theater, the present reality was dynamic and volatile, due to the two insights derived from the

involvement of changing views. The urban transformative practices of civil initiatives interlinked with the some parts of local citizens, but there was tension arising with municipal authorities and the private contractor. Urban creativity in much broader terms –not just about creative solutions for urban environment, but also about how these multiple views engage and interconnect. It is related to the self-directed organization building processes that are created by participants. Under this condition, different priorities and capacities can be negotiated among different stakeholder and modes of co-existence in space be conditioned. Hence, utilizing bottom-up responses in urban planning processes that enable direct participation of civil society into urban planning should be understood as a framework for flexible and open structure for developing ideas.

In terms of extending limits of democracy in society, creating dialogue and interaction among various actors, even the ones with opponent perspectives, is essential. Besides that, the ways of challenging neo-liberal urban development logics –processes often oriented towards privatization and financialisation of urban space_ highly depend on the capabilities of civil society to self-organize and demonstrate alternative survival strategies and tactics. The ways that bottom-up groups foster new engagements with urban space and places, are therefore, essential power of expression of creativity at local scale while framing creativity in public imagination, at the same time, is essential driver of urban neo-liberal policy tool. Together, these two approaches offer diverging perspectives on, and expectations of, urban creativity. Hence, urban creativity is interpreted differently local administrators and civil groups. The former frames it as possibilities of making alternatives for virtues of economy while the latter generally uses it as socio-spatial practice of embedding themselves into locality. In this presented context in Istanbul, creativity seems to be interpreted as big urban redevelopment projects by the formal planning bodies, but social virtues of creativity were neglected. A dichotomy between the central and municipal planning bodies' strategy of suppressing opponent views and the ineffective efforts of bottom-up groups to creating dialogue with formal planning bodies prevents intermediary role of bottom-up response to emerge not just as the inscriptions of various visions of the theater associating individuals and social groups frequenting the theater, but rather develop relationship building processes between diverse groups and urban actors for maintaining mode of co-existence within the place.

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Alternative Urbanism in the Historic City Centre: A Transnational Perspective on Theory and Practice

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Abstract: Historic city centres are characterised by the tension between the local, represented by authentic spaces of everyday life, and the global, responding to the needs of tourism industry and capital flows. Under the neoliberal paradigm, state-led urban regeneration projects often benefit developers and private investors with little regard to the socio-economic dynamics of existing communities. Recently, this approach has been challenged by alternative practices of placemaking that represent a transition from top-down imposition of urban change to the co-production of space. Such practices are characterised by a more temporary, flexible and tactical approach to the design of space. They represent a collective desire that involves several actors, from local residents and business owners, to civil society organisations and design professionals in the role no longer of the exclusive author but as facilitators and mediators of change. Observing the development of such practice in the western world, and the corresponding theorisation attempts developed mostly by western scholars, this paper looks further to its applications in the global South, with evidence drawn from empirical research in London, UK and Cairo, Egypt. The paper suggests that alternative urbanism may be indicative of a longer-term transition towards a more equitable urban planning practice.

Keywords: alternative urbanism; place-making; co-production; community

Introduction: Alternative Urbanism

In recent years, there has been a growing interest, both theoretical and practical, in small community-based urban interventions that have been proliferating in cities around the world and their potential contributions towards activating and reshaping urban spaces. These urban practices indicate different ways of acting and thinking in relation to urbanism that pays attention to ordinary local city spaces of everyday life such as repurposing overly wide streets, vacant lands, highway underpasses, parking lots and other little-used or abandoned spaces (Loukaitou-Sideris and Mukhija, 2017). Such spaces or what Groth and Corijn (2005) describe as ‘places that are not coded for market-led development’ (506) open possibilities for urban design experiments, artistic expression and informal improvisations allowing a more vibrant everyday urban life. Even in prime locations in city centres, innovative interventions in vacant lands temporarily ignored by investors are argued to be catalysts for urban development that rework orthodoxies of conventional urban planning (Tonkiss, 2013). The approach of intervention is based on the efficient use of existing resources, local skills and knowledge to revitalise the cityscape. Alternative to neoliberal large-scale flagship regeneration projects largely based on the sanitisation and aestheticisation of space, such practices are characterized by emphasis

on the lived experience of public space to be enjoyed by all through a more creative, flexible and tactical design of space.

Despite originally emerging as urban activism in opposition to official prioritisation of economic gains and indifference towards local socio-spatial dynamics, these practices are now seen as tools for urban regeneration garnering the attention of developers and local governments, especially after the global economic downturn of 2008. Carried out formally under the conditions of austerity, such practice has enabled the synergy of two seemingly oppositional forces, community and development needs (Kamvasinou, 2015), leading to a co-production process where various stakeholders participate: from local residents and business owners, to civil society organisations and design professionals in the role no longer of the exclusive author but as facilitators and mediators of change.

Along with the development of such practice in the Western world, there are corresponding theoretical attempts mostly by western scholars to conceptualize and interpret these projects. In the academic literature, these community-oriented urban interventions are given diverse names among which tactical urbanism, temporary urbanism, everyday urbanism, or open-source urbanism. The shared characteristics across these practices are that they are mostly small-scale or incremental, cost-effective, relatively short-term and participatory, whereas the majority of published work addresses mostly case studies in Europe and North America. While citizen-led urban practices have been dominant for years in the global South as survival tactics born out of need, they are differentiated from what Devlin (2017) describes as ‘desired informality’ promoted by western scholars to capture the essence of the traditional humane city enlivening the public realm. In less developed cities, informal actors repurpose the seemingly abandoned or little used plots of land to acquire the basic necessities of life (Bayat, 2012). However, in recent years such citizen-led activism has been further manifested in the global South through a surge of urban actions involving local communities, experts and international collaborations reclaiming and revitalising ordinary spaces while embracing existing informalities and creatively setting them on the legitimate path. Even though planning institutions in many areas in the South still hold to outdated modernist clean sweep planning ideas, creative collectives mediate between the conflicting interests inventing opportunities for transformation (see Watson, 2009).

Placemaking, diversity and inclusion

Placemaking is a term that has its origins in the works of planners, urban designers and geographers such as Jane Jacobs (1962) who advocated for community-based urban design and lively neighbourhoods, Edward Relph who explored Place and Placelessness (1976), W. H. Whyte who famously researched what contributed to the successful social life of public spaces (1980), and Dolores Hayden who discussed Placemaking, Preservation, and Urban History (1988). Together with creating a distinct identity, these people-centred approaches underlie many of the current works on placemaking in research and practice, including those of the Project for Public Spaces, a consultancy carrying on the work of Whyte on small urban spaces. They have led to Urban Design being termed ‘the art of placemaking’.

Placemaking is an important dimension of regeneration projects. According to Project for Public Spaces, it is a collaborative process by which we “maximise shared value”, promote “better urban design”, or facilitate “creative patterns of use, paying particular attention to the physical, cultural, and social identities that define a place and support its ongoing evolution” (Project for Public Spaces, 2007).

Cities need spaces for diversity, social mixing and inclusion, where people meet, interact and even ‘clash’ (Dines and Cattell, 2006). Streets, squares, parks and other public spaces constitute the ‘public realm’ and such spaces link to the economy, the environment and human health (Carmona, Magalhães and Hammond, 2008). In multicultural societies such as London’s and Cairo’s, not only the design of

spaces is of importance but their control and management through private, public or community organisations. Placemaking brings together diverse actors (including design professionals, planners, elected officials, residents, and businesses) to improve a community's cultural, economic and social environment.

Local heritage is often used in regeneration projects to provide continuity, distinctiveness and a sense of belonging amidst new development (Adams, 2014), as people's attachment to an area is often motivated by their memories (Dines and Cattell, 2006). As Relph has put it "authentically made places", as opposed to places "invented or imposed", "arise when the physical, social, aesthetic and spiritual needs of a culture are adapted to particular sites, and this can happen unselfconsciously through vernacular practices, or self-consciously through thoughtful design" (Relph, 1976, 67-68).

If Placemaking is the more formal planning and design of urban space to include not just physical interventions but moreover the social and identity aspects of urban space and the communities therein – creating a place, place-shaping is similar in intention but usually more bottom up, temporary and tactical. It is incremental and organic and may lead to placemaking, but it's also more precarious and vulnerable to change and erasure. One of the key tools of alternative urbanism is place-shaping.

Under globalisation, with our cities under increasing demand, innovative approaches to the use of space have embraced temporary place-shaping (Hou, 2010). Place-shaping strategies and tactics can lead to a set of development-led placemaking strategies with the purpose of redeveloping the site while ensuring the legacy of temporary uses (Andres, 2013). Nowadays spaces can sometimes be activated almost instantly, with the aid of digital place-shaping through social media and civic engagement - the Occupy movement events in London in 2011-12 and the Egyptian uprising events at Tahrir Square in Cairo in 2011 demonstrate exactly this.

The cases we present here focus on alternative urbanism as the ability of spaces to adapt to societal, governance and physical change and the role of small urban interventions towards the longer-term shaping and reimagining of our cities.

Cairo Case Study

This alternative urban paradigm is manifested in one of the most significant central areas in Cairo, namely 'Downtown Cairo', through spatial interventions known as 'Downtown Passageways' that were initiated in 2014. The idea of the project was to revitalise the pedestrian passageways in-between buildings as alternative spaces for developing the old decaying core of Cairo.

Downtown Cairo has been the urban centre of the city, with major cultural, commercial, administrative and political activities. It was established in the late half of the nineteenth century along the lines of Haussmann's Parisian model with exquisite historical architectural styles, elegant public squares and wide boulevards, but has been experiencing significant deterioration over the past decades. Public spaces have been either securitized and underused; or extremely congested with informal encroachments, mobile vendors, clothes racks and food stalls. Moreover, being the home of the Egyptian Uprising in 2011, it witnessed unprecedented demonstrations which added a layer of complexity to the use and meaning of its public spaces. Besides the tension that arises from being the urban centre of the city with different competing interests, heritage assets, businesses and touristic attractions, downtown Cairo has gained after the revolution a national symbolic meaning of urban activism and political expression.

In post-revolutionary Cairo, after almost three years of political instability (2011-2014), the development of Downtown Cairo surfaced in the official discourse, particularly nostalgic towards Downtown's golden age with an intention to promote tourism. This nostalgically-driven approach led to more attention towards restoring architecturally significant facades and cleaning up undesired uses and activities. Emphasis on cosmetic issues would transform the area to an open air museum catering

for tourists and elites, but alienating existing communities (ElShahed, 2007). The state's plan of 'museumification' started to manifest in painting old buildings and sidewalks, white washing graffiti, and an enormous flag in the middle of Tahrir Square, the heart of the Egyptian uprising, along with tighter security, forced removal of street vendors and restricted car parking (Rabie, 2016). On the other hand, the private sector had another approach for development, particularly Al-Ismaelia for Real Estate Investment company, which is a major stakeholder owning more than five percent of downtown. El Shafie, the cofounder of Al-Ismaelia, believes in building a creative city narrative that would position downtown Cairo among the major urban centres in the world, reclaiming its lost place in global competitiveness (Rabie, 2016). Al-Ismaelia has supported creative industries in downtown such as independent art spaces, street performances and art festivals. It also has been working on buying and renovating abandoned cinemas and theatres; and leasing vacant properties for start-ups and small businesses. Both approaches of the state and the private sector raised concerns among the public regarding gentrification. The third vision of developing downtown besides the government and the private sector's is that of activists trying to find a common ground between the government, the private sector and local communities. Community-aligned activist professionals in urban design, planning and arts collaborated and established firms positioning themselves differently in relation to the formal planning system. Cairo Laboratory for Urban Studies, Training and Environmental Research (CLUSTER), a research platform and urban design practice founded by the urbanist Omar Nagati and the curator Beth Stryker, is an example of these professional entities particularly interested in downtown urban issues. Being based in one of Downtown's main streets, the CLUSTER team consider themselves a part of the local community. They can be described as practical activists who, while being keen to support less powerful underserved groups, are against demonising private investors.

The Passageways project started as a mapping and design exercise as part of an urban design studio led by Omar Nagati in one of Cairo Universities. The aim of the academic project was to propose realistic and creative urban solutions to revitalise Downtown's passageways.

The CLUSTER team led by Omar Nagati and Beth Stryker turned the academic coursework into practice, through which they established their firm after the initial conversations with the local community. CLUSTER proposed the concept of in-between-ness as an alternative framework for urban development, referring to a variety of spatial gaps between buildings ranging from passageways, commercial arcades and setbacks to courtyards, dead end streets and pedestrianised zones (Nagati and Stryker, 2016). Such spaces represent an urban typology that is less visible from the main arteries of downtown and the official public realm, allowing a more vibrant everyday urban life mediating between the formal and informal (Nagati and Stryker, 2016). In an interview with Nagati (2018) he said that without compromising security or traffic, the passageways can accommodate creative possibilities such as bike lanes, book fairs, vegetable markets and arts exhibits, nurturing a nuanced dimension of publicness.

While the CLUSTER team had a broad vision for revitalising the downtown area as a whole through its passageways, they did not have the capacity, power or resources to implement the whole idea. Nonetheless, they were willing to apply their approach partially for the experimental advantage of implementing small changes with an intention to induce activism, create social networks and potentially cause positive ripple effect (Nagati, interview, 2018). The opportunity came for CLUSTER when foreign Danish organisations provided a fund to regenerate Cairene public spaces after the revolution. Two passageways, Kodak and Philips, were proposed by CLUSTER as a pilot project under this fund. They supplemented the fund with small amounts of money from Al-Ismaelia, the Real Estate Development Company, local shop and property owners (Nagati, interview, 2018).

For the purpose of this paper, the transformation of one of the two passageways, Kodak passageway has been traced. It is in a prime location, and highly securitized as it lies across from downtown's

Jewish synagogue and close to multiple banks. Before intervention all the shops overlooking the passageway were vacant except two, and the passageway was mostly underutilised (Nagati and Stryker, 2016).

The redesign engaged Egyptian and Danish University students, artists and the local community. It involved re-tiling the passageway, incorporating tree planting, benches and gardens. Design elements were subjects of contestation and intensive negotiations; compromises were necessary (Nagati and Stryker, 2016). For example, one of the landlords complained that benches would bring ‘undesirable’ people or activities. He threatened to surround these benches with barbed wires if CLUSTER insisted on them, but Nagati convinced him to give the project with its benches one month as a test period after which the benches would be removed, which never happened (Nagati, interview, 2018). Also, municipal authorities objected to integrating benches for security reasons, thus the design was amended to present them as raised lighting features rather than explicit benches, which was officially approved (Nagati, 2018).

The renovations have produced an unexpected uniqueness triggering passers-by’s curiosity attracting them out of their daily routines. The cosiness of the space with its seats and green landscape transformed the passageway into a mini-park encouraging people to sit, meet and take a break from their harsh days. When asked what is different about this space, one of the passers-by stated the passageway “feels like home”; another said it is “serene and alive”.

In the following years CLUSTER collaborated with Al-Ismaelia a few times to organise events and curate exhibitions in the passageway and the surrounding vacant shops, which significantly added to the liveliness of the space, attracting a wide range of visitors. Such creative events have produced interesting public encounters and created a suitable environment for social interaction. The passageway and the surrounding shops have taken on an ‘edgy’ character enriching the experiential dimension of the area. Over time, the vacant shops have transformed into well-known venues supported by significant web presence. Moreover, the temporary art installations in the passageway implemented by Al-Ismaelia Company have attracted a wide range of users across different age groups and from different social backgrounds that have interacted with the art pieces. For example, in April 2017, a swing and spring-inspired decorations were installed which was a quite a novelty in Cairene public spaces. The passageway transformed then into a ‘must-visit spot’ in downtown Cairo. The narrative of creativity was further enforced by the activities of the users of the space and their interaction with the public installations. For example, the scenery intrigued a couple of university students to sit for hours to sketch the space.

Another substantial consequence of the renovations is the opening of Eish and Malh Restaurant around the corner, which quickly became one of the favourite restaurants for locals and tourists. In collaboration with CLUSTER, the like-minded owners of the restaurant organised a community Ramadan Iftar in the passageway which brought the community and representatives from the municipal authorities together (Nagati and Stryker, 2016)

After five years of the intervention, Kodak passageway is still in a good condition as it has been looked after by the local community. A board of tenants, property owners, and businesses was set after the intervention to manage the space. Although a public space, driven by their sense of ownership, they gather money monthly for gardening, trash collection, electricity water and general maintenance (Nagati and Stryker, 2016) The surrounding community are very proud of their passageway that became the ‘living room’ of the area. The space also received recognition from the local government, for example it was selected for launching events and exhibitions as one of the key sites to celebrate the International Heritage Day. Also, the minister of Tourism visited the space that was hosting a photography exhibition around the theme of promoting Egypt to the world.

London case study

King's Cross is a central London area and one of the largest redevelopment sites in London covering 67 acres of land. It has a rich historical past with 19th Century heritage assets ranging from industrial buildings, such as the Granary building, to fully operational and revamped train stations (St Pancras and King's Cross), and the Regents canal, originally introduced in the 1820s to link the city to Birmingham and the new industries of the Midlands but currently being used for leisure purposes. By the beginning of the 20th century the site was an array of 'stations, sidings, railway buildings and related warehouses', crisscrossed by railway tracks which were removed in the 1980s: 'The adjacent neighbourhoods housed the working poor and the destitute. It was not an attractive place but it worked' (Bishop and Williams, 2016, 23). The area went through decline in the mid-20th century; after the Second World War, changes in freight transfer rendered the goods yards obsolete and led to unemployment and deprivation for the local communities. Before the first redevelopment proposals were voiced in the 80s, the area was "notorious" for vacant wastelands, crime, prostitution and drugs, but also attracted nightclubs and artists as the rents were cheap (Bishop and Williams, 2016, 25). It also had a range of emerging and vocal community actors.

Various masterplans were proposed in the 80s including Norman Foster's in 1989. However, they did not materialise due to a combination of technical and financial constraints, unfavourable market conditions and resistance from the local community. In 1996 the King's Cross Partnership was set up as a public/private partnership between Islington and Camden Councils, Railtrack and London and Continental Railways (LCR), and community representatives. They sought a development partner that would have a participatory approach and ability to work with stakeholders, among other things. Developers Argent, who had successfully delivered Brindleyplace in Birmingham, won the competition in a joint venture with St George, a housing company, but they eventually parted in 2004 and Argent carried on the masterplan. The presence of two conservation areas, an important collection of historic buildings and industrial archaeology meant there was a legal requirement for a detailed application assessing the impact of the development on them (Bishop and Williams, 2016, 74); the development clearly took these into account and turned them into assets for placemaking, linking to the history of the place and local identity, and attracting tourists. English Heritage, the then advisory body for listing buildings, was involved in the process from the outset. The famous Gasholder no 8, Grade-II listed, now forms the centrepiece of the new Gasholder Park, which is bordered by a unique triplet gasholder hosting new housing – both historic gasholder structures were dismantled and reconstructed on a different part of the site. Another asset of heritage value that was respected and supported was Camley Street Natural Park, a small nature reserve and ecological heaven on the canal that had been preserved in the 1980s through successful campaigning by local activists.

Of interest to us is that strengths of the masterplan included the respectful and creative treatment of heritage assets and the focus on a diverse public realm throughout the lengthy process of redevelopment (2008-2020). Making physical and psychological connections for the local people to access the site, particularly during its construction, by introducing relevant uses on the edges and in the centre of the development was key to its success and acceptance (Bishop and Williams, 2016). This came up strongly during the extensive public consultation too, which pointed to the need to address social and economic issues including unemployment and health in the local community and particularly young people, and for 'meantime' social projects to be incorporated into the longer-term regeneration process. Temporary uses had always been part of the history of the site, particularly during the years of decline; now public spaces such as Granary square were open to the public as new civic spaces before even the buildings were occupied or built, and temporary uses such as the Skip Garden were brought in to link the different stakeholders and communities together and with the new development. The success and longevity of a temporary project such as the Skip Garden therefore owes a lot to the supportive approach of the developer.

The Skip Garden was inaugurated in 2009 in the early construction stage of the development. It is run by the sustainability education charity Global Generation (GG) and has received support from the two local authorities, Camden and Islington, local businesses (e.g. The Guardian newspaper) and the developers of the King's Cross masterplan. It consists of gardens planted in skips and maintained by young people, often from local schools, employees from local businesses and other volunteers. It was initiated by Jane Riddiford, currently CEO of GG, and the CEO of developers Argent who supported "the idea that business and activism don't have to be either end of the spectrum" (Riddiford, interview, 2013). The gardens are portable so they can be moved around the site as the development progresses through its phases. The skips represent, and were donated by, the construction companies on site (Kamvasinou, 2015).

The first Skip Garden was opposite St Pancras Station and lasted for two years (2009–2011). It moved to another part of the site awaiting development in 2011. In 2012, it moved to its third location just off York Way that hosted the Garden until May 2015 when it moved to Tapper Walk near a much shorter temporary art project, a natural swimming pond; the garden is still there in 2019.

According to Riddiford, the project is "about 65% grant funded and probably 35% through commissions, through venue hire, through the business training days", or more generally through "relationships with businesses". Part of it focuses on the Generators – young people in their late teens who join for a year and go through a programme of public speaking and learning about green issues. Through this the project can reach out to local businesses who then will actually pay to do workshops and offer internships to local young people (Kamvasinou, 2015).

The main focus of the project is to educate in the importance of sustainability. GG's aims and educational philosophy go beyond the physical site, while the 'skip' design relates to the particularities of the development site. A number of workshops and educational events have been built over the years, gradually allowing for more public accessibility, encouraging social interaction and educating about the origins of food. The project runs workshops on gardening and food growing, runs the local school Business BTec and works with the nearby textile department of the University of the Arts which is based in the Granary building. Companies such as the Guardian newspaper were looking for links with the local community and partnered up in a training scheme for their staff. The Garden has also attracted tourists and visitors to the site, who may have heard about it through the web or discover it through guided tours. This diversity of types of people or age groups has gradually come to be "the main marker of the project" (Richens, interview, 2013, cited in Kamvasinou 2015, 196). Although the garden has not been totally or always publically accessible, funded or managed, it contributes to the diversity of the public realm and placemaking through its ethos and the activities it supports.

Comparative remarks

The two case studies show several similarities and differences, and provide evidence to the application of alternative urbanism ideas in two very distinct cultural contexts. We now turn to examining some of these here, on the basis of a framework linking alternative urbanism to placemaking. This framework includes the synergies and challenges of co-production; the role of tourism; and activating urban space through place-shaping.

Co-production: synergies and challenges

Through a negotiated common ground, the Passageways project allowed the coming together of real estate developers, activists and the local community. Al-Ismaelia Company already had the intention to renovate the passageway aiming to create a coffee shop and co-working hub (Hassan, interview, 2019). Due to problems in officially licencing these uses, the proposal of the activists opened an alternative possibility for development and raising the value of their property and the whole surrounding area, while making use of local activism and winning the trust of the community. This

has helped to enhance Al-Ismaelia's public image that was linked to gentrification. In a personal interview with their head of marketing communications, she said their team operate under the slogan 'downtown for all' (Adel, interview, 2019). They promote this vision in all their community events to prove their good intentions which do not negate the importance of economic benefits to them. The vacant shops owned by the company hold temporary exhibitions open to the public for free and short-term rent-free leases are offered to creative local businesses on a condition of implementing pop-up creative installations in the passageway for the public. For example, the initiative of 'Downtown Goes Green' was launched where recycled materials were used in pop-up decorative art. Nevertheless, when interviewed about the reasons CLUSTER collaborated with Al-Ismaelia only a few times, the activist Nagati involved in the passageway project said they wanted to keep their neutral position within the community avoiding to be viewed as prioritizing economic interests over local needs.

Kodak passageway is a co-produced space by professionals and the local community. It was co-designed and people have contributed with their resources and knowledge both during implementation and through the continuous inclusive appropriation of space over time. Despite the involvement of investors, the local community retained control and ownership over the space, while nurturing a vibrant public realm and unique lived experiences for both locals and tourists alike.

On the other hand, the position of the Skip Garden in Central London highlights the possibility of producing fertile temporary 'edgelands' even within the context of high value business and an existing and successful ongoing regeneration project. The initiators were realistic about the prime location and the fact that they would have to be flexible and enter a dialogue with the developers to pursue their aims.

Consequently, the project has gained the support of the developers (although it was not part of the masterplan) and the two local councils of Camden and Islington. GG as a Charity runs the project and engages the private sector as well as local councils in supporting its funding while working towards establishing longer-term training programmes to self-fund in the future. Socio-culturally the project engages "local communities, including the local business and corporate communities, but also communities of interest: those wanting to learn more about food growing, sustainability and ethical business" (Kamvasinou 2015, 202). In kind support comes in many ways, including the donation of the skips from the construction companies on site, but further, through local businesses offering job opportunities or internships to local young people.

The concept was the brainchild of Paul Richens, a gardener. No designers were involved in the initial incarnations of the project, however temporary pavilions have been designed by architecture students from UCL at the latest site. The care and maintenance of plants also depends on the contribution of people participating in the gardening workshops. The Garden has supplied the nearby restaurants on Granary square with planters, while ongoing exchange exists with the University of the Arts textile department who use plant dyes from plants grown at the Skip Garden.

With regards to sanctioning the interventions, the two projects represent different challenges and approaches. In the Cairene context, the activist professionals followed a tactical approach to sanction the Kodak passageway project. The project's narrative was reframed for the authorities claiming that it was aligned with their beautification approach, restoring order to downtown after the political instability, while concepts of inclusiveness and diversity were understated (Nagati, 2018). The project obtained seven approvals from different authorities including electricity, water, traffic, security, and heritage preservation authorities and others; each time the design was reframed and presented so as not only to satisfy their technical requirements, but to also align with the authority's vision of development (Nagati and Stryker, 2016). Nagati (2018) explains that even the collaboration with foreign organisations was carefully presented as support for the local municipality.

Regarding the programmed events taking place in the passageway, CLUSTER took the risk of not obtaining official approvals particularly from the security apparatus when they organised the communal meal. Nagati (interview, 2018) points out “sometimes we have to take the risk”. Although the local municipality was collaborative, the idea was not welcome for security reasons which led to an argument with security personnel on site but resolved quickly (Nagati, interview, 2018). Similarly, the building and tenant relations manager at Al-Ismaelia company confirmed that they did not seek approvals for the temporary installations in the space. Nevertheless, they did not include any physical signs of advertisement for their company in the passageway to avoid legal trouble (Mostafa, interview, 2019). The head of marketing and communication shared her observations with me about the change in the attitude of the security forces existing in the surrounding area over time. They got used to people congregating in the space, enjoying their time and pausing for pictures in a space in which previously holding cameras was considered suspicious (Adel, interview, 2019).

On the other hand, the Skip Garden started as a temporary project but has managed to endure and contribute not only to the development site but to policy change. “GG have a three-year [renewable] temporary lease for renting the land, with no rental costs, the expense being borne by the developers in full. As a Charity they also benefit from tax rates relief” (Kamvasinou 2015, 193). The temporary lease has serious break clauses, to protect the developer as well as determine the liabilities and the appropriate health and safety requirements, both for working with young people and school children, but also for working on a construction site. It was one of the first of its type, and pioneered the development of what is now in the UK called a ‘meanwhile lease’ (Kamvasinou 2015).

Tourism

While Egypt in general has faced a substantial decline in the tourism sector since the uprising as tourists feared coming to Egypt due to several terrorism-related incidents, Kodak passageway represented a touristic attraction to the few tourists visiting Cairo. This is evident in the number of international visitors rating Eish and Malh Restaurant on TripAdvisor. Also due to significant web presence the space received recognition in artists’ networks attracting international artists and volunteers to exhibit their work and participate in the events such as ‘From Rags to Riches’ workshop which continued for a whole month in one of the vacant shops overlooking the passageway. Al-Ismaelia Company installed ‘I love Cairo’ signboard - a common rhetoric promoting tourism in major cities in the same way ‘I love London’ for example is on souvenir mugs and t-shirts. The signboard created a hot spot for pictures taken by tourists or locals that are usually uploaded on social media platforms attracting more people. ‘Internal tourism’ has been clearly enhanced: more people, especially younger generations, come from different parts of the city to downtown just to experience the space. Moreover, the minister of tourism’s visit is a formal recognition of the potential of the space to promote tourism.

The Skip Garden has an active and frequently updated website and has initiated promotional videos. This web presence has brought on site people from all around the world, including for example Brazil and China, which is “quite extraordinary, and wouldn’t have happened twenty years ago...That’s one of the major things, that suddenly you’re not just a local player but you’re a world player as well” (Richens, interview, 2013). Events organised there also help spread the word, and the information centre at King’s Cross run by the developers also promotes the project through guided tours. As the King’s Cross development nears completion, more people start flooding in and discovering its assets, including the Skip Garden – a different position compared to when it all started, when catalysing community engagement with the development site was the target.

Activating space and placemaking

Over a period of 10 years, as a mobile garden, the Skip Garden temporarily activated the sites it occupied through place-shaping activities but in the longer run it contributes to placemaking through

establishing longer term relationships between people – businesses and community. Its aesthetic is rather makeshift compared to other public spaces in the development, which are much more designed and polished (see Granary square, Cubitt square, Gasholder park) but that offers an alternative way of doing things that is still well-considered and serious. The Garden is still going strong ten years later and has become part of the identity of the new place, attracting both locals and visitors alike.

However it is unclear if the Skip Garden will stay on when the King's Cross development is completed. Some of the ideas for its future are, for example, to make use of green roofs on the new buildings or barges on the Regents canal. This highlights the precarious character of alternative projects but also the importance of flexibility.

Similarly, the Kodak Passageway project situates placemaking between two modes of intervention regarding time. The first incorporates permanent landscape alterations, while the second involves both spontaneous and programmed temporary activities or installations that leave no traces in the existing surfaces or structures. In both modes of intervention, throughout the process people were drawn out to the streets building social networks which triggered chain reactions and further interventions catalysing urban development in a long-term perspective (see Lerner, 2014). Therefore, alternative urban practices are sustainable in terms of creating a network of actors, as collective appropriations are expected to continue responding to new opportunities and new aims. Even temporary transformations of a space, which terminate by the end of the activity, do not always return to the pre-existing form but morph into something new (Dovey, 2016).

Both projects suggest “a different public realm to that proposed by mainstream urban design in the context of the neoliberal city, where emphasis is on commercial activity and which is often eroded by privatization and the exclusion of lower-income groups” (Kamvasinou 2015, 203). Activities that connect rather than divide, such as art, social events or gardening, create a public realm where people can meet, interact, reach each other and ultimately overcome their preconceptions and assumed differences. The often makeshift nature of the alternative urbanism projects, as opposed to the high-end public projects in city centres, makes it easier for some people to physically engage with them through designing, constructing, using or being responsible for their upkeep; they assume ownership and can see the impact on their everyday lives and neighbourhoods. “This diversity is much needed in the public realm of today because it caters for a variety of people with different disposable incomes, social status, ethnic background, age, gender or, more generally, interests” (Kamvasinou 2015, 203).

Conclusion

This research sought to address the potential of community-based urban interventions as a phenomenon and how it is reflected in theory and practice from a transnational perspective. As Friedman (2010, 161) has put it, “there is no single, best method [of placemaking]; each way is culturally attuned and has its own historical trajectory”. The versions of alternative urbanism we have presented here confirm this. Both our cases, however, point to a transition from top-down imposition of urban change to the co-production of space generating uncommodified urban spaces that are not solely controlled and maintained by the state or the private sector. Within the historic centre of the city, in both Cairo and London, Kodak Passageway and Skip Garden projects represented catalysts for urban development away from the conformities of mainstream urban regeneration projects. At the same time, they empowered local communities to become key participants in this transformation. In both cases, there seems to be a shared transition towards more acceptance of initiatives that are not part of the official plan – of the developer or the state. Although this has led to policy change in the case of London, in the form of the meanwhile lease, such transition in planning policy is still awaited in the case of Cairo. Alternative urbanism is not a universal form of action as the idea has been articulated to address different problematic urban settings in different ways. The alternative approach proposes injecting informal activities to enliven sanitised contexts and conversely embracing informal landscapes to enhance the use and quality of deteriorated environments without pushing away the poor or prohibiting everyday improvisations. Alternative urbanism as a concept places design at the

interface between the formal and the informal: it creates a lived space open to individual and collective appropriations reflecting the complexity of the city and suggests a transition towards a more equitable urban planning practice.

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Research on the improvement of urban public space vitality based on the concept of social resource sharing—taking Tianlin community in shanghai as an example

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Abstract: Based on the concept of social resource sharing, this paper takes Shanghai Tianlin community as an example and proposes feasible suggestions on how to improve the vitality of public space in the stage of urban accumulation and development. The Tianlin Community is located in the east of Xuhui Innovation Industry Park which brings a rich cultural and scientific resources together in the downtown of Shanghai. With the increase of land prices, the widening gap between the rich and the poor is obvious and the serious closed community phenomenon have led to the problems of weak public continuity and low vitality of the public space. The author selected 20 different public spaces in this area and evaluated them with five criterion: surface, identity, commerce, leisure and accessibility. By the usage of Grasshopper, a five-minute network of local connections with different degree was finally formed and found: (1) The area is not accessible everywhere and fragmented in different parts; (2) The area has some spaces in need for certain qualities while there are other spaces around have corresponding quality which can help to balance. In order to improve the accessibility of these 20 points of interest and sharing the public resources, the author tried to propose strategies of connection and balance to enhance the vitality of the public space in the Tianlin community: (1)Based on the current situation, increase the public access and visual corridors between the semi-closed community and the closed community; (2) According to the evaluation of surface, commerce, leisure and identity, provide various equipments in four categories to improve the wickest points. Through such strategies, it is possible to achieve a fair social resource sharing of the public space to the greatest extent, while at the same time solving the unbalanced development of different regions.

Keywords: public space; vitality; accessibility; closed community; social resource sharing

0. Introduction

In China, when talking about the vitality of urban public space, it is necessary to mention the public space inside the community area where people live in every day. There is a saying that "residence changes China", China is a large country with a population of 1.39 billion. In order to improve the quality and fun of people's daily life, the transformation of its daily public space is crucial. In other words, where, when and what the residents are doing in the city determine the vitality of the urban public space to a certain extent.

However, closed communities in China are a very common phenomenon. The lack of open-type models in communities has caused a number of urban and social problems, making

residents living in the same community unable to enjoy a completely equal outdoor public space, one of the important reasons that has led to the decline of the vitality of urban public space. In the face of the national policy of “promoting the block system and gradually opening the closed community and danwei courtyards”. How to change the situation, the unfair public space causing by the closed community will also be a big problem that China needs to face for a long time in the future.

This paper will first discuss the formation process of China's closed community and the urban public space problems caused by it. Taking the transformation of Shanghai Tianlin community public space as an example, this paper introduces the current situation of the use of public space and proposes some transformation strategies to enhance the vitality of its public space. I hope this article can be a reference to China's future urban public space development.

1. Background

In February 2016, in order to further strengthen and improve the urban planning management work, the Chinese government issued an important document of “Several Opinions on Further Strengthening the Management of Urban Planning and Construction”, which proposed that the new community buildings in China should promote the block system in the future and no closed community will be built. The completed community and danwei courtyards should be gradually opened to achieve internal publicization of roads and promote land use and utilization. The proposal of this policy shows that the state is paying more and more attention to the fairness and justice of urban public space. If the closed community is not conducive to the use of public space, then conversely the open block is an important solution to improve the vitality of urban public space.

However, the social development model of China's closed community has lasted for more than half a century, it is very different from the formation of the gated community in Europe and America. Now suddenly opening up the closed community which has been built, it will inevitably face conflicts with the current Property Law. More importantly, this is completely contrary to the concept of “deep house courtyards”. Chinese people have been pursuing for long, which is one of the typical concepts in traditional Chinese culture. In the past, Chinese urban residents have experienced siheyuan, danwei courtyards and now the closed communities, the only constant situation is "closed." It is no exaggeration to say that there is no home for the Chinese to have a room with no wall. Therefore, opening up the closed community is definitely not a one-step process, and it is necessary to constantly explore the transformation mode of the transitional stage.

2. The formation process of a closed community in China

2.1 Superblock mode

Tracing back to the history of China's community planning, it can be found that the concept of the community originated from the Soviet Union during the period of large-scale industrialization and was completely transformed in China. In the 1950s, after the Korean War, China formulated its first five-year plan (1953-1957), attempting to carry out comprehensive industrial modernization. The Soviet Union provided direct assistance which

including technology, equipment and labor force for 156 key projects in the "First Five-Year Plan." Therefore, China naturally began to seek experience in architecture and urban planning from the Soviet Union and the socialist countries in Eastern Europe (Huang, 2016). The superblock model from the Soviet Union was first used for experimentation which is Stalin's favorite. It emphasizes symmetry and enclosing space, but there are countless shortcomings. For example, residents living inside have only west windows and have to face the streets, a series of problems such as noise, pollution, and air convection generating here. Therefore, the pattern of the superblock soon was abandoned.

2.2 Microdistrict mode

As Chinese urban planners focused more on the economy and utility of community, a Soviet model called microdistrict caught the attention of planners. Actually, the microdistrict model was essentially indistinguishable from the superblock model, which is a basic unit of urban community with a relatively complete cultural and welfare facilities and surrounded by urban main roads.

2.3 Danwei courtyards

In the 1950s and 1970s, there was a big change in the development of community in China. At that time, a large number of communities emerged and the most widely accepted community planning model at that time was the danwei courtyards. Subject to the urban planning concept of the Soviet Union, China, which is learning from the Soviet Union, also put forward the slogan of "production first, life second". But we did not simply imitate the Soviet Union, we invented a unit model with some kind of Chinese characteristics. The Soviet Union allowed the distance between the community and the workplace to be no more than 40 minutes of commuting time. In China, the unit (Li,2017) was integrated into a place where living and working were integrated, then the danwei courtyards was born. However, the units built in the 1950s were not equipped with walls. Since the 1960s, various units have started building fences and walls. Danwei, as economic entities that combine production and consumption, are inevitably exclusive. The society is not equal, as the unit needs to rely on the wall to protect its own land and resources from the invasion from other area of the city, and also some other danweis.

2.4 Commercial housing mode

The failure of the planned economy and the decade-long Cultural Revolution have subsequently caused serious housing shortages for a long time. After the implementation of the economic reform policy in 1978, the Chinese government also implemented a series of reforms on real estate. The task of community development gradually shifted from the government to the private developers, and the commercial community development model gradually emerged. Although the planning department did not force developers to build closed communities, the development model of "who develops and who provides the facilities" set by the developers make it necessary for them to build private houses such as community and commercial buildings in the sites and they are also responsible for the common parts of roads, parks, and leisure facilities. The cost of the developer's construction part is shared by all the owners of the community, so the developer must make the public ownership of these

public facilities inside of the community. At the same time, the property management company introduced by the community has also played a role in promoting the closed community. According to some scholars' research, in 1991-2000, 83% of the communities in Shanghai were closed in this way.

3. The issues of public space development caused by closed residential

3.1 Social security issue

The closed community has greatly improved the security of the community by establishing the fence wall and the management of the property management companies, but it has increased the crime rate of urban public space outside the community. There is an old saying in China that "the skin does not exist, the hair will have nowhere to attach", and the complete separation of roads and communities has led to many unattended streets in cities. On the other hand, the security of public space is mainly achieved by neighborhood monitoring. A sufficient number of pedestrians and abundant street life are the main means to ensure the safety of urban public space. The closed communities greatly limit the natural surveillance of the inner public space by the police and the public.

3.2 Class isolation issue

E. Saarinen (1943) has proposed that "housing should mean home and a healthy environment, not just the walls and roofs made up of shelters from the wind", which means that the house shouldn't be limited as a living function (Lv,2006). It is also an important place to operate social relationship. Closed communities are manifestations of people's distrust of each other and even exacerbate the contradictions of different social classes. People of different classes live in different closed communities and social circles. Such social isolation has caused social unrest, resulting in people's selfish, xenophobic, and prejudicial characters, which seriously threatens the social harmony and the fairness of public space. Spatial justice is the foundation of urban vitality research, which is the key point for improving urban vitality (Cheng,2019).

3.3 Split urban public space

The formation of the closed residential is just like a cell whose cell wall protects the interior space well, but cuts off the connection between the internal and external space. Many public spaces with strong continuity have been cut off by these residential. Residents in the same community but not in the residential cannot enjoy the same public space. For example, some riverside green spaces will be blocked by residential, and people cannot walk or run along the river. Therefore, people can only do some activities in parks and squares, the scope of activities is very limited, which is also one of the important factors affecting the vitality of urban public space.

4. Exploring ways to improve the vitality of urban public space in community——Taking Tianlin community as an example

4.1 Introduction of Tianlin Community



4.1.1 Location

As seen in figure 1, our site is located in Xuhui district, southwest of downtown which is famous for its strong economic and culture, what was considered as the French Concession in the past. Huangpu River is an important canal in Shanghai and its formation is closely related to the flood-discharge of Taihu lake. The river flows from Panlong port to Huangpu River and Puhui Tong surrounding the bigger area of the site is part of this flow. The project site is situated in the northeast corner of the area.

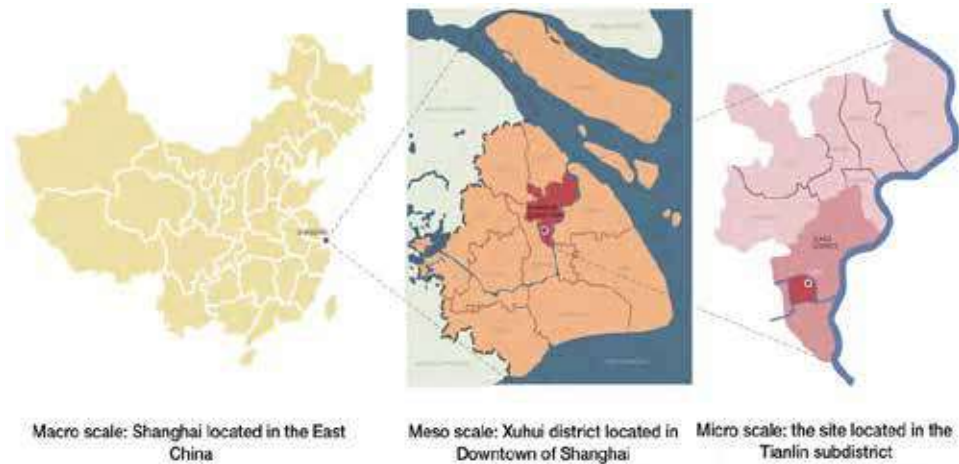


Figure 1. The location of the site from macro to micro scale

4.1.2 Built environmental factors

(1) Typology of residential buildings

The types of buildings in the Tianlin community are obviously different. Through field interviews and a large amount of network data collection, the height, shapes and year of construction are summarized. As seen in figure 2, most of these residentials are high-rise buildings, the newer the buildings, the higher the building's height and the old residential mainly distributed in the west of the Tianlin community. By comparing what we feel from the interview, we can also find that the more the residential buildings are of a lower height, the more the inhabitants are closer and know better each other. The more the community buildings are older, the more the inhabitants feel the sense of community as they know each other in comparison to new residents who have moved here recently. It is obvious to know that the built environment can affect the social relations among residents here.

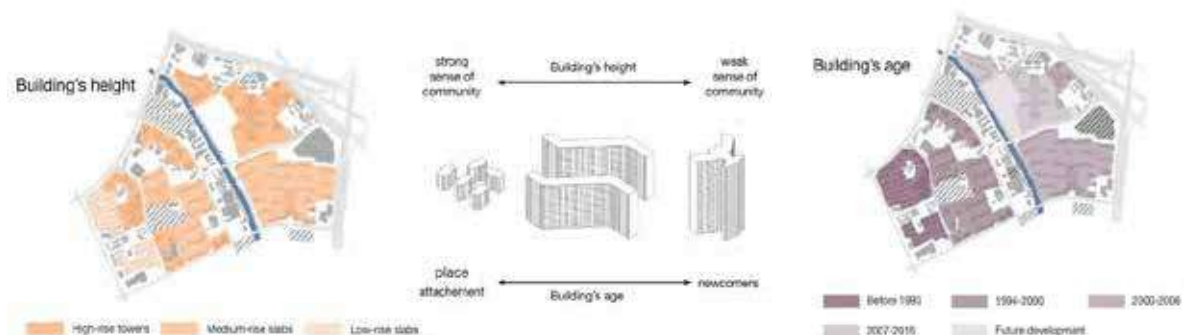


Figure 2. The typology of residential buildings in Tianlin community

(2) Resource analysis

The area is covered by bus system operating around 23 different bus lines while the metro provides 5 lines nearby: line 1, line 3, line 4, line 9, line 11 (Figure 3). It's sure that the Tianlin community has very convenient transportation resources for people to come here. Besides, the site is mainly supplied with restaurants, banks, cafes and shops. However, these commercial services are mainly distributed on the boundary of the site. There are not many destinations of that kind within the inner area which is composed of different residentials.

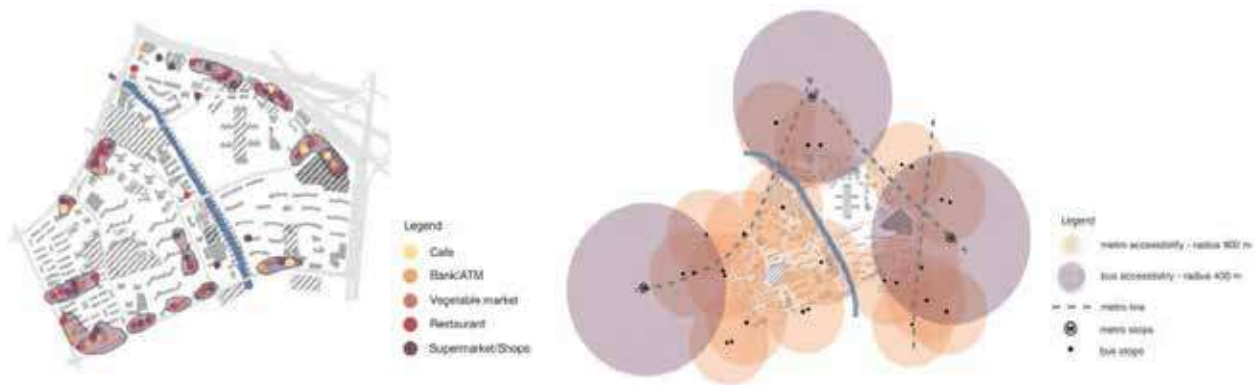


Figure 3. The resource analysis of the site

(3) Law of people's activities

By monitoring from 10 am to 8 pm, a total of six time zones of Baidu Thermal Map, we can easily find that people are mainly attracted by commerce, office and metro stations to move around the area but most of the time they spent in the boundaries of the area without getting inside (Figure 4). Especially during rush hours, there is the biggest flow of people around the site.

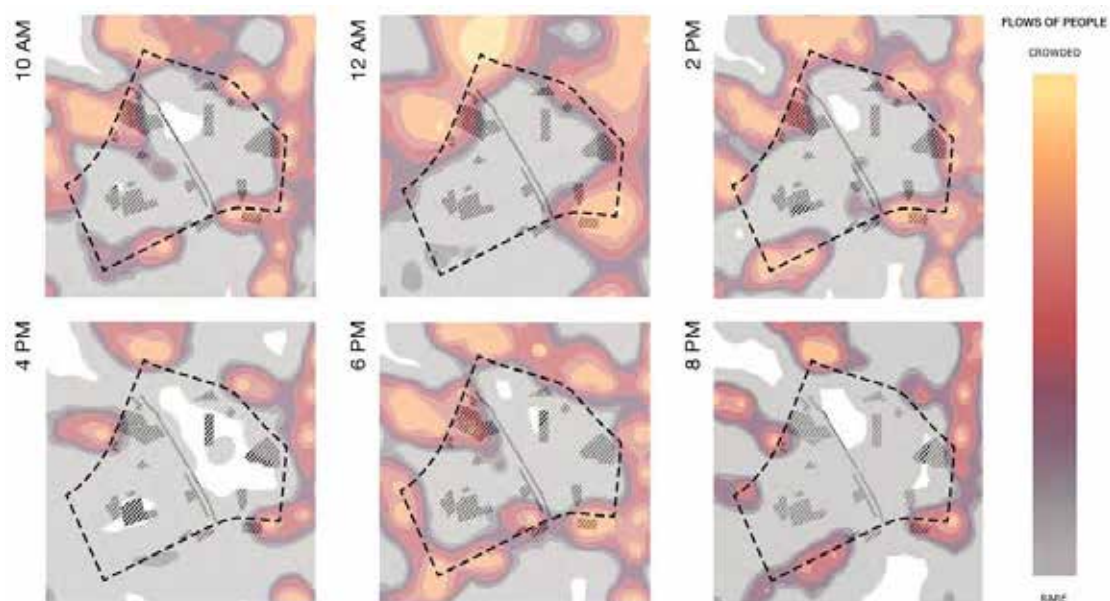


Figure 4. The law of people's activities in different time from Baidu Thermal Map

4.1.3 Public space

(1) Public space plaque selection

The area has around 20 points of interest which were chosen by a subjective criteria from the site survey (Figure 5, Table 1). Some of them are well-designed, suitable for leisure, commercial activities, others lack equipment, identity, have more greenery or are more lively. One of the main problem is that these areas have a different level of accessibility as there are big gated residential within the site and semi-public spaces in most cases not accessible to the inhabitants.

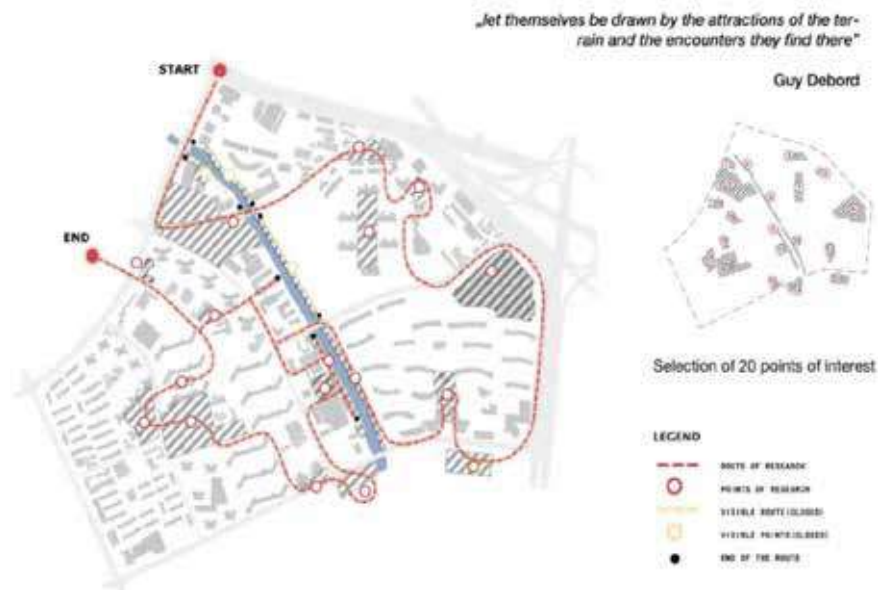


Figure 5. Public space plaque selection

1	Parking lot next to the bridge	2	Closed waterfront linear greenery	3	Greenery slope
4	Closed linear greenery	5	Community center	6	Community greenery
7	Greenery inside the gated community	8	Ikea	9	Waterfront behind the flower market
10	Open waterfront	11	Flower market	12	Square inside the gated community
13	Shopping mall	14	Waterfront of eagle park	15	Commercial front
16	Tianlin central park	17	Greenery inside community	18	Space between two apartments
19	Urban living room	20	Commercial corner		

Table 1. Selection of 20 points of interest

(2) Accessibility of public space

Due to the establishment of closed residentials, the accessibility of public spaces within the Tianlin community is very poor, and many places cannot be arbitrarily passed through. And these public spaces are not systematic. Different gated forms of gated residentials make up most of the space in the area (Figure 6). Furthermore, only streets can be classified as real public space. Gates prohibit a free access for people to many spaces of the area. Therefore, the public space in which people living in the Tianlin community can operate is very limited. As seen in figure 7, there are different arrangements along the canal, from a well-design public spaces, frequently used, to a waterfront not accessible for public. Many residents living here have never even visited the waterfront space adjacent to Puhui Tong.



Figure 6. The accessibility of residentials

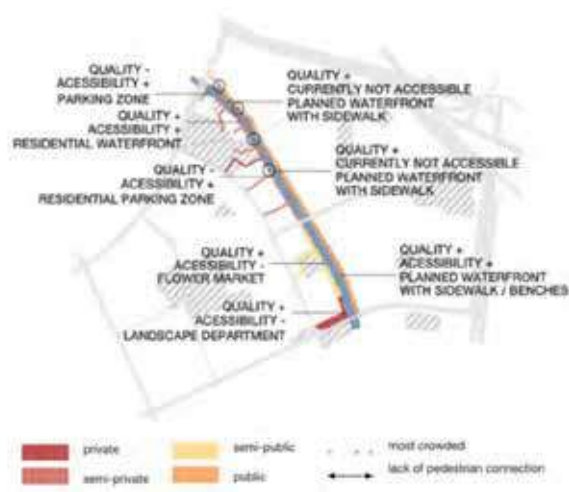


Figure 7. The accessibility of waterfront

(3) Summary of public space features

From our first impressions and further analysis of the waterfront seems to be a clear division and imbalance between different sides of the Puhui Tong which is the consequence of the built-environment but also lead different lifestyles: Older-Newer, Traditional-Modern, Permeable-Impermeable, Downscale-Upscale, Shared-Private, Local-Globalized. The types of public spaces within the Tianlin community are very abundant, but there are also large differences and low levels of integrity. On the whole, the frequency of use of public space is uneven, and generally low, as the vitality of space is truly low.

4.2 Concept—Social resource sharing:providing opportunities for the inhabitants to rediscover their place of living

4.2.1Goals and Vision

The concept of social resource sharing is a concept proposed for the closed community which bring about the separation of urban public space. Through this concept, the utilization rate of urban public space resources can be effectively improved, and the waste of idle space can be reduced. At the same time, it can also effectively activate people's awareness of the protection of the public environment, so that everyone can rediscover their place of living. In

other words, we would like to create a neighborhood that apart from meeting inhabitants' desires in terms of comfort also provides opportunities of a better life by getting them in contact with new experiences and people rather than mere existence (Figure 8).

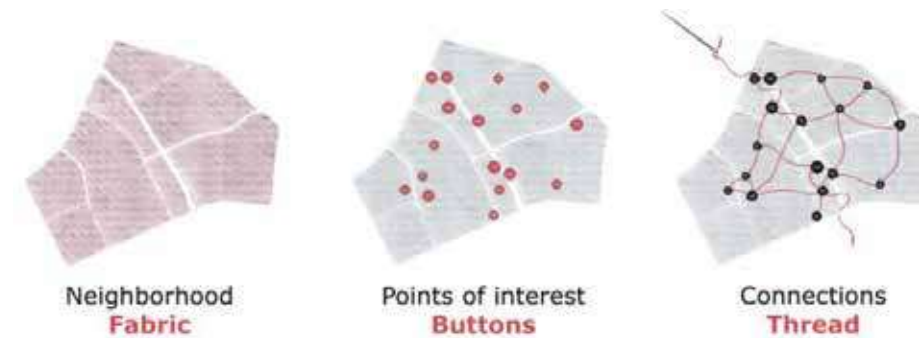


Figure 8. The metaphor of the concept

4.2.2 Methodologies

The site is totally divided into several parts, especially between west and east, as a consequence of the built-environment and different lifestyles. After the site survey, obviously the 20 buttons can be divided by two dimensions (Figure 9): One is the landmark, which are designed for all, attracting people also from outside (places embedded in public space). And the other is the urban living room, the place for the community to socialize, gather together (places embedded in private, semi-public space). After we evaluate the 20 points of interest from surface, identity, commerce, leisure and accessibility, we can visualize the site that need more design according to each of criteria. We find that the spatial attributes of different urban public spaces are quite different and lack close relationship with each other, which means that there is a serious problem of separation in public space in Tianlin community.

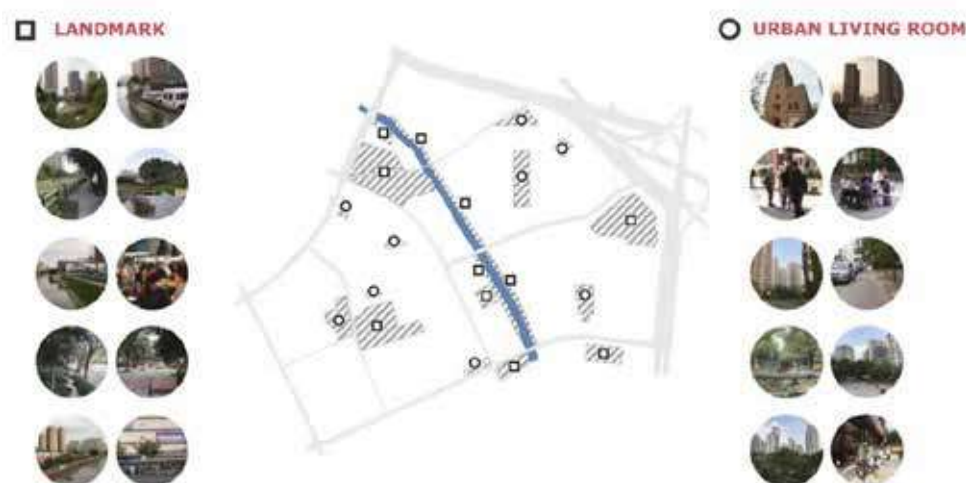


Figure 9. Two dimensions of the 20 points of interest

4.3 Reform Strategy for Enhancing the Vitality of Public Space in Tianlin Community

4.3.1 Connect: Enhance the correlation among public spaces

We can easily find that the area is not accessible everywhere and fragmented in different

parts. So what we would do is to provide new paths to link the twenty points in order to make the whole area more accessible, not only where there is a need for new design but connecting all the areas of the intervention.

According to the 5-minute life circle, we defined threads with the usage of grasshopper based on the 5 min walk radius (340m), and create a five minute network of local connections (Figure 10). The external manifestations of these connections can be bicycle lanes, walking paths, jogging paths or just a visual corridor, which in turn forms a relatively continuous and logically public space system. Then the next question is how to attract people to visit the 20 public spaces along the space path we designed, to rediscover the living space they live in.

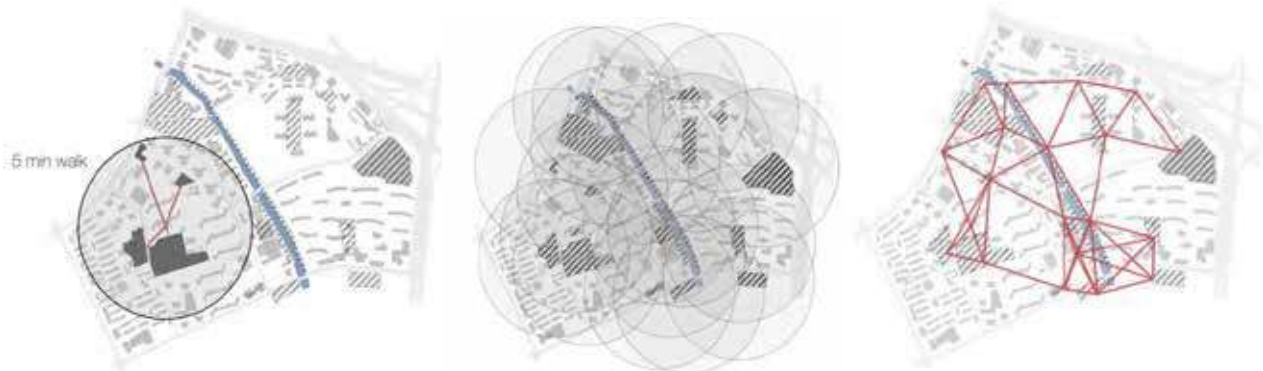


Figure 10. A five-minute network of local connections

4.3.2 Balance: Balancing the spatial attributes between public spaces

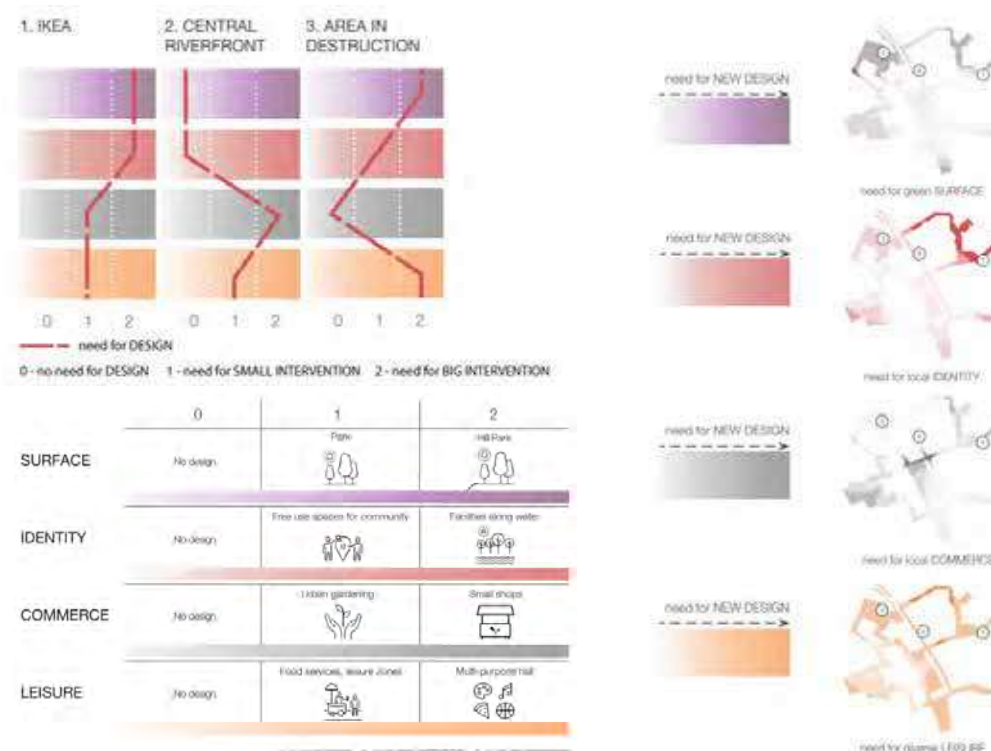


Figure 11. Reform strategies of balancing the spatial attributes between public spaces

The area has some spaces in need for certain qualities while there are other spaces which

have this corresponding quality. According to the evaluation of surface, commerce, leisure and identity we provide various equipments in these four categories to improve the wickest points so that there will be a certain balance between the various public spaces (Figure 11). According to the evaluation of the status quo, we divide the degree of each point needs to be designed into three levels: no need, need for small intervention and for big intervention. Take the central waterfront for an example, the current surface and identity is good enough, so what we need to intervene is to provide more commercial facilities to attract people to visit here. On the other hand, the quality of its leisure space needs to be improved, providing more leisure activities for people to enhance their public space, it can be food service and also multi-purpose hall. And for the commercial service of area in destruction is very good enough, but its scores of surface and leisure is really low, indicating that this area needs to improve its environmental function and quality.

5. Conclusions

The popularity of closed communities in China is the result of historical factors, social development and many other factors. Although, it satisfies the pursuit of safety and living environment quality within the community to some extent. Such development is limited and the negative effects on urban public space cannot be ignored also. If we compare the city to a giant organic organism, then the closed community can be regarded as a parasitic body with incomplete functions. Its wall is equivalent to a semi-permeable membrane, which filters and blocks the exchange of energy and matter. However, the closed residentials, must rely on external functional organs to function properly (Zhang and Wang, 2013)

Therefore, through the concept of social resource sharing, we continue to unblock the community and enhance the continuity of urban public space. This matter is related to the fairness and justice of the urban public space, but also reorganizes the separated social relations, allowing people to get out of closed work and living spaces, to promote interpersonal communication. These practices are of great significance to comprehensively enhance the vitality of urban public space, and hope to provide reference for the future development of Shanghai's public space.

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Recent developments in Cultural planning as an approach to build creative cities

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Abstract

This study is basically a review of works of cultural planning across the world and particularly relating it to the urban planning, and other disciplines related to urban planning. This paper discusses about the different definitions and dimensions of culture in the urban planning practices. From the definition of culture to inclusion of culture in urban planning which involves a multipronged approach. It has looked into this through published works and best practices followed in different parts of the world. Culture of place is understood through cultural assets which are classified into tangible and intangible. Implication of classification of these assets is looked upon through the lens of urban planning policies and different development sectors related to the planning and management of cities. Some of the examples from Europe, Canada, and USA and Asia are taken into consideration. At the end observations are analysed for the suitability of the cultural planning theory for adoption in urban Indian context and future possibilities.

Key words: Cultural planning, Urban culture, Creativity, Creative city

Introduction:

Out of some of the literature about cultural planning, first to mention is the 'idea that cities ought to refashion their economic and development policies and planning regimes with an aim to become 'creative cities' (Landry, 2000). Prof Landry is the one of the few instrumental people in globalizing the idea of creative cities and cultural planning, where he emphasized on investment in the field of cultural capital for natural development of cities. City's cultural capital would transform into creative capital and act as an engine of growth in that particular place. Cultural identity is a very unique to any place or a city. This Idea of identity though culture brings a healthy competition among the cities in terms of development of creative capital. Each city has the pride in its diversity of cultural spaces and cultural capital, the supposed 'creative class', who are imagined as a vital demographic group to capture as in-migrants, for the investment and innovation, they bring with them (Florida, 2002). This intellectual human capital and their contribution brings value to a place. The cultural transformation through migration of different people of different background, ethnicity, occupation, geography would help in building the new age cities with balance diversity in the time of globalization. This would help in improving the knowledge based economy of the city as it's a symbol of cultural tolerance and acceptance. Another critique would be that creative transformation in places fuel gentrification, especially in the inner city...as deindustrialization gains pace in European cities (Gibson and Homan, 2004). This is in contrast with the Florida's idea of rise of the creative class help bridging the gap between old and new. These debates look into the culture as a traditional art form rather than the generator of economy, in terms of sound human capital with creative benefits. Mr. Landry looks upon culture as the lifestyle of every citizen of a city, the way we live influence our surrounding also the vice versa hold true that surrounding influence the way one lives and shows creative abilities through cultural activities. This is where the planning of cities, cultural and creative capital art related.

Review and critique on cultural planning that represents a relatively straightforward urban planning, economic, social geography, observation and theoretically informed theories related to America such as Fordism and post-Fordism, agglomeration and cluster theory, etc. (Gibson and Kong, 2005). One can see idea of cultural planning and economy related to it is also an effort to brake from the shackles of industry driven cities. It might have taken some time to finding the gap of culture in the madness of industry driven cities. Recent literature shows this ideas of culture and cultural planning are gaining popularity in the middle of critiques. Especially economy of culture is a subject of brainstorming among scholars. Turning from normative cultural planning to other dimensions of culture and creative capital of cities (Markusen, 2006) Globalisation, industrial towns and post modernism, idea of creative class, these theories only look at city culture as capitalist driven commodity which cannot be held true, as the culture plays wider role in day-to day happenings of a city while helping its sustenance.

So First we will try to understand different meanings and contexts of culture and try to find out answers for some questions, Such as what is culture? What are the types of culture? What are the cultural assets and why do we need to plan for these cultural assets? What is cultural planning and creative city and how these both are related? How creative city concept evolved? Why creative industries have to be incorporated in planning policies? How to quantify Cultural assets and Creative industry's significance to analyse potential and opportunities? And will discuss about some Best Practices around the world for Cultural planning. Will discuss about the tools and techniques used and practiced around the world to incorporate culture in planning and Cultural tourism. The focus will be to address how it has to be done.

Definitions and Notions

Meaning of Culture as mentioned in Webster's dictionary, culture is originated from the Latin word "Cultura" Which means "cultivation". Roman orator Caesar described the word Culture as the "Cultivation of the soul". There are many other scholars gave a wide and acceptable definition of culture relating it with urban spatial studies. Culture is "Universal human capacity". (Taylor,E.B. 1974) which is a generalized definition, it signifies universality of culture. "Culture is the folk-spirit having a unique identity and culture is the cultivation of waywardness or free Individuality" (Velkley, Richard, 2002). This signifies the identity of a city is its culture which is nothing but the way of life of that place.

Broad Classification of culture:

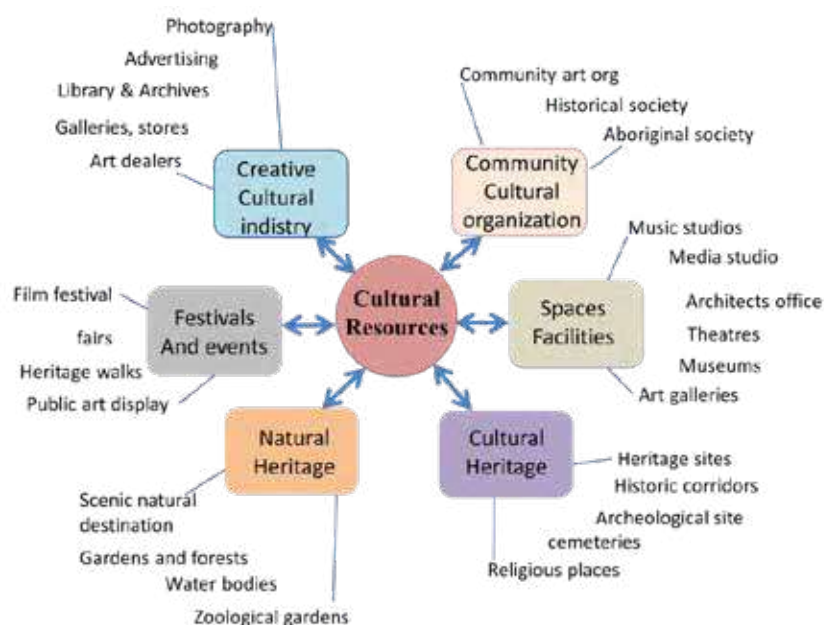


Figure 1: cultural resources.

The figure 1 is prepared based on different generic sources. Mainly from cultural plans of city municipal corporations of Chicago, Hamilton (Canada) and Barcelona. It shows enormous possibilities of inclusion of culture into urban planning process.

Culture can be classified Based on various parameters, The Basic and Broad classification can derived as shown in figure 1. Considering the culture a way life, Rituals, Values, Beliefs, Costumes, Laws, Architecture, Festivals, Gatherings, Natural Heritage, Native Industries, Spatial identities etc. can become cultural elements. Depending on the Definition of culture, these elements vary with the context of place and study. Culture can be elaborated differently with different knowledge domain. But broadly it can be divided as mentioned above, based on Geography such as Asian, European, American or African again considering smaller geographical areas as French, Punjabi, and Tamil etc. Likewise Different languages, Ethnicity, Wealth such as High and Low, Based on Different Time Period as Gothic, Indus valley, Greek civilization etc. And Last but not least the Power and Political Culture which can influence all other cultural aspects. For example Democracy, Communism, Monarchy, etc.

Cultural assets can be classified broadly into two categories that are: 1) Tangible assets - Physical artefacts, Built and Natural Heritage. It is also called as material culture. 2) Intangible assets - Such as language, customs, traditions, rituals, sense of place etc. Different techniques can be used to map the culture. Which, we will discuss with some examples and Best practices.

Relation between culture, creative city and urban planning.

So, what is a creative city? Charles Landry in his book “Creative City” says, “In simple terms creative city is the one where innovation happens”. The idea behind this is, there is always more creative potential in a place than known. This notion of creativity lies in the culture of opportunity given to every individual to be part of problem solving community of city. Every individual gets an opportunity to present his imagination and knowledge to address a problem of city one lives in. It can be addressing the transportation problem, Homelessness, improvement educations facilities, recreational facilities, conservation of nature and Heritage, or it could be a solution to hygienic living. Where these idea come from? The culture of the city and the community are reasons for the problems as well as solutions for place to develop. The idea of creative city is to bring in the existing potential of culture to the forefront of urban planning and development process. To establish the relation between economy, culture, other urban dynamics and policies. To be a creative city the soft infrastructure includes: A highly skilled and flexible labour force, dynamic thinkers, creators and implementers (Markusen,2001). So one needs the creative minds who would bring innovation in the field of urban sectors. Urban components Social and Physical infrastructure to works on need creative brains as the software, So this clarifies culture led creativity is crucial for better development of urban centres. Now let us look into the existing system where culture is omnipresent and how it is perceived in the current urban planning scenario

Recently Municipal organizations across cities have tried to inculcate a culture into their development schemes and have formulated definitions of cultural planning based on expert studies “Cultural planning is often explained as a strategic approach to urban cultural development; an approach that involves the ‘mapping’ and leveraging of a wide range of ‘cultural resources’ (arts, culture, and heritage)” (Kovacs 2011). UNESCO has approved two documents (2001 and 2005) on this subject. In 2001 the Declaration on Cultural Diversity, it emphasises on the acknowledging the cultural wealth of a place and it implication on diversity and human rights. In 2005, the Convention on Cultural Diversity, It advocates the need for diversifying the production means of goods and services to the local level rather than centralising it to some countries for short term economic greed and selfishness of capitalist countries.

The UN Habitat State of the World's Cities Report, 2004, notes, for example,

“...the growing trend of refurbishing and re-branding cities as cultural havens - a creative attempt by many local governments to revitalize economies in need of urban renewal mechanisms....Whether or not a city has a cultural heritage to draw upon, or merely a survivalist's need to succeed, banking on the financial draws of culture – be it artistic, historic, athletic or religious - has proved to be a blessing for many urban officials and planners... On the assumption that culture can be a motor of employment growth...”

UNESCO creative cities framework, 2012, classifies Cultural assets of a city into two broader categories that are 1) Tangible assets - Physical artefacts, Built and Natural Heritage. It is also called as material culture. 2) Intangible assets - Such as language, customs, traditions, rituals, sense of place etc. which by far now has been reflected in many scholarly works. Through available scholarly literature one can say that recently it is happening around the world. Many local governments are trying to address the gap of culture in the urban planning process to tap potential of culture in transforming urban scenario through cultural plans. To mention a few examples, Toronto, Chicago, Barcelona, London, Vancouver, Paris has cultural plans prepared for a period of ten to twenty years. Other cities in different continents such as Thailand, Singapore, Sydney, Doha local bodies have adopted mechanisms to include cultural assets into urban planning strategies.

The Barcelona cultural plan was envisaged in 2009, planned for 10 years. Underlines three goals 1) to create environment in a city which brings different communities together for inclusive progress 2) Ease of equal access to cultural places, goods and services 3) To encourage every citizen to express their ideas for the public problem solving. These goals bring in more number of people with different background and different development domains together which increase the cultural interventions in the development of the city. Often it talks about accessibility of more programs and facilities for all the citizens of the city. This is more of a Policy document outlining different schemes and programs for inclusiveness.

The Mayor's Cultural Strategy for London 2012 London cultural strategy emphasize upon six categories that are Education, skills, career, Infrastructure, environment and the public realm. *“...Education considered as strategic approach that helps to coordinate existing activities, build links between cultural institutions, schools and local authorities and raise awareness of the high quality provision on offer...”*. Skill based careers offer a wide range of opportunities in cultural sector leading to own business rather than youngsters opting for company jobs. “Great outdoors” initiative to improve public space, streets, water bodies, green spaces, Public art which would enable public communication and interaction are included as a strategy.

Chicago cultural plan 2012, Emphasizes on the broader civic impact of cultural activities and communication through culture, through community development programs for economic growth. Similarly Sydney's cultural strategy 2014, is sector based, the emphasis is given to cultural tourism and the tourist experience of the city. The entertainment industry is the main economic generator of the city's creative industries. So now look at the international framework provided by the United Nation's cultural arm, UNESCO, gradual progress in the field of cultural strategy and development relating it to urban planning and economics is apparent in the last 3 decades. Which can be substantiated by scholarly literatures.

The rise of idea cultural Planning in Europe and USA is acknowledged by number of academic works and also by some of the city authorities. Academicians and researchers have been trying to distinguish between

art policies of industrial towns and culture as the engine for the growth of a city. There evident is the difference between arts policy and idea cultural planning. It is often asked whether the cultural planning is not simply ‘a fairly traditional arts policy’ with another name (Stevenson 2005). This is a matter of discussion and critique since the early 90s (Kovacs, 2011) that how cultural policy is not merely related to arts it can be much more than that. It has been three decades since the idea of cultural planning emerged in contemporary world. Most of the research available on the topic is non empirical and based on mapping and available economic statistics. The advancement in terms of cultural asset mapping is limited to spatial mapping of tangible assets but there is not much advancement into how these result can be incorporated into existing development plans. The most of literature found seek to move away from the idea culture as art policy (Mills 2003, Kovacs 2011) to culture as an approach to build new cities where creativity of citizen help cities to develop. This clearly shows in spite of push for cultural led urban planning, urban policies have been adopting economy focussed cultural inclusion rather than cultural based urban planning approach.

Considering the Indian Scenario, the Union government has a Ministry of culture which are responsibilities limiting to Arts policy and conservation of historic monuments and Ministry of Urban development is totally a different set. All different departments at top government level work in isolation for example body responsible for conservation of monuments looks after monuments without any regards to the regional aspirations of the place those monuments are situated. The tourism department looks into the profit side of the monuments without considering the broader infrastructure and natural resource backing. This scenario is also seen in many other European and Asian countries. So the policies made by the central government serve as examples of city municipal corporations, even if local bodies have a better understanding of their cities. So the bottom approach for the policies regarding urban development is the need of the hour for cultural based development. Since the land is a state subject in an Indian Federal system, some of the states have passed different culture and conservation guidelines for the municipal local bodies. To mention few, Delhi urban arts commission, Jaipur heritage guidelines, Mysore heritage development plan, Ahmedabad heritage city guidelines etc. Most of these city guidelines focus exclusively on heritage conservation and tourism focussed development. However, good, these are for Heritage conservation since these do not emphasize on living culture as the heritage. Also urban planning bylaws and guidelines are prepared without due consideration of living cultural assets.

Possibilities in the cultural planning

Looking through the above literature, some of the basic questions would arise. Is there a framework for inclusion of cultural assets, both tangible and intangible in urban development process? What are the policy preferences are in place to consider culture as the driving factor not only as arts policy? Can we relate culture with spatial dynamics in city planning? Is there a method to quantify cultural assets so as analyse its impact on urban dynamics such as transportation, social infrastructure? Would culture help in better development of human capital in terms of Quality of life? Does Culture influence creativity leading to innovation, thus helping the development of a city into a better civilization?

Hypothetical idea of the relation between Culture, cultural assets, urban spaces, urban economy, sociology, Cultural geography, urban planning, governance mechanism, could broadly be established diagrammatically as drawn below in table 2. This leads to the next stage of the further research in the field of culture and urban planning.

The possibilities

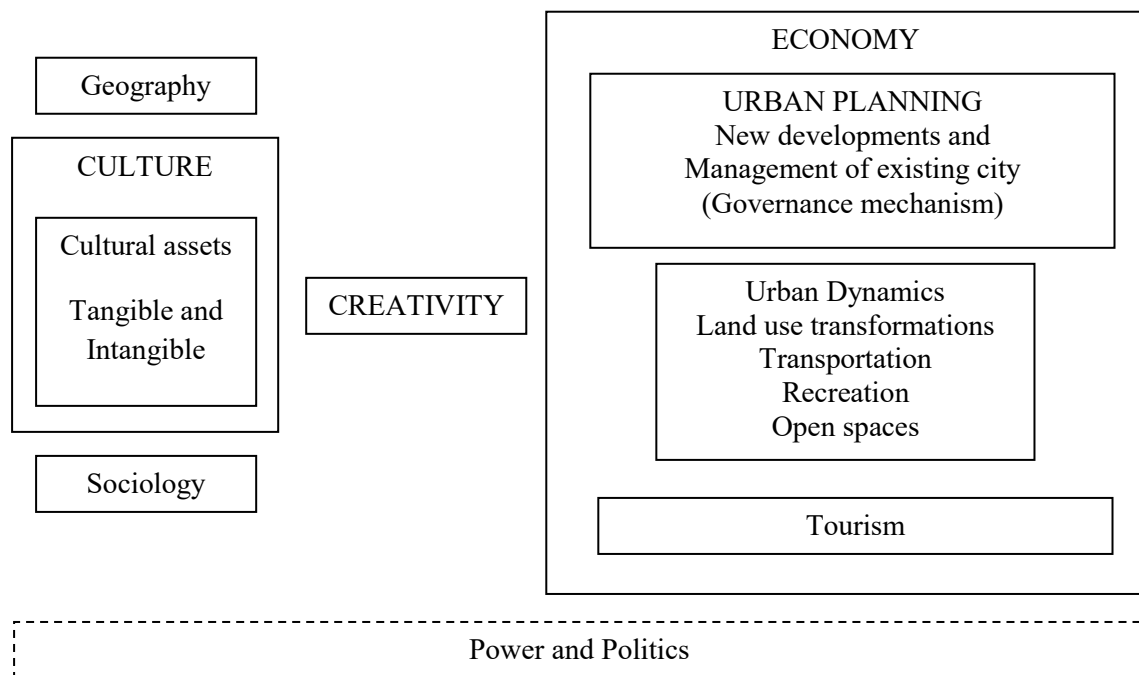


Table 2. The hypothetical relation between Culture and urban planning

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1. Tourism, public spaces and urban cultures

Recording, evaluating and management of tangible and intangible cultural heritage, through a decision-making multi-criteria analysis

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Abstract: Nowadays, we live and act in cities fulfilled with urban spaces, architecture and of course heritage culture, expressed by tangible and intangible assets. The last decade, the economic crisis, shows that cities and global heritage is demolished, damaged or in danger. This paper tries to identify culture in multilevel way, through space to global. As tourism is concerned with cultural (culture routes, touristic heritage attractions cities), this project aims to record culture from object to plan, including tangible and intangible assets. The paper, proposes a table, separated in tangible and intangible categories such as buildings, oral traditions, biodiversity etc. That's a first step of a fully record of the heritage of a city. In a step below, criteria indicators are placed in each category, concerning to a decision-making analysis called MAUT. With this system each city can have a record, evaluation and knows which culture assets must save, manage, promote or protect first. The mainly idea of this project is to propose a new innovated system about urban culture, including multilevel heritage analysis and a new management system, which can be used for tourism, urban actions etc.

Keywords: tangible assets, intangible assets, multicriteria analysis, culture

Introduction

Every city is a place, fulfilled with motivation, emotions, people, has a past, a present and a future time and energy. In this concept of the three parameters, time, place and energy, we have the rhythm of a place, grouped into programmed events, where the above-mentioned triptych, interferes with alternations, repetitions, etc., through the dynamics of each place. Thus, urban spaces are transformed into spaces of action and manifestation, into new spaces that are completely mutated. Static urban space is not always the same and commonly used. It gives its place to new events, structures and explorations, new possibilities of opening, producing new rules and fluxes of interaction within these constantly changing urban entities. affect the vitality, publicity and sharing of urban spaces (Antchak, 2018).

The above description refers to the city and automatically creates an inner and outer contour space, in the form of repeatability, ephemeral, etc. Each form has a shape and limits its content. Tangible forms are all dimensional, as a non-dimensional form is not meant in the intangible world. Each form has a center on which its composition depends. Such a form is also the place, expressed mainly through the city. Every new form-city-place we are in for the first time, invites us to meet it, so that we can then

describe it and categorize it. To get to know a new place, we use an experiential personal experience. We carefully examine and observe to determine its characteristic features, details and properties (structure, form, etc.). So, we know through experiential experience and personal judgment, we form one and then we know it to others.

In this perspective its city has a past, a form and it's a new experience both tangible and intangible. So, its city has a culture and heritage to show, to protect and manage. Culture and heritage are two mean full words, acting in everyday life. Beginning by the theory that culture is much more than the legislation of it and the main conventions and declarations, culture is everywhere. In the way we speak, we form our cities through the years, we act, laugh or the customs we have. In other words, culture is an attempt to preserve and save the old without affecting the progress of the cities and the future of them. Heritage is the transfer, of the culture, from generation to generation. Is more than ethics but is included in culture. Culture is a completely expanded and tricky concept that is constantly being renewed, revised and incorporates new inputs of interpretation from mankind, art, folklore, architecture, etc.

Besides, the word "polis", from which culture emerges, is a place of speech and myth, where each city creates its own speech and myth, at a reasonable and spiritual corresponding level creates an identity. Cultural identity, is something wider than culture, is the result of a collective historical experience of many fields, creating a common value set. The coexistence of the people, in which this value and social ensemble are composed, is the creation of a city, a place (Stefanou, 2000). As a space of interaction and experience of a value set, a city is always an "on the move" object, which brings together citizens and through their co-operation helps to develop the individual consciousness that leads to the collective consciousness of the place.

In this paper, and after this introduction, we will try to describe more extensive, the meaning of tangible and intangible cultural heritage and propose a new system based in multicriteria analysis for the purpose of protecting, recording, evaluating and managing the cultural heritage.

Tangible and intangible cultural heritage

First, it's useful and needed to identify the meaning of tangible and intangible culture. According to the dictionary of the Greek Language Center, culture is: *"all the material, spiritual, technical achievements and performances that are the result of man's creative powers and abilities and which are expressed historically in forms and forms of organization and action of society as well as the creation of (material and spiritual) values "* We see, therefore, that culture is treated as one, initially, a set of incriminating categories at a practical and spiritual level, as it concerns techniques but also forces and capacities that act through society. Two sets of cooperation, one related to the result of the forces and one in relation to the organizational structure of society. The basic source of the two systems and sets, man, the driving parameter and the entity of all the elements, the creator of civilization, in a perpetual continuum and evolution of life. These two forms created through the years the tangible and intangible cultural heritage.

The tangible heritage concerns to material culture, as buildings, monuments etc and has a variety of legislations, conventions beginning after the Second World War, after a huge number of monuments, treasures and cultural elements lost or destroyed. So, the prevention, the legal framework and the

protection were an immediate need. Tangible heritage, from the protection of the individual monument, to the protection of the perimeter environment and then whole historic and traditional settlements, is commonly known in cities and worldwide. The protection of intangible heritage started many years ago, as intangible assets are more difficult in understanding, recording and management.

The term "intangible cultural heritage" is considered to represent an "English translation" of the Japanese expression "*mukeni bunkazai*" (Lenzerini, 2011). In the Western world, the word "intangible" according to the Dictionary means: *a. Which does not have a material existence; ANTI Material: The spirit is immaterial. Yields and intangibles. b. (for a material body) so very transparent, ethereal, as if it were immaterial: the intangible forms of Byzantine hagiographies.* We observe that this word is given the essence, the transcendent, the non-material body, and the association with the spirit is important. In the form of linking intangible civilization, we begin by establishing and adopting the view that culture is a product of humanity, structured and shaped, taking shape over time, and the resources of that were exemplified by culture. At an early stage, all assets were intangible. The first legislation about intangible culture was the Unesco Convention on the "*Safeguarding of Intangible Cultural Heritage in 2003*" defines intangible cultural heritage as: "*practices, representations, expressions, knowledge and techniques - as well as the tools, objects, handicrafts and cultural sites associated with and which communities, groups and, where appropriate, individuals recognize as part of their cultural heritage*" (Article 2 (1)).

The Convention provides for the creation of two lists: (a) the Representative List of Intangible Heritage and (b) the Inventory of Immature Heritage in an Emergency Preservation State for expressions that are on the verge of extinction or significant alteration. (Unesco, 2003, para. 11-28). Greece ratified the Convention in 2006 and has so far incorporated into the "*Representative List of the Intangible Cultural Heritage of Humanity*" five elements of intangible cultural heritage. Specifically:

1. In 2013, Greece, along with Spain, Italy, Croatia, Cyprus, Morocco, Portugal, have enlisted the Mediterranean Diet as an expression of the intangible Cultural heritage that characterizes the Mediterranean.
2. In 2014, the know-how of Traditional Masticulture in Chios was placed on the same list.
3. In 2015, the Tinos marbles crafts
4. In the year of 2016 the Momorous, a custom of Kozani, Western Macedonia, was included in the catalog
5. In 2017, the registration of Rebetiko, folkore Greek music, was approved
6. In 2018 Greece and seven other countries (France, Switzerland, Spain, Italy, Croatia, Cyprus, Slovenia) joint the catalog, for the Art of Xerolithia, which is a technique of buildings wall stones without cement and binder.

According to those, we believe that cultural heritage is initially recognized as a place and then identified in it, initially its intangible elements and subsequently the materials, for their efficient management (Pocock et al., 2014). The main correlation of intangible and material culture is the realization that culture as a conquest was always at the same time immaterial and material, and that

this separation is for mainly state reasons and that these two resources can be readily understood by both experts and non-experts.

Based on all the above considerations, we conclude that culture, in fact, is commonly a dual nature of intangible and tangible assets, that are involved with varying degrees of intensity in each resource. This awareness, with the parameters of the resilience and breadth of these resources, can lead to a better management where intangible and tangible assets are intertwined and interdependent.

Types of culture

Culture has many different expressions and forms that have emerged in the course of time. As the first goal of this paper is to record resources, tangible and intangibles, this chapter is an attempt to register multiple categories, with the aim of creating a repository of tangible assets, separated in natural and man-made assets and intangible assets. This repository will assist in creating the registration system, which is discussed in the next chapter.

We notice that from the beginning, the world consists of an immaterial substance which is becoming matter. Starting with the natural resources, the earth's elements, the green places, the blue surfaces and thus the biodiversity that create the environment and the space in which man developed and began to design his place. They are the original components of creation, without which civilization and man could not evolve. Unesco for the creation of 22 development indicators defines certain categories for the listing natural heritage. As a natural heritage, it states: (a) physical characteristics consisting of natural and biological formations or groups which have an excellent value of aesthetic or scientific value, (b) geological and geographic formations and precise demarcated areas, which are the biotope of endangered animals and plants of exceptional value in terms of science or conservation. However, this classification is somewhat limited. So, in order to make a various typology of nature resources, we put analytical categories of the natural resources, that a scientist finds in a place such as: ground morphology, geotherm, seas, lakes, waterfalls, etc.

Secondly, we continue with the typology of the man-made assets. It could be argued that natural resources are the activating factors of creation, the background, the raw material that man has ever intervened mildly or more vigorously, composing what we call man-made assets that include intangible and tangible cultural assets. The cultural heritage of mankind is based mainly on man-made assets, as it becomes more manageable and comprehensible through the creations of man.

The most well-known and understandable tangible and man-made cultural resource and one of the most important forms of cultural heritage is the architectural heritage, which resides in a single or cluster of buildings and ecclesiastical buildings with influences from different periods. But besides the city and the protected elements, the countryside and its elements are also important for the cultural heritage of a place, whether they are crops, fields, green areas, ie natural elements with little human intervention, or human activities such as livestock farming, beekeeping etc. The building blocks of a city or countryside area are the smallest unit of understanding, as the building is the evidence of the history of a place as it is depicted in various forms. Every period expresses something different and, over the years, it is judged to be pleasant or unpleasant with the realization that it can change over time. The museum is an artistic and educational space. It collects the "worthy" or "saved" material elements of the past. Moreover, educational buildings, as a knowledge place, is another powerful

avenue for learning the heritage. It takes place from childhood and lifelong, through schools, spectacles, and museums that are powerful pillars of civilization. From the point of view institutions and museums, in the term that Hjerppe used in 1994 as "Memorial Institution", covering institutions, museums, organizations etc. trying to preserve the heritage, prevailed (Solanilla, 2008).

Another example of cultural heritage in building is the industrial heritage consisting of building structures and equipment, objects of industrialization and the industrial revolution that emerged first in Europe and then in the rest of the world. A major issue for buildings in the city and the countryside is the architectural remains, which are scattered existing buildings in a poor or desolate state that have been abandoned. They are important or humble remnants of a period (Dillon, 2013), which play an important role in the historical continuity and course of a place, as well as in the whole of a city or nation. Finally, important for each place is the archaeological heritage, the archaeological sites and excavations, elements of whole cities, that have been found through the years and smaller elements of the history of a place such as heirlooms, books, costumes, utensils, ecclesiastical etc.

Those and some more categories were used to create the categories of human creations in the category of tangible assets. In order to classify the intangible cultural heritage, the categories of the 2003 Convention, were used, for reasons of plurality and because intangible is remaining a difficult and non-well-known research field, as the paper already shown.

Development of the multicriteria analysis system

In this chapter, we will analyze the system of recording and evaluation, as it was formulated in the context of the research and the methodology of approaching the present dissertation. For the creation of the system, the original structure of thinking and creating this, we form it in the context to be a simple, easy-to-manage system that would be in direct use and provide valid and optimal results. Thus, the steps to identify this are the following:

1. After the analysis of multicriteria systems, these tests in the context of recording and evaluating the intangible and material cultural heritage of a place, for the selection of the best method
2. Develop a general philosophy of the system, in terms of its purpose, content and outcome
3. Development of the system in two distinct stages. These stages are recording and evaluation
4. Organization of the two stages with their constant interrelationship
5. Create an evaluation system using mathematical models, analyzed through gradual milestones
6. Explanation and creation of a manual, which is presented in this chapter

The first assumption of this paper, which is defined at all stages of the system, is that in this system, throughout the writing process, we used the categories of the chapter :types of culture and all our assets tangible and intangible are legally understood as the cultural heritage of the place and engraved in the collective consciousness of individuals as part of it. The notion of ownership or shared heritage

between two places has been affected in the context of interpretation, performance and creation of the system. This happened, because of the multiple issues that this option creates, as we think that it will be caused misinterpretations or system misconceptions. Thus, in the two distinct stages of the recording and evaluation of the multicriteria system, to be interpreted below, only the cultural objects of the site are selected at the registration stage, while at the evaluation stage targeted criteria are set in each category. The system is easily understood by four main steps.

1. First, we created a table, separated in tangible and intangible with the analyzed categories etc. That's a first step of a fully record of the heritage of a city.
2. In a step below, criteria indicators are placed in each category, concerning to a decision-making analysis called MAUT (Multiple Attribute Utility Theory).
3. Each criteria has the same calibrated system and the user, following the analysis evaluates the criteria from 0 to 4, regarding to the culture significance.
4. After this, easy mathematical models are used, and the system is evaluated, giving the culture significance by number.

Conclusion

The aim of this paper is to clarify the terms of tangible and intangible culture to redefine them and to class them by introducing the concepts of the environment, humanity and society into the context of culture. This thesis is a doctoral thesis, so its analysis is expected to be completed and attributed in two years from now. The creation of a multicriteria system is a new attempt to link civilization with a system of evaluation and recording which has not been used so far. Multicriteria systems are usually used in cultural programs for protecting threats, risks, analyze materials of buildings etc. With this proposal system each place can have its own record of tangible and intangible culture, which it can be evaluated. In this way, the government, groups or operators of culture or anyone involved in cultural management can manage, save, and know through a calibration the importance of the assts of each place.

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The Research on Formation Mechanism of the Rural Red Culture Tourism Industry Cluster and Application

-- Reflections from the Comparative Analysis of the “Revolutionary Resort” Xibaipo Town and “Green Dot” Dashi Town

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Abstract: Red culture tourism has emerged as a new theme tour in China. Developing red culture tourism industry is a special way to activate economic and revitalize cultural for the villages in old revolutionary area. In fact, when red tourism intervenes in rural development, some villages can form red culture tourism industry cluster. In addition to the villages' own resources, social network condition and market demand, the policy regulation and planning guidance behind are also important. By taking “Revolutionary Resort” Xibaipo town as an example, whose red tourism have developed into a rather mature stage, we firstly studied the overall distribution of the red tourism industry cluster, and analyzed the formation mechanism. Then, we used Xibaipo town as a comparison case. With the help of the National "Green Dot" Rural Revitalization Competition platform, we analyzed the practical problems in the development of red tourism resources in the Guangan village, Dashi Town, Sichuan Province, and put forward the industrial cluster model of "Cultural Innovation" and "Scientific and Technological Innovation" to promote the benign development of rural agriculture, society and ecology. Hope to provide a new idea about the red resources' development for the villages in the old revolutionary area in the future.

Keywords: rural revitalization; red culture tourism industry cluster; formation mechanism; comparative analysis

1 Introduction

Rural development is important in China now. In the revolutionary era, as China took the special revolution road of “urban encircling the city”, the country has preserved many valuable red cultural resources. Furthermore, in the new era of knowledge economy, the development of industrial clusters not only exists in the manufacturing industry, but will also emerge more in the service industry. So, the development of the red tourism industry cluster is also the new way and idea for the future economic and cultural revitalization of the rural areas. This paper established an analytical framework for the formation mechanism of red tourism industry clusters, and analyzed the Xibaipo, a “Chinese revolutionary holy site” with mature red tourism industry clusters, and compared it with Guangan Village, which also has red cultural resources. We hope to propose appropriate countermeasures for the development of the red cultural tourism cluster in Guangan Village in the future.

2 Literature review

2.1 Industrial cluster

In 1990, Michael E. Porter used the concept of "industrial cluster" for the first time in **The Competitive Advantage of Nations National Competitive Advantage** to describe the group formed by enterprises and related institutions that are close in space, have business relevance and are linked together through mutual communication and complementarity. With the development of knowledge economy and the improvement of people's consumption level, enterprises have higher and higher requirements on technology. Traditional industrial clusters' way of reducing costs through specialized division of labor already cannot satisfy the production demand. Innovation becomes the key factors to survive in the competitive environment (Wang, 2007). Under this background, Chinese scholars put the innovation development of clusters or the innovation of industrial clusters on the agenda, and have more clear division between the industrial cluster and industrial agglomeration. Agglomeration is the process of actual operation, the cluster is a phenomenon form or strategic method (Wang, 2007). At the same time, the tourism industry agglomeration with enterprise sharing behavior and rooted in local enterprise network is real industry cluster (Feng and Miao, 2009, Yin and Liu, 2010). Later, we have a comprehensive understanding of industrial clusters. The essence of industrial clusters is not only an economic network, but also a social network (Tian *et al.* 2013). It is not only geographical agglomeration, but also contains the logic of knowledge, production and sales (Liu, 2011). As seen in Table 1.

Tab.1 Analysis of industrial clusters in the age of new knowledge economy and traditional industrial clusters

Category	Traditional industrial cluster	Industrial cluster in the era of knowledge economy
Attributes	Economic.	Economy, society, culture, etc.
Aims	Costs cutting.	Continuous innovation to meet consumer demand.
Method	Professional division of labor, mass production.	Relying on innovation networks, corporate interaction and division of labor.

2.2 Tourism industrial cluster

Although there is no clear answer about whether the cluster concept can be applied to tourism industry, there are many supportive views. In 1998, Michael E. Porter affirmed that industrial cluster theory can be applied to the tourism industry, and called tourism, agriculture, chemical industry and textile industry together as the four industries having the most obvious industrial cluster phenomenon. Earlier in our country, Long is an early scholar who put the concept of industrial cluster into practice in the field of tourism. He pointed out that the cluster in specific geographic areas should include a series of entities closely related to the leading industry, and points out that in the case of Yunnan the main body at the core of the ecological tourism cluster is nature reserve (Long *et al.* 2002). Judging from the economic development situation, it is an inevitable trend for industrial clusters and trade clusters to develop into service industry clusters, and industrial clusters will blossom everywhere in the service sector (Qian, 2007). on the other hand, for the need of the development of tourism industry, rural tourism industry is highly correlated and needs to establish a huge network organization through industrial agglomeration(Liu,2009). In reality, after nearly a decade of development, rural homestay clusters, such as Moganshan homestay industrial cluster and Huanggongwang suburban village homestay clusters, have been developing rapidly in recent years (Zhu, 2018). The author thinks that the above cases and studies can show that tourism industry cluster is established and will have great development potential in the future.

As for the definition of tourism industry cluster, it is generally agreed that the tourism industry cluster should have the core tourism attractions, and the tourism-related organizations should concentrate in the region, gathering together through the complex network relations (Shen, 2011, Ma and Lu, 2014), and Ma highlighted

the importance of the creativity, and points out unlike manufacturing longitudinal economic ties form the upstream and downstream of industrial agglomeration, and horizontal industrial agglomeration of the same kind pursuit of scale economy, tourism industrial cluster is a transverse combination of different forms of industry, demand and the tourism market platform shared are the keys to connect production factors (Ma and Lu, 2014). As seen in Table 2.

Tab.2 *Analysis of tourism industry clusters and manufacturing industry clusters*

Category	Manufacturing industry cluster	Tourism industry cluster
Motive force	Scale production, industrial division of labor, innovation.	Core attractions, shared market platforms, regional brands, policy promotion, innovation.
Method	Horizontal similar industry agglomeration, vertical economic upstream and downstream industry agglomeration.	Horizontal accumulation of industrial based on tourism demand.
Development trend	From mature to transformational development.	From budding to vigorous development.

2.3 Rural tourism industrial cluster

As for the definition of rural tourism industrial cluster, it is a consensus that tourism related enterprises and organizations satisfy tourists with rural culture and resources to let them experience rural culture, landscape and rural life gather in rural space (Shen, 2011, Xu, 2013). Furthermore, innovation of rural tourism industry cluster is important. (Xu, 2013). Conceptual Comparison of Industrial Clusters, Tourism Industry Clusters and Rural Tourism Industry Clusters can be seen in Table 3.

Tab.3 *Summary of the industrial clusters, tourism industry clusters and rural tourism industrial clusters*

Concept	Characteristics
Industrial clusters	Complete industry chain, industry scale, sharing behavior, dependence on innovation and local social networks. Existence; It is the inevitable trend of economic development.
Tourism industry cluster	Core attractions, cater to tourism needs, network organizations, shared tourism market, regional brands, innovation.
Rural industrial cluster	Taking rural culture, landscape and life as the core resources to cater to the needs of tourism, in order to share the tourism market and regional brands, rooted in the innovation of local social networks.

2.4 Formation mechanism

Concerning the important driving force for the development of the rural industrial cluster, the social capital is the key. During the knowledge economy age, the interaction of enterprises, social network and the symbolism of the products for industrial cluster development is particularly important (Wang, 2007), Tian studies the current situation of the social network of Kashgar tourism industry cluster (Tian *et al*, 2013). Huang comprehensively expounds the formation mechanism of rural tourism industry agglomeration in Guangxi from the perspective of spatial agglomeration, social network and economic externalities (Huang, 2014). Liu pointed out that social

capital is the micro-core driving force of rural tourism industry cluster, and he studies the three cluster evolution models of the rural tourism industry cluster in Hangzhou, embedding and converging. He valuably points out the important role of the government in its operations (Liu *et al.*, 2015). On the other hand, the driving force of economic is also very important. The sharing market and regional brand are the two key development factors. Ma explained the profit maximization model from that perspective of economics, and took Baiyun Mountain in Song County as an example to summarize the formation of the tourism industry cluster into four stages: "factor improvement, brand promotion, market sharing, and business agglomeration" (Ma and Lu, 2014).

2.5 Development mode

Based on Chinese conditions, scholars have given suggestions on the development of rural tourism industry clusters. First, Long believes that the village itself needs to improve the literacy of knowledge and culture. it must learn how to "self-rescue" and improve the utilization efficiency of the resources invested from the angle of social capital's initiative (Long *et al.* 2002). Followed by Qian's view about for the industry's own demand, China's rural tourism clusters should form homogenous services, mainly resort-based rather than tourism-oriented services, and the new industry cluster is mainly promoted by the local government in the future (Qian, 2007). At present, the rural public awareness is weak and the relationship is relatively loose. Perhaps the villagers can spontaneously lead to the rise of the rural tourism industry, but governments' intervention and operation later on is indispensable (Shen, 2011), and there is also a research perspective on the optimization of rural tourism industry cluster structure, which shows the important role of government in innovatively transforming resource-dependent agglomeration (Xu, 2013).

2.6 The driving role to rural development

At the economic level, rural industrial clusters can drive the development of the rural economy and increase the income of the villagers. From the perspective of resources, it can strengthen the overall landscape of the village, which is conducive to the rural areas gaining competitive advantage in tourism development (Shen, 2011). Especially, it can effectively reduce the phenomenon of "tragedy of the commons" of tourism resources (Han, 2016). From a social perspective, rural tourism industry clusters can further build and extend social networks in rural areas due to their comprehensiveness and openness, which is conducive to the future self-organized entrepreneurial behavior of villagers (Liu *et al.*, 2015).

3 Method

3.1 Basic principles

Through the preliminary theoretical research, the five aspects are the selected—regional brand, cluster component, resource level, social network and government regulation—as the conditions for analyzing the basic formation demands of the rural tourism clusters in China. As seen in Figure 1.

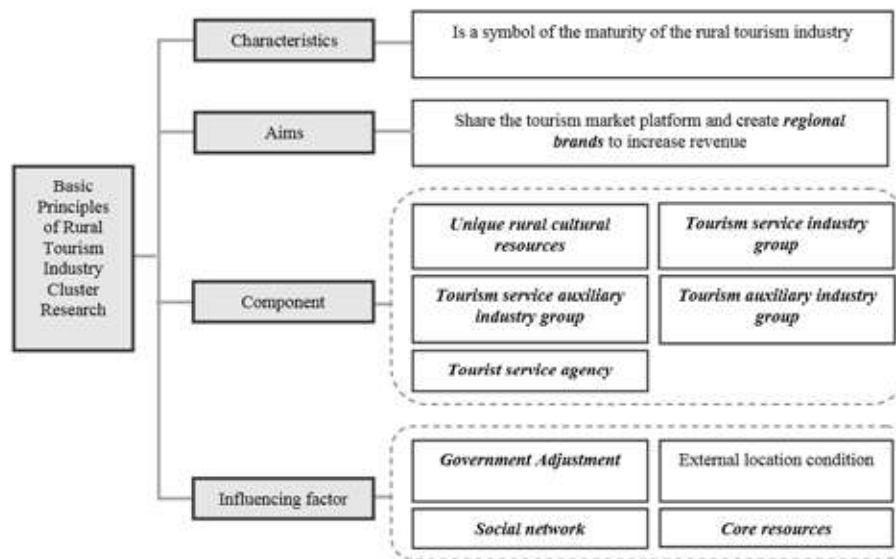


Fig.1 Basic analysis conditions of China's rural tourism industry cluster

3.2 Research framework

In terms of research mechanism, Porter's competitive advantage theory and diamond model are reasonable method from the perspective of consumer (Bao and Fang, 2006). Yang used the Michael Porter Diamond Model selecting unique elements—the rural cultural landscape, tourism service industry group, tourism service auxiliary industry group, tourism auxiliary industry group and tourism service organization to further explained the rural tourism industry cluster (Yang, 2008). It is believed that for the development of rural tourism, the perspective of consumers' needs is very important. So it is a very classic and correct choice to select the Michael Porter diamond Model for research. As seen in Figure 2.

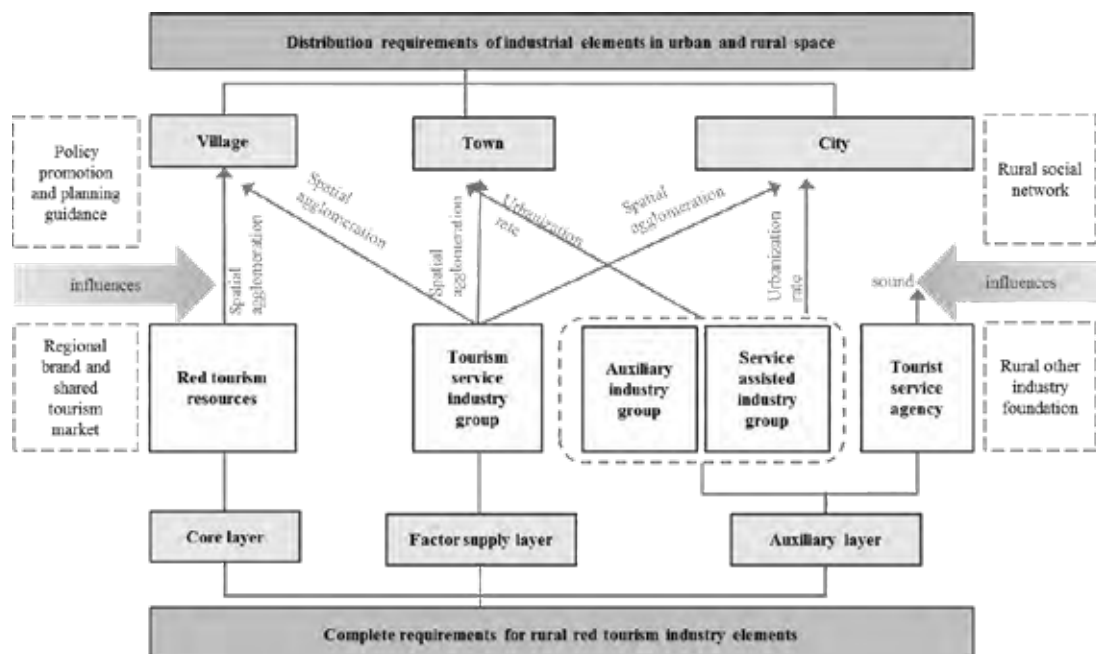


Fig.2 Analysis framework of rural red tourism industry cluster mechanism based on Porter Diamond Model

The study considers that the rural red tourism is different from the general rural tourism industry. It is reflected that its red tourism resources is the core, it relies heavily on government policy support and planning guidance, and rural industrial facilities can be shared with other rural. Therefore, adjustments are made on the basis of rural tourism industry cluster theory. Firstly, the necessary elements of the formation of the rural red tourism industry cluster are decomposed into three parts: core element layer, supply layer, auxiliary layer, and the elements are implemented in the three spatial scales as city, town and village. Judging whether the red tourism cluster in the village of Xibaipo is formed by these three spatial level elements. Secondly, through the interpretation of important policies, development history and the comparison of the industrial status of surrounding villages, we consider the reasons for the formation of the original red tourism industry cluster in Xibaipo town. Finally, under this framework, we made a comparative analysis with Xibaipo to judge the conditions and shortcomings of Guangan Village to develop the red tourism industry cluster in the future, and proposed countermeasures.

4 Comparative analyses

4.1 Xibaipo town, "revolutionary resort"

4.1.1 Basic information

Xibaipo town, located in Pingshan county, Shijiazhuang city, is one of the five revolutionary holy places in China, and it is a dual-excellent area for developing red tourism and rural tourism (Tian *et al*, 2016). **The Master Plan of Big Xibaipo (2011- 2020)** has determined the geographical concept of the Big Xibaipo, the space scope contains five towns, two villages and Gangnan reservoir in Pingshan county (Xie and Liu, 2013), Xibaipo Town is a tourist town dominated by red cultural resources. So we identify Xibaipo Town as the main spatial scope of this study. As seen in Figure 3.



Fig.3 Township distribution map of Xibaipo town area Model

Xibaipo town has jurisdiction over 16 administrative villages, 28 natural villages. The town government is located in Chenjiayu village. Xibaipo town is 40 minutes away from Pingshan county and 1 hour away from Shijiazhuang city, which has very convenient transportation. Therefore, the research objects of "City" are

designated as Pingshan County and Shijiazhuang City, "Town" is Xibaipo Town, and "Village" is 16 administrative villages.

4.1.2 Judgment of the red cultural tourism cluster

The core element layer is analyzed from the distribution of red resources. Three core red resources groups are formed in the Xibaipo town area, namely Xibaipo town center-Xibaipo village-Dongpo village group, Gaijiatun village-Chenjiatun village - Jiayu village - Baili Village Group and Liangjiagou village - Beizhuang village Group, followed by Nanzhuang Village with the former site of the Organization Department of the CPC Central Committee. As seen in Figure 4 (left).

The supply layer analyzes the distribution of tourism service industry group. From the four aspects of hotel, catering, convenience store and parking lot, there are actually only Dongpo village, Xipo village, Chenjiayu village, Liangjiagou village-Beizhuang village formed a tourism service industry group. There is no service industry distribution in Gaijiatun village-Chenjiatun village-Jiayu village-Bali village group and Nanzhuang Village with red tourism resources. As seen in Figure 4 (right).

The auxiliary layer is analyzed from the urbanization rate and the service of tourism institutions. In terms of urbanization rate, the urbanization rate of Shijiazhuang City in 2018 is 63.16%, and the urbanization rate of Pingshan County in 2017 is 51%, indicating Shijiazhuang and Pingshan County are both now in the stage of urban and rural integrated development, public finances are strong, the gap between urban and rural public services is small, and the city has greater capacity in assisting rural(Zhao *et al*, 2016). Therefore, for the villages of Xibaipo Town, Shijiazhuang City and Pingshan County are both Can provide some auxiliary support for it. In terms of tourism service agencies, Xibaipo is operated by the Xibaipo Scenic Area Management Committee and the tourism service agencies are officially operated.

In general, the urbanization rate of the cities around Xibaipo town is relatively high, and the scenic spots are operated by regular tourism institutions, indicating that Xibaipo Town are qualified in the auxiliary layer. Combining the core elements and the supply layers, Dongpo village, Xipo village, Chenjiatun village, Liangjiagou village and Beizhuang village meet two conditions at the same time, which can be preliminarily judged that these villages have formed a rural red tourism industry cluster.



Fig.4 Cluster map of red scenic spots (left) and tourism service industry (right) in Xibaipo Town

4.1.3 Policies and development incidents

In 1935, when the Gangnan reservoir was built, many villagers from other places moved to Xibaipo town, forming the migrant village. The social network of the village was unstable, and the development of industry

and agriculture was restricted by the terrain. The whole area lacks vitality. In 1955, Hebei provincial museum, together with the local government, began to prepare for the construction of Xibaipo memorial hall. Xibaipo village and Dongbaipo village began to develop (Cheng and Cheng, 2013). In 1956, Xibaipo Township (Chenjiatun village) was gradually expanding. Construction of Gangnan reservoir started in 1958, completed in 1962. As the main source of drinking water in Shijiazhuang and the capital Beijing, Gangnan reservoir instead of providing valuable waterfront space for the development of Xibaipo tourism, it has imposed strict restrictions on its development and construction (Tian *et al*, 2016), which is also the reason why the county in the northeast and southwest of red scenic area has not been developing red tourism related industries. In 2010, Pingshan county put forward the construction of "Big Xibaipo" target in order to speed up the pace of urban and rural integration, and proposed the construction plan—the Xibaipo, Dongbaipo, Liangjiagou and Chenjiayu the four administrative villages merging into one in the heart area, On both sides of town center building three key village, to strengthening radiation level of red tourism cluster in the center and to promote the development of village in the two-winged (Yan *et al*, 2010). It is hopes that the new residential construction is combined with the local rich ecological tourism resources. As seen in Figure 5.

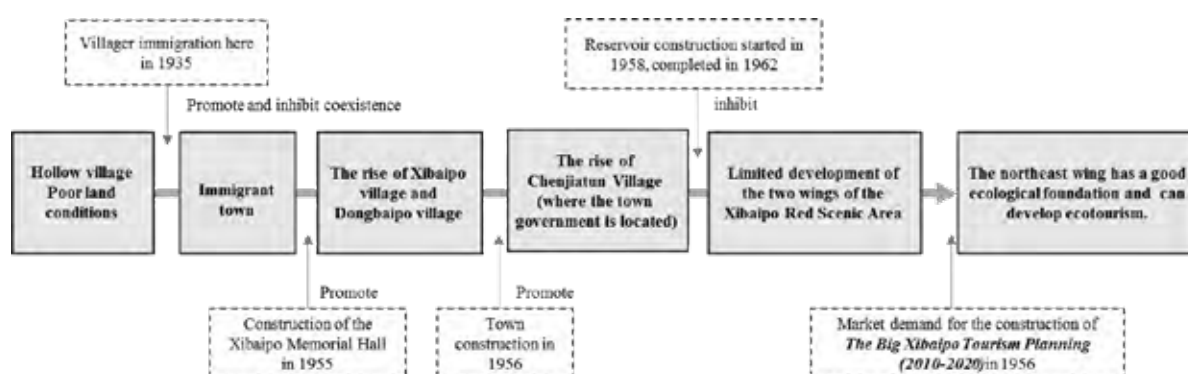


Fig.5 The overall development experience of Xibaipo township

4.1.4 Related industries in surrounding villages

At the current stage, Xibaipo town has four functional divisions, with a mountain sanctuary in the north, a red industrial cluster in the middle, a national forest tourist area in the northeast corner, and a traditional agricultural area in the southwest. On the whole, since the northern part of Xibaipo town is affected by the mountain, with the south part restricted by the reservoir, the development is relatively cramped. Under this circumstance, the north can only develop eco-tourism based on ecological resources. For the southwest part there is no better advantage, and it can only maintain the original traditional agricultural development. As seen in Figure 6.



Fig.6 *Distribution of main types of rural industries in Xibaipo town*

4.1.5 Summary of motivation

The construction of the Gangnan reservoir in the township and the Xibaipo Red Tourism core scenic spot led by the government are two important factors affecting the development of the local industry. They play a dual role in driving and restricting the rural industry in Xibaipo town. In the early stage, the villages were promoted by the construction of the core red tourist scenic spot. However, later on, when the red industry area of the whole area is ready to develop, the safety requirements of Gangnan Reservoir limits the rural development in the two wings of the core red scenic area. The villages on the northeast side rely on a better ecological base to develop a national forest ecological park, while the traditional agriculture on the south side does not match the quality and specifications of the central red scenic spot, with development limited. From the perspective of motivation, the villages in Xibaipo town can be classified into four categories: red tourism policy promotion, township construction policy promotion, endogenous demand, endogenous demand and policy orientation, and ecological security restriction. Secondly, the government's strong ability to regulate and control Xibaipo town can, to a certain extent, make up for the lack of social capital in the immigrant villages of Xibaipo town. The side shows that the red tourism cluster in the area was established.

4.2 Guangan village, "green point"

4.2.1 Basic information

Guangan village is located in southwest of dashi town, Pengxi county, Suining city, Sichuan province. It is 5 kilometers away from dashi town, and near the south of Chuanshan district. The location is very convenient. On August the 29th, 1929, Jixun Kuang announced the uprising in Niujaogou village and established the first red army of workers and peasants. The site of the Niujaogou village where Jixun Kuang uprising for Sichuan province was elected as the provincial key units of cultural relics protection. As seen in Figure 7. With the implementation of the comprehensive plan of modern agricultural industrial zone, an important strategy for rural revitalization in Suining, the development of Guangan village is facing a new opportunity.



Fig.7 *Guangan village's Jixun Kuang Uprising Site (left), former headquarters (right)*

4.2.2 Comparison of forming conditions

Xibaipo town was originally a small village with red resources, but later gradually developed into a town, which is close to the development condition of Guangan village. By comparing Guangan village with Xibaipo town, we firstly found that the core tourism resources and regional brands of Guangan village are not as important as those of Xibaipo town, and the largest regional impact can only reach to the provincial level. Followed by the auxiliary layer, both of Shijiazhuang city and Pingshan county have entered the stage of urban and rural integrated development, while Suining city has just entered the urban-rural integration stage, with Pengxi County still in the stage of urban-rural unbalanced development. The recent support for Guangan Village will be

weaker. Like the original of Xibaipo town, the hollowing out is serious, and the social network is unstable. However, Xibaipo town have a strong embedded development from the state-province-city-county-town different levels of governments, and the economic and social network built by them can make up. Guangan village does not have such development conditions. It needs to find another method. In the end, Xibaipo Town has many ecological restrictions, while Guangan Village hasn't, and the surrounding agricultural foundation is good. As seen in Table 4.

Tab.4 Comparison of the formation conditions of village red tourism industry cluster

Important condition		"Revolutionary Resort" Xibaipo Town (initial condition)	"Green Point" Guangan Village, Dashi Town
Horizontal industry element	Core resources layer	National famous revolutionary memorial site and 100 national patriotic education demonstration bases.	The site of the Niujaogou village where Jixun Kuang uprising for Sichuan province is the provincial key units of cultural relics protection.
	Factor supply layer	Close to the original town area, 5 minutes drive (now Chen Jiaxuan).	Close to Dashi Town Township, within 10 minutes by car.
	Auxiliary layer	The urbanization rate of Shijiazhuang 2018 is 63.16%; the rate of Pingshan County in 2017 is 51%. Basically it is in the urban and rural integrated development stage, the rural auxiliary capacity is good.	The urbanization rate of Pengxi County in 2018 was 36.94%, which was in an unbalanced development stage. The city has weak support for rural support.
Social network		Immigrant village, social network is instable.	Hollow village, social network is instable.
Government regulation		State-province-city-county-town government regulation.	City-county-town government regulation
Regional brand		Ten nationwide major revolutionary bases.	Sichuan Provincial Red Tourism Aorta.
Other factors		There are many restrictions on ecological protection—the construction of Gangnan Reservoir in the west, the protection of the mountain in the northwest, the good forest resources in the northeast of the town, with agricultural foundation in the south.	There is an agricultural foundation. The village grows walnuts, and the surrounding countryside grows rice, rapeseed, alfalfa, pear, watermelon and other fruits and vegetables.

4.2.3 Problems

Compared with Xibaipo town, Guangan village's red tourism industry cluster will faces three major problems: how to use red cultural resources, how to deal with the recent development of Suining City and Pengxi County's poor support capacity; how to seek sustainable development while the social network is unstable, and the government's strong involvement is not possible. We put forward strategies for the above problems.

4.3 New method

4.3.1 Thinking the ecological base

Guangan village cannot solely rely on red resources. Compared with Xibaipo Town, the top ten revolutionary bases in China, the red resources of Guangan Village are of limited importance and influence in the whole country. It is necessary to use the existing foundation to build a red tourism industrial chain with the red cultural sites of Niujiaogou, constructing walnut ecological chain with local walnut garden and Suining agricultural ring line, and propose the strategy of developing with red tourism as the core and cooperating with local industries.

4.3.2 Construct a new social network

The reconstruction of local social network in Guangan Village requires the power from multiple parties. At the same time, it needs to be developed in stages, and three keywords can be used to summarize them, namely “red”, “walnut” and “valley”. In the early stage of rural development, cultural innovation was carried out with red resources to attract schools, NGOs and travel agencies to provide them with services such as red cultural tourism, eco-farm experience, and Small and Beauty Agriculture experience. Through B2B cooperation model, we can improve the rural social cooperation network. At this stage, we also pay attention to the local development of walnut agriculture. In the medium term, the scientific and technological innovation focused on the walnut ecological chain, and the green industry and education are expanded to attract enterprises services, high-efficiency and experimental bases. Guangan village will provide modern agricultural experience, finance, and logistics services for them. Through the B2B and B2C models, the village will develop the social network relationship between local villagers, enterprises, and governments. After completing the dual innovation development stage, they can return to the local rural construction to create a higher quality environmental quality for local residents. Let them have a better sense of belongings.

4.3.3 Organization revitalization

Guangan Village needs to revitalize grassroots party organizations. As the location of the red cultural site, the local has a solid foundation of party organization. At the stage of red culture, it can carry out the construction of a learning-oriented and service-oriented foundation party. In the stage of green industry and education development, it can carry out the construction of innovative, learning-oriented, and service-oriented party organization. In addition, under the leadership of grassroots party organizations, rural infrastructure construction can also develop steadily.

5 Conclusion

On the basis of theoretical analysis, this paper draws on the perspective of the Michael Porter Diamond Model to study the mechanism of the rural red tourism industry cluster in Xibaipo town, a national revolutionary holy land. It is except that Xibaipo Town is an immigrant village in the early stage of development, and short board of social network vacancies (strong government regulation brings about this shortcoming), other aspects of development conditions are very good. Furthermore, we selected industrial factors, social networks, government regulation, regional brands and other conditions to make a comparative analysis with Guangan village which also have red tourism resources. It shows that Guangan Village can't compete with Xibaipo Town in the importance of red core resources. and Pengxi County's future support services for Guangan village is limited. Similarly, the problem of hollowing out in the Guangan village is serious, and the government's ability to regulate and guide the future is unknown. So, the red tourism industry cluster in Guangan Village cannot copy the development mode of Xibaipo Town, and cannot rely solely on the government and red resources. In response to the problems faced by Guangan village, we proposed three strategies—building a dual core of rural red resources and ecological bases, building a new social network with "red cultural innovations" and "green technology innovations", building a learning-oriented, service-oriented, and innovative grassroots party organization to achieve organizational revitalization. We hope it will provide a new idea for the development and utilization of red resources and rural revitalization in the method of tourism industry clusters in rural areas in China.

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A Study on the Development Trend and Transformation of Shanghai as a Creative City in the 21st Century

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Abstract: In the 21st century, under the wave of globalization, society is entering an economic development model with knowledge and creativity as its capital. Against global convergence, playing local characteristics of the city itself is the key to improving the city's competitiveness. This model of creating a city image with creative economy and stimulating economic development through creative industries has adapted to the requirements of post-industrial society for urban transformation. Therefore, it has been strongly supported and promoted by many governments, and has rapidly swept the world – “creative city” has gradually become a new paradigm for urban development. Based on the data of the Shanghai Statistical Yearbook for the past ten years, this paper visualizes creative investment, creative achievements and creative workers at the creative economy level, and hierarchy structure, proportion and salary at the creative class level, and creative immigrants, homosexual index and creative ideas at the creative city level. Thereby it analyzes the development trend of Shanghai as a creative city at various levels in the past ten years, and summarizes the advantages and disadvantages of its development. This paper found the advantages are that the national level has a large investment in research and development in Shanghai, a large number of patents granted, a rapid development of creative industries, and a leading index of creativity across the country (except Beijing). The shortcoming is that the number and proportion of the creative class is not big enough. At the same time, Shanghai as an international metropolis, the openness, inclusiveness and diversity of the city are far from enough. In these respects, we analyze the creative city—Helsinki's successful experience, meant to guide Shanghai's future development strategy and transformation as a creative city.

Keywords: creative economy; creative city; creative class; urban culture

Introduction

In the 21st century, under the wave of globalization, society is entering an economic development model with knowledge and creativity as its capital. The industrial transformation of the city is becoming more and more important. It opposes global convergence, and the local characteristics of the city itself are the key to improving the city's competitiveness. This model of creating a city image with creative economy and stimulating economic development through creative industries has adapted to the requirements of post-industrial society for urban transformation. Therefore, it has been strongly supported and promoted by many governments, and has rapidly swept the world – “creative city”. This has gradually become a new paradigm of urban development (Gan Lin, 2012). Looking forward to 2035, Shanghai will basically be built into a remarkable global city, a city of innovation, a city of humanities, an ecological city, and a socialist modern metropolis with world influence. This

is the development of Shanghai's urban development in the 21st century. Goals and visions (Shanghai Municipal People's Government, 2018). How to become a city of innovation and how to become a great creative city that can attract a large number of creative classes will become a new challenge for the development of our city in this era.

At present, most of the domestic and foreign research related to it is aimed at the public policy of developing creative cities at the national level, the development experience of European and American cities as creative cities, and the creative industries developed in Shanghai in recent years along with urban renewal. For Shanghai itself As a whole, the overall development trend of the creative city in the past decade, including the advantages and disadvantages, is relatively small. Therefore, this article first briefly introduces the basic concepts of creativity, creative economy, creative class, creative community, and creative city. Then, I consulted the Shanghai Statistical Yearbook in the past ten years, and creative investment, creative achievements, and creative workers at the creative economy level. At the creative level, the hierarchical structure, proportion, salary, and the immigration, homosexual index, creative industry and other statistical data at the creative city level are visualized, and the development trend of Shanghai as a creative city at various levels in the past decade is analyzed and summarized. At the same time, from the six aspects of lifestyle, social activities, diversity, authenticity, identity and local quality, the creative capital: Helsinki's successful experience, to provide some feasible suggestions for the future development of Shanghai's creative city.

1 Related concepts

1.1 What is Creativity?

Creativity is a very open concept that can be interpreted in a wide range of ways. It seems that any action aimed at solving a problem or improving the situation is a reflection of creativity (Klaus Kunzman, 2012). Charles Landry writes, "Creativity has many qualities. It is a history of deep experience in the past. It subverts widely accepted things, challenges customs, and tries to create new experiences, rather than absorbing and identifying existing ones in advance. Experience. Experience always exists in a predetermined pattern or theme, leaving little room for personal imagination. Conversely, creative cities have to create their own space, it can be loose, ambiguous, uncertain and unpredictable Sex, ready to adapt (Charles Landry, 2009)."

1.2 Creative Economy

The concept of "creative economy" first appeared in the US Business Week in August 2000, after which John Hawkins explored the global impact of the creative economy in his 2001 book, Creative Economy. Define the creative economy as 15 creative industries (Richard Florida, 2010). Richard Florida (2010) thinks so, "Creativity is the most important economic driver, knowledge and information are creative tools and materials, and innovation is a creative product. This product can be expressed as a new technology product, too. Can be a novel business model or method."

1.3 Creative Class

The rise of the creative economy has had a profound impact on the division of social groups or classes (Richard Florida, 2010). The striking feature of the creative class is that its members are engaged in the work of "creating meaningful new forms" (Richard Florida, 2010). In this regard, Richard Florida (2010) believes that it is mainly composed of two types of groups, the "super creative core" group (including scientists and engineers, university professors, poets and novelists, artists, actors, designers and architects, and The pioneering group of thoughts in modern society) and the group of "innovation experts" (including high-tech industries, financial services, law and health care, and business management groups). The other classes corresponding to it are the agricultural class, the working class and the service class.

1.4 Creative Community

For the creative community, Richard Florida believes that “the place must be open, there must be diversity, there must be an open gay community, and people there have different races and ethnicities. There are different ages. The people in the paragraph are living, and they are easy to accept young people, and the appearance of those people is not the same (Richard Florida, 2010).” That is, the creative area can provide interesting lifestyles, social activities, diversity, inclusiveness (such as accepting homosexuals), authenticity, ability to reflect identity, recognition, ability to have unique local qualities, and so on.

1.5 Creative City

Successful creative cities have the following characteristics: hard factors (creative physical space such as museums and exhibition halls), urban history, individuals (leaders, stars, etc.), open communication, network connections, organizational capabilities, urban cultural image, mature Cultural and creative industry clusters, art and media education, technology environment, cost of living (affordable housing, etc.), pleasant atmosphere, etc., these characteristics can attract creative people, as well as various creative enterprises, thus driving the city's creative economy development (Klaus R. Kunzmann et al, 2013).

2 Shanghai 21st Century as a creative city development trend

2.1 Creative Economic Level

2.1.1 Creative Investment Index

In the 21st century, Shanghai's creative economy is developing rapidly. R&D investment in the creative sector has grown exponentially, the number of licensed patents has continued to grow, and creative industry workers are steadily growing. Simultaneous development of technological innovation and creative work will become one of the main driving forces for Shanghai's economic growth.

In 2000, total R&D expenditure was about 7.673 billion yuan, and it increased to 93.614 billion yuan in 2015. The total R&D investment during this period increased by 11 times. In 2000, research and development institutions, universities, and enterprises did not have high R&D expenditures. From the perspective of growth rate, the highest is the R&D expenditure of enterprises, followed by R&D expenditures of scientific research institutions and research and development funds of higher education institutions.



Fig.1. Significant growth in creative investment: research and experimental development (R&D) funding

2000-2015

(Source: Shanghai Statistical Yearbook 2004-2016)

2.1.2 Creative Achievement Index

From the beginning of the 21st century to 2015, from the year-on-year curve of R&D results, although there was a slight downward trend in 2004 and 2013, the overall situation continued to grow. In 2000, the number of authorized patents in Shanghai was only 4,050, and it increased to 60,623 in 2015, almost 15 times more than the 20th century American mentioned by Richard Florida in *The Rise of the Creative Class*. Authorized patent growth.

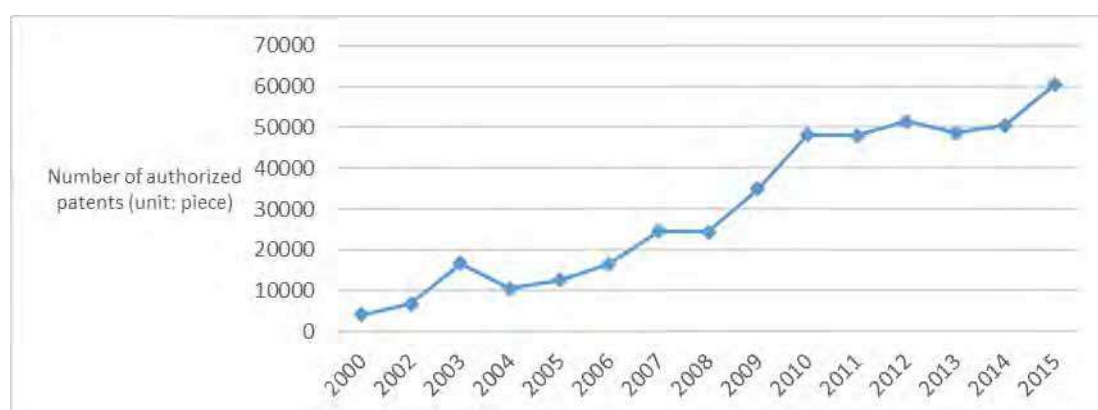


Fig.2. The growing creative achievements: the development of patents 2000-2015

(Source: Shanghai Statistical Yearbook 2004-2016)

2.1.3 Creative Workers Index

Compared with R&D investment and creative achievements, the increase in the number of creative workers is not very large, but it is also a growth trend. Technological innovation practitioners, such as scientists and engineers, increased from 18,365 in 2005 to 45,196 in 2015, an increase of 2.5 times. In particular, from 2008 to 2009, the largest increase, an increase of 15,000 people. The number of people in culture, sports and entertainment has been fluctuating up and down, with an overall increase of around 20,000.

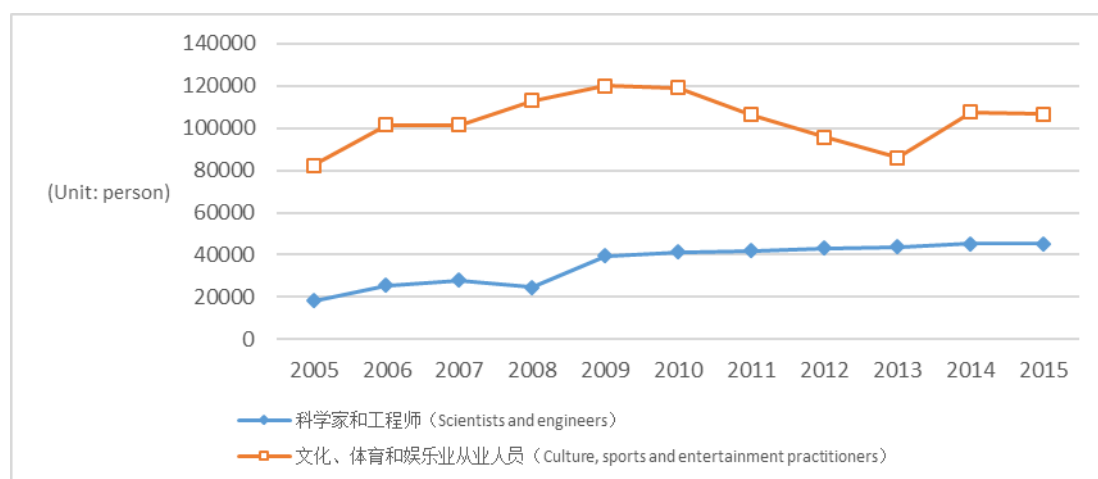


Fig.3. The number of creative workers increased slightly 2005-2015

(Source: Shanghai Statistical Yearbook 2004-2016)

2.2 Creative level

2.2.1 Hierarchy structure and proportion

In the 21st century, the creative class in Shanghai is rising and its number is growing steadily. From 1,633,700 in 2005 to 331,270 in 2015, it has roughly doubled, and the total number of employed people has increased by about 4.5% in total. The increase is not large. For the creative class, Shanghai should also be in the future. Adjust public policies to attract more creative people.

From the overall chart, Shanghai's labor class still plays an important role, both in terms of quantity and proportion, at the highest position, followed by the service class, the creative class, and finally the agricultural class. The number and proportion of the agricultural class are decreasing year by year, while the number of labor class and service class is increasing year by year. The difference is that the proportion of the service class has increased, and the proportion of the labor class has decreased in recent years. There is a tendency for the number and proportion to gradually approach.

Nobel laureate Robert Lucas believes that productivity due to the agglomeration of human capital is a key factor in regional economic growth, calling it "the out-of-bounds effect of Jane Jacobs" (Richard Florida, 2010). Therefore, in the future, Shanghai's urban development expects that the proportion of creative and service groups will increase substantially, and the proportion of working class and agricultural class will decrease. But this does not mean that the service class will replace the working class, because the meaning of the service class is mainly to support creativity. Class and creative economy. This trend means that creative people will start to recognize the lifestyle and atmosphere of Shanghai and can gather here. It is accompanied by creative companies that need manpower to choose Shanghai. The synergistic development of the two will drive Shanghai's economic development.



Fig.4. Hierarchy structure 2005-2015

(Source: Shanghai Statistical Yearbook 2004-2016)



Fig.5. Hierarchical structure 2005-2015 (% of total employed population)

(Source: Shanghai Statistical Yearbook 2004-2016)

2.2.2 Salary level

The chart shows that the creative class has been at the highest salary level for ten years, followed by the service class, the working class, and the lowest is the agricultural class. On the whole, due to the rapid development of China's economy, all sectors have shown a sharp growth trend in the past ten years, with the creative and service sectors growing fastest. In 2005, the average salary of the creative class was about 33,000, and it increased to 90,000 in 2015. In 2005, the average salary of the service class was about 23,000. In 2015, it increased to about 68,000. In the past ten years, both classes have increased their wages by about 2 times.

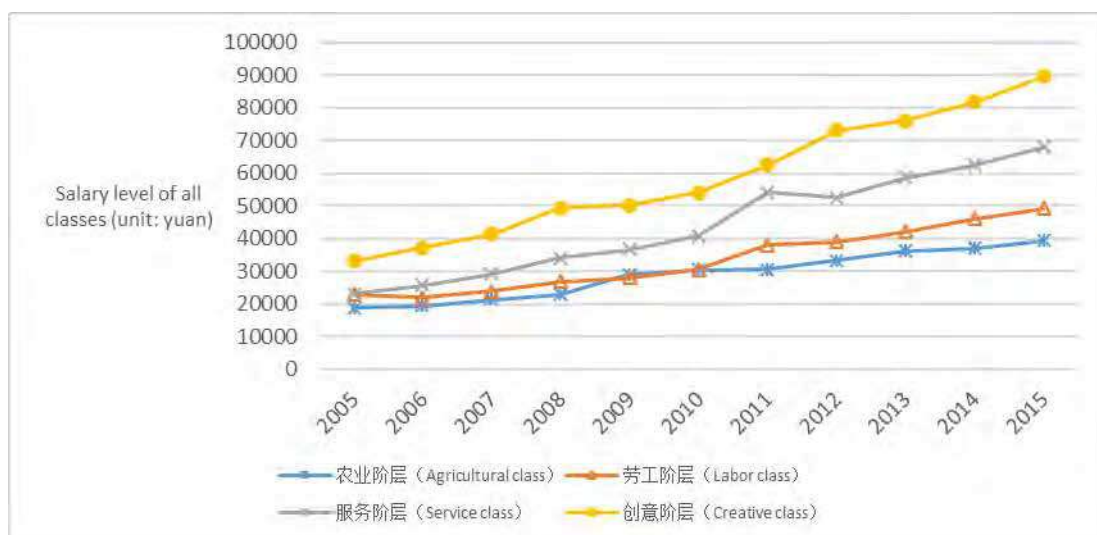


Fig.6. Average salary level of people at all levels 2005-2015

(Source: Shanghai Statistical Yearbook 2004-2016)

2.3 Creative City Level

2.3.1 Immigration Index - Urban Openness

A large number of studies have shown that the immigrant population has a positive effect on the economic development of the country and the city (Richard Florida, 2010). Wall Street Journal reporter Baska Zachali's "Globalization of Me" mentioned that "opening up to immigrants is the cornerstone of creativity and economic growth." He believes that the success of the national economy is in line with the entire country. The openness of creative talents and dynamic people around the world is directly related (Richard Florida, 2010). I think the same is true for cities, that is, the degree of urban economic development is directly related to the openness of creative talents and dynamic people around the world.

The following picture shows the trend of the number of migrants in the past ten years according to the Shanghai Statistical Yearbook. It can be seen that from 2009 to 2010, regardless of the resident population, there is a relatively large increase in the proportion of migrants and migrants, indicating a large amount during this period. The immigrant population flooded into Shanghai. This is because in 2009, the Shanghai Municipal Government issued a notice on the "Trial Procedures for the Hold of the Shanghai Residence Permit" to Apply for the Permanent Residence of the City, That is, the eligible entrepreneurs and employees in Shanghai can meet the requirements. Apply for Shanghai household registration. From 2010 to 2015, the migrant population is basically in a relatively stable trend. It may be due to factors such as high housing prices in Shanghai and difficulties in settlement. The increase in foreign population is very low.

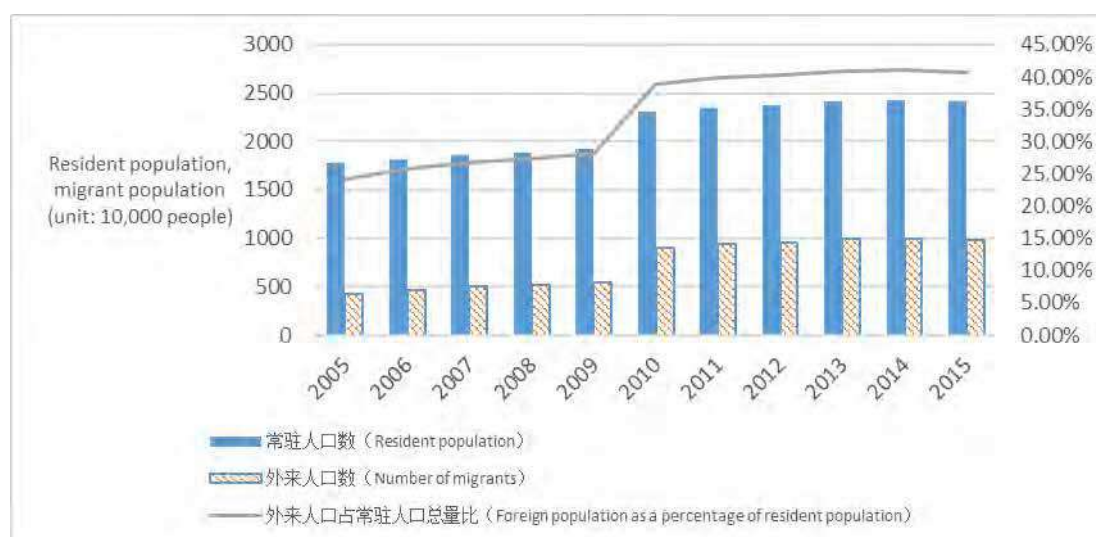


Fig.7. Immigration Index 2005-2015

(Source: Shanghai Statistical Yearbook 2004-2016)

2.3.2 Gay Index - Urban Inclusion

Richard Florida (2010) mentioned in his book that he and Gates conducted a comparative study of the creative/high-tech industry distribution and the homosexual index rankings, and found that the homosexual index is an effective indicator for measuring diversity. Because of the usual situation, the colony that can accept homosexuals also has a relatively open attitude towards other types of people (Richard Florida, 2010). That is to say, in areas with high gay index, the degree of openness, diversity and tolerance of the city will be relatively high. Such an area plays an important role in stimulating creativity and high-tech growth.

Since China's overall openness to homosexuality is not high, there is basically no accurate research data. Therefore, it can only be based on the data in the 2015 Blued Big Data White Paper. Blued is currently a popular gay friend dating app, and the number of users is very high. It accounts for 84.57% of the domestic gay apps, which is relatively more telling. The data shows that the number of Blued users nationwide has increased

significantly in recent years. On the one hand, it reflects the popularity of APP, and on the other hand, it shows the growth of this group and the demand for social. In terms of user rankings, Beijing was the highest, followed by Guangdong, Jiangsu and Shandong (no data rankings were found later). Shanghai is geographically close to Jiangsu. In theory, the number of users should be high, but it is not ranked in the top four users, indicating that Shanghai is not very tolerant of the diverse population. At this point, Shanghai, as an international metropolis, should make a difference and strive to create a more open and inclusive urban environment. Only in this way can Shanghai attract more creative people.

At the same time, I believe that the increase in immigration is not high, and the homosexual index is not high. These may be directly related to the results of the previous increase in the creative class, and further research is needed in the future.

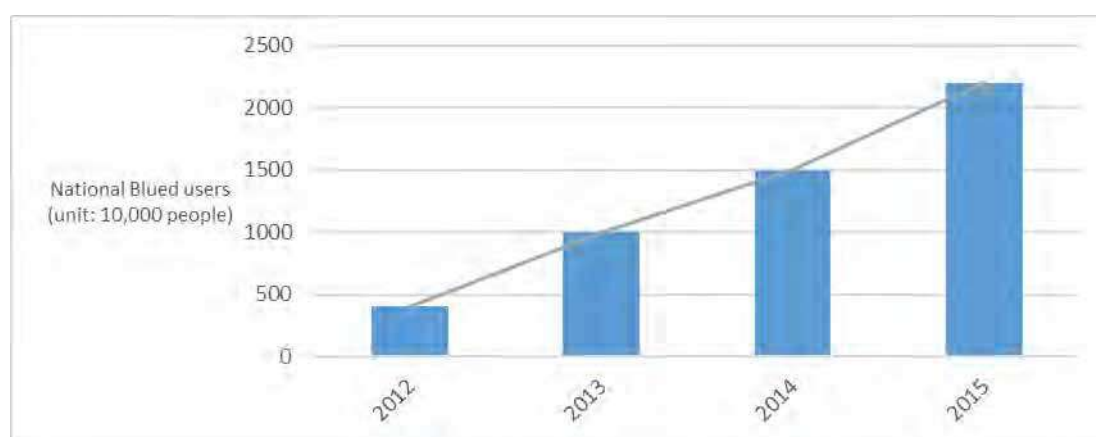


Fig.8. Gay Index - National Blue User Volume 2012-2015

(Source: "2015 Blue Big Data White Paper" for user statistics)

Table 1 Gay index - 2015 Blue user rankings in provinces and cities across the country

Province	Blue users nationwide ranking
Beijing	1
Guangdong	2
Jiangsu (near Shanghai)	3
Shandong	4
...	...

2.3.3 Creative Industry Agglomeration Index - Urban Culture Level

Based on the development status of urban creative industries, the identification of creative industry clusters with corresponding funds and supporting support is a relatively simple and fast way to achieve effective results in the material and space level, accompanied by a large number of urban material space renewals in recent years. Transformation, this kind of government-led industrial cluster development model is widely used in major cities such as Beijing, Shanghai, Suzhou, Xiamen, etc. According to statistics, at the end of 2015, Shanghai has certified 126 municipal-level cultural and creative industrial parks, covering a total of 17 districts and counties in the city. At the end of 2017, Shanghai issued "Several Opinions on Accelerating the Innovation and Development of Cultural and Creative Industries in the City", and proposed that by 2035, it will fully build a cultural and creative industry center with international influence.

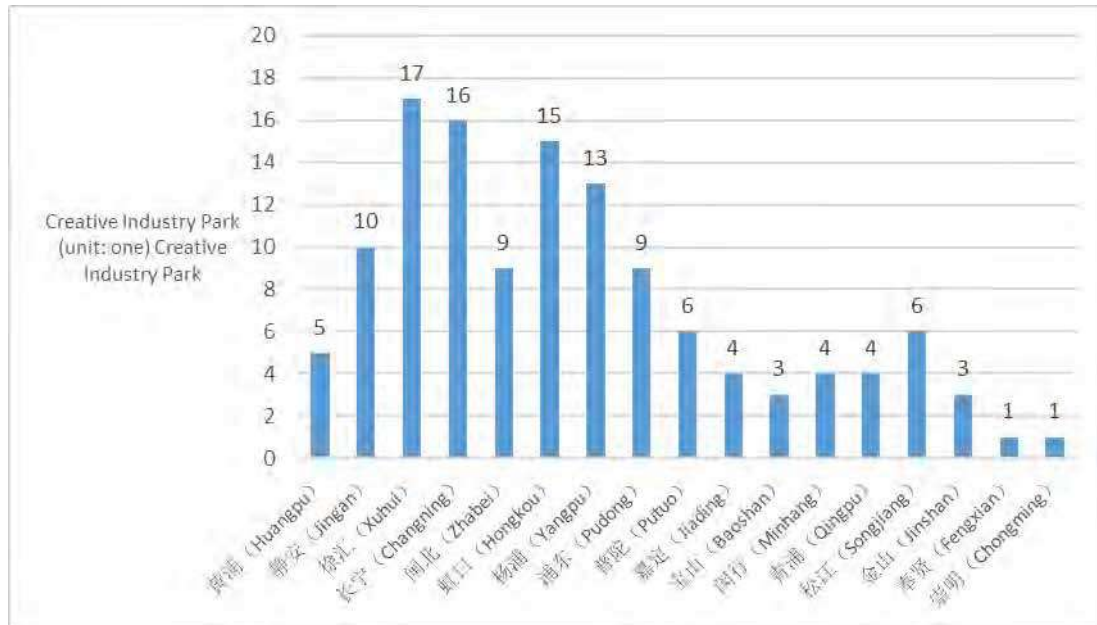


Fig.9. Distribution of Shanghai Cultural and Creative Industry Park

(Source: 2015 Shanghai Cultural and Creative Industry Development Report)

2.3.4 Creative Index

The 2017 China Urban Creativity Index (CCCI2017) was jointly completed by the School of Management of Shenzhen University, the Research Institute of Cultural Industry of Shenzhen University, and the National Cultural Innovation Research Center of Shenzhen University. The results show that Beijing, Shanghai, Hong Kong, Shenzhen, Hangzhou, Guangzhou, Chongqing, Suzhou, Tianjin, and Taipei rank among the top 10 in the 2017 China Urban Creative Index. It can be seen that Beijing and Shanghai are leading positions in creative cities nationwide.

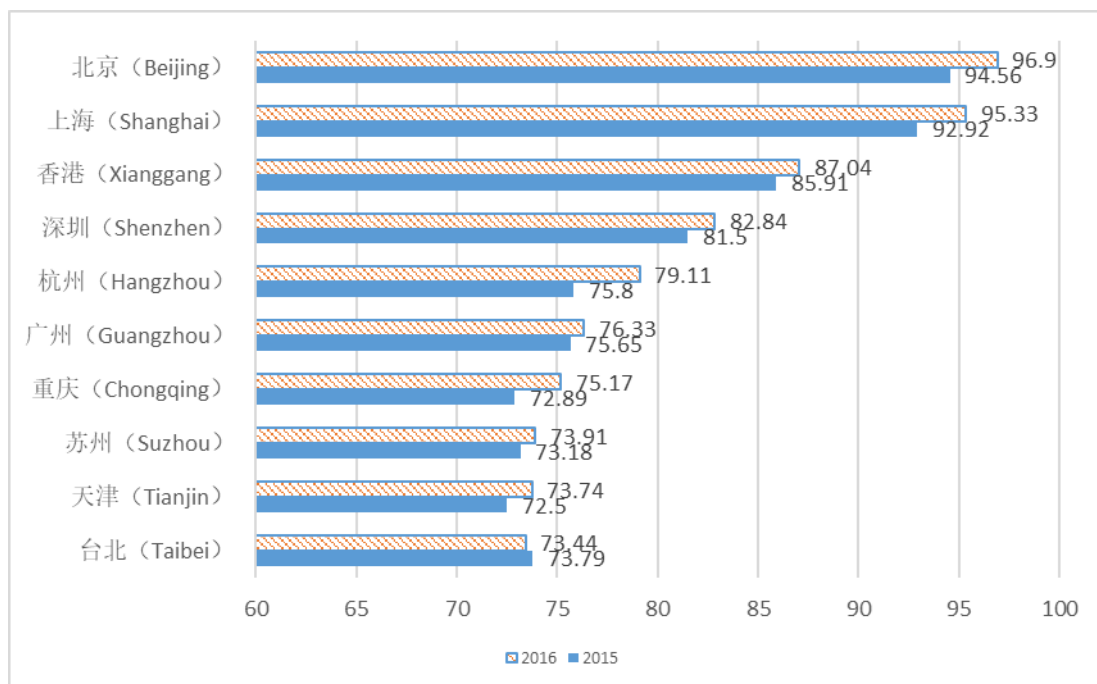


Fig.10. Creative Index Ranking 2015-2016

(Source: 2017 China Urban Creativity Index (CCCI2017) released data)

In view of the development trend of Shanghai as a creative city in the past ten years, the advantages are that the national level has a large investment in research and development in Shanghai, a large number of patents granted, a rapid development of creative industries, and a leading index of creativity across the country. In other cities (except Beijing), etc., the shortcoming is that the number and proportion of the creative class is not big enough. At the same time, as the international metropolis of Shanghai, the openness, inclusiveness and diversity of the city are far from enough. In these respects, we can learn from European and American cities, such as Helsinki, to guide Shanghai's future development strategy and transformation as a creative city.

3 Localization of Creative Cities: Drawing on the Capital of Creativity: Helsinki City Development Strategy

3.1 Overview of Helsinki Development

Helsinki is the capital and largest city of Finland. At the end of 2016, the population was about 635,000. Helsinki is considered to be a very livable city and a vibrant cultural city and destination. In 2012, the New York Times commented on the city like this: "Design! Design! Design! Design is the DNA of this city." (Klaus R. Kunzmann et al, 2013) Now, Helsinki has clearly developed into a science, art, creativity and innovative cities and creative industry centers with excellent service (Klaus R. Kunzmann et al, 2013). Finland's Greater Helsinki 2050 vision is from urban urban life, urban life attraction, economic and employment growth, sustainable urban transport, entertainment, urban natural and cultural environment, sea area and urban internationalization. New requirements.

3.2 The basic characteristics of a creative city - Helsinki related experience

Richard Florida (2010) states in the book *The Rise of the Creative Class* that the basic qualities of a creative city are: a lifestyle with creative culture; a "third space" for social activities; And inclusive; the authenticity and uniqueness of the city; the realization of its own value and identity; participation and local quality. Helsinki, as a successful creative city in the 21st century, is well represented in these six aspects. Correspondingly, Shanghai can get some inspiration from Helsinki's way of shaping the characteristics of creative cities according to the current development status.

At the lifestyle level, Helsinki hosts a large number of cultural events as well as festivals, celebrations, etc., and is instructed by influential cultural institutions to form a strong urban culture and artistic atmosphere. People here can easily find activities and places that suit them, such as interesting musical performances, exhibition galleries, performance venues and theatres. The public's satisfaction with cultural facilities is as high as 94% (Klaus R. Kunzmann et al, 2013).

Social activities and diversity levels, such as the former Cario workers' settlement in the north, are known for ethnic restaurants, bars and sex shops. There are a large number of students, Bohemians and residents who like beer, and it is also a concentrated area for middle-class IT workers (Klaus R. Kunzmann et al, 2013). People here are open-minded and can accommodate people of different nationalities, races, ages and sexual orientations. Among them, "Carlio Manufacture" was transformed into a studio for 19 young artists, and also provided services for locals such as shops, galleries and cafes, which provided "the first place to interact with acquaintances or others. Three spaces" (Klaus R. Kunzmann et al, 2013).

At the identity level, Helsinki supports cultural activities and art education through a number of regional cultural centers, providing artists in all fields with affordable venues to display their works, so artists can realize their

value here. Another example is the Araba beach area, which has transformed the former glassware and ceramics factories into attractive creative residential areas. At the same time, through government intervention, it provides artists with the corresponding needs, that is, developers are required to invest a portion of their investment in art investment. Etc (Klaus R. Kunzmann et al, 2013). These practices will enable people here to establish their own identity and actively build the community into a community that can recognize their identity (Richard Florida, 2010).

In terms of the authenticity and local quality of the city, the city should create its own characteristics of culture, geography, history, facilities, environment and activities. Although the city of Helsinki has a cold climate and a poor geographical location, and because it is located in a very polar night, the lack of sunlight in winter can easily cause seasonal depression. But by discovering the potential of urban resources, the “Light Power” campaign, which calls for people to take a serious look at lighting, has become a festival for shops, galleries, streets, parks, museums, and even factories and construction sites. The venue has attracted many international cooperation and a large number of tourists, becoming a new city brand in Helsinki (Charles Landry, 2009).

3.3 Localization Construction - Shanghai's future development strategy and recommendations.

First of all, Shanghai will continue to promote the development of creative industries, but in the future, it is necessary to reduce the development of “commercial real estate” and “fragmentation” of creative industrial parks, and gradually integrate the industrial chain of creative industries in the district.

Secondly, it creates Shanghai's own urban characteristics from the aspects of history, regional culture and artistic activities, and provides the public with more space for social activities, so that people can find their own lifestyle here.

At the same time, Shanghai should treat foreigners, homosexuals, young people, etc. in a more open and inclusive manner, that is, to show the diversity of international metropolises.

Finally, the government should actively adopt policy interventions to provide affordable housing, venues, etc., for entrepreneurs, where they can achieve self-worth through their own efforts, and can be rooted in Shanghai to obtain A sense of identity and belonging, and so on. These will attract creative classes to live and work from all levels, which means that companies and resources that require manpower will gather here. In this way, people, companies and resources with different professions and abilities will gather in Shanghai at the same time, which will produce sufficient effectiveness to promote the growth of Shanghai's economy in the future (Richard Florida, 2010).

Conclusion

The 21st century is an era dominated by creative classes that promotes urban development with a knowledge economy and creative economy. In order to attract creative class, the city needs to build an environment conducive to creative development, that is, open, inclusive, diverse, and identity, to provide a suitable lifestyle, social activities, local quality environment. These innovative urban traits are essential to Shanghai's future creation of a global city of excellence. At present, the number and proportion of creative people in Shanghai is not big enough. The openness, inclusiveness and diversity of their cities are still far from enough. These need to be adjusted and improved through urban public policies. In the future, under the guidance of the creative class, Shanghai will become a city of innovation, a city of humanities and an ecological city. It will become a socialist modern metropolis with world influence. This is our common vision.

(Note: All charts are drawn by the author based on shanghai yearbook data and network data)

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UN Habitat's participatory initiative to public space design involving residents, refugees and local authorities: the case of Naba'a', Bourj Hammoud, Lebanon

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Abstract: This paper explores the process of engaging participants in designing a public space in a neighbourhood with socially deprived people from different backgrounds. The space was designed by locals and refugees, with the support of the local authorities. The paper investigates the extents to which placemaking, initiated by a third party could generate a civic space that combines people through everyday needs stemming from the context, and being addressed over time, rather than in a fixed design outcome. It examines the intervention initiated by UN Habitat Lebanon in Bourj Hammoud municipality at the eastern boundaries of administrative Beirut, and specifically within it, the area of Naba'a. Studying this public space initiative within Naba'a addresses marginal neighbourhoods that are in need of ameliorating the living conditions, and improving the quality of life for the population. UN Habitat's intervention comprised mediation between municipality and residents, and collaboration with the local residents and refugees within one neighbourhood in Naba'a, and framing their needs for an open public space. UN Habitat engaged the municipality in supporting the locals in executing this public space. The presentation argues that this process enabled place attachment for people with no official claim to an urban area.

Keywords: public space; social cohesion; place attachment; Bourj Hammoud

Introduction

Currently many urban contexts witness conflicts, displacement and the influx of refugees with limited access to services and job opportunities. These people often reside in marginal neighbourhoods, which are not visited by outsiders, reducing the opportunity for encounter (Netto *et al.*, 2018) and 'unplanned interaction' between disparate bodies and things (Amin, 2012: 71, Watson, 2006). This paper focuses on the process of public space provision and design in marginalised neighbourhoods that goes beyond securing a physical location (Tornaghi and Knierbein, 2015), and takes the challenge of activating and maintaining the space. In this approach, through a third party's initiative, local authorities, local residents and refugees are engaged in the decision-making process for designing a public space. The paper frames this approach through a relational perspective (Lehtovuori, 2010, Tornaghi and Knierbein, 2015), which allows for the understanding of the space contextually as a process intertwined with the local daily social practices (Knierbein, 2015). This understanding

considers the meanings, qualities and values attached to spaces (Healey, 2006), while enabling diverse people to jointly build space attachment.

The selected case study is one neighbourhood in Nabaa', Bourj Hammoud municipality, to the east of the capital city Beirut, Lebanon that has witnessed since World War I perpetual population flows and shifts causing instability and poor living conditions.

The following section examines marginal neighbourhoods and implications for their users and public spaces. The framework of a relational perspective on public space is then presented with the aim of understanding which processes could mitigate issues arising in public space design within marginal neighbourhoods. The next section focuses on UN-Habitat's participatory approach within a 'counter flow' relation and its application within a deprived neighbourhood.

Marginal Neighbourhoods and Public Spaces

The provision of public spaces is highly associated with their success in promoting or regenerating cities. Central public spaces reflect 'the legitimacy of the local administration' and are often considered 'nodes for social cohesion' (Madanipour, 2004: 269). Yet public spaces in marginalised neighbourhoods are usually neglected by local authorities and investors due to various reasons (Madanipour, 2004) ranging from the absence of commitment if residents are not voters, to the lack of interest in investing in a neighbourhood with poor environmental quality of urban space and residents with low purchasing power. The spaces are then either closed, inaccessible or highly securitised and controlled. Alternatively, self-regulatory mechanisms emerge for coping with the lack or the poor state of public spaces such as avoidance of the space by the residents (Barolsky, 2016) leading to the lack of encounter opportunities (Kwan, 2009) and often segregation. This segregation is reflected spatially but also in their social, economic and everyday life activities (Healey, 2006, Selim, 2015). Residents are disadvantaged and do not have equal access to job opportunities, facilities and amenities (Netto *et al.*, 2016, 2018). Yet they seek refuge within such neighbourhoods not by choice but rather by the lack of it. The population in such neighbourhoods is socially fragmented, forming 'a mosaic of difference trapped within a limited space ... and with limited capacity to connect to the outside world' (Madanipour, 2004: 271).

In the particular case of Nabaa' this neighbourhood is populated with disadvantaged residents consisting of locals or refugees who face social exclusion. On the one hand, refugees are often perceived as a security threat and a competitive workforce (Madanipour, 2004, Healey, 2006). On the other hand, the local residents can equally experience social exclusion due to different forms of vulnerability, for example age, disability, employment, ethnicity or other (Madanipour, 2004: 270, Selim, 2015). The vulnerability and poor living conditions that residents share lead to avoidance or lack of interaction, especially if 'most are preoccupied with sorting out some of the basic problems of life, their capacity to deal with others becomes more limited' (Madanipour, 2004: 271). Different forms of expression and the difficulty of communicating among residents cause tensions, and in some instances generalisations and prejudices about people that are perceived as different (Madanipour, 2004).

Tensions and schisms are visible in such a marginal neighbourhood's public spaces, especially if dominated by one group, sometimes requiring the intervention of security forces (Barolsky, 2016).

The decline of public spaces and lack of encounter among residents leads to their detachment from the place (Dines *et al.*, 2006, Lehtovuori, 2010). Some residents withdraw from the neighbourhood's urban spaces when feeling unsafe, intimidated or discriminated. Yet there is evidence that these perceptions can be reversed by increased everyday contact and interaction (Selim, 2015). This requires residents' mobilisation and collective engagement in the process of providing public spaces that meet shared interests and needs (Madanipour 2004, Lehtovuori, 2010). Through collective action, residents are enabled to 'de-alienate' public spaces (Knierbein, 2015: 54) and establish communication channels among themselves. Through the exchange of 'local knowledge' (Healey, 2006: 111), communication facilitates understanding, learning and acknowledging different ways of using, organising and valuing space (Healey, 2006: 112), which affect spatial practices and expressions. Discussing 'the management of co-existence' in shared space requires communication (Healey, 2006: 111) that is transformed into action. Over time, this may enable forging social links in public spaces beyond kinship or one's community (Healey, 2006), which is essential in a fragmented society. This is achieved through their shared engagement in shaping that space within their neighbourhood (Madanipour, 2004: 282) and establishing place attachment over time (Dines *et al.*, 2006, Lehtovuori, 2010). This attachment is dynamic and can switch from negative to positive depending on social relations and experiences as well as the presence of support available in the neighbourhood in the form of social networks, local facilities and reference points (Dines *et al.*, 2006).

Public Space Design and the Relational Perspective

This paper uses a relational perspective to explore public space as a process within a context with socially constructed meanings and practices, rather than as a product, a physical stage or a container of activities (Lehtovuori, 2010). This approach enables the analysis of material and immaterial aspects of public space by critically examining the relation of the social, political, historical and cultural context and its impact on people's lived practices within the public space process (Tornaghi and Knierbein, 2015). Within this perspective, individuals are given voice and are recognised as 'communities whose emotional and lived involvement in place making is not an option, but a fact' (Tornaghi, 2015: 35). These actors adopt 'a radical proactive attitude in the reconfiguration of institution-citizen relations in light of environmental and social justice' (Tornaghi, 2015: 35). This approach fosters 'links to be created between the dynamics of civil society (including conflicts between individuals, groups and different social spheres), political decision-making, and planning and design practice' (Tornaghi and Knierbein, 2015: 2).

UN-Habitat's role goes beyond giving voice to people (Miessen, 2010: 14); it rather works to ameliorate a crisis situation in a marginalised neighbourhood, and forge a lasting collaboration. UN-Habitat is keen to raise awareness on public space not only at the level of communities but also at the level of local authorities, highlighting the significance of learning from local knowledge and collaborating (see UN-Habitat, 2017b). 'Public space has surfaced as a top priority and a dire need, it is not only about asphaltting a space and fencing it with walls, it is about a social need' (social development coordinator, UN-Habitat, personal communication, 25 January 2018). There is a sense of 'responsibility' from the part of UN-Habitat and the local authority to improve the citizen-institution relation. UN-Habitat has an 'interest' in giving voice to vulnerable people and learning from insiders (Till, 2011). Their approach could be considered as 'entering participation from the side' (Miessen,

2010: 16), and engaging various stakeholders in decision-making. This is achieved through the neighbourhood profiling process and learning about the intricacies of the political, economic and social characteristics of the context under study (Miessen, 2010). In turn this insiders' knowledge guides the public space process, which combines people's needs with the municipality's vision. The next section examines UN-Habitat's public space design in a neighbourhood in Nabaa', Bourj Hammoud. But what was specific in the choice of Nabaa'?

Introducing Nabaa' in Bourj Hammoud

Bourj Hammoud is the eastern suburb of the capital city Beirut, which until the eighteenth century was agricultural and marshland. This terrain hosted Armenian refugees towards the end of the First World War, following Ottoman persecution, within shelters in a grid iron layout with narrow streets (Harmandayan, 2012).

A second wave of refugees included Lebanese, mainly from the south and east of the country during the civil war period 1975–1989. Similarly, Lebanese-Armenians also fled into Bourj Hammoud seeking refuge, and investing in commercial activities. This transformed the area into a commercial hub but also caused the out-migration of those economically better off (Harmandayan, 2009). The area's proximity to employment sources, and the affordability of housing caused the influx of economically and socially disadvantaged people of various backgrounds including Lebanese and foreign transient workers (Harmandayan, 2009). Historically and spatially, this population diversity and turnover resulted in social fragmentation.

In addition to population dynamics, planning decisions capitalised on the road network (Salam, 1998), leading to the division of Bourj Hammoud into a northern industrial waterfront area and a predominantly residential southern area, characterised by deteriorated housing stock with commercial streets dissecting the urban blocks (Harmandayan, 2012). In particular, the south-western part called Nabaa' is characterised by high population density, poor services, the lack of public spaces and a degraded urban environment (Harmandayan, 2012).

Within such a context Nabaa' still witnesses episodes of population influx, and is considered a hub for the disadvantaged. The most recent dynamic is the influx of Syrian refugees. Since 2015, about 61 per cent of the population are Syrian refugees, about 34 per cent are Lebanese and Armenian, and the rest are foreign workers. Irrespective of their background, the population is characterised by low income, and renters suffering from rising rent prices due to the housing market monopolised by few real estate dealers (social development coordinator, UN-Habitat, personal communication, 25 January 2018).

The neighbourhood under investigation in Nabaa' (Figure 1) is located at the crossing of three main roads and next to a school and mosque (UN-Habitat, 2015: 9). It comprises three blocks with 48 buildings and an estimated 2,044 residents in 2015 (UN-Habitat, 2015: 9). The sidewalks are in poor condition, with only commercial activities, and little greenery. The intersection of the three main roads is considered as a square, and the internal roads as the neighbourhood's public spaces (UN-Habitat, 2015: 9).

Figure 1: Location of Bourj Hammoud east of Beirut



To investigate the current public space provision in this neighbourhood, I conducted interviews between January and November 2018 with the social development coordinator at UN-Habitat who was in charge of this process, and reviewed available reports by UN-Habitat (UN-Habitat, 2015, 2016, 2017a, 2017b).

Intervening in Nabaa's

After conducting a rapid assessment in 2015 in Nabaa' followed by detailed neighbourhood profiling of Bourj Hammoud in 2016, UN-Habitat determined the imminent need to initiate a public space process and ameliorate living conditions in a highly congested area hosting refugees. This decision, which was supported by a successful public space programme application (UN-Habitat, 2017a), equally stemmed from the need to decrease tension among residents; this tension was manifested both verbally and physically. The local Lebanese residents claimed that safety and security deteriorated with the arrival of the refugees, and so did services including electricity and solid waste management. The municipality indicated that refugees had an economic impact by opening shops and competing with the locals. The school principal indicated that arguments among Lebanese and Syrian parents were recurring. The Syrians complained of prejudgement by the Lebanese, harassment of some females and money theft in some cases. So what was this public space process?

The Committee

In March 2016 a local committee of 11 members was formed with the help of a local female activist and under the guidance of UN-Habitat who requested that the members represent the neighbourhood with its social tissue including gender, age, role in this neighbourhood and nationality. The committee held regular meetings, and represented Lebanese and Syrians and included a municipal council

member, persons affiliated with the various political parties existing in the area, (for more information on various struggles in Lebanon refer to El-Khazen, 2000, Hanf, 1993, and Khalaf, 2002,). Particularly for contestations in public space refer to Mady, 2012, Fawaz *et al.*, 2009, Bou Akar, 2012, Bollens, 2012, and Deeb and Harb, 2013) two principals of local schools, a mukhtar or head of the locality (a mukhtar is a representative of the local government in charge of administrative tasks) and two activists from the area. In the local committee meetings, the significance of a public space process was highlighted, and residents were made aware that the municipality is a partner along with them in the process. As the majority of residents in Nabaa' are not from Bourj Hammoud, they have no voting rights within this municipality according to the Lebanese electoral law. This has led some residents to believe that their needs are neglected because they are non-voters.

The Intervention Site

One of the committee's first tasks was to aid UN-Habitat in identifying possible intervention sites. Several vacant lots were found at the south-western periphery of Nabaa', yet they were privately owned. Searching within the blocks, the committee identified a lot which was municipally owned though small in surface area, 200 square metres. UN-Habitat then got permission from the municipality to proceed with the implementation of the public space project on it. There was an obstacle, however, the domination of the lot by a drug dealer who defined his territory with a tent, a small van, tables and chairs where men often gathered. The dealer was a foreign worker whose sons were imprisoned, yet was under the protection of local influential persons. The local committee and the municipality worked for almost a year to relocate him away from the neighbourhood. In February 2017 and following the mayor's last warning for evacuation, the public space implementation began. Note that this could not have been achieved without the consent of the local political party representatives, after identifying this lot as municipal and seeing the benefit in offering it to the residents as a public space (social development coordinator, UN-Habitat, personal communication, 23 March 2018).

Minecraft as a Participatory Tool

Once the intervention site for the public space implementation was determined, UN-Habitat was ready to start the process of public space design by mobilising and engaging the community (UN-Habitat, 2016). Within the presented case study, UN-Habitat opted to use Minecraft as a participatory platform (UN-Habitat, 2016), which since 2013 has been implemented in other contexts, yet not in Lebanon.

Minecraft is a computer game that uses building blocks to visualise design ideas. UN-Habitat used it as an engagement tool following seven steps, first by building the model of the location using Google Earth and available maps. The second is to offer training to a group of participants from a UN-Habitat expert. The third is to hold workshops with community participants to give instructions on Minecraft and establish dialogue regarding the purpose of this process and the significance of public space. The fourth is forming groups of 2–4 participants each sitting at a computer, where ideas were collected and discussed, missing amenities were identified, similarities and differences in approaches were later compared. The fifth is constructing the actual Minecraft model generated by the participant groups within the 2–4-day workshops. The sixth is sharing the models with stakeholders, discussing, prioritising and ranking the proposals; this is further explained for Nabaa's case. The seventh is

converting the final Minecraft model into architectural work, estimating the cost and preparing for bidding then implementation (UN-Habitat, 2016). Minecraft was seen as a useful tool for building cohesion since it enabled residents to share their everyday knowledge of the neighbourhood including their experiences, their values and cultures, and use this knowledge as ingredients in a joint public space design process. This established a socio-spatial and contextual link that was useful in forging an understanding of what constitutes a public space for different users.

The public space process in Nabaa' is a pilot project, introducing a participatory approach that is not common in Lebanon, let alone involving Lebanese and refugees. Some adjustments in the seven steps of Minecraft approach were necessary to fit within Nabaa's context. These related to modelling, language, information dissemination and workshop duration. To produce the site model, Minecraft programmers were sent surveyed maps and photographs of the location. UN-Habitat game facilitators did not speak Arabic, except one urban designer who worked in UN-Habitat in Sweden and was trained on Minecraft facilitation. The engagement process took approximately four months, including networking with the community and disseminating the information provided during the workshop. While the Minecraft training sessions usually take four days, the facilitator was alerted that in the Lebanese context and culture, participants would not dedicate that much time. Therefore, information usually shared in the first Minecraft session was instead disseminated in the focus group, allowing for shorter workshop duration. These groups also served to reveal the needs and opinions of residents.

The focus groups took the form of a one-day discussion organized in the neighbourhood school. The groups were formed with the help of the local committee, in particular the female activist, and according to the selection criteria given by UN-Habitat to represent the neighbourhood residents. This was possible as this activist has lived in the neighbourhood for 18 years and gained the trust of residents. She was the gatekeeper whom all authorities and NGOs contacted for support. The groups had five themes: children, adolescents, youth, men and women, and each group was then asked to nominate members for the Minecraft workshop. The five focus groups comprised 120 participants who roughly represented 120 households within a catchment area of five minutes' walking distance from the location. Roughly an equal number of males and females participated and the groups comprised Lebanese and Syrian from different social backgrounds (ranging from homeless to employed).

Tensions between both nationalities surfaced during the focus group discussions, in some cases shifting to problems they were facing and projecting them on the public space discussion. The main issues of contestation were the drop in commerce for the Lebanese as Syrian shops selling cheaper products were frequented by the Syrian refugees; housing rent skyrocketed after the arrival of the refugees with an increase in demand and a limited supply, the willingness of Syrians to share apartments and split rent; issues of insecurity with the arrival of refugees and women feeling unsafe to go out; incidents with Lebanese and Syrians leading to prejudices and generalisations. After continuous discussions, these issues were resolved by UN-Habitat as follows: empowering the Syrians and allowing them to explain their case in front of the Lebanese; reminding the Lebanese of their own war struggles, and that refugees are obliged to flee and hence require support rather than adversity; using as examples public spaces in other refugee-receiving countries such as Germany, in which public spaces are equally accessible by Germans, Syrians and Lebanese without discrimination (social development coordinator, UN-Habitat, personal communication, 15 January and 23 March 2018). The latter was in response to a request to either provide separate public spaces, or temporally segregate the

space's use by nationality, knowing that the space is too small to hold many users. UN-Habitat responded by explaining that the management of the space will assure an equal opportunity and access to all residents to use it (social development coordinator, UN-Habitat, personal communication, 15 January and 23 March 2018).

In July 2016 the Minecraft training started and included 24 participants representing the five focus groups. Around ten groups with six to seven members participated (social development coordinator, UN-Habitat, personal communication, 25 February 2018). The training took place at the UN-Habitat HQ in west Beirut during two consecutive days. Participants were roughly equally divided in terms of gender, but predominantly Lebanese. Syrians, especially females, had some cultural constraints, such as women requiring the permission or accompaniment of the husband, and children not being allowed to go without a parent. About 30 per cent were Syrian and 70 per cent Lebanese in a neighbourhood where 61 per cent were Syrian. However, this did not prevent collaboration within the groups. A 50-year-old woman who could not use the computer was supported by younger group members. One homeless young man was very creative in the ideas he proposed, as was another drug addict. The Syrian children were often more active and creative in their proposals than Lebanese ones. The participants worked in groups of three, and some were allowed to work individually when they did not integrate well in the group. Many different proposals emerged: a Syrian child proposed building his house; some proposed building on two stories a garden and library.

It took the participants one-and-a-half days to complete their designs. Facilitators of each group then summarized the components of each proposal. It is worth noting that participants worked together in mixed groups, not minding their differences and focusing on their design proposals. On the second day, the work of the groups was presented to the local committee. Each group had one participant who presented the group's ideas and the discussion was with the local committee, while the facilitator, an architect, registered all ideas and counted frequencies (turned to scores). Participants felt proud that their work was taken seriously by the local committee including the municipality. The site planning was the combination of ideas with high scores from all groups, which became the basis for the Minecraft model. Participants were made aware that individual designs could not be executed so as not to favour one group over another. This was to ensure equal opportunities for the shared ideas to be implemented. They were also informed by the local committee regarding the feasibility of their ideas (trees, green surfaces, toilet, two storeys and so on), and provided with explanations about the rejected ideas. For example, the proposal to have a two-storey project including a small library was dismissed after explaining why it cannot fit within this tiny lot. The local committee validated the model with UN-Habitat to arrive at a final design, which took a week after the workshop. Some changes were made, for instance bollards proposed to mark the space's edge were replaced by a fence upon the request of the committee, although against UN-Habitat's intentions to keep the space open. The UN-Habitat facilitator then converted the key proposals into a Minecraft model, which the UN-Habitat architect later visualized through perspectives and drawings representing the design components. These included land levelling, flooring, landscaping, fixing sidewalks, furniture, trees and vegetation. The components corresponded to walkways, a resting area, a play area, trees and greenery, screening the adjacent building, lighting and toilets. During the discussion, residents decided not to have the toilets, as the space is very small, and embedded in their neighbourhood, which meant they could use utilities within their houses instead.

The discussion ended around August 2016 when the design and execution drawings with the corresponding bid documents were prepared by UN-Habitat and handed over to the municipality. One condition was to involve workers from Nabaa' to ensure the engagement of the neighbourhood residents during the implementation process. Between August 2016 and March 2017 the municipality started the procurement process. The selected bid included only local workers, such as the contractor, the builder and others. Meanwhile, UN-Habitat kept visiting the area to reassure people that the implementation was ongoing and that it was adopted by the municipality. The local committee continued its involvement in the process; one female activist had an active role in resolving problems arising during implementation. For instance, she was able to detect people who falsely claimed they worked in implementing the public space and asked for payment.

In August 2017 and under the auspices of the municipality, 'Nabaa's Garden – Bourj Hammoud' was inaugurated. Local catering was provided (ice cream vendor) and a show for children was organised (Figure 2). The lively event attracted many people from outside the neighbourhood.

Figure 2: Location of the neighbourhood in Nabaa'



Post-Implementation

The inauguration had an impact beyond the neighbourhood itself with positive and negative effects. On the positive side, some NGOs working within Bourj Hammoud and Nabaa' are using the space for meetings after gaining permission from the municipality (YMCA, Kafa and Himaya). The space is now well-known and popular, and is mostly active when open. On the negative side, some children started fighting over the monkey bar and the municipality did not abide by the space management agreement, and the grass and trees withered. To resolve these issues, the bar was removed and opening hours reduced (Figure 3). To some extent, the belief that the municipality neglected the neighbourhood due to residents' inability to vote seemed to hold true. UN-Habitat's response to this was to rethink the space with the residents' help. This reflects the principle of counter flows, where input from different scales is continuously sought and used to manage the public space.

Figure 3: Location of the lot before and after the public space implementation



The agreement was to have two municipal wardens in two shifts, morning and afternoon. In reality, there was only one, a policeman. Yet after the opening, the space was closed for some days, after which one of the local committee members negotiated with the municipality to open the space from 8am to 2pm. These opening hours were not suitable for the Lebanese children who finished school around 2pm. Only Syrian children had an afternoon school shift and could benefit from the space in the morning. Instructions on how to use the space were posted at the entrance and included the exclusion of food, ball games and access to youth as decided by the local committee. The space was dedicated for resting and for children to play safely away from cars.

To date and after implementation, UN-Habitat has been engaged in further learning from residents about their needs from this space and establishing a sense of ownership. This includes considering: the opening hours, the warden, maintenance of the provided amenities, greenery and safety. Based on residents' feedback, the space was upgraded in spring 2018, and some design elements were changed. The concrete benches, which are less likely to be vandalized or damaged than plastic or wooden ones, were relocated as they are set too close to each other. The grass, which dried out, was replaced with rubber tiles that are safe for children. The concrete benches and walls were painted with graffiti. (social development coordinator, UN-Habitat, personal communication, 23 March 2018). The trees that dried out were replaced with trees in pots, which give shade and do not require much irrigation. The tree pots and sand pits for children will be reused old rubber wheels collected from the area. In terms of safety and visibility, two water tankers used to park just next to this space blocking the view. In their place the tree pots were placed to maintain visibility. Solar lighting fixtures are installed and the whole neighbourhood is benefitting from them. Light wire fences were installed rather than walls. The space's flooring was expanded towards the road, that is, out of its limits, thus extending it into the neighbourhood.

Meanwhile, negotiations with the municipality continue regarding the opening hours and management of the space – either provide a municipally assigned warden for the afternoon session, or assign a local who would be paid by the municipality or funded by UN-Habitat.

Conclusion

The bleak image of a degraded and socially fragmented neighbourhood was transformed. This was possible due to the relational approach, which enabled an ongoing process of communication and collaboration among the municipality, residents and refugees. Within this context, 'the core feature of a relational public space is change' (Tornaghi and Knierbein 2015: 15), which is manifested through the initial engagement of various actors in the space's implementation, the use of the space for social practices beyond the confines of the neighbourhood, and the upgrading that followed. It is an attempt to counter stagnation and residents' perceived neglect of their neighbourhood by the municipality, and equally mix residents rather than suffice to live parallel lives leading to prejudices. This dynamic engagement of individuals has both benefits and shortcomings. It is an interweaving process that starts with reading the spatial and social fabric of the neighbourhood, identifying individuals, establishing social networks, and involving them in placemaking, empowering them to gain a sense of ownership and place attachment, nurturing over time and space a process of social cohesion.

The recently designed space became one component of the nearby facilities that form a fabric weaving across the neighbourhood. This new place established a station in people's everyday practices, providing immaterial benefit through gathering and contributing to wellbeing, specifically for housewives. Also, the space was recognised at a wider urban scale by engaging residents but also outsiders, and accordingly pinning the neighbourhood on the city map.

The relational approach together built a process rather than a product. There is no expectation that the design will solve all the neighbourhood's problems. Yet using the design as a shared basis for the residents is seen to enable encounters, everyday practices, and possibly have the potential to gradually dissolve prejudgements and establish affinity and coherence among disparate residents. This

marginalised neighbourhood with its palimpsest social and spatial urban context provides the ground for reflections on similar contexts in globally.

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Along the river Cormor, re-linking landscapes and public facilities in the region Friuli Venezia Giulia

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Abstract: In Italy, the drawing of policies for an Urban Agenda has only recently re-gained attention on the national level. However, while the discussion still focuses on metropolitan and inland urban contexts concerned by major transformations or abandonment trends, the ordinary framework of small and medium cities and villages – building the most of Italian territories – tends to remain at the background. These situations prevail in Friuli Venezia Giulia, where the 71% of Municipalities count less than 5.000 inhabitants. Many urban centres stand nearby the system of rivers, which structures a variety of landscapes from the mountains to the sea. Since the 2000s, a number of Municipalities from the valley of the river Cormor have started re-thinking their economies, taking slow mobility as the driver for sustainable tourism. With the support of a citizens' Association, they are now working on a River Contract, a non-compulsory tool for the participatory construction of strategic/planning instruments combining environmental protection with sustainable local development. This is the context of the activities that the Master Course in Architecture of the University of Trieste has recently carried out in collaboration with local stakeholders. The design of the southern extension of a horse and cycle track along the river gave the opportunity to re-frame the issue of tourism in a larger planning perspective, aimed at enhancing the relations between the river, and the small/medium urban centres it goes through. Results offer new planning visions that: interpret the Cormor as the spine of a network of ecological services; foster the reuse and re-connection of existing public facilities; re-define the topic of 'slow tourism' according to the specific characters and lifestyles of these contexts.

Keywords: river landscapes; ecological services; slow mobility; public facilities

1. Introduction

In Italy, over the last years, the drawing of a national Urban Agenda has re-gained attention (Calafati, 2015, ed.). More recently, and in the view of the 2021-2027 European programmes, the evaluation of the results that have marked the period of policies and projects just behind us has been accompanied by reflections on a growing differentiation of urbanisation features all across the Country (Munarin and Velo, 2016, eds.; Urban@it, 2018). With reference to an increasing variety of development speeds and trajectories, this differentiation will make the *customization to the contexts* of future governance and planning tools a particularly complex task, both on national and local levels.

1.1 'Middle lands'

In Italy, the map of abandonment and of territorial situations in conditions of environmental, economic and socio-demographic fragility is increasingly articulated and widespread. Even urbanised territories

that have historically been at the centre of the dynamics of production and modernization are changing their nature. This process sees the interweaving of trends of selection and decline, of marginalization and slow emergence of new opportunities that, however, struggle to find full expression in new development paths (Borghi, 2017, ed.; De Rossi, 2018, ed.). In the background a broader reflection lies. In Italy and in Europe, today's definition of 'city' lends itself to different interpretations, as evidenced by the analyses of national research networks (Balducci *et al.*, 2017a, eds., 2017b, eds.; Alleanza Italiana per lo Sviluppo Sostenibile [ASviS] and Urban@it, 2018). Many Italian regions are divided into numerous Municipalities. Characterized by a dispersed urbanisation made by small centres, these territories are crossed by practices and rituals that, due to their spatial extension, appear in some ways 'metropolitan', and that with denser urban contexts share the issues of the crises afflicting the contemporary Western world. «Urban planning is fully involved, even shaken by the current mutation: the gradual shattering of proven ways of doing is accompanied by a serious difficulty in questioning its principles in relation to a new interpretation of what happens in the cities and territories, in what is now identified as the urban *tout court*» (Gabellini, 2018)¹.

In this sense, the case of Friuli Venezia Giulia is representative of situations that recur at national and European levels. In this region there are not real metropolitan cities; the 71% of Municipalities count less than 5.000 inhabitants, with an overall standstill of population and growing aging trends; there is only one medium-sized city (Trieste), and three small capital cities (Gorizia with 34.411, Pordenone with 51.139, and Udine with 99.518 inhabitants) (Regione Autonoma Friuli Venezia Giulia, 2018a). The contexts of Friuli Venezia Giulia belong to the many '*middle lands*' that dot the national territory. With this term we allude to situations that, while consistent and pervasive, do not fall within the parameters and perimeters of the most dynamic *metropolitan areas*, nor within those established for the most marginal *inland areas*, both at the core of the national and regional policies for the territorial cohesion established by the European Union programmes 2014-2020². Our interest in 'middle lands' derives from what in Italy today appears a «strategic, political and cultural disinvestment» in the urban peripheries of small and medium-sized centres, as well as in the many places of a «province that is made of polycentric urban and productive fabrics» (Carrosio, 2019: 13). In these contexts the number of inhabitants and the equipment of services still hold on (albeit with difficulty), the situations of economic crisis and decommissioning are still limited (and therefore, perhaps, easier to govern). Nonetheless – due to the difficulties in identifying and accessing specific financing channels – it is strong the risk of being left alone in the face of increasingly complex environmental and socio-economic challenges, and therefore of slipping into more serious conditions of marginality and hardship³.

1.2 A different perspective

Friuli Venezia Giulia is the context of the activities that the Master Course in Architecture of the

¹ From here on, all the translations from Italian texts are made by Elena Marchigiani.

² The reference is: to the National Operational Program (PON) *Metropolitan Cities 2014-2020*, adopted by the European Commission with Decision C (2015) 4998, and addressed to Torino, Genova, Milano, Bologna, Venezia, Firenze, Roma, Bari, Napoli, Reggio Calabria, Cagliari, Catania, Messina and Palermo; to the National Strategy for Inland Areas (SNAI), which involved 72 project areas (1.077 Municipalities) identified as «peripheral» and «ultraperipheral» with respect to the distance from the poles of urban services (Barca, 2012, 2016; Barca *et al.*, 2018; Carrosio, 2019). For an overview of the purposes and implementation of these programs, see: www.agenziacoesione.gov.it. Date of access: 31/05/2019.

³ In Friuli Venezia Giulia these risks are made even harder by the abolition of the provinces: the intermediate government bodies between the Region and the Municipalities. By virtue of its autonomous status, Friuli Venezia Giulia was in fact the only Region in Italy (together with Sicily, equally autonomous) to implement the Law no. 56/2014, dealing with provisions for Metropolitan cities, Provinces, unions and merging of Municipalities. Today, there is therefore no intermediate level institution that is able to coagulate the interests and perspectives of territorial development among Municipalities that generally have a few thousand inhabitants.

University of Trieste has recently carried out in collaboration with local actors and Municipalities⁴. In this region, many urban centres stand nearby the system of rivers stretching from the mountains to the sea. The focus of our reflections is the sequence of urbanised spaces, including both small centres along the river Cormor, and the peripheries of the middle-sized city of Udine bordering the watercourse⁵. These areas were selected in order to cover a significant sample of *intertwined river and urban landscapes*: from the northern foothill sector, where the Cormor runs in the middle of the reliefs topped by small villages; to the ‘dry plain’, where Udine conurbation lay, and – apart from the Cormor – the minor water network is mainly underground; to the southern ‘wet plain’, where the water system comes to the surface, and the urbanisation becomes more scattered.

The stakeholders’ request to design the extension to the sea of a partially existing – but lacking of maintenance – horse and cycle track along the river gave us the chance to *re-frame the issue of tourism in a larger planning perspective*. Our aim was to help local stakeholders re-discover hidden and forgotten connections among the water landscapes and the settlement structure, in order to re-imagine the accessibility to the river banks as a driver for the development of new circular economies, services and spatial equipment spreading on wider urban and rural territories. In more general terms, our goal was to re-read the ‘middle lands’ not as ‘hanging’ territories, but rather as an *opportunity to imagine new development paths*. What these places still lack are in fact project-oriented representations, capable of giving visibility to resources that – due to their discontinuous and heterogeneous characters – are still underestimated by current economic and tourist dynamics. With the students, we built maps and pictures that helped us see these spaces in a different way: the river no longer as a simple longitudinal track or a trivial back of cities and rural sites, but as a complex and structuring system, once again linked to the contexts, and able to put into play the many underused areas along its course. In this sense, didactic and research work provided territorial and site specific design inputs to: interpret the Cormor as the spine of a new network of ecological services working in-between the scales (territorial, urban and neighbourhood); reuse and re-connect a rich framework of existing public facilities (green spaces, areas and equipment for mobility, social and health assistance, education and culture); re-define the topic of *slow tourism* in relation to the particular nature, sensitivity and lifestyles of these contexts. Mostly and above all, our aim was to draw *place-based interpretive frames and visions*, helping local actors build deeper reflection and discussion towards future policies and projects.

2. Territories on the edge

Coming out of the glacial hills, the river Cormor crosses the urbanized plain and reaches the Adriatic Sea, through a sequence of in-between urban and rural situations. The most evident character of this variety of *intermediate spaces* is the peripheral and residual character of areas, artifacts, practices and uses, with respect to the more compact and central nuclei that give shape to the settlement structure.

2.1 Sequences of intermediate spaces

⁴ The reference is to the Urban Planning and Design Atelier II (academic year 2018-2019), at the fourth year of the Master Course in Architecture. The atelier was coordinated by Elena Marchigiani, with Paola Cigalotto and Andrea Peraz. The didactic activities were organized in the frame of a formal agreement between the Department of Engineering and Architecture of the University of Trieste, the Municipality of Tricesimo (in the former province of Udine), the Valley of Cormor Association.

⁵ Specifically, we worked on 9 Municipalities from the former province of Udine. From the north to the south (the first figure refers to the number of inhabitants; the second to the territorial surface in square kilometres): Tricesimo (7.687; 17,7), Tavagnacco (14.981; 15,4), Pagnacco (5.059; 14,9), Udine (99.518; 57,2), Pasian di Prato (9.363; 15,4), Campoformido (7.891; 21,9), Mortegliano (4.969; 30,1), Pozzuolo del Friuli (9.927; 34,4), Castions di Strada (3.767; 32,8) (Regione Autonoma Friuli Venezia Giulia, 2018a).

Upstream, the initial part of the river course is closed between small hill towns; it forms an environmental mosaic, made of places that are characterized by high biodiversity and a strong topographical articulation. When entering the areas interested by our design explorations – between the Municipalities of Tricesimo and Pagnacco – the built-in path course of the Cormor keeps the buildings at a distance: the water is almost inaccessible, while on the summit of the hills the ancient centres stand; only some of them reach the edges of the river terraces. In the plain section – between Tavagnacco and Campoformido – the stream enters Udine conurbation. Its meanders cross several times the highway, along which large public facilities are located. Urban settlements border the watercourse on both sides: here the riverbed offers a precious pause in the urban structure, and an environmental corridor for the hinterland of the capital of Friuli. Downstream, the landscape opens up and the Cormor flows next to small ancient centres and their most recent expansions. From the Municipality of Mortegliano to that of Castions di Strada, the watercourse is punctuated with abandoned manufacturing buildings (industrial archaeology, mills and spinning mills, former military areas, etc.). In addition to freshwater prairies and natural wetlands, the stream touches the remnants of ancient plain woods and many floods mark its history; for this reason, the final stretch (running through the reclaimed lands) has been channelled to the sea.

The three transects where our design explorations took place – Tricesimo/Tavagnacco, Udine/Campoformido, and Mortegliano/Castions di Strada – correspond to a large variety of river landscapes, with different degrees of urbanization and naturalness. However, they show some common features. Despite the presence of areas of environmental interest, the lack of explicit relationships with the neighboring urban contexts, over time, has contributed to relegate them to a marginal position with respect to the overall functioning and use of these territories. A common character is the location on the edge of a ‘territorial machine’, that here still finds it difficult to reverse on contemporary development trajectories (Maciocco, 2006). At a first glance, there are no exceptional environments, great tourist and cultural attractions. The minute and ordinary elements of spatial identity are weakened by the crisis of the socio-economic conditions that, in the past, have ensured their construction and management. Standing on the border between the city and the countryside, the water and the land, these *counter-spaces of the contemporary city* risk being reductively interpreted as «*places that don't matter*» (Rodríguez-Pose, 2018), where transformation puts aside the selective and imaginative abilities of the project, to give space to the inevitability of abandonment and/or anonymous urbanisation trends (Figure 1).

However, these interpretative drifts can be avoided by taking a different approach. Since in these places it is not easy to identify striking aspects with a propelling role, the first move is «*to re-centralize the margin*» (De Rossi, 2018: 6): by making our glance more attentive, we have to search for the local conditions on which to graft *trajectories of internal metamorphosis*. In this perspective, the relationship with the river – that, up to the recent past, was vital for productive activities and communities – can once again become an opportunity to qualify activities (agriculture, tourism, housing, etc.), by focusing on their synergies and capacity to answer the demands for a *better quality of life* (Lancerini, 2005; Marchigiani, 2010). This quality finds today a fundamental ingredient in the landscape (Council of Europe, 2000). Coherently to this approach, our design work re-read the *river landscapes* as a discreet but relevant presence creating well-being conditions; as the pivot of transformations that are rooted in places; as the medium and generator of a plurality of practices, performed by many actors who can be involved in the development of local territorial systems (Lanzani, 2005).

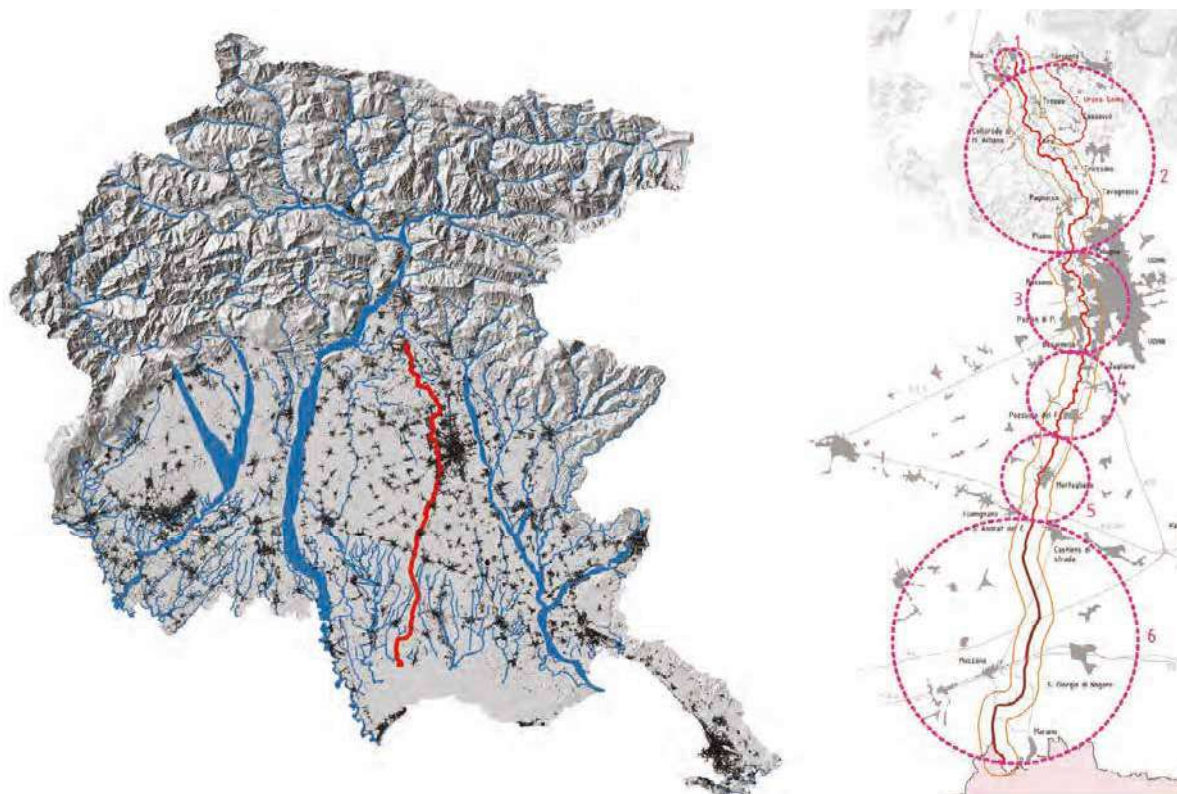


Figure 1. On the left the river structure in the region Friuli Venezia Giulia (in red, the Cormor). On the right, the river Cormor and the settlement structure. The 3 transects of design explorations belong to landscapes 2, 3 and 4-5. Source: P. Cigalotto.

2.2 And yet something moves: towards the River Cormor Contract

The opportunity to work on the Cormor landscapes was given by the collaboration with local stakeholders who, over the last years, have been engaged in the construction of a complex strategic process. Since the early 2000s, a number of Municipalities along the river have started to jointly reflect on the opportunity to work on the enhancement of the basin, the sustainable management of water resources and the settlement of new economic activities. Thanks to European cooperation funds, they succeeded in refurbishing the northern part of a horse and cycle track – named *Ippovia del Cormor* – bordering the river⁶. With the support of the Valle del Cormor citizens' Association, these Municipalities are now engaged in the definition of a River Contract: a large scale tool for a shared construction of long-term strategic and planning instruments, where environmental protection combines with local development, and the horse and cycle track is extended to reach the lagoon on the Adriatic Sea.

The objectives of the EU environmental regulations stand at the core of this tool⁷. In Italy, in 2010, the *National Charter of River Contracts* defined them as «processes of negotiated and participatory planning aimed to reduce the eco-landscape degradation and to upgrade the river basin/sub-basin areas». The contract is built locally, between public administrations, private subjects and citizens involved at

⁶ The project *Ippovie In@natura* was financed in 2005 by the EU Programme Interreg II Italy-Slovenia. From Buja to Tricesimo, 35 kilometers of paths bordering the river were re-paved and tourist information billboards were arranged at the entrances to the track.

⁷ The reference is, in particular, to: 92/42/CEE (Habitat Directive), 2000/60/CE (establishing a framework for Community action in the field of water policy), 2007/60/CE (floods directive). See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1559029419256&uri=CELEX:32000L0060>. Date of access: 31/05/2019.

different levels; the intent is to define and implement local development paths, whose «propulsive heart [...] is the reconstruction of a shared vision for the hydrographic basin. This representation has to guide the signatories of the contract in developing a project that is coherent with the real potential that the territory expresses»⁸. Although the River Contracts are a non-mandatory instrument, at the national level they obtained legal recognition with the Law no. 221/2015 (environmental provisions to promote green economy measures and to reduce the excessive use of natural resources), through the introduction in the *Environmental Code* of a specific article (Legislative Decree no. 152/2006, art. no. 68 bis). Even if the focus is the management and protection of water bodies and basins, the awareness of growing territorial fragility and the spread of hydrogeological instability processes (due to the effects of urbanisation, poor maintenance and climate change) are at the base of the progressive orientation towards multi-objective actions, in which safeguard, development and participatory governance integrate (Bianchini and Stazi, 2017).

The process towards the construction of the *River Cormor Contract* was fostered by the adhesion, in 2015, of the Friuli Venezia Giulia Region to these initiatives⁹. A further incentive was the possibility to access regional funds that – although not clearly planned – in the future might be addressed to the implementation of a strategic and shared framework of actions. The process started in 2017, with the organization – by the Valle del Cormor Association – of participatory activities open to local communities. The preparation of the Document of Intents for the River Contract started in May 2018. The agreement with the University of Trieste and the design activities developed with the students between October 2018 and January 2019 strongly interacted with this process. In April 2019 the signing of the Document of Intents was started with the coordination of the Municipality of Tricesimo, and the involvement of the Friuli Venezia Giulia Region, the Reclamation of the Friuli Plain Consortium, and the Valle del Cormor Association; up to now half of the 25 river basin administrations have signed.

The objectives set out in the Document of Intents cover different fields of action. They not only consist in the protection of the environment, the prevention of the hydro-geological risk provoked by the floods that periodically affect the basin, the reduction in the level of water pollution due to urban and agricultural activities. They also deal with the tourist enhancement of these territories, whose location in the proximity (albeit, once again, on the edges) of important regional, national and European cycle routes offers unprecedented perspectives (the reference is, in particular, to the Alpe Adria cross-border itinerary)¹⁰. Specifically, the ‘Cormor system’ is seen as an opportunity for developing sustainable tourism through the reuse of a network of existing inter-estate roads. The horse and cycle path is interpreted as a *widespread infrastructure for slow territorial fruition*, with a high potential to re-activate local economies: accommodation and catering equipment, also connected to the sale and

⁸ The National Charter of River Contracts was drafted on the occasion of the V National Table of River Contracts, held in Milan in 2010. See: <http://nuke.a21fiumi.eu>; <http://www.contrattidifiume.it>. Date of access: 31/05/2019.

⁹ The Regional Law no. 11/2015 (about organic regulation on soil protection and water use), defined and structured the process of negotiated planning for the River Contracts; with the resolution of the Regional Council no. 1448, 28th July 2016, Friuli Venezia Giulia formally adhered to the *National Charter of River Contracts*, launching activities aimed at promoting and supporting their diffusion on the regional territory.

¹⁰ In the Regional Landscape Plan approved in 2018, the completion of the Cormor Horse Trail up to the sea is part of the project for a regional slow mobility network. The trail is identified as a complementary component to the primary Alpe Adria cycle route, which is mostly already infrastructure, and runs from Tarvisio to Grado. On a wider scale, this regional network is part of the Bicalitalia and EuroVelo routes (Regione Autonoma Friuli Venezia Giulia, 2018b; see in particular document *E3. Scheda della Rete della Mobilità Lenta*).

consumption of typical products; sporting events; trails offering the experience of a variety of landscapes, from the mountains and the hills, to the lagoon and the sea.

3. New representations, between the water and the land

The activities developed with the students aimed to enlarge the design perspective from the areas directly related to the river, to the urban and rural landscapes the Cormor runs through. The Document of Intents is in fact only the first step of a process that should lead, on the one hand, to a Strategic Document where a medium-long term scenario integrates large scale spatial planning into local development policies; on the other hand, to a short-term Program of Actions, where the methods, times and economic resources that are necessary for implementation are defined.

With reference to this process, our contribution consisted in *anticipating spatial visions* supporting the recognition and the regeneration of systems of places and activities linked to the river and to its 'middle lands'. Taking tourism and slow mobility as the drivers for raising the quality of local living conditions, we worked on spaces dedicated to occasional practices and to residents' daily movements, on the reuse of dismissed areas, and on the settlement of new services and forms of production.

3.1 Research by design

Reflecting with local actors was fundamental. Even within the short time of a semester, the Urban Planning and Design Atelier was conceived as a gradual approach to the contexts, their voices and demands for transformations. The aim was to place ourselves in a hybrid field, between training, action-research and public engagement. What interested us most was exploring *locally rooted opportunities* for economic and social re-development. During this process, professors and students were accompanied by representatives of the Valle del Cormor Association and of the network of Municipalities adhering to the River Contract.

We started by combining the *analysis of local and regional planning tools*, with *participated visits* to the study areas, where we walked, talked to local technicians and politicians, listened to inhabitants, observed and reflected in places. No less important was *moving across the scales* of urban planning and design, to capture different dynamics and relations between the river and the territory. The presentation of intermediate results to local stakeholders prompted us to synthesize ideas into new representations of existing resources and of their enhancement potentials. We were convinced that discussing and, eventually, sharing images for the future had to be essential ingredients of our planning practices.

3.2 River landscapes as complex ecologies

All through the Atelier, students and local actors were invited to re-read the river contexts as complex ecologies. Going beyond the dimensions of the environment and soil protection, the potentials of these landscapes refer to broader sets of factors that the project is asked to critically interpret and re-arrange.

In order to safeguard, restore, enhance and manage river landscapes it is necessary to recognize and construct multiple correlations among many material and immaterial elements of the territory. By taking the concept of landscape as a general frame for a plurality of systems and processes, this approach allows to recognize the primary value of the interconnections between the river and the urban settlements, the strengths and the opportunities resulting from the synergies between the natural elements and the evidence of local culture. Until a recent past, the water system has been an important

reference for the localization of irrigation ditches, factories, mills, furnaces, economies related to the use of water. Although a large part of this estate has been abandoned, planning its reuse with respect to its identity and historical values can offer new perspectives. When working on the river landscapes, the project must also be able to cope with the weaknesses and threats that specifically affect these contexts. Let us consider the frequent presence in the riverbeds of (mostly abusive) landfills; or the waste of ecological and landscape resources provoked by urban settlements and agricultural activities that often spread to the banks of the watercourses. These processes can be contrasted by giving space to a growing demand for leisure activities to re-appreciate the values of nature; and by re-interpreting the places along the waterways as strategic nodes of new systems of collective spaces and environmental connections to the surrounding areas. In the same way, particularly significant alterations – such as the presence of artificial basins – can be re-read as design opportunities when re-framed in wider scenarios for a sustainable tourist use.

Due to all these considerations, building new visions for the river landscapes meant focusing on the different functions (and values) that these contexts can specifically perform:

- *ecological functions* (rivers as excretory systems; ecological corridors; areas where to govern risk factors and territorial fragility);
- *social functions* (rivers as spaces perceived and enjoyed by local communities; common goods; components of systems of equipment and services addressed to stable and temporary, static and moving populations);
- *economic functions* (rivers as places of economic activities, different from intensive production and agricultural exploitation);
- *cultural functions* (rivers as gates through which re-discover and enhance the history and the identity of the territory, and as attractors of new tourist flows).

3.3 Not only tourism and cycling... but also collective equipment and services

During the Urban Planning and Design Atelier, the local actors' request to draw the extension of the Cormor horse and cycle trail was integrated into a more complex vision. Working on the relationships between tourism and cycling forced us to define extensive *re-equipment strategies*. In this sense, our investigations searched for areas and materials for *light 're-infrastructural' projects*, that had to be pertinent to the sensitivity of the contexts on which we were operating.

The territories crossed by the river Cormor were re-interpreted as components of a *network of greenways*: «communication routes reserved exclusively for non-motorized journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area» (European Greenways Association, 2000). This key emphasizes the many potentials of slow mobility: from its being a means to favor access and enjoyment of those 'minor' and 'undercurrent' landscapes that only a slow fruition allows to appreciate; to its being an opportunity to encourage *loisir* practices, oriented to re-activate and to 'put into circle' sustainable territorial economies. In our region the growing of cycling supports this reading: between 2015 and 2017, along the Alpe Adria cycle route, transit increased by the 46%¹¹.

¹¹ These figures were disseminated by the Association Ulisse-FIAB, with reference to the 19th report on German cycling tourism prepared by ADFC (German Cyclist's Association). See: <http://www.ulisse-fiab.org/?p=9277>. Date of access: 31/05/2019.

However, *cycling is not just a tourist practice*. As in the past, and now again – due to the economic crisis and to a growing (albeit in Italy still timid) environmental sensitivity – moving by bicycle (and on foot) fosters tourist tracking on dispersed urban territories. Moreover, by observing the practices that are generated from a daily use of the bike, we often «recognize specific and new uses of space [...] that mix tradition, innovation, trends and multiculturalism». In our Country, the growth of these seasonal and daily movements «is tracing interesting geographies telling how economic realities, local administrations, stakeholders and individuals [...] have been able to respond and re-propose products and services of particular innovation and excellence» (Velo, 2015: 1663). When specifically working in urban contexts of thin and polycentric grain, «dirt roads, river towpaths, informal landscapes between buildings, areas of programmed floods, drainage basins and collective open spaces become the elements that constitute an additional *layer* of porosity within the city» (Velo, 2016: 332).

According to these issues, we invited the students to integrate the green and blue network of the greenways with the *system of collective equipment and services* that punctuate the edge territories of Cormor. In this way, the aim to re-embed the river to its contexts merged into the more general objective of making «cities inclusive, safe, resilient and sustainable», at the core of the *2030 Agenda for Sustainable Development* (United Nations, 2015), and of the next season of European funding programmes. Thanks to our surveys, we could see how the fragility of the territories along the river and of the communities that inhabit them were also connected to growing deficiencies in the maintenance of public spaces and equipment for daily living; to their inadequacy to answer to the needs of moving and changing populations; to their being closed to the contexts (i.e. the fences that generally surround the schools), and difficult to access. Moreover, re-designing and re-framing this – still implicit and not effective – *public city network* into new territorial visions could offer new solutions to face the current chronic scarcity of public funds, through more systemic urban regeneration actions.

Working in an integrated manner on the banks of the river, on the edges of urban settlements, on rural spaces, and on the leftovers of peri-urban agriculture was therefore a stimulus to take the project of the cycle route as one of the main ingredients of *a new spatial structure*. The importance of the cycle route was increased by its capacity to hold together different populations and social practices, and to foster the definition of new services both for outsiders and insiders. Moreover, the design of the route was a prompt to re-think the uses of existing public spaces and of their spatial connections; to update the legacy of urban policies that, over time, have built the «material quality of welfare»: green areas, areas for mobility and parking, social-assistance and educational-cultural services. In this sense, our design explorations also provided inputs to re-furbish large quantities of equipped spaces that have been provided by *planning standards* since the last century; spaces where the «individual and collective practices that give body to the ‘quality of life’ of women and men in their daily experience of inhabitants and users of the city» take place today (Pasqui, 2017: 139). Identifying the itinerary for the cycle route therefore stimulated us also to imagine new types of standards, in order to face climate and environmental emergencies through the planning of *ecologic services*, and to give answers to social demands and requests for economic re-development¹².

¹² The anniversary of the Interministerial Decree no. 1444/1968 on planning standards offered the opportunity to reflect on this pillar of urban planning and on its possible evolution. Many research groups have dealt with these issues; among them, the *Standards Laboratory*. With the support of the Italian Society of Urban Planners (SIU), it involves: University of Trieste (Sara Basso, Elena Marchigiani); Politecnico di Milano (Cristina Renzoni, Paola Savoldi); IUAV Università di Venezia (Alessia Franzese, Stefano Munarin, Maria Chiara Tosi); Università di Roma Tre (Mauro Baioni, Giovanni Caudo, Nicola Vazzoler). See: Renzoni, 2018, ed.; Marchigiani, Savoldi, to press, eds.; <https://standardurbanistici.wordpress.com/eventi-attivita> (last access: 2019/05/11).

4. Tailor-made design, across the scales

Our investigations in the Cormor 'middle lands' continuously moved between different scales and observation perspectives. If developing strategies and projects rooted in the contexts was necessary to reveal their latent identities, we did not want to fall into a 'localistic' approach.

We therefore started from a large scale, in order to draw a general master plan holding together the landscapes between Tricesimo (to the north) and Castions di Strada (to the south), and synthesizing the many functions – ecological, social, economic and cultural – that the river system, as a whole, can play. At the same time, we focused on a site-specific scale. Our aim was to recognize the territorial components with which the different transects of the river landscapes enter into contact; the risks of their degradation and simplification; the opportunities that their enhancement can offer to re-activate local resources and energies.

4.1 Tailors and jewellers

In the process of continuous displacement of our gaze, we have been encouraged to re-think not only the forms of the project, but also the role of the designer.

In the 'middle lands' the «centre/periphery, or city/countryside *cleavage*» which «seemed to have largely gone out of use in mature modernity» (Revelli, 2017: 45) still appears firmly present, not only in the spaces but also in the imaginary of actors and local communities. By making our externality a point of strength – and trying not to slip into the banal re-proposal of recipes that had been elaborated elsewhere – we imagined ourselves as tailors, called to mend fabrics of material and immaterial relations that time had consumed. As artisans engaged in a patient work of re-copying, unstitching and re-putting in place the contexts we were investigating. We were aware that *these territories needed a particular care*: similarly to the clothes put aside – but we are attached to – they had to be re-worked in order to respond to changed aesthetic and functional needs.

During our surveys we also cultivated the awareness of moving across places that are very rich of resources: the river first, but also the variety of landscapes, the diffused fragments of naturalness, the environmental networks developing along the minor hydrographic network, the many artefacts of a history of land construction and of economic and social investment. We therefore also imagined ourselves as jewellers, committed to re-nestle the little gems we had encountered. Our task was to define favourable conditions for *embedding into the tales of these territories* processes of innovation, new daily wanderings between the river and the cities, practices of an 'ordinary tourism' that takes the distance from the acritical importation of standardized models.

4.2 A new infrastructure for a collective city

Some specific questions addressed our design explorations: how to imagine the Cormor landscapes as the backbone of ecological and functional strategies aimed at structuring and 're-infrastructure' the territory; how to draw a spatial framework capable of re-composing a collective city on a vast scale; how to contribute to the overturning of hierarchies, and to the transformation of the watercourse from a back to a centrality generating new connections and public facilities. The overall vision drawn by the students' master plan outlines original geographies, in which the Cormor re-gains the role of reference for living and moving in contexts of varying thickness which, perpendicularly to the river, creep into

urbanised and rural areas. In this way, a new complex infrastructure of spaces for collective use takes shape, branching out in a sequence of side transects and chains of equipped places.

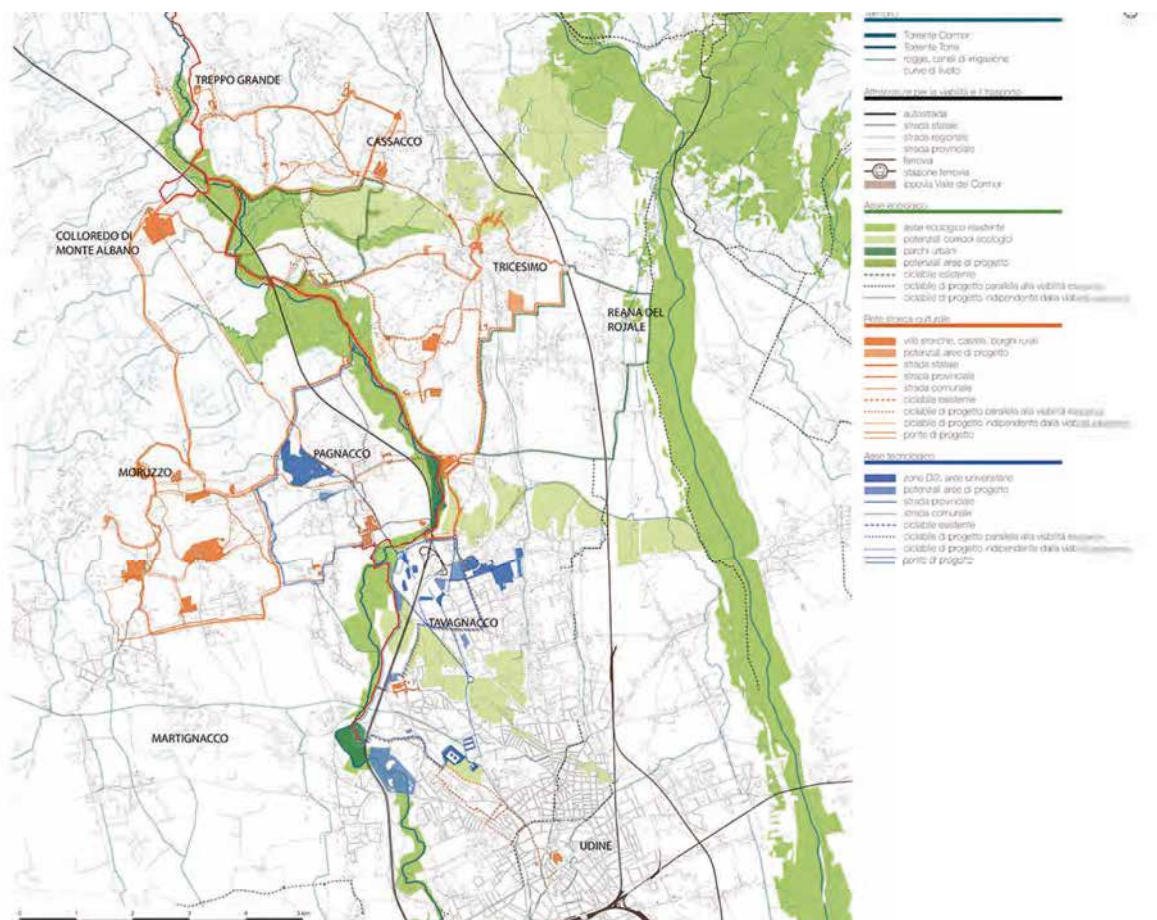


Figure 2. The master plan (transect 1: Tricesimo/Tavagnacco). Source: P. Barbiani, M. Caiffa, M. Collenz, S. Di Ferro, L. Lauricella, I. Morgera.

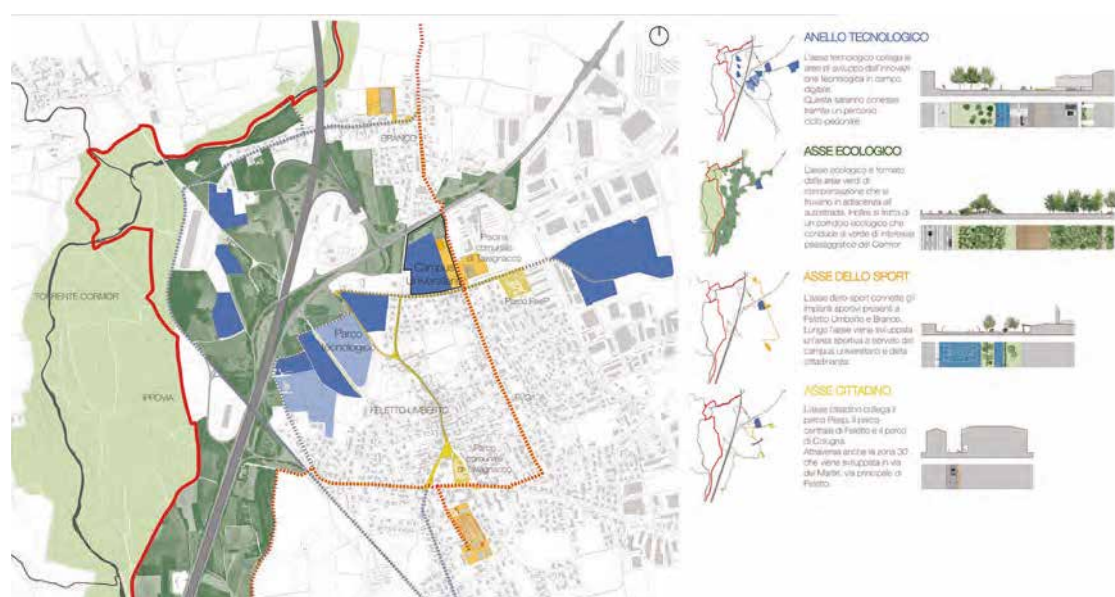


Figure 3. Axis of innovation. Source: M. Collenz, S. Di Ferro, L. Lauricella.

In the northern section of the 'Cormor system' the master plan proposes an image made of *arches and buttonholes*. Two green transects (the 'arches') overwrite the sequences of crops and areas of landscape interest that, by crossing the plain, ecologically connect the rivers Cormor and Torre. They are integrated by a circuit of cycle paths (the 'buttonholes'): a system of links between the main path (already built) on the river bank, the rural villages, the villas and the castles on the hills, the small railway stations in the area (Figure 2).

Within the conurbation of Udine – in the Municipality of Tavagnacco – this circuit finds a graft in what the Town Plan identifies as a new system of services and centrality of territorial scale: an '*axis of innovation*' comprising a succession of areas perpendicular to the river, intended to host a science-technology park and a university campus. The circuit connects the new campus to the existing equipment (neighbourhood parks and sports facilities), and becomes the occasion to transform the streets that penetrate the densest residential fabrics into '30 km zones'. Even more importantly, the definition of new territorial and ecological connections addresses the choice to design the campus according to sustainability criteria (from water management, to the use of devices for saving and producing energy from renewable sources); as a space that is permeable to the city and to the landscape, where one can find new sports and cultural activities, designed for a flexible use by students, tourists and residents (Figure 3).

The aim to *overcome the functional and spatial separation from the contexts of large plots for territorial equipment* similarly directs the work on the surroundings of the 'citadel of sports', to the north of Udine. In the riverbed of the Cormor river, the design of the landscape bordering the cycle lane is meant to reduce the impacts of the nearby highway, through the creation of drainage basins, reed beds, and the insertion of wood strips. These green infiltrations further extend, to scratch the impermeable surface of the paved areas around the citadel of sports. Not far away, along the cycle path, a sequence of shared vegetable gardens, areas for the sale of agricultural products, recreational and sports activities, draws a new type of public space, whose articulation helps to bridge the functional and perceptive gap with the huge scale of the existing equipment (Figure 4).



Figure 4. Citadel of sports. Source: P. Barbiani, M. Caiffa, I. Morgera.

In the central section of the watercourse, the cycle route passes from one side to the other of the Cormor, often keeping a distance from the river banks. In its waving movement, the path frequently approaches the edges of the city of Udine, where strong differences in the grain both of residential fabrics, and of urban and neighbourhood equipment can be recognized. In these contexts, the master plan proposes the image of a *necklace of parks*. The strategy of re-coupling the cycle itinerary to the places of everyday living translates into the identification of a network for soft mobility, connecting the suburban track to the main city centre. Along the network, the reuse of a series of still vague open spaces concurs to re-design the fringes of Udine, Pasian di Prato and Campoformido. Structured like a comb, the green itineraries form a sort of 'bicycle ring road': a fast connection for tourists and citizens, who can thus reach the leisure areas along the river avoiding the busiest radial roads, and enter the city moving along safe routes to access to urban equipment and services. What makes this journey attractive is precisely the variety of urban situations and collective spaces – new and existing – that it intercepts (Figure 5).

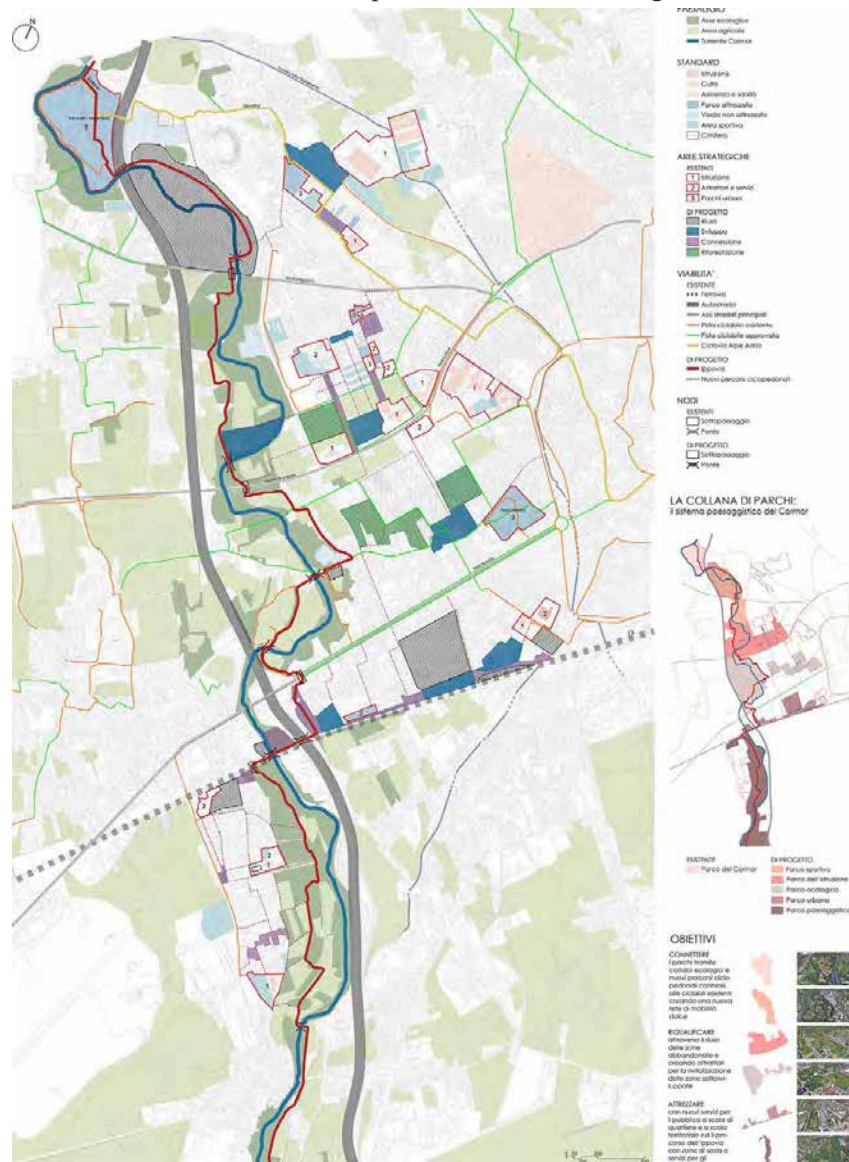


Figure 5. The master plan (transect 2: Udine/Campoformido). Source: G. Bearzotti, G. De Conz, T. Linternone, T. Lippiello, M.T. Manzara, V. Novello, N. Pigat, G. Zei.

In the north, the choice to place one of the new parks nearby a large social housing district ('Peep Ovest') is supported by a generous presence of areas realized as planning standards (gardens, schools of different levels, social and health services), and by the project to further develop an existing centre for higher education. Stretching from east to west, the new green spine is connected to the river by a branch of the main cycle path, which is obtained by re-sizing and re-arranging the section of the road that currently divides the schools from the housing district. Additional mending elements are given by the extension, in a north-south direction, of strips of open spaces from within the neighbourhood to the sports areas and the vegetable gardens conceived as *services complementary to the school cluster*, open to tourists and residents. What comes to light is a green carpet, where the Cormor plays again the role of primary frame (Figure 6).

Moving to the south the focus is, even more explicitly, on the urban extensions of public facilities, on the '*spatial chains*' where daily movements take place between dwellings, work spaces, services and leisure (Basso, Marchigiani, to press). Radiating out into peripheral tissues that are characterized by reduced articulation and limited spatial quality, the *design of a new soil* (Secchi, 2000) builds new ecological services. It is starting from the recognition of a fragmented presence of green plots that, again in the outskirts of Udine, students' design explorations propose a widespread park, linking a large garden (parco Moretti), the cemetery, schools and sports fields, abandoned areas. The park is made of different types of forest which are meant to improve air quality and microclimatic conditions; in the middle of urban woods, a further branch of the bike path runs, finding new equipment for children, youngsters and tourists near the riverbed (Figure 7).

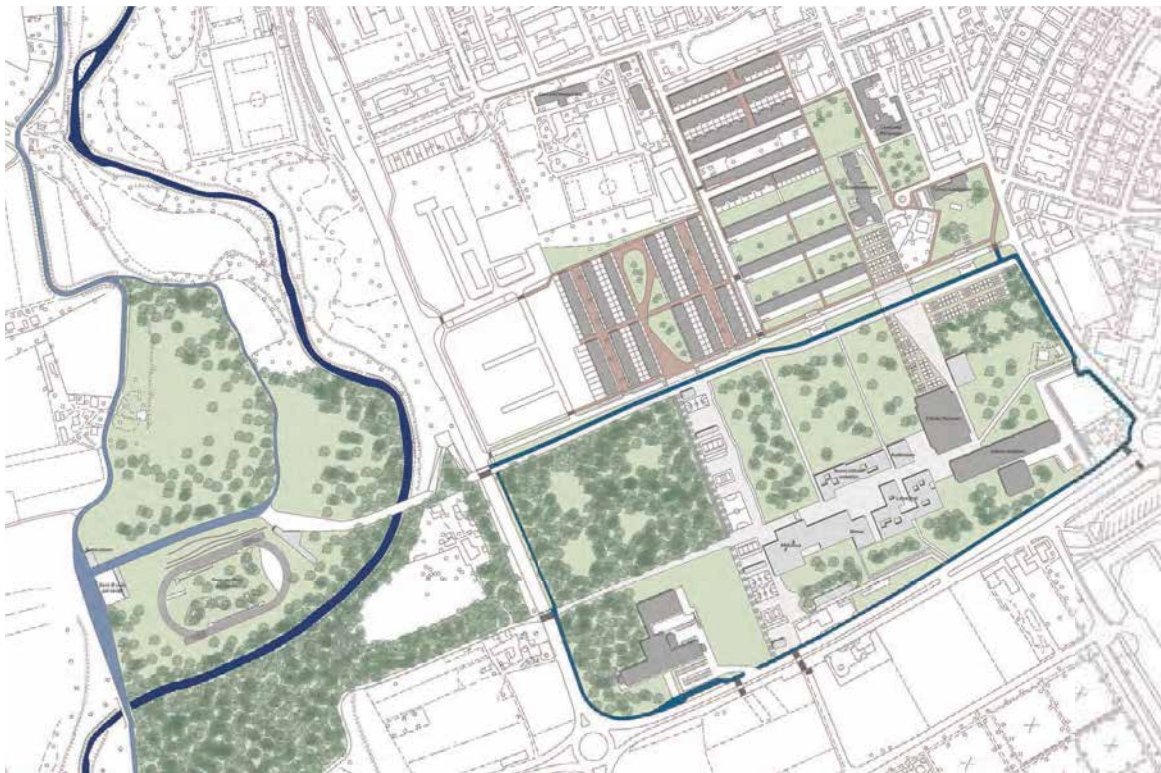


Figure 6. Peep Ovest. Source: T. Lippiello, V. Novello, N. Pigat.

In the current economic and demographic standstill, *dismantling processes* pierce the settlements, affecting buildings and surfaces of different sizes, that are in competition the ones with the others with respect to a possible re-insertion into the 'city life cycles'. In Udine – as in the rest of the region – many military areas are today waiting for reuse. The proposal to create a third urban park concerns an area that, perpendicular to the river, intercepts a settlement of barracks to be discarded. Extending

immediately south of one of the main access roads to the city (viale Venezia), the military site overlooks a large void spreading along the railway. In this neighbourhood, the lack of equipped open spaces combines with the presence – in the direction of the city centre and near a minor network of urban streams – of important public facilities (schools, offices, a museum), that the park concurs to make more accessible through slow mobility. When reaching the barracks, the *green filament* attacks their fence; it *triggers the regeneration* of the large plot through the location on its edge of public spaces and services, as outposts for the future development of businesses and light production activities within the whole area (Figure 8).



Figure 7. Urban woods. Source: G. Bearzotti, T. Linternone, M.T. Manzara.

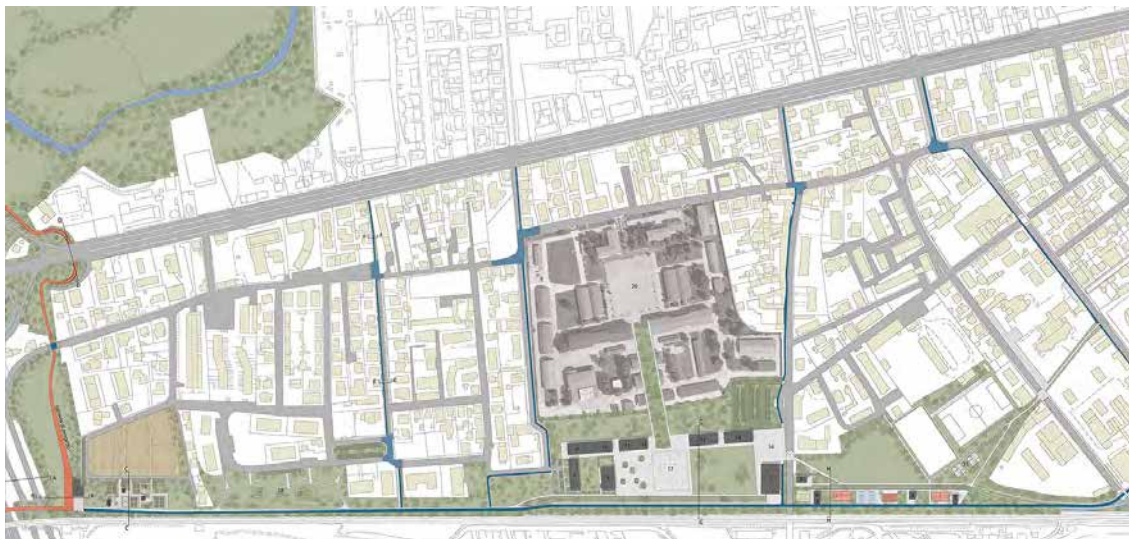


Figure 8. Former barracks. Source: G. De Conz, G. Zei.

In the territories of the Municipalities of Pesian di Prato and Campoformido the urban landscape is completely different. It tells the story of a residential enclave (Villa Primavera), originally conceived as a neighborhood of high building and space quality, and today impoverished by the abandonment of those small private commercial and sports facilities that were meant to enrich daily life in a green suburb. However, the legacies of public policies remain: a swimming pool, a church, schools and a sports area. On the western edge an articulated mosaic of landscapes borders the Cormor basin:

agricultural plots, stable meadows, protected natural areas and biotopes. Looking at the neighborhood from the point of view of the river, the project for the last park of the ‘necklace’ fosters an *articulated – even though minimal – regeneration strategy*. The main cycle lane finds space in the dirt roads running in the riverbed. Its branches enter the neighborhood; stimulate the re-thinking of the spatial and functional organization of the residential roads network; put into a system and enhance a multiplicity of small green areas, hedges and tree-lined rows that currently appear as offcuts without any meaning or use (Figure 9).

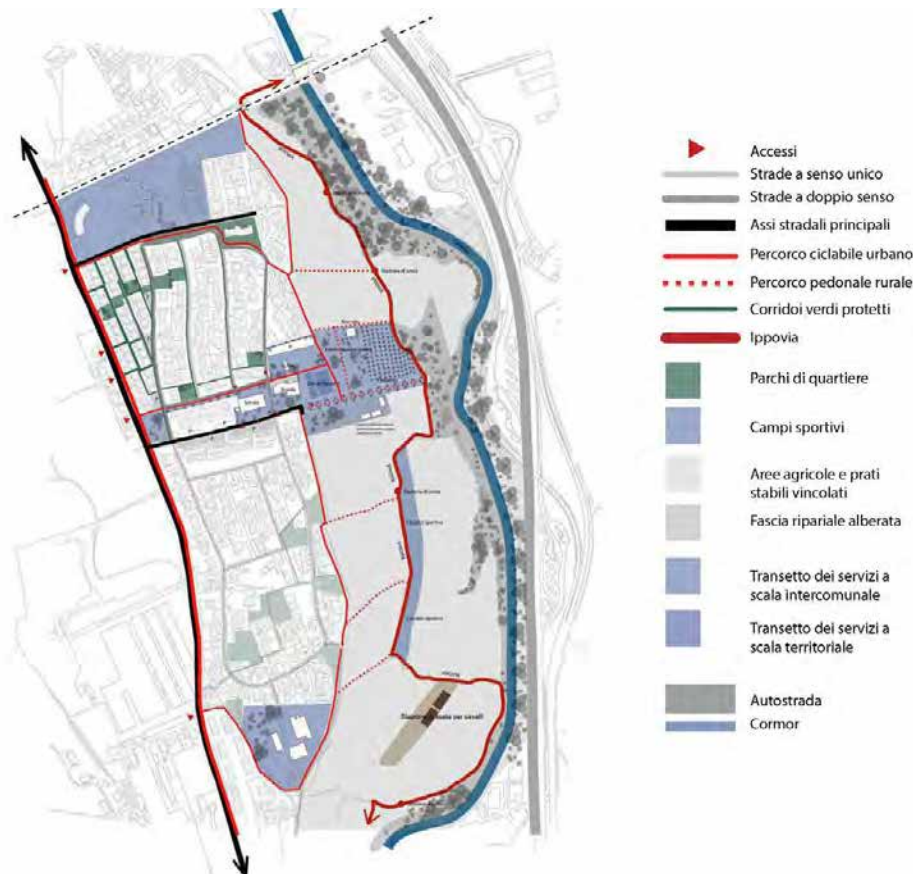


Figure 9. Villa Primavera. Source: L. D’Onofrio, P. Ridolfi.

Before reaching the lagoon and the sea, the Cormor relates again to urban landscapes in three Municipalities of the the lower Friuli: Pozzuolo, Mortegliano and Castions di Strada. Still full of meanders up to Pozzuolo del Friuli, the river flows channelled to the south. Its course blends into the minimal frame of the rural landscape. The settlement structure consists of small-sized centres, whose ordering principle is given by the frame of the roads. In this section of the watercourse the bike path is still to be traced. Building representations that could orient its design proved to be a particularly complex operation. To identify resources, these territories had to be *read in braille*, through layers that only a very careful examination, a 'tactile' approach and slow walking can unravel. However, here more than elsewhere, the project of the cycle route offered the opportunity to demonstrate how tourism and slow mobility can be a driving force for imagining «new development models, consisting of circularity of processes, self-organization and co-presence of diverse economic forms» rooted in the rural history of these territories (Carrosio, 2019: 30). To this end, the master plan proposes an image made of *stitches and mending*. The main cycle route follows the frame of dirt roads next to the Cormor; a network of secondary routes innervates in the surrounding contexts, to grasp places and points of view, break the monotony of the landscape, and re-construct ecological corridors between the areas of environmental interest (Figure 10).

building, where the installation of a small covered market, rooms for events and accommodation facilities are foreseen (Figure 11).

Equally attentive to the rediscovery of agricultural tradition is the project for the territories north of Mortegliano where, until the most recent past, the landscapes of the cereal production could count a lot of varieties. The northern entry point to the cycle route is once again a pole of sports facilities (a horse centre), built inside a former military powder magazine. Riding towards the urban center, the itinerary meets a new *agricultural and educational park* dedicated to the organic farming of many species of corn. The park follows the geometry of the existing fields; arranges the crop varieties according to their heights so as to orient the eye towards the most valuable visuals; thickens the hedges and the trees on the sides of the internal paths, where equipment supporting pedestrian and cycle use is settled. In contiguity with the park and a secondary canal running between Udine and the sea, the presence of a small abandoned mill offers the opportunity to create a bar and a resting point, exhibition spaces and research laboratories (Figure 12).



Figure 11. Spinning mill. Source: C. Furlani, G. Tomasin, F. Zotti.

The last section of the cycle track runs in the territories of Castions di Strada, where the Cormor splits into two arms, forming a drainage basin to be further extended. Here, with even more evidence, the design of the network for slow mobility becomes the engine of an *ecological 're-infrastructuring' process*. The creation of new water basins offers the opportunity not only to imagine reed beds for the treatment of pollutants produced by agricultural activities, but also to design a more extensive landscape project, aimed at enhancing and re-linking the wetlands that characterize this section of the river landscape. Reforestation actions give thickness to the system of environmental connections, and capillary radiate in the new rows and hedges along the roads and the dirt roads. Also in this case, the *green and blue network is integrated with territorial re-equipping strategies*, and the private management of new services is targeted towards occasional users and inhabitants: an old hydraulic booth is converted into a refreshment area; on the edges of the urban centre, a small residential expansion provides additional places for outdoor sports, education and culture services; entering the

agricultural landscape, a visitor center finally offers the opportunity to learn the history of the territory and to practice educational activities for schools (Figure 13).



Figure 12. Corn park. Source: D. Buccino, A. Romanzin, G. Vallone.

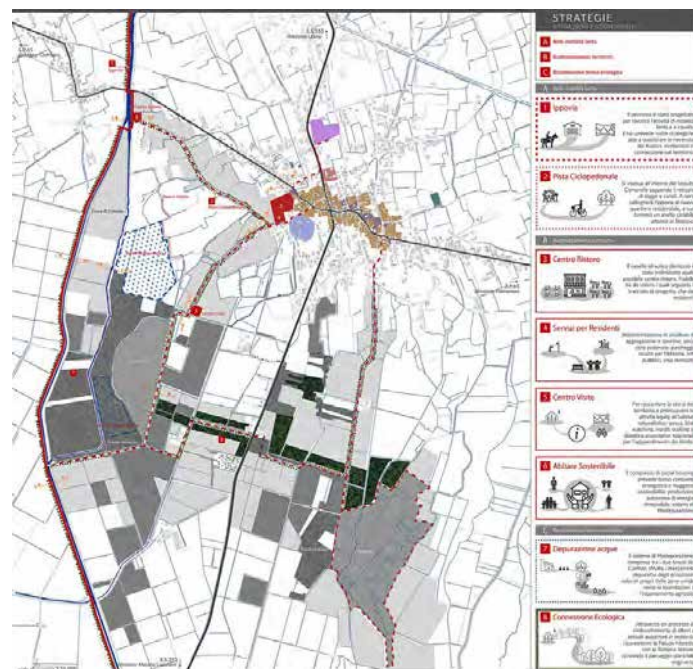


Figure 13. Wetlands. Source: S. Maiello, N. Zucchiatti.

5. And the reflection goes on

The *learning by doing* process we have described offers many clues for reflection both on teaching and making research through the project, and on more general issues related to spatial planning in the 'middle lands' .

5.1 The utility of trespassing

Taking sustainable tourism as the engine of territorial ‘re-infrastructure’ and ‘re-equipping’, what we developed with students and local actors was a twofold exercise: on the one hand, we tried to break the boundaries between single spatial and functional areas, in order to identify new possible relationships among places, uses, activities and economies; on the other hand, we set aside ordinary teaching methods, to put us in direct tension with the contexts, with those who inhabit them and are engaged with imagining a possible future. Thanks to this exercise, the approach of *research by design* taught us much: most of all, the need to update the education of an architect and an urban planner, by working both inside and outside the university classrooms.

Through a *learning process based on border crossing* we developed competences that are no less important and complementary to those of spatial design. Diving ourselves in the contexts, listening to common expertise, building empathic relationships with the places and with the people, cultivating the willingness to self-discard our positions, spurred us to reflect on how design-oriented knowledge can also make use of forms of collective learning, supporting technical data collection and elaboration. We often learn *by trial and error*, when we abandon situations and roles that are more familiar (the ‘comfort zones’), to enter lands that we have not explored yet. For this reason, the reduction of transversal, reflexive and communicative competences – those that today are defined as *soft skills* – to theoretical and codified formulas of teaching and learning seems counterproductive. On the contrary, widening the field of training contexts is a fertile way to reason on how to cultivate the sensitivity to innovate our tools through the direct interaction with increasingly problematic (*wicked*) spatial, environmental and social conditions. This sensitivity marks the difference between the acquisition (and transmission) of simple technical expertise, and the development of the ability to perform a professional practice that must be as competent, as relational and critical.

Nonetheless, during our experience, we often experienced the inadequacy of our (verbal and graphic) languages to translate and to communicate in a clear and effective manner what we had learned, and we wanted to deliver to a public discussion. No less strong was the students’ frustration in understanding how their prefigured spatial arrangements were nothing more than tentative and temporary proposals, within a much longer and articulated path of *framing and re-framing* of actors and points of view, situations and problems, solutions and tools. However, experience strengthened our awareness that building collaborative contexts, where the issues of complex and integrated design can meet those of teaching and active research, can be very useful. Even though difficult, these opportunities can in fact stimulate processes of collective imagination, build new synergies, points of contact and hybridization between the energies and the knowledge of the university, and the questions, the practices and the competences emerging from the territory.

5.2 Towards and Agenda for the ‘middle lands’?

These synergies are even more necessary when we work in contexts that are similar to those we were investigating, and whose features recur in many other situations in our Country. In similar territories, the conditions in which the local subjects – first and foremost institutional – today act appear to be far from favoring a strategic thought. For many Italian Municipalities it is difficult to access the funds finalized by the European Union to promote sustainable trajectories of urban and territorial development (Cappello, 2015, 2016). Even when addressed to inland areas – as happened in the programming season that has now come to an end – these funds have in fact excluded the here described ‘middle lands’. The

limited dimensions of the administered contexts and of the technical staff within the local authorities, together with the contraction of resources for the outsourcing of projects, inevitably create further and significant factors that impede participation in exceptional and complex financing channels. However, it is our conviction (and of the actors with whom we are still collaborating) that, even in the coming years, the resources allocated at European level (together with their wished national and regional integrations) will constitute one of the few effective levers to aggregate dispersed territories around projects for a sustainable development.

It is starting from these considerations that our work took as guiding principles the sustainable development objectives established by the *United Nations' 2030 Agenda* (United Nations, 2015), and now assumed as the basis of the European programming 2021-2027 (European Commission, 2018: art. 4). These objectives set a reference for the construction of spatial and environmental regeneration programs and projects, joining actions aimed at reactivating abandoned places, governing decline of population dynamics and migration flows, awakening dormant economies.

Nonetheless, these are far from simple tasks: they push the administrations of different levels to perform a complicated exercise of rethinking the future, of building medium and long-term visions that can enable them to effectively use both ordinary financing resources, and the extraordinary ones that hopefully will soon be destined for cities and territories.

Although it is clear that, without adequate support – both procedural and financial – the small Municipalities of the ‘middle lands’ will find it very difficult to go far, planning the future requires high doses of commitment and trust.

It is precisely with this obstinate and positive approach that we joined local administrations and civil society's actors in the construction of a vision for the River Cormor Contract. In this vision, the green and blue infrastructures where the slow mobility network is settled do not only constitute the structuring principles of a new environmental project, but they also equip a spatial support for imagining new and different development trajectories. These trajectories are aimed at promoting quality and well-being, combining the creation of new services and economies for both tourists and inhabitants. With our design explorations we proposed new representations, in which the territories on the edge – of water and countryside, small and medium urban centres – could regain centrality, while remaining far away from the «'having to be' [...] that have been determined inside the cities», as well as «from the typical urban projections on these territories, depicting them as a kind of *friendly society* with traditional, patrimonial and tourist values» (De Rossi, 2018: 8).

The Cormor master plan and the in-depth studies on the spatial transects that mark its course also offered further insights to reflect on how the guiding vision of the River Contract can find concrete implementation, even independently of the uncertain access to extraordinary financing channels. Due to their often minimal and incremental nature, the project actions defined with the students are not disconnected from the themes and methods that are typical of ordinary urban planning. We would therefore like to think that the work done, if shared by local administrations, may constitute an invitation to convincingly cross the boundaries between the fields of urban planning and of territorial development programmes, and to use the procedures and tools of local planning to try to *anticipate large scale and integrated visions*. In the current «wandering phase» (Gabellini, 2016: 144), when ever faster and complex environmental, social and economic changes associate with increasing political and financial uncertainties, helping territorial actors construct in advance project agendas is a contribution that universities and research can (and must) deliver to the territories that welcome and stimulate them.

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Who lives heritage: investigation on the impact of tourism flows and heritage protection in the use of public space.

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Abstract: The study turns to a theoretical reflection on the outcomes that the heritage protection over the last decades had on the use of public space and urban life, trying to compare the effects that have been observed on different urban models such as large metropolitan cities and small historic towns. The aim is to investigate the different responsibilities that contribute to the process of moving urban life away from historical and heritage sites, studying, among these, the impact of mass tourism.

Keywords: tourism, heritage, public space, landscape

Introduction

It has been a long time since the protection of the heritage, both in urban areas and in smaller towns, has been increasingly accompanied by economic interests triggered by the strong tourist flows that characterize our time. The implications of this phenomenon can be traced on several fronts: from the hardships caused by a real estate market increasingly oriented to temporary rentals, to the musealization of small historic centers that, on the Italian territory, are emptying of inhabitants and filling up with seasonal tourists, unable, on their own, to revive the places or to substantially reactivate the local economy. In this context, the public spaces of big cities do not avoid the consequences of mass tourism.

Tourism, in recent decades, has been the industry that has perhaps more than anyone else changed numbers, nature and purpose, from aristocratic travelers of the Grand Tours between the seventeenth and nineteenth centuries, to the masses of people of all nationalities surrounding the main monuments of the world. Through the twentieth century and the technological evolution of the media and transport, the progressive lowering of travel costs and the disappearance of distances, mass tourism has invaded the centers of major capitals. International tourist arrivals in the world have grown almost uninterruptedly: from 25 million in 1950, to 278 million in 1980, passing through 528 million in 1995, up to over a billion in 2013 (and according to UN estimates, the sector, which will continue to grow by an average of 3.3% per year, is expected to double by 2030, up to 1.8 billion per year).

Assaulted are the most important and significant capitals, the UNESCO sites, which for some time was blamed for declaring the mummification of cities by marking them as "World Heritage", and putting them into the spotlight of mass tourism (from the article "La maledizione dell'UNESCO", Sciortino 2019, Panorama¹). A tourism often concentrated in some parts of the year, paralyzing some parts in the heart of the city, morphologically not suitable to accommodate the flow of people we see walking through the alleys of our historic centers.

The other side of the coin is the paradox that sees small historical masterpieces, smaller towns such as small towns in Lazio, or small towns in the inner Cilento, desolate and abandoned. These centers, rich in history and heritage, are outside major touristic routes, difficult to access (lack of a quick connection to the networks of rail or public transport, or large leaps in altitude due to the morphology of many smaller centers) and so difficult to discover even for those tourists interested in different experiences, slower and of higher quality, compared to those of major destinations.

Over the years, some of them have become true ghost towns, often becoming targets to speculators who, by buying almost the entire historic centre, have transformed them into luxury theme hotels and open-air wellness centres, effectively erasing all the connotations of the city in what thus becomes a mere scenario.

For abandonment and depopulation, congestion and mass invasion both produce a chain of disappearance of memory and identity and the death of our cities. If, in fact, we take up again the Socratic thought according to which man is composed of the physical body, material, and soul, immaterial, and apply it to our cities, we understand that the part of immaterial and invisible city is not only people living there, but the mixture of tales and stories, memories and principles, languages and desires, institutions and projects that have determined its current form and that will guide its future development. And as Settis reminds us in his "Se Venezia muore", cities die for three reasons: when a ruthless enemy destroys them, when a foreign people settle there with force chasing away the natives, or when the inhabitants lose memory of themselves, and without even realizing it they become foreigners to themselves and enemies of themselves.

The periphery in the historical centres

Gentrification and depopulation are thus the two extreme phenomena that afflict the Italian historical centres today. To define these phenomena it is necessary to keep in mind that the recurring cyclical nature of economic crises, the instability of markets, the processes of late industrialisation and deindustrialisation, climate change and deterioration of ecosystems have transformed the traditional perspectives of urban development and settlement and socio-economic dynamics at all latitudes.

Since the second post-war period we have witnessed a strong industrialization of the Italian territory, which has produced already at the end of the '80s a territory characterized by a system structured around poles of attraction, the provision of primary services, or large cities, which experienced phenomena of polarization, congestion, limited accessibility. Around them, gravitate belt areas characterized by a metropolized territory (Indovina, 2009), a fragmented and widespread urban continuum, dependent on economic dynamics and commutism from the large main nucleus, which invades the rural space, contaminating it with unusual functional mixtures, dismantling the structural plots (Macchi Cassia, 1992). The resulting territory has the pathological characteristics of an enormous proliferation of settlements in widespread form with flows of multidirectional private mobility (Ricci, 2005).

¹ http://www.inu.it/wp-content/uploads/Panorama_Unesco_22_maggio_2019.pdf

The progressive expansion of the belt areas around the attractive poles and the corresponding territorial disequilibrium contribute to delineate the so-called internal areas, defined by the Unit of Evaluation of public investments as "areas far from the centres of provision of essential services such as education, health, mobility, connectivity, characterized by processes of depopulation and degradation", which today constitute 61% of the national territory where, however, less than 20% of the Italian population resides (ISTAT, 2016), a percentage significantly reduced compared to the first decades of the 20th century. The present differences are not only due to the classic North-South gap, but also to the many factors inherent to the unequal development between town and country, between mountain and plain, between coast and hinterland (Marchetti, 2017).

In such a context, the very notion of "periphery" no longer measures the physical distance of a place from the central area, but rather recalls the characteristics of "economic and social marginality, building degradation and lack of services". (Bando "Periferie" DPCM 25 May 2016) typical of the development of large urban areas as a whole. These peculiarities are also found within the historical stratification of urban systems, structures and open spaces, which is the main reference for the identity and self-representation of local communities.

In recent decades, in fact, the profound socio-economic processes of gentrification and turistification, which characterize in particular the historic centers of large cities, have led to the escalation of problems related to the deterioration and impoverishment of contexts of historical value, with increasingly evident effects of removing the memory of places and local identities. These elements are associated with processes of abandonment and disposal of spaces, complexes and facilities that are no longer functional or appropriate in the context in which they are inserted (large hospitals, markets, theaters, cinemas, meeting places and spaces of relationships), due to the emptying of the catchment area, difficult accessibility or structural obsolescence.

These state assets are now subject to privatization and incompatible reuse, transformed into supermarkets or large stores, following the legislative decree 85 of 2010, the rule on the so-called "federalismo demaniale" signed by Calderoli, Berlusconi and others. This makes it possible for the City to sell all public state property, 536 pages of property of immense value that now the municipalities can put in the hands of private individuals.

Perhaps the island of Certosa will never be sold, but only because it costs too much and pays too little, not because it is a common good, and the mere price of all state property makes Italy in fact a giant supermarket (Settis, 2014). But the city, with its buildings and its heritage, also has a soul, the so-called invisible city.

Crossing the Alps and stopping in France, the report "L'economie de l'immateriel" considers immaterial values (which cannot be valued) as the basis for tomorrow's growth: "there is an inexhaustible wealth that is a source of development and prosperity: the talent and passion of women and men", we read on the first page. Talent and passion triggered and nourished by cultural memory. The report was commissioned by the Ministry of the Economy (2006, Chirac presidency) and concludes that intangible values *"hide an enormous potential for growth, which can stimulate the economy of France by generating hundreds of thousands of jobs, and preserve as many as would otherwise be in danger"*.

Big congested centres

Venice

The symbol is undoubtedly represented by the City of Venice. The territory of the City of Venice, according to the current administrative division, comprises in addition to the lagoon city, a large area of mainland, which includes Marghera, Mestre and other areas, such as the airport of Tessera. And it is here that the population has headed in recent decades, especially the younger generations and students who move there from all over Italy. Despite the internal movement, in this area taken as a whole population has fallen by as much as 100 000 inhabitants from 1971 (363 062) to 2011 (263 996), but the data are much more dramatic if you look only at the

historic center, from 108 426 in 1971 to 56 684 in 2014. As Settis recalls in his "Se Venezia muore", only the terrible plague epidemic of the 1600s had reduced Venetian population by half in this way. Since the 1970s, a new plague has been spreading, with an increasing number of elderly and exodus of residents, a low birth rate, a continuous contraction of population, and a city that is running away from itself.

As the city empties, the wealthy around the world buys houses, pieces of Venice to use five days a year, distorting the market and creating a price system that expels the Venetians and causes a gentrification perhaps unique in the world. Meanwhile, every year eight million tourists flow into the streets for thirty-four million presences, against a maximum "load capacity" of 12 million (Tattare, 2014): in other words, for every inhabitant of Venice there are 600 floating visitors, deeply altering the economy, demographics, but also social and physical balances. The city is now dominated by a tourism monoculture that exiles the natives and binds the survival of those who remain and the city itself almost exclusively to the intention of servicing the tourist, with b & b, restaurants and hotels, parties ad hoc, in order to transform their residence in the old city in a profitable extra-hotel activity. Often a small contribution to the tax is one of the pros of living in Venice. While everyone in the world dreams of living a bit of the magic the city has to offer, are countless the Venetias that have sprung up all over the world, the Venice of the north, the Venice of the south, the 27 Venetias scattered in the United States, starting from the famous Venice beach, the Venetias of the east, which is punctuated India, Japan, China.

The image of Venice today represents a model of life, exportable and exported more than any other in the world. The aggression against the city is like an embrace of love, but that progressively tightens and damages parts of the city surrounded by the grip. In recent days we have seen the impressive images of the cruise ship that hit the boat along the Giudecca canal², making even more evident the risks and incompatibility of the system of exploitation of these places, denounced almost prophetically at the Art Biennale, by the artist Banksy in the performance in St. Mark's Square of "Venice in Oil" (Figure 1).



Figure 1: Venice on Oil, Banksy

² <https://tg24.sky.it/cronaca/2019/06/02/venezia-incidente-nave-crociera-video>.

But the people of Venice are not tourists, not even the most careful who spend a few days or weeks there. It is not that of those who own but do not live in the crowd of second and third houses. *“Neither can be what men and women must be for a city: the living blood that circulates in the veins that are streets and squares, the guardian and creator of memory, a community that identifies the physical form of the city and its ethical reason.”* (Settis, 2014)

Rome

In this context, Rome also represents an emblematic case, both as a city and as a historic centre. The territory of its municipality is today the largest in Italy, with a population of 2,865,000.

The 2008 General Regulatory Plan includes the historic centre as part of the wider Historical City, which includes the integrated whole of the central historical area inside the Aurelian Walls, the urban parts of the nineteenth and twentieth century consolidated expansion, and the individual sites and buildings located throughout the municipal territory. These have a historical-cultural identity defined by particular qualities, recognizable from the point of view of the structural characteristics of the urban system and those of the morphological, architectural and use of individual fabrics, buildings and open spaces, also with reference to the sense and meaning they assume in the memory of the communities settled³. Rome is in fact the largest open-air museum, where every church, every suburban villa, every historical road axis tells a piece of the story and the image of the city. In 2016, thanks to the Extraordinary Jubilee of Mercy, called by Pope Bergoglio in March 2015, there were 20 million arrivals and 40 million attendances, with an average staying, however, has gradually decreased to 2-3 days.

But the Rome of mass tourism is the Rome of its historical center; unique in the world not only for extension (1.470 ha, inside the Aurelian walls) and for the importance of its heritage (UNESCO site since 1980), but also for the extraordinary intensity of tourist flows (14.7 million tourists in 2017⁴), the center of Rome in recent decades is suffering massive phenomena of abandonment by the original inhabitants and gentrification (the population has risen from about 424000 in 1951, to about 133590 in 2012⁵), population aging (old age index equal to 227) and radical transformation of the socio-economic structure.

The number of visitors in 2015 in the archaeological complex of the Forums alone is impressive, 6,600,000 people, especially considering that the entire population of the Lazio Region, in which Rome is located, does not exceed 5,900,000 inhabitants and that the second most populated municipality of the same region, after Rome, is Latina and has 125,000 while that of the Roman area is Guidonia-Montecelio which has 89,000.

In the City of Rome is concentrated 88% of the accommodation activities (hotels and extra-hotel of the entire Province of Rome), and comparing the data on tourist attendance 2014-2015, it is clear that in Rome and its province is concentrated more than 85% of the presences recorded throughout the Lazio Region.

³ Municipality of Rome, General Regulatory Plan, approved by CC 18/2008, NTA, Art. 24, co.1.

⁴ Tourism and labour market observatory.

⁵ Roma Capitale. Statistical Office. Data for 2012 related to the I Municipio.

These data undoubtedly depend on the fact that Rome, for the very high concentration of assets, is a privileged destination for tourism on a global scale, cause but also effect of the reduced influx of tourists in the rest of the region, despite the very high presence of historic centers, museums, archaeological sites and points of interest (Cerasoli 2017).

This situation of massive tourism has important consequences in the use of public space in cities of art such as Rome, precisely. Today, in fact, the elements that physically make-up the squares and streets of the historic city, are the same as in the past, but lack the gestures, habits that gave body and life to that public space (Caudo, 2017). In a city like Rome, tourist flows reach such a volume as to transfigure the public spaces of the center, pushing the inhabitants to look elsewhere for new places of encounter that they can appropriate. As the monumental spaces of the historical city become victims of the substitution of the inhabitants in favour of temporary travellers, the identity of these places is lost and in fact these spaces are taken away from the citizens. In large cities, where there is certainly no problem of depopulation, as in more internal villages, there is the problem of social separation and the "migration" of public life from historical squares to more marginal and unconfigured spaces. The historical squares have been in some way "abandoned" by the citizens, who prefer to move to neighboring places, hidden corners in which to seek a greater identity and belonging of which many better known places have been emptied. In Trastevere, as well as in the areas of Campo dei Fiori or Piazza Navona (Figure 2), those that were the monumental public spaces and therefore designed and configured for the public life of the city, are reduced to a fictitious artifact, for the sole purpose of contemplation, almost denying the interaction with the actors who live the space, and therefore seek in places not configured the possibility of living freely the city, informally (Cianci, Mondelli, 2018).



Figure 2: Roma interrotta, Pasquale Iaconantonio

If it is true, in fact, that on the one hand tourism has increased the protection of heritage, it is also true that this protection has gone so far as to make heritage, and the space in which it is placed, an object of exclusive use of the tourist himself, effectively taking away the historical places from the life of the city and those who live there. Rome is an emblematic example in this sense. If it is true that many other cities of art in Italy have been invaded and transformed by the tourist industry, subjecting their structure and identity to the economic aspects of the tourism industry, no one like Rome has had the need to coexist this aspect with all the functions related to its role as capital. This means that the historical and monumental center of Rome is in a sense forced to live an superimposition of actions and flows that are twisted especially during the daytime, mixing tourists, workers,

students and so on. It is precisely this role of the city as a metropolitan city in which millions of people flock every day to "limit" the damage of tourism to a certain extent, and at the same time to make particularly necessary good practices for the reintegration of city life in historical, archaeological and monumental spaces.

If in Venice the city has abdicated to an almost mono-thematic and completely branded use of its urban space, triggering a process that has almost completely emptied the lagoon of its inhabitants, in Rome this can not happen and exactly for these reasons the city lends itself to become a fertile ground for initiating a debate and propose strategies that review in heritage sites opportunities for public space for use of the city and its inhabitants, counteracting the extreme musealization of the historic centers.

The attention that in recent years is focusing on the results that tourism is causing on the real estate, transforming most of the houses in temporary accommodation designed for travelers, must extend to the repercussions that this phenomenon has in the open spaces of the city. The idea of democratising space is therefore central, and only in modern times is it understood as "public" and therefore thought of and designed for the life of relationships and the needs of those who live in the city. Most of the squares that make up our historic centers, in fact, were not born in order to provide citizens with places where they could live the life of relationship, but were more than anything "the palimpsest of arrogant and egocentric representations of the powers that have dominated the city from time to time". (Cellini). Are we not now facing a new kind of "arrogance" in which economic interests dominate the city by materially selling its historical and artistic heritage and taking its spaces away from the citizens? It is necessary to reconsider the role of patrimonial protection in function of the city, tracing a strategy that balances the management of the patrimony with its usability by the inhabitants, avoiding the risk of a loss of identity and memory and therefore of the "death of the city".

Abandoned small towns

The other side of the story instead represents all those small "valuable" places, historical urban centers that belong to the heritage of the minor centers, located almost always in the so-called "internal areas" of the Italian territory, which see - with naive short-sightedness - tourism as a panacea of their decline and abandonment.

This archipelago of ancient territorial garrisons, which is the backbone of the country, after the end of the Second World War has been affected by significant phenomena of abandonment. Forgotten, it has gradually become fragile, suffering the dismemberment of the network of interactions that for centuries had radiated sap to the whole system, transhumance, supply chains, ancient paths, pilgrimages, represented the networks of territorial relations that had kept alive the local economies for centuries, which urban polarization and globalization dynamics have almost erased.

Today, the smaller historical centres of the internal areas, except in isolated cases, present common pathologies, linked to the inability to respond to the needs of contemporary living (Abbate, 2011), mainly due to the marginality of these centres with respect to production processes, the lack of services and the criticality of connections.

The lack of financial resources in the smaller municipalities, certainly not facilitated by national and regional policies, absorbed by the chronic "emergencies", has allowed these minor urban realities to turn into ghost zones, or, in rare cases, into large real estate investments in tourism, linked by a double thread to exogenous economic dynamics.

It is therefore necessary to work with the existing materials to reverse the erroneous approach that does not consider the internal areas as a resource or an opportunity, but as a problem or a residue concerning the peripheral lands, to react to the progressive marginality, conceiving these places as a ground for social and productive experimentation, protagonists in some way of a cultural and economic rebirth.

The primary objective in these contexts is to highlight the territorial heritage of these areas, understood as the set of long-lasting structures produced by the co-evolution between the natural environment and human settlements, whose value is recognized for present and future generations (Marchetti, 2017). Territory understood as a cultural landscape, as an expression and outcome of the complexity of nature and culture and therefore as a product of history, immediate expression of the identity of a place and its inhabitants, whose components thus become the invariants of places and communities, trace of history and matrix for a historicalised and contextualized evolution (Carta, 2002).

This extension of meaning not only concerns the formal, civil and symbolic aspects, but also the time of belonging of the resources and their location in contemporary territories, thus representing an extension of temporal, spatial and meaningful interest. The traditional field of analysis of the physical city has in fact extended from the historical centre to the existing city as a whole, to involve the entire "historical territory" of which it is part, in search of the "widespread and often dispersed plot of the traces of man" (Amato, Bevilacqua, 2018).

It should be kept in mind, in fact, that mass tourism often results in putting at risk and altering the value of the Italian landscape. The landscape balance that characterizes most of our country is an invaluable value whose protection we try to operate at multiple levels. The passage that led to the enactment of the conceptual extension from historical centre to historical territory (Gubbio Charter, 1960, 1990), reaffirmed by the European Landscape Convention, has been further innovated with the concept of "historical urban landscape" that UNESCO introduced with the "Vienna Memorandum" in 2005 and that at the end of 2011 was consolidated in a special "Recommendation". Its field of application concerns the recognition of the quality of an urban landscape whose strength is in the widespread, capillary and living presence of a heritage that is not reduced only to protected historical areas and buildings, but refers to the physical, geographical, historical context in which it fits, resulting in a synoptic and organic vision of the heritage that opposes the idea of discontinuous and isolated emergencies (Settis, 2002).

In the polycentric territorial system, the smaller historical centres perfectly embody those landscapes of everyday life mentioned in the European Landscape Convention as territories capable of projecting and "making perceptible to the settled communities values of a proper identity matrix" to be preserved, avoiding homologating interventions that "safeguard stones but not people and traditional functions" (Cervellati, 2009).

If on the one hand these valuable characteristics that the national and European regulations tend to protect are precisely the attractor that makes Italy one of the most visited countries in the world, on the other hand the "bel Paese" consists of a territory that is difficult to lend itself to the management and assimilation of such large tourist flows, especially when it comes to the most internal areas.

The case study of the small towns of the inner Cilento

To deal with and analyse the issue, this contribution refers, by way of example, to the area of the Cilento National Park, a sub-region of Campania which, with regard to the debate on the internal areas, is a particularly interesting reality and perhaps unique of its kind. Its large size and distance from the most important metropolitan areas, make it a region with a rural identity that only in recent decades has tried to invest in tourism by exploiting the heritage inherited from the Greeks, Etruscans and Lucanians. However, this momentum has most of the time moved without an adequate awareness of a heritage that goes far beyond archaeological sites but that includes the rural landscape of the Park in its entirety, leading to the serious consequence of making gestures that have endangered its intrinsic value (Cianci, Mondelli, 2019).

In fact, the historical centres that make up the Cilento Park are an emblematic example of this marginal situation in which many Italian historical centres fall. The Cilento, in fact, is a large slice of territory located in the south

of the province of Salerno, while remaining a peripheral area in a region, Campania, already rich in coastline, cities of art and tourist attractions worldwide. This administrative situation, if on the one hand it has never launched the Cilento towards the possibility of a consistent modern development, has had, on the other hand, the welcome side effect of at least "limiting" the effects of the building pressure on the whole territory, delimiting it only to some coastal centers.

Tourism, mainly concentrated in the coastal strip, is kept away from what is the historical and cultural value of the inland villages, causing also the negative consequence of increasing the insediative pressure on the coast, often compromising the landscape value of the Park. The morphology of the Cilento territory is exactly what over the centuries has dictated the lines of settlement development, alternating periods in which the proximity to the sea was functional to communications, with phases in which the need for defense led the population to retreat into more rugged and controllable territories.

It is precisely those same topographical characteristics (Figure 3) that in ancient times allowed the rise of the Cilento centers, to be today an obstacle to their contemporary development, making difficult connections for the inhabitants and also driving away the tourism that could discover them. The settlement structure formed in the Middle Ages that gave rise to the small towns that now characterize the Cilento landscape has long been preserved unchanged, until, starting in the 70s, mass tourism has changed significantly the appearance of the valleys and coastal areas, through the emergence of new urban expansions devoid of that relationship between anthropogenic forms and natural environment that constitutes the value of the Park of Cilento. The need to promote a new type of tourism, alternative to the seaside one that only concerns the summer season, is therefore felt not only in order to repopulate the most inland areas, but also in order to preserve the landscape and contain the risks arising from the territorial changes made in recent decades.



Figure 3: small town in Cilento National Park

Very significant, in this sense, is the Landscape Plan of the Park of Cilento, which among the objectives also identifies the "awareness of the local community to the importance and value - including economic - of the landscape and historical pre-existing". This aspect wants to emphasize the implications that a greater awareness and enhancement of the historical and cultural heritage of the smaller towns can have on the territory, providing the opportunity not only to reactivate the tourism sector more widely throughout the region, but also to give a new impetus to the primary sector, recalling the interest in the rural vocation of the Cilento interior, which never

before in this historical period could rediscover an important opportunity for economic development and repopulation of the region. The abandonment of traditional activities, in fact, are often the cause of the disappearance of the characteristics of a particular landscape, with the consequent loss of cultural value and attractiveness of a territory for tourism purposes. Therefore, it is essential to preserve the link between the territory and the population that lives there intact, keeping alive the traditions and enhancing the activities on which these small societies have been based and developed, counteracting the tendency to depersonalize the smaller centers operated in the contemporary era.

Conclusions

On the basis of what has been said so far, we can point out that it is possible and necessary to relate to the consequences that tourist flows are having in large cities that are congested on one hand, and in small inner cities that are endangered by them, either because of abandonment and marginalisation or because of a functional transformation that affects their cultural identity, on the other hand. There is no doubt that the planning of local territorial development must work putting at the core of the operations the protection and enhancement of the landscape according to a method that is not static or merely conservative, but identifying in the productive and economic activity of the places an important tool with which it is possible to dynamically preserve the landscape, attracting tourism inward and reactivating local economies. Tourism, in fact, can and must be in any case one of the tools for development and revitalization, but never the only source of economic support. Because in the latter case it is easily transformed into an element of degradation. In this way it will be right, then, to promote tourism in inland areas, also in order to unload and decongest the large cities of art, which on the contrary need to find their own dimension beyond the "urbs", the physical structure, and reconsider the value of "civitas", or the society that lives there, and that gives substance to the concept of the city itself.

Tourism is changing the historical centres of our cities, perhaps forever. It is said that "beauty will save the world", but not only, as Settis says, beauty will not save anything and no one if we do not know how to save beauty, and with it, culture, history, memory, the economy, but will gradually destroy cities that were previously resilient. (Cecchini, Blecic).

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Public Space as Protest Space: Between Visibility and Insecurity

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Abstract: Public space in the European City is, by definition, a place of political publicity, debate and open exchange of opinions. Social movements use public space to create visibility and to express their political, social, or ideological perspectives and demands. Looking at the situation nowadays one can observe cleavages between right-wing and left-wing groups on the one hand, and an increasing eventisation of protests - a "pleasure for the state of exception" or "event-driven protest" - on the other hand. What do these developments mean for public space and its inherent qualities? How do protesters assess the situation? Based on the results of quantitative surveys of participants two types of protest are contrasted: 1) a conflicting political demonstration march 2) a less conflicting and more festivalized Christopher Street Day parade. The results show significant differences in the visitors' structure, motivations, the individual perception of the events and the perception of security and presence of police. The framework conditions of protest have an effect on public space: If they implicate security risks and instrumentalize or abuse the purposes of specific groups, there is a considerable impact on its accessibility, usability, and political quality.

Keywords: public space, protest, visibility, insecurity

Introduction

Political and social protests are omnipresent in public spaces of cities. They represent a central form of political participation outside parties and institutions and draw attention to current social and political conflicts. Protest topics and forms are diverse. They range from peaceful, festivalised parades to violent protests with massive riots. Media representations often focus on violent conflicts between controversial groups or between demonstrators and police, as in the case of the G20 protests in Hamburg/Germany (Hunold *et al.* 2018). Violence, fires, and looting (Rucht, 2019) also occurred repeatedly in the context of the protests of the yellow vests in France against President Macron's reform policies. Overall, changes in the protest culture are observed in Germany (Rucht and Teune, 2017): an increasing form of violence can be observed (Hutter and Teune, 2012, Nassauer, 2016) on the one hand, but on the other hand also an eventisation, an increase in "event-driven protests" and the "pleasure for a state of exception" (Betz, 2016, Blickhan and Teune, 2003).

Social movements and protests are usually investigated with regard to their origins, conditions, and contents. The "Patriotische Europäer gegen die Islamisierung des Abendlandes" (PEGIDA, Patriotic Europeans against the Islamization of the Occident) protests and their counter-demonstrations in Germany, as an example of conflictual demonstrations between right-wing and left-wing political

groups, are discussed from an identity-theoretical perspective. In addition, the focus is on the social composition of the participants, their motivation, mobilization, protest experiences, and political positioning (Patzelt, 2015, Vorländer *et al.* 2016). Research on parades such as Christopher Street Day (CSD) usually focuses on identity constructions and gender stagings (Kates and Belk, 2001). Spatial interactions and, above all, limits to the use of public spaces as settings for social movements are given little consideration in research. This article aims at filling this gap.

The current discussion on public space is concerned with various developments that endanger its qualities. At present, privatisation tendencies and increasing subjective feelings of insecurity are discussed as limiting the usability of public spaces. Exclusive practices lead to the fact that not all social groups can make equal use of their civil rights. The conditions for protests in the public sphere are also changing with increasing uncertainty and changed controlling options. Two contrasting case studies illustrate the importance of context of protests and their different effects on the usability of public spaces. Both can be located in the context of visibility and uncertainty and will be discussed in a final step.

Public Space: Heterogeneity and Visibility

Public sphere and the right to demonstrate are fundamental principles of democratic society and an essential element of cities and their culture (Schäfers, 2006). The central element of this public sphere is the principle of general access to places or assemblies. Publicity also implies transparency for all citizens with regard to matters of public interest. It is a prerequisite for generating (public) opinions and a way of bringing issues into public debate or onto the political agenda (Neidhardt, 1994). Speakers and audience meet, topics are visible and negotiated. The public sphere is thus a necessary condition for the effectiveness of social movements.

Public spaces are (ideally) freely accessible to all citizens and are therefore characterized by a high degree of heterogeneity among the population groups (Bahrdt, 2006, Sennett, 2008). They offer opportunities for the most diverse encounters, the expression of individual lifestyles, cultural differences, and the open exchange of opinions. Public spaces can be places of representation and can be described as "stages of visibility" for various political, social, or ideological points of view (Gusy, 2011).

The public character of a space, however, is only created by the people who use it. . "… what makes a space public – a space in which the cry and demand for the right to the city can be seen and heard – is often not its preordained 'publicness'. Rather, it is when, to fulfill a pressing need, some group or another takes space and through its action makes it public" (Mitchell, 2003, 35). Individuals or groups must occupy space, show presence to be represented and compete with other interests. . "… the desire of other groups, other individuals, other classes, together with the violent power of the state, laws about property, and the current jurisprudence on rights all have a role to play in stymieing, channeling, or promoting the 'taking' and 'making' of public space and the claim to representation" (Mitchell, 2003, 35) Negotiation processes for the demands for use of cities and their public spaces become necessary. "Cities not only breed contention; they also breed control. In their ongoing struggles to maintain order and power, local states and their partners develop strategies and techniques to direct the ebbs and flows of contentiousness constantly bubbling up from the urban grassroots. The city is a generative space of mobilizations and, because of this, it is also the frontline where states

constantly create new governmental methods to protect and produce social and political order, including repression, surveillance, clientelism, corporatism, and participatory and citizenship initiatives” (Uitermark *et al.* 2012, 2546). Cities are places where mechanisms of control, regulation, and order of political and social life in general and of social movements in particular are developed.

The symbolic occupation and appropriation of public space represents a claim to power and also creates atmospheres. Protest movements use the public space as a stage to generate attention and visibility. Parades and demonstrations are an expression of how people with shared political or ideological interests come together, form collective identities, and, at the same time, differentiate themselves from contrary views. Protest and social movements are closely connected to the concept of "mass" and the mobilization of masses (Rucht, 2012). Masses of people generate visibility and attention through their mere presence. With regard to protests and social movements, it is a matter of mobilizing "masses" and persuading them to stand up for or against something, to draw attention to social conditions, and exert influence. "Collective protests" strive to reach a broad public and generate public attention and sympathy (Rucht, 2012). A symbolic effect is produced by a large number of participating people (Balisitier, 1996). The central goal of street protest is to create presence, both concretely in space and time, and in form of resonance and effect in the media.

Media contribute to the production of visibility of various political and non-political interest groups, as well as socially relevant topics and areas of conflict, and generates a mobilizing effect. The presence of groups and topics in the media can activate supporters as well as opposing groups (Fahlenbrach, 2009). However, the kind and selection of media representations influence the reception and social perception of protest events. Content is moved to the foreground or to the background, depending on the interests involved. For example, the perception of the demonstrations on May 1st in Germany is shaped by media coverage and largely focuses on the outbreak of left-wing violence (Blickhan and Teune, 2003). This can lead to distortions and scandalisation (Rucht, 2003) and ultimately affect the subjective feeling of security of media recipients. But still it is the occupation of physical space that gives visibility to a protest. Reporting, dissemination, and mobilization via the Internet and social media take on a complementary function.

Current conditions of public spaces as protest spaces

The role of public space in the European city is discussed anew on a theoretical level: changed framework conditions regarding fear of crime, respect, trust, social heterogeneity, and polarization processes have to be introduced into the discourse. At present, the peaceful, tolerant, and stylized public appearance is countered by developments that move the issue of security in the foreground (Koopmans *et al.* 2005). Terrorist threats, xenophobia, and insecurity can also be associated with fear of staying in larger crowds. Transformations of public spaces through increasing privatization and surveillance also give security a new significance (Selle, 2010). These developments can contribute to more security in cities or intensify social divisions and feelings of insecurity (Minton, 2012), and restrict freedoms.

Insecurity

The heterogeneity of its users has always made public space a place of encounter with the other and the unknown, which can also generate feelings of insecurity and uncertainty. This unfamiliarity goes

far beyond the fear of crime (Wehrheim, 2009). Uncertainty caused by otherness can be explained on the one hand by a "knowledge gap" (ibid., 38) towards the foreign, and on the other hand by the perceived endangerment of existing social orders (ibid., 39). Thus, the meaning of security can also be thought of in two dimensions: 1) as protection in the sense of unharmedness, 2) as "security of expectation" (ibid., 40). This distinction is also effective in protests when different lifestyles and worldviews meet.

New threats today include cross-border, transnational activities, and sources of danger, criminal networks and organizations, and extreme violence with extreme consequences (Albrecht, 2010). A divergence between the objective security situation and the subjective perception of security can be observed. This subjective component plays a central role in the discussion about feelings of insecurity in public spaces; i.e. they are not only rational, but strongly emotional. Explanation approaches for the individual perception of insecurity can include victimization experience, the representation of crime in the media, and in a generalization thesis, which associates fear of crime with general fears of life (Albrecht, 2010). The perception of police patrols as well as age and gender also play an important role at the individual micro level with regard to fear of crime (Lüdemann, 2006).

The PEGIDA demonstrations in Germany and their venue, the urban public space, can be seen as a projection surface for fears (Keller and Berger, 2017). Fears and worries play a central role in the narratives of the PEGIDA movement. The communication of fear is a central strategic instrument in the PEGIDA movement and the expression of fear in public space is political action. This has made it possible to mobilize people and reach the "concerned citizen" (Keller and Berger, 2017). Fueling fear of specific social groups can have an effect on the subjective perception of (in-)security in public spaces. The PEGIDA movement takes the freedom of assembly in public space. At the same time it restricts the freedom of others (counter-demonstrators, citizens, migrants). Security and freedom are in a tense relationship. The safety of one person can restrict the freedom of another (Keller and Berger, 2017).

Privatization

Free accessibility and freedom of use are preconditions for free and visible articulation of opinions by all members of society. Communication and dissent require public space in which the freedom of speech of the citizen is not restricted by private interests (Kohn, 2013). However, the "right to public space" is controlled by the regulatory practice of the dominant social system (Ruppert, 2006). The possibility of using public space as a social and political space is defined by legal provision, spatial design, surveillance, and policing practices (Ruppert, 2006). Public space is increasingly developing into a contested space "where ambiguities of proprietorship, of aesthetics, of social relations (class and gender in particular), and the political economy of everyday life collide" (Harvey, 2006, 19). Particularly economic interests are at odds with the ideal of a public space (Mitchell, 1995, Neumann, 2016). Public space is in danger of losing its character if control by private interests prevails.

Protests in transition? Between violence and eventization

Increasing violence

In Germany, the number of protests is increasing, partly due to the growing number of asylum seekers which cause right-wing protests to increase massively. At the same time, counter-movements emerge

that advocate a tolerant, cosmopolitan society (Daphi and Deitelhoff, 2017). Above all, confrontational forms and violence have increased (Hutter and Teune, 2012, 2017). Studies have shown that the willingness to "civil disobedience" among protesters is growing (Rucht et. al. 2010). In the autonomous left-wing scene, militant actions such as arson attacks, attacks on police officers, or neo-Nazis are not uncommon. During demonstrations of the extreme right, confrontations with police are usually avoided. Attacks on people who are marked as foreign or belong to the left-wing scene are, however, part of everyday life (Rucht and Teune, 2017).

During demonstrations, the police is confronted with the dilemma of protecting the right to demonstrate for all on the one hand and preventing and punishing crimes on the other hand. The police's actions are regarded critically (Kanzler *et al.* 2003). Donatella della Porta has defined the term "Protest Policing": "the police handling of protest events - a more neutral description for what protestors usually refer to as 'repression' and the state as 'law and order'" (della Porta and Reiter, 1998, 1). The dichotomy of the term becomes clear in this definition: on the part of the state and the police, "protest policing" is understood as the enforcement of law and order, on the part of the protesters, the impression of repressive up to violent intervention of the police predominates. Police action itself can become a political issue, because the practice of protest policing influences the chances of political groups to articulate themselves, mobilize sympathizers and exert political pressure (Winter, 2006, 259). Article eight of the German Basic Law protects freedom of assembly as an essential element of democracy and ensures that people can come together without hindrance and assert their right to freedom of expression (Arzt and Ullrich, 2016). Police checks and surveillance aiming at maintaining public order and security are sometimes at odds with this, as police measures can restrict this freedom of assembly, or intimidate participants. This creates tension between the legal situation and police practice. If the presence of the police is understood as a demonstration of power, as a potential restriction of the freedom rights of the demonstrators, this can generate conflict potential (Winter, 1998). Protests and conflicts also arise when public space is restricted in its use as a demonstration space.

Eventization

Protests are extraordinary events. They are not always exclusively politically motivated or conflictual. As an "event-driven protest" (Betz, 2016), political demands can also be combined with an excitement and fun character. This not only changes the atmosphere of protests, the expectation of fun and joy can be the motive for participation and have a mobilizing effect. Participants expect community, sociability, and a feeling of belonging (Betz, 2016, 272). Initiating social change does not have to be the only objective, but can act as legitimization (Betz, 2016). Dancing, costumes, or performative elements can be the expression of this protest.

Earlier social movements, such as the homosexual movement in the beginning of the 1990s, still rejected fun elements, such as the carnivalesque parade of Christopher Street Day, as they question the political seriousness (Dobler and Rimmel, 2008). This seems to have been put aside with the emergence of the "event-driven protest" (Betz, 2016). Rucht (2003) diagnoses an increasing implementation with entertainment elements at the political demonstrations of the trade union on May 1st in Berlin, a development to a "fair interspersed with political elements" (Rucht, 2003, 50f). Even during riots in Berlin-Kreuzberg, forces of attraction and repulsion of sympathizers, activists hungry

for excitement, neutral activists, passers-by, residents, and police were observed as in a magnetic field (Casquette *et al.* 2003).

Case Studies: Demonstrations and parades

Demonstrations and parades can differ in their atmosphere, size, dynamics, mobilization, course, composition, or topic etc. For this reason, they should always be viewed in relation to their specific context (van Stekelenburg *et al.* 2012; Klandermans *et al.* 2014). Within the framework of the project "Organized Pedestrian Movement in Public Spaces (OPMOPS)", funded by the German Federal Ministry of Education and Research, demonstrations and parades are investigated. Two contrasting protest forms serve as case studies: regular demonstrations in the small German town of Kandel and the CSD Parade in the German city of Mainz.

Both protest forms use public space of the inner city to create visibility and convey political messages. However, they differ in the size of their venue, the conflictual nature of the protest, and their atmosphere. Kandel serves as an example of a political demonstration in which the clash of right-wing and left-wing groups leads to conflicts. CSD in Mainz shows the described tendencies towards an eventization of protest. CSD was originally a festive day of commemoration and demonstration for the acceptance of and against discrimination against homosexuals, bisexuals, and transgender people (LGBTI). Due to its size and the character of the event, it often has a tourist significance as a carnivalistic and excessive celebration (Markwell and Waitt, 2009). Nevertheless, the parade itself and the visibility of the difference in way of life can also be understood as provocation. Feelings of insecurity, rejection, avoidance, and even aggression can be observed when heterogeneous lifestyles are questioned.

Political demonstrations in Kandel

Kandel is a small town with about 9,000 inhabitants. In December 2017, a 15-year-old girl was murdered there by her ex-boyfriend, an Afghan refugee. In January 2018, right-wing political alliances called for a demonstration in which around 1,000 people participated. The protests were politically motivated and were primarily directed against the immigration policy of the German government. Resistance then formed counter protests: a middle class alliance, largely composed of Kandel citizens and supported by churches and trade unions, aims above all at sending a signal against right-wing attitudes and right-wing marches in the city. Furthermore, individuals as well as regional and supra-regional groups participate in a politically left-oriented alliance. It represents diversity, tolerance, and humanity and opposes hatred, racism, and exclusion. The right-wing demonstrations and counter protests in Kandel have been taking place since early 2018 at least monthly. The death of the girl was instrumentalized and forms the starting point for nationally organized right-wing protest, visible in the formation of the group "Kandel ist überall" (Kandel is everywhere). Kandel became a stage and synonym for a right-wing protest against Chancellor Merkel's German refugee policy and against immigration. The monthly demonstrations are accompanied by large police forces, physical and verbal attacks and crimes.

Christopher Street Day (CSD) in Mainz

Organized and registered by the association "Schwuguntia e.V.", the 25th Christopher Street Day in the German City of Mainz (approx. 200,000 inhabitants) took place in June 2018. Unlike in other

cities, only pedestrian groups (no trucks) take part in the march in Mainz. They demonstrated against inequality, exclusion, and discrimination, and for equal rights of all people. The intended renunciation of trucks and loud music emphasized on the original character of the demonstration and the political message, rather than on a fun and experience character. In addition to a march through the city center, which was registered as a political demonstration, a supporting program consisting of music, information stands of groups from the LGBTI community, rallies, and gastronomy was offered on a central square in the city center. This underlines the event character of the CSD, which not only pursues political motives, but is also a place of celebration, meeting, and entertainment. CSD in Mainz can be characterized as hybrid. The parade is not only a political demonstration, a symbol of equality in society, and an expression of belonging and identity, but also a colorful parade of parties and music.

Methods

The following results are based on two standardized quantitative surveys conducted by the Department of Urban Sociology at the University of Kaiserslautern in 2018. Participants at CSD and demonstrators in Kandel were interviewed face-to-face on various aspects of the perception of the demonstration, the police operation, and various other aspects. At the demonstration in Kandel in October 2018, a total of 99 participants from different protesting groups were interviewed. The total number of participants was about 700. Of these, 300 were supporters of the right-wing alliance, and 400 people took part in two counter-demonstrations and smaller pickets at different locations in Kandel. In June 2018 a total of 162 participants were interviewed at CSD in Mainz. According to the organizer, about 2,000 people participated in the demonstration march through the city center of Mainz. The results are supplemented by results of participatory observation.

Social structure and group size of visitors

The participants surveyed at the CSD are on average significantly younger than those in Kandel. There are also differences in the gender ratio: More men were interviewed in Kandel. Surprisingly, the proportion of highly educated people was the same in both surveys. With regard to socio-structural characteristics, the case study in Kandel reveals differences between the respondents according to alliances. The respondents from the left-wing alliances are younger than the right-wing demonstrators. There are also clear differences with regard to education. Respondents from the left-wing alliances show the highest education (Table 1).

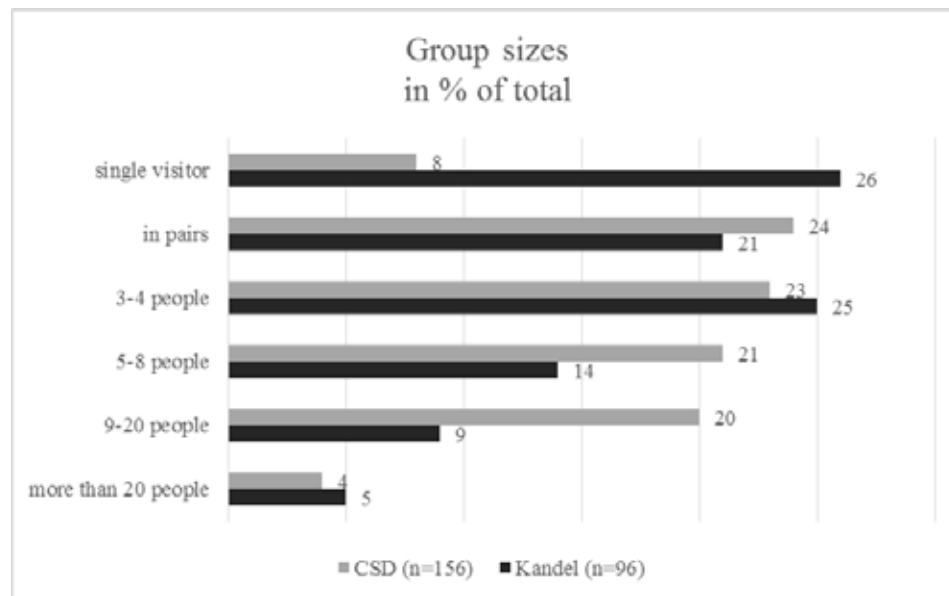
Table 1: Comparison of visitor structure

	CSD n=162	Kandel n=99
Average Age (in years)	26	47
Male (in %)	44	58
Higher Education * (in %)	68	67

Source: Own Surveys; * in Germany: Admission to Universities of Applied Sciences and higher

There are also clear differences in terms of group sizes (Figure 1): Individual visitors are clearly underrepresented among the CSD respondents. The proportion of groups of 5 to 8 persons, and especially of larger groups of up to 20 persons, is significantly higher than at the demonstrations in Kandel. This may be due to the stronger event character of the parade. In Kandel, larger groups play a comparatively minor role. More than a quarter of respondents are individual visitors, which shows the greater relevance of individual political interests and motivations.

Figure 1: Comparison of Group sizes



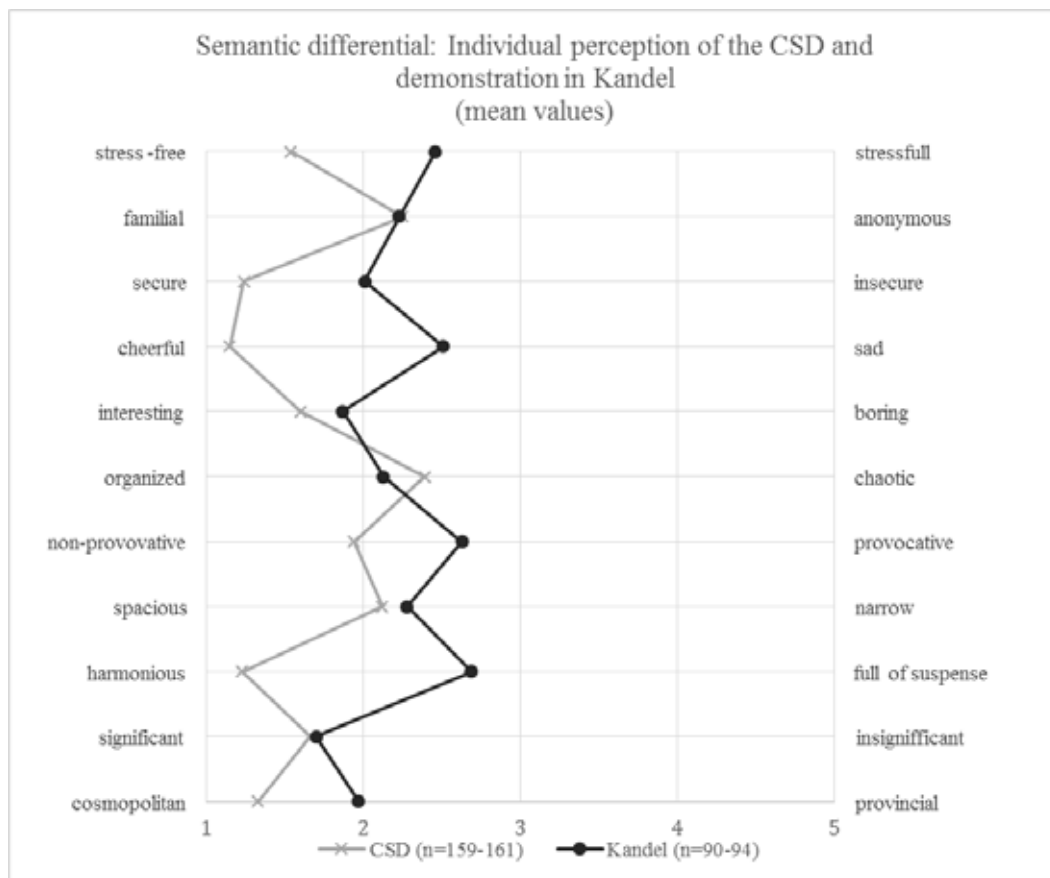
Source: Own surveys

The people interviewed at the CSD were asked to rank associations with the parade to derive visitor types in a further analysis. The "hedonist" (21% of respondents) associates CSD first and foremost with the aspect "party, music and colorful parade". The "politically motivated type" (31% of respondents) primarily associates CSD with a political demonstration and chooses this aspect in the first place of the required ranking. The "mixed type" (48% of respondents) cannot be assigned a clear motive. The results show the differences in visitors' motivations and underline the hybrid character between event and political demonstrations.

Individual perception

The participants' perception of the parade or demonstration provides information on the atmosphere, subjective feeling of security, and attribution of meaning. By means of a semantic differential, on a five point Likert scale, respondents expressed their perception of the demonstrations in Kandel and the perception of Christopher Street Day in Mainz using opposing pairs of adjectives, where 1 is an absolute agreement with the positive term, 3 is "neither nor" and 5 is an absolute agreement with the negative term. The result is visualized using the mean value.

Figure 2: Individual perception - Kandel vs. Mainz



Source: Own surveys

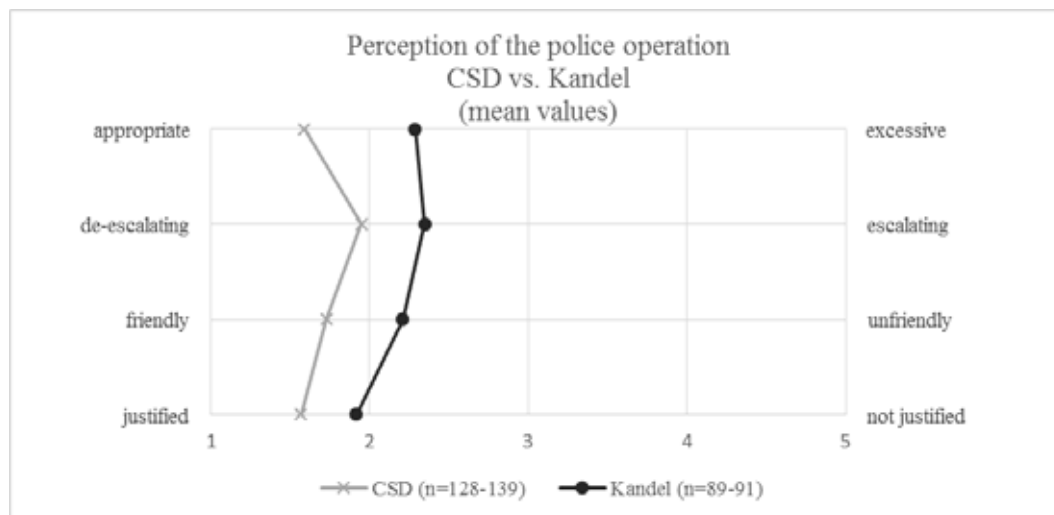
Figure 2 clearly shows that both curves predominantly move to the positive adjective pairs. Viewed individually, the CSD is perceived as safe, cheerful, harmonious, and cosmopolitan. This underlines the positive atmosphere in which not only the political message, but also community, openness, experience, and fun are important. The demonstration in Kandel is perceived as important, interesting, and safe. The most obvious negative perception is visible in the adjective pair „harmoniously/full of suspense“, which reflects the rather tense situation when opposing groups meet. The protest situation in Kandel is described as clearly more stressful, sad, provocative, and tense than the CSD. This is due to aspects of topic and to the confrontational situation between demonstrators and counter-demonstrators.

The comparatively positive results in Kandel are partly due to the fact that all political groupings were considered cumulatively in the graph. Differences in the perception of the demonstration between the various participating groups, especially with regard to perceived provocations, can be observed: Since the counter-demonstrators were able to interrupt the demonstration of the anti-migrant demonstrators in Kandel with whistles and vuvuzelas and were not pushed back by the police, the vast majority of people from the politically right-wing alliance felt provoked. This heated the mood and directed aggression not only against the opposing groups, but partly also against the police. There are also differences in perception with regard to perceived security or insecurity. Respondents from the left-wing alliance perceive the demonstration in Kandel as safer than people who belong to the right-wing alliance. This may be due to the numerical dominance of the counter-demonstrators.

Perception of the police operation

Police deployment in Mainz and Kandel differed widely due to different conflict structures: On demonstration days in Kandel, the police regularly deploys several hundred emergency forces from federal state and nationwide. Police forces are confronted with different interests, not only of demonstrators and counter-demonstrators, but also of persons not involved, like residents, tradesmen, politicians, or representatives of the media. Police presence at the CSD was many times smaller. There were only 15 police officers on duty, mainly for road safety.

Figure 3: Perception of Police Operation



Source: Own survey

In Mainz and Kandel, the overall perception of police deployment was positive: comparatively appropriate, de-escalating, friendly, and justified. In all respects, the assessment at the parade in Mainz was more positive than at the demonstrations in Kandel. Here, too, it should be noted that differences between the alliances can be observed in Kandel: The left-wing alliances consider the police deployment to be more negative and, above all, rather unfriendly and exaggerated. The counter-demonstrators were kept at a distance by the police. This can be interpreted not only as a security measure but also as a restriction of personal freedoms (Figure 3).

Discussion

The inner-city public space provides the stage for both the protests in Mainz and Kandel. Centrality increases the visibility of protests. The ritual character of protests serves to strengthen their meaning. Rituals are necessary for community building and they contribute to the formulation and perpetuation of positions (Rucht, 2003). Especially in Kandel, where the protests take place at least once a month, this ritualization contributes to the visibility of the protest and to the support of the respective demands. Symbols can be seen as characteristics of rituals. They serve as a point of reference for collective identities and at first glance represent a specific view (Casquete et. al. 2003). Group-specific symbols connect people in social movements and also serve as a distinction to "others". But symbolisms also serve to create visibility and to classify people or things. At the CSD in Mainz, the rainbow flag dominates as symbolism, but identity is also staged with costumes. Also in Kandel,

different groupings can be distinguished from each other on the basis of clothing, banners, flags, etc., but without carnival elements (Figure 4).

Figure 4: Demonstration march Kandel (left picture) and CSD in Mainz (right picture)



Source: Own photograph 2018

Protests and social movements create specific atmospheres. The perception of the atmospheres by the demonstrator differs with regard to the character of the protest. Further influence is exerted by the perceived grievances, group identifications, possibilities of participation (empowerment), and the perceived aggression of the police (van Leeuwen *et al.* 2016). Since the perceived atmospheres can have a positive or negative effect on the behavior of participants in protests, possible emergence or avoidance of conflicts, for example, can also be controlled (van Leeuwen *et al.* 2016). While the atmosphere in Mainz can be described as cheerful and relaxed (which can also be attributed to the fact that there were no counter protests or other conflicts), the atmosphere in Kandel was much more tense and marked by the conflicts between the groups. Police was in attendance with a large number of forces, which on the one hand served to avoid and control conflicts, but on the other hand also fomented conflicts, namely when individual groups felt at a disadvantage with regard to policing strategies.

The positive perception of the demonstrations in Kandel in October is surprising and does not correspond to the image conveyed by the protests in the (social) media. There were riots during several demonstrations in Kandel earlier in 2018. According to the Ministry of the Interior, overall 178 criminal charges against participants were committed in 2018, mainly violations of the Assembly Act, attacks on police officers, or bodily injuries. Compared to other demonstration days, the situation during our surveys in October was more tense, but less aggressive. Nevertheless, media focus on the image and mood of a temporarily insecure public space occupied by right-wing groups, resulting in conflicts and violent confrontations between opposing political groups. Even if scandalisation cannot yet be spoken of here, there are certainly effects on subjective feelings of (in-)security.

Unlike the peaceful and cheerful protests in Mainz, the issue of insecurity is part of the demonstrations in Kandel. An important role is certainly played by the narrative of insecurity in public space (Keller and Berger, 2017), which is currently often used by right-wing political groups to stir up fears of attacks. This technique is also utilized by the right-wing alliance in Kandel. Feelings of

insecurity during demonstrations and parades arise from two perspectives: 1) insecurity, in terms of a perceived danger of assault and violence, for example when opposing groups meet; 2) uncertainty of expectation through the encounter with otherness, different views and lifestyles, groupings, and behaviors.

A mere dichotomous distinction between amused protest in Mainz and conflictual protest in Kandel, however, is not tenable. Counter protest can take different forms and also take up fun elements: A "people's bingo" took place in Kandel as an expression of a peaceful counter protest by the left-wing groups. Within hearing and sight, parts of the counter-demonstrators reacted to the use of certain terms and formulations in the context of right-wing demonstrations. The form of the protest action contains a fun component and an entertainment value, but also stereotypes are made visible and counteracted.

The effects on usability of public spaces by protest can vary considerably. For the demonstration march in Mainz, public space was temporarily converted and closed to traffic. The public character of Gutenbergplatz, the starting and ending point of the parade and the central meeting place, was not limited as there were no access restrictions. Due to its touristic importance, the CSD in Mainz can have a positive effect on the city, as a sign of diversity, heterogeneity, and experience of the extraordinary. For the citizens of the small town of Kandel, the demonstration days however represent a major break in everyday life. Public life and the usability of public spaces are limited. Shops close earlier and streets are temporarily closed so that detours have to be accepted. The effect is primarily limited to the demonstration days. But the empirical studies indicate that the nature of the demonstrations affects the city as a whole because images are transferred: Mainz as a diverse and cosmopolitan city, Kandel as a conflictual city, occupied by right-wing political groups. If "Kandel" is associated with right-wing protests, this has a negative effect on the image of the city, which can have negative consequences for both citizens and businesses. The representation in the media contributes to it in particular. Not only are the death of the girl, but also the city and its public spaces instrumentalized for political purposes. On demonstration days, public space in Kandel is a contested space: residents, tradesmen, demonstrators, counter-demonstrators, and police officers are involved.

Conclusion

David Harvey (2006) described public space as a contested space. The struggle for visibility is in the hands of those with the greatest power of expression. The more, the louder, the more conspicuous, the higher the visibility. The struggle for space does not only take place between opposing groups but also between demonstrators and police. Negotiation processes are difficult when the mood is tense. In a sense, police can be seen as a mediator between visibility and security in public space. They enable groups to assert freedom of assembly and thus create visibility and at the same time avoid insecurity for all participants. At the same time, they have a regulatory power that can restrict the freedoms of use of public spaces.

The effect of protests on public space, like the protests themselves, is context-dependent and case-by-case analyses are required. Individual perspectives of participants and their respective motivations play a role in the transported atmospheres. The example of CSD shows that an "event-driven protest" can contribute to supporting the qualities of public spaces. Heterogeneity and diversity are promoted and demanded. In accordance with the normative dimension of public spaces, however, opportunities

for participation and accessibility may not be restricted. This danger arises if experience orientation, consumption and commercialization become central motives of protest organization and participation.

Protests in public space are repeatedly confronted with the processes of negotiation. Without question there is an interplay of visibility and uncertainty: on the one hand, public space is used as a stage for representation and visibility; on the other hand, the clash of opposing groupings, ideologies, and lifestyles can lead to the emergence of uncertainties and insecurities. The creation of security, in turn, can lead to curtailments of protest possibilities and thus to restrictions of visibility. The more conflictive a demonstration, the higher the police deployment. This means that use of space is more restricted by barriers. Opposing groups are spatially separated from each other. Freedoms of space usage are restricted.

In conclusion, further research and comparisons with other parades and demonstrations are necessary to arrive at generalizable conclusions. Above all, a strengthening of (socio-) spatial perspectives in protest research would be desirable. Planning disciplines hardly play a role in the discussion about public spaces and social movements. It is precisely the aspect of space, in its physical and social function that plays an important role with regard to security and visibility.

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“Tourism, public spaces and urban cultures”

Urban Regeneration and (over) tourism in China: Exploring Alternative Tracks in Suzhou’s Historic Centre

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Abstract: The booming development of cultural tourism in China has a significant impact on historic cities. While offering favorable opportunities for urban regeneration, tourism also poses a direct threat to the quality of life and the authenticity of urban cultures. This paper takes the historic center of Suzhou as an illustrative case to explore how alternative, spatially decentralized and time-distributed forms of tourism can contribute to the long-term and sustainable regeneration of historic cities and benefit local communities. Through conducting a design investigation of Suzhou, this research explores in particular the role of urban planning and design in aligning tourism development and urban regeneration agendas. The exploration reveals that, as opposed to exclusive and reductive city branding practice, a diversification of the tourism offer can multiply the distinctive identities of Suzhou’s historic city and contribute to its regeneration. It also advocates the potential role of urban design as an instrument of exploration and mediation in heritage-led regeneration projects in China.

Keywords: Cultural Tourism; Urban Regeneration; Urban Design; China.

Cultural tourism in Chinese cities and its impact: Suzhou as an exemplary case

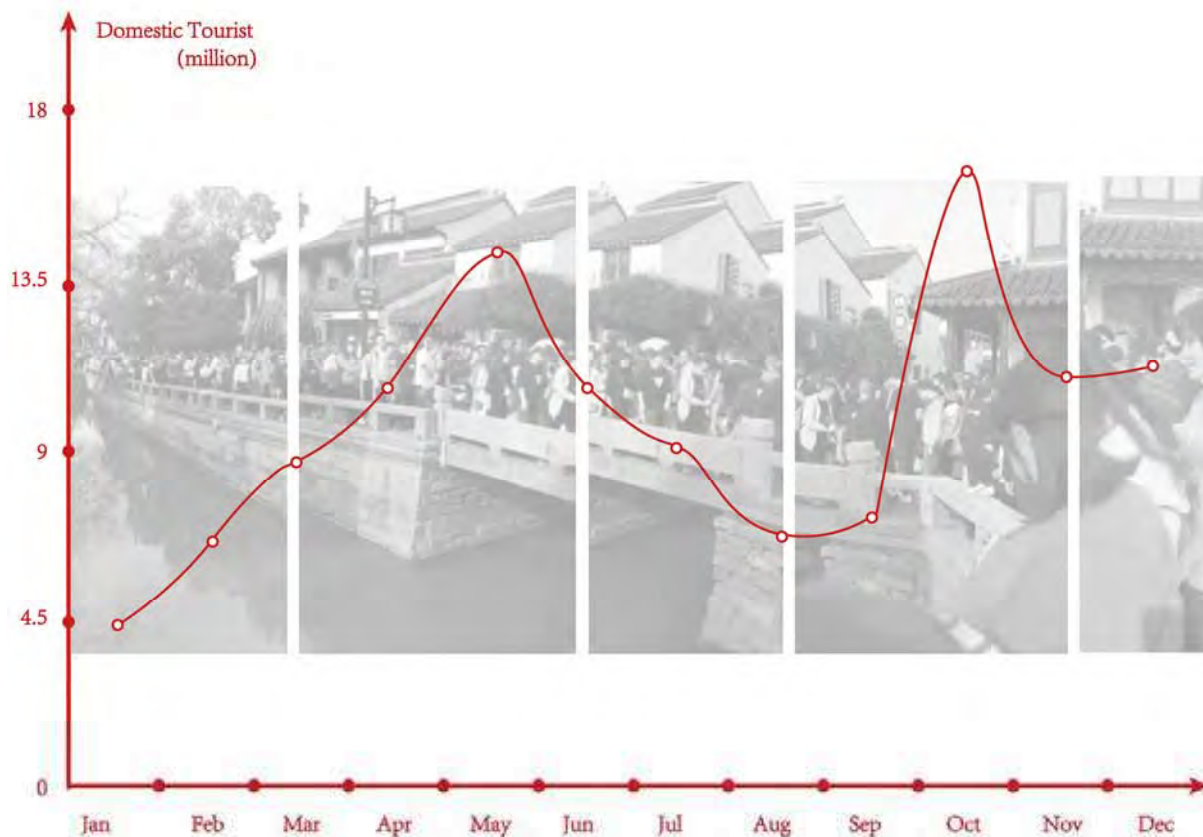


Figure 1: Accounting more than 100 million tourists every year, the influx of domestic tourists in Suzhou is mainly concentrated in two peak periods corresponding to national holidays and favorable climate conditions.

Suzhou is a megacity of 13 million people located in the heart of the Yangtze River Delta. Founded 2500 years ago, its historic center is very famous for its typical canal-streets and ancient gardens inscribed as World Heritage. Covering 15 km² and currently inhabited by 230,000 people, Suzhou old town is a main touristic destination that attracts a staggering number of visitors. Out of the more than 100 million people visiting the city area every year (STB, 2018), it is estimated that about a quarter visit the old town (Yin *et al.*, 2014). Among these, the vast majority (98%) are Chinese, coming from the local or surrounding provinces (Jiangsu, Shanghai and Zhejiang). The other 2% are foreign tourists, who still represent 1.5 million people, mainly coming from Japan, Korea and the USA.

The economic impact of tourism is equally massive. Ranked between the 10th to 20th most popular touristic destination in China according to various listings, Suzhou contributes up to 5% to the gross tourism revenue at national level, which was estimated in 2017 to 4570 billion RMB, or an 11% portion of China's total GDP.

Domestic tourism in China is in addition evolving very quickly, fueled by the emergence of the middle class and facilitated by new high-speed rail transport connections. Over the last five years (2012-2017), domestic travels in China had increased by 70%, or a 10% yearly increase. Over the same period the number of domestic tourists in Suzhou had increased by 6% every year, and generated an 11% yearly growth in revenue [Note 1].

While undeniably bringing considerable economic benefits to urban conservation and regeneration, the development of tourism in historic city centers across the world also presents serious threats. When exceeding a certain capacity, excessive growth of tourist numbers can generate negative and long-lasting impact on the livability of a place. As a global phenomenon, the adverse effects of over-tourism have been described and cautioned by the World Trade Organization (WTO, 2004). These negative effects include the abuse of natural resources and pressure on urban infrastructure and services, such as congestion and an over-proliferation of hotels, facilities or retails aiming at visitors. In addition, the promotion, marketing, branding and management of tourism can affect the diversity and authenticity of local life and culture.

In China also, the negative impact of mass-tourism on historic cities has been increasingly observed and acknowledged. In his study on Lijiang, a historic town recently listed as World Heritage, Huang (2013) describes how direct environmental nuisances such as traffic congestion and noise are accompanied by indirect and long-lasting impact on housing prices and urban services. He adds that the artificial importation of pseudo-traditional customs (such as floating river lanterns) to excite tourist interests have misrepresented the authenticity of the local culture.

Lijiang is not an isolated case. Several other researches have reported on how excessive development of tourism has affected the livability, heritage and traditional culture of local cities and forced the displacement of homegrown populations (Gang Xu, 1999; Li M. *et al.*, 2008). On the national level, it appears that most tourism strategies and management plans of Chinese cities have been applying standardized solutions for mass tourism (China Tourism, 2016). Tourism plans essentially focus on the city's major tourist attractions, with an exclusive attention to tangible elements and little consideration of the intangible aspects of the local culture (Li, 2000; Mao and Liang, 2013).

Retrospective of Chinese historic cities: from urban renewal to heritage-led regeneration

The “touristification” of Chinese historic cities is the latest stage in a succession of shifting attitudes towards ancient urban centers over the past decades. In the wake of the open-door policy of 1978, the industrial and economic development of China was accompanied with a massive wave of urbanisation. In Suzhou for instance, the built-up area was multiplied by more than 11 times between 1980 and 2010 (Wang *et al.*, 2015). In this process, most historic centers were initially neglected and suffered decay and degeneration. Overcrowded and poorly maintained, historical houses got deserted by the local middle-class population who could afford relocating in some new development areas on the urban periphery. This vicious circle aggravated the living conditions of historic city centers and worsened their attractiveness.

In reaction, from the 1980s, the question of urban renewal became a formal part of the agenda at national and local levels. Very typical in China is that local governments have played a leading role as both redevelopment advocate and project manager (Zhai, 2010). Three main successive types of urban regeneration strategies in China can be distinguished:

First, a demolition-reconstruction model, which prevailed between the 1980s and the 1990s. Also known as ‘old city renewal’ (jiucheng gaizao), this phase aimed primarily at solving urgent housing and safety issues. It replaced traditional urban fabrics with new housing types that met sanitary and fire protection standards, while sometimes ornamented with a reinterpreted expression of local historic architecture style (Yin, 2012). In this renewal process, as exemplified by the total replacement of Tianjin’s historic center, features of traditional urban fabric were forever lost.

Second, a commercial place-marketing model, which is incarnated by Xintiandi in Shanghai (1997). Based on the preservation of a few emblematic historic buildings, such projects use heritage conservation as a branding

tool to support real-estate development agendas. Economically successful in Shanghai, this regeneration model has been copied in several other places in China [Note 2]. However, these projects are also vigorously contested and accused of generating social exclusion and gentrification, while compromising the integrity and historical significance of the built heritage (Fan, 2014; Zhong and Chen 2017).

A third phase emerged in the 2000s and has focused on heritage-led regeneration – often termed ‘culture-led’ in China (Xia and Wang, 2010). According to Xie (2017), the growing influence of the notion of authenticity advocated by UNESCO explains China’s changing approaches to heritage conservation in recent years. After years of demolition and reconstruction, the new paradigm of conservation principle is now “to repair the old as to appear old” (Xiujia Rujiu). Authenticity is not only associated to preserving essential qualities of urban form, materiality or uses and functions. It also encompasses immaterial qualities such as the arts, culture, history, lifestyle and intangible assets of a city. This combination makes historic city centers a fertile ground for cultural tourism, and culture-led regeneration as a powerful strategy to achieve economic growth (Russo and Borg, 2002).

The link between urban conservation and tourism in Suzhou



Figure 2: the comparison between Suzhou’s Tourism Plans (2011) and Conservation Plan (2013) indicates a clear correlation.

The evolution of Suzhou’s historic center over the past decades reflects the three phases described above. While its historical fabric dating from the Song dynasty (9th - 13th c.) onwards had remained largely intact until the early 20th century (Xu, 2000), the center of Suzhou has since then been subject to profound transformations. A series of turbulent events (wars in the first half of the 20th c.; the Cultural Revolution in the 1960-70s) followed by sanitation and modernization programs in the 1970s-1980s led to the demolition of courtyard houses replaced by standardized walk-up apartments.

Subsequently, the local authorities issued its first protection plan in the 1980s and initiated reconstruction programs of historic elements, such as the city wall. The successive conservation plans have gradually broadened in scale and scope – from protection listed buildings and gardens to entire streets and areas, and finally controlling development by imposing restrictions on building height and style. The latest conservation

plan introduced in 2013 defines protection zones that cover almost a third of the city center's area, and includes some heritage-themed itineraries interconnecting them.

A comparison between the urban conservation and tourism plans reveals a clear correlation. Even though produced by two separate government authorities depending of different ministries [Note 3], heritage conservation and tourism development in Suzhou's historic center are closely interrelated. The review of Suzhou's official tourism channels confirm, for the historic center, a culture-led strategy essentially based on the promotion of the historic and traditional features inherited from the Ming and Qing dynasties and depicted in some famous scroll paintings.

On the link between urban conservation and tourism, the regeneration of Ping-Jiang Road district in Suzhou is often regarded as an exemplary case of integrated urban revitalization in China (Yin, 2012; Xie, 2017). Initiated in the late 1990s, the plan not only preserved and refurbished important parts of the traditional fabric, houses and public space. It also enabled to a majority of local residents to remain living in place thanks to the provision of basic infrastructures and an advantageous housing allowance program. For several years, the renovated historic area had combined successfully a coexistence of tourists and inhabitants in a relative balance.

Two decades later, however, the regeneration project became a victim of its success. Over-promoted on postcards and featured in successful television drama, Ping-Jiang Road is almost entirely bordered with souvenir shops and is the chronic theater of tourist traffic jams. Recent interviews conducted in the area indicate how local inhabitants suffer from the excessive commercialization of their neighborhood: the reduced accessibility, the closing of the vegetable market, and the recent conversion of the local temple house into a fancy teahouse / bookshop are the signs of tourism gentrification affecting their living environment (Vannoorbeeck and Attuyer, 2019).

Next to Ping-Jiang Road, a few other places designated as scenic areas tend to attract masses of tourists without positively contributing to the local life. In contrast, the rest parts of the city remain unexplored by visitors. Protected as heritage, these historic areas are subject to strict rules of conversation that limit the possibilities of radical changes, although adaptation and remodeling may be necessary to improve the living conditions.



Figure 3: contrast between overcrowded and commercialized scenic spots and decaying neighborhood.

The emergence of alternative forms of tourism

Suzhou is neither the only nor the first historic city facing the intricate challenges of tourism development, urban regeneration and livability. Lessons can be learned from numerous international cases and strategies addressing similar issues (Mason, 2015 ; Gotham 2005). One possible way to prevent the negative impact of tourism is to limit it. Perhaps inspired by Venice's installation of gates for tourists in 2018, Suzhou since very recently (23rd April 2019) imposes a reservation system on aspirant visitors to book their visit to popular attractions one to seven days in advance (The Humble Administrator Garden, Lion Garden, and the Suzhou Museum). Another possibility is to increase the pricing of attractions as a way to increase exclusivity and filter accessibility. Although they may solve problems in the short term, these approaches also precludes the possibilities of channeling popular tourism growth as a catalyst for urban regeneration.

Another type of response is to stimulate alternative forms of tourism. The notion of alternative tourism has been developed from the 1990s as a response to mass-tourism (Pearce, 1992). As a trend, it corresponds to a general diversification of tourism interests facilitated by lower transportation costs, relaxed regulations on (international) travel, and, more recently, the development of social media and online platforms of collaborative economy (Dredge and Gyimóthy, 2015). Prospective tourists can now plan their own travel individually and personalize their route by tailoring it to their needs without the intermediate of travel agencies [Note 4].

Among the several forms of alternative tourism that have emerged, some are focused on achieving a positive interaction with the local cultures and people. "Experience-based tourism" (Tzortzaki, 2018), "In-Depth tourism" (Chen *et al.*, 2009) or "Slow Tourism" models generally valorize local customs, products, traditions and travel experience as part of the destination's attractiveness (Honoré, 2004; Heitmann *et al.*, 2011; Lumsdon and McGrath, 2011) [Note 5]. Other alternative forms of tourism such as "Sustainable Tourism" (Edgell, 2016) or "Community-Based Tourism" (Blackstock, 2005) more explicitly aim at making the hosting community actively engage with and thereby benefitting from tourism development.

Interestingly, several values advocated by alternative tourism models meet the recommendations on tourism development coming from the heritage conservation and urban regeneration side. Guidelines from UN-Habitat or UNESCO's framework for Historic Urban Landscapes (HUL) also insist on enhancing indigenous and local culture, economy and products, and reiterate the pivotal role of local communities in regenerating their physical environment.

Integrating tourism and urban regeneration: defining a framework

A possible synthesis addressing both tourism development and sustainable urban regeneration is offered by a recent report of the World Tourism Organization (UNWTO, 2018). This report, based on the perception of "overtourism" (Ali, 2016) by residents in several European cities, proposes eleven integrative strategies to manage and promote dispersal of tourism flows in urban areas in order to make them inclusive, safe, resilient and sustainable:

- Strategy 1: Promote the dispersal of visitors within the city and beyond
- Strategy 2: Promote time-based dispersal of visitors
- Strategy 3: Stimulate new itineraries and attractions
- Strategy 4: Review and adapt regulation
- Strategy 5: Enhance visitors' segmentation
- Strategy 6: Ensure local communities benefit from tourism

- Strategy 7: Create city experiences for both residents and visitors
- Strategy 8: Improve city infrastructure and facilities
- Strategy 9: Communicate with and engage local stakeholders
- Strategy 10: Communicate with and engage visitors
- Strategy 11: Set monitoring and response measures

While complementary, these strategies can be divided into three main types of recommendation. A series of strategies (1, 2, 3, 5) focuses on the tourism experiences in both space and time. Another series of recommendations (6, 7, 8) centers on the involvement of the hosting community in tourism development and the benefits it can generate for urban regeneration. A third group (4, 9, 10, 11) relates to monitoring, management and regulatory aspects.

Together, these recommendations are in line with the evolution from mass tourism (destination based, pre-organized, all-inclusive packages) towards alternative and diversified modes of tourism characterized by free individual travellers in search for authentic and place-based experience and in consideration of the ethical and sustainable aspects of tourism development. Even though the mass and standardized tourism model still dominates in China, the trend for alternative tourism is likely to develop in the future, give the growing influence of social media and smart tourism (Kim and Wang, 2018). The eleven strategies can therefore serve as a valid framework to explore how the management of tourism growth can be integrated with the sustainable regeneration of historic cities in China.

Design exploration: seeking alternatives in Suzhou

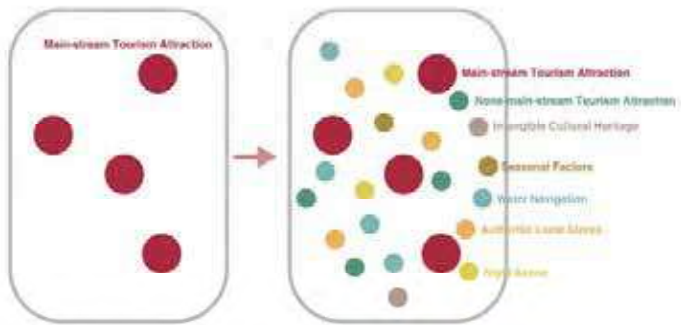
Presuming that tourism in Suzhou will continue to grow, this research proposes a design investigation addressing in particular the role of urban planning and design in aligning tourism development and urban regeneration agendas. It takes the guidelines of the World Tourism Organization on Tourism Growth (UNWTO 2018) as a framework and Suzhou's historic center as an exploration field. The study area has been limited to the historic center, where the contrast between high concentration of tourism and poor living conditions is most striking.

The design exploration employs a triple strategy: 1) to multiply and diversify the number of touristic attractions; 2) to enrich the travel experience; 3) to modulate the seasonality of tourism peak flows. These three strategies on space and time are complemented by a fourth determinant – how visitors can navigate across an expanded spectrum of available activities.

For each strategy, a detailed analysis of the current condition was conducted based on a combination of documentation, fieldwork, interviews and interpretative mapping. In the Agency of Mapping, Corner (1999) describes mapping as a performative research method that allows, through graphic operations of selection, omission, isolation, codification and associations, to uncover realities previously unseen or unimagined.

Based on the mappings' findings, specific proposals for developing alternative forms of tourism are formulated. With the express purpose to promote the values of authenticity, sustainability, and equity, the proposals also draw on international precedents and theoretical conceptualizations of the city from an experiential and perceptual perspective.

Design exploration 1: multiply and diversify the number of touristic attractions



The first strategy is to multiply and diversify the number of touristic attractions. This strategy aims at decongesting the few overcrowded spots of Suzhou's historic center, but also at dispersing peak flows in space and time (strategies 1 & 2). Besides tourist attractions, a wider palette of 'places of interests' may as well contribute to a segmentation of visitors (strategy 5) and potentially enrich city experiences for both residents and visitors (strategy 6).

In the historic center, tourists currently tend to agglomerate at a few tourist sites: the World Heritage Gardens, two historic streets, and two reconstructed city gates along the city wall [Note 6]. Labelled as "top attractions" in international, national and local rankings, these attractions are the most popular on social media (Kim & Wang 2018). Over-commercialized and often overcrowded, the immediate surroundings of these sites suffer from the influx of tourists, many of which travel in groups and may not necessarily contribute to the local economy. On the other hand, the rest extensive area of the city are left blank on the current tourist map, suggesting they are featureless and uneventful even though they are potentially of comparable interest.

We argue that alternative attractions can be defined according to various selection criteria. One possible criterion is the notion of locality and authenticity. Supported by the slow-, community-based and responsible tourism models, the focus on authenticity and locality are seen as potential vectors for supporting the local economy, strengthening cultural identity, and encouraging direct interaction between visitors and guests.

In order to identify 'places of interests' in the historic centre of Suzhou, this research draws on various non-mainstream sources, such as Suzhou-based online platforms or local certification labels attesting the quality of established businesses. As a result, several maps were created, featuring traditional shops, small opera playhouses, craftsman workshops, or local residents' favorite restaurants.

Another possible set of alternative places of interests are the sites currently vacant or underused. As a 25-century old city constantly in transformation, Suzhou invariably has some temporarily neglected spaces, such as abandoned factories, construction sites awaiting permits, or shopping malls deserted by customers. Temporarily reclaimed and refurbished, these sites can play a role in absorbing the surplus of tourists during peak periods, while serving the local community with improved city infrastructure and facilities, which is the 8th strategy proposed by UNWTO.

Many other alternative points of interest can be imagined, based on selection criteria such as natural assets or viewing points. In all cases, the definition of alternative tourist sites should remain an open and dynamic process. The mapping of these alternative places of interests reveals new spatial logics, such as thematic clusters or linear patterns that urban regeneration can align with and capitalize on. As a tool for urban regeneration, the creation of new places of interests that serve alternately visitors and locals' needs can eventually inspire and help prioritizing interventions on public space.

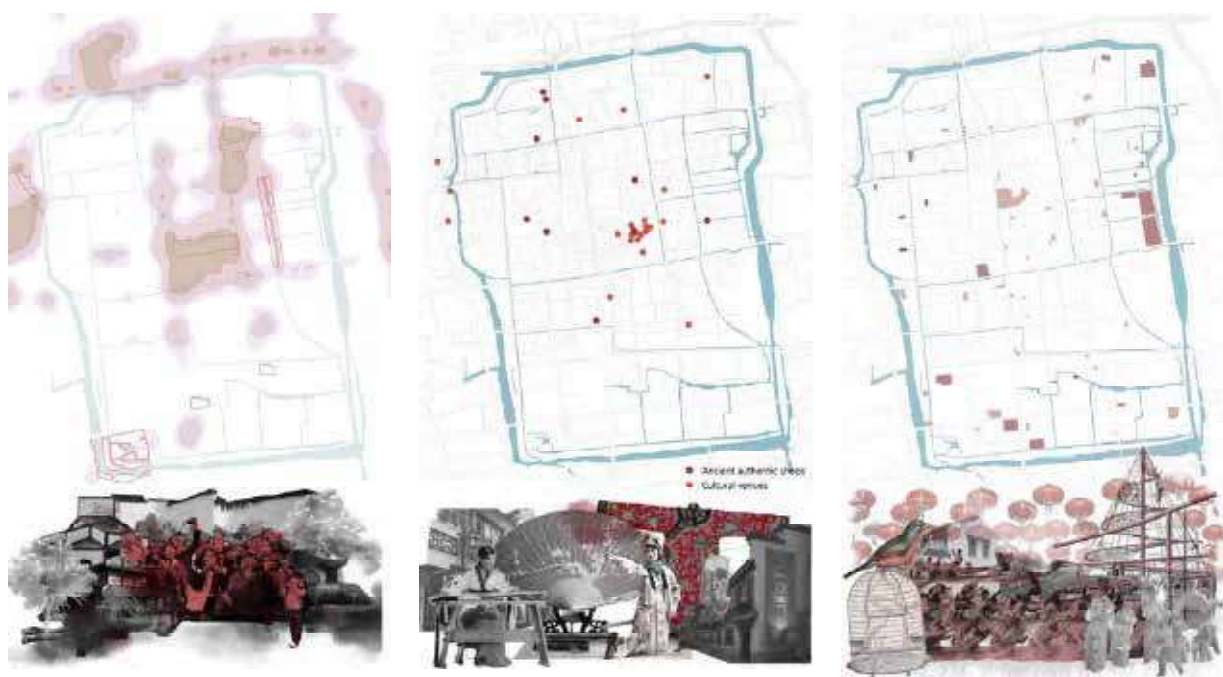
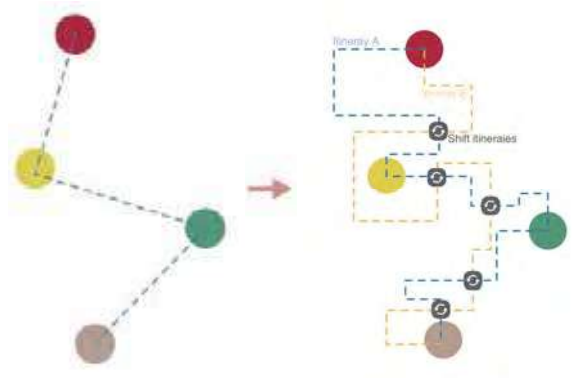


Figure 4: mapping existing and alternative attractions: a) (top) axonometric view of Suzhou with rooftops potentially offering a panoramic view on the city; (bottom, from left to right) b) mapping of the current mainstream spots (outlined with red contours) and concentration of population on a national holiday afternoon; c) typical Suzhou stores over 100 years old and traditional craft and culture places (opera, wood sculpture, embroidery, etc.); d) currently vacant or underused sites and buildings that could potentially host events.

Design exploration 2: stimulating alternative itineraries



The second strategy to address tourism growth in Suzhou is to stimulate new itineraries. Responding to UNWTO's third recommendation, this can also help disperse visitors and create city experiences for both residents and visitors (strategy 1 and 7). The notion of alternative itineraries is strongly encouraged by the models of slow tourism and experience-based tourism that emphasize on travel itself as a way to experience a place's cultural characteristics, to appreciate the everyday landscape, and to interact with its inhabitants.

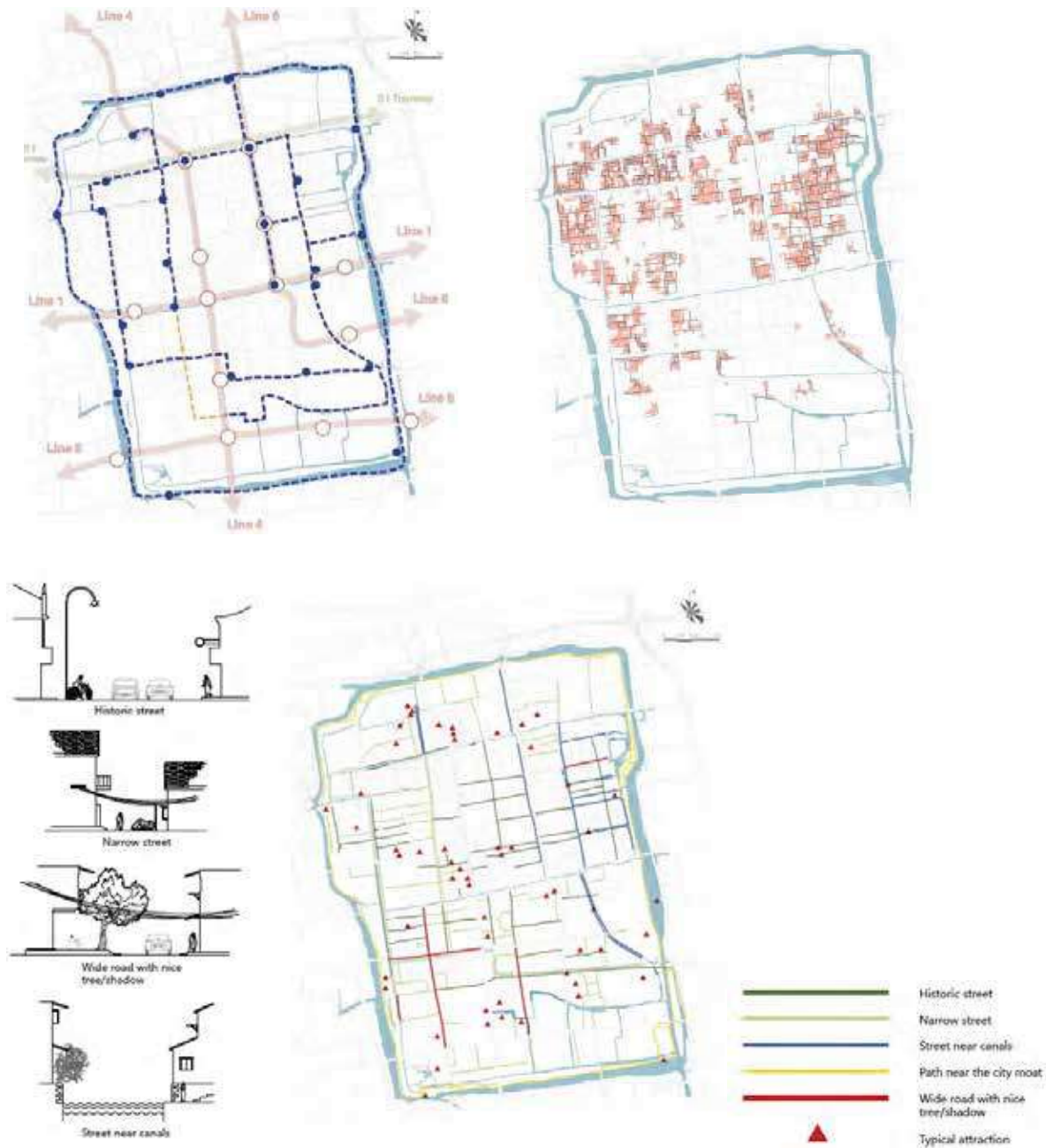
Currently, flows of tourists in Suzhou are mainly concentrated in a few historic streets and the immediate surroundings of main attractions. As visitors mainly go around by metro or private tour bus, the distance from one main attraction to another is far and not easily reached on foot nor facilitated by the bike infrastructure system. Very recently, the city begins to run a tour bus system and has been adding new lines connecting the different tourist sites. However, passing through the main arterial roads only, these itineraries offer merely a very partial view to the richness of Suzhou's urban fabric.

As an alternative, this research compiles an inventory of 'streets of interests' based on their potential for travel experience. Among the various evaluation criteria, the physical features of a street are essential in determining the comfort and perceptual value of an excursion. In this regard, Suzhou is characterized by a few avenues planted with trees, and a series of canal-streets [Note 7]. This mapping also reveals partially disconnected patterns that can potentially be reconnected through urban design approaches.

Another important criterion in the selection of an itinerary is the scenic experience it provides. Theorized in Cullen's *Townscape* (1961) or Peter Bosselmann's *Images in Motion* (1998), the quality of an urban walking experience is highly dependent on the scale, spatial diversity and articulation of the different atmospheres it crosses. In this regard, the dense network of narrow alleys sneaking across Suzhou's urban blocks from the Ming and Qing period offers a very rich experience: opening sporadic views on interiors, punctuated by small bridges over canals and shaded by trees hanging over courtyards, the mesh of tortuous pathways is full of surprises that contrast with the regular and predictable rhythm of the main street pattern.

The third possible thematic categorization of the streets is related to Suzhou's local history and toponymy. In her study of the city's morphology, Xie (2017) recalls that numerous streets and bridges of Suzhou were named after famous families or people. As such, the street pattern of Suzhou not only conveys historical and social meaning but also can be seen as a 'story-scape' for the curious visitor to explore (Kaufman 2009).

Here again, the set of criteria to choose alternative itineraries is endless and can be tailored to individual preferences. From an urban regeneration point of view, however, this investigation offers the possibility to reflect on how the designation of alternative thematic itineraries for tourists can be coordinated with investments that meet the residents' needs. The pedestrianisation of streets around schools could for instance perfectly meet the tourism mobility agenda.



Design exploration 3: Diversifying tourism offerings throughout the year

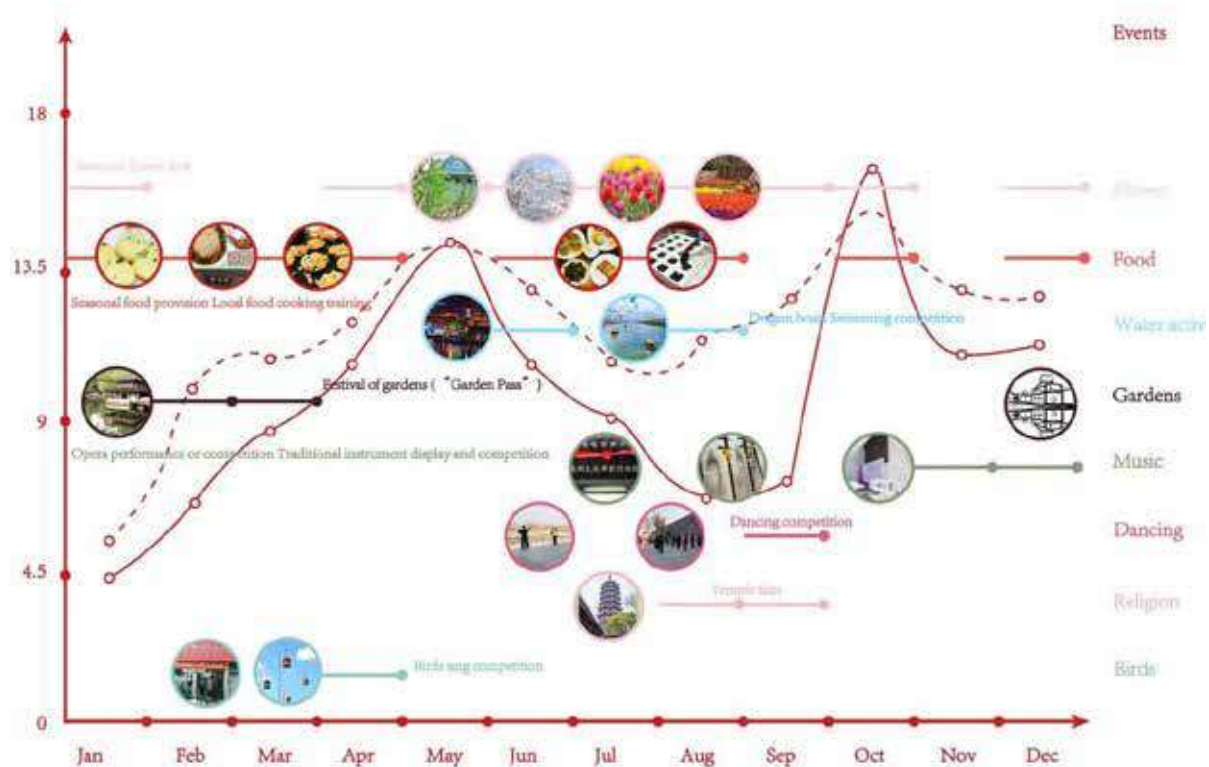


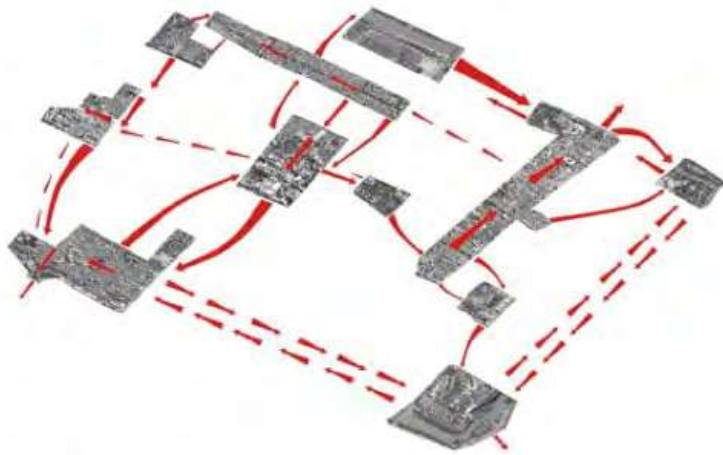
Figure 6: Chronological mapping of existing and proposed seasonal events that may contribute to a more balanced modulation of tourist influxes during the year.

The third strategy is to diversify tourism offerings into day vs. night, and weekday vs. weekend activities, featured by seasonal changes and punctuated by annual festive events. This responds to UNWTO's second recommendation to promote a time-based dispersal of visitors. Time dimension can be addressed at different scales. On a weekly and daily timeframe, tourism is logically concentrated in the week-ends and the daytime, with relatively limited activities after 8pm. On a yearly scale, the frequentation of tourists in Suzhou is relatively unbalanced, with two peak periods in May and October. This is principally explained by seasonal factors and national holidays, with no other particular linkage to Suzhou events. In contrast, the lower season is mainly in the cold winter and hot summer time, when the climatic conditions are not optimal to enjoy the mainly outdoor attractions of Suzhou.

To redistribute the influx of tourists on a yearly timeframe, several possibilities are offered. Starting from the annual calendar of flower blossoms, harvests, crops, rituals, pilgrimages, and symbolic dates, a series of alternative events can be imagined that are rooted in Suzhou's cultures, traditional houses and/or meaningful places. During the high season, decentralizing activities by using vacant sites scattered throughout the city can invite tourists to get off the beaten paths. Cordoba's Patios Festival in Spain (Cordoba, 2019) provides a good reference for Suzhou to hold a similar event prompting inhabitants to renovate their house courtyard and open it to visitors. Such initiatives, coordinated and supported by the city authorities, can contribute to develop locals' sense of pride and simultaneously foster a community-based and bottom-up dynamic of urban regeneration.

In the lower season, new events could celebrate some of the typical Suzhou customs and intangible heritage through festivals, seasonal markets or biennales. In the cold winter period, birds singing competition or gastronomic events could for instance reuse former industrial buildings, while during the hot summer times canal walks and boat rowing can help reinventing the historic link between the city and its canals.

Suzhou Drift as navigator



The systematic mapping of alternative places of interest, itineraries and events described above enriches the attractiveness of Suzhou with a wide variety of spatial and temporal opportunities. The fourth part of the design exploration of this research explores how tourists can be guided across the augmented city. Assuming that the trend towards individualized and experience-based types of travel will continue to grow, and taking advantage of new instruments associating GPS to social media, this opens up a possibility to develop an interactive navigation tool.

We develop and frame the concept of “Suzhou Drift” to support intuitive, individual and experience-based types of travel. The notion of Drift draws from the *Dérive* – proposed by the Situationist International in the 1950s-1960s – as “a mode of experimental behavior to create new situations, (...) a technique of rapid passage through varied ambiances guided by intuition” (Debord, 1958).

As a navigation instrument supplemented by the additional parameters of alternative attractions and itineraries elaborated in the previous sections, “Suzhou Drift” can customize routes according to personal interests and seasonal conditions. The simulation of Suzhou Drifts can cater for the need of different types of users/travellers and recommend several possible routes to explore the city. These possible itineraries can also be imagined in sequential perspective drawings as if on a Suzhou scroll, illustrating the variety of assets that the city can offer to adventurous visitors.

Complementary to the application-based information, some light physical design interventions in the public space such as signage, street furniture or temporary public art installations can make the city more legible, walkable and enjoyable while functioning as open invitations to some of the itineraries and alternative attractions.

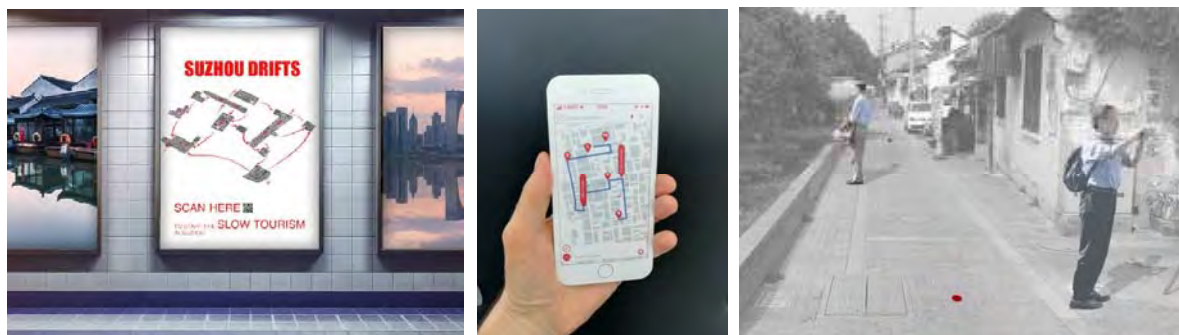


Figure 7: A simulation of ‘drifts’ during one day in Suzhou by three typical users profiles (a young backpacker; a family with children; a senior couple) illustrate the variety of assets that the city can offer.

Conclusion

This research has explored the implementation of a triple strategy for tourism development in Suzhou and elaborated on their possible implications in practice. Based on findings from this design exploration, three recommendations are proposed to inform the practice of tourism planning and urban regeneration in China and achieve a better integration of the both.

Firstly, the diversification of tourism is an opportunity to reveal the complexity and multiple identities of a city. The inquiry for alternative attractions and itineraries in Suzhou reveals several features that have been so far neglected. Beyond the postcard image of gardens and canals advertised in official tourism branding, Suzhou's historic center has an enormous wealth of tangible and intangible assets inherited from its long history. Tatters of the traditional urban tissue are finely intertwining within the regular blocks and punctuated by a scatter of former industrial buildings and sites. With their own scale and characteristics, these contrasted urban atmospheres coexist as different cities in the city. While the existing culture-led regeneration practice in China has tended to brand one exclusive 'legitimate' identity and orient design guidelines accordingly, we argue that the recognition of multiple urban identities – be they spatial, cultural or social – is important. Not only for the diversification and segmentation of tourism, but also to accommodate the plural needs of the local communities.

Furthermore, the potential of alternative tourism as a strategic and transformative agent of urban regeneration should be recognized and exploited. Because of its dynamic and cyclic nature, tourism has changing and renewed needs that are a priori not always compatible with the incremental and linear process of urban regeneration. Nevertheless, the design exploration of Suzhou exemplifies how the creation of events and temporal re-programming of parts of the city can serve as a transformative agent, as a testing tool to inspire, trigger or help prioritize more permanent planning choices for the regeneration of historic cities.

Finally, the methodological value of urban design as an exploratory instrument could be further expanded and enhanced. As a discipline, urban design in China has until now been confined to an executor role of masterplans and regulatory design codes. Arguably, urban design offers a large palette of tools that help grasp the complexity of the historic city and to envisage its future. The practice of urban design can associate quantitative information with a qualitative reading of the specific typological, morphological, and usages characteristics of the city. It can also develop interpretative, temporal and narrative descriptions of the city that can in turn inspire potential projects. In regeneration processes, intense cooperation and exchanges are needed between communities, tourism, spatial planning and business stakeholders. In this context, exploratory urban design can be instrumental to create a middle ground and support the development of shared visions.

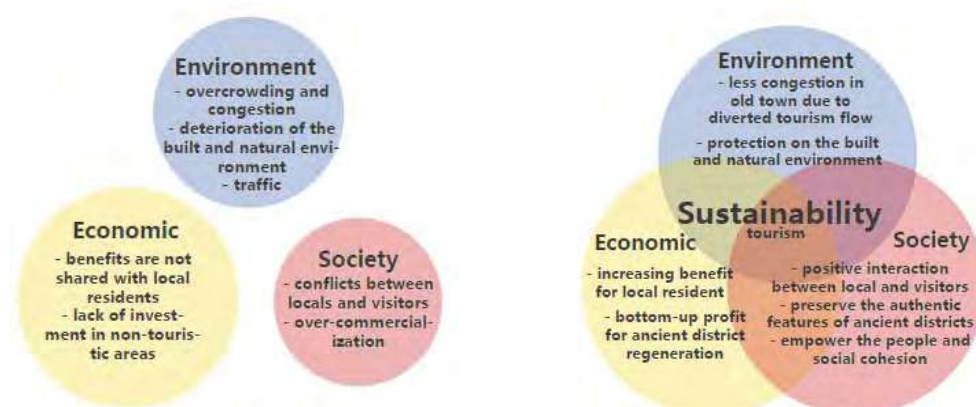


Figure 8: Comparison between the issues generated by a mass-tourism, and an ideal scenario of alternative tourism positively integrated with sustainable urban regeneration.

Limitations and suggestions for further research

Although potentially instrumental in China, the exploratory approach by design is nevertheless not sufficient to ensure a balance between tourism and sustainable regeneration. A key challenge remains how communities can positively take advantage of tourism development. In an ideal scenario or virtuous circle, alternative and decentralized tourism can lead to improved physical environments, empowered hosting community and greater social cohesion. In reality, however, numerous cases of touristic cities affected by an excessive Uberisation of hospitality services show that alternative and decentralized tourism models, when not regulated, can lead to serious risks of gentrification (Arias-Sans, 2015; Gant, 2015).

From interviews conducted with officials of the Suzhou Municipal Administration of Tourism (SMAT), it appears that the current tourism development model, while encouraging decentralized and alternative tourism, relies essentially on the dynamics of the market. For further research, it is recommended to investigate how governments can assume a coordinating role to ensure a collectivization of the profits generated, and reinvestment in distribution in the form of refurbishment or training programs.

Finally, considering that the local population of the historic center of Suzhou is characterized by an overrepresentation of seniors and migrant workers, it is also recommended for further research to explore how participatory and coproduction mechanisms can be encouraged and implemented.

Acknowledgements

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It has also benefitted from insightful inputs from Prof. Pierre-Alain Croset, from Mr. Wang Rudong from the Suzhou Municipal Administration of Tourism (SMAT), and from the Studio Suzhou (2018-19) coordinated by Florence Vannoorbeeck and Dr. Katia Attuyer from the Department of Urban Planning and Design at Xi'an Jiaotong Liverpool University.

Notes

Note 1: Sources of tourism data in Suzhou in 2018: Suzhou Tourism Bureau (STB). <http://www.suzhou.gov.cn/> and <http://www.sztravel.gov.cn> (Accessed: 18 Sep 2018); Sources for tourism data in China: <http://www.chyxx.com/industry/201806/650305.html> (Accessed: 18 Sep 2018) ; www.ctrip.com; <https://tradingeconomics.com/china/tourist-arrivals>, accessed on April 25, 2019

Note 2: See for instance Nanjing 1912, Fuzhou Xintiandi, or Old Bund of Ningbo.

Note 3: The main public actor of tourism in Suzhou is the Suzhou Municipal Administration of Tourism (SMAT). Depending since 2018 of the Ministry of Culture, it is responsible for the definition and implementation of specific policies, strategies and plans.

Note 4: Individualized travel practices have been popularized by local peer-to-peer accommodation services such as www.couchsurfing.com or its commercial replica, www.airbnb.com. In addition, services platforms now give the possibility for tourists to authentically experience local life, to share local customs, or to benefit from insiders' recommendations or specific services. See among other www.spottedbylocals.com , www.localtravelmovement.com , www.coolcousin.com, www.getsidekix.com, www.waymarking.com, Lonely Planet's Everyday Micro-adventures or the very recent 'experience' option proposed by Airbnb.com <https://www.airbnb.com/s/experiences>

Note 5: Slow Tourism emerged recently as one of the numerous emulations of the slow-food movement. Founded on a concept of authentic, responsible and slow travel experience, slow-tourism also claims to promote the sustainable preservation of authentic modes of living, local aesthetic and culinary traditions.

Note 6: The historic city center concentrates 24 sites designated as national heritage. Out of these, 9 gardens were listed as World Heritage by UNESCO in 1997 and 2000. <http://whc.unesco.org/en/list/813/>

Note 7: Known as a "double-chessboard", the grid of parallel canals and paths is very characteristic of Suzhou. From the tens of canals that were once crisscrossing the entire city, only a few canals are left today. Recently, the city initiated the reopening of some sections to restore the continuity of the network.

Source of figures

Figure 1: authors, adapted from a video of on Pingjiang Road overcrowded on April 6, 2019; data of tourism in 2018 in million visitors: <http://www.sztravel.gov.cn/news-list.aspx?page=2&catalogid=201804211508560000>;

Figure 2: left: Suzhou Tourism Plan 2011-2020 (Suzhou Tourism Bureau, 2011); Right: the Suzhou Historic City Conservation Plan_2013- 2030 (SPDRI, 2013).

Figure 3: pictures by Yiwen Wang.

Figure 4: authors, based on spatial analysis from satellite pictures and fieldwork Map a) top attractions according to social media (Kim and Wang 2018) and population concentration from baidumap live application (situation on Friday June 8, 2019, at 2.30 pm).

Figure 5: authors, based on spatial analysis from satellite pictures and fieldwork

Figure 6: Xu Yuan, Group Urban Identities, from Studio Suzhou Vannoorbeeck F. & Attuyer K. (2019).

Figure 7: authors.

Figure 8: authors.

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Unbalanced Development and Peripheralisation Processes: a Testing Phase to Map Studies

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Abstract: In many regions, an unbalanced dichotomic development based on core and peripheral areas has increased territorial inequalities affecting places, communities and economies. The peripheralisation processes are causing several disadvantages, in terms of socio-economic negative trends, abandonment of cultural heritage and increasing of environmental risks. The CNR IRISS research aims at investigating approaches to contrast marginalisation trends and support balanced development processes. Starting from a first screening of scientific literature, different fields of study have emerged, ranging from regional sciences to geography and urban studies, from economics to social studies, and different terms have come out such as internal areas, inland areas, and inner peripheries. The aim of this research phase is to implement a systematic literature review to explore the multiplicity of terms related to unbalanced development and peripheralisation processes, to investigate possible connections with different scientific disciplines and/or geo-political contexts also by analysing the evolution of the debate over time. This work presents a testing phase aimed at verifying the adequacy of the selected methodology and selected items and at sharing them with the scientific community in order to consolidate and enrich the methodological framework, and to organise the follow-up activities.

Keywords: territorial inequalities, peripherality, systematic literature review, data collection

Introduction

Reducing territorial inequalities is a key challenge for achieving sustainable development strategies, as highlighted by international scientific debate and political agenda. In many contexts, socio-economic and political dynamics have excluded some territories from mainstream activities, increasing gaps within regions between core areas and peripheral areas. The dichotomy between leading and declining areas results in negative trends for the second ones, in terms of abandonment and depopulation, lack of jobs and opportunities, reduction of essential services, accessibility issues. These processes produce negative impacts on well-being and quality of life of the local communities and contribute to the increasing vulnerability of the historic heritage and the environmental resources.

The ongoing research project “Innovative Strategies for Regenerating Small Villages and Inner Areas” deals with this debate by focusing on place-based regeneration strategies in territories that suffer marginalisation processes, with a specific in-depth focus on Italian context in which the inner areas amount to about 60% of the national territory. In these contexts, landscape represents a relevant asset as demonstrated by the high presence of excellent sites such as Protected Areas, National Parks and Sites of Community Importance. Starting from

this evidence, the research focuses on landscape to verify its role as driver for activating regeneration processes in inner areas, through a co-design approach aimed at improving synergic planning between top-down policies and bottom-up initiatives (Oppido *et al.*, 2019; Oppido *et al.*, 2018). The research activities are carrying out both by developing a first empirical case study of the Italian context through an Action Research protocol and by deepening an international theoretical framework. The key goal is to explore how to implement approaches for contrasting marginalisation trends and supporting balanced development processes, within the framework of the Italian National Strategy for Inner Areas (Barca *et al.*, 2014) that promotes a place-based approach for regenerating these contexts. The Italian inner areas have been identified through a methodological study based on the distance (in minutes) from the centres offering basic services and they are characterised by demographic decline, ageing population, low economic performance but also by a relevant territorial capital – human, cultural and natural capital – often untapped. The Strategy is implemented within a multilevel framework, involving national, regional and local tiers, considering local communities key actors for the goals, and it is part of the Cohesion Policy, according to the European expectations aimed at supporting all regions in enhancing their economic and social potentialities (Barca 2009; Commission of the European Communities 2008; OECD 2016). These policies recognise the unbalances between central and marginalized areas as a key issue in Italy and Europe in terms of social inequalities as well as of risks of losing the inestimable cultural and environmental value of the resources present in human settlements that over time have lost the critical mass capable of attracting and retaining population and productive activities. This known problem, which has been dealt with in literature and in local, national and transnational policies, requires a deepening of the ontological framework and of the interpretative aspects, in order to have a solid working basis, even in the linguistic and geo-political differences.

Building the theoretical framework of the research, literature review has highlighted the presence of multiple terms in scientific and political debate such as marginal areas, peripheral areas, inner areas, inner peripheries, inland areas – all terms referred to unbalanced development dynamics and peripheralisation processes (Kinossian, 2017; Küpper *et al.*, 2017; Lang *et al.*, 2015; Wirth *et al.*, 2016).

With reference to this terminological multiplicity, the aim of this research phase is not to establish a state of the art about a specific term but to implement a systematic literature review to explore the selected terms related to possible connections with different scientific disciplines and/or geo-political contexts also by analysing the evolution of the debate over time.

The first focus developed by the researchers was about the concept of “peripherality”, of which the core discussion concerns levels of accessibility (ESPON, 2009; Schürmann & Talaat, 2000; Spiekermann & Wegener, 2006; Vickerman *et al.*, 1999). This spatial meaning has been progressively linked to socio-economic performances, connected with distance from the main centers of activity (Kühn 2015). This change determines that places not geographically remote could be peripheral in terms of relationships with economic networks, highlighting the role of lack of connectedness and weakness of interaction (Copus *et al.*, 2017). From a first screening of scientific literature and policy documents, the conditions of marginalisation are linked to the exclusion from physical, social, economic, institutional and cultural network (ESPON 2017).

This relationship with socio-economic dynamics, rather than geographical characteristics, makes these processes changeable and transitory. However, it is useful to point out that overemphasizing the analogy between peripherality and socio-economic performance leads to confuse these territories with lagging areas (Copus & Noguera, 2016). «[...] the concept of inner peripheries which is emerging is not simply a Central European analogue of the kind of “economic potential” peripherality observed in Northern and Western Europe, but rather one which has more in common with the discourses on social exclusion and well-being» (Copus & Noguera, 2016). The discussion progressively focused on the complexity of variables to be considered, not simply related to location: «Geographical remoteness, as such, therefore does not cause marginalisation, nor does central location promise prosperity» (Bock, 2016, p. 5). From this perspective, «[...] the peripheries are

considered the outcome of complex processes of change in the economy, demography, political decision-making and socio-economic norms and values» (Naumann & Fischer-Tahir, 2013, p. 9), by highlighting the role of inadequacy of infrastructure, health facilities and educational services in terms of quality of life. These conditions trigger negative trends such as ageing, out-migration, reducing human capital and therefore the capability to generate local development, with the risk of progressive territorial de-generation processes (Sassen 2014).

Terminological differences also derive from different geographical areas. «However an additional source of terminological confusion arises between the Anglophone research tradition, which is used to the idea that the “periphery” is indeed around the (Northern and Western) edges of the country, and that of the Mediterranean and Iberian countries, where major cities are located on the coast, and peripherality is associated with “the interior”, or “inner areas”» (Copus & Noguera, 2016).

This brief overview shows the richness of the debate and the multiplicity of the implications related to the spatial and non-spatial features. The complexity of the topic is also highlighted by its multidisciplinary, including several disciplines involved such as regional and urban planning, economics, social studies, environmental studies, transportation. The screening of literature and political documents has allowed identify the recurring terms, obtained by combining the adjectives inland/inner/interior/internal/marginal/non-core/peripheral with the substantives area/context/territory/landscape and their plural.

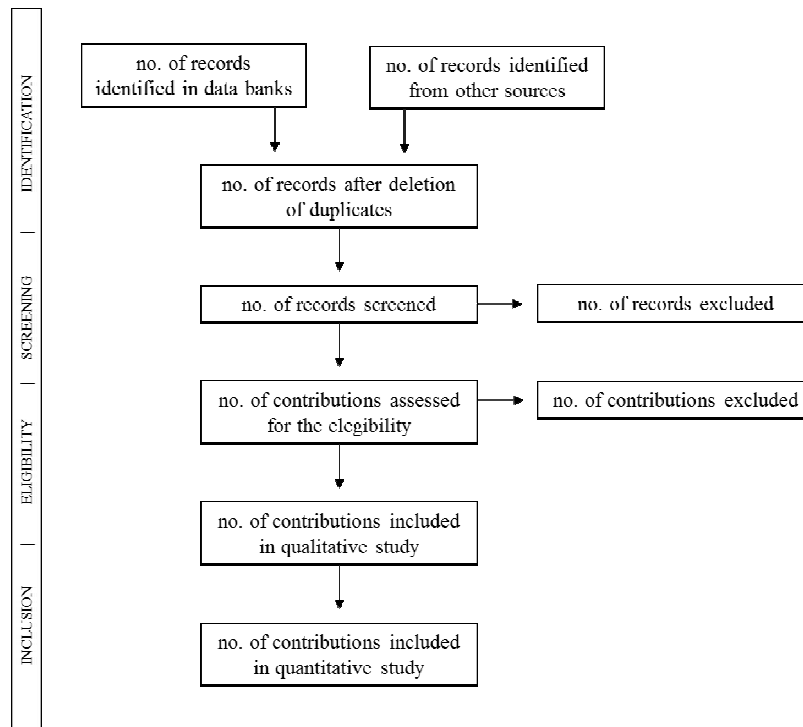
Following this introduction, the paper describes the adopted methodology for a systematic literature review, illustrates the data collection, analyses the first findings in order to discuss with scientific community about the current testing phase and to program the research follow-up.

Methodology

The systematic literature review is a method used to identify the state of the art in relation to specific research topics. Most used in clinical research, it represents a way to develop studies characterised by integrity and transparency. In the case of this work, this method has been used to: explore and deepen the multiplicity of terms within different scientific disciplines and geo-political contexts, reflect about the topic through studies and research developed over time, and propose original research initiatives to contribute knowledge in this research and operative scope (Perroni et al., 2015). Specifically, this work describes a testing phase of the methodology to be shared with the scientific community in order to consolidate and enrich the methodological framework, and to refine investigated terms.

A codified systematic review consists of «[...] a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies» (Glossary of Cochrane Community 2019). The flow chart in Figure 1 describes the adopted systematic review approach coherently with the PRISMA Statement (Moher et al., 2015), which includes 4 phases: identification, screening, eligibility, and inclusion.

Figure 1 – Flow chart for a systematic review (Moher et al., 2015)



Data collection

Researchers structured the data collection process in order to explore the multiplicity of the selected terms within different scientific disciplines and/or geo-political contexts, and to propose an original perspective in the field of place-based regeneration.

As already anticipated in the introduction, authors' previous studies highlighted a preliminary set of terms on which apply a first testing round of a systematic literature review. In order to have the highest level of alternatives starting from these emerged items, researchers have combined all adjectives (inland, inner, interior, internal, marginal*, non-core, peripher*) with multiple substantives (area*, context*, territor*, and landscape*) (Table 1).

Table 1 – Matrix of adjectives and substantives creating terms for the testing phase

	inland	inner	interior	internal	marginal	non-core	peripher*
area*	inland area*	inner area*	interior area*	internal area*	marginal area*	non-core area*	peripher* area*
context*	inland context*	inner context*	interior context*	internal context*	marginal context*	non-core context*	peripher* context*
territor*	inland territor*	inner territor*	interior territor*	internal territor*	marginal territor*	non-core territor*	peripher* territor*
landscape*	inland landscape*	inner landscape*	interior landscape*	internal landscape*	marginal landscape*	non-core landscape*	peripher* landscape*

Working on a systematic review means to search multiple databases doing a laborious and time-consuming activity with a successful outcome. Taking into account the research of Bramer et al. (2017) about the optimal combination of databases needed to conduct efficient searches in systematic literature reviews, authors should have selected at least Web of Science and Google Scholar to guarantee adequate and efficient coverage of the research topic. The Web of Science platform offers to scientists a tool to develop, modify and save structured advanced research – called as query – through field tags, Boolean operators, parentheses. A plus value of this platform is the opportunity to frame the query within the Web of Science Categories, permitting to filter subject categories of every journal and book covered by Web of Science Core Collection. This is an important point to make specific query, avoiding a massive collection of suitable contributions. The Google Scholar's advanced research does not enable to refine results because it is not possible to isolate subject categories but only to search for author or journal/book. Representing this work a phase of testing, authors have used only the Web of Science putting off the manual research on Google Scholar for a more consolidated phase of the research.

Researchers structured the Web of Science search considering:

- only works in English language to guarantee an international profile of the research;
- the maximum timespan (1965-2018) covered by Web of Science to include the policy evolution;
- scientific articles, books, book chapters and conference proceedings;
- all databases from the Web of Science Core Collection (Citation Indexes).

Researchers started the advanced search organising specific queries for all the eight subject categories selected: Agricultural Economics & Policy, Regional & Urban Planning, Social Issues, Cultural Studies, Demography, Urban Studies, Development Studies, and Economics. After, they proceeded to draw up queries for each column of the matrix (Table 1), for example:

ts=(("inland area*") OR ("inland context*") OR ("inland territor*") OR ("inland landscape*"))

and organised a separate history for each ones in which it is combined with every subject category (Figure 2).

Figure 2 – The saved history for INLAND query

Set	Results	Save History / Create Alert	Open Saved History	Edit Sets	Combine Sets	Delete Sets
# 17	0	ts AND #1		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 16	33	ts AND #2		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 15	6	ts AND #3		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 14	26	ts AND #5		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 13	0	ts AND #4		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 12	0	ts AND #3		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 11	15	ts AND #2		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 10	2	ts AND #1		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 9	3,298	ts=(("inland area*") OR ("inland context*") OR ("inland territor*") OR ("inland landscape*"))		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 8	185,684	(ts-(Social Issues)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 7	874,507	(ts-(Economics)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 6	89,888	(ts-(Development Studies)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 5	144,417	(ts-(Urban Studies)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 4	55,800	(ts-(Demography)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 3	64,172	(ts-(Cultural Studies)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 2	158,877	(ts-(Regional & Urban Planning)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>
# 1	57,824	(ts-(Agricultural Economics & Policy)) AND LANGUAGE: (English)		Edit	<input type="checkbox"/>	<input type="checkbox"/>

The result of this operation is showed in the Table 2.

Table 2 – Results from the combinations of selected queries within selected subject categories

		Agricultural Economics & Policy (56,289)	Regional & Urban Planning (155,520)	Cultural Studies (63,692)	Demography (55,729)	Urban Studies (143,847)	Development Studies (64,075)	Economics (868,903)	Social Issues (185,169)	TOT
		#1	#2	#3	#4	#5	#6	#7	#8	
inland area* inland context* inland territor* inland landscape* (1,265)	*A	2	15	0	0	28	6	33	0	84
inner area* inner context* inner territor* inner landscape* (850)	*B	0	20	0	0	37	1	7	2	67
internal area* internal context* internal territor* internal landscape* (692)	*C	1	7	0	0	12	4	7	0	31
interior area* interior context* interior territor* interior landscape* (389)	*D	0	3	0	0	6	2	10	0	21
marginal* area* marginal* context* marginal* territor* marginal* landscape* (1,752)	*E	21	31	5	1	29	12	46	6	151
non-core area* non-core context* non-core territor* non-core landscape* (27)	*F	0	0	0	0	1	0	0	0	1
peripher* area* peripher* context* peripher* territor* peripher* landscape* (2,600)	*G	8	100	2	13	117	30	86	5	361
TOT		32	176	7	14	230	55	189	13	716

Authors used the software Mendeley to archive contributions. The programme is directly linked to Web of Science so the migration of the data was easy and automatically excludes duplications. This operation permitted to move from a package of supposed 716 units to 461 ones. All the data related to these latter were transferred to an Excel grid structured as follow and in which elements were input in chronological order with an assigned ID (Table 3).

Table 3 – Organisation of the collected data

Category	Collected data
General information	ID <i>from #001 to #461</i> Typology of the product (drop-down menu) <i>journal article</i> <i>book</i> <i>book section</i> <i>conference proceeding</i> Date <i>from 1968 to 2018</i> Title of the product Abstract Name and surname of the first author Affiliation of the first author Name and surname of the second author Affiliation of the second author Name and surname of the editor/s Affiliation of the editor/s Title of the journal/book/conference Name of the conference Volume Issue Keyword Page Publisher City of the publisher DOI code ISBN code
Discipline scope (drop-down menu)	Urban and Regional Studies Geography Social Studies Economics Transportation Environment Multidisciplinary
Geographical scope (drop-down menu)	Europe North America South America Central America Asia Africa Australia any
Typology of the contribution (drop-down menu)	Theoretical approach Case study Methodological approach Project/program/policy
Collected items (drop-down menu)	Inland area* Inland context* Inland territor* Inland landscape* Inner area* Inner context* Inner territor* Inner landscape* Interior area* Interior context* Interior territor*

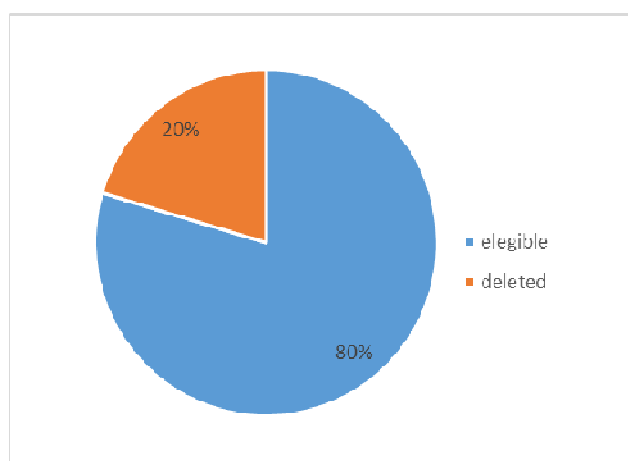
	Interior landscape* Internal area* Internal context* Internal territor* Internal landscape* Marginal* area* Marginal* context* Marginal* territor* Marginal* landscape* Non-core area* Non-core context* Non-core territor* Non-core landscape* Peripher* area* Peripher* context* Peripher* territor* Peripher* landscape*
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In order to complete a testing phase, the first 100 lines with a published abstract have been evaluated for the eligibility and then included in a quantitative synthesis.

Findings of the testing phase

Authors developed preliminary quantitative findings of the testing phase in which the first 100 units with an edited abstract were assessed for the eligibility (from #027-1990 to #137-2008). This sample showed 80% of eligible units and 20% to be deleted from the database mainly because, nevertheless the subject category and query was respondent, contents were not relevant for this research (Figure 3). For this reason, the discussion proposed below was developed on 80 units developed from 1990 to 2008.

Figure 3 – Percentage of eligible contributions



First general findings were developed on the four specific categories: discipline scope, geographical scope, typology of the contribution and typology of collected items (Figure 4-7).

As expected, the main discipline scopes were Urban and Regional Studies and Economics, followed by Social Studies and Multidisciplinary Studies. Any units were collected in Geography, Transportation, and Environment discipline scopes (Figure 4). In the timespan tested, the scientific debate was concentrated in European countries and in Asia (mainly in China), followed by Africa, North America and Australia with similar concentration of

units (Figure 5). This debate was developed mainly through a case study approach while there was a lesser percentage of theoretical approach testifying the lack of defined framework of research topic (Figure 6). With regard to the collected items, four of them emerged as the most collected: peripher* area*, marginal* area*, inland area* and inner area*. During the timespan 1990-2008, the item peripher* was cited in almost the half part of the units (Figure 7). In this set, the items recalling the concept of the urban periphery were excluded – coherently with the research aims.

Figure 4 – Frequency of discipline scope

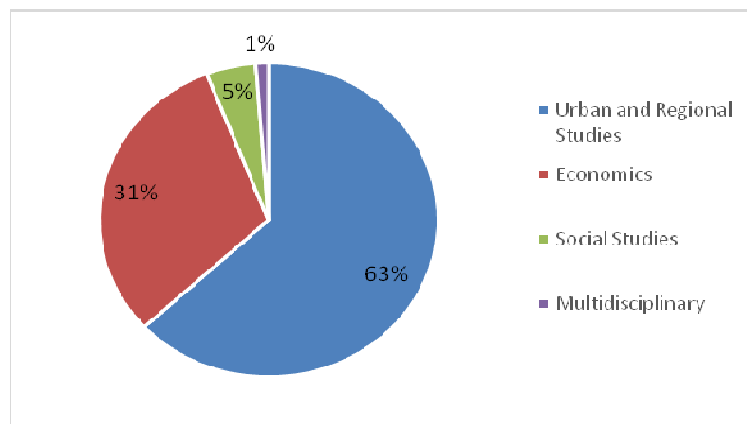


Figure 5 – Frequency of geographical scope

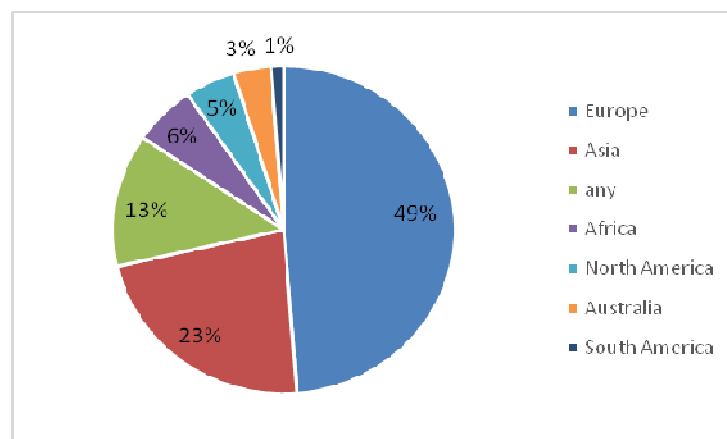


Figure 6 – Frequency of contribution typology

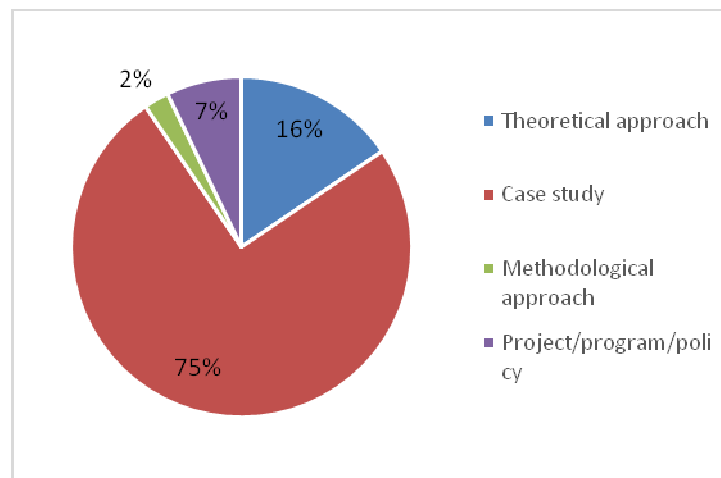
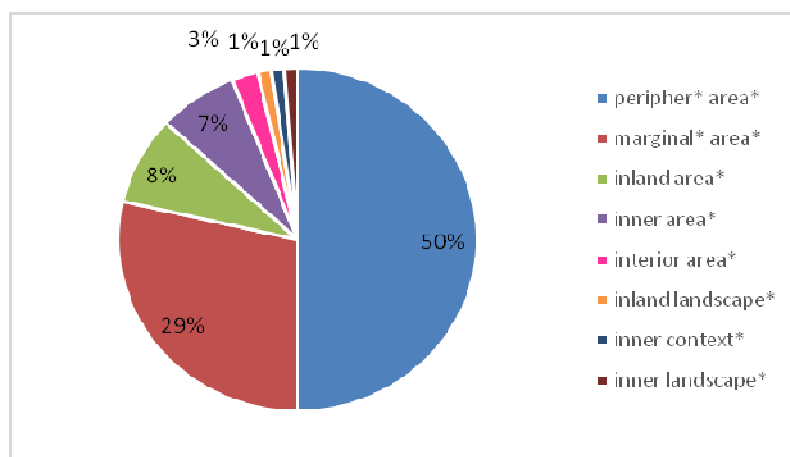
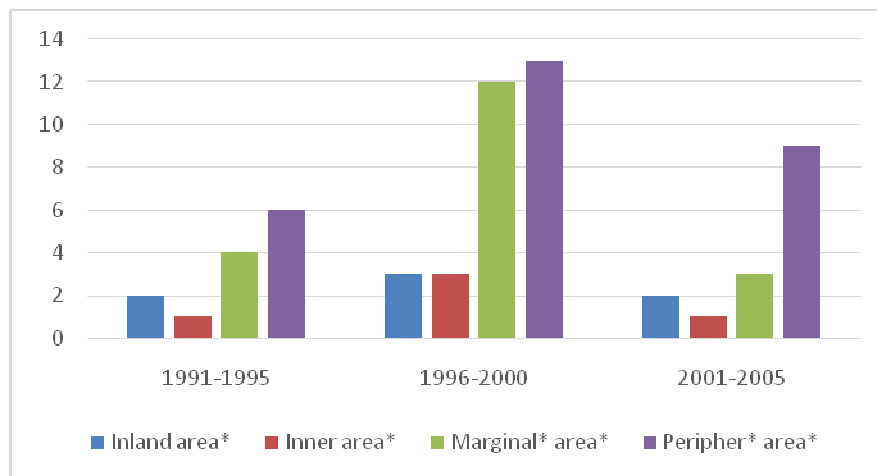


Figure 7 – Frequency of collected items



Starting from these first findings, authors considered to dedicate a specific quantitative synthesis of the four most collected items: peripher* area*, marginal* area*, inland area* and inner area*. In terms of item frequency during time, authors selected three five-year timespans: 1991-1995, 1996-2000, 2001-2005. Constantly, peripher* area* and marginal* area* exceed the others with a prevalence of the first one. Related to these two items, the scientific production is concentrated during the timespan 1996-2000 (Figure 8). In the next phases of the research, it will be clarifying to explore this quantitative result through a qualitative analysis.

Figure 8 – Frequency over time of the four most important items



To have an idea about frequency of the four categories until now collected, a brief quantitative synthesis is presented in Table 4.

Table 4 – A quantitative synthesis of the most collected four items

Item	Timespan	Typology of product	Discipline scope	Geographical scope
inland area*	1993-2005	case study	Economics	Asia
inner area*	1995-2007	case study	Urban and Regional Studies	Europe
marginal* area*	1990-2007	case study	Economics and Urban and Regional Studies	Europe
peripher* area*	1992-2008	case study and theoretical approach	Urban and Regional Studies	Europe

Discussion and Follow-up

The aim of the research is to explore multiple items emerged from the literature review, referred to unbalanced development dynamics and peripheralisation processes. This paper deals with a testing phase of a systematic literature review in order to verify the adequacy of the selected methodology and selected items with regard to the research goal. With this purpose, authors presented the methodology, the data collection and the testing phase to start discussion and to organise follow-up activities.

First evidence from the testing phase allows to highlight presence and frequency of selected items in discipline scope, geographical scope, contribution typology. With regard to the four most important items, frequency over time has been pointed out and the quantitative synthesis shows that the European countries is the main context involved in the debate and the discussion regards mainly case studies. By exploring the next timespan (2009-2018), it will be interesting to verify if theoretical approaches is codified, e.g. after the ESPON program started to affect the issue of inner peripheries.

In addition, the testing phase has pointed out that the Italian context has affected the first selection of items by the researchers. Analysis of some contributes, collected through the systematic literature review, shows the

presence of additional terms referring to specific phenomena in other continents, such as inner city in the Asian context. This gap will be filled in the next phase.

With reference to the follow-up phase, the research agenda includes the following activities:

- Sharing this work with the scientific community, first during the Aesop Annual Congress 2019 in Venice and then through research social networks (Academia, ResearchGate), in order to consolidate and enrich theoretical and methodological framework, and items investigated. Later, this work will be implemented through consultation of scholars and politicians.
- Exploring other studies about systematic literature review that can guide the methodological phases.
- Hypothesising to amplify the set of substantives, now referred mainly to the physical environment (area, context, landscape, and territory), with more social items, e.g. including community.
- Consolidating the set of items and phases of the methodology and re-apply the methodology also including the manual Google Scholar's advanced research for all the timespan 1965-2018.

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The built environment and active life-styles in older adults: an analysis of the location of care services in Portugal

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Abstract: The relationship between the built environment and people's health has been a frequent scientific subject. The ageing populations of many developed countries has further increased the interest in this relationship. At the core of these studies is the assumption that, as people age, they become more sensitive to the physical space they live in, which can form barriers or, on the contrary, contribute to active life styles. But the role the institutions for older adults can assume in this context, and how their location and surrounding built environment can affect their users' mobility, has often been ignored by this discussion. This paper focusses on this relation, by analysing 17 care facilities in Portugal. For this analysis, interviews were conducted with 36 professionals and 137 users, and *in locu* assessments of their location was made. Through this methodology, it was found that the proximity to primary services is fundamental for an active lifestyle in institutionalized older adults and their integration in the neighbourhood. Particular attention should thus be paid to the broader location of these facilities in the urban context, and not only to the assessment of the surrounding environment's walkability levels.

Keywords: Ageing; built environment; care facilities, proximity, active lifestyles

Introduction

The impact of the built environment on people's health has been acknowledged since the XIX century. In particular in Europe and the USA, the urbanization processes of the industrial revolution was accompanied by epidemics of infectious diseases (Hall 1980), leading to the integration of public health issues in spatial planning regulations which allowed for more ample and green spaces, better ventilation and insulation or the separation of urban functions. The joint consideration of spatial planning and public health continued to be relevant in the following decades, but tended to weaken after the Second World War, with a decrease in infectious diseases and a "shift of power and resources to therapeutic hospital-based health services" in the medical field (Kidd, 2007, p.170). More recently, the relation between these two areas gained a renewed impetus, as broader health definitions became accepted and as the impacts of housing types and locations on the physical, mental and social well-being became evident (Kidd, 2007).

The aging population of many developed countries has also increased the interest in the relation between the built environment and the public health of older people. At the core of this interest is the assumption that, as people age, they become more sensitive to the physical space they live in, which can form barriers or, on the contrary, contribute to healthier and more active life-styles. Within the discussion concerning the relationship between the built environment and aging, mobility and accessibility are fundamental. In fact, more than designing dwellings according to older adults' needs, the idea that all the surrounding built environment must be planned according to their needs has been put forward (Burton and Mitchell, 2006). Prompted by the idea of aging in place, which aims to keep older adults in their original residences even when there are significant changes in their living conditions (Martins *et al*, 2012), initiatives such as elderly-friendly communities, age-friendly cities, livable communities or streets for life emerged.

By assuming that older people should stay in their communities as long as possible, these initiatives tend, however, to neglect the broader role elderly care facilities can assume in a society. Over the past decades, several studies stressed the impact of institutionalization in older adults, pointing to the depersonalizing effects of such environments. In the 1970's, Kahana (1973) noted that the accounts of the living conditions in institutions for older adults tended to invoke images of 'Dante's Inferno'. This perspective is still recurrent. Despite this, institutional settings are a valid (and sometimes the only) solution for a substantial number of seniors. And not just for those who are increasingly becoming dependent, live alone or lack family support – although these tend to be the main users (Freitas and Scheicher, 2010). Understanding the effects of environmental settings on older adults is therefore of utmost importance to assure them a better quality of life.

Studies concerning the location of these institutions are, nonetheless, scarce, leaving many unanswered questions. The goal of this article is to analyze the location and the neighborhood environment of senior institutionalized settings and the way in which they influence the behavior of their users.

Material and methods

Seventeen non-profit day-care centers and senior care homes were analyzed in the district of Aveiro (table 1), between 2015 and 2017, twelve of which located in predominantly urban areas and five in non-urban areas, according to the classification of the National Statistical Institute. For this analysis, a mixed methodology was adopted that included *in loco* observations and semi-structured interviews with professionals and users.

Table 1: Facilities included in the study

	Name	Type of service	Users' average age	Municipality
1	Associação Pró Deficiente Integrado	DC+ SC	79	Sever do Vouga
2	Centro Formação e Cultura Costa do Valado	DC+ SC	82	Aveiro
3	Santa Casa da Misericórdia de Aveiro	DC	89	Aveiro
4	Centro Comunitário da Gafanha do Carmo	DC	79	Ílhavo
5	Centro Social de Oiã	SC	84	Oliveira do Bairro
6	Centro Social Paroquial da N. S ^a da Nazaré	DC+ SC	74	Aveiro
7	Centro Social Santa Joana Princesa	DC+ SC	77	Aveiro
8	O Abrigo	DC	76	Sta. Maria da Feira
9	Santa Casa da Misericórdia de Vagos	SC	83	Vagos
10	Lar Paroquial Amélia Madaíl	SC	87	Aveiro
11	Centro Social e Paroquial de Argoncilhe	SC	75	Sta. Maria da Feira
12	Assoc. Obras Sociais de S. Vicente de Paulo	SC	76	Sta. Maria da Feira
13	Centro Paroquial de São Bernardo	SC	83	Aveiro
14	Os Pioneiros	SC	83	Águeda
15	Centro Comunitário da Vera Cruz	SC	85	Aveiro
16	Fund. Casa Pessoal da SS e Saúde de Aveiro	SC	85	Aveiro
17	Lar São José Ílhavo	SC	75	Ílhavo

DC: Day-Care Centre SC: Senior Care Homes

For the interviews, a set of topics which are relevant to understand the users' experiences and perceptions, such as the most relevant services and activities or constraints and motivations. Were developed. In each institution the interviews were applied to two or three professionals and an average of eight users, totaling 36 professionals and 137 users. The majority of the interviewed older adults were female (67,2%) and the criteria for being included in the study were: a) to be a user of the institution; b) to be able to speak coherently; c) to be able to move without the assistance of others; d) to be willing to participate in the study. The ethical recommendations of the Helsinki Declarations for research involving human subjects were followed.

A preliminary visit to each institution's neighborhood environment was conducted in order to map other facilities and services, as well as to detect potential barriers in terms of accessibility within a given distance. This process involved: i) the analysis of services/functions within a given radius of the facilities; ii) the analysis of the features of the surrounding built environment.

Regarding the first (i), several authors have pointed out the impact that the availability of services in the proximity to older adults' facilities can have on their mobility (see, inter alia, Day, 2008; Burton and Mitchell, 2006). This analysis draws on the concept of catchment area (or ped-shed), meaning the maximum distance a user is willing to make to access a given service (Newman and Kenworthy, 2006). This means that all persons within the catchment area have a reasonable access to those services or facilities, measured in distance (metres) or time travel (minutes). In this study, the services and amenities within a 400 m and 800 m radius from the facilities were identified.

Regarding the influence of the build environment on the number of trips made by older adults (ii), it is important to consider the global quality of the neighborhood environment and the barriers that might exist in potential routes. Following Santinha, Costa and Diogo (2018) it was possible to distinguish five factors that influence seniors' willingness to walk:

1. *Connectivity*, which assesses the presence of a continuous network of routes, without barriers, and which guarantee a good connection between the main poles of attraction and to public transportation;
2. *Convenience*, which means a network that is as direct as possible, combining pedestrian routes, sidewalks, crossings, mixed traffic streets and pedestrian zones;
3. *Comfort*, associating a plain and pleasant movement to a sensation of calm in a space without restrictions and with attractive and high-quality pavement, urban furniture, shelters and resting areas;
4. *Conspicuity*, which refers to the extent to which a facility, a route or an object is noticeable, eye-catching and legible; and
5. *Conviviality*, which expresses the goal of taking advantage of attractive spaces, architectural and cultural variety to stimulate social interactions.

In this study, these factors were used to evaluate the neighborhood environment of the institutional setting. For this, three observable criteria were defined for each factor and were evaluated from a binary perspective: positive or negative (see the results for a complete listing of the criteria).

Results

Location

The assessment of the services and amenities within 400 m and 800 m of the considered facilities included six major categories: food related services; open public spaces; general services; health and well-being; transportation; and others. Table 2 shows the availability of services within the catchment areas of 400 m and 800 m. Findings show that the amount of services cannot be directly equated with a rural or urban location.

Nonetheless, the facilities in urban areas tend to be close to more services than the non-urban ones and, in particular, have better access to open public spaces or general services.

Table 2: Share of institutions that have at least on service/amenity in their service area (%)

Category	Service/amenity	Service area of 400 m			Service area of 800 m		
		Rural	Urban	Total	Rural	Urban	Total
Food related	Pub or cafeteria	80	42	53	80	67	71
	Restaurant	40	8	18	60	33	41
	Grocery store	20	42	35	40	75	65
Open public space	Park	0	42	29	0	42	29
	Public square	0	17	12	0	17	12
General services	Bank	0	33	24	20	50	41
	Post-office	20	33	29	20	58	47
	Parish	0	33	24	20	42	35
	Stationery shop	0	17	12	20	17	18
	Clothing or shoe store	0	17	12	0	17	12
Health and well-being	Health centre	40	42	41	40	58	53
	Pharmacy	20	58	47	40	67	59
	Hairdresser and beautician	40	33	35	80	50	59
	Swimming pool	20	8	12	20	8	12
Transportation	Bus stop	40	50	47	40	58	53
	Train-station	0	8	6	20	25	24
Others	School	40	33	35	40	50	47
	Hotel	0	0	0	20	0	6
	Place of worship (church)	40	75	65	80	83	82

Urban design factors influencing mobility

The assessment of the build environment regarding its walkability for the senior population was made for five factors, each one comprising three observable criteria (Table 3). The assessment for a criterion given was then summed up to provide an overall score for each factor and institution. The factors with the worst scores were convenience and connectivity, given a tendency for inadequately sized walking areas (namely narrow or absent sidewalks), insufficient crossings and natural and topographic barriers. The highest scores were observed for comfort, conspicuity and conviviality, with positive marks for the criteria related to the overall quality of the urban design, such as the presence of urban barriers, the amount of lighting or signalization. In these dimensions, a criterion that stands out for its negative score is the amount of street furniture for resting, which was considered insufficient in most facilities.

Table 3: Assessment of the environment surrounding the facilities

	Predominantly rural					Predominantly urban																	
Institution	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total					
Connectivity	2	1	1	1	1	2	1	2	1	0	2	1	2	1	2	1	2	23					
1- High density and abundant intersections in quarters	+	+	-	+	+	+	+	+	-	-	+	-	+	+	+	+	+	13					
2- Absence of natural and topographic barriers	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-	-	4					
3- Multimodal transportation nodes	+	-	-	-	-	+	-	+	-	-	-	+	+		-	-	+	6					
Convenience	1	1	0	1	0	1	1	2	0	1	1	1	2	2	2	2	2	20					
1- Existence of alternative routes to reach point of interest	+	+	-	+	-	+	+	+	-	-	-	+	+	+	+	+	+	12					
2- Adequate crossings given traffic volume	-	-	-	-	-	-	-	+	-	+	-	-	-	+	+	-	+	5					
3- Adequately sized walking areas	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	-	3					
Comfort	2	1	1	2	2	1	2	2	2	3	2	2	2	3	1	1	2	31					
1- Absence of urban barriers	+	-	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	14					
2- Lighting	+	+	-	+	+	-	+	+	+	+	+	+	+	+	-	-	+	13					
3- Street furniture including structures for resting (benches)	-	-	-	-	-	-	+	-	-	+	-	-	+	+	-	-	-	4					
Conspicuity	3	0	1	2	2	1	3	2	3	0	1	2	1	2	3	0	2	28					
1- General and specific signalization	+	-	+	+	+	+	+	+	+	-	-	+	-	+	+	-	-	11					
2- Architectonic diversity	+	-	-	-	-	-	+	-	+	-	-	+	-	-	+	-	+	6					
3- Landmarks	+	-	-	+	+	-	+	+	+	-	+	-	+	+	+	-	+	11					
Conviviality	3	0	1	3	2	2	3	3	3	0	1	0	3	2	3	1	3	33					
1- Visually interesting environment	+	-	+	+	+	+	+	+	+	-	+	-	+	+	+	-	+	13					
2- Safety	+	-	-	+	-	+	+	+	+	-	-	-	+	-	+	-	+	9					
3- Spaces that facilitate interactions (public space)	+	-	-	+	+	-	+	+	+	-	-	-	+	+	+	+	+	11					
Total	11	3	4	9	7	7	10	11	9	4	7	6	10	10	11	5	11	135					

Users' perspective

Regarding the role of the urban layout for the elderlies' behavior, the interviews showed that in almost all institutions the users leave the facility on foot. Although walking for leisure or recreational purposes is very common, most of the trips are made with a destination in mind like accessing a specific service. The services mentioned most frequently in the interviews were cafeterias/pubs, post-offices, churches, hairdressers and pharmacies (in this order). This is in line with what was shown in figure 3.

Notwithstanding the broad tendency for leaving the institutions through active modes of transportation, several limitations were identified by the interviewed. These barriers mostly concern insufficient sidewalks, traffic, the lack of resting opportunities or high gradients.

One aspect that characterizes the mobility pattern of the elderly interviewed is the limited use of public transportation. This is mainly due to their distance (only six of the institutions had a bus stop within 800 m as shown in table 3), their limited frequency, the lack of experience of most of the older adults in using this type of transportation and also because transportation is often provided by the supportive care facilities.

Perceived walking behaviors of the interviewed older adults are, in general, related to the environment surrounding the facilities (as shown in table 3). In fact, older adults stating that they scarcely leave the institutions, are mostly from those institutions that present the lowest scores regarding the five urban design factors.

Conclusions

The general findings of this study show that institutionalized older adults value mobility, active lives and social connections, and leave the building by active modes of transportation, if the built environment of the institution's surrounding area provides appropriate conditions – which was not the case in many of the analyzed institutions. In particular, the quality of the sidewalks, the slope of pathways, the presence of urban barriers and the absence of places for resting (benches) form barriers to a more active life-style by older adults. It was also possible to conclude that walking for transportation occurs more frequently than walking for leisure, thus highlighting the importance of services and amenities in the proximity of the institutions.

These findings can provide useful insights for policymaking. When dealing with the challenges of aging and institutionalization, public policies must therefore take into account, not only the scale of the institution's environment, but also the institution's neighborhood environment, in close collaboration with other stakeholders, namely the institutions' directors and personnel. The extent to which institutions succeed in understanding older adults' requirements and provide an environment capable of addressing their needs, is a key issue to reduce stress and the pace of decline associated with institutionalization.

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Negotiated Public: Investigating the Streetscape of Beijing's Old City

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Abstract: The emergence of conflictual practices in the street life of Beijing's old city has challenged the conventional use of the concepts of public and private in the design of public space. This paper proposes a novel way of reading and understanding the street as a public realm under negotiation by exploring the controversial and conflicting spatial practices and ambiguous social expressions of a traditional type of street in Beijing, namely the *hutong*. It argues that the street is best understood as a dynamic public realm negotiated through common agreement, spatial conflict, and ephemeral intervention. This argument hopes to open discussions towards a more localised and comprehensive understanding of public space in Chinese cities.

Keywords: appropriation; negotiation; public space; the streetscape

Introduction

This paper's interest in renewing the way to read and understand public space in Chinese cities emerged from the observation of the enormous spontaneous and undefined activities taking place in the old city of Beijing. For instance, the hanging of personal laundry above the designed public facilities on the street defies the formal expression of urban public space; similarly, people inhabit the street by bringing out their chairs and tea tables from their living rooms, as if the street were their private ground. At first glance, the design principle of public space is not able to grasp the nuances and complexities of such a socio-spatial condition, where people exhaust the maximum availability of public properties and resources.

The deficiency, in my opinion, lies in the theoretical perspective in our contemporary design thinking of public space in Chinese cities. The current theoretical debate on the Chinese city has touched upon the particular characteristics of public space related to the Chinese urban culture (Lu, 2006, Li, 2014). In the design processes, however, there remains a generalisation of understanding the street as an obvious and legitimate public realm, assuming a rather consistent public behaviour. Other possibilities for a conceptual change also in the design practices of public space are not fully recognised and explored.

In this paper, I want to propose an alternative conceptual expression of the street as a negotiated public realm, in which the public is conditional and dynamic. In order to do so, this paper has conducted a

qualitative study of a specific type of street—namely the *hutong*—which is the alley aligned with traditional courtyard houses in the old city of Beijing (Figure 1). The living culture of the Chinese and how they perceive the public and private dimensions of their living environment find their full expression in this traditional urban typology. By using the methods of drawing, photograph, and interview, this paper investigates the spatial and social practices in the *hutong*, discussing three ways of negotiation in the making and using of the street space: common agreement, spatial conflict, and ephemeral intervention.



Figure 1. A typical example of the *hutong* (Source: author photo)

The Common Agreement: Negotiation in the Using of Public Space

Let us explore this new perspective of negotiation concerning using the street as public property from its most basic meaning: setting up a common agreement (Oxford English Dictionary, 2019). That is to say, the public or private use of spaces in the *hutong* is initially operated by agreements among residents themselves rather than determined by land property as in Western cities. The logic of the common agreement, according to my exploration, is the main cause of the so-called ambiguous status of land ownership and the privatisation of public space.

Street appropriation has been a common practice in the history of the Chinese city. As depicted for instance, in literature, the *hutong* in Beijing was commonly inhabited by shops displaying commodities for public viewing and purchase in the past. Swedish art historian Osvald Sirén (1924, p.8) addresses this phenomenon in his book *The Walls and Gates of Peking* that ‘a good deal of the business is transacted in the street, by the shopkeepers as well as by itinerant vendors, particularly at the food shops which display their delicacies outside’. However, some Western scholars have considered such a practice as the privatisation of public space and criticised it as displaying ‘a lack of public spirit’; the assumption was that people in the city lacked senses of responsibility and respect regarding public properties and public rules. As shown in the book *Chinese Characteristics* written by the American missionary Arthur Henderson Smith (1894, p.110), one of the earliest Western texts that present Chinese culture to foreign readers, appropriating public spaces was such a common practice in Chinese cities at the time that it was disturbing to a Western eye. ‘The wide streets of Peking are lined with stalls and booths which have no right of existence,’ as Smith complains, adding that ‘...the space opposite to the shop of each belongs not to an imaginary “public” but the owner of the shop’.

I would argue that the prevailing of space appropriation in the *hutong*, which seems firmly embedded in the Chinese tradition of living, is an initial result of the common agreement in negotiating the right to use spaces. There are many ways to establish a common agreement in the *hutong*. A typical example is making a personal statement in the public street by displaying private belongings such as home furniture, vehicle, and laundry. The places where people make such a statement are often peculiar: the crossing of two alleys, the street corner, or the front door of their house, where they have the best view towards the various things going on in the surroundings (Figure 2). Next to displaying personal stuff, we find



Figure 2. People sitting at the crossing of two streets and talking to the passing-by (Source: author photo)

simultaneously different approaches in making agreements. When a conflict of interests occurs in using the shared spaces between two neighbours in close proximity, people set up a rule in a more implicit way and sometimes even by a long-term effort to defend the territory. In an interview, a *hutong* resident identifies the unique pattern of bike parking in front of his door: the left side is fully parked while the right side is empty (Figure 3). ‘This is because,’ he explains, ‘the neighbour living in the right door does not want bikes parking next to his door, while we do not care so much.’ About how this became a common agreement in the community, he puts further, ‘maybe he once kept moving away bikes from his front door for about two months, and this is perhaps how he set up this rule.’



Figure 3. The bike parking on both sides of the door (Source: author photo)

The perspective of the common agreement illustrates that the street has been negotiated to become a public realm or a private territory not by land property or public rules but rather by autonomous spatial practices. Sometimes the common agreement is made explicit by personal occupations of the street space, and in other cases, it is more veiled behind the social scene of the community.

The Spatial Conflict: Negotiation in the Contention of Public Space

The second act of negotiation I want to specify is spatial conflict, which refers to the conflictual spatial practices occurring in the public street due to the diverging needs and interests of different social groups. As Donald Appleyard (1987) notes, ‘...streets have always been scenes of conflict. They are and have always been public property, but power over them is ambiguous’. These conflicts manifested in spatial practices have transformed the street into a battleground, where people exercise their power, as what Sharon Zukin (1995) claims, to experience, to conceptualise, and to control those spaces.

The spatial conflict takes over in the negotiation process when people fail to set up a common agreement. One of the conflictual points I have discovered through observation and interview is the catch basin for rainwater in the *hutong*. In many places, the water wells supposed to be used for drainage have become the dumping points of left-over food; such a practice not only blocks the rain water but also deteriorates the street environment. To stop this uncivilised behaviour, the residents first attempted to negotiate through written communication by putting a sign on the wall: ‘do not pour rubbish to the catch basin’. However, this strategy to set up a common agreement failed to change the situation, and eventually, people have to put a cover on the catch basin to physically prevent the rubbish dumping (Figure 4).



Figure 4. The covered catch basin and the warning sign on the wall (Source: author photo)

Taking a close look at the urban transformation process in the past years, we could understand that the spatial conflict is also a result of the emerging inequality in the right to public spaces caused by external forces. In Beijing’s old city, the rise of real estate development since the 1990s and the massive building process of tourism since the 2000s have been decisive in this sense (Beijing Municipal City Planning Commission, 2005). Notably, the cultural values embedded in the historical city generated an opportunity for developing tourism: within five years, many traditional courtyard units were sold to wealthy real estate developers and private owners (Fang, 2000a, 2000b). The locals were gradually pushed aside, and the limited public facilities in the old urban areas were taken over by the boosted domestic and international tourist trade. The economic benefit brought by tourism development has dramatised the spatial issues in the *hutong*: both posh courtyard houses as restaurants or offices and crowded shantytown style living units exist in one urban block, displaying a polarised economic and social condition with both global business elites and the urban poor (Zhang, 1997).

Among the changes in the social and economic landscape of the *hutong*, representatively, the arrival of automobiles has generated a crucial point of spatial conflict. Since the 1980s, the *hutong* has been forced to accommodate cars despite its limited traffic capacity. Car occupation intensified the issue of space scarcity in the *hutong* and resulted in various social confrontations articulated by the conflicts in space. One eye-catching phenomenon is the placement of old and broken bikes underneath the back window of a house or along the street. These bikes, which seem like ‘pieces of installation art’, are placed purposefully by some *hutong* residents to stop car packing next to their windows (Jia and Wu, 2014, p.104). As displayed in this street scene (Figure 5), the juxtaposition of the rusty bicycles and an expensive car on the potential sidewalk showcases people’s struggle to refine the condition of being invaded by a privileged use of the street by certain groups.



Figure 5. Broken bikes lying on the ground (Source: author photo)

We can understand from these objects negotiation through the spatial conflict is a radical and spontaneous attempt to resolve contentions in using public spaces and to maintain a social balance in the *hutong*. The public street is taken for granted by people as shared resources, but only if shared equally. By reframing the privatised urban spaces into public resources again, the spatial conflict has emphasised the characteristics of the street as a social arena mediating conflicts among the claims and interests of different social groups.

The Ephemeral Intervention: Negotiation in the Making of Public Space

The third way of negotiation, which I call the ephemeral intervention, is to my understanding the most relevant to our design perspective of public space. We used to think in the fixed categories of design and appropriation, but this context has urged us to change our perspective towards the equal importance of the two in the making of public space. Rather than the permanent intervention implemented from formal design proposals, the private-driven ephemeral intervention does not have a legal right of existence, and neither does it last long. Initiated by people, it is a practice that temporarily exists but has the potential to catalyse a change of spatiality in the public realm.

The ubiquitous laundry drying, a remarkable characteristic of the *hutong*, might be one of the most illustrative examples of the ephemeral intervention. For the locals, public facilities such as utility poles, trees, and cables are available materials for setting up a laundry drying space. As in this situation (Figure 6), the iron pole used for electricity is perhaps too smooth to tie a string, and thus a small piece of wood has been added on top to resolve the problem of friction. This additional spatial device, as an ephemeral intervention, has changed the nature of the pole from a public facility to a domestic tool. By ephemeral interventions like laundry drying, people reappropriate and restructure the street space to adapt to their daily needs of domestic life.



Figure 6. (Source: author photo)

In the *hutong*, the two types of interventions — the permanent and the ephemeral — co-exist and collaborate in the making of public space. There are good examples that illustrate the controversial results of this collaboration. One of them is the street corner connecting the main street to the small alley, a favourite place to stay and to gather among the *hutong* residents. While the public sector implemented a top-down restoration of the area by paving the ground with bricks, the ephemeral intervention took over the social design of the place. On the one hand, the corner space is not pleasing to the eye because of a dirty ground with a stack of trash, and its dark and oily surface indicates a lack of responsibility among the residents; on the other hand, the dirtiness does not prevent people from claiming the space. Chairs and tea tables mingling with bike parking and even with

discarded waste — the whole set up of things presents a fluid situation, where the officially designed public space is easily overturned by a set of positive and negative appropriations (Figure 7).

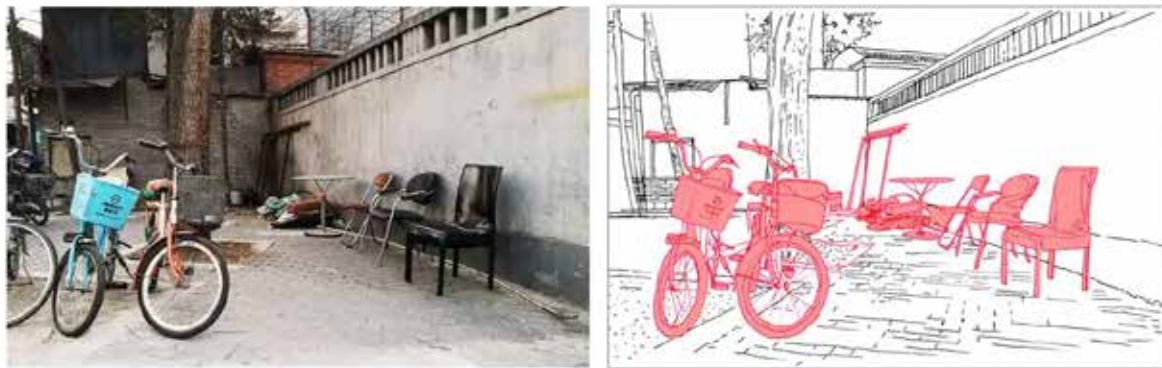


Figure 7. The ephemeral interventions extracted from the space and highlighted in red (Source: author photo and author drawing)

Besides the ground pavement, the refurbishment of the urban historical centre has equipped some places with designed elements such as stone benches and landscape sculptures. According to the residents, a large part of those interventions come from the municipality to block the open facades of the illegal shops and caf  s in the *hutong*. Using hard material like stone reveals the intention of the designer to introduce a permanent intervention to the street, aiming for a positive change in the quality of public space. It turned out that these benches are only occasionally used by the passing by tourists and most of the time occupied by the laundry drying activity: as the line above the bench hanging bedroom items shows (Figure 8). The bench's hardness and the laundry's softness have not only created a striking visual contrast but also manifested a conflict between the designer's ideal and people's perception of the space. In the two types of the spatial interventions, the juxtapositions of objects, combinations of activities, and collisions of ideas have constituted a new spatiality: a spatiality that articulates the public realm as a social arena under constant negotiation between different actors in the development of urban projects.



Figure 8. The drawing has mapped the two types of interventions from the photo: the bench and the vegetation as the permanent interventions and the hanging laundry as the ephemeral intervention. (Source: author photo and author drawing)

The prevailing of the ephemeral interventions in the hutong has showcased that the making of the public realm is by nature a dialogue between public agencies and citizens. While the authority imposed its will to shape the urban environment, the people simultaneously pose their claims to the city; while the designers offered their insights on the public space, the citizens tend to restructure it with their spatial

practices. Such realities also challenge us to re-identify the significant limitation of architectural and urban projects in shaping the social behaviours of people in the public realm.

Conclusion

The paper has offered a new understanding of the street as a public realm under negotiation and has briefly discussed three ways of negotiation as common agreement, spatial conflict, and ephemeral intervention. When looking at the street activities through the lens of negotiation, we recognise the complex and dynamic nature embedded in the using, contention, and making of the public realm.

The idea of common agreement, the primary form of negotiation, invites us to think about another way of defining the public and the private territories in Chinese cities. We have been focusing on parameters such as ownership, accessibility, and public laws to define what is public and what is private. Now we should start to question the availability of public space as something conditional, fluid and bound with specific cultural norms.

The practice of spatial conflict urges us to pay attention to the characteristics of the street as material conditions enabled by contentions over the evolved social inequality. Space is a product of social action, and the reordering of space is also a reordering of social relations (Lefebvre, 1991, Lu, 2006). The spatial conflict — alleviating or intensifying the contentions in the use of the street — embodies the nature of public space as the arena that mediates social issues and different interests as well as a result of the issues and divergence.

The perspective of ephemeral intervention challenges us to reconsider the approaches and actors in the shaping of public spaces. By re-defining appropriation as an ephemeral urban intervention, we understand better the design of public space as a matter of common and dialogical practices. It could, I believe, open up different views on the design of public space in Chinese architectural and urban practices.

Moreover, the results of this paper correspond to the contestation of ‘a unified public, the desire for fixed categories, and the rigid concepts of public and private space’ (Crawford, 1995, p.4), which has been ongoing since the 1990s. This paper, however, has used an utterly different example from the early scholarship that has mostly concentrated on American cities. Especially given the qualitative methods employed in this research, the reflections on the phenomena of negotiation are limited within a certain scope of scholarly perspectives and will not show the whole picture of public space in Chinese cities. But it hopes to steer future discussions towards a more localised and comprehensive understanding of public space and to help practice act in and respond more adequately to the conditions of Chinese cities.

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Study on The Characteristics and Changes of Street Cultural Attributes in Mingcheng District of Xi'an

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Abstract: As an important part of a city, streets are not only the arteries of transportation, but also the carriers of history and culture. The cultural attribute of streets highlights the connotation of cities to some extent. Exploring its characteristics and changing rules is an important way to study urban culture. This paper, taking Xi 'an Mingcheng district as the research object, through the historical data query and the current situation matching, based on the ArcGIS platform, the three types of cultural space and the four important periods of the street pattern are coupled and analyzed, obtaining the street culture property during the period of the overall features and classification, finally summed up the cultural attributes of Xi'an Ming city streets. The research shows that the number of streets with cultural attributes in Mingcheng district of xi 'an is gradually decreasing, and the fluctuation of cultural index is decreasing. In the research on different types of streets, religious streets maintain a steady state, educational streets continue to increase, and humanistic streets decrease significantly.

Key Words: Xi 'an Mingcheng district; Streets; Cultural attributes; Change research

Introduction

Street is the road space carrying the urban traffic function. As the flow of elements within the city, the composition of street space cannot simply be regarded as the superposition of all streets, but should start from the study of urban intention to explore the correlation between the space formed by the enclosure of residential buildings on both sides of streets. Cultural space is a place with certain material space scope, which is generally recognized by people, where cultural production and consumption gather, and where urban cultural characteristics are concentrated. Cultural attribute is one of the important attributes of the street, which is reflected in the number, scale and accessibility of the cultural space on both sides of the street. By studying the relationship between street and its related cultural space, it reflects the change and development of street's cultural attribute. Cultural confidence is a more fundamental, deeper and lasting force in the development of a country or a nation(Zhao and Sun,2016). As an important carrier of cultural confidence, street's cultural attribute reflects city's cultural characteristics to some extent. Therefore, it is the only way under the national cultural strategy to sort out the relationship between streets and cultural space in Mingcheng district of Xi 'an and study the cultural attributes and changes of streets, as well as the necessary way to study urban development.

Xi 'an, known as Chang 'an, Fengyuan and Jingzhao in ancient times, is one of the four ancient capitals of China. Together with Rome, Athens and Florence, it is one of the world's famous historical and cultural cities designated by UNESCO and has a high value of historical and cultural research. As an important birthplace of the Chinese nation, the ancient capital of thousands of years and the starting point of the "silk road", its status is very unique and lofty in the whole country and even the whole world. Xi 'an Mingcheng district is located in the core area of Xi 'an city. During the Ming and Qing dynasties, Xi 'an was expanded to the east and north based on the Tang dynasty, and built walls to defend the city. During this period, a basic urban pattern with bell tower as the core and four main streets running through each other from east to west and north to south was formed(Lan,2016). This pattern has been retained till now, and has evolved into the Mingcheng district which can best reflect the historical and cultural characteristics of Xi 'an. As the most special urban space in Xi 'an Mingcheng district, street space contains important historical and cultural development characteristics of Xi 'an. Taking streets as the starting point, this paper summarizes the characteristics and changing rules of street culture properties, and provides references for the spatial system optimization and development strategies of Xi 'an Mingcheng district.

1. The connotation and type interpretation of street culture attribute

Fernand Braudel once said, "Small streets and alleys can take us back to the past. Even with the rapid development of the economy today, those material civilizations still speak of the past."(2008) Taking a comprehensive view of the development history of eastern and western cities, streets, as the first interface to display cities, are the entry point for people to understand a city, from Miletus of Hippodamus to the Roman walled city, from the medieval European new town to the baroque and classical dynamic champs-elysees. From Lu dafang's < Tang Chang 'an diagram> to Zhang Zeduan's Riverside Scene at Qingming Festival. The urban streets created by the continuous inheritance of thousands of years of urban history in China and the west run through the historical changes of human society from beginning to end and are engraved with the common urban memory of mankind. With the acceleration of modernization and the establishment and popularization of the modern traffic system with motorized traffic as the main body, the traditional urban street system in China has been systematically destroyed. The traditional interpersonal communication mode no longer exists, the inheritance of street space culture is forced to be interrupted, and the traditional cultural space is gradually blurred.

Xi 'an Mingcheng district has largely retained the development of Xi 'an during the Ming and Qing dynasties. It is an important historical and cultural protection core area of Xi 'an city and an important witness of Xi 'an history. Therefore, the study on the street cultural attribute of Xi 'an Mingcheng district is the key point to explore the development history of Xi 'an city and an important way to explore the wisdom and thoughts of ancient people. This study aims at the research ontology of streets in Mingcheng district of Xi 'an. According to the research foundation of domestic streets and the unique historical features of Xi 'an, the streets are divided into religious streets, educational streets and humanistic streets by combining different cultural attributes. Among them, the religious streets refer to the street through each type of religious beliefs and religious ritual and related activities of religious cultural space (contains Buddhist culture as the kernel of the Buddhist temple, islamic culture as the kernel of mosques, Taoist culture as the core of Taoist temple and began was introduced into China in late qing dynasty and formed a certain scale, the kernel for western Christian, Catholic church, etc.) and model of religious culture of the streets; Educational streets refer to streets with educational and cultural atmosphere built through

cultural Spaces with educational functions (including county schools, government schools, Confucian temples, academies, tribute schools, examination houses, schools formed by the reform of the education system and modern educational facilities, etc.) in the Ming district. humanistic streets refer to the street through all kinds of bearing city spirit, bear the function of cultural exchange and communication with humanity feelings class cultural space (include all kinds of ancestral temple, temple, bearing the function of regional cultural exchange halls, as well as modern citizens with lifting city palace of culture, science and technology museum, museum, art museum, memorial hall, etc.) and the shape has the cultural atmosphere of the street.

2. Research routes

2.1 Research idea

In this study, the definition of Xi 'an Mingcheng district mainly consists of five parts: the main district, East area, West area, South area, North area (Figure 1) .

Xi 'an Mingcheng district streets show a checkerboard distribution, and this distribution feature has been continued until now. The cultural space of Xi 'an Mingcheng district has the characteristics of large span, large quantity and wide distribution. In view of such characteristics, in the research process of changing characteristics of street cultural attributes in Mingcheng district, Xi 'an, firstly, based on existing historical data, the composition and distribution of road network structure and cultural space in different periods in Mingcheng district were sorted out. Secondly, the changes of street cultural attributes are interpreted. Finally, the author explores the historical causes of the changes and gives relevant suggestions. In the part of the interpretation of changes in

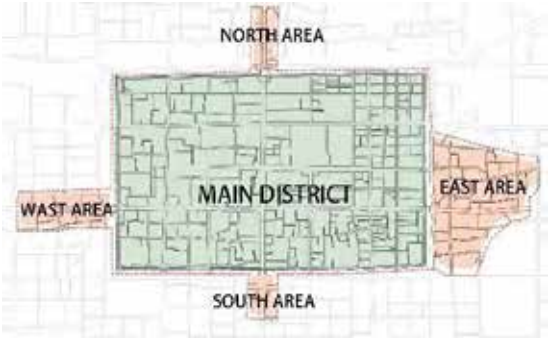


Figure 1 Scope of study

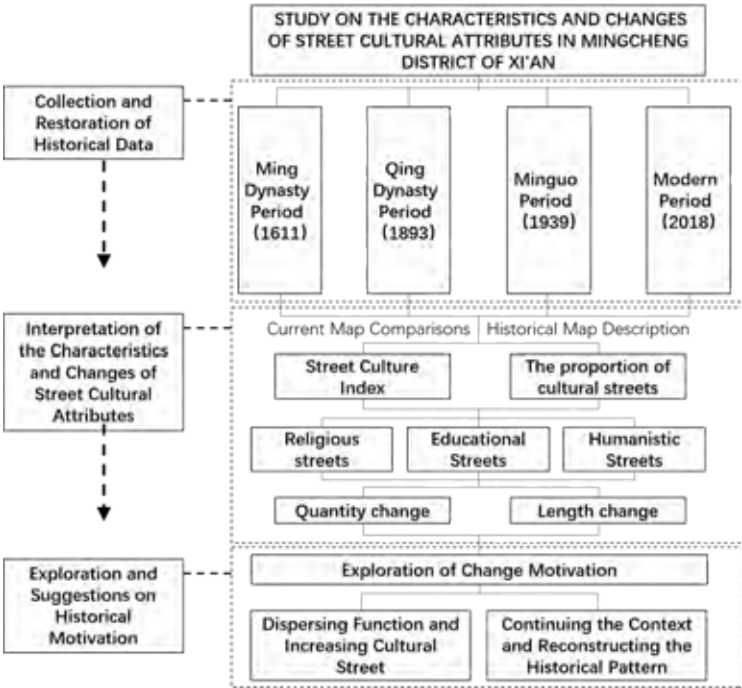


Figure 2 Research framework

street cultural attributes, there are two levels, namely, the interpretation of overall changes in characteristics and the interpretation of classification changes in characteristics. The cultural attributes of streets are further subdivided into religious attributes, educational attributes and humanistic attributes. On this basis, the types of streets are divided to explore the changing characteristics of religious streets, educational streets and humanistic streets. Through three steps and two levels of research, is the best way to explore the characteristics and changes of street culture in Xi 'an Mingcheng district (Figure 2) .

2.2 Data sources

From the early Ming dynasty to the present, according to data collection and analysis, cultural space changes in the Ming district of Xi 'an can be divided into four specific periods: Ming dynasty period (1611), Qing dynasty period (1893), Minguo period (1939) and modern period (2018). In these four periods, the urban development of Xi 'an was relatively stable and the urban characteristics of each period were distinct. Therefore, the cultural space of Xi 'an Mingcheng district was studied based on these four periods. Among them, Shaanxi provincial capital map of Ming dynasty(Figure 3), Xi 'an Fucheng map of Qing dynasty (Figure 4), existing road traffic map of Xijing city of Minguo(Figure 5) and 2018 map of Xi 'an Mingcheng district of modern times(Figure 6) are all represented. Translating historical map compared with current situation of Xi 'an topographic map, and the Qing Qianlong "Xi 'an government record", the Qing Jiaqing "Xianning county annals", the Qing Jiaqing "Changan county annals", the two counties of Xianning Chang 'an renewal ", "Xi'an Ming and Qing dynasties dictionary", "Minguo period, Xi 'an dictionary", "Xi'an education "and other documents as a basis point, on the streets and three kinds of cultural space location and size of accurately setting, thus obtains the accurate streets and cultural space distribution, and further integration of various periods street culture characteristic figure.



Figure 3 Shaanxi provincial capital map of Ming dynasty

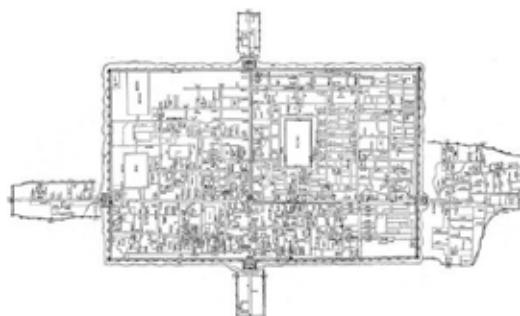


Figure 4 Xi 'an Fucheng map of Qing dynasty



Figure 5 existing road traffic map of Xijing city of Minguo



Figure 6 map of Xi 'an Mingcheng district of modern times

3. Analysis of characteristics of street cultural attribute change

3.1 Overall combing

3.1.1 Street combing

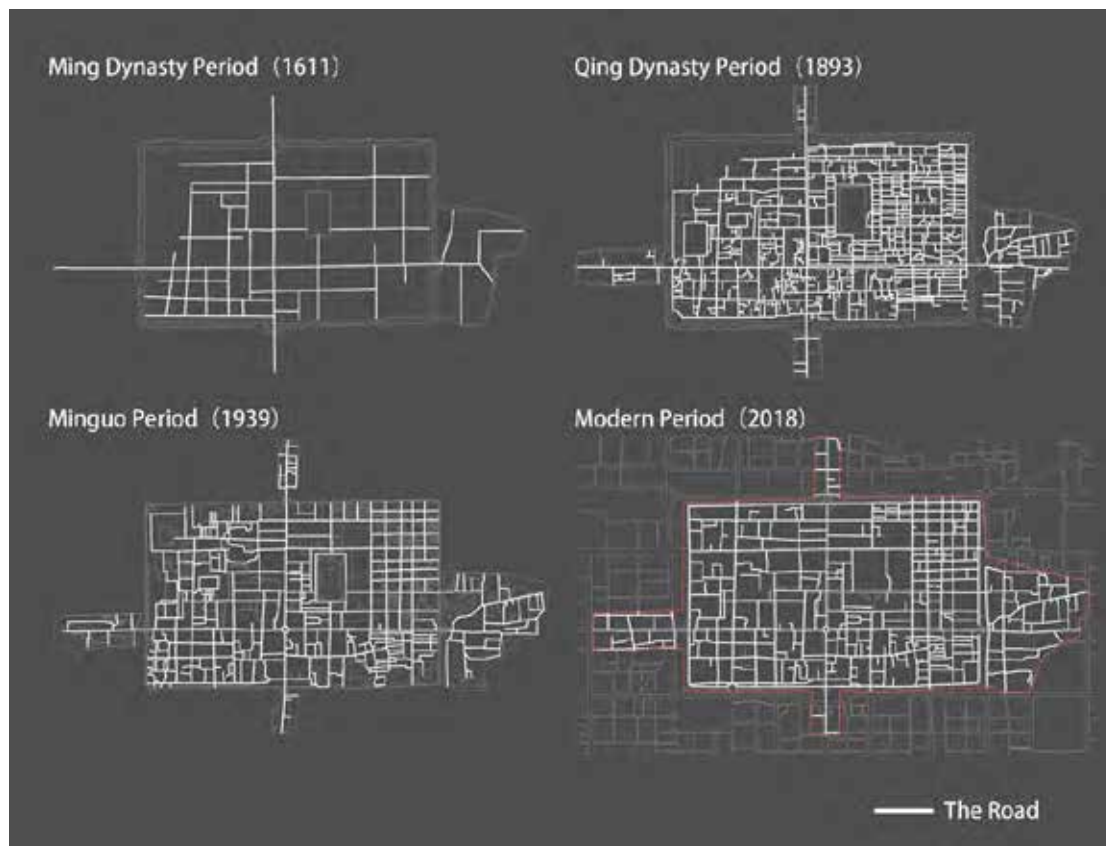


Figure 7 Street Layout Map of Each Period

The streets in Mingcheng district of Xi 'an in the four periods were summarized to get the street distribution map in each period (Figure 7), and the length of streets in each period was statistically analyzed. Among them, the total length of streets in the Ming dynasty is about 43238.4 meters, the total length of streets in the Qing dynasty is about 153175.1 meters, the total length of streets in Minguo period is about 120432.8 meters, and the total length of modern streets is about 150324.0 meters. However, due to the war and political instability in Minguo period, the development of infrastructure was backward and the street length decreased (Table 1).

Table 1 Road Length Statistics Table

Period	Ming dynasty	Qing dynasty	Minguo	Modern
Total Street Length	43238.45	153175.08	120432.82	150323.97

3.1.2 Cultural space arrangement

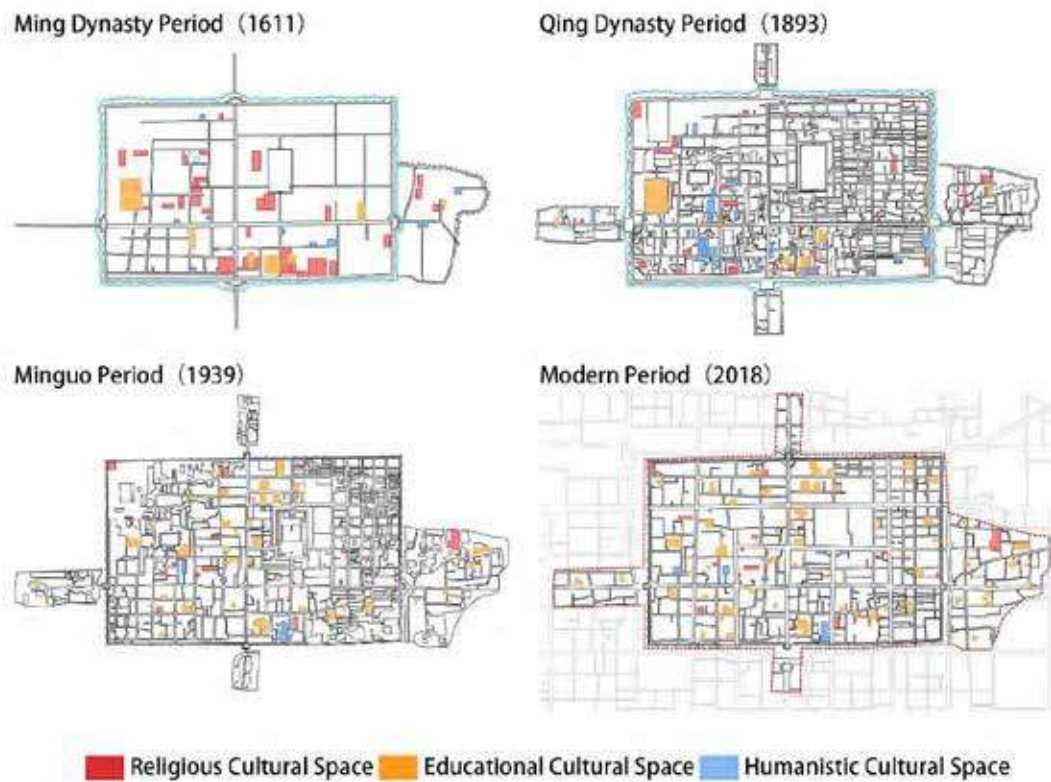


Figure 8 Cultural Space in Each Periods

The distribution of three types of cultural space in the Ming district of Xi'an in the four periods was analyzed in detail, and the cultural spatial distribution map of each period was obtained (Figure 8), and the scale of each type of cultural space was statistically analyzed. Among them, there were 57 cultural Spaces in the Ming dynasty, 205 in the Qing dynasty, 80 in Minguo period and 123 in the modern period. The number of various cultural Spaces is shown in the following table (Table 2).

Table 2 Statistical Table of Cultural Space Quantity

Period	Number of Religious Cultural Space	Number of Educational Cultural Space	Number of Humanistic Cultural Space	Total
Ming dynasty	35	8	14	57
Qing dynasty	39	9	157	205
Minguo	28	44	8	80
Modern	32	69	22	123

3.2 Analysis of overall change characteristics

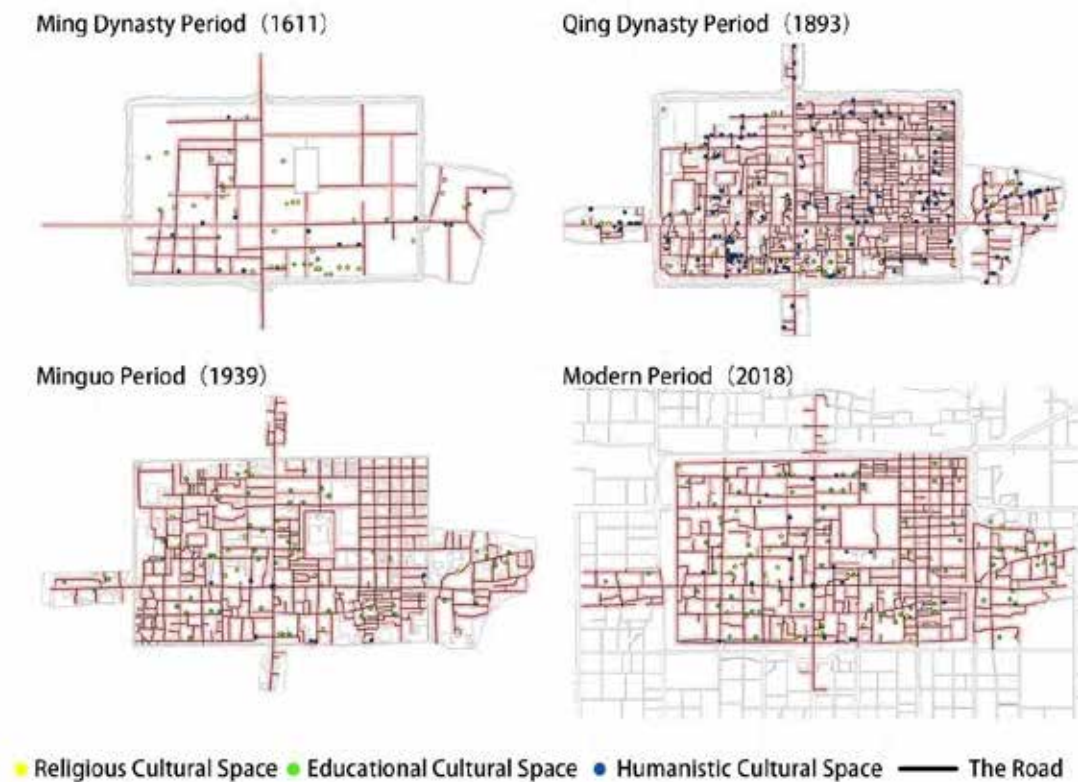


Figure 9 Overall Distribution Map

In order to further study the cultural attribute characteristics and changes of streets in each period, combined with their definitions, the streets in the four completed periods and the cultural spatial distribution in each period are coupled for analysis. By ArcGIS software to the streets as the object, establish a radius of 50 m buffer, and on this basis, the connection of three kinds of cultural space, street buffer calculated each period within the scope of cultural space, the number of street culture and concluded the period index and streets with cultural attribute variation characteristics, and further analysis and research for different types of street (Figure 9).

3.2.1 Analysis of changes in street culture index

The street culture index refers to the ratio of the total number of cultural Spaces in the buffer zone with a radius of 50m in each street in each period to the total length of streets in that period, which is a quantitative characteristic of street culture attribute. The calculation formula is: :

$$X_c = \frac{Y_c}{L} \times 10000$$

Xc refers to the cultural index of a certain period, Yc refers to the total number of cultural Spaces within the buffer zone of the street during the period, and L refers to the total length of the street during the period.

The street culture index of the four periods of Xi'an Mingcheng district is calculated, as shown in the following table (Table 3):

Table 3 Statistical table of cultural index

Period	Total Street Length	Number of cultural spaces within the buffer zone	Cultural Index
Ming dynasty	43238.44764	39	9.019750276
Qing dynasty	153175.0753	273	17.82274299
Minguo	120432.8152	103	8.55248628
Modern	150323.9727	157	10.44410929

It is found that the street culture index of Xi 'an Mingcheng district shows a trend of increasing first, then decreasing and then increasing, and the overall trend is a sharp decline. In the four periods, the street culture index of the Qing dynasty was the highest (17.82) and the street culture index of Minguo period was the lowest (8.55). From the Ming dynasty to the Qing dynasty, the street culture index increased by 8.8. From the Qing dynasty to Minguo period, street culture index decreased by 9.27. After the founding of Minguo period, the cultural index slowly increased to 10.44 in modern period, showing the characteristics of the gradual revival of the cultural attributes of streets in Mingcheng district (Figure 10).

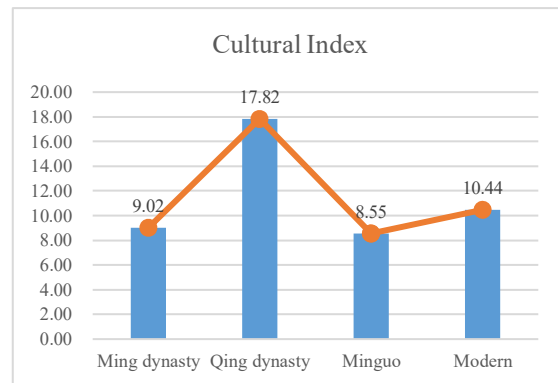


Figure 10 Cultural Index Change Map

3.2.2 Analysis of street change characteristics with cultural attributes

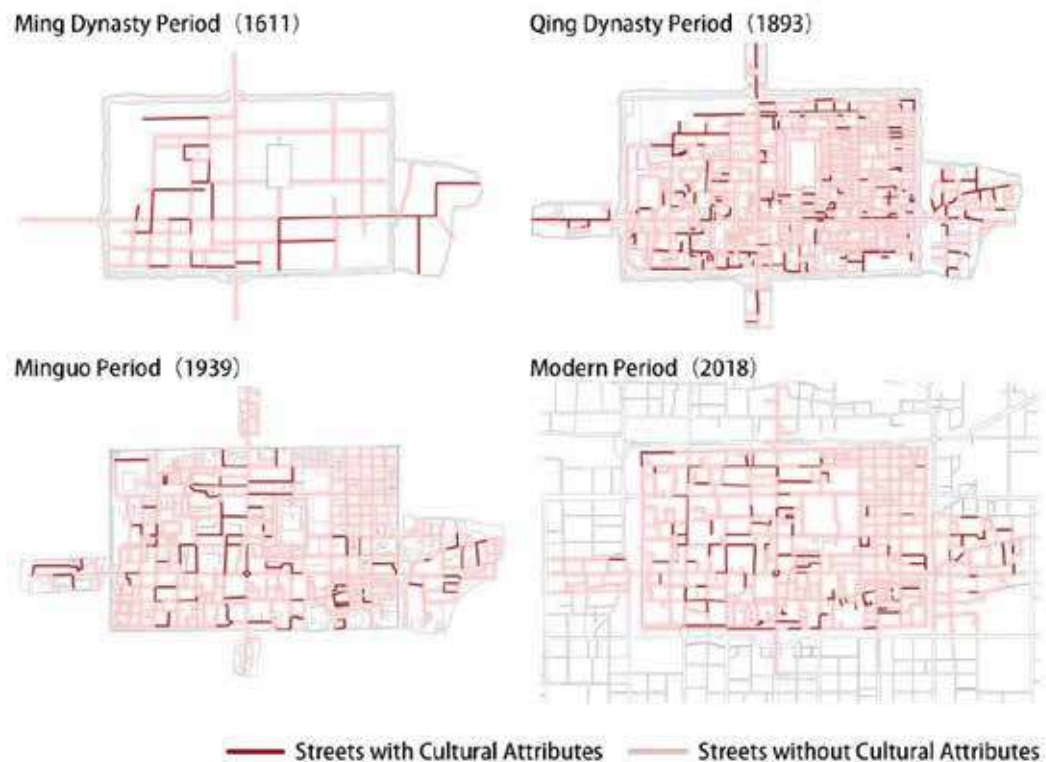


Figure 11 Street Change Map with Cultural Attribute

The cultural attributes of streets in different periods are counted, streets with cultural attributes are extracted, and the distribution map of streets with cultural attributes is obtained(Figure 11). Meanwhile, the total length of streets with cultural attributes in each period is statistically analyzed, and the following table is obtained(Table 4).

Table 4 Street Change Table with Cultural Attributes

Period	Ming dynasty	Qing dynasty	Minguo	Modern
Street Length with Cultural Attributes	12783.29	29575.7075	21939.33141	23689.01534
Total Street Length	43238.44764	153175.0753	120432.8152	150323.9727
Proportion	29.56%	19.31%	18.22%	15.76%

It can be concluded from the analysis that the length of streets with cultural attributes in different periods in the Ming district is similar to the change law of cultural index, showing an overall trend of first increasing and then decreasing and then increasing. The total length of the Ming dynasty was about 12.7 km, and it grew to about 29.6 km in the Qing dynasty. The Minguo period was greatly reduced to 21.9 km and 23.7 km after the founding of China.

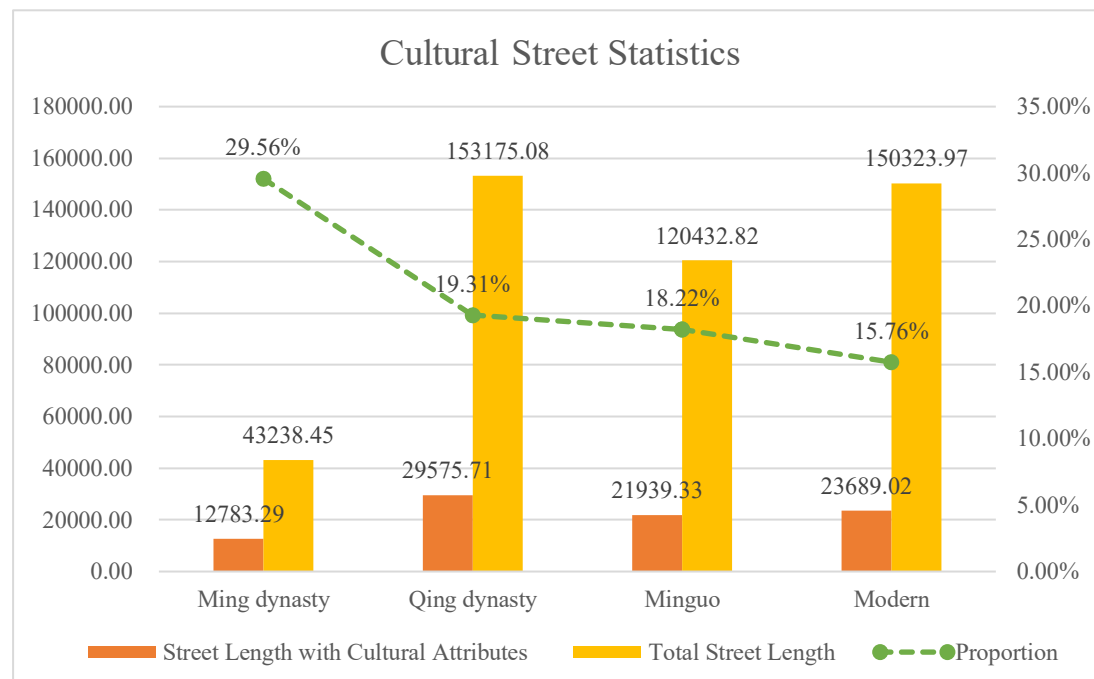


Figure 12 Cultural Street Statistical Map

However, by comparing the ratio of the street length with cultural attributes to the total street length in each period, it can be found that the proportion of the street length with cultural attributes in the Ming district shows a linear trend of decline. The Ming dynasty accounted for the highest proportion, at 29.56%, while the Qing dynasty declined to 19.31% and Minguo period to 18.22%.Streets with cultural attribute length in different periods of time have increased under the condition of reduction, the overall proportion have continued to reduce, weaken gradually said clearly in urban streets cultural attribute, city streets whole culture continues to decline, the generation that not only unable to meet the needs of urban residents, but also seriously affected the heritage and development of the Xi 'an city spirit and context(Figure 12).

3.3 Analysis of changes in religious stre

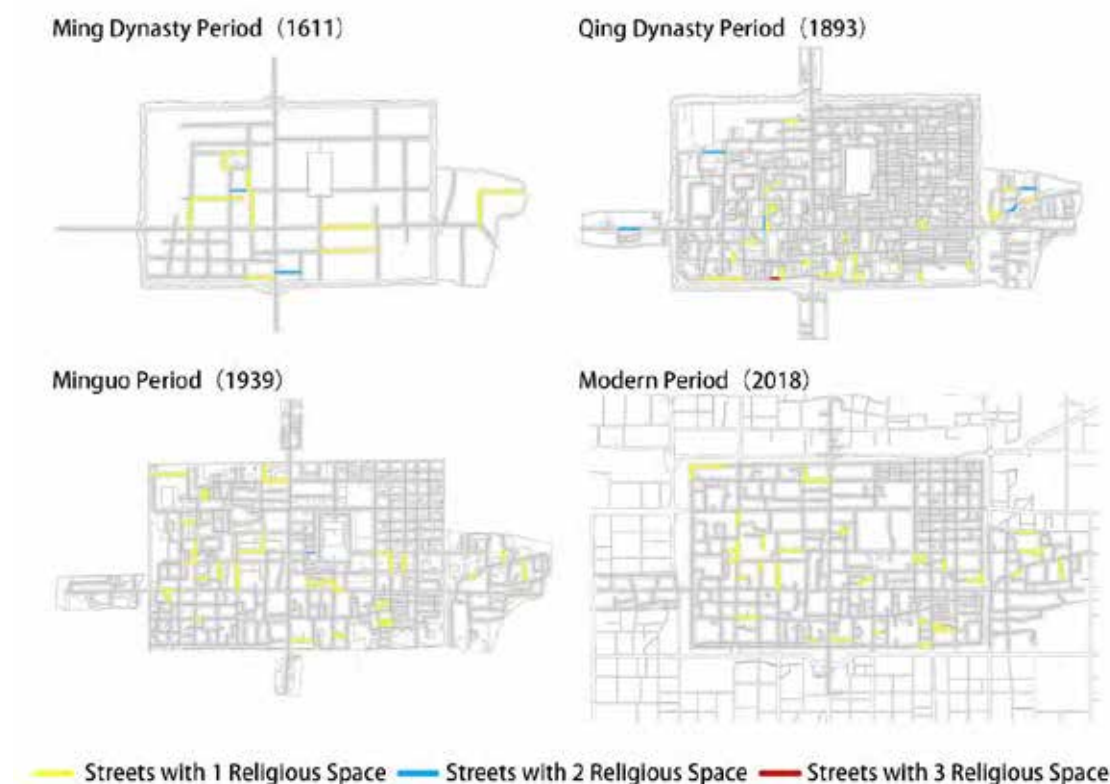


Figure 13 Characteristic Map of Religious Street Change

Religious streets were extracted from the streets with cultural attributes in different periods, and the change characteristics of religious streets were obtained (Figure 13). Meanwhile, the size characteristics of religious streets in different periods are statistically analyzed, and the following table is obtained (Table 5):

Table 5 Religious Street Size Statistics Table

Period	Ming dynasty	Qing dynasty	Minguo	Modern
Quantity of Cultural Space	35.00	39.00	28.00	32.00
Number of streets	13.00	42.00	37.00	45.00
Total length	6713.17	5768.77	7789.43	7907.11

The research shows that the number of religious streets in the Ming urban area presents an overall rising trend, and the change trend is relatively small after the Qing dynasty, with the overall number stable at about 40, indicating that the religious streets basically meet the residents' needs after the Qing dynasty. The analysis of the total length of religious streets shows a trend of decreasing first and then increasing, but its growth rate gradually slows down with the social development, which indicates that religious streets basically meet the needs of residents. According to the classification of religious streets by the number of religious Spaces within their scope, it can be found that there are less religious streets in the Ming, Qing and Mingguo period with two or more religious Spaces, which have a higher integration degree. However, modern religious streets all contain only one religious space, which indicates that the distribution of religious cultural space is gradually equalized for residents in different areas to use.

3.4 Analysis of changes in educational streets

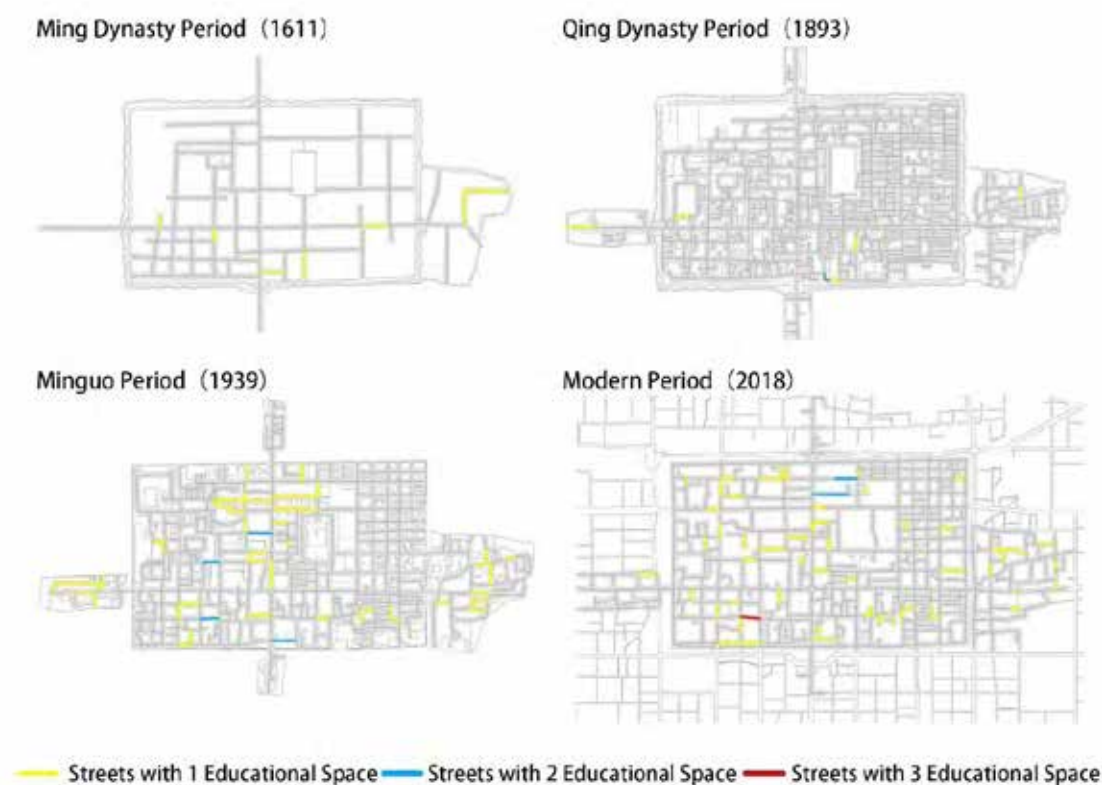


Figure 14 Characteristic Map of Educational Street Change

The educational streets with cultural attributes in each period were extracted and the change characteristic map of educational streets was obtained (Figure 14). At the same time, the size characteristics of educational streets in different periods are statistically analyzed, and the following table is obtained (Table 6):

Table 6 Educational Street Size Statistics Table

Period	Ming dynasty	Qing dynasty	Minguo	Modern
Quantity of Cultural Space	8	9	44	69
Number of streets	6	6	47	76
Total length	2740.97	1235.08	12191.35	12601.32

The research shows that the number of educational streets in Mingcheng district continues to rise, and it increased greatly during Minguo period until the number of 76 streets in modern times. The total length of educational streets is analyzed, and the overall trend is decreasing first and then increasing, but the total length of educational streets grows slowly after the founding of China. Combined with the growth of its number, it can be seen that the characteristics of educational street gradually develop from long and less to short and more. It can be found that with the development of the times, the number of streets containing multiple educational Spaces gradually increases, indicating that the number of educational cultural Spaces gradually increases, and the distribution develops from centralized layout to decentralized layout.

3.5 Analysis of changes in humanistic streets

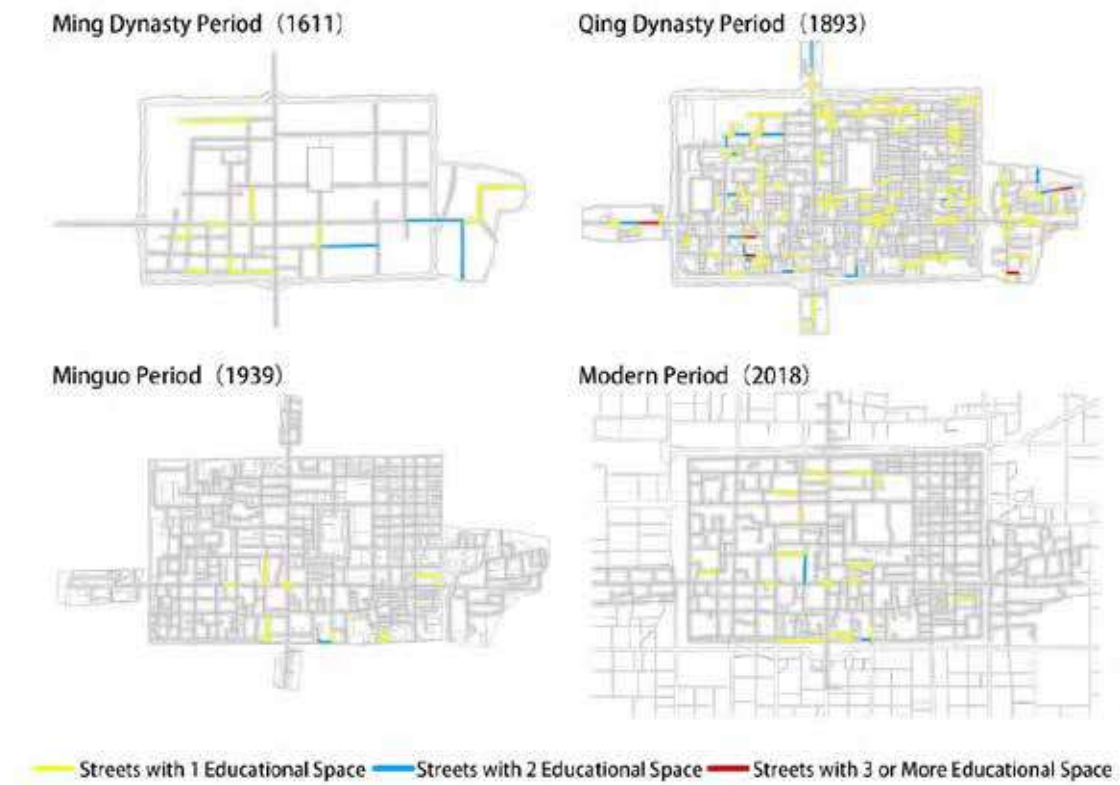


Figure 15 Characteristic Map of Educational Street Change

By extracting the humanistic streets with cultural attributes in each period, the change feature map of humanistic streets is obtained (Figure 15). At the same time, the size characteristics of humanistic streets in different periods are statistically analyzed, and the following table is obtained (Table 7):

Table 7 Humanistic Street Size Statistics Table

Period	Ming dynasty	Qing dynasty	Minguo	Modern
Quantity of Cultural Space	14	157	8	22
Number of streets	15	183	13	30
Total length	7821.05	24201.59	2758.94	5996.63

According to the research, the number of educational streets in the Ming district first increased and then decreased, reaching a maximum of 157 in the Qing dynasty, but decreased to 8 in the Minguo period. The analysis of the total length of humanistic streets shows a trend of increasing first, then decreasing, and then increasing. In the Minguo period, the length of humanistic streets also decreased sharply, from 24201.6 meters in the Qing dynasty to 2758.9 meters. After classifying humanistic streets according to the number of humanistic spaces within their scope, it can be found that the number of streets containing multiple humanistic spaces in the Qing dynasty was relatively large, while the number of humanistic streets increased gradually after modern times and presented a decentralized layout.

4. Historical motivation exploration and Suggestions

4.1 Research on the causes of changes in street cultural attributes

Since the Ming dynasty, the change of cultural attribute of streets in Mingcheng district of Xi'an has shown the characteristics of decreasing quantity and proportion. However, the change motivation of different types of streets in different periods is not the same, which is closely related to the political and social changes in different periods. Generally speaking, the causes of cultural attribute changes of streets in Mingcheng district of Xi'an can be summarized into three aspects, including social factors, economic factors and institutional factors.

Among them, the influence of social factors is mainly manifested in three aspects. First, demographic impact. Since the Ming dynasty, the population in the Ming urban area increased, and the residents' rigid demand for cultural space increased accordingly. Therefore, the number of streets with cultural attributes increased greatly during this period. With the population reaching saturation in Mingcheng district, the increase rate of streets with cultural attributes decreases, and the number of religious streets remains basically stable, indicating that residents' needs have been met. Second, the nature of the city. During the Ming dynasty, Xi'an assumed the position of an important military gateway to northwest China. During this period, its urban function was mainly military defense, serving as an important defense checkpoint and border gate in northwest China of the Ming dynasty. Therefore, in this period, Xi'an fu street cultural attributes are relatively weak, more assume the traffic and military defense attributes. With the change of dynasties, the Qing dynasty brought a relatively stable social form, and during this period, Xi'an's functions gradually changed from mainly military to diversified. During this period, Xi'an assumed more functions as an important economic and cultural center in northwest China, and a large number of assembly halls and ancestral halls were built, leading to a large increase in the number of humanistic streets in this period. Third, social stability. During the Ming dynasty, Xi'an's social stability was weak, and the street cultural attribute was weak, which was more of a military defense attribute. With the improvement of residents' spiritual demands brought by the political stability of the Qing dynasty, a large number of humanistic streets have been promoted to some extent, which makes humanistic streets become the first of all kinds of streets in the Ming district of Xi'an and the most important part of the cultural system of Xi'an streets. In the period of the Ming dynasty, the decrease of residents demand levels of political unrest, residents took on faith and city spirit of humanity class cultural space is gradually disappear, part of the conversion to education class cultural space, the other part with the historical process, so as to make the humanities class street a substantial reduction in the size, in Xi'an street culture system is also gradually forgotten(Ren,2005). With the rapid development of Xi'an after the founding of China, social stability has been greatly improved, and the number of streets with cultural attributes in the Ming district has also increased significantly, with the most obvious feature being the increase of educational streets and humanistic streets.

The influence of economic factors on the evolution of cultural space is mainly reflected in the fact that economic development increases residents' diverse demands for street cultural attributes. Qing Guangxu period, the humanities class cultural space due to its special worship(Ren,2005), such as for agricultural economy and the health of body and mind and such sacrifice, carrying the residents is yearning for a better life and hopes, with the economic development, residents' desire for the agricultural harvest and hall on the demand of the business income, lead to contain a industry protection function of humanistic

class cultural space in short supply, thus derived according to different requirements of humanities class cultural space, such as Xiangzi temple and Mashen temple, further makes the humanities class streets are widely distributed in this period and larger scale.

The influence of institutional factors on the evolution of cultural space is mainly reflected in the influence of educational street. During the Guangxu period of the Qing dynasty, the educational system was reformed and the imperial examination system was abolished. From 1905 to 1910, various kinds of modern education were concentrated. During this period, educational cultural space was gradually transformed(Xun,2002). During the period of Minguo, with the introduction and rapid development of new education, its educational ideas, methods and contents were greatly changed, which made the scale of educational streets rise steadily during the period of Minguo. Thoughts after the founding of new China, the scientific planning to guide urban construction in China, to meet the needs of residents of education function, education class cultural space as the main bearing of education function, on the premise of the pursuit of equal public services, to meet the demand of the whole, this kind of cultural space scale gradually improve, making education class gradually become the cultural attribute of Xi'an street street in the largest part of the body, the equal demand also contributed to the equal distribution of education class street makes education core gradually disappear.

4.2 Conclusions and recommendations

The cultural attribute of streets is of great significance to the Mingcheng district of Xi'an. Its existence satisfies the multiple demands of residents for cultural belief in different periods, and is the witness of Xi'an history, the bearing of city spirit and the sustenance of people's belief. In the streets with cultural attributes, humanistic streets, as the spiritual fortress of the city, will play the most critical role in the overall urban context and spiritual inheritance. This article through to Xi'an Mingcheng district contained in the Ming dynasty, the Qing dynasty, Minguo, the modern characteristics of four periods and street culture attribute changes were analyzed, and the main draw two conclusions: Xi'an city street culture present the first index increase after decreases and then increases variation characteristics, and the streets of the cultural attribute length of the period, gradually reduce the proportion of the total length of the street, Secondly, in the research on the three types of streets with cultural attributes, the overall number of religious streets changes slightly, and their length tends to decrease first and then increase. The overall number and length of educational streets show an increasing trend. The overall number of humanistic streets reached its peak in the Qing dynasty, which was greatly reduced in Minguo and slowly increased after the founding of the People's Republic of China. Finally, the study shows that there are three factors influencing the cultural attributes and changes of streets in Mingcheng district of Xi'an, including social factors, economic factors and institutional factors.

Xi 'an, as the ancient capital of thirteen dynasties, is the prominent cultural attribute, and Xi'an's history cultural should be the leading cultural attribute. Humanistic street is the largest, most extensive and most representative street type with cultural attributes. On the one hand, humanistic street symbolizes the historical memory of the city. However, with the development of The Times and the transformation of functional requirements, this type of street has been almost completely annihilated, and this phenomenon is the typical epitome of the loss of urban context and urban culture in Xi'an, especially in the Ming district. In view of the evolution characteristics and causes of cultural space in Xi'an Mingcheng district, highlighting its historical and cultural attributes, the following Suggestions are put forward for the

construction of Xi'an cultural system:

Dredge the urban functions in the Ming district and increase the humanistic streets. Combined with the development needs, the excessive commercial and residential functions in the Mingcheng district are removed to further increase the cultural space of humanities in the Mingcheng district, thus increasing the number of humanities streets. Current residents demand for humanities class street is no longer sacrifice function is given priority to, so it needs to be more suitable for today's urban residents use the function of the implant, such as reading books, museum exhibition points, green square, etc., to add more with different combining the characteristics of era cultural street, through the transformation of urban space, room to improve energy, choose for residents to provide a variety of cultural function.

Reconstruct the historical pattern, continue the urban context, strengthen cultural confidence. Xian Mingcheng district's old history and culture, optimizes the cultural space distribution, comply with the Mingcheng district in the old city renewal, in the history of important nodes or the culture of the city center for centralized core construction, combined with the network, set up the historical and cultural street network and system architecture, continuation of ten dynasties the ancient capital of context, the Mingcheng district into a centralized demonstration of the city culture and city museum, improve urban cultural self-confidence, enhance urban identity and a sense of pride, to build Xi'an unique history card, heritage city history, show the city spirit, and inspire vitality.

In this paper, considering the factors such as the data collected, only to Xi'an Mingcheng district within the scope of urban streets change characteristic and the cultural attributes of related research, but in today's Mingcheng district of Xi'an city account for only part of the overall scope, therefore, the properties of Xi'an within the scope of the whole street culture combing research is relatively insufficient, is expected to be further perfected.

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Exploring port-city relationships through event-led urban regeneration

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Abstract: Policy makers in European port cities have been keen on bidding for mega events (MEs) in the last thirty years, as a means to boost or sustain processes of urban regeneration and development. Despite MEs are an increasingly regular feature of urban and cultural policies in these cities, little effort has been put in exploring the outcomes of event-led urban regeneration on the conflicting and deterritorialised liminal space that is the port-city interface. This paper presents some of the findings of a PhD research about the spatial and socio-cultural relationships between ports and cities and the impact of event-led urban regeneration on these links. The experiences of Rotterdam (EURO 2000; European Capital of Culture 2001), Genoa (1992 Specialist Expo, European Capital of Culture 2004), Valencia (America's Cup 2007 and 2010; Formula One European Grand Prix 2008-2012) are put in conversation in relation to the recent case of Kingston upon Hull (UK City of Culture 2017). The analysis of these experiences helps to problematise a range of issues including the 'cultural' role of port authorities, the spatiality of event-led regeneration at the port-city interface and issues of authenticity and cultural demaritimisation.

Keywords: culture-led regeneration; European port cities; event-led regeneration; port-city relationships

Introduction

In the last thirty years, mega events (MEs) have become a key feature in urban policy in many European port cities, in relation to the opportunities that such events may offer in terms of urban regeneration and development. This appears to be particularly the case for European port cities, which had witnessed deindustrialisation and the migration of working port areas outside their traditional urban location. Glasgow (European Capital of Culture 1990), Barcelona (1992 Olympic Games and 2004 Forum of Cultures), Genoa (1992 Specialist Expo and European Capital of Culture 2004), Marseille (European Capital of Culture 2013) are examples of how MEs have been used to address waterfront redevelopment in a context of changing port-city relationships. Although there is a recognition that port-city relationships are rapidly evolving and possibly retightening after a period of growing separation between cities and ports, little attention is devoted to exploring how MEs, and their considerable transformative power, impact on these complex and changing links.

This paper presents the framework and key findings of a PhD research aiming at exploring port-city relationships from the perspective of regeneration triggered by MEs (event-led regeneration) and by cultural activity (culture-led regeneration). In particular, the study aims at investigating the mutual relation between MEs

and the spatial and socio-cultural components of these links between port and cities, through a comparative analysis of MEs in four European port cities.

Firstly, a selective literature review about the evolution of port-city relationships is connected to the growing body of literature about culture-led and event-led urban regeneration. Secondly, the research design and methodology of the study are briefly outlined. Thirdly, background information on the four case-study cities is provided. Fourthly, the connection between MEs and the socio-spatial and socio-cultural aspects of port-city relationships are explored and discussed, in relation to the evolution of port-city links.

Ports, cities, culture and MEs

Port-city relationships have been explored by geographers and port specialists in particular since the 1960s, when Bird (1963) proposed the Anyport model to interpret the evolution of these links from a spatial and functional perspective. The Anyport model assumed the migration of working port areas outside their traditional location at the heart of their cities as an inevitable step in the evolution of ports. This because ports would need wider spaces and increasingly specialised infrastructures that could not be provided within historic harbours. As a matter of fact, containerisation, increasing vessel size, the need of deeper waters and greater accessibility were amongst the factors that fuelled port migration in many European port cities in the late 20th century (Hayuth and Hilling, 1992). These technological developments produced redundant port facilities in central locations on the waterfront and made ports less depended from local labour markets (Hoyle & Pinder, 1992; Ducruet et al., 2010 in Hall and Jacobs, 2012).

Research on port-city relationships from the 1980s to the 2000s (e.g. Hoyle & Pinder, 1992; Meyer, 1999) tend to underline the growing physical and functional separation between ports and cities and the consequent weakening of traditional links. However, Hoyle (1988; 1989; 2000) developed a model of port-city relationships that, in its latest version, suggests a current phase of retightening of these links. The literature on port-city relationships in the last two decades acknowledges that these relationships are evolving on different grounds. Ducruet and Lee (2006) proposed a model based on the role of ports in transnational maritime trade (intermediacy) and the role of cities within global urban networks (centrality). Contemporary port-city links are understood as a combination of complex interrelation (Wiese and Thierstein, 2014; Daamen and Louw, 2016), where the spatial driving force is now the city (Wiegman and Louw, 2011).

Hayuth (1982) first described the port-city interface as the liminal space between cities and ports, which raises issues of sustainability. This concept has been developed by further research (e.g. Notteboom *et al.*, 2013) towards a view of this geographical liminal space as “a pluralistic community of actors” (Daamen and Vries, 2013, p. 6). Since the 1980s, this space has been substantially transformed through processes of waterfront redevelopment. Pioneering experiences in US cities such as Baltimore and San Francisco inspired similar schemes in European cities such as London, Barcelona or Liverpool. Many of these schemes made use of culture-led urban regeneration (Bianchini and Parkinson, 1993; Evans and Shaw, 2004), where flagship cultural facilities, activities or events were used as catalysts for waterfront redevelopment and strategic repositioning.

European port cities such as Barcelona and Genoa have also made use of event-led urban regeneration, where MEs were devices for concentrating investment and producing massive urban transformation. MEs can be understood as “large scale cultural (including commercial and sporting) events which have a dramatic character, mass popular appeal and international significance” (Roche, 2000, p. 1). Examples are the Olympic Games, the World and European Football Cup, the European Capital of Culture (ECOC). MEs can also be viewed as pivotal moments along long-term trajectories of urban development and regeneration through culture (Evans, 2011). Policy makers in European port cities appear increasingly keen on bidding for MEs with the aim of diversifying the local economy and changing external perceptions in relation to the negative image of ports associated with pollution and poverty. For example, the competition for the title of UK City of Culture 2017 involved eight port

cities in the country. Nevertheless, the literature on culture- and event-led regeneration does not recognise the specificity of port cities.

Methodology

A comparative case study analysis of port-city relationships in the context of MEs involved four European port cities, namely Kingston upon Hull, Rotterdam, Genoa and Valencia. The case of Hull was approached as a pilot study to test and further develop the research methodology and to benefit from the fact that the analysed ME was being celebrated in the early stage of the study.

The other three case studies were selected seeking commensurability albeit allowing a certain degree of diversity of instances, in order to avoid “theoretically uniformed choices” (Storper and Scott, 2016, p. 1124) and “self-fulfilling reasoning” (Abu-Lughod, 2007, p. 401). An initial scoping review of experiences of MEs in Mediterranean and Northern European port cities was followed by a shortlisting process which considered a range of issues including demographics, role of candidate cities in national and European urban networks, timeframes of MEs, language barriers. Ducruet and Lee’s matrix (2006) mapping port-city relationships was also used.

Cultural political economy (Jessop and Sum, 2001; Sayer, 2001; Jessop 2010) was deployed as a high-level framework to explore power relations behind MEs at the port-city interface. A bespoke comparative strategy including elements of Tilly’s variation-finding and encompassing comparative strategies (Tilly, 1984; Robinson, 2011) was adopted to perform the comparative analysis.

A range of practical research methods were used in the analysis. A preliminary desk research was followed by a traditional policy analysis, examining event programmes and relevant planning documents. Forty-four interviews with key informants across the four case-study cities involved senior officers from city councils, port authorities, major cultural organisations, culture companies and event teams, as well as experts and academics. A small number of street interviews – approximately 5 to 10 in each city – was also carried out in waterfront areas and at the port-city interface, involving residents and visitors. These interviews were not aimed at producing quantitative data. Rather, they were used to validate information from other sources and to outline research hypothesis to be tested through the other research methods. Finally, non-participant observations, photographs and mapping were also deployed.

Four examples of port cities of culture

This section presents a brief overview of the four case-study cities. Each sub-section briefly outlines geographical and historical settings, pre-event regeneration strategies and event-led spatial transformation at the port-city interface.

Hull

Kingston upon Hull, or Hull, is a port city on the Humber Estuary, in Northern England. After peaking at more than 300,000 inhabitants in the 1930s, its population steadily declined in the following decades and recently rose again to 260,000 inhabitants. This was due in particular due to migration from Eastern Europe, albeit the ethnic composition of local population remained predominantly white British. In its 800 years’ history as a port city, Hull became the third largest port in the country in the 1930s. Shipbuilding – Hull is the port where the *Bethia*, later HMS *Bounty*, was built – and whaling were replaced by distant trawler fishing in the second half of the 20th century. However, overfishing and territorial waters disputes with Iceland – the so-called Cod Wars – led to the collapse of Hull’s fishing industry since the 1970s. This caused a slow and steady socio-economic decline, which made Hull one of the worst performing UK cities in terms of employment, education, deprivation and

health figures. Because of this steady decline, negative external perception and preconceptions have characterised the image of Hull up until the mid-2010s.

Since the late 1980s, urban regeneration focused on the city centre – which had long been considered as underperforming in terms of retail activity – and the waterfront. The city's old docks were redeveloped and Hull Marina (Figure 1, left) was opened in 1983. Victoria Dock was redeveloped in a residential area in the late 1980s and 1990s, while the aquarium The Deep (Figure 2) at Sammy's Point opened in 2002. The regeneration of the city centre was nonetheless halted in 2010 due to the impact of the economic crisis. The early 2010s also heralded a major development for the port of Hull, where Siemens located a £300 million wind turbine manufacturing facility (Figure 2), which contributed to generating additional jobs in the city.



1. Hull Marina (left) and Humber Street at the Fruit Market (right)



2. The Deep (left) and Siemens' wind turbine manufacturing facility (right, background).

In this context, Hull City Council bid twice for the UK City of Culture, in 2010 and then in 2013. The UK City of Culture (UKCoC) was proposed in 2009 and launched in 2010 with the aim of allowing other cities in the UK to benefit from the positive impact of cultural MEs, as happened in Glasgow. European City of Culture 1990, and Liverpool, European Capital of Culture 2008 (DCMS, 2009). The first UKCoC was Derry-Londonderry in 2013, followed by Hull in 2017. Although no major regeneration schemes were part of Hull's UKCoC bid, the event did have a transformative impact and contributed to boosting investment (e.g. £100 million invested by the City Council only) in the improvement of public realm, the refurbishment of cultural facilities such as the Ferens Art Gallery and the New Theatre and finally the regeneration of the Fruit Market (Figure 1, right).

Rotterdam

Rotterdam is the largest port in Europe, stretching for roughly 50km from the city centre to the North Sea. It is the second largest city in the Netherlands, with a population of roughly 630,000 inhabitants, and it is part of the urban region known as Randstad, which includes the other three major cities Amsterdam, The Hague and

Utrecht. Nearly half of Rotterdam's residents are foreign born (Entzinger and Godfried, 2014), in particular from former Dutch colonies, Turkey and Morocco.

The city and the port of Rotterdam were devastated during the Second World War and went under a long process of reconstruction in the following decades. In the 1990s, Rotterdam was facing the typical challenges of a declining industrial city, including deprivation and unemployment, and was in the shadow of Amsterdam. The transformation of Rotterdam from an industrial port city to a culturally vibrant port metropolis was initiated by both the City Council and the Port Authority. On the one hand, the City Council adopted a long-term strategy of attracting middle-income households to balance the social composition of the local population; on the other hand, the Port Authority realised that port competitiveness also depended on the attractiveness of the city itself, as ports require more high-skilled professionals (Aarts et al., 2012; Vries, 2014). In both cases, enhancing the city's cultural attractiveness was recognised as a key step, while cultural facilities and events were the tools to achieve this aim. Waterstad (Hajer, 1993) and the Museum Triangle (Meyer, 1999), as well as the large-scale redevelopment project for the Kop van Zuid area (Doucet, 2013) are examples of this policy.

After a few pioneering experiences of cultural events, cultural policy became a “spearhead of urban development” in the city (Hitters, 2000, p. 188). In 2000, Rotterdam was the city that hosted the final match of the UEFA European Football Cup, along with other matches in the group and knockout stages. All matches in Rotterdam were played at Feyenoord Stadium, which was refurbished for the event. A metro line connecting Feyenoord district to the city centre was also built. The following year, Rotterdam was also the European Capital of Culture. The European City of Culture (European Capital of Culture since 2001 – ECoC) was proposed in 1985 by the Greek culture minister Melina Mercouri. The first ECoCs, such as Athens 1985, Florence 1986 and Amsterdam 1987 were cultural festival in established cultural city. Glasgow 1990 marked a watershed in the history of the programme (Bianchini *et al.*, 2013) as it was a year-round cultural event focusing on urban regeneration. Since then, ECoCs attempted to use the event as a catalyst for urban regeneration, city branding and tourism development. The ECoC 2001 in Rotterdam was conceived to celebrate the rebuilding of its cultural infrastructure (Hitters, 2000). Although the event had very little physical impact – the transformation of the Las Palmas building on Wilhelminakade (Figure 3, left) into an exhibition space was one of the few examples – the ECoC was more oriented at presenting Rotterdam as a cultural city.



3. The Las Palmas building (left, bottom right), which was refurbished for the ECoC 2001, and view of the Erasmus Bridge and Kop van Zuid (right).

Genoa

Genoa is the sixth largest city in Italy, with a population of 580,000 inhabitants, and one of the country's main ports. It is the perfect example of a historic Mediterranean port city, where the city centre faces the historic port. Demographic growth in the 19th and 20th century was sustained by industrialisation, as Genoa was part in Italy's

Industrial Triangle together with Milan and Turin. Population peaked at more than 800,000 in the early 1970s. Since then, the decline of state-owned heavy industry and of port activity more broadly, together with the effects of the 1973 oil crisis, contributed to a steady structural economic and demographic decline. The inner harbour was also partly abandoned, as it was no longer adequate to the needs of maritime practices.

In this context, Genoa hosted a series of MEs and other large events in the 1990s and 2000s. These included a few matches of the 1990 FIFA World Cup, a Specialist Expo in 1992 in occasion of the 500th anniversary of the discovery of the Americas, the G8 summit in 2001 and the European Capital of Culture in 2004. These events were used as catalysts to trigger and sustain the redevelopment of Porto Antico – the inner harbour – and the city centre. Urban regeneration at the port-city interface can thus be considered as a result of a number of actions, rather than one single project (Gastaldi, 2012). Porto Antico was reconverted into a leisure port and open to residents and visitors for the 1992 Specialist Expo, albeit the event was not necessarily successful in terms of audience numbers. A €900 million investment included flagship facilities such as the Aquarium, Bigo and Piazza delle Feste and the redevelopment of the Magazzini del Cotone, while the Biosfera by Renzo Piano was built for the 2001 G8 summit (Figure 4). The European Capital of Culture 2004 included a €220 million investment in physical interventions, such as the restoration of a number of heritage buildings in the city centre and the construction of the Galata Museo del Mare (Maritime Museum) in a city-owned dock.



4. Flagship cultural facilities on Genoa's waterfront: the Biosfera, the Aquarium, Piazza delle Feste and Bigo; Galata Museo del Mare (Maritime Museum, right).

Valencia

Valencia is the third largest city in Spain, after Madrid and Barcelona, and the second busiest port in the country, after Algeciras. Its population account for more than 800,000 inhabitants. Unlike other Spanish cities like Barcelona, Malaga or Alicante, the city centre is located about 6km inland, while the port faces the Mediterranean Sea and it is surrounded by a few historical maritime urban districts.

However, Valencia was not an industrial port city. Its traditional economy was based on agriculture and horticulture, while the port served as a gateway to export agricultural products (Prytherch & Boira i Maiques, 2009). The deviation of the River Turia to the South – after the severe flood occurred in 1957 – and the 1988 spatial plan set the conditions for the development of contemporary Valencia. Since the mid-1980s, a linear park called Jardín del Turia was built on the dry bed of the river. Flagship cultural facilities were also built, such as the Palau de la Música in 1987, the Palacio de Congresos by Norman Foster in 1998 and the iconic Ciutat de les Arts i les Ciències from 1998-2002. Between the late 1980s and the late 1990s, a huge port expansion took place to the South, with the construction of the logistics zone. This generated considerably port-city tension to the South, where the port engulfed the district of Natzaret and caused the destruction of La Punta.

In this context, Valencia hosted the America's Cup 2007 and 2010. The 2007 edition saw more than €400 million invested in the transformation of the inner harbour, which was redeveloped as a leisure port and separated from the commercial port through the construction of a new exit channel. From 2008-2012, Valencia also hosted the Formula One European Grand Prix in a dedicated street circuit which was realised in and around the port estate (Figure 5).



5. Valencia's inner harbour during the America's Cup 2007 (left); part of the Valencia Street Circuit along the inner harbour (right).

MEs at the port-city interface

This section briefly outlines and discusses the findings in relation to the evolution of port-city relationships in Europe. The first sub-section explores questions of spatial outcomes and permeability of waterfront areas, while the second discusses issues of cultural involvement of port authorities and socio-cultural port-city links.

Socio-spatial port-city relationships

Although contributing to reversing the tendency of physical and functional separation between ports and cities, MEs in the four case-study cities have had rather different outcomes in terms of direct physical impact. Little or no transformation was produced in Hull and Rotterdam. In the former case, key cultural facilities were refurbished and public realm was renovated, while the event had only an indirect impact on the ongoing redevelopment of the Fruit Market. In the latter, the Las Palmas building and Villa Zebra were the only exhibition and museum spaces developed for the ECoC 2001. On the contrary, MEs were used for the reconversion – and reconnection with the city – of historic inner harbours in Genoa and Valencia. In both cases, these areas were partly or fully inaccessible by residents and visitors, albeit no longer used for maritime activities, and were transformed into public spaces through MEs.

In part, this has to do with geographical settings and traditional port-city relationships. However, adopting Evans's (2011) view of MEs as pivotal moments along the cities' trajectories of urban development and regeneration, the position of MEs along these trajectories becomes crucial. In the case of Hull and Rotterdam, MEs did not have significant direct physical impacts also because waterfront redevelopment was already at an advanced stage, since considerable transformation had taken place in the 1970s and 1980s. In these cases, MEs were used more as branding devices, in particular to tackle the negative aspects of the port city image. Nonetheless, MEs produced considerable impacts in other domains of port-city relationships, such as the cultural involvement of port authorities (see next section) or in the intangible cultural links between cities and ports. Conversely, in the case of Genoa and Valencia, MEs were used to overcome the physical and functional separation that still characterised port-city relationships in the early 1990s and 2000s respectively, through a redesign of the port-city interface.

In either case, the concentration of investment and regeneration at the port-city interface through MEs risks producing “spatial dilemmas” (Bianchini, 1993, p. 201). In all four cities, waterfronts have become attractive areas, even for international tourism. However, this transformation has arguably widened the gap with the ‘back city’, which did not benefit from such regeneration processes. Examples are Hull’s housing estates, Feyenoord in Rotterdam, part of Genoa’s city centre and Natzaret in Valencia.

Whether MEs were used to achieve this reconnection or as branding devices, the permeability of the port-city interface represents a crucial issue. In Hull, Genoa and Valencia, waterfront spaces were used to host cultural events or redeveloped more or less directly through MEs. However, waterfront areas in these cities display rather different degrees of permeability. In Genoa, the pedestrianisation of Porto Antico and its reconnection with the nearby city centre was also facilitated by the fact that, back in the 1960s, a flyover was built to improve the accessibility of the port. Conversely, in Hull and Valencia, port ring roads are still used by road traffic. In Hull, Castle Street – part of the A63 road connecting Leeds with the port of Hull – separates the city centre from the Fruit Market and the waterfront (Figure 6, left). In the bid for the UK City of Culture 2017, £170 million were budgeted for road improvement, which were considered “critical to festival venues” (Hull UK City of Culture 2017, 2013, p. 77). However, the iconic footbridge that was designed to overcome this barrier is still under construction in 2019. Although much less busy because of port expansion to the South, the road that borders Valencia’s leisure port still represents a barrier to permeability (Figure 6, right).



6. Castle Street in Hull (left) separates the Old Town (on the right) from the Marina, the Fruit Market and the waterfront (on the left); the port ring road in Valencia (right) also represents a physical barrier.

In this case, if the America’s Cup 2007 was used to convert the inner harbour into a leisure port with the aim of connecting Valencia to the sea, the subsequent Formula One events contributed to retaining this barrier. As pointed out by one informant:

“It’s true that the port-city relationship was not optimised, because Formula 1 prevented that the road that every port city has, or had, between the city and the port... This road ring was kept because it formed part of the [F1] circuit. So, it wasn’t pedestrianised.” (Interview with academic, 2018, author’s translation).

The case of Valencia also shows how the unmanaged legacy of MEs can worsened permeability and accessibility. After 2012, Valencia Street Circuit was abandoned, while part of it was fenced off (Figure 7). This contributed to further isolating Natzaret, which had been engulfed by port expansion and now is cut off from the city centre. A port-city agreement was reached to attempt to reconnect Natzaret to the rest of the city.



7. The impact of the abandoned Valencia Street Circuit on the permeability of the port-city interface.

Socio-cultural port-city relationships

MEs in port cities are also an opportunity to explore the ‘cultural’ role of port authorities. The disruption of traditional port-city relationships based on proximity and mutual dependence, technological developments, automation and securitisation are amongst the factors fuelling the “dehumanisation” of seaports (Van Hooydonk, 2007, p. 42). In addition, port cities still face issues of negative external image in relation to perception of poverty, crime and negative port externalities such as congestion and pollution. In this context, port authorities are increasingly interested to contribute to the city’s development and branding to both legitimise port operations and to increase competitiveness. As noted by Vries (2014), the attitude of port authorities can be mapped between two extremes: port authorities as landlords, where they only manage the port and have little or no contact with the city, and as developers, where they take part in the political and cultural life of the city.

The study of MEs in the four analysed cities suggested that port authorities, not unlike other key local organisations, are interested in taking part in these processes, albeit this could be the result of pressures arising from expectations around their involvement in such important events for the city. Nevertheless, port authorities are positioned along the abovementioned spectrum. For instance, Valenciaport took part in the organisation of MEs, albeit retaining a landlord position. Havenbedrijf Rotterdam N.V. could be considered closer to the developer extreme, considering its key contribution to the cultural and artistic life of the city (for instance in the case of large-scale cultural events such as the Port of Rotterdam North Sea Jazz Festival). Genoa and Hull displayed milder attitudes, although the UKCoC 2017 in Hull did contribute to stimulating Associated British Port’s interest in culture in an unprecedented way.

As cultural events of national and international relevance, MEs also raise issues of authenticity and commodification of culture (Getz and Page, 2016; Gruneau and Horne, 2016), which can negatively impact local heritage. In the context of European port cities, MEs and their homogenisation power operate in a context where traditional maritime practices and socio-cultural links are being eroded, through a process of demaritimisation (Musso and Bennacchio, 2002) which could include a loss of maritime culture.

In the case of Rotterdam, for example, the ECoC 2001 and the following event policy implemented by the City Council, together with waterfront redevelopment schemes, are arguably promoting a reconnection between the city and the River Maas. However, this reconnection appears based more on the use of water as an architectural element, rather than on recalling the city’s history and present as a port. In Rotterdam and Genoa, historic port areas – either redeveloped into urban areas or still harbouring maritime functions – are spectacularised through iconic architectures or even panoramic viewpoints (albeit the latter involve ‘clean’ and saleable port practices and facilities such as cruise and ferry terminals, Figure 8).



8. Headquarters of Rotterdam's Port Authority and former terminal of Holland America Line, next to the cruise terminal (left). Panoramic lift on the Bigo in Genoa (right).

The study of MEs in the four selected port cities has also underlined how overlooking established socio-cultural port-city links and geographical settings in event-led regeneration processes may led to unintended consequences. For example, despite the massive investment and regeneration in Genoa's Porto Antico and city centre, the latter has witnessed a process of 'counter-gentrification' as migrants have concentrated in this area. In addition, informal economies have settled in the redeveloped leisure port. In Valencia, the top-down attempt of established a strong connection between the city and the sea, despite the traditional separation between Valencia and its port, led to years of underuse of the leisure port built for the America's Cup 2007.

Conclusions

This paper has explored port-city relationships through the impact of MEs and event-led urban regeneration, to suggest that these events play a role in the evolution of port-city links themselves. The experience of Hull UK City of Culture 2017, Rotterdam (ECoC 2001), Genoa (1992 Specialist Expo and ECoC 2004) and Valencia (America's Cup 2007 and 2010, Formula One European Grand Prix 2008-2012) have been analysed from a comparative perspective to shed light on the impact of such events on the socio-spatial and socio-cultural relations between these cities and their ports.

The paper has briefly outlined and commented the impact of MEs on the socio-spatial port-city relationships, suggesting that MEs, as culture-led urban regeneration more broadly, are factors contributing to the retightening of port-city relationships after decades of detachment. However, it has been pointed out that MEs may have considerably different direct impacts in relation to their position along trajectories of urban regeneration and that they can also produce spatial disparities. Permeability at the port-city interface still remains an issue, which can be considerably worsened by poorly planned MEs and their unmanaged legacy.

Socio-cultural impacts of MEs on port-city relationships were also discussed, showing the role of port authorities as either landlords or developers within these processes and commenting issues of authenticity, commodification of maritime culture, cultural demaritimisation and unintended consequences of event-led regeneration, such as underuse of cultural facilities and public space and counter-gentrification.

Further research should focus on the tension and spatial contradictions between cultural – and urban more broadly – uses that MEs – whether directly or indirectly - encourage at the port-city interface, in a moment where ports are still urban (Hall and Jacobs, 2012) and lighter maritime functions tend to locate on waterfront areas in proximity of city centres.

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15_Tourism, Public Spaces and Urban Cultures

Spaces for tourism, Venice planning topographies

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Abstract: In Venice and in the whole Venetian Region, tourism has become one of the first economic powers over the last decades. During the years of crisis, tourism was virtually the only economic source which seemed not to show any recession set against the manufacturing industries and industrial production in general. Although the Venice Region has a long touristic vocation related not only to its historic heritage but also including winter sports, as well as coastal (sea and lake) and health (springs or thermal baths) resorts, some conditions have changed. Many changes have occurred since the 70s, considered the period of extreme expansion of spaces, in terms of buildings and infrastructures for tourism in the Region by expansions of large parts of villages or local settlements with the direct consequence of a huge amount of land use. Venice today faces peculiar conditions where the struggle for inhabitants to keep their residential and daily lives comes up against the huge power of private investments oriented exclusively towards tourism. According to recent surveys there is no longer accommodation for longterm affordable renting throughout the island. Many local associations have striven, through provocative actions and initiatives, in order to defend a specific right to live the city. Following this general framework, the paper aims at documenting how the city has changed in terms of physical space, modification in use of public spaces and the lack of administrative local policies to defend local inhabitants in the city. Meanwhile, over the last five years some studies and researches, especially in the University IUAV in Venice, have stressed the accent to reuse and recycle spaces for living or collective purposes, though local administration and public opinion generally shows itself to be unresponsive to these suggestions. Is there the need to display a reflection much more related to space and the its specific role in a peculiar city like Venice? This kind of work is oriented to read this phenomenon via a spatial lens through maps, re-drawings and interpretation of data coming from different sources. In order to show how the impact of tourism is apparently affecting the daily and ordinary spaces in the city of Venice, the study focuses on potential spatial planning initiatives towards a possible, hopefully alternative, scenario for the future.

Keywords: mass tourism, mapping, Venice, built spaces

Poorly controllable phenomena

Tourism, despite geopolitical, environmental or social factors, continues to grow to the point of becoming the first economic listing for the Veneto region featuring figures for presences of 70 million per year. In fact in Veneto for 2017 the tourist economy generated about 17 billion euros in turnover, up 6% compared to the figures for 2016, constituting more than 20% of the regional GDP, defying any comparison with the regular turnover of the more traditional regional economies such as agriculture, food, textiles and commerce. The Veneto Region ranks third among the Italian regions after Lazio and Lombardy, and if Rome receives €6 billion 743 million (+ 20% compared to 2016), the takings for Venice are 3 billions 769 million (+ 19.4% on 2016), (CISSET, 2018). The entire region is focusing on a massive tourism promotion campaign, seeking on the one hand to consolidate given traditional destinations, on the other by wagering on new forms of tourism, such as the rediscovery or

reformulation of local traditions or the definition of new chains of relations with the latest trends related to food, wine and the experiential dimension of travel. It can be said that the years of the economic crisis experienced by the Veneto region were particularly tough and that tourism has been the constant driving force behind the forms of recovery in the region. The immense growth of the tourist phenomena (Deramo, 2018) which has involved parts of the planet, until recently considered of little to no interest, has been even more extensive in Venice, producing effects hitherto unseen in the city throughout its millennial history. The history of Venice, made up of an inclusive approach and a substantial openness towards the new populations who came there to work, trade or simply to visit the city, today seems to have come to an end. More and more people are experiencing conditions of intolerance, annoyance and closure towards a mass tourism that leads not only to a distortion of the city layout, but above all to that of the life of those who live or work there. One is faced with a constant paradox that never seems to be resolved and that sees on the one hand a tourist demand that is constantly growing and on the other a contraction of the city in terms of its residential, work and service offer, compelling residents-users of the city to adapt to forms of precarious housing, which fall far short of defining Venice as an ideal city in which to live. The policies of local administration also seem to be not up to the task of tackling a problem that only apparently concerns the island city of Venice but which has actually taken on a scale that encompasses the entire territory. If inscribed within the Venetian metropolitan system, the island city seems to suffer from a tourist pressure that does not only concern the historical boundaries of the city (Venice and Mestre) but also and above all neighboring areas, inadequately infrastructured and equipped to receive and tackle modern tourism. In fact, this becomes the result of phenomena that see contemporary society relate to a global system in which tourists no longer know where their boundaries lie, nor can they safely identify the center from the periphery or outskirts. The image of the territory loses its external margins and its internal hierarchies and the subject is merely left with his or her own interpretation of reality, to build itineraries and look for goals and things to achieve (De Marco, 2018). The tourist destination moves from the margins of a space-time system to which the subject belongs (the coastlines, the deserts, the mountain ranges, the historical matrices, the frontiers of the future) to places endowed with specific and autonomous meanings such as given neighborhoods and locations attractive from a predominantly economic point of view, but not entirely associated with quality or spatial value. Each place becomes a potential object for drawing the tourist's gaze, in a sort of global competition between local spaces, each of which tending to accentuate its own characteristics and enhance its own image, in the context of complex tourist regions, capable of offering inexhaustible possibilities of choice and experience. Thus the tourist space expands beyond the specialized areas of the historic city of Venice, comprising its identifying and highly iconic places, manifestly emptied of their social values, involving the spatial resources of smaller towns and inland areas and designing new social and human geographies. Observing the tourist phenomena from the point of view of spatial modifications means identifying the characteristics of tourist movement, its territorial dimensions and the networks through which new strategies are defined, where new images of the territory and not least where new visions for the future can be built. Venice is a paradigmatic example of how, from a dimensionally contained city, the web of a tourist region with multi-purpose images is derived. Here physical-morphological features such as the sea, the lakes and the rivers, the large water reserves, no longer form frontiers but, through the major infrastructures for mobility (mainly road), become connective elements linking the resources of a new territorial subject - the more or less sustainable excursionist or hiker - prone mainly to moving on foot or by bike but able to present themselves on the global scene (Fabian, Velo, Donadoni 2015). The communicative rhetoric behind this image is very consolidated, using the term VENICE as an easily recognizable and acknowledged commercial brand. An example is the tourism

section of the Veneto Region website that defines the region as The Land of Venice, or the advertising slogan of the Winter Olympic Games: The Dolomites, the mountains of Venice.

Looking for new spaces for tourists

In Venice, day-trippers not only exceed the number of overnight tourists but the sum of the two exceeds that of residents, now just over 53,000. According to official estimates, the figure for the resident population is destined to fall further, in line with demographic rates on a national scale. This is inevitably a symptom of a profound deterioration of the residential and, at the same time, tourist quality for the city. Yet some studies¹ (Belgioiso, 2018) underline how the migratory phenomenon from the water city of Venice is constantly growing (fig.1). This is associated with local and national reports that denounce daily situations of intolerance on the part of the residents, phenomena of vulgar behavior or lacking any respect towards the city by tourists and basically a malaise felt by both parties. Clearly, they are certainly not phenomena circumscribed to Venice, even many other cities such as Barcelona, Amsterdam and Berlin are facing similar situations with profoundly different morphological, political and social conditions. The question falls on the understanding of how a city can adequately respond to a stress of similar intensity. The feeling is that we are progressively moving towards the acceptance of a form of development that continually requires resources, ground and raw materials and that above all is made up of services, which the diffuse urban forms of the Veneto have not been able to establish and absorb over the years. Tourist economies manifest themselves by requiring a large amount of space, accepting consolidated practices, linked to services, but also unpredictable ones associated with needs and public safety, which it is essential to guarantee in the form of standards of urban welfare. The studies carried out so far do not highlight the impact of tourism in Venice on the physical and built environment. We never talk about how much water and energy consumption is required by a city made up mostly of hotels, hostels, b&bs and apartments for tourist use where those who pay feel entitled to consume more than they would at home. Over and beyond the need for specific data collection, defining the impacts would result in a catastrophic scenario for the city, where the terms sustainability and balance in the use of resources become completely meaningless. In support of this consideration, the public administration of Venice has demonstrated, on the basis of unspecified data how, according to daily water consumption, the city on average presents a number of inhabitants equal to twice that declared, trying to placate any controversy on the depopulation of the city and the absence of policies in support of residential housing².

A map that changes according to the eyes of the beholder

The problem of data in Venice is a serious one, since collection and access, not to mention control of the same is at times impossible. Official and other data released would allow a quantification of some direct and indirect phenomena of tourism. Some examples may become paradigmatic: the number of

¹ Margherita Belgioioso, assistant professor at the Brunel University in London, using official data from the Venice Municipality, created some diagrams proofing the number of residents who moved away from the old city is higher than the new born residents, denying official version referring the lack of new born.

² In March 2019, the local press reports that starting from the multi utility hydrological service (Veritas), the city counselor Paolo Pellegrini, belonging to the current major list, states in Venice there are at least 100.000 inhabitants, calling them “*non resident-residents*”.

vacant, closed or uninhabited dwellings seems to be completely impossible to attain, both for reasons related to the uncertainty of the data, and for the physical spatial conformation of the city. Another example of lack of accessibility to data, for example, is the attempts at obtaining aggregated data from the web platforms (Airbnb, booking.com, Homeaway etc.) that do not allow a true monitoring of the actual situation, denying the possibility of exact quantification and above all of any representation of the activities of the same. These data could become indicative by being aggregated by indicators (accredited accommodation facilities, municipal monitoring, vehicular passages etc.) though certainly not exhaustive since they do not include a series of data, such as that relating to accommodation, offered by web search and sharing economy platforms that, in the absence of regulatory agreements, do not issue data on the number of presences. If the data is not enough or cannot be directly controlled the description of the city and the phenomena related to tourism becomes highly complex (*The airification of the cities*, Siena Laest).

Describing the repercussions of tourism within the urban space leads to training the eye to recognize particular indicators that alternate in some parts of the city with a certain recurrence. Venice, which can traditionally be considered a tourist city, shows the wounds of an intensive exploitation of its urban fabric for tourism purposes, carried out without too many scruples. Not only in some parts of the city where interminable sequences of commercial and catering services are concentrated, but above all the ground floors of the buildings, that have been turned into places of access to tourist accommodation and storage and supply facilities mainly for the same. If this concerns the ground floors of the buildings that show a main front, the fate of the lateral part that face onto the courtyards and the alleyways is that of becoming access spaces to residences or tourist apartments, the above mentioned goods storage spaces or emergency exits for large hotels. There is therefore a logic of high intensity of uses and functions in some parts of the cities, mainly concentrated in some areas or along some preferential routes, accompanied by a sprinkling of empty spaces at the ground floor level, which belong to a idea of 'gray ownership' (the *Laboratorio Venezia* is a report, curated by Laura Fregolent, Massimo Gheno and Filippo Farronato, that demonstrates the replacement of commercial activities for residents in favour of product and sales presentation). But if what has been said so far refers to the ground floors, it becomes interesting to try to build some maps that illustrate phenomenologies, even in an iconic and in some ways provocative way, that allow a description and mapping of the upper floors as spaces dotted with tourist accommodation considering the constructed ground (Pollak, 2006) that makes Venice so unique.

In other words, we are dealing with the possibility of describing the repercussions of the phenomenon of tourism in a highly subjective way that leads to the definition and elaboration of very different perceptual and sensorial data (Colin, Troiano; 2014). The resulting map is one traced by tourism as a phenomenological subject and one of power (Brossat, 2017), that defines new geographies [fig. 1] that plays a key role in the decision making where the city is planned, strongly influencing the choices, defining paths and directions the city must undertake for the future, establishing itineraries and hierarchies between the parties and the subjects involved.

The rules dictated by tourism involve entire buildings or apartments, modifying them spatially, weighing them down with services and infrastructures required for contemporary ways of life and above all by placing spaces on the level of (economic) convenience rather than sharing and the common good. If you build a map of what might be called tensions in Venice, the number and polarizations that would result could be immediate. There are many places where over the five years

local residents have managed to put up a fight, the outcome of which for the most being entirely negative. We are talking about the area of the former Gasometers, the ex-Actv area, the former Teatro dell' Anatomia, the former Cà di Dio retirement home, Villa Herion in Giudecca and the list could be even longer. Tourism determines the list of spaces and goods to be sold, defines functions and needs but overlaps with a layer, much more complicated to construct and to define, that coincides with that

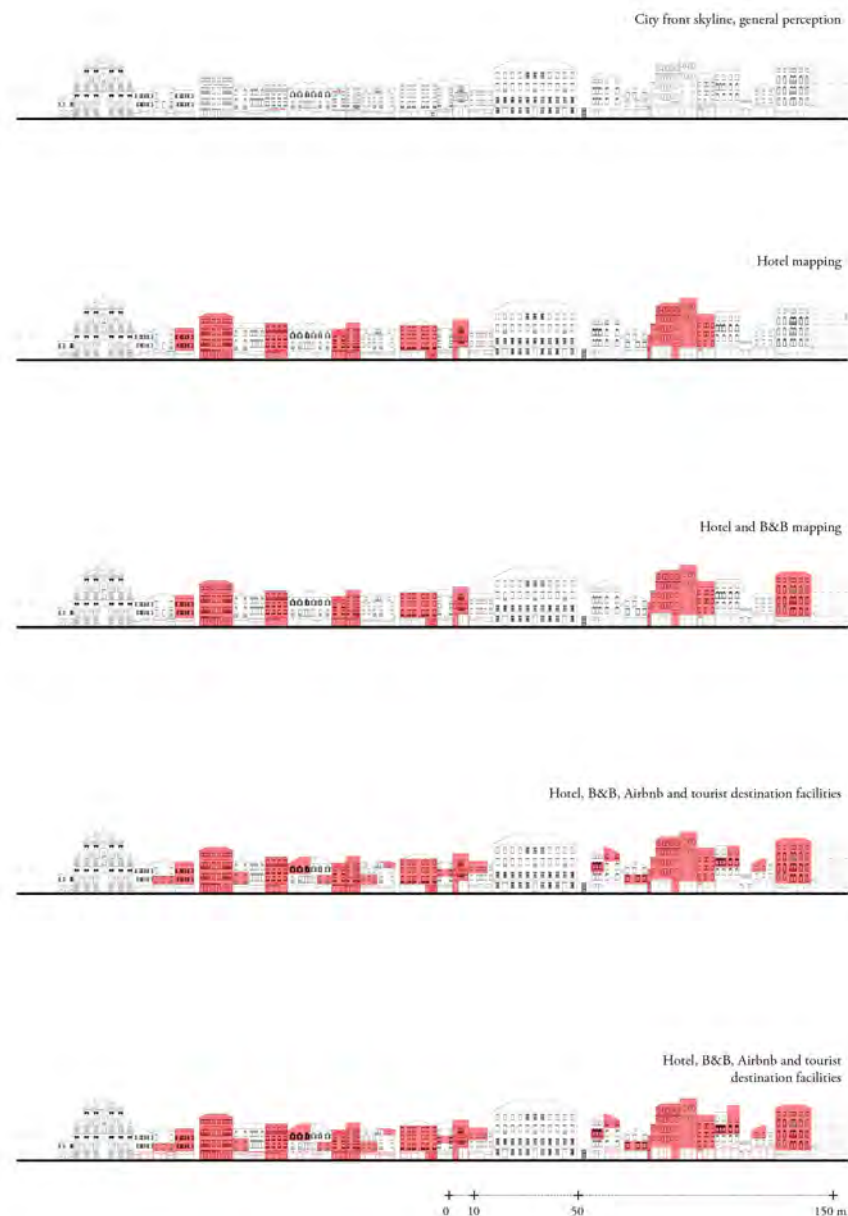


Figure 1. The section demonstrates, through a sample of the city, how in Venice the touristic destination is a pervasive power, infiltrating the largest part of the built heritage.

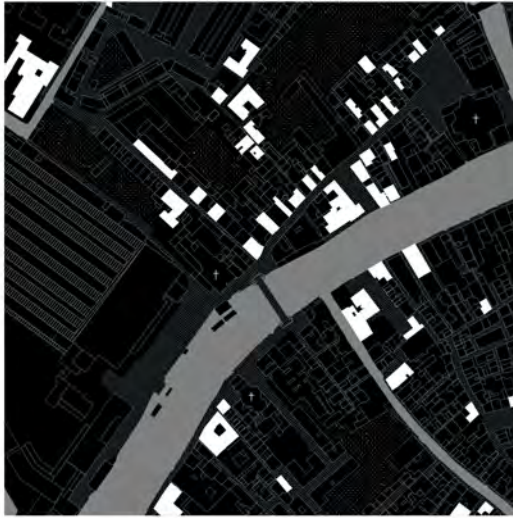
of resistance to tourism itself, creating a mixed reality (Masi, 2018) made of tacit approval, protest and indifference. Individual buildings or groups of buildings that constitute urban aggregates typical of the urban building fabric that, alongside rendering up their fascinating history of stratification and modification, also cede to today's practices imposed by tourism. The perception is once again called into question alongside the speedy and energetic restructuring that takes place, like with the use of the same type of window, the presence of air conditioning, the absence of names and surnames on the doorbells and front doors, are the clear indicators of tourist destinations within. Thanks to this kind of mapping that could be resorted to on the one hand via individual monitoring, data sharing and search for responses, we could work towards a more accurate control and determination of the effect and action of tourism on the city.

The images that can be obtained, for example, can sometimes entail a more provocative value since it could be useful to represent the hotel areas as urban voids, usually spaces that are not inclusive and not open to the communities that live there. It is the map of a future vision of the city where the void, the absence, corresponding to the hotels, becomes the figure that builds the image of the city, of its practicability and accessibility [fig.2]. An exercise of this type refers to the concrete possibility of building new interlinking space chains that intercept tourist, accommodation and residential presence in the same place where, depending on the different hours of the day, some spaces can be used according to different functions: in the morning as a breakfast room, in the afternoon as a space for courses, in the evening and pre-evening hours spaces for public meetings or encounters among local citizens. In this way perhaps even the heterotopic figure, typical of the hotel within the city, could fit into a process of modification of uses and practices, as well as forms, typical of densely inhabited contexts.

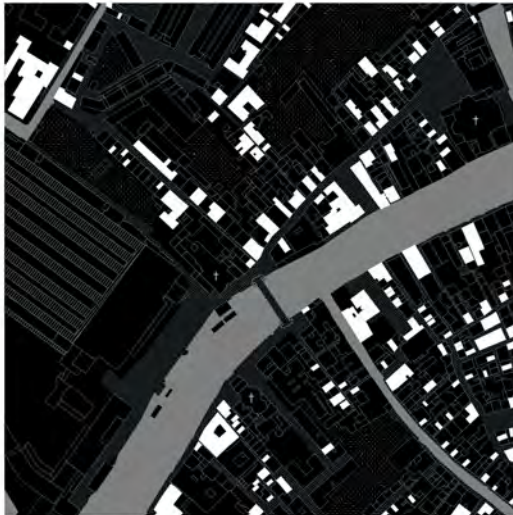
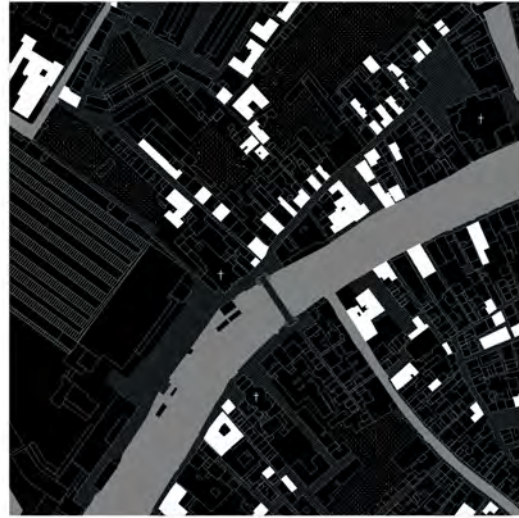
The city and tourism, Venice, a laboratory in which to monitor, experiment and imagine

To reach the practicability of similar evocations - the word scenario is not specifically used here - there is no lack of difficulties and elements for further exploration, the loss of the *fine-grain city* (Ward, 1989) is no more under control. How the public and social system and the private system can collaborate must be understood the same way as how regulation and free enterprise can exist side-by-side. The commercial and economic dynamics argue that the most severe of certifiers is the customer who brings with him his own format, his own vacation (expectations) and references to his own contexts of comfort and service. It must be said that in Venice tourism has always been seen as a revenue where demand is unlimited, a revenue that appears to be guaranteed, offering politicians and policymakers the possibility of not making any effort. This is an inescapable aspect that must be combined with the possibility and capacity of a local urban context. In 2016, the Italian government, with the "Pact for Venice", provided the city with substantial financial support, declaring it a test case in order to define governance policies for mass tourism. This provision provided an extraordinary economic and financial starting point for studying, testing and putting into practice far-sighted and far-reaching policies capable of contrasting and initiating solutions to issues such as housing, urban and physical degradation of the lagoon. The local administration actually issued a summary of the proposals that individual associations or groups or individuals had sent to the municipality. It is clearly a symptomatology of how much this administration is inattentive to mapping in listening to the proposals and needs of citizens in the face of a global phenomenon of which perhaps few are aware.

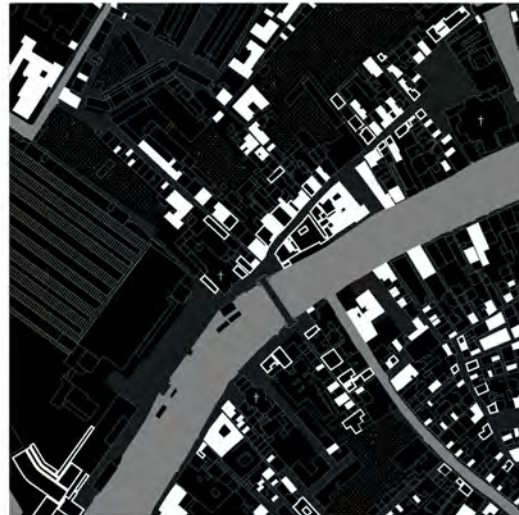
Hotel mapping



Hotel and B&B mapping



Hotel, B&B and AirBNB mapping



Hotel, B&B, Airbnb and tourist destination facilities mapping

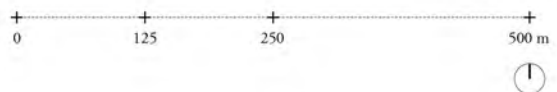


Figure 2. The maps show how could be displayed a hidden layer dealing with the multiple touristic purposes of the urban tissue (white boundaries). This way of mapping demonstrates the need of a direct approach and observation in representing effectively the touristic phenomenon in urban space.

With regards to awareness, some thematic maps illustrating the real penetration of the tourist phenomenon in the urban fabric of Venice, the degree of modifiability and compromise could have a more efficient and more effective result in perceiving the issues. It is a question of reflecting on the problems of urban planning efficiency, so today the theme of the representation of phenomena is very important. It is a question of highlighting the plurality of values, of social dynamics that lead to the construction of new arguments with an impact on the disciplines to which they could refer (Latour, 1998).

The intention is perhaps to try to attain a form of representation for urban phenomena and the city of Venice itself which incorporates semiotic and imaginative readings, dictated by the practice and direct experience of the city, which do not refer to retro-utopias (Velo, 2018) full of memories and nostalgia but that look to the future with radicality and conscience and that refer to a social pact (Fabbri, 2018) in a complex medium and long-term operation that requires technical, regulatory and economic analysis and that finds its specific driving force in the agreement of the different social dimensions of the city.

A simulation that graphically describes the degeneration of the city in its aspects of places of encounter, of work, of free time and of living, salient elements for the design instances decided by the *Athens Charter* (1933) would show a city in strong contraction, with marked polarities of concentrations in some days or particular instances with places of permanent abandonment and voiding. Mapping and amplifying could argue the question of designing for visibility broadly, ranging from catalogs and instruction manuals to map and infographic systems (Manzini, 2015). The city should have and collect this kind of maps, displaying the possible project as extreme effort of imagination contributing vividly and radically to deal with these problems, exploring differences and possibilities as powerful criticism to the present (Secchi, 2000) . This is why Venice becomes a laboratory of continuous experimentation and identification of new modes of working in which the role of the researcher, architect and urban planner could perhaps find new voice and strength to affirm decisions and indicate solutions where, according to the teachings of Lefebvre, space can regain its political office once again.

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The Impact of Cultural Creative Industries and Tourism Development on the Authenticity of Historic District from the Perspective of Spatial Production: A Case Study of Tianzifang, Shanghai

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Abstract: In the transition period of urban renewal in China, micro-renewal by means of function replacement has gradually become a popular mode of historic district renovation. However, the impact of industry injection and tourism development on the authenticity of district has become increasingly prominent. Based on the theory of spatial production, the (re-)production process mechanism of authenticity under the influence of creative industries and tourism activities in Tianzifang is analyzed. It shows that: Tianzifang has experienced the (re-)production process from the place of residence to the place of cultural creative industries, and then to the place of modern tourism consumption culture; The main body of Spatial Practice has gradually changed from original inhabitants to artists, businessmen and tourists, with its social network reshaped in varying degrees; For *Representations Of Space*, the physical transformation of buildings carriers is relatively light, but their functions have undergone a change from residential living space to cultural (re-)production space and then to cultural consumption space; For the *Spaces Of Representation*, the cultural authenticity has gradually evolved into the staged authenticity, with the symbolization and commercialization. In addition, the effects of space production is summarized from the reconstruction of material space, spiritual space and social space.

Keywords: Urban historic district; Authenticity; Creative Industry and Tourism Impact; Spatial Production

1. Introduction

Historic districts are rich in historical relics within a certain range, which can truly reflect the traditional features or local characteristics of ethnic groups in a certain historical period, including not only tangible structures, but also values, lifestyles, organizational structures, customs and habits (Zhao, J., 2017). Nowadays, with the rapid spread of urbanization, coordinating the protection, renovation and commercial development of historic district is one of the difficult problems for many China's cities in transition period. The core value of historic district reconstruction lies in the protection and presentation of its real cultural scenes. However, with the development of tourism, the authenticity of more and more historic districts has gradually been transformed into the stage authenticity (MacCannell, 1973, 1989), which becomes a pseudo-event (Boorstin, 1962) and leads to the convergence of historic districts in transition period.

Space has three attributes: material, spiritual and social (Lefebvre H, 1991). The renewal process of historic district is the (re-)production process of material space, spiritual space and social space. Through the reproduction and redistribution of its resources and interests, its spatial pattern, cultural atmosphere and social relationship structure are reconstructed. At the same time, the inevitable conflicts of value, power and interests among different subjects are also facing the predicament of unjust space production (Zhu Z, Wang Q, 2018). According to Lefebvre's theory of space production, *space practice* refers to the daily activities in physical space and the production and reproduction of society; *representations of space* is a conceptual space dominated by the knowledge and ideology of planners and scholars; *spaces of representation* is a symbolic system composed of images, which realizes the overlapping of space experienced by the subject and material space of space practice (Lefebvre H, 1991).

2. Research object and method

Tianzifang, a renovated historical district of Shanghai's unique Shikumen complex, is selected as the research object. It is located at 210 Lane Taikang Road, Dapujiao Street, Luwan District, Shanghai. Originally as a popular mixed-function old district in the center of Shanghai, its northern and Western adjacent areas of the district were originally high-grade residential areas of French Concession, medical and educational institutions, and there were many common old-style lanes scattered in the south. Later, with the upgrading and transfer of industry in Shanghai, factories gradually idle, facing the pressure of demolition and transformation. With the active participation of artists, original inhabitants and the community, it has gradually been renewed into a characteristic cultural and creative district. At present, it has become one of the famous representative districts of tourism and leisure in Shanghai.

The main research methods include literature analysis, field survey and in-depth interviews.

3. The Process of Spatial Production in Historic District

3.1 The *Spatial Practice* of Tianzifang

3.1.1 *Specific Process*

In the early 1990s, with the upgrading of the industrial structure in the center of Shanghai, the old industrial buildings in the neighborhood were gradually idle. Depending on the Art College, the government plans to turn Kangtai Road into a cultural and artistic neighborhood and start renting idle factories to artists.

Around 2003, government-led renovation projects in old districts were launched, and real estate developers obtained the right to renovate through bidding. At this time, residents began to participate in the game of space production because of dissatisfaction with demolition compensation, and began to rent out their own houses. Galleries, studios, etc. gradually spread from the old factory site to the surrounding old-style residential neighborhoods. In addition, some scholars and artists began to publicly oppose the mode of demolition and reconstruction, and the voice began to attract the attention of the mainstream media. Finally, the reform and development plan was put on hold gradually. The government began to relocate Tianzifang as a historic district of cultural and creative industries, adopted a protective development model, and invested in the construction and improvement of the infrastructure in the district.

Since then, commercial capital in the neighborhood has continued to infiltrate. Besides the original inhabitants, the second landlord and the third landlord began to emerge, which doubled the rent. Many artists have to move away, which indicates that the literary industry is in a difficult position to survive. At present, Tianzifang has developed into a famous tourist attraction in Shanghai, attracting a large number of domestic and foreign tourists.

3.1.2 Change of Space Subject and Its Role

Renewal has changed the spatial subject of Tianzifang historical district from a single government/resident subject to the government, artists, residents, and then to the government, residents, business operators, artists, tourists and other multiple subjects. The government formulates protection management rules, artists become the direct producers of Tianzifang district space according to professional aesthetics, and merchants become the direct producers of Tianzifang district space according to market demand. Most of the local residents move out of the neighborhood to start a new life by rent, and become the biggest beneficiaries of the renewal of the neighborhood. A small number of residents are still living in the neighborhood, continuing the production rules of traditional cultural space. Tourists indirectly influence the production and practice activities of tourism stakeholders through the imagination of traditional street space in Shanghai, thus indirectly realizing the production of district space.

3.1.3 The Change of Social Relations of Space Subjects

The revitalization of Tianzifang historical district not only deconstructs the spatial subject of the district, but also reproduces the social relationship between the new spatial subjects. With the breaking of the boundary between the original industrial space and living space and the emergence of new land-use mixtures, such as commercial-residential mixing, the neighborhood ties in the original social relations are also destroyed. The commercial interest relationship between residents and operators, the management relationship between government and space users, and the consumption relationship between tourists and service providers quickly evolved into a capital interest link to maintain the community social structure. The main body of district space has changed from a single neighborhood relationship to multiple social relationships such as business cooperation and competition, tourism services and consumption. At the same time, each of them seeks superior resources in the development of historical districts and maximizes its own interests.

3.2 Reproduction of Representations of Space

3.2.1 Reproduction of Buildings: Protection and Development of Carriers

Architecture is an important carrier of the style and features of historic districts. The original building types of Tianzifang historic district mainly include: factory building, Shikumen building, traditional residential landing building and Western-style house. Most of the factory buildings were small-scale buildings built in the 1970s and were replaced by artist studios in the 1990s. Shikumen Architecture is a unique integration of Chinese and Western architecture in Shanghai, which can attract both Chinese and foreign tourists. Traditional residential buildings carry the daily life culture of the old Shanghai residents' alleys. At present, they have been transformed into low-level shops, two or three-floor coffee shops or theme shops. The high-rise and back streets are difficult to rent because of their low commercial value. Western-style houses are mainly distributed in the northeast of Tianzifang, with a special exotic flavor. In the transformation, elements with visual impact are designed, which are reflected in the facade decoration, accessories, window display and other aspects, paying attention to visitors' experience.

3.2.2 Reproduction of District Function: From Space of Cultural Production to Space of Cultural Consumption

From the perspective of spatial morphology, the original spatial texture of Tianzifang has basically been well preserved, but the function of the district has undergone great evolution, as shown in Figure 1. The residential space originally carrying the residents' life memory is gradually eroded by commerce and transformed into the production space carrying tourists' consumption activities. The area of creative workshops originally relying on artists' studios is gradually shrinking and replaced by retail business functions.

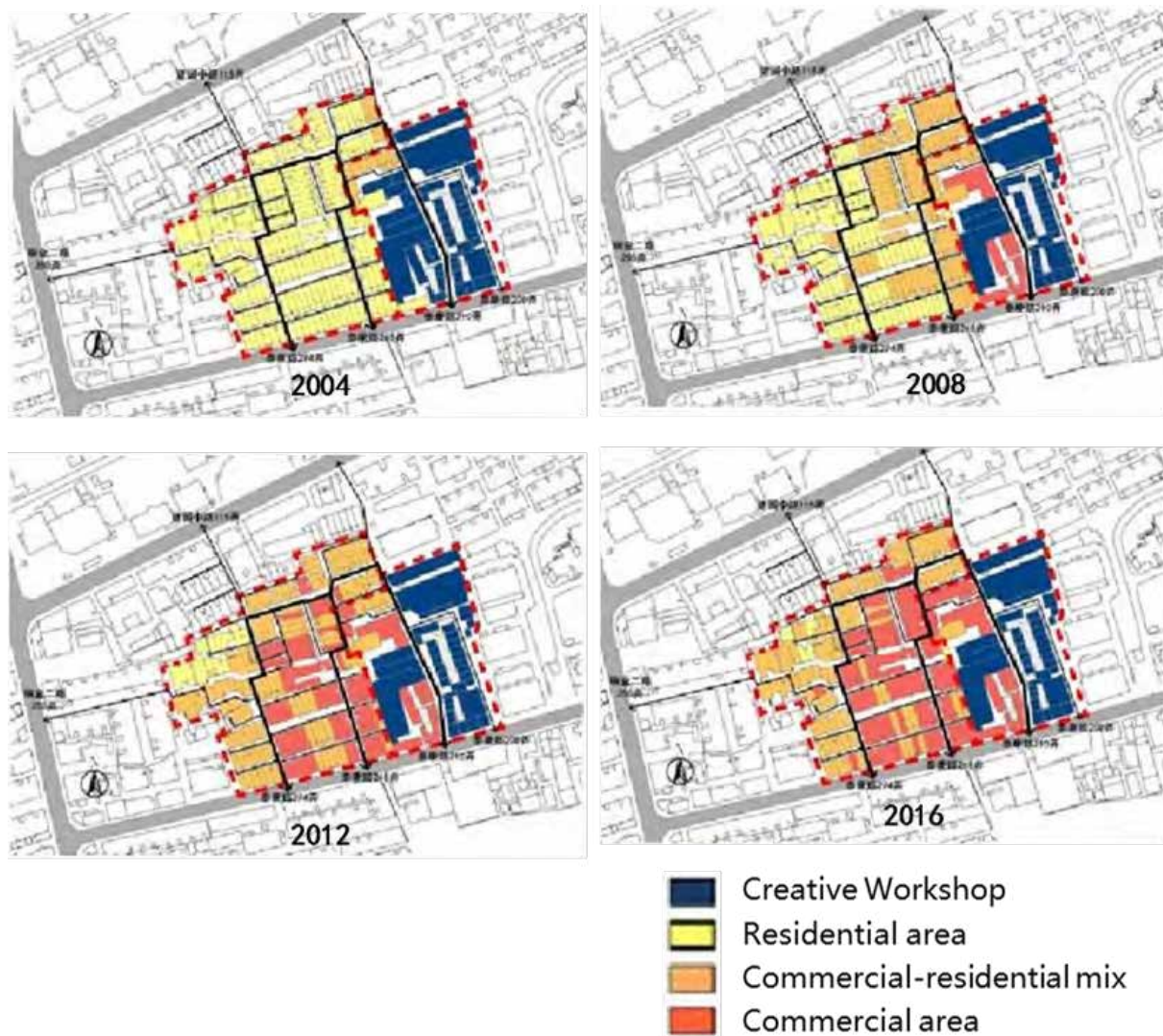


Fig. 1 Analysis of Functional Evolution of Tianzifang District

(Source: Zhu Xiaoyu, 2017)

3.3 Reproduction of Spaces of representation

In the process of reproduction, the objective and authentic culture of the historical district itself gradually recedes into the background or even declines. What presents to tourists in the front is the staged authenticity packaged by commodification and symbolization, and the two cooperate with each other to reshape the space.

3.3.1 The decline of Authentic Culture behind

Before the renewal, the original culture of Tianzifang district includes: the material space culture represented by Shikumen Architecture reflects the trace of integration of Chinese and Western architectural styles in history, the original creative and artistic cultural foundation of the plot, such as the footprints left by artists here, and the city life culture represented by the daily living environment of the original inhabitants' neighborhoods.

In the process of transformation, although the decision-makers have little interference in the original material carrier building itself, the outmigration of a large number of original inhabitants has directly led to the

fundamental disconnection between the original life subject and the district cultural carrier, and the traces of the original cultural celebrities have gradually been forgotten.

3.3.2 Reproduction of Symbol Culture ahead

Cultural symbols are highly concentrated in cultural representation. The excavation and reconstruction of cultural symbols is the key to pushing historical districts to mass tourism consumption. In the early stage of the transformation, the government and planners positioned Tianzifang as a cultural and creative industrial district, so the function of Tianzifang was mainly based on cultural and creative shops, with a small amount of catering and other ancillary services. To a certain extent, the injection of literary creativity activates the lost street space. However, with the impact of commercial development in the neighborhood, a large number of cultural and creative stores have been relocated. New cultural symbols such as souvenir stores, catering stores, clothing stores, bars, coffee shops and beverage stores of foreign chain brands have become the main land use trend.

New commercial functions have injected new cultural symbols, reflecting the projection of heterogeneous leisure cultural symbols in the district space. The symbol culture in the front has gradually infiltrated and merged with the traditional culture of the district and occupied the main space. At this time, life, art and culture rooted in the historical districts themselves are gradually given the current leisure significance. Some traditional life memory cultures in the neighborhood can also be displayed to tourists in new forms (such as the construction of retro decoration in theme bar). Therefore, it can be said that the construction of new cultural symbols has enriched the connotation of traditional culture in the neighborhood and regenerated the culture conforming to the trend of the new era.

4. The Effect of Spatial Production in Historic Districts

4.1 Material Space Turning: From Bearing Collective Memory to Meeting Consumer Demand

With the extension of capital profit-seeking antenna from traditional manufacturing industry to urban material environment transformation and the second and third capital cycle represented by culture and service consumption (Zhou Yu, 2013), Tianzifang's material space experienced the reproduction of preserving the shape skeleton and repackaging content. The memory of its original daily life scenes has almost disappeared, and a small number of indigenous people living in the corner of no commercial value are deeply affected by tourism activities. In addition, with the increasing number of visitors, the demand for consumption is increasing. The rapid spread of various modern commercial activities and the constant creation of characteristic consumption themes have promoted the reproduction of infrastructure, architecture and landscape in the neighborhood towards the consumption demand of the tourism market.

4.2 Reshaping Spiritual Space: Demonstration Effect and Cultural Acculturation

In the process of space reproduction in Tianzifang district, besides the active implantation of new cultural symbols, the new space service objects (tourists) also influence the ideological changes of the direct space producers (tenants) and the original residents (landlords) behind them by their own tourism activities (such as promoting the double growth of rent through the effect of tourism scale). Thus tourists have the demonstration effect on space producers (Fan, Q.B., 2013). In this process, some old cultural forms have further alienated in order to meet the needs of tourists' tastes or media propaganda. For example, the daily production process behind the scenes of the original craftsmen has gradually turned into a special "performance" activity for tourists to visit and display. Furthermore, the cultural demand represented by tourists' consumption and the cultural supply represented by the symbolization of tenants constantly collide with each other. With the passage of time, this kind of communication brings about a certain degree of integration between the two, and eventually realizes

the dynamic balance of demand and supply culture step by step. This is cultural acculturation (Salusa et al., 2017).

4.3 Reconstruction of Social Space: Gentrification and Space Justice

Gentrification refers to the fact that poor tenants who originally rented here were forced to move away because they could not afford the rising rents in the central urban areas, and were replaced by the middle class who could afford the rents, which made the original social relationship structure of the settlements constantly change (Richard Schaffer, 1986). In the process of space production and reproduction of Tianzifang district, there are mainly two gentrification processes.

The first is that before the transformation, because of the poor living environment, in Tianzifang neighborhood, besides the local original residents, there are a large number of workers and poor tenants in the original factory. After the factory of industrial replacement and upgrading in Shanghai was idle, with the support of the government, many artists began to settle in. The rising cultural atmosphere in the neighborhood led to the rise of land prices. Workers and poor people were forced to move to other low-cost areas. Most of the artists are non-local people. The differences between their cultural needs and living background and the aborigines complicate the original social relations.

The second is due to the 2010 World Expo held in Shanghai, Tianzifang's tourism reputation has improved significantly. The failure of the artist group to compete for rent with commercial capital has led to the replacement of most of the artists in the neighborhood by commercial operators. At this time, a large number of local aborigines moved out, and the social relations among the residents who were forced to stay and the business operators, tourists and other groups became more complicated.

In the process of gentrification, the replacement of the neighborhood tenants makes the social network of the neighborhood continue to undergo irreversible restructuring. The authentic neighborhood relationship has been reproduced many times, greatly weakening the personality of the district and gradually becoming homogeneous with other historical districts. After such repeated reconstruction of social space, the original different classes gradually formed social segregation, which had an irreparable negative impact on spatial justice.

5. Summary and Discussion

From the perspective of space production, Tianzifang historic district has experienced the process of reproduction from the place of residence representing the culture and life of Shanghai School to the place of cultural and creative industries, and then to the place of modern tourism consumption and culture dressed in historical and cultural clothes. The main body of its space practice has gradually changed from the original inhabitants to artists, businessmen and tourists, and reshaped its social relations in varying degrees. Although the physical transformation of district building as a carrier of spatial representation is relatively light, its function has undergone a change from residential living space to cultural production space and then to cultural consumption space. At the same time, the reproduction of representational space is accompanied by the reconstruction of symbolic culture, which makes the authentic culture gradually decline. Generally speaking, under the production and reproduction mechanism of Tianzifang historical district, its material space, spiritual space and social space have been reconstructed to varying degrees, accompanied by a series of spatial effects such as symbolization, commercialization and gentrification, which make its authenticity gradually reconstructed and alienated.

In addition, how to retain the collective memory of the authenticity of historic districts, coordinate the production relations among power, capital and residents in the overall transformation, reflect on the role of cultural reproduction in the renewal of historic districts, and ensure the realization of spatial justice are related to

the process of urbanization in the future and the value orientation of protection and development of historic districts in China, which requires further in-depth exploration.

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CHARACTERISTICS IN THE SPACE RESHAPING OF CREATIVE CLUSTER DURING GENTRIFICATION: THE CASE OF TIANZIFANG IN SHANGHAI

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Abstract: This paper explores the process of gentrification of Tianzifang creative cluster and analyzes the space reshaping characteristics during this process. The study finds that: due to the gentrification of the population and surge of leisure businesses, there are five main driving forces that reshape the space: 1) space consumption and experience demand of tourists, 2) space competition and privatization demand of businesses owners, 3) space renovation and defense demand of local residents, 4) space renovation demand of creatives, 5) space control and guidance of local government. As a result of five main driving forces, the space has shown new characteristics including reserved space structure, mixed functions, segregated living space, commercial space sprawl, privatized public space. This paper provides suggestion that coordinating the relation among diverse stakeholders will be the key to promote transition of urban space and maintain social justice.

Keywords: gentrification; creative cluster; space reshaping characteristics; diverse stakeholders

1. Introduction

With the deepening of globalization process and rise of the new economies as well as great shift of urban and regional development mode since 1980, the “Creative Industry Cluster” expand rapidly. Historical areas, waterfront areas and industrial areas have become important space foundations for promoting creative industries. Therefore, space reshaping and social network reconstruction of the creative cluster have become the core of urban sustainable development research.

As a new urban social geographical phenomenon, gentrification has been developing for decades in Western countries (Huang Xing and YANG Yongchun, 2012). With the diffusion of globalization gentrification has been widely produced, operated and consumed worldwide as a “Global Urban Strategy” (Smith, 2002). Creative cluster in the inner city learns from this “Global Urban Strategy” to some extent. Therefore, some investigators have recently turned to research whether there is a “Creative based Gentrification process” and the answer is “yes”. Jamie Peck (2005) argument in *Struggling with the Creative Class* that:

In the field of urban policy, which has hardly been cluttered with new and innovative ideas lately, creativity strategies have quickly become the policies of choice, since they license both a

discursively distinctive and an ostensibly deliverable development agenda. No less significantly, though, they also work quietly with the grain of extant ‘neoliberal’ development agendas, framed around interurban competition, gentrification, middle-class consumption and place-marketing quietly...

A considerable amount of research has been made on social network reconstruction of the creative cluster during gentrification, but little research has been made on space reshaping. Many researchers pointed out that there has significant correlation between the cluster of cultural creative industry and the change of social-structure feature: those areas that cultural related industrial cluster obviously are always the neighborhoods of higher social class (GAN Xinyue *et al.* 2017), which means there is a “Creative based social-structure change process”. With the changes in the social-structure, the people who live and use the space have changed, the needs for space of different people are different. Therefore, how do different people use the space in different ways and what are the conflicts between local residents and the newer users during the space reshaping? It is desirable to carry out surveys of the “space reshaping” characteristics of creative clusters during gentrification.

2. Gentrification process in Tianzifang

Tianzifang, a Creative Cluster in Shanghai, shows a “Creative based Gentrification process”. Tianzifang is located in Luwan District the central area of Shanghai (Figure 1). The block was formed in 1920s, as a result of expansion of the French Concession. At that time, it has been used as residential quarter and industrial area. After renovation in 1988, it’s now become a creative cluster, also a charming landmark for both local residents and foreign tourists. Not only has the creative industry made Tianzifang area turn from a traditional, local, private and poor area to a fashionable, international, open and rich area, but improved local image and at the same time makes the social relationships more complicated (KONG Xiang and QIAN Junjie, 2011). The gentrification process of Tianzifang can be divided into four stages.



Figure1 The location of Tianzifang (left) The past and present photos (right)

2.1 Informal arrangements between the factory managers and artists

Tianzifang became well known as a creative park in the late 90s when internationally renowned artist Chen Yifei moved into the area and rented one of the factories as his art studio. From 1998, the government of Luwan district decided to regenerate the area to attract more artists came here and rent industrial factories as their art studio. Development had to be negotiated with the factory owners and every one of the local residents. Although most of the houses in Tianzifang area are nationalized, for historical reasons, the renting in this area is permanently rented (SUN Shiwen and ZHOU Yu, 2015). The complex ownership structures in the area make it difficult to demolish and rebuild the area.

2.2 Informal arrangements between local residents and creatives

The relaxed, vernacular feel which benefits from the artists made Tianzifang a highly attractive destination. More and more artists wanted to move into the area. So, the local subdistrict established “Office of the Art Street Management Committee” in 2004 which is responsible for the investment of Tianzifang. The spillover creative space needs and economic interest promoted local residents began to lease their own houses and to move out to houses in other places bought with the rents obtained. As a result, more and more creatives move into the district replacing local residents and turning the residential area into non-residential functions which is illegal. Although the government has planned to demolish and rebuild the Tianzifang area as a new business center, due to the rapid development of the Shanghai real estate market, the housing prices in this location have risen rapidly, causing residents to be dissatisfied with the government's compensation for demolition and resettlement fees and tend to make informal agreements with creatives to obtain higher income.

2.3 Formal arrangements between local government and local residents

The local government finally had to accept this popular informal creative cluster and redeemed land sold to developers in 2008, because creatives' reshaping of space has indeed improved the environmental quality of the Tianzifang area and the voices for protecting historical districts are high. Government's acceptance made it legal that local residents change their houses' function from living to non-residential functions which attractive more leisure and lifestyle businesses that generate economic benefits. Formal arrangements between local government and local residents have promoted the overall renewal of this area.

2.4 Complex social network and gentrification

From this time on, creatives have gradually moved out of the Tianzifang area, as both the government and local residents seek for maximum benefits raising the rental price of houses and welcoming more leisure and lifestyle businesses brought into the area to replace the less profitable creative businesses. As a consequence, the creatives and local residents have been replaced by newer business owners and the rent became much higher than before, even the land price of area adjacent to Tianzifang became higher as well. In the end, the renewed attractiveness in turn leads to a gentrification of the population and a revaluation of land and real estate. At the same time, a complex diverse stakeholders social network has formed among the government, local residents and businessmen during gentrification (Figure 2).

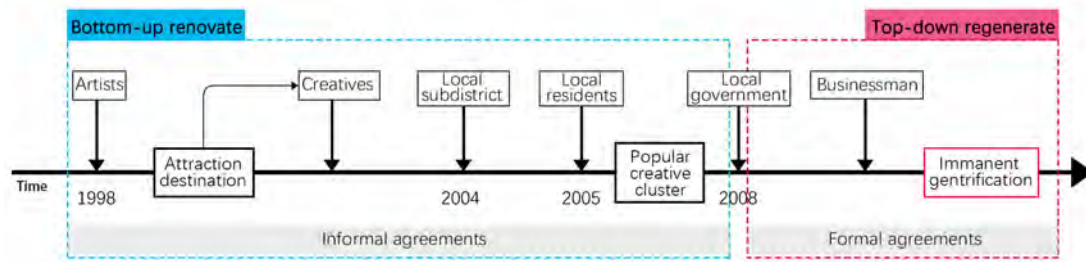


Figure2 Gentrification process of Tianzifang

The sociality of urban space originates from all kinds of human activities and their mutual relations in urban space, and the essence of urban spatial diversity is the diversity of social structure (YANG Guiqing, 2017). Consequently, the reconstructed social network in turn reshapes the land use and space structure. How does these diverse functions co-build the space? What are the characteristics of space reshaping? How do they use the space in different ways? What are the conflicts between local residents and the newer businesses result from space reshaping?

3. The characteristics of space reshaping

3.1 Reserved space structure

Tianzifang was one of many laneways in Shanghai that had an organized space structure. After renovation, it still kept the old laneway space structure which formed by “Main lanes - Secondary lanes – House” spatial organization and diverse space scale (Figure 3). The reserved structure benefits from the bottom-up independent renovation and local residents’ resistance to demolition of the area. The main public space of the area is on the laneways which means activities and communication of local residents, tourists, business owners, creatives are both organized by laneways. This special space structure not only limits users’ behavior about how to use the space, but also be the main influence factor of forming complex stakeholders social network.

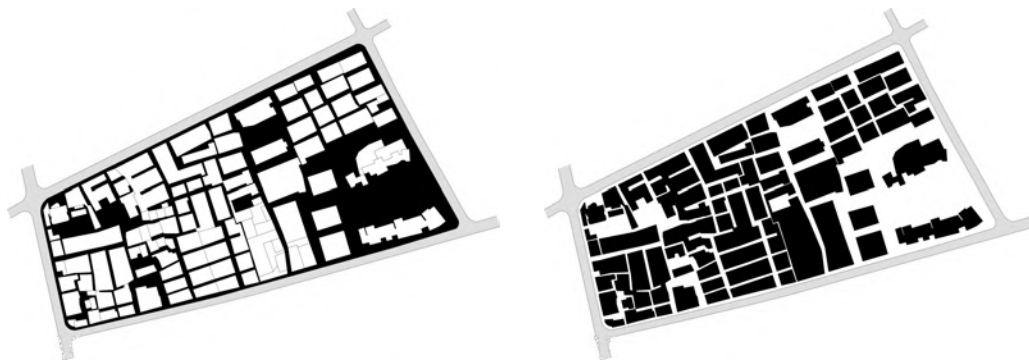


Figure3 Figure-ground relation of Tianzifang

3.2 Mixed functions

Tianzifang was formed in 1920s, as a result of expansion of the French Concession. At that time, it was formed by variety townhouses, a few businesses along the street and centralized factories. A variety of cottage factories grew up during the 1930s and 40s serving the immediate needs of the industrial city center, but most of them were closed down in the 1980s and left vacant factory

buildings. As we can see in Figure 4, the space of the neighborhood is mainly composed of residential buildings and laneway factories. These laneway factories were embedded in local communities offering local residents work. As a result, a close social connection in Tianzifang area was formed by the functional layout of job-housing balance.

After renovation in 1988, the functions were transferred to creative studios, leisure and lifestyle businesses step by step. First of all, famous local artist and art companies found the low rent and superior space environment of inner city and moved into the vacant factory buildings, and after that, a large number of creatives continually moved into the neighborhood through renting local residents' house changing the residential function to non-residential function. Creatives make this area attractive and bring consumers in who have little taste for art and design goods. This also start to make businesses embedded in local communities means more leisure and lifestyle businesses brought in to the area replacing the less profitable creative businesses. The mixed function combining residence, business and studio (Figure 5) makes diverse stakeholders use same public space bringing a diverse stakeholders social network. The space function transformation changes the social network and the social network in turn reshapes the space.

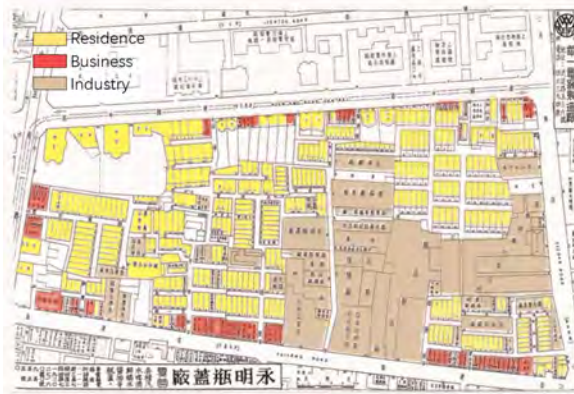


Figure4 Mixed functions in 1947



Figure5 Mixed functions in 2013

3.3 Segregated living space

The embedded studios and businesses segregated living space, even segregated internal space of residential building through using different floors of one house for different functions. This kind of space segregation blocks the original close social connection in the area.

After renovation, the embedded studios and businesses replace half of the residential area making the residential area segregated (Figure 6-A). The community space organization used to be integral, because of local residents renting houses to creative businesses and leisure businesses, the community space has become fragmented. Furthermore, the reason why the residential area preserved located on the periphery of the neighborhood, especially in the north and west is that the luxury shopping mall opposite the Taikang Road making residential area on the Taikang Road side almost transfer into commercial area.

Not only was the overall layout of the houses segregated, but even the residential building internal space was segregated due to different functions in different floors (Figure 6-C). Because the first floor can be rent out to commercial use easily for its accessibility, the residential buildings were used in

three different ways. First way is that the whole building is for residential use. Second is that only the first floor is for commercial use and other floors still use as housing. Third is that the whole building is for commercial use. The residential building internal space was segregated because different functions needs different kinds of space and users' needs are diverse.

As a result, segregated living space brings separated social connection. Especially, there are conflicts between the first floor users of restaurants or bars and the second floor local residents. What's more, due to the internal space of residential building was used as non-residential functions, the space residents used to associate with others has changed (Figure 6-B). More specifically, the main lanes and secondary lanes used to be main space for residents' communication, but now used for visitors. Besides, the new cross-street building links are built for tourists. Finally, residents' lives are disrupted and the community social connection are separated.



Figure6 Segregated living space in Tianzifang

3.4 Commercial space sprawl

Driven by maximizing benefits, local residents and less profitable creatives moved out the neighborhood and commercial space sprawled (Figure 7-A). The commercial area used to be along the street, but with more leisure and lifestyle businesses brought into the area, it occupies almost half of the neighborhood now. Mixed commercial and residential areas bring a lot of social problems because of the way in which space is used.

First, when the old building has a new function, the users do not change the structure of the building, only divided internal space and decorate it (Figure 7-B). The space reshaping changes people's behavior. Second, the commercial functions not only change the internal space of old buildings but make courtyard a place for tourists' entertainment (Figure 7-C). What is controversial is that the courtyard used to be a public space, but now become more proprietary. The space reshaping affects the daily life of residents and leads to the disappearance of original scenes of the local neighborhood. Third, the new businesses usually grow on the old buildings and occupy as much outdoor space as possible to make more profits (Figure 7-D). There are five common ways in which new businesses grow on the old building including arrangement of outside stalls, outside seats, glass boxes, cross-street buildings and porches. The space reshaping leads to conflicts between tourists and local

residents because the public space is crowded with too many tourists that local residents have no space for their daily lives.

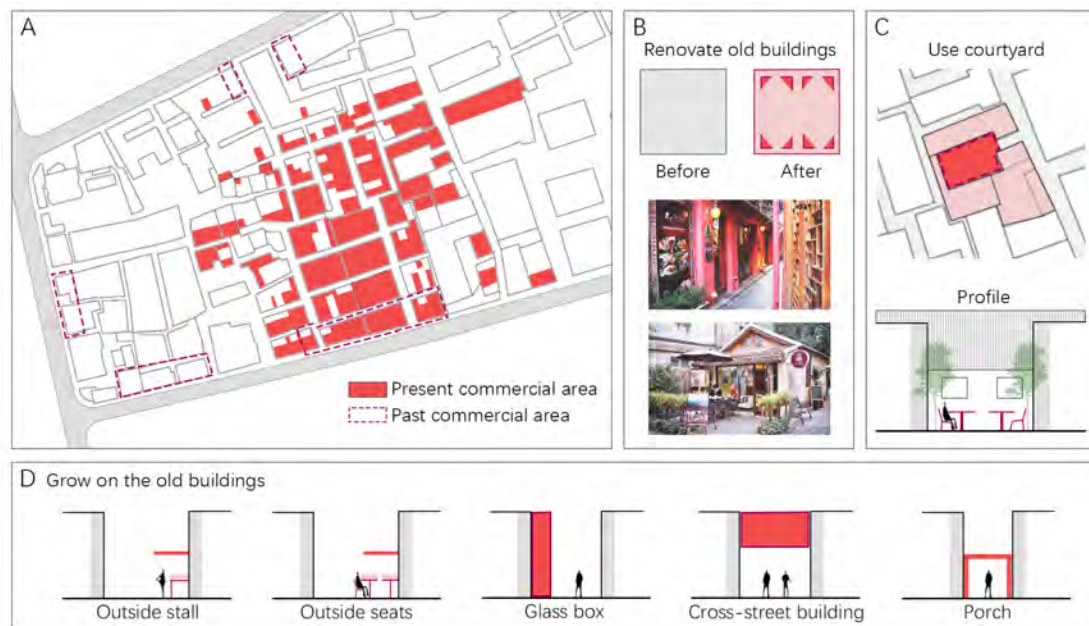


Figure7 Commercial space sprawl in Tianzifang

3.5 Privatized public space

Public space should be open to everyone, but with the further development of the gentrification process in the area, public space has become privatized. Commercial space invades more and more public space and uses it as its own space causing three main problems.

The first problem is that disappearance of neighborhood lives. The privatization of public space is reflected in the commercialization of laneways and courtyard which used to be the places residents lived in and communicate with each other. As a result, the traditional local neighborhood lives are disappearing and neighborhood relations gradually drift apart and the local residents face the risk of being marginalized. To a certain extent, it confirms the typical representation of "class substitution" in the theory of gentrification (ZHANG Juan and WANG Maojun, 2017)

Secondly, the privatization of public space brings mutual interference in the use of diverse spaces. First of all, the living space of local residents is affected by tourists. Secondly, the scope which visitors can visit in is affected by local residents.

What's more, the privatization of public space causes neighborhood security risks. First is the lack of patency in laneways. People who lived on both sides of the street used to observe the behavior of strangers making this area safe. What's more, the privacy of neighborhood life is destroyed and the residents' lives cannot as safe as before.

4. Conclusion

The attraction to the leisure and lifestyle business of Tianzifang leads to a population gentrification and because different people have diverse space use characteristics the space have been reshaped during the gentrification process. There are five main driving forces that reshape the space (Figure 8).

First, space consumption and experience need of tourists. Second, space competition and privatization need of businesses owners. Third, space renovation and defense need of local residents. Fourth, space renovation needs of creatives. Last but not least, space control and guidance of local government. As a result of five main driving forces, the space has been reshaped and show new characteristics including reserved space structure, mixed functions, segregated living space, commercial space sprawl, privatized public space.

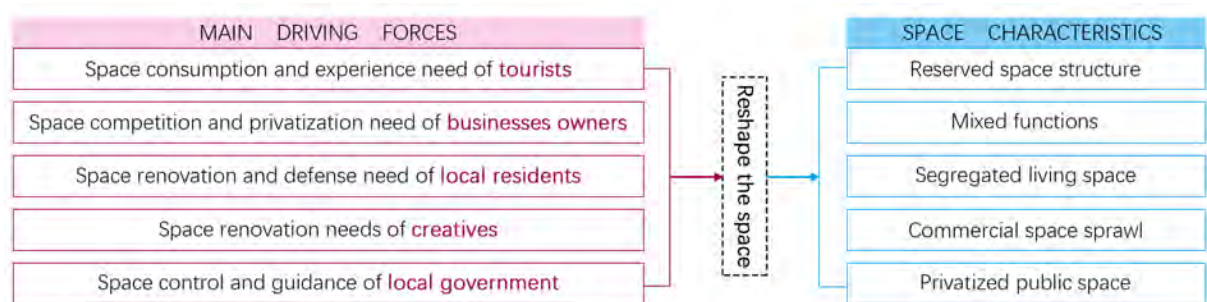


Figure8 Space reshaping process

Under the global symbolic economic, cultural production and innovation displace material production (Zukin, 1995). The space of creative cluster will be reshaped during the globalization process, and coordinating the relation among diverse stakeholders will be the key to promote transition of urban space and maintain social justice.

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Privatization, Marginalization and Reuse of Waterfront Space in New Town——Taking Zhangjiang Science City Zhongshi Unit as an Example

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Abstract: In the past ten years, China has ushered in a new era of urban development. The urban renewal project has gradually changed the original urban pattern. In the suburbs, the construction of new cities has replaced the old towns and formed two types—an industry-led new towns and life-oriented new towns. The Zhangjiang area is one of the earliest industrial zones in Shanghai. It is currently in an important period of transition from industrial zones to the urban area. The comprehensive improvement of scientific research capabilities, living environment and urban vitality is its development goal. The long-term industrial development has led to the relatively closed industrial parks in the Zhangjiang area. The high-end communities have been built everywhere but the supporting facilities are insufficient. This has led to the emergence of city-industry separation, and separation of jobs and residential in the Zhangjiang area. These problems are particularly prominent in the Zhongshi units. In the process of building a fast new town, Zhangjiang Old Town, which was originally water-based, gradually declined, and was replaced by a new town with roads as the development axes. Planners used modern and mature design methods to design high-end residential communities and spacious car roads, but also brought public space with no vitality. Taking the Zhongshi unit of Zhangjiang Science City as an example, this paper first analyzes the existing characteristics of public space, and takes the waterfront space as the research focus. It is found that the waterfront space is characterized by privatization and marginalization. After that, some urban design method was used to redesign the form of waterfront space, function, and relationship with the surrounding area in order to realize the reuse of the public space.

Keywords: waterfront public space; urban renewal; privatization and marginalization;
Zhangjiang Old Street

1 New town development model and existing problems

1.1 Two models of the development of China's new town

With the continuous development of China's economy, the urbanization process is also accelerating. In 2018, China's urbanization rate is close to 60%, and the city is undergoing rapid changes and transforms. In the core area of the city, the urban renewal project with the main contents of comprehensive renovation, functional change and demolition and reconstruction of existing buildings, infrastructure, public facilities, streets and environment is changing the original urban pattern (Chen, 2019). Tianzifang, Xintiandi in Shanghai and other urban traditional street reconstruction projects have become a model for urban renewal in the country. Due to the expansion of the city's scale and the need for development, there is no land and space for urban development in the city center or the old city. As a result, various new town and new district planning and construction projects have been carried out across the country to meet the needs of industrial development or urban population expansion.

New town or new district is a relatively independent unit planned for political, economic, social, ecological and cultural needs(Feng, 2015). After more than 30 years of construction, China's new town and new district has formed a huge and complex system. There are many types and development models of new urban new districts. Many new town developed from industrial parks have become important economic growth poles besides the core areas of the city. Due to the rapid development of the new town, it is also facing problems such as city-industry separation and lack of vitality. The development model of the new town needs to be transformed. The relationship between industry and urban space has always been an important issue in the development of new towns in China. The problem of city-industry separation has seriously restricted the healthy development of cities. Scholars have conducted in-depth research on the phenomenon , the classification and causes, and the path of city-industry integration. At present, China's new town and new district can be divided into four categories: residential new district, industrial park, high-speed rail new town and science and technology new town(Yang and Lin, 2017). Its development model can be classified into the following two situations.

The first is new town formed by industrial agglomeration, represented by industrial development zone. Most of the industrial development zones are located in the suburbs, relying on the construction of industrial parks to form industrial clusters, and promote the economic development of the new town. In terms of space, large-scale closed spaces such as factories and parks have gradually replaced the more densely populated old towns and farmland. People live

in places with good housing conditions and supporting facilities in the city center, and only work in the new town during the day. Second, new town relying on opportunities such as high-speed rail with the residential area is the main function. In order to share the population pressure in the city center, large residential areas are built on the edge of the city or in the suburbs. Lower prices and larger space meets the housing needs of people working in the city center. However, there are certain problems in the current two development models. The new town with industry as its main function cannot provide supporting service facilities. The new town with residential function as the main function lacks industrial support. It will be less attractive to talents, so the ability to absorb the population is limited. The space differentiation between jobs and residences causes the industrial park to become a "ghost town" at night, and the strange phase of the residential area becomes "empty town" during the day. It leads to the lack of vitality in the city and the low sense of identity of the crowd.

1.2 Development and transformation background of Zhangjiang area

Zhangjiang High-tech Zone is located in the center of Shanghai Pudong New Area, adjacent to Lujiazui Financial Center and Shanghai Disneyland (Figure 1). Since the establishment of the Zhangjiang Hi-Tech Park in 1992, it has experienced the development phase of the exploration period (1990-1999), the incubation period (2000-2005), and the development period (2006-2011), and entered a new era of transformation (Wang and Huang, 2013). After the implementation of the "Zhangjiang" policy in 1999, a large number of high-tech industries gathered in Zhangjiang. The area of the park continued to expand, and the industrial functions were further strengthened and improved. It became the vitality point of the economic development in Pudong, and its influence continued to expand. In 2011, Shanghai was approved to establish China's third national independent innovation demonstration zone, and named after Zhang Jiang. The word Zhang Jiang has become synonymous with Shanghai's high-tech development, and Zhangjiang region has entered a new era of transformation and development.

In 2017, the "Zhangjiang Science City Construction Plan" was approved (Figure 2). The plan is based on the original Zhangjiang High-tech Industrial Development Zone. The area is increased to 94 square kilometers, and a science city integrating production and urban space is to be established. With the concept of open agglomeration, integration of diversity and green communication as the planning concept, the transformation and development of Zhangjiang Science City will become the creation place of new knowledge and new technology in China and the world, the breeding place of new industry, modern new livable city and municipal public center. And built into a world-class science city.



Figure 1 Zhangjiang Science City Bitmap



Figure 2 Land Use Planning of Zhangjiang Science City Construction Planning

1.2 Main problems in the construction of new towns

Zhangjiang Science City began construction in the 1990s. Planners use advanced planning concepts and design techniques to design clean, modern and urban areas. However, in the past 30 years of, some contradictions and problems have been exposed. The livability and vitality of the new town have not met the vision of the government and planners. The Zhongshi unit is located in the north of Zhangjiang Science City. It is the earliest developed unit in Zhangjiang area. The northwest corner of the unit is an industrial park, the east is a large-scale residential area with mature and mature construction, and the southwest corner is a newly-planned software park. It presents a pattern of intertwined collages between residential areas and

industrial areas. From the perspective of the Zhongshi unit, the main problems reflected in the new town include the following aspects.

First, the industrial park area and the residential area are relatively independent and the supporting facilities are insufficient. The density of public service facilities in residential areas is enough but unevenly distributed, lacking comprehensive hospitals and cultural and sports venues. Second, the road is wide but not suitable for walking, which makes it empty. Each urban cluster has a fence, which is closed to the public. People mainly work in residential areas or work inside industrial parks. The street only bears the traffic function. Although there are walking and running lanes, there is no corresponding supporting function on both sides, and the road is too wide, the radius of the turn at the intersection is large, causing people to lack the desire to travel. Third, the ecological base is rich, but the accessibility and continuity are poor. The landscape function of the green space is greater than the public activity function, and it is not systematic. There is a fault zone in the waterfront activity space. Fourth, ignore the inheritance of historical context. The old town of Zhangjiang are damaged, the intangible cultural heritage lacks the space carrier, and the emerging culture lacks the output platform and space.

2. Introduction to the water environment of Zhangjiang Old Street

2.1 Impact of urban development on river systems

The Yangtze River Delta is a typical plain river network area. The water system of the Pudong New Area is vertical and horizontal, with a typical Jiangnan water town style. The water system and the town are interdependent. As an important part of the urban public space, the waterfront space can not only improve the urban micro-environment, but also improve the environmental quality. It is also a public place for residents' activities. In the planning of the new town, the planning of the waterfront area is a key design area to display the image of the city. The dynamic waterfront space design can drive the economic development of the surrounding area and become a symbol of the region. However, the construction of the new town is often accompanied by the destruction of the original river network. In the construction and development of the Zhangjiang High-tech Zone, in addition to the rivers or main streams in the center of the city are preserved and redesigned, many tributary water systems are landfilled into roads or the construction of the park. The original farmland was requisitioned, and the water environment of some water systems was also invaded by industrial pollution, causing the river network to shrink and the water surface rate to drop. Bai Yiqin (2010) compared the land use and water system remote sensing data and water environment quality in Pudong New Area over the years, and found that with the acceleration of urbanization process, the length, area and

quantity of river network decreased. Small and medium-sized rivers and village-level rivers disappear faster. In the central urban area, the network is relatively systematic, while the river network in the urban fringe area maintains the original natural form. (Figure 3).

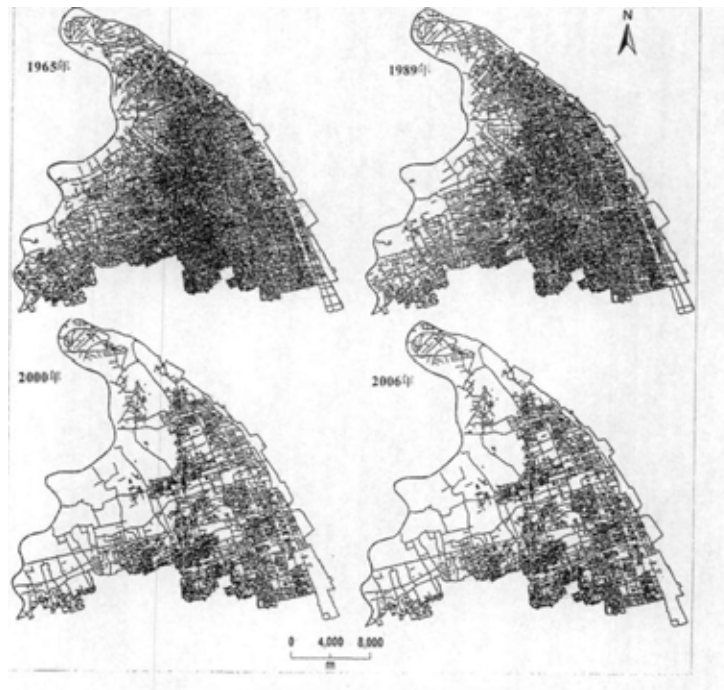


Figure 3 River network changes in Pudong New Area from 1965 to 2006(Bai, 2010)

2.2 Water resources around Zhangjiang Old Street

There are many rivers in the Zhongshi unit. The main two rivers, Majiabang River and Lvjiabang River cross in the middle of the unit (Figure 4). The river from west to east is the main traffic in the hinterland of Pudong. Transporting waterways, nowadays, has lost its transport function and has become a landscape river. The north-south Majiabang River was dilapidated and digging through the original Libang channel. In addition, there is a river called Taohe passing through the east of the unit. The river sets the Majiabang River and Lvjiabang River together in the interior of the block to form a ring structure.



Figure 4 Existing river in Zhongshi unit

The intersection of the two rivers of Majiabang River and Lvjiabang River is the location of Zhangjiang Old Street. Zhangjiang Old Street is a spontaneously formed market town formed during the Ming Dynasty (1567-1572). It retains the longest historical memory in the Zhangjiang area and the original spatial pattern of the Jiangnan water town. The old street extends along the east and west sides of Lvjiabang River, and the enclosed courtyard space is arranged in layers to form a deep spatial feature of the courtyard. A main street is set up in parallel with the water system to form a house-street-river spatial pattern. A number of lanes are perpendicular to the water system and extend to the bridgehead, the water system intersection, and the intersection to form an open space (Figure 5).

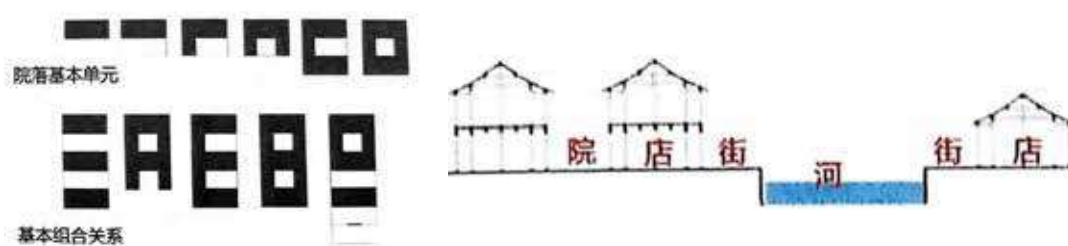


Figure 5 Zhangjiang Old Street courtyard and water street space pattern

3. The role of waterfront space in the change of Zhangjiang Old Street

Up to now, the surrounding area of Zhangjiang Old Street has been replaced by modern industrial parks and residential buildings, and the construction of new town is still in progress. Zhangjiang Old Street is also facing demolition, and some indigenous people have left their long-term residence. In the process, Lvjiabang River transformed from the original main

transportation channel into a landscape river channel, and the waterfront space was transformed from a lively and energetic public space to a place where no one cares. From a historical point of view, the change of Zhangjiang Old Street witnessed the entire process of industrial park development changing the old market town space.

3.1 Late Ming dynasty to the Republic of China: prosperous period

The history of Zhangjiang Old Street can be traced back to the Ming Dynasty. It is said that there are two phoenix trees on both sides of Lvjiabang River. Therefore, the old name is Gutongli. During the Longqing period of the Ming Dynasty, there was a man named Zhang Jiang who opened a ceremony here. He built a fence as the boundary between the east and the west, so it was named "Zhangjiangzha". At this time, the river channel is the main means of transportation. Both the cargo ship and the passenger ship to and from the sea and Shanghai have to transport each other through the rivers. As one of the main transportation waterways in the hinterland of Pudong, the Lvjiabang River has frequent commercial trade on the river. Zhangjiang Gate has also developed as a major market town along the Lvjiabang River. By the time of Qing Emperor Qianlong, Zhangjiangzha had formed a commercial market town with more than 200 shops. The number of households exceeded 1,000, and it formed a 100-meter-long east-west street and a north-south street and sugar shop across the Lvjiabang River. Street (Figure 6). By the time of the Republic of China, Zhangjiangzha was already a major town in the northern part of Nanhui County, and a water and land transportation hub, known as the "North Gate Key." Until the 1950s, Zhangjiangzha has always been a commercial and trade center in the district. The waterfront space is mainly commercial activities. The merchant ships that come and go are docked at butou for loading and unloading goods. There are many shops, tea houses and pubs on both sides. The commercial atmosphere is strong (Figure 7). It can be said that ZhangJiangzha has developed and expanded by relying on the transportation of the Lvjiabang River River. The waterfront space is the most popular public space in Zhangjiangzha, and it is also the place where people interact and trade.



Figure 6 The whole territory of Nanhui County, Qianlong, Qing Dynasty



Figure 7 Zhangjiang Old Street Historical Image (1948)

3.2 After liberation: privatization of space brought about by the transformation of functions

After the founding of New China, with the start of the economy, a large number of urban construction activities occurred frequently. Chinese cities entered a stage of rapid development. Due to the change of transportation mode, land transportation has gradually replaced water transportation and has become the main mode of transportation. A large number of roads were built, and influenced by the traffic location, commercial and other public functions began to gather on the road. In Zhangjiang, the new town center was established on the west side, and the shops concentrated on the roads, forming a pattern along the ZhenXixin Street, Chuanbei Road, and Zhangjiang Road (Figure 8). The original commercial functions of Zhangjiang Old Street were gradually replaced into living spaces. Old Street lost its status as a core city and became a town dominated by residential functions. This process is spontaneous and not government intervention. Since 2000, Guanglan Road

has been constructed, and Zhangjiang Old Street has been divided into two parts (Figure 9). The old street of Zhangjiangzha has entered a decline period. The functional changes on both sides of the river and the decline of water transport have also made the riverside space The original commercial vitality space has been transformed into a living space for residents.

With the improvement of people's quality of life requirements, the living conditions of Zhangjiang Old Town are becoming more and more crowded, and the waterfront space is showing a trend of privatization. In the period of our investigation, the aborigines have not yet fully moved out, and we can see the imprint of life that has been preserved on both sides of the river bank. Some illegally built sheds extended from the residential houses to the river banks. The fences blocked the waterfront roads. The riverside stood many poles for drying clothes, and it became the home of the residents on both sides of the river.



Figure 8 Zhangjiang Old Street Historical Image (1948)



Figure 9 Zhangjiang Old Street Historical Image (1948)

3.3 The construction period of the new town: the marginal space in the development of the new town

Since the 21st century, urban construction in Zhangjiang has entered a stage of rapid development. As mentioned above, the changes in the river system of Pudong New Area have also been staged around Zhangjiang Old Street. Now the water system around Zhangjiang Old Street faces the following problems, affecting the vitality of waterfront space.

First, the tributary water system lacks management and the waterfront space is poorly accessible. On the south of Zhangjiang Old Street, there is a river that runs through Pudong New Area and is 28 kilometers long and about 70 meters wide. It is also one of the main main streams in Pudong New Area. The city-level public service center will be built on both sides of the Chuanyang River. The implantation of science and technology and public service functions will greatly stimulate the vitality of the riverside space on both sides of the Chuanyang River. The Zhongshi unit where Zhangjiang Old Street located is in the northern part of Science City. Its status and role are much lower than those on the banks of the Chuanyang River. The tributary water system such as Majiabang River is neglected, the river channel is narrow, and some riverside landscapes are poor and lack of management. In addition, due to the complex property rights on both sides of the Lujiayu River and the Majiabang River, the public shoreline has not been integrated into unified management and planning. Most of the shorelines are in a closed management mode and are not open to the public (Figure 10). Besides, the collapse of many river-crossing bridges has not been repaired (Fig. 11). The river banks are filled with domestic garbage and building materials, so the connectivity and accessibility of the riverside space is poor (Figure 12). This is also one of the main reasons for the openness and vitality of the riverside space.



Figure 10 Waterfront space with closed management measures



Figure 11 Bridge collapse

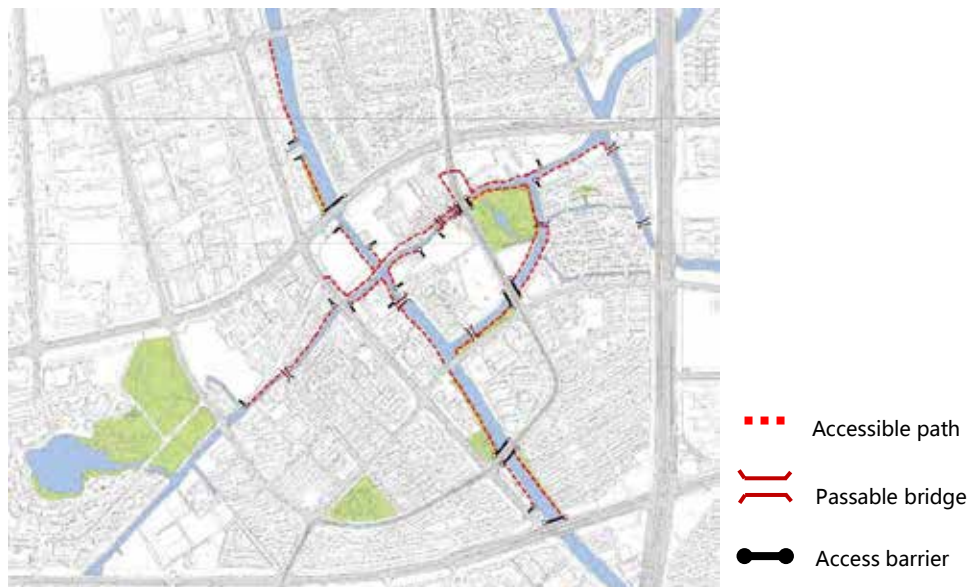


Figure 12 Analysis of the Traffic Situation between Ma Jiazhen and Lu Jiayu

Second, the river bank line is simple and lacks design, and the waterfront space is difficult to get close. Take the Majiabang River River passing through Zhangjiang Old Street as an example. The south side of the eastern section of the river is Guanglan Park. Combined with the streamline design of the park, the walkway and the hydrophilic square are set up in the waterfront space, and the space is relatively open. On the other side of the Guanglan Park, the embankment is relatively simple, with fences as the mainstay. Although the passage space of the old street waterfront was preserved, it was undesignated and the vegetation was overgrown, which made it impossible to get close. In the important urban core area, the waterfront area is a place where vitality gathers. But in the non-core area such as Zhangjiang Old Street, the waterfront space exists only as the “back of the street”, and the waterfront space is neglected and becomes the edge of the city. (Figure13, Figure 14).



Figure 13 The difference between the two sides of the Majiabang River River is obvious



Figure 14 Straight shoreline with vegetation

4. Design strategies of waterfront space: reuse and vitality

In order to preserve the spatial pattern of the water town of Zhangjiang Old Street and enhance the vitality of the waterfront space, we designed the area around the cross-shaped river formed by the Lujiayu River and the Majiabang River, covering an area of about 33 hectares. A design response strategy is proposed for the waterfront space. The land includes Zhangjiang Old Street and some Zhangjiang Townships built after the 1990s. Existing buildings are dominated by industrial, residential and businesses. It is hoped that through the planning of space design techniques and theme functions, the waterfront space of Zhangjiang Old Street will be activated, thus driving the regeneration and development of the entire area.

4.1 Public function is concentrated in the river

Science and technology is the eternal theme of the development of Zhangjiang area. In the vicinity of the design scope, there are software parks based on R&D and innovation, as well as industrial parks that focus on parts processing and manufacturing and have future transformation and upgrading needs. However, there is a lack of places around the base for R&D personnel to rest and exercise. In addition, the surrounding cultural atmosphere is relatively strong. Zhangjiang Drama Valley, Zhangjiang 368 Cultural Industrial Park and

Changtai International Cultural Center are located in the Zhongshi unit, but these cultural industries lack a platform for export and publicity, resulting in insufficient influence. Therefore, we consider implanting technological innovation and cultural creativity related functions in the base to gather public functions to the river. The waterfront space serves as a space carrier for the external display and activities of the creative experience function, and promotes the regeneration of the riverside space with diversified functions.

Create a common core of science and technology at the intersection of rivers. The Chuangzhi Square, the Game Interactive Hall, the Comprehensive Experience Hall, and the Binhe Park are arranged around the river intersection to form a public activity center. The Chuangzhi Square on the west side is the main place for undertaking various kinds of performances. It is also a place for residents and researchers to exchange and gather. In combination with the outdoor space of the Exhibition Center, various technology product launches, creative markets and roadshows can be held. It is also a great place for watching the waterfront landscape. The north and south sides are equipped with small-scale buildings, which is a continuation of the old street texture. They allow small and micro enterprises to interact and experience offline and attract people. On the east side, a riverside park was designed as the most concentrated public space in the entire area, allowing busy people to relax and enjoy the natural beauty after work.

On the east side of the science and technology public core is the reserved Zhangjiang Old Street area, along the river to form a waterfront business district based on casual dining, and join the retail, experience, old street memory hall and other functions. Further to the east is the commercial service and leisure area formed by the Guanglan Road subway station. While continuing the function of the old street, it also adds functions such as parent-child activities, shopping and entertainment, and provides corresponding supporting facilities for the surrounding communities. On the west side of the science and technology public core, the current building quality is good. The main problem is that many closed blocks are formed due to the barrier of the wall, and there are more negative spaces. Therefore, the micro-update method is adopted to sort out the stock space, and the waterfront landscape is infiltrated into the area, and sports activities facilities and leisure plazas are arranged in places with large space as places for residents' activities.

Three theme routes are planned, which are the Old Street Discovery Tour, the Kechuang Experience Tour, and the Leisure and Recreation Tour. The public nodes besides River are connected in series to create a communication place (Figure 15).



Figure 15 Theme tours and public events

4.2 Reconstructed River Street Space

Due to the acceleration of the construction of the new town, the original river street space of Zhangjiang Old Street has been destroyed, and the modern waterfront space is obviously not suitable for this historic land. By combing the existing architecture and space texture, we summarize the past river-street relationship of Zhangjiang Old Town based on historical images, hoping to rebuild the river street space and continue the traditional space pattern of the old street. According to the existing building quality, the buildings that need to be demolished and can be reconstructed are selected, and new buildings are implanted to bury the damaged space. The original space texture of the old street is restored and continued. Some of the waterfront space design direct waterfront commercial interface, enhance the accessibility of the waterfront space, and form a continuous pedestrian street on both sides of the river bank. Thus, a building-street-river-street-building spatial relationship is rebuilt(Figure 16). The bridgehead is designed with a relatively small open square to form a small public node in the neighborhood. The riverside combines commercial buildings to form a good leisure and commercial space. The outdoor teahouse and viewing platform are set up to reshape the traditional watertown atmosphere.



Figure 16 Spatial relationship of river and street in Zhangjiang Old Street

4.3 Shoreline design for different people and functions

The waterfront space adopts a differentiated design approach to the functions of both sides of the river to create a variety of waterfront space forms and meet the needs of different groups of people. The shoreline can be divided into four sections according to its functions: the living section on the west side, the river intersection section, the Zhangjiang Old Street section, and the Guanglan Park section.

The living section on the west side: the riverside is dominated by talent apartments, commercial and residential areas, and the living atmosphere is strong. The riverside creates a community atmosphere and increases the space for residents to do some activities. The original single straight shoreline is partially widened to form a multi-layer retreat, and a continuous two-story water walkway is provided in combination with the two sides to provide a venue for fitness, leisure, and community activities (Figure 17, Figure 19).



Figure 17 Waterfront perspective of the living section on the west side

The river intersection section: At the intersection of the two main rivers-Majiabang River and Lvjiabang River, it is the most crowded place for crowds. Therefore, it is necessary to design a shoreline with a high degree of publicity to provide outdoor activities and make full use of the waterfront. The landscape creates a vibrant and open atmosphere. Design a shoreline form that is open to the surface of the water, and maximize the provision of a hydrophilic space by adding sunken plazas, waterfront terraces, and stepped slopes. Part of the waterfront building has a roof garden that provides a rich view space in the vertical direction (Figure 18, Figure 20).



Figure 18 Waterfront perspective of the river intersection section

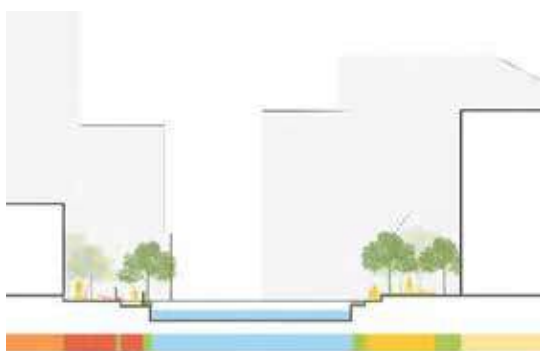


Figure 19 River section of the living section on the west side



Figure 20 River section of the river intersection section

Zhangjiang Old Street section: There are many commercial buildings on both sides of the old street, and the shoreline has been redesigned. When the street is indirectly facing the river, it is completely open space. When the building is directly facing the water, the street is a semi-open space on the inside and becomes the backyard of the waterfront shop. The two ancient bridges, Zhong'an Bridge and Taiping Bridge, are restored, and the landscape and the directly hydrophilic steamed buns are intertwined to form an ecological and artificial mixed coastline. The traditional waterfront forms such as Shantou, plank road and wooden bridge are used to

link the waterfront street with the Lvjiabang River. The riverside space occupied by the residents is designed to open to the public, forming multiple riverside parking spaces and reshaping the atmosphere of Zhangjiang Old Street. (Figure 21).

Guanglan Park section: The south bank of the Majiabang River on the east is Guanglan Park. The landscape resources are good and the flow of people is dense. It is in stark contrast with the landscape on the north bank. The waterfront space between the two sides lacks contact. Design a waterfront revetment that is partially open to the river and form a contrast with Guanglan Park. The tour line in Guanglan Park is also close to the river. The hydrophilic platform is added to the narrow river. People can directly enter Guanglan Park from the north side, which also enhances the accessibility of Guanglan Park and the radiation capacity to the surrounding area. (Figure 22).



Figure 21 River section of Zhangjiang Old Street Section



Figure 22 River section of Guanglan Park section

4.4 Pay attention to walking space

The entire area requires people-oriented, paying attention to the walking experience and weakening traffic. The internal roads are dominated by narrow urban roads, and landscape and lifestyle roads are preferred. The two main rivers are the main open space streamlines, extending the public corridors, connecting the Guanglan Park and the Zhangjiang Theme Park on both sides, and infiltrating into the surrounding areas to increase access to the waterfront space to form a public space network(Figure 23).



Figure 23 Walking space system

5 Conclusion

Zhangjiang Science City is an outstanding representative of the construction of Shanghai new town, but there is still a phenomenon of low vitality in the north, and there are problems such as insufficient supporting facilities, lack of street life, unused waterfront space, and destruction of cultural memory. This reflects the lack of humanistic care and quality in the planning and construction of the new town. Zhangjiang Old Street bears a long history of Zhangjiang area, and the change of its waterfront space reflects the change of urban construction to the spatial pattern of old towns. Through field research, we found that the waterfront space in the Zhangjiang Old Street area currently has problems such as poor accessibility and simple bank line, which leads to the lack of waterfront space vitality. In view of the above problems, we proposes a redesign of the waterfront space with four strategies as follows: public functions to be concentrated in the river, shoreline design for different people and functions, and pay attention to walking space. We hope it can activate the entire Zhangjiang Old Street and even the Zhongshi unit.

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PRELIMINARY STUDY ON THE RENEWAL STRATEGY OF THE NEW ESTATE FOR WORKERS : FROM THE PERSPECTIVE OF PLACE-MAKING

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Abstract: Public spaces could be the embodiment of urban culture, as well as the collective memory of the neighborhood residents. In the context of China's urban development transitions, paying progressive attention to quality improvement, this paper selected representative “the new estate for workers” in Yangpu District Shanghai, which providing to workers in the past planned economic system. From several aspects, such as “quantity, order, surface and shape” analyzing the site's physical spatial feature, founding that it faced the drawback of “old, worn, isolated and lack” in the development .Meanwhile from the perspective of place-making, exploring unique opportunities and resources related to the collective memory. Eventually, this paper proposed its spatial and environmental design update strategy in terms of “recall, live, experience and link”

Keywords: the new estate for workers; update strategy; public spaces; place-making

1 Introduction

In the 1950s and 1960s, when Shanghai experienced socialist transformation, a large number of “the new estate for workers” were built, because it showed the superiority of socialism on the one hand, and on the other hand, “the role of urban productive functions” requires the active participation and input of the working class (Luo Gang, 2007). Then, in order to comply with the development of China's different transition periods, the industrial upgrading and migration has received enough attention, but the “the new estate for workers” and other renovations have not been paid attention. At present, China's urban construction has gradually changed from quantitative expansion to qualitative improvement. Urban renewal as an inevitable stage and major challenges of urban development, the important connotation of high-quality development is urban quality and urban experience. In the post-industrial era, the construction of creative cities guided by human resources needs to bridge the fragmented social space and use the construction of old communities as a mean to improve the quality of urban public space to cause residents' spontaneous activities.

The quality of life of the old workers living in the new estate for workers has not improved. It is especially important to propose a space environment renewal strategy, to restore the life function of the streets and implement kind of culturally oriented urban renewal. The community as the basic unit needs to activate its innovation elements, update infrastructure and service supply requirements, and

provide more incubation space for the overall spatial and functional replacement of the "re-industrialization strategy" of upgrading the creative industry in Shanghai.

2 Lot analysis - quantity, order, surface, shape

2.1 Quantity: Spatial scale and scope

This article takes the example of the “Kongjiang Village” in Yangpu District, Shanghai, which is located on the northeast side of the central city of Shanghai, between the Inner Loop and the Central Loop, about 2km away from the Wujiaochang area, one of the Shanghai sub-centers (As seen in Figure 1). The scope of this study is from Songhuajiang Road in the north, Kongjiang Road in the south, Yingkou Road in the east, and Huangxing Road in the west. The total area is about 1.1km² . Within the scope, there are 14 residential areas in the form of “the new estate for workers” such as Kongjiang Fourth Village, Kongjiang Second Village, Kongjiang Fifth Village, Kongjiang Third Village, and Kongjiang First Village . Each district is almost 5-17ha, basically belongs to the layout of small neighborhoods (As seen in Figure 2).



Figure 1: Study area location map



Figure 2: Study area division map

The main roads in the study area include the Jingyu Middle Road, Yanji Middle Road and Yongji Road in the West-East way, and Jingyu South Road, Cangzhou Road, Shuangyang Road and Yongji Road in the South-North way . The width of Jingyu South Road and Jingyu Middle Road is about 10-12m, the width of Cangzhou Road and Yongji Road is about 12-14m, and the width of Yanji Middle Road and Shuangyang Road is about 15-18m (As seen in Figure 2 and Figure 3).



Figure 3: Field research photos

The top [from left to right]: Jingyu South Road, Jingyu Middle Road, Cangzhou Road

The bottom [from left to right]: Yongji Road, Yanji Middle Road, Shuangyang Road

2.2 Order: Spatial texture and order

Spatial texture and order is a manifestation of the localization characteristics of this area in the historical dimension. There are many residential forms in the study area. For example, "the new estate for workers" housing mainly in the form of patches for multi-storey buildings determinant layout and high building density from the architectural texture analysis. The other residential building types are mainly high-rise point layouts with low building density. Meanwhile, although the area dominated by some public facilities is mainly low-rise, the building covers a large area. Overall, the compactness is not high, and only the layout of the building is considered. The consideration of the external space environment is insufficient, and some public facilities also cause the mutation of the texture in the lot (As seen in Figure 4).

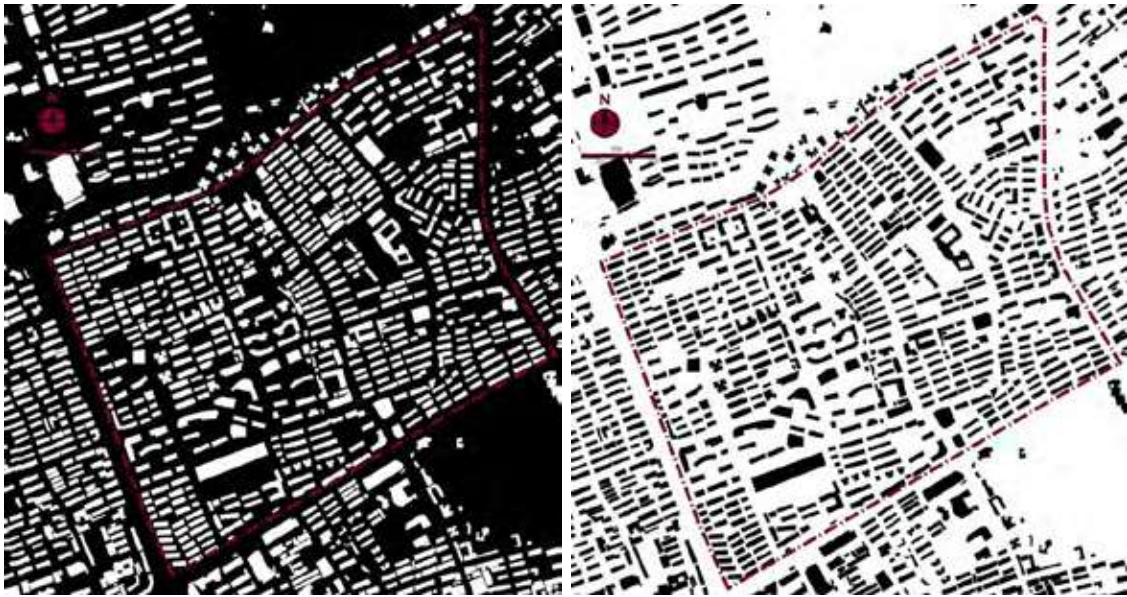


Figure 4: Texture analysis of the relationship between architecture and space

2.3 Surface: Spatial organization and interface

Starting from the spatial organization of different functions within the scope of research, the overall living space is mainly equipped with educational facilities, ministrant facilities, medical facilities and living and commercial facilities. Among them, the living space can also be divided into three different levels, the new estate for workers built in the 1950s and 1960s, the multi-storey residential quarters built in the 1980s and 1990s, and the high-rise housing buildings built after the 21st century in gated community . From the perspective of space and street interface, although there are many urban roads in the scope, the whole section is divided into 14 small neighborhoods, but the overall interface continuity is not high, and the road is only used as the skeleton of the division space. The east-west way road and street commercial interface creates a good vibrancy atmosphere, but the south- north way road is slightly insufficient due to the residential layout .(As seen in Figure 5)

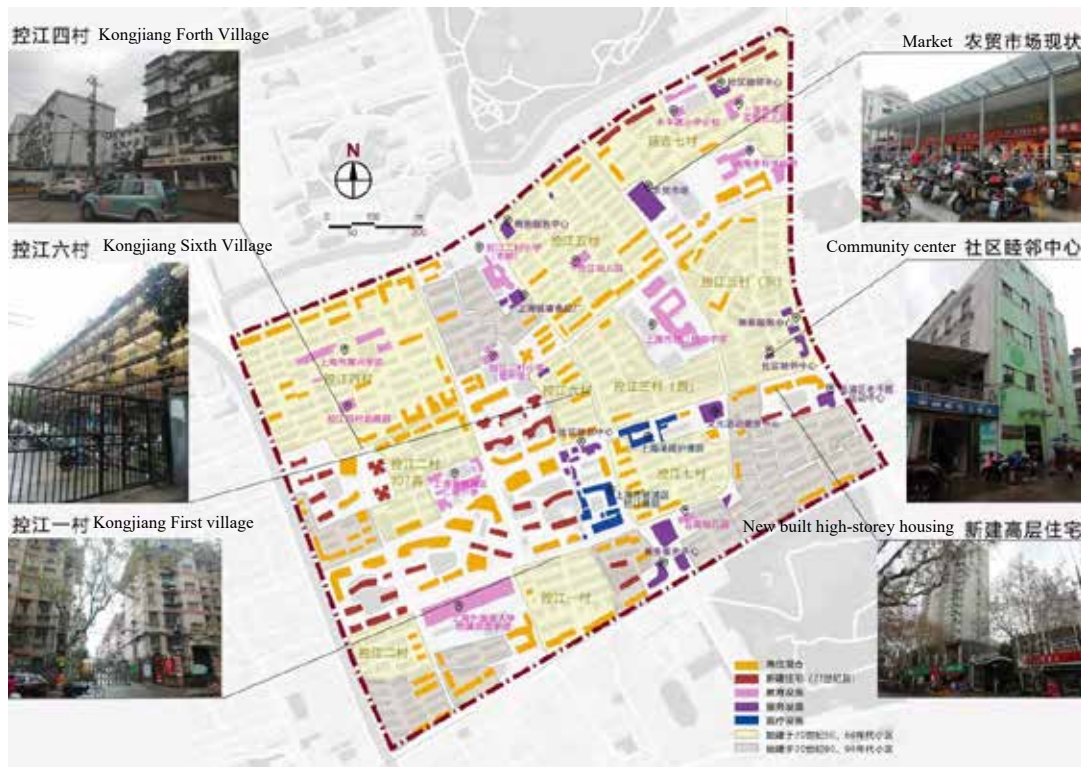


Figure 5: Spatial function organization analysis map

2.4 Shape: Spatial form and streamline

The spatial form is, to a certain extent, a microcosm of the era. As time goes by, the overall spatial form as a local continuation can also reflect the characteristics of the times. It can be seen from Figure 6 that most of the houses built before the 21st century are mainly low-rise and multi-storey, and their architectural forms constitute the main spatial form within the scope. However, with the development and construction of the real estate market, some gated communities have appeared. It appears in the high-rise point or plate form in the section, resulting in a morphological feature of overall disordered chaos.



Figure 6: 3D map of buildings and spaces forms

After excluding the educational facilities, the medical facilities, and the newly-built gated communities, it can be seen from the analysis of open pathways district 3, 8, and 14 have high connectivity with the surrounding roads, and the connected roads are not interrupted by the above-mentioned land use ; but district 4, 6, 7, 10, and 11 are occupied by the above-mentioned land use, resulting in poor connectivity. From the perspective of open green space, there is little room for residents to open up and use, and there is a shortage of open space. At present, two examples can also be seen that there are few people in use and insufficient space for activities (As seen in Figure 7).



Figure 7: Open pathways ,traffic sites and open green space maps and field research photos (①on the top right and ②on the bottom right)

3 Problem analysis - old, worn, isolated, lack

3.1 Old: The living population is aging, and the corresponding service system is imperfect

According to investigations and interviews with some office staff, the majority of the residents in the study area are old retired workers from the typical factory, such as the Shanghai cigarette factory, and the average age is about 60 years old; and there are two relatively complete medical facilities in the scope. However, currently it is less suitable for elderly activities in terms of activity space and environment. to meet the diversified needs of the elderly, not only indoor activities, but also outdoor spaces. (As seen in Figure 8).



Figure 8: The elderly are resting in the community service center

3.2 Worn: Buildings, space and environment facilities are worn and have poor livability

Most of the houses within the study area were built in the 1950s and 1960s , at that time ,its kind of the product of company welfare in the planned economy period, even after the 1990s renovation also capped nearly three decades ago, the overall architectural space livable poor . Although some buildings have applied for painting renovation of the facade of the housing, the lack of consideration for the systematic renewal of the residential environment of the urban community, the material space system composed of the building and space environment lacks complete planning and design.

3.3 Isolated: closed space partitions cause social interaction barrier

Due to the construction of a number of closed communities with commercial houses, there are high walls around them to ensure their safety. However, the security and openness of space are always two contradictory features. The physical isolation of material space may even lead to the gradual isolation of neighborhood interactions at the social level (As seen in Figure 9). How to construct semi-public space and semi-private space is a problem that should be considered as a planning designer. From the means of creating space, to reduce the barrier of social interaction, we should provide communication space and platform for the harmonious coexistence of neighborhoods.



Figure 9: Gated residential district entrance signage

3.4 Lack: lack of continuity protection in a unique cultural background

As a microcosm of an era, " the new estate for workers " is an image of a cultural concept and a spatialization of political ideology (Zhang Wei, 2005). How to seek new development in the current era? After research, there are very little response to history in the lot, except for the texture layout of the building and part of the road based the historic layout, the other environmental facilities are lack of consideration of the cultural background, precious historical and cultural resources are lack of sustainability protection and extension.

4 Strategies preliminary - recall, live, experience, link

4.1 Recall: built on the collective memory of the place

When Shanghai pursues a superior global city, history should not be forgotten. In the new development context, more attention should be paid to creating space that echoes historical and cultural memories, considering its unique cultural background and protecting its sustainability. So that residents living in the area have memories have resonance.

Habwah defines collective memory as: "The process and outcome of a member of a particular social group sharing the past. The condition for ensuring the inheritance of collective memory is that social interaction and group consciousness need to extract the continuity of the memory." The construction of the site also provides basic material conditions for the formation and review of memory. The relationship of place identity is also interdependent, providing a material basis for the identification of individuals, society, and even historical memory through the construction of buildings, spaces, and environments (As seen in Figure 10).



Figure 10: Schematic diagram of place identity

After the analysis of the current situation resources, we will construct a site based on collective memory within the scope of the whole research, and try to reorganize the overall spatial structure. For the typical roads, the section

transformation is shown (As seen in Figure 11 and Figure 12). Yanji Middle Road is the main traffic-type road within the scope, and the height of the buildings on both sides of the road section is inconsistent. The strategy proposes to construct a continuous commercial interface and activity interface, to guarantee the continuity of space by constructing a miniature park. While the width of Jingyu Middle Road is narrow, the height and width ratio of the road is close to 1:1, which is suitable for constructing life-type roads, proposing the addition of a characteristic guiding sign system and cross-section processing of continuous activity space. Both transformation methods are to expand the pedestrian activity space as much as possible, so that the vehicle space is controlled to the lowest level. The reference for the miniature park can be found in the reconstruction project of Sujiatun Road in Yangpu District, Shanghai (As seen in Figure 13).



Figure 11: Reconstruction of Yanji Middle Road Section

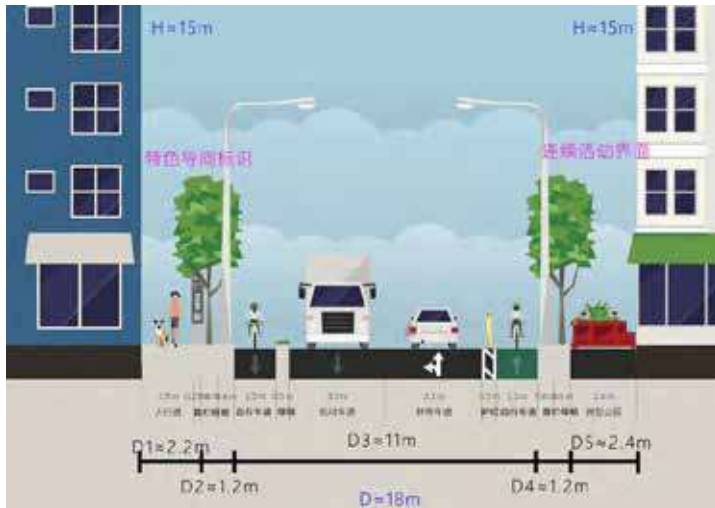


Figure 12: Reconstruction of Jingyu Middle Road Figure 13: Miniature park case

4.2 Live: Networking reshapes the vitality of public spaces

Urban space contains social concepts and human values, which are reflected in the lives of the people in which they live, which can be clearly experienced in the old area of the city (Zhoujian, 1996). How to reshape the vitality of public space, first of all, we can focus on the accessibility of space, put more indoor activities in the urban space, implanting the vitality of the living scene for the city. Meanwhile we should focus on strengthening the external communication of the event space. The road network density of the encrypted open path provides more open space, which is conducive to agglomerating more public activities to enhance the attractiveness of its space. In the strategy, we try to integrate the design of the openable residential area, connect the “communication interaction loop”, and set up the open center of the area in combination with other facilities in each area to improve the accessibility of each service function (As seen in Figure 14).



Figure 14: Spatial structure network analysis

Secondly, the construction of public space can not be renewed from a single location or facility. It should be combined with the dynamic street interface, living area and other linear surface space, taking into account the network reshaping measures from the entire scope to create a compact and continuous space interface. It can help to form the diversity and agglomeration of public life, and consider the diversity of time meaning in the overall order, so that the entire area is full of vigor and vitality. In the strategy, we try to order the main street as a major comprehensive axis, at the intersection of the lot as a core node to create; connecting the Jingyu Middle Road, Jingyu South Road and Yongji Road to create a "*dynamic living loop*" putting to provide comprehensive services to the leisure life of residents; and constructing the Cangzhou Road as a characteristic memory street, build a sample street as a place; building a small "green heart" at each major road node, and adjust the overall network planning to reshape the vitality of the site. According to the author's research, the reconstruction project at Sujiatun Road and Fuxin Road in Yangpu District, Shanghai is worth learning (As seen in Figure 15 and Figure 16).



Figure 15: Fuxin Road Pocket Park



Figure 16: Sujiatun Road Miniature Park

4.3 Experience : Enhance the intuitive feeling of identity and orientation

The mutation of spatial scale and texture will form the spatial identification. Whether it is for the architectural scale or the street space, the attention to the identification and orientation of the construction space can enhance the intuitive feeling of the residents; for example a building balcony , enclosed courtyard or in the life street, event plaza, identify and guide space are based on site-specific feature shape. At the same time, focusing on the construction of the iconic venue can also provide more interesting space in the lot. However, when creating such a space, attention should also be paid to the isomorphism of the local space, following the basic road network or architectural texture, and usually selecting the necessary nodes in the daily life path of the residents, by establishing a visual focus. So that the attractive space landscape is shaped and styled. We can also use design techniques such as color change, height and size contrast to enhance the visual perception of its identification and orientation. At the same time, attention to the establishment of the landmark will not only affect the research scope or even the impact of the development of the lot and the region from a larger scope.

Taking the core node transformation as an example, the current space is divided into three types of typical space (As seen in Figure 17). Space ①, ④ Can be summarized as the surrounding street space for service business, and both of them have the opportunity to create varying space; space ② due at the exit of the bank, at present, the vitality is only poor. Just a kind of street waiting space; space ③ is a rare public open space in the district, but there are fewer people in there because of the lack of interesting and vivid activities. Through the above analysis, we try to propose the following transformation means: considering different use functions, combining a variety of guidance and service facilities in a large space, setting up an activity space, and creating a "mutation" in the space, through color change, scale change. Different facilities are set up , combining with the small scale space, different service facilities add fun to the pedestrian space and increase opportunities for interaction. Small-scale facilities such as newspapers, signs, etc. can be set up in a limited space. (As seen in Figure 18).



Figure 17: The current situation of the core node space of Yanji Middle Road

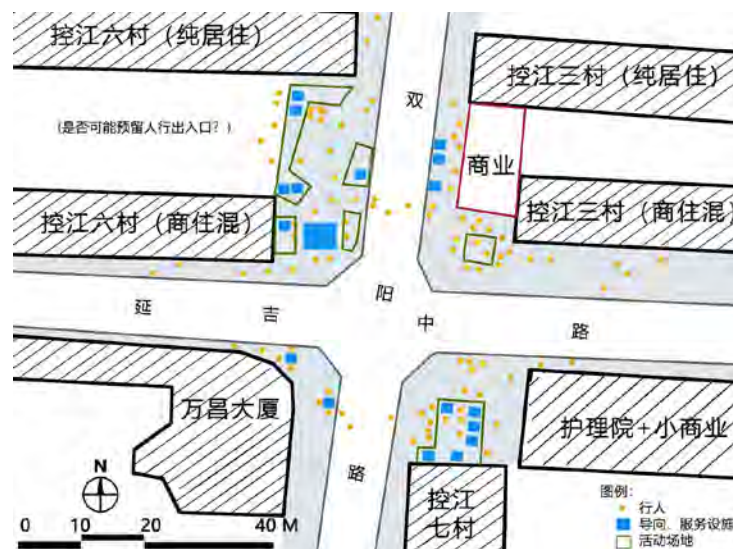


Figure 18: core node space transformation concept map

4.4 Link: Moderately mixed development guarantee smooth Neighborhood Communication

Moderate mixing use and open positive spatial construction are important foundations for building a harmonious neighborhood. Residents living in the same area have the responsibility and obligation to contribute their own homes and create a livable living environment. From the perspective of space, more private and semi-private spaces will be transformed into semi-public and public spaces (As seen in Figure19). Meeting the needs of construction of space environment for different ages people, we can consider the optimization of mixed arrangement of functions such as business, leisure and amusement. Different leisure places providing a platform for effective communication among residents' neighbours.

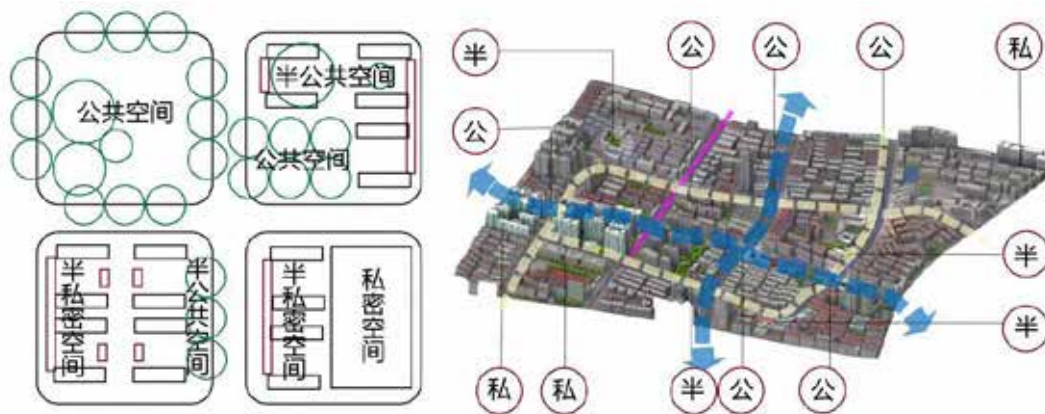


Figure 19: Space-level hybrid concept map of transformation

We should also consider the streamline of residents' behavioral activities, comprehensively meet their life experience and service needs, and build a public space suitable for their communication based on the scale of people. Usually small- scale space will also give people a sense of security and intimacy, making residents more willing to communicate with each other. In this case, it is based on small-scale public space construction, moderately mixing peripheral service functions, and providing the possibility of ensuring smooth communication in the neighborhood. Taking the Cangzhou Road constructed by the proposed characteristic street as an example, firstly we could integrate the interface into the mixed layout of commercial and residential, and then the street space formed by different interfaces could be classified and guided. It can use the additional facilities space, green space, guiding behavior streamline and different interface processing on both sides to optimize pedestrian experience and ensure smooth communication (As seen in Figure 20).



Figure 20: The status quo analysis and transformation concept of the characteristic memory street Cangzhou Road

5 Conclusion

This paper takes the example of the “Kongjiang Village” in Yangpu District, Shanghai, from the aspects of spatial scale and scope, spatial texture and order, spatial organization and interface, spatial form and streamline, analyzing the spatial characteristics. Then through the analysis of the problem, it is found that its’ unique cultural background lacks continuous protection, closed space partitions cause social interaction barriers, space environment facilities are old and worn, and livability is poor. The author tries to construct an urban renewal strategy based on the perspective of place identification, and proposes suggestions for the renewal and development of the “the new estate for workers” section from the aspects of site construction, network reshaping vitality, enhanced identification and orientation, and moderate mixing. At present, the sense of place identity that is gradually weakened, it needs to be intervened from the means of space, and gradually restore the public value that workers should have in the new village. As a review of the memory of a generation, a realistic image of history, and the continued inheritance of a cultural resource, we have the responsibility to think and inspire its protection, development, and transformation. From the perspective of the development of time dimension, in the future, we can comprehensively consider the co-construction, co-governance and sharing of the old public housing community, and actively use the open street system to enhance its comprehensive service functions, to build more low-density low-intensity mode to achieve internal and external linkage. Realizing the cultural-oriented traditional community renewal and demonstration, attracting more entrepreneurial, innovative and creative people for urban development, and enhance the identity of the new and old integration.

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Urban and Regional
economics of transition

Woman Labor in Transition Process from Agriculture to Industry Sector

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Abstract: Through the change in rural development plans, non agricultural sectors are supported in rural areas to decrease rural poverty, specially for women. Creating employment opportunity have an important role in women empowerment. But traditional gender roles build huge obstacles in front of women. Understanding these gender roles and the resistant mechanisms that are invented by women is really important to create new strategies for decreasing women poverty and deprivation.

Keywords: women labour, rural development, agricultural industry, gender roles.

Introduction

From 90's the inequalities between cities and rural areas increased dramatically. Rural areas became poverty and deprivation places. Immigration from rural areas to cities increased very fast and to keep population in rural areas, regional and rural development polices are needed to have another direction. Rural development plans started to support non agricultural sectors instead of agricultural growth. The industry investments on rural areas offered women paid jobs. Woman's working outside the house challenged the gender roles but found a way to continue.

Geyve-Pamukova region is a rural area in Sakarya, Turkey. In last 20 years two large-scale factories and some small factories opened in this region. And women transformed from unpaid family worker to paid workers. In this paper it will be discussed how this transition effects the physical and social structure of this region.

For the study, the women who works in the large scaled-factories and their employers are interviewed. It is seen that women don't transform the place, but they become more mobile and have more right in decision making process in family. But there are some gender based barriers for women empowering. These barriers are not only created by husbands or employers but also women feel unease because they can't perform their "wifhood" or "motherhood" duties properly. In this study the social change caused by working women, the barriers in front of these change and the resist mechanisms of women will be discussed.

Rural Development and Women Labor

The rural areas had a great importance when the agriculture had a high share in employment and gross national product, but the development of mechanized agriculture and the industrialization in urban areas put the rural areas in the second place and so rural areas became places of deprivation by comparison with urban areas (OECD, 2011).

The inequalities between rural and urban areas and the deprivation in rural areas became an issue firstly in the 1950s, to eliminate these inequalities the concept of rural development has been increased. The first rural development models, which took economic growth as a target by state aid. This method increased the growth and efficiency in the agricultural sector but this growth was not reflected on the life of rural society (Ellis and Biggs, 2001).

With the global competition in the 1990s, the differences between rural and urban areas have deepened. The deprivation in rural areas and the sectoral diversity in urban areas caused decrease of population in rural areas. For the first time in 2007, the population in urban areas has passed through the rural population and the rural population has decreased much faster in developing countries. (data.worldbank.org).

In rural areas, the development of agricultural growth which provides by state aid deepened the problem instead of solving. It revealed that a change in the policies for rural areas is necessity. In addition to economic growth, creating high quality living spaces and improving social life has been the main target of these new rural policies. Today's rural development policies also aim to increase the competition in the global system by developing non-agricultural sectors in the countryside, to provide the physical and social infrastructure that will attract the investor to the rural area, and to create qualified workforce to work in these new sectors. (OECD, 2011).

The economic growth-oriented development strategies which are adopted before 1980 have deepened not only the rural / urban inequalities but also the women / men inequalities in rural areas. In 1979, the United Nations drew attention to the inequalities experienced by rural women in the Convention on the Elimination of All Forms of Discrimination against Women and proposed solutions to these inequalities. The Article 14 addresses directly the women in rural areas. This article makes contracting countries responsible for providing certain rights for rural women. These rights are the right to participate in the plans, the right to access to health services, the right to access agricultural credit and marketing facilities, and the right to housing. This convention also recommends to develop empowerment policies which will help women to access technology or credits for enterprising. (UN, 1979).

It is important to provide employment opportunities as suggested by rural development plans in resolving rural women's poverty and lack of access to services. But without analyzing the social acceptances which are shaped by gender roles, the obstacles to women's participation in paid employment and reactions of women to these obstacles, creating employment opportunities can be only a limited solution

The social life in the rural areas is mainly based on ensuring the continuity of agricultural production and shaped by natural conditions and traditions. Gender roles are also directly related to agricultural

production and traditions. The rural women work on the fields as men for agricultural production but they are also responsible for other jobs as taking care of animals, drying the products, feeding the workers. These jobs are handled at home with the woman's reproduction duties. And the most important difference between men and women labor is the women are not paid (Berlan-Darque, 1988; Massey, 1994; Little, 2009). The woman labor is a free labor which is transferred from father's house to husband's house by marriage. Just because gender roles do not allow them to leave the house for a long time; women continued to deal with labor-intensive tasks while men use knowledge and skills and marketing of products. In this system all of the family income is controlled by men, women are excluded from domestic decision-making mechanisms.

Inclusion of non-agricultural sectors in rural areas means both employment for rural people and cheap labor for the investor. Sectors like agriculture and textile (which employs women) being predominant in rural areas created job opportunities for rural women. Working in the factory means not only getting out of the private area and taking a part in public area for woman but also means getting paid for their labor. But working outside of the house doesn't mean that women are not responsible for domestic work anymore. Taking care of elders and children and domestic works mean double work for women. And giving the control of the money to the husbands as head of households can mean working out of house is a burden for rural women not a tool for empowerment. So to reduce women poverty the rural development policies have to analyse local social acceptances, gender roles and the limitations which are build by these roles and social acceptances.

This paper aims to understand how gender roles and local social expectations shape working women's daily experiences by interviewing industrial worker women in a rural area. The field of study is Geyve Pamukova region, which is a rural center and locates in Sakarya, Turkey. The regional development plans aim to reduce women poverty and empower women by creating employment opportunities.

Rural Development in Turkey

Turkey adopted planned development firstly in 1960s. Until the 1990s development used to mean basically economic growth. Development plans in this period were largely limited to modernization in agriculture and infrastructure improvement.

The worldwide changes in rural development policy effected development plans in Turkey too and in the second half of the 1980s the concept of rural development has began to change in Turkey. The country development plan which was prepared in 1989 aimed that facilitating the service and information flow in accordance with contemporary needs for the rural area; supporting agriculture-based industrial investments and increasing non-agricultural economic activities (DPT, 1989).

In the first decade in 2000s Turkey started a localization process in governance under the effect of European Union harmonization process. This localization changed the concept of development policies. The central development policies transformed into regional development policies. State Planning Organization was closed and 26 regional development agencies were established. These

Regional Development Agencies aim to build a cooperation between public sector, private sector and civil society organizations, to control utilization of natural and human resources, to accelerate regional development by using local potential and to decrease inequalities between regions. Reducing inequalities between urban and rural areas has a special importance to keep population in rural areas.

Regional and Rural Development Plans for Study Area

The study area, Geyve Pamukova region is located in the north west of Turkey and 170 km far away from Istanbul, the biggest market of Turkey. This region is in TR42 district with Sakarya, Yalova, Düzce and Bolu provinces. East Marmara Development Agency is responsible for this district and defines these cities as old agriculture cities which lose their character under pressure of Istanbul's deindustrialisation process. In 1980s industry was decentralized from Istanbul and the located in nearby cities. These nearby cities were agriculture cities, the population mostly used to live in rural areas. And this process from agriculture to industry changes nature, working habits and all social structure. The first development plan aim that the cities keep their own character as much as possible to sustain agriculture product and educate labour to adapt this process.



Figure 1: TR42 Cities and Istanbul

The second development plan (2014) divides the district into three regions by considering socioeconomic qualities: Global Region, Dynamic Region, Periphery Region. Adapazarı, İzmit and Gebze are the important economic centers of Global Region. The 94% of population lives in urban areas in this region. This region has the highest development level and most of the industrial investments. For this reason many people migrate to this region from Dynamic and Periphery Regions. Dynamic Region is a transition zone. This region has still rural characteristic but state and private sector create new industrial zones in this region.



Figure 2: Three Regions and Study Area

The Periphery Region has the biggest areameter and lowest population density. The study area is in this region. The lowest development level, mostly rural population, problems in accessibility and reachability to the services are the main characteristics in this region. The economy is not industrilized and mostly based on supplying raw material. Only 13% of the population lives in this region. And throughout the district population growth rate in the total district is 18% but in Periphery Region is only 3%. In the upcoming years there is a risk of losing population in this region.

2014 - 2023 Development Plan has three main purposes: Liveable Region, Competitive Region and Learning Region. And there are goals under these aims that are specific to needs of each regions. The vision of Periphery Region is sustaining agricultural production and supporting Global Region. To keep the population in rural areas plan gives a critical role to agricultural development and raising welfare level in rural areas. Building an integrated production system is an important key for rural development. To achieve this goal rural areas should process the raw material and sell products afterproduct. In order to process raw materials, it is frequently mentioned that the human resources must be enriched and the labour should be prepared for this new production system by providing the necessary education.

Regional development plan considers gender inequality and rural women poverty. Social diagnosis studies aim to discover employment rate of women, accessibility to social services and educational status of women. And by discovering these problems local solutions will be provided. The plan also suggests to support women entrepreneurship and provide micro credits for women entrepreneurs.

For Geyve Pamukova rural region, supporting agricultural industry investments has an important role the decrease rural poverty. Agricultural industry will create a huge employment opportunity and and alternative to agricultural production. According to plan creating women employment will raise women welfare level and women will access services more easily. All these strategies are important

and effect women's life but positively but they don't consider local life, social structure. They don't analyse social reactions, obstacles and gender roles.

For this study, 45 women worker and three managers from three different factories were interviewed. The oldest of the factories provides service for twenty years and the newest one for ten years. The gender roles and social living were shaped by traditions in study area and women's participation in paid employment challenges these traditions and social living. The interviews questioned that why do the women work, how do they spend time after work, in what do they spend their money, decision making processes in family, with whom do they share domestic work. With these questions it was aimed to understand how does the working effect the lives of women, can the women workers access the services easier, the obstacles for women to gain strength and the resistance mechanisms created by women for these obstacles. Hopefully this study will be a framework for future investments and development plans.

Interviews with Company Representatives

Two factories belong to food companies and one of them was opened in 1992, and the other one in 1996. Both of these factories were located outside of the settlement, on the road to Istanbul. The third factory is a textile company and was opened in 2002 in Geyve Organized Industrial Site, closer to the settlement. In all these factories workers work in shifts. Regional development plan gives an important role to these companies to create women employment, specially food companies. So the the interviewees are chosen mostly from the food companies

Reasons to Choose This Region

Firstly it was asked to company representatives that why did the company choose this region. Three of them told that the location is very determinant in making this choice. This region is close to the Istanbul, which is the most important market in Turkey. The rural character of the region do not provide any advantage for cheaper labour for food companies and they also don't consider clustering because the both of them use their own infrastructures. The textile company is located in Organized Industrial Site and moved there during the Istanbul's de-industrialization process. For the textile company, it is important to be close to the Istanbul market but they also benefit from the advantages that are provided by Organized Industrial Site. The company representative also told that the region provided an unexpected advantage, labour force. Specially finding women worker is not an issue for the textile company.

Thoughts About Female Workers

The advantages and disadvantages of employing women were asked to company representatives. The social life in the region was shaped by traditions. The women do not spend time with men if they are not from family. The friendship between a woman and a man is not approved by society. But in these factories women and men work together in the same place. It was asked to the representatives if that caused any problem.

One of the company representatives is woman and she told that organizational culture of her company supports women employment. The company has branches on all regions in Turkey and employs women in production, distribution and management. In this factory, there are 220 women and 305 men workers. 208 women work as blue collar workers and 8 women work as white collar.

The company representative doesn't think that there is a difference between women's job and men's job in production. The maximum weight, break time, needed skill are same for women and men in production process. The company doesn't hire part time or seasonal workers. Women and men get the same wage. So they don't need to choose one gender and try to keep a balance between number of men and women employees. The management of the company also supports the women to be machine operator or forewomen when they are experienced. The company considers to empower women but they also know the limitations which are shaped by social life in the region. Production process has different production lines and mostly workers of each line have the same sex.

The company representative explained this situation by employees' own choices. She also told that if women and men work together in the same line there is always a foreman. Because the male workers don't want to receive orders from women but also the women hesitate to give orders to men. She thinks that working together in factory helps to normalize women men relationships but there is a still long way. Even the company has zero tolerance for gossips and slanders it is impossible to stop people talking about their coworkers.

The representative of the other food company defines his company women friendly too. There are 900 workers in the factory and about 100 workers are female.¹ 10 women work as white collars in quality control department, rest of them work as blue collars. These company representative thinks that there are two important difference between male and female workers: women are physically weaker and they have domestic works beyond the working in factory. So they give the physically less tiring jobs to the women and let the women to regulate their shifts in a way to taking care of their children and home. The company also organizes special events in Mother's Day, that women can join with their families and give to them presents. Despite the company representative emphasizes the respect to motherhood, the company has no day care center or nursery room. Another women friendly policy of the company is employing the women who really need to work. It is important to understand which women really need to work according to company representative. The company representative and the owner of the catering firm that provides catering and cleaning services to the factory support women to work if they really need. And the women who really need to work are widows who have no support from family and have to feed their children. Catering firm owner thinks that the women who insist on working and earning their own money are greedy. When they earn their own money they become rebel, don't respect the head of house and the families come apart.

¹ This company representative didn't give the exact numbers because of company policy.

Lastly, in textile company there are 520 blue collar workers and 390 of them are female. The company will increase the employment capacity and hire 200 more women in 2019. The company representative defines the job as an intricate job that requires maximum attention and women are much better in these jobs. So the company prefers to employ women. Female workers are mostly single or childless young women. The women do not prefer to work when they got married or having kids. The company representative thinks that women's priorities are changed once they got kids and they don't want to work anymore.

All of the three companies define themselves women friendly but none of them have daily care centers or nursery rooms. Only the female company representative accepts that it is a huge problem. It is not a choice for company, but the current conditions causes this deficiency. The factory campus is noisy and smelly. And also delivery from the factory continues during all day. These conditions are unhealthy and dangerous for the kids. If local government offers an appropriate place the company is ready to build a daycare center.

The representatives of the other two companies don't think that their companies are responsible for daycare centers. According to law, for food company providing daycare service is not an obligation by considering the number of female employees. And the employees of textile company are mostly single or childless women. The company representative thinks that leaving the child in daycare center is an abnormal thing for the women in this region. The women don't want to leave their kids with strangers, they prefer to get help from their mothers or mothers in law. The only daycare center in Geyve provides service to the white collar women, as teacher or officer.

Interviews with Female Workers

The thirty two of the interviewees are married with children, eight of them are single and five of them are divorced. The youngest interviewee is twenty two one years old and works in the textile company for eleven months. The oldest interviewee is sixty years old and works in one of the food companies for sixteen years. The highest education level is secondary school and none of the interviewees is illiterate.

The interviewees mostly live in town centers which are defined as rural centers by regional plan. The shuttles of companies provide transport service to the women who live in central neighborhoods, but the women who live in nearby villages need to arrive closest shuttle point. These women always travel with their husbands or male family members. None of the interviewees use their private car. The family cars are used by husbands or fathers.

Reasons to Work and Spending Items

The women were first asked why they worked and where they spent the money. While single and childless women spend the money mainly for themselves, married women with children put the family support and the needs of children first. Clothing, self care and fun come last. There are two main motivations to continue working life. one is the dream of retirement, the other is to buy a house. Having your own house also has a symbolic meaning in this region as well as throughout

Turkey. Women are very familiar with the home ownership of their relatives, neighbors or colleagues. These statements are very common in interviews “husband and wife worked together to buy a house” “despite of all the hardworking they couldn’t afford to buy a house” “they don’t have a house but spend money too thoughtlessly”. Almost all married women see women's work as wasted labor if they cannot buy a house. In a sense, buying a house is seen as a tangible equivalent of the efforts.

In this region head of the house is traditionally husband or father and has the control of the money. In families, that make a living with agriculture, when women work as paid agricultural workers, their wages are usually paid to their husbands or fathers traditionally. For this reason, women were asked who had their salary cards. The majority of women keep their salary cards themselves and find it normal to keep their own money. However, immediately after saying that they had control of their money, they felt the need to state that they spend their money for their families and they did not have any luxury expenses. . Women are better than their husbands in determining the needs of children, as well as basic needs, trips with children are paid by women's money. Women take great pride in taking their kids for weekend trips, cinema or other activities.

One of the three women who did not have her salary card said that she handed her salary card to her married son. The sixty-year-old interviewer woman does not want to shopping because she is exhausted in the factory that is why his son does it for her and others by using woman’s salary. Other two women’s salaries are in their spouses. One of the women did not understand the accounting affairs and the other said that she was working because of her husband's debts and that the money she earned was taken by her husband and deposited in the bank.

The companies don’t have seasonal or part time employees. The female and male employees work under the same conditions for same working hours and get the same wage. However women’s wage was accepted as a contribution to the family budget. Married women say that decisions about buying expensive goods such as furniture, car or house were made mostly by husbands. Husbands prefer housewives rather than working ones when women make too many comments on how to spend money.

A interviewee explains her reason to divorce with this attitude. Her ex husband wanted to spend the money that she earned by working hard and she didn’t let him and got a divorce. Divorce is not very common in her family and community but she has a “honest job” and works “chastely”. So she got support from family and friends.

All the interviewees emphasized this “working chastely”. Working outside the home is still a new concept for this region. In factories women and men work together and it causes gossips about men women relationships, and these gossips reach family members. For this reason female workers care to limit their relationships with male worker. They don’t chat with male workers, they only communicate with male workers if it is necessary for work. None of interviewees wanted to talk about details of these gossips. But they told that there is no gossip about women who cares only her job and works chastely. For the interviewees behaving chastely and limiting the relationship with

male workers are women's responsibility. Men are just men and women have to be careful if she doesn't want to cause gossips.

Spare Time Activities

The spare time activities of women were asked through interviews. The women that are married with children spend their time with family specially with their kids. Domestic works take most of their time but they believe that earning money gives them opportunity to spend more quality time with their families. They have picnic in nearby areas, visit historical and cultural places, go to cinema and shopping in urban center. And all these activities are possible when the family has two wages.

Women spend their spare time with their female workers too. Workplace provides also socialization opportunity for women. When their shift ends on the morning, women go to breakfast or drink tea in a cafe. Husbands are not jealous or unpleasant, because they know the other female workers and trust them. Spending time with other women are refreshing for the female workers. These women are mostly single or have school age children. The women with young children can't have their own time.

Sharing Domestic Work

Thirty five of the interviewees are married with children. And most of them do domestic works themselves. When a woman has an unemployed daughter, she helps to mother in domestic work. Oldest interviewee has an unemployed daughter in law and despite she has her own house she cooks and cleans for her husband's parents too. And by her help the interviewee can continue working. The interviewee is glad with this sharing, she thinks that domestic works are much harder than working in factory.

For child care women get help from other female family members. Mothers, mothers in law and unemployed sisters care the children when the mothers are at work. Women with young children can not socialize with their colleagues. They feel guilty when they don't go directly home and free the carer of the child. Only one interviewee told that her husband couldn't find job when their children are young and took care of their three children. He also cooked and cleaned house. Despite all the critics and mocks from family and friends she thought that her husband did a good job and she could earn the money without worrying for children.

Husbands don't take responsibility in domestic work or child care. And women basically accept this organization. They don't complain about difficulties of work life they think that the double working make their life harder. The job in factories is physically exhausting but when they leave the factory the job is finished but responsibilities of home continue for seven days and twenty four hours.

Conclusion

Investing in non-agricultural sectors in rural areas created employment opportunities for women and play an important role in empowerment of women. Getting paid for their labour made the

women more independent. They became more self confident because they can create quality time for their family and themselves.

Despite all these positive effects, women face many difficulties in working life. According to the community working and earning money is not a right but a privilege for women. Women have to behave decently to have this privilege. To keep their names clean they have to be always careful. However companies do not employ first degree relatives in the same campus, some friend or neighbor watches the actions of the women. The male worker don't respect the female workers. They think that the women are not good enough to make qualified jobs, so they need to be thankful and don't argue with male workers.

Women mostly have control of their money for daily needs. But as a wife and mother they put their own needs wants in second place. They don't spend money for education, self care or making savings. The important decisions are made by husbands. They work hard with their husbands to buy house or car but these properties belong to their husbands.

And the biggest problems that women have to face are caused by gender roles. Women have to cook, clean and take care of the children and elders. Factories have no day care centers or nursery rooms. Women feel guilty about living their children or take a break from working. They identify themselves as mother, daughter or wife. They can easily give up on working woman identity.

Companies have their own policies about employing women, women job definitions and opening day care centers. There is no regulation or incentives in regional plan strategies about these policies. The regional agency need to analyse local social life carefully to determine the social obstacles that stand in front of women empowerment.

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Is there a housing shortage? A post-Keynesian economics approach to the financialisation of housing in England

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Abstract: The overwhelming dominance of neoliberal economics has come under question following its failure to understand, let alone predict, the barrage of global financial crises that began in 2007/8. Heterodox economic theories, Post-Keynesian school of thought in particular, have since assumed much greater significance during the last decade as much broader and more encompassing theoretical conceptualisation of economic behaviour is established. Land and property development stands at the centre of these debates due to the fundamental importance of property in providing collateral to the private banking system when money is created. Furthermore, the neoliberal exclusion of the role of debt and financialisation in determining the growth of the global economy has encouraged a fundamental misallocation of resources. The significance of excluding debt has permitted a deep-seated narrative to evolve amongst policy makers, in which the high price of land and homes in most developed countries is indicative of a shortage of supply, whereas it is likely that the role of debt driven demand is a more plausible culprit. This paper explores the role of financialisation and money creation in the UK to better understand the impact of debt upon the presumed shortage of housing supply in England. The unswerving belief of a housing shortage in the UK is beginning to be questioned. Between 2016 and 2018 the UK government substantially reduced its 25-year projections of increased household requirements by some 1.1 million units, reducing annual needs by more than 25% to 159,000 units. The implication of such a substantial and sudden shift in projections will inevitably have a broad impact on urban planning requirements and highlights the usefulness of heterodox economic thought in untangling the complicated transition of urban planning to meet future needs.

Keywords: heterodox economics; financialisation; mortgage debt, house prices

Introduction

Just 20 years after radical government financial deregulation in 1985, the humble Building Society movement became the centrepiece of the 2007 and 2008 global financial crisis in the UK. The most dramatic disruption occurred in mid-September 2008 when long queues formed outside the branches of Northern Rock Bank in the cities and towns of England, the first bank run since 1866.

So what had wrought such devastation across the formerly humble and venerable English Building Society movement with its long and stable history of mortgage provision to the housing market, a history that dates back more than 150 years? In a word the answer is “banking”.

Northern Rock was just one of a former group of building societies which had expanded rapidly into the fast paced world of credit funded banking. Other banks, which had also

previously made the switch from Building Society to bank, like the Bradford & Bingley and the even the bigger Halifax Building Society, also became insolvent in 2008 and were either taken under state control or forced to merge with larger banking institutions.

The introduction of modern banking practices resulted directly from a government policy of wide ranging financial deregulation in the mid 1980's. The deregulation set off a chain reaction of bank created debt, widespread mortgage accessibility and rapidly rising house prices that eventually consumed almost the entire independent mortgage industry. What had once been the centuries old Building Society movement, providing almost the entire mortgage market for house purchases, was destroyed in the financial crisis of 2007/2008.

This paper explores the institutional changes within the mortgage and housing market in England that directly followed that deregulation of the financial sector in 1985 and highlights how strong house price growth is likely the result of those significant institutional changes in the banking system and the process of money creation. The advent of massive growth in mortgage availability necessarily impacted the property market directly through the demand for housing and is likely a major contributor to the substantial rise in the price of house prices over the last 40 years. Despite this financialisation of the property market there is still a predominant narrative throughout industry and government that ignores financial aspects and attributes the cause of high prices to a lack of supply resulting from unnecessarily restrictive planning policy that prevents house building meeting the projected need.

This paper will first review the evidence for a shortage of supply and then review the long-term changes that have occurred in the financing of the property stock in England.

The Housing crisis and the shortage of supply

A common refrain in the British press is that Britain is suffering from a shortage of 300,000 houses a year and that new house building is falling far short of meeting that need (Torrance, 2019). But it is hard to blame the press alone when the source of those headlines comes from the government planning department itself.

In February 2017 the Department for Communities and Local Government published a white paper announcing their housing planning policy called 'Fixing our broken housing market' and the first paragraph stated:

"The housing market in this country is broken, and the cause is very simple: for too long, we haven't built enough homes. Since the 1970s, there have been on average 160,000 new homes

each year in England. The consensus is that we need from 225,000 to 275,000 or more homes per year to keep up with population growth and start to tackle years of under-supply.” (DCLG, 2017,p.9)

A year later in a statement to the Houses of Parliament by the Secretary of State for Housing, Sajid Javid confirmed that the government planned to “deliver 300,000 homes a year in England by the middle of the next decade” (HC Deb 05 March 2018).

It is difficult to establish the exact origin of the 300,000 number but it is likely derived from the projected growth in the number of households for the whole of the United Kingdom (UK) published by the renamed Ministry of Housing, Communities and Local Government (MHCLG) and is approximately in line with their projections for England from 2014 (MHCLG, 2018). Given that England has a population of some 85% of the UK total, a figure of 300,000 may derive from that. Other studies also suggested similar projections for household formation. In 2004, the government commissioned a wide-ranging study of housing supply (Barker, 2004, p5.). Barker estimated that 245-260,000 new homes would be needed to prevent rising house prices in England. A further widely quoted study (Holman, 2013) with revised estimates for annual household formation, estimated that from 2011 to 2031 there would be a need for 240,000 new households each year. Current government policy as laid out in the National Planning Policy Framework (NPPF) was updated in February 2019 and emphasises in particular, government guidance on how planning permissions are to be granted to meet housing needs (MHCLG, 2019) and it appears that household projections from 2014 data are the basis for this guidance. The household formation projections from MHCLG are therefore a crucial input to the entire planning policy in England.

Current UK planning policy for household development.

Unfortunately, the history of projecting the formation of new households for a planning horizon one or two decades ahead was not straightforward. The key determinants for the growth of new households are

1. *Population projections, births and deaths*
2. *Migration.*
3. *Average household size, by persons.*

Population projections are provided by the Office for National Statistics (ONS) and are periodically revised. They are subject to considerable revisions as shown in the Table 1

Table 1. Historical Population Projections for England (millions of persons)

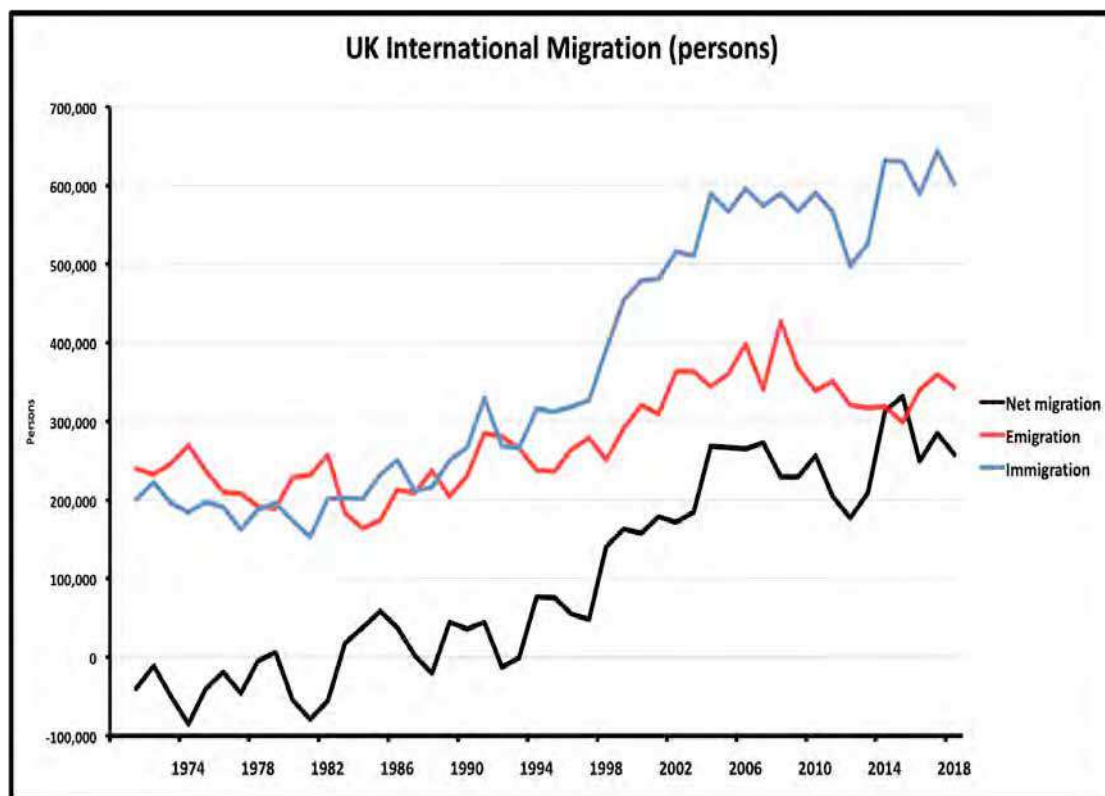
Year	2008 based survey	2014 based survey	2016 based survey
2011	52.5		
2016	54.8	55.2	55.2
2021	56.8	57.2	57.0
2026	58.7	59.1	58.5
2031	60.3	60.8	59.8
2036		62.4	60.9

Source: ONS (2019) Table 401 and earlier versions.

The most recent figures from the 2016 based survey show a reduction in the projected population for the year 2036 of 1.5 million persons against the previous 2014 based survey just 2 years earlier. This reduction reflects a significant narrowing of the birth/ death rate, as life expectancy is currently estimated to grow less quickly than previously thought.

Migration projections are very difficult to establish. As Chart 1 below shows, net migration was small and slightly negative until the mid 1990's when it began to rise significantly.

Chart 1.

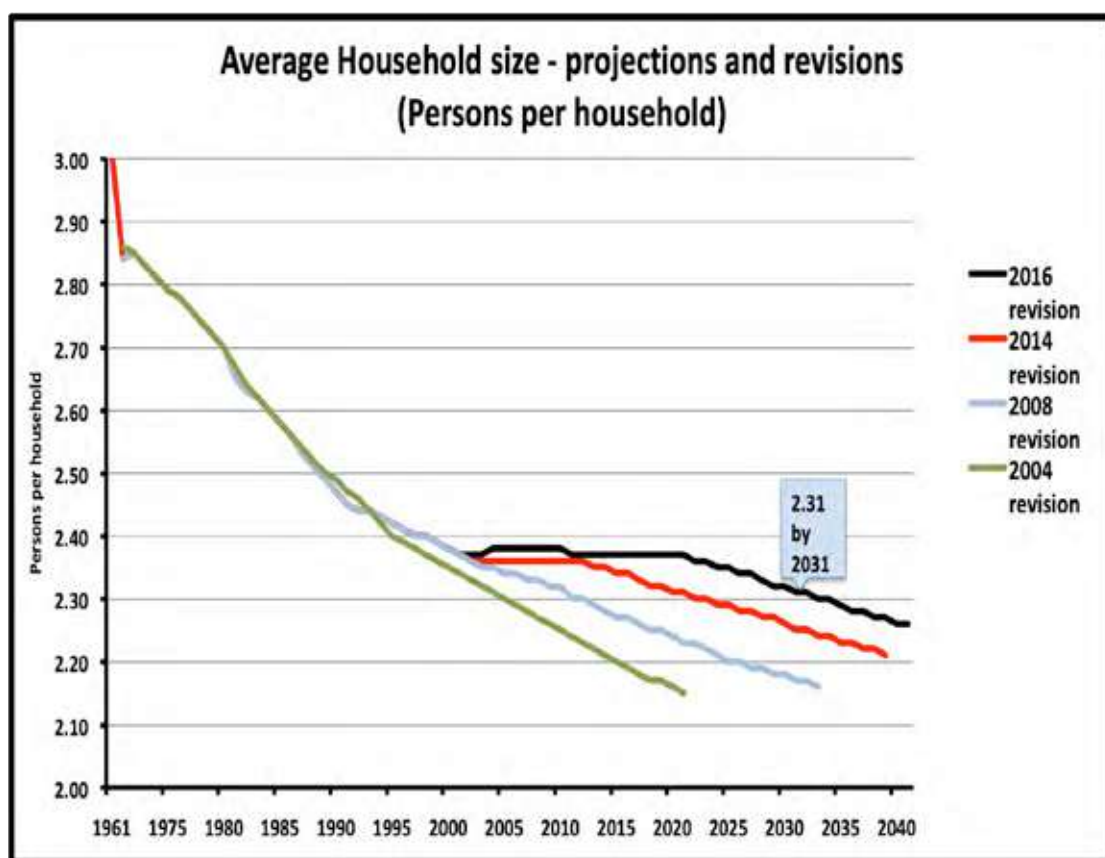


Source: ONS (2018) Table 2.04.

The total numbers of migrants clearly has a direct bearing on projected household formations but when the level of migration is higher, it also has an impact on average household size because newly arrived migrants are less likely to form single family homes. The tendency in the government statistics has been to overstate the growth of the natural population death/ birth rate and to underestimate the growth in migration. To some extent the revisions to these two variables offset each other.

Chart 2 shows the long-term trends and revisions for projected average household size in England by number of persons.

Chart 2.

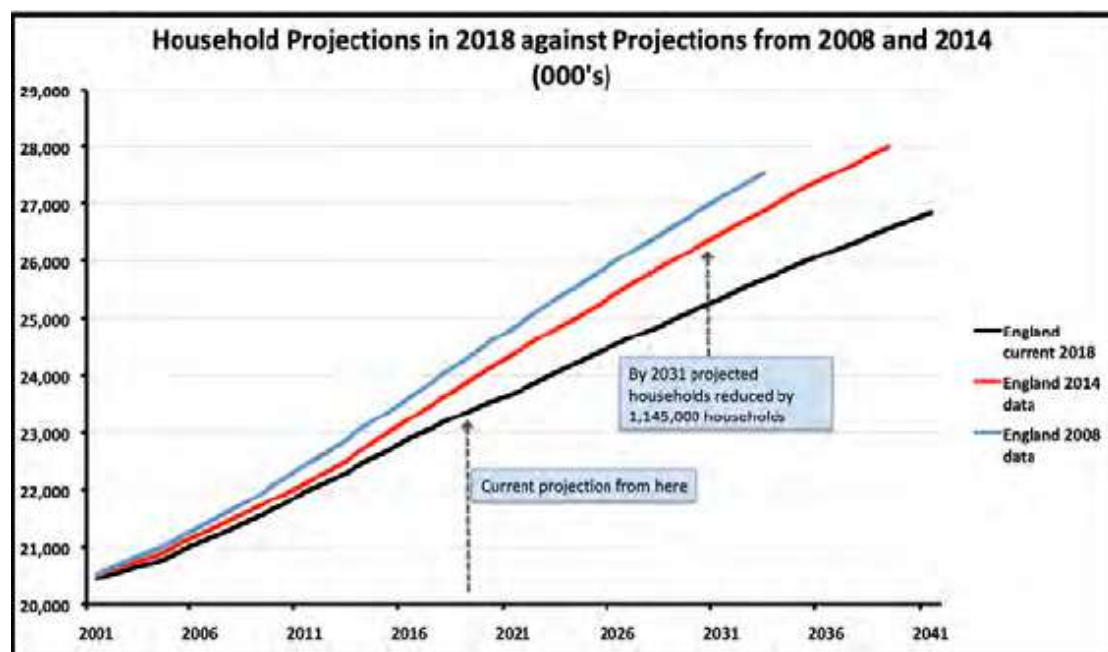


Source: ONS (2018a) Table 401.

Average household size estimates have been significantly revised since 2008, when it was believed that household size would continue to reduce following the pattern of the preceding 20 years. More recent data tends to confirm that the historical fall in household size is flattening out and has remained static at 2.37 persons per household for almost 20 years.

The consequence of these substantial revisions to the major determinants of new household formations is shown in Chart 3.

Chart 3.



Source: ONS (2018a) Table 401

The steady reduction in the estimates for the projections of household formation is striking. For example, the projection published in July 2016 and based on 2014 data (drawn in red on Chart 3) showed projected households for 2031 at 26.5 million. The household stock for 2016 is given as 23.6 million, implying a requirement for 193,000 new houses per year. But the most recent publication in December 2018, based on data from 2016 (drawn in black), projects household numbers at 25.35 million for the year 2031, or 1.1 million less households than were projected just 2 years earlier. The most recent numbers imply a requirement for some 164,000 new households each year, almost 18% less than that projected just 2 years earlier; significantly below the headline figures of 240,000 -265,000 discussed above.

The National Planning Policy Framework (NPPF) appears to be based on statistics derived from data from 2014 and earlier and does not appear to be adjusted for recent reductions in household projections just described. Nonetheless, the emphasis within NPPF guidance on

building more houses is having some effect. Data for the actual number of new household completions are rising. Table 2 shows the number of net additional dwelling for each of the last 10 years.

Table 2. Housing Completions in England (net additional dwellings)

Year	Net additional dwellings
2006-07	193,080
2007-08	200,300
2008-09	157,630
2009-10	124,200
2010-11	117,700
2011-12	128,160
2012-13	118,540
2013-14	130,340
2014-15	155,080
2015-16	163,940
2016-17	183,570
2017-18	195,290

Source: MHCLG, (2018) Table 120

Following the financial crisis in 2007/2008, household completions fell sharply from just above 200,000 dwelling to a low of 117,700 in the preceding 3 years, a fall of more than 40%. It is understandable that at that level of new completions there was growing concern about a shortage of supply across the entire housing market and it was against this background that the UK government began forming its agenda to radically overhaul the planning policy towards building more houses. Table 2 shows a steady recovery in annual housing completions since the nadir in 2010/11. The latest figure for 2017/18 shows completions rising to levels last seen in the boom days just before the financial crisis. Commentary in the British press continues to highlight that the government is still well below its objective of providing 240,000 to 265,000 new dwellings each year for England (NAO, 2019). But it is noteworthy that the most recent data shown in Chart 5 has annual requirements projected at 164,000 each year, if that is so then the actual supply of housing is currently exceeding need

by more than 25,000 dwellings each year. If completions continue to accelerate, England could be facing a glut of housing in the next few years.

Are High House Prices the cause of the crisis?

The discussion above has highlighted the difficulty of projecting the future need for housing in England but there is little in the discussion about house prices, even though high house prices are usually cited as the result of a presumed supply crisis. For example, in the foreword to the white paper introducing the governments new planning policy in 2018 the British Prime Minister stated:

“Our broken housing market is one of the greatest barriers to progress in Britain today”

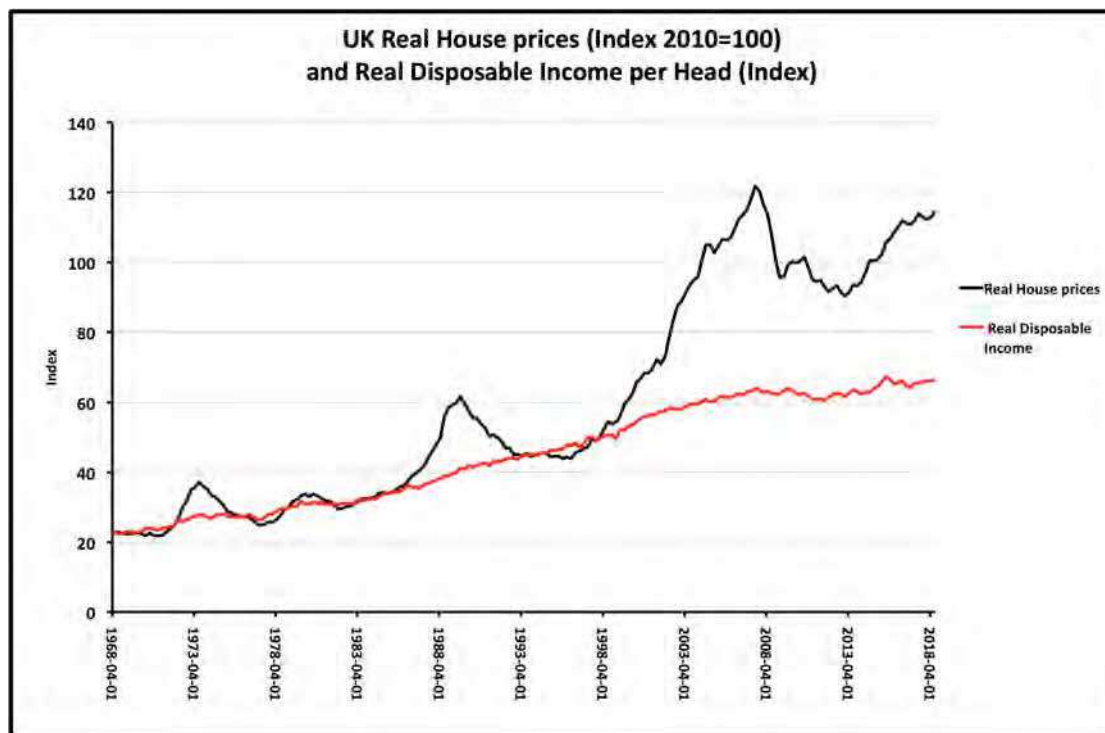
“Today the average house costs almost eight times average earnings – an all-time record.”

“The starting point is to build more homes.”

(MHCLG, 2018)

The rise in house prices is not in doubt. Chart 4 shows the long-term relationship between household disposable income and the average house price in the UK.

Chart 4.



Source: (BIS, 2019); (OECD, 2019); (BoE, 2019)

Chart 4 shows that house prices have increased sharply above incomes. Whilst house prices exhibited periods of volatility in the 1960's and 1970's the tendency was for booms to be followed by busts and with house prices moving back in line with incomes. From the 1990's onwards the rise in prices is much stronger than in previous episodes and the tendency to fall back in line with incomes has not occurred.

Whilst it is intuitively appealing to suppose that the elevated level of house prices reflects a shortage of supply, it is equally possible that the increase is driven by an increasing demand. Mainstream economics has tended to ignore the impact of credit and debt by presuming that debt and loans merely transfer spending power from the lender to the borrower and cancel out in terms of the impact on the real economy. But following the financial crisis in 2008 it became clear that credit and debt were important drivers of activity in the real economy. The theories of heterodox economists that had been largely ignored before the crisis have been given much greater exposure in recent years. Hyman Minsky for example shot to posthumous fame after a life of relative obscurity with his 'financial instability hypothesis' (Minsky, 1992). This theory postulated a very dynamic role for debt, whereby long periods of steady growth in the economy would encourage increasingly speculative investment bubbles endogenous to the financial market. Ultimately, the leverage in the economy becomes so great that it increases fragility in the financial markets, such that any small downturn in the economy would trigger large financial distress. Following Minskys lead more economists began investigating debt and concluded that banks actually did create debt, rather than acting as an intermediary between borrower and lender and concluded that debt was a fundamental driver of the economy (Wray, 2015), (Keen, 2017, Chp4). Even the Bank of England (BoE) confirmed that debt and money is created by primarily by the commercial banks in a groundbreaking article in their Quarterly Review (McLeay et al., 2014).

The economic and financial history of the English mortgage market provides a good example of the impact of the growth of debt, credit and banking leading to fragility in the real economy. A change of institutional financial structures in the mid 1980's when the Building Society movement was drawn in to the world of commercial banking was the start of a very long-term Minsky type business cycle.

The Building Society movement in England

The Building Society movement in England dates back to the middle of the 19th century and evolved from mutual clubs that were formed to provide finance to their members so that they could build themselves houses and homes. Initially the members pooled their savings and

built the homes one by one. When houses had been built for each member the mutual society would be wound down and closed. In time however, the success of these mutual groups in providing finance developed into larger business' and new savers were recruited to take the place of the initial members. In this way some of the mutual groups became more permanent and indeed the word 'permanent' would often be included in their names. In fact the hapless Northern Rock that suffered the collapse and bank run in 2008 was itself the result of the merger of a number of smaller building societies including one called the Northern Counties Permanent Building Society (originally founded in 1850).

The Building Society movement grew steadily over the next one hundred years and established a well-earned reputation for conservative but reliable provision of mortgages to the English property market. Mainly for institutional reasons the mortgage industry in England never attracted competition from the large commercial banks. In part this was due to the retail nature of the mortgage market where large numbers of small short-term savers were required to fund the larger long-term mortgage loans that house purchasers needed. Consequently, the mortgage market remained an almost entirely separate and segregated market from the wider banking industry that funded the larger part of the British economy. So what changed that caused the Building Society movement to become such a large part of the banking crisis in 2007 and 2008? The answer can be found in the substantial liberalisation of banking and finance that occurred in the mid 1980's which was itself the result of economic policy changes brought about by uncontrollable inflation of the previous decade, the 1970's.

Some economic history: free floating exchange rates and the implication for money creation.

In the early 1970's, the global economy had become extremely volatile. In the UK, the government struggled to contain rising inflation, growing unemployment and heavy downwards pressure on its currency, the British Pound. Until 1972 the British Pound had been fixed against the US Dollar under the Breton Woods exchange rate agreement. The US Dollar in turn, under that agreement, was fixed against the price of gold. The widespread economic turbulence of that era witnessed a relentless outflow of gold from the US Treasury, such that the global fixed-exchange regime became unsustainable. Whether by design or necessity the link between the US Dollar and gold was abandoned by President Nixon in July 1971. Thereafter, everything changed. No longer backed with gold its exchange value against other currencies was left to float or sink as determined by the vagaries of the foreign exchange markets. The same applied to all the other developed countries that were a part of that system. The world henceforth was to be conducted with fiat money – money backed solely by government decree.

In many ways this was a much more momentous change than was generally appreciated. In particular this affected the banking industry. Because governments were no longer constrained by maintaining fixed exchange rates for their currencies they were able to explore more flexible methods to control the money system. Quantitative controls on commercial banks balance sheets were removed and monetary policy was directed towards controlling the money supply by using interest rates. Technical operations of banking had mostly been considered an esoteric matter and of little overriding concern for economists. Economic theory always explained banking by what was known as the 'quantity theory of money'. In essence the quantity theory states that commercial banks will create loans in some multiple of their reserves. Reserves are simply funds held on account at the central bank and are used to settle accounts between each other. As for example, when a customer makes a payment to a person with a bank account at a different bank, the two commercial banks have to switch the funds between themselves and will do so via their reserve accounts at the central bank. Beyond holding a prudent level of reserves to enable payments to other banks, any bank is free to offer their remaining customer funds as new loans. Under this mechanism it appears that the amount of reserves in the system will control the total amount of loans that the commercial banks can create and the level of customer deposits in the whole banking system will determine the money supply. However, once fiat currency became a reality in the 1970's and free floating currencies were no longer constrained by fixed rate to either the US Dollar or gold it became apparent to more heterodox economists that bank money creation was not constrained by reserves at all. In reality commercial banks create new money when they grant a new loan to a customer. The loan then becomes a deposit in the banking system. The amount of money in the system is only constrained by the commercial bank that decides whether it believes a customer is a profitable prospect and is prepared to make a loan.

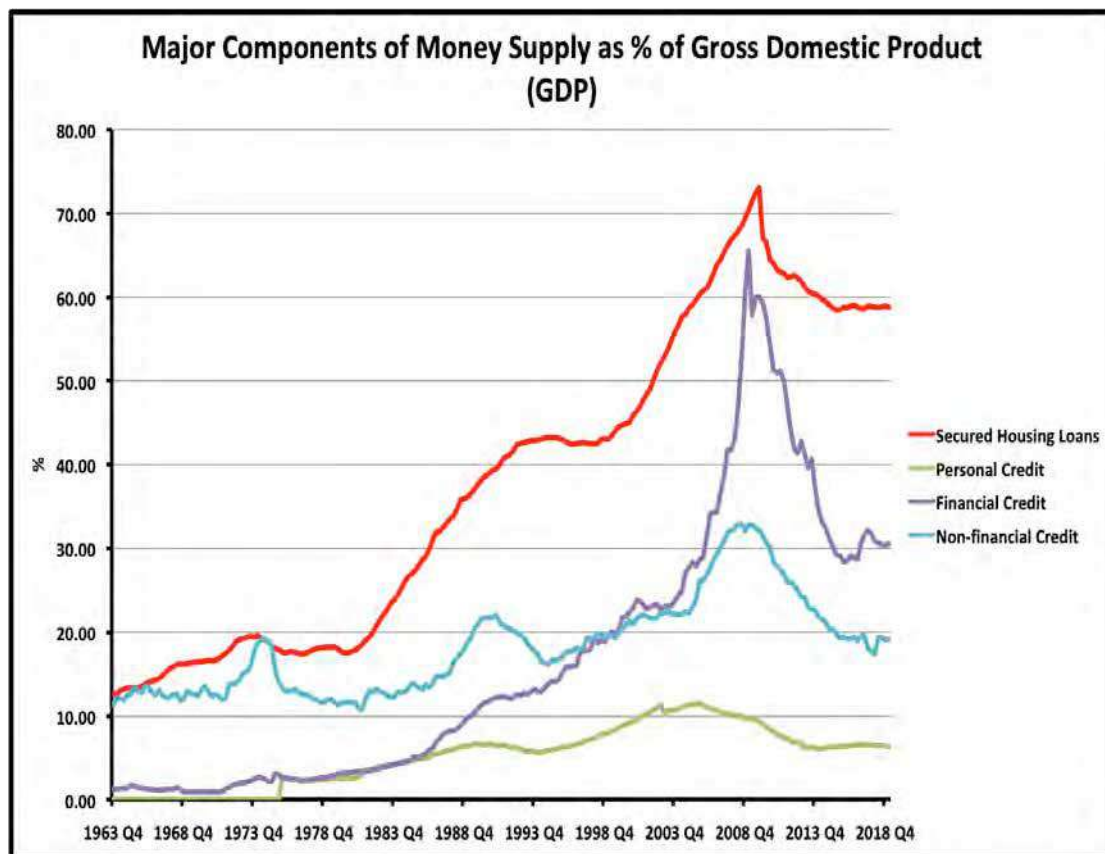
No longer constrained, commercial banks began to look at new markets and began to offer mortgages in competition to the building societies. By the mid 1980's the British government embarked on a very broad liberalisation of the entire financial system, colloquially known as 'big bang'. For the property market the significance of this development was the introduction of a government bill, The Building Societies Act in 1986, allowing the building societies to act like banks and fund their mortgages, not just with savers deposits but, if they so wished, with up to 20 per cent of funds borrowed on the short-term money markets. In effect they had become banks and indeed were permitted to convert to full commercial deposit taking bank status under the new laws, if they wished.

The impact on the mortgage market was dramatic. Availability of mortgages broadened substantially and financial services such as checking accounts and instant access accounts became available to savers in the retail mortgage market.

Very quickly the provision of new mortgages began to outpace almost every other type of loan, far exceeding the growth in commercial business loans or for private loans to consumers. From a banking perspective, property loans have a considerable advantage over other assets because the property behind each mortgage provides very safe collateral that is relatively easy to value. Certainly compared to a small business loans that requires considerable diligence by the lending bank, a residential property loan is a much simpler proposition.

Whereas in the 1960's and early 1970's mortgage finance represented approximately 20% of the total income of the country (or Gross Domestic Product, GDP), some 30 years later this has increased to more than 70% just prior to the financial crisis. The growth and importance of mortgage finance in the overall UK economy is shown in Chart 5.

Chart 5.



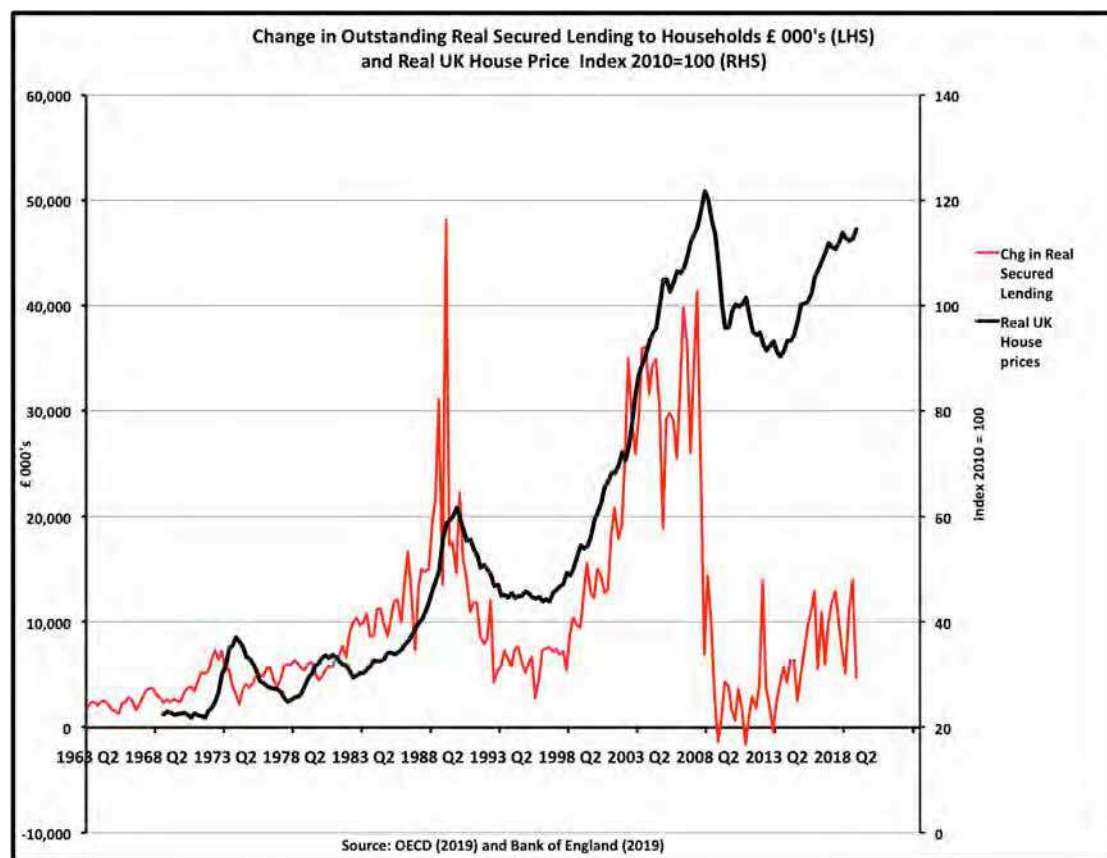
Source: (BoE, 2019b)

The value of the mortgage credit as a percents of Gross Domestic Product(GDP) is shown in red and labelled as “Secured Housing Loans”. The early part of the chart shows mortgage credit representing less than 20 % of the economy

As the banking industry was deregulated in the 1980's and the mortgage market and the Building Society movement was gradually subsumed within the commercial banking business Chart 5 tracks the explosive growth in mortgage credit. By 2007, just before the financial crisis the mortgage market was by far the largest component of the balance sheet of commercial banks. The other fast growing item of the UK money supply was 'financial credit' (shown in Chart 5 in purple) and this includes much of the notorious shadow banking finance that was also a big driver of mortgage credit.

The relationship between the growth of mortgage credit and the price of houses is shown in the chart below.

Chart 6.



Source: (OECD, 2019); (BoE, 2019).

Chart 6 shows that there is a strong relationship between house prices and the change in mortgage credit. Whilst, correlation does not prove causation it would be hard to suppose that without the availability and easy access to billions of pounds of mortgage credit that UK house prices could have been driven so high.

Conclusion.

The housing market in England is in crisis but the crisis is one of high house prices not one of housing availability. Apart from high prices it is far from clear that the crisis is related to a shortage of supply. Much more likely is that the crisis is one of affordability. The growth of mortgage credit over the last 30 - 40 years has been dramatic and now approximates £1,414,763 million. This sum is so big that it represents the largest component of bank credit in the economy. Clearly the cost of holding such a large amount of credit is a substantial burden upon house buyers. Also, following the line of argument of Hyman Minskys instability theory, the accumulation of so much debt must substantially reduce the soundness of the UK economy. The cost of holding that amount of debt is given by multiplying it by interest rates, which have been driven down to extraordinary low levels in order to support outstanding debt. But when the debt is so large it is readily apparent that any significant rise in interest rates would carry a high risk of triggering another financial calamity.

There is also another possibility for triggering a crisis if debt burdens are close to the limits of sustainability. The evidence presented in the first part of this paper indicated that the current supply of new dwellings now exceeds the projected need from growing population and migration. If the government policy of increasing that supply even higher towards their stated target of 250,000 additional dwellings, any resulting pressure on house prices could, ironically, trigger a much more serious financial crisis.

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The Role of Taiwan's Industrial Diversity In Regional Employment Growth - A Comparative Study on Digital Economy Industry and Cultural Innovation Industry

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Abstract: Urban-regional and national economies are more vulnerable to external events and turbulence, such as the impact of the 2008 financial crisis, resulting in a global economic downturn. Recently, understanding the regional (un)related variety is central to create new regional industrial structure, such as digital industry sector and cultural creative industry sector. This causality has been argued and emphasized in evolutionary economic geography, but empirical analysis in the causal influence of related variety on regional employment growth remain less examined in Asian cities.

This paper aims to examine the impact of related and non-related variety on employment growth of digital economy industry (DEI) and on cultural and creative industries (CCI) in Taiwan. This paper use spatial regression and spatial lag model analysis to examine this issue through comparing 350 samples of two different industries (DEI and CCI) under the level of towns and cities in Taiwan during 2001 to 2011. Main data comes from Industrial and Commercial Survey in Taiwan.

The empirical result shows that related diversity will increase employment growth, while non-related diversity will reduce unemployment growth. And this result will become more significant as the degree of urbanization increases. In addition, digital economy industry are more significant than cultural and creative industries. This research contribution can provide more accurate data analysis for regional economic planning or labor market policies.

Keyword: Diversity analysis, Digital Economy Industry, cultural and creative industries, Employment growth

Introduction

In the era of information and knowledge intensive, innovative and creative industries are dominated by digital economic industries and cultural and creative industries. According to the statistical information network of the Republic of China, the output value of Taiwan's digital economy industry grew by 1.1 (trillion yuan) from 2008 to 2015, and the proportion of GDP in the whole country grew from 17.3% to 20.3%, an increase of 3 percentage points. As shown in Figure 1, Taiwan's digital economy industry has always been a key industry and has grown rapidly, which is bound to drive the employment growth of Taiwan's digital economy industry in the future. However, the development of cultural and creative industries in Taiwan can be traced back to 2010. The proportion of GDP of cultural and creative industries has declined by 0.41 percentage points from 2010 to 2015. Because the change of employment ratio will be affected by the output value of cultural industries in the previous year, the employment growth rate has shown a reverse upward trend despite the decline of the proportion of GDP after 2013, as shown in Figure 2.

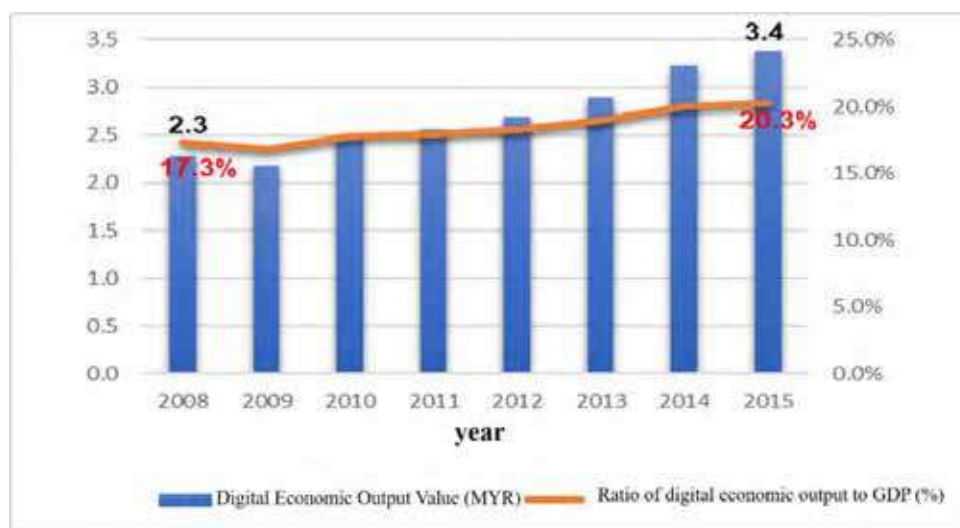


Figure 1-Digital economic industry business cycle: gdp and weight change

Reference : Statistics of the Republic of China

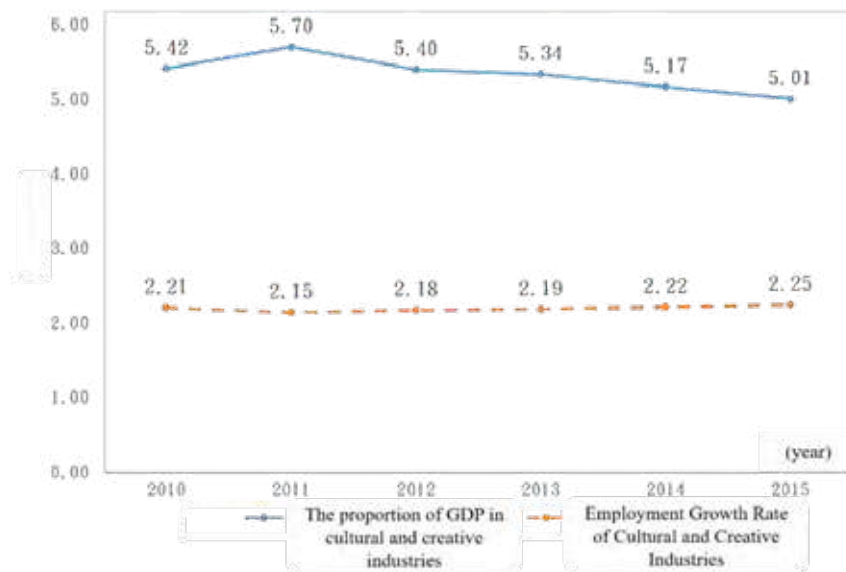


Figure 2-Business cycle of cultural and creative industries: gdp proportion and employment growth chart

Reference : World Bank Open Data: Cultural Bureau Cultural Statistics

In view of this, the above-mentioned causal relationship between industrial innovation and development for employment growth can be roughly divided into two types: the innovation and development of industrial economy and the orientation of urban space. The first is to explore the measurement index of innovation with the effect of agglomeration economy, with entropy index. The (entropy) indicator is a change in the index of computational diversity (Frenken, Oort, and Verburg, 2007; Frenken, van Oort, Verburg, and Boschma, 2005) and the spillover effect on the diversity between specific industries. empirical objects to explore the specific internal industry diversity whether it can drive industrial growth. The other is the urban type. Although the urban type variables have been adopted for specific developments in different townships, different urban types have different developments for the industry, such as the degree of urbanization in each township. The difference in the degree of human capital, in other words, due to different urban development conditions, the relationship between various industrial diversity factors and employment growth rate will form a spatial difference. Based on this, this study combines these two research perspectives and considers the relationship between the innovation and development of industries in the urban space and the growth of employment.

To investigate the effect of the industrial structure for the diversity of job growth through research design purpose of this study, using multiple regression model research tool. Based on the results of this study, the government will provide data support for the implementation of the human resources structure and industry's innovative development strategy in the space location.

Overview of related variety concepts

Agglomeration economy

In the theory of agglomeration economy, there have been many studies on the spillover effects of urbanization economy and localization economy(Glaeser, Kallal, Scheinkman, and Shleifer, 1992). Frenken, van Oort, Verburg, and Boschma (2005) put forward a new empirical framework to explain the spillover effect of agglomeration economy. Proposed the variety

index is divided into related variety and unrelated variety, however Lazzeretti, Innocenti, and Capone (2017) added regional variety variables in the analysis of a specific industry diversity, different from the unrelated variety and related variety is related to 4-digits level according to industry classification for data analysis, the regional variety of variable is 2-digit level Industrial variety classified by benchmarks. Before discussing the impact of the externalities of sector variety within a specific industry on regional economic development and employment growth, we must first understand the theoretical basis and context related to variety indicators.

Firstly, Frenken et al. (2005) points out that there are three kinds of relationship between variety and economic development, the first is in addition to a spillover effect between intra industry manufacturers, the industry also has spillover benefits, variety of a region, this region can bring additional economic growth (Glaeser et al., 1992; Jacobs, 1969; Van der Panne, 2004), this is not said Only input and output will affect the development of regional economy, when the region exists in the composition of a particular industry will also affect the quality of the regional economic growth, and the spillover effect is a geographical proximity (Jaffe, Trajtenberg, and Henderson, 1993; Porter, 1998), focused on the development of mutual complementary regional industry and the economic growth will focus on the development of complementary products to Industry is higher (Frenken et al., 2005).

The second is to consider variety as a risk-dispersing strategy in a portfolio to reduce the impact of external shocks on a region (Attaran, 1986). When there are diversified sectors in a region, external shocks will only have a slight negative impact on economic growth and employment. Conversely, if a region concentrates only on one area or sector with the same demand, the impact will lead to long-term economic recession and high unemployment risk.(Martin, 2011; Xiao, Boschma, and Andersson, 2018)

Finally, the variety and evolution of relationship between geography and economic development approach, if an economy is not increasing over time other industry variety, regional economic development will be affected by structural unemployment, and eventually fell into recession (Cantwell, Andersen, and Technology, 1996), Frenken, Oort, and (Verburg 2007) pointed out that an economy in the new Department issued Exhibition needs to absorb the surplus labor force in the original sector, which is the result of the product life cycle of the existing industries. This phenomenon is also reflected in the spatial development, because new industries usually appear in urban areas, while older industries are mainly in rural areas. This also shows that the surplus labor force is mainly produced in rural areas, while new employment opportunities arise in rural areas. In the highly urbanized areas.

And related variety is believed to stimulate employment growth, because new combinations will bring new products or services(Hidalgo, Klinger, Barabási, and Hausmann, 2007), thereby creating new employment opportunities. On the contrary, the localized economy where

specialized firms cluster will enhance process innovation, as expertise is used to improve production processes in existing industrial chains. These innovations stimulate labour productivity, but they do not necessarily lead to more jobs. Therefore, the concept of variety is consistent with the theory of product life cycle, which indicates that young industries with high product innovation rate create employment opportunities in different urban areas, while mature industries with high degree of specialization stimulate the productivity of surrounding areas.(Content and Frenken, 2016; Duranton and Puga, 2001)

Research design

Conceptual model

According to Figure 3, according to the data analysis method of diversity indicators, three main variables of diversity within two digital economic industries and cultural and creative industries are calculated. The control variables of population density and human capital with spatial differences are added into the multiple regression equation. The variances are tested by regression analysis at 350 Township scales and among different industries. Finally, the conclusions of this study are sorted out.

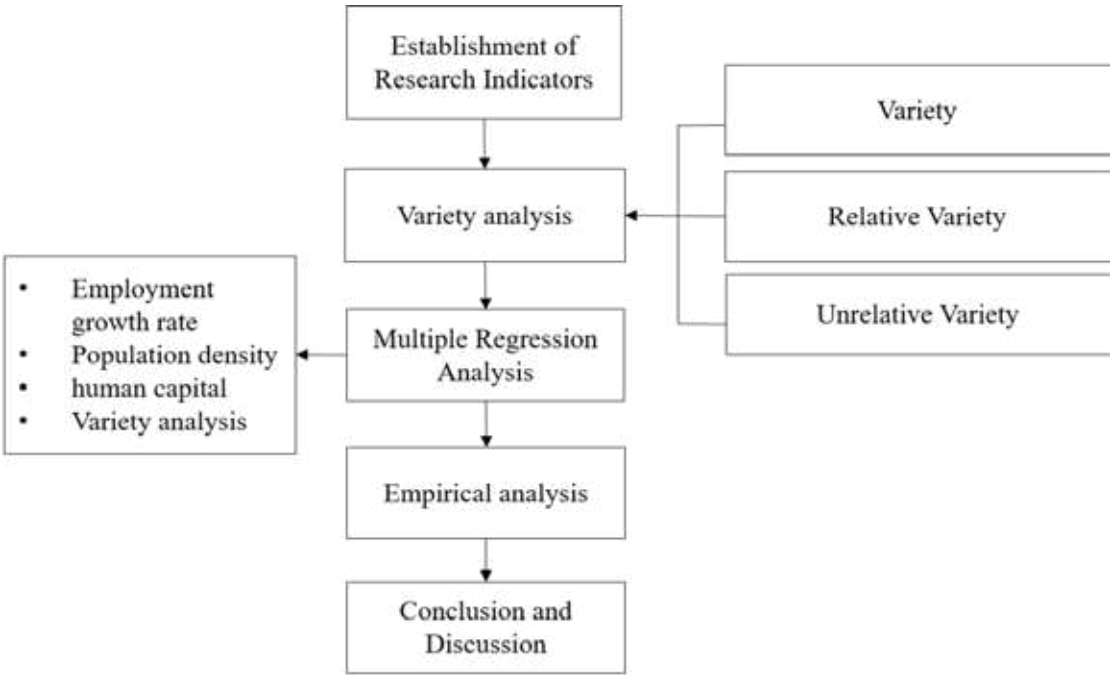


Figure 3 Research framework

Reference: Drawing by this study

Research methodology and variables

The purpose of this section is to establish a model to verify the relationship between the diversity of Taiwan's digital economy and employment growth. Commercial census categories of the General Accounting Office of the Executive Yuan is used 4-digit level for the data base. Based on this, the following formulas are listed to calculate the diversity. (Frenken et al., 2005; Hartog, Boschma, and Sotarauta, 2012; Lazzeretti et al., 2017)

Relative Variety, RV

Among them, the proportion of the total number of employees in each sub-industry in a certain regional economic scale is expressed as follows:

$$p_{ij} = \frac{\text{Population of the industry (region)}}{\text{Total Employed Population (Region)}} \quad (1)$$

Among them, i : the number of employments in 4-digit level, j : town, 1,...,350

Assuming that there are g middle-class industries in a certain regional economic scale, the G middle-class industries are subdivided into n sub-industries. The employment proportion of the middle-class industries is the sum of the employment proportion of the sub-industries, that is:

$$P_g = \sum_{i \in S_g} p_{ij} \quad (2)$$

Among them, p_{ij} : the ratio of employment in each township, S_g : the middle sector, $g=1,...,G$, P_g : $p_{ij}, g=1,...,G$.

As mentioned above, the related diversity is composed of four-digit industrial codes classified in the same two-digit codes in the industry standard classification. In order to obtain the diversity of specific industries, the digital economic industries and the literary and creative industries identified in the industry standard classification are classified into a group of related industries: S_g . Finally, the I industry in the industry standard classification is calculated. (Subcategory) In regional economies: the ratio of the number of employed persons in the P_{ij} industry to the total number of employed persons and the proportion of each relevant diversity in the regional economy (P_g). Using these ratios, the degree of diversification of the sub-industries within the same industry can be expressed as the following entropy in the (H_g):

$$H_g = \sum_{i \in S_g} \frac{p_{ij}}{P_g} \log_2 \left(\frac{1}{p_{ij}/P_g} \right) \quad (3)$$

In order to measure the degree of diversification of the fine industries with strong technological connections within the middle industry, it can be expressed as follows:

$$RV = \sum_{g=1}^G P_g [H_g] \quad (4)$$

Which type (4) as the target calculation formula, and the digital economy industry related diversity. Taiwan industry announced a total of four categories are categories, categories, categories and small categories, g value in industry categories, each industry is divided into several small classes industry. (1) calculated fine industry the area proportion of total employment, (2) belong to the same type of (3) Formula for calculating the diversification level of the fine industries in each medium industry.

Unrelative Variety, UV

Unrelated variety is to explore the correlation between different industries. The high level of unrelated variety means that the correlation between industries is not high, and they are not in the vertical or horizontal industrial chain.

$$UV = \sum_{g=1}^G P_g \log_2\left(\frac{1}{P_g}\right) \quad (5)$$

$$p_{ij} = \frac{\text{Population of the industry (region)}}{\text{Total Employed Population (Region)}} \quad (6)$$

$$P_g = \sum_{i \in S_g} p_{ij} \quad (7)$$

UV: unrelated variety

p_{ij} : The ratio of 4-digit level employment to 2-digit level employment in each township

P_g : The aggregation of the same 2-digit level category in the industrial category and the ratio of the employed population in the digital economic industry

Formula (5) is the objective formula to calculate the non-related diversity with the digital economy industry. (6) Formula (7) calculates the proportion of the fine industries in the region to the total employment population of the total industries. (7) Formula (7) is the sum of the ratio of the fine industries in the same middle class.

Employment growth

$$\text{Employment growth} = \frac{\text{Number of employed in that year} - \text{Number of employed in the previous year}}{\text{Number of employed persons in the previous year}} \quad (8)$$

Calculation of employment growth rate as shown in formula (8), base for a year before the employment population, this research of employment growth in 2006 and 2011, the annual employment population using data for the number of employment population in 2011, a year before the number of people in employment the number of employment population in 2006. Then we calculate the total industry employment growth rate, as well as digital the employment growth rate of economic industry is used to analyze the impact of related variety and unrelative variety on employment growth.

Empirical Research

Model and Hypothesis Verification

Based on the empirical process mentioned above, the section illustrates the establishment of the model, which is divided into two parts: confirming whether the diversity of digital economic industries in different townships affects the regional employment growth. Referring to the regression model (Lazzeretti et al., 2017), the relationship between industrial diversity and employment growth in different townships can be expressed as follows (9):

$$\Delta Y_t = \beta_0 + \beta_1 Rel[Val]_t + \beta_2 Un[Val]_t + \beta_3 Pop[Dens]_t + \beta_4 Human[Cap]_t + \varepsilon_t. (9)$$

Y_t : Employment growth rate

X_{1it} : RV

X_{2it} : UV

X_{3it} : Human capital

X_{4it} : Population]density

Among them, the total employment growth rate of all industries is taken as the strain of the three models, and the independent variables are the diversity of digital economic industries, related diversity, non-related diversity, population density and human capital, which measure the degree of urbanization, and t is expressed as time. The sources of all independent variable and dependent variables are shown in Table 1.

Table 1 list of multiple regression variables.

Item	Variables	Statistical units	Expected symbols	Source
Dep. var.	Employment growth rate (average)	Unit		Employment in industry and Commerce census conducted by the Comptroller's Office of the Executive Yuan, from 2001 to 2015, is calculated from the statistical data every five years.
Variables	Variety of Digital Economy Industry (V)	Indicators of Industrial Innovation	?	Employment in industry and Commerce census conducted by the Comptroller's Office of the Executive Yuan, from 2001 to 2015, is calculated from the statistical data every five years.
	Related Variety of Digital Economy Industry (RV)	Indicators of Industrial Innovation	+	
	Unrelated Variety of Digital Economy Industry (RV)	Indicators of Industrial Innovation	×	
	Human capital	Population/km2	+	Social and Economic Data Service Platform of Statistics Department of Ministry of Interior
	Population density	人/km2	+	Social and Economic Data Service Platform of Statistics Department of Ministry of Interior

Symbol description: + : positive influence relationship; — : negative influence relationship; × : no significant influence; ? : Uncertainty of impact

Estimation of results and discussion

Table 2 lists the regression results of digital economic industry diversity and employment growth. In the first model (model 1), the overall diversity of digital economic industry is positive and significant, which shows that there is a positive relationship between the overall diversification of digital economic industry and employment growth. In model 3, the overall diversity of digital economic industry is used. In addition, The control variables of population density and human capital are also added. This model can find that population density is negative and human capital is not significant. The overall R2 increases slightly, and the overall diversity of digital economy industry is still positive and significant. Therefore, this model shows that various digital economy industries have a positive impact on employment growth.

In model 2, the variables of digital economic industry diversity are replaced by digital economic industry related diversity and non-related diversity. The model finds that both related diversity and non-related diversity are not significant, which means that companies engaged in digital economic industry can not generate employment growth in related or unrelated sectors. The spillover effect may be related to the industrial structure, or it may be because during the past decade, the industry has shown a saturated state, which slows down the growth of employment, resulting in a non-significant causal relationship between inter-departmental diversity and employment growth. However, after adding other control variables in Model 4, R2 has increased, and the related diversity of digital economic industries has also shown. Positive significant impact, while other variables show the same symbols and meanings, which indicates that a large number of technology companies are set up in interrelated departments, and the spillover effect has a positive impact on employment growth.

The regression results of cultural and creative industries and employment growth presented in Table 3 show that the regression methods are the same as those of digital economic industries, but the results are quite different. The results show that cultural and creative industries are not significant in the first six models. Only the irrelevant diversity in Model 7 has a positive and negative impact on regional employment growth and population density. This shows that the related industries within the cultural and creative industries can not promote the employment growth of the industries, but the non-related industries within the industries have a positive impact on the regional employment growth, which shows the concept of risk diversification, and the protected areas are not affected by external shocks leading to the regional total employment growth. It also shows that the unrelated departments within the cultural and creative industries can communicate with each other and produce spillover effects.

Table 2 Model Results Consolidation Comparison Table

Models	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Period	2001-2011				2001- 2006	2006- 2011	2001-2011
Dep. var.	Employment Growth in Digital Economy						Tot Emp. Growth
Rel Var		0.113		0.221*	0.098	2.366	6.890
DEIs		(1.315)		(2.237)	(0.228)	(0.311)	(1.386)
Unrel Var		0.018		0.053	0.156	3.089	-2.392
DEIs		(0.201)		(0.570)	(0.393)	(0.362)	(-0.515)
Variety	0.849**		1.498***				
DEIs	(3.156)		(4.139)				
InPop			-0.202**	-0.166*	-0.130	-1.863	-23.090***
density			(-2.743)	(-1.71)	(-0.360)	(-1.054)	(-6.115)
Human			2.587	1.889	-0.847	6.053	167.396
cap ²			(0.429)	(0.305)	(-0.118)	(0.283)	(0.535)
obs	350	350	350	350		350	350
R2	0.028	0.017	0.050	0.032	0.003	0.008	0.148
Adj. R2	0.025	0.012	0.041	0.021	-0.009	-0.004	0.138
F test	9.961**	3.068*	6.018***	2.829*	0.219	0.683	14.963**

Table 3 Model Results Consolidation Comparison Table

Models	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Period	2001-2011				2001-2006	2006-2011	2001-2011
Dep. var.	Employment Growth in Cultural and creative industries						Tot Emp. Growth
Rel Var		0.026		-0.045	-0.140	0.554	1.391
CCIs		(0.080)		(-0.101)	(-0.477)	(0.491)	(0.147)
Unrel		0.069		0.163	0.089	0.123	27.857*
Var		(0.133)		(0.312)	(0.260)	(0.814)	(2.526)
CCIs							
Variety	-0.535		-0.787				
CCIs	(-0.871)		(-0.887)				
InPop			0.180	0.175	0.068	0.118	-14.432***
density			(1.030)	(0.888)	(0.525)	(0.452)	(-3.486)
Human			-12.334	-18.895	-5.609	1.633	272.414
cap2			(-0.800)	(-1.293)	(-0.586)	(0.239)	(0.887)
obs	350	350	350	350	350	350	350
R2	0.002	0.000	0.006	0.005	0.002	0.003	0.093
Adj. R2	0.000	-0.006	-0.003	-0.006	-0.010	-0.009	0.082
F test	0.759	0.010	0.708	0.466	0.184	0.234	8.660***

Conclusion

In the past, the research on related diversity mainly focused on all industries in the region, such as service industry and manufacturing industry. This study takes township administrative divisions as the research scope, defines emerging industries with 4-digit level, and lists explanatory variables for urban spatial differences. Finally, the spillover effects of related diversity in different industries and regions are analyzed.

Limitation of the study

The area identified in this study is 350 townships in Taiwan. There is no data on unemployment, and it is not possible to verify the hypothesis that irrelevant diversity can reduce the unemployment rate.

The original data used to classify the digital economy industry are classified according to the relevance of the nature of the work in advance, without taking into account the correlation between the input and output of the company and the export commodities of the company. Such a classification may be underestimated.

Contribution of the study

Analysis of the results of the two industries shows that the spillover effects of diversity are different for different industries, and non-related diversity in cultural and creative industries can also lead to employment growth, which has not been found before, but the R^2 of the general model is not high, which may be due to the lack of key variables, such as: company size, industrial returns, infrastructure. And so on, because of the relationship of product life cycle, for mature industries, on the contrary, because of the improvement of labor productivity, so as to reduce employment growth rate, which may lead to cultural and creative industries can not reflect the relationship between the spillover effect of diversity and employment growth.

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Track 16: Urban and Regional economics of transition

Financial or societal returns? Exploring the ambiguous role of intermunicipal energy company Fluvius in the energy transition in Flanders

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Abstract: Energy systems are key sites of spatial and socio-political transformation. This paper explores the role of distribution network operator Fluvius in the energy transition in Flanders. We examine the tension between the societal expectation for this public company to contribute to a more sustainable energy system, and the financial and spatial conditions for its operation. The analysis is based on 20 in-depth interviews, and advances the three spatial concepts of density, spatial selectivity, and scale, to highlight the socio-spatial tensions surrounding energy distribution. It reveals questions around energy tariffs for dense versus sparse areas, locational choices for collective heating and renewable production, and the spatial redistribution of the cost of energy transition. Although fundamentally political, the regulation and management of such issues is often framed in technocratic and economic terms, leaving spatial planning and redistribution implicit. By revealing these spatial and political dimensions, the research contributes to a broader debate about the role of energy distribution in a more sustainable and democratic energy system.

Keywords: energy distribution, implicit planning, socio-spatial redistribution, dispersed urbanisation

Introduction

Transforming urban energy systems has become a key element of spatial and socio-political urban change (Bulkeley *et al.* 2014). Rather than a merely technological challenge, the energy transition is therefore about a fundamental transformation towards a more sustainable and inclusive energy system (Morris and Jungjohann, 2016). This requires understanding and rethinking the arrangements of who owns, operates and finances these systems, and how they are spatially configured.

However, energy infrastructure networks are often characterised by a strong inertia since they are embedded both materially and spatially in the existing territory, and connected socio-technically to the energy ‘regime’ (Frantzeskaki and Loorbach, 2010, Markard, 2011). Spatial planning and design have started to explore the energy transition as a spatial question, showing how energy infrastructure transformation is connected with broader processes of spatial change (Juwet and Ryckewaert, 2018,

Sijmons, 2017). Transition studies have often focused on ‘niche’ innovations, but are increasingly interested in the role of regime players in transformation processes. Incumbent players in the energy sector are under pressure to adapt to a context of liberalisation and unbundling, decentralization and digitization, decarbonization and denuclearisation. As many urban infrastructures in Europe are privatised and increasingly financialised (Pike *et al.* 2019), in countries like Belgium, but also Switzerland and Germany, energy distribution largely remains in public hands (Mühlemeier, 2018).

This research focuses on the case of electricity and gas distribution networks in Flanders. These networks are 100% publicly owned by the municipalities, and managed by a single operating company called Fluvius. The research explores the ambiguous position of Fluvius by analysing the tension between societal expectations about its contribution to a more sustainable and democratic energy system, and the financial and socio-technical conditions in which it operates. Hypothetically, this tension can be identified both at the level of the municipalities and of Fluvius itself. While municipalities increasingly formulate strong climate ambitions, they also expect and depend on a yearly dividend from the network operator. Fluvius claims the ambition to become carbon neutral, and has public service obligations to promote energy efficiency and facilitate the uptake of renewables, but also has vested interests in the existing fossil gas network and a revenue that is relative to the kWh of energy supplied. This paper will focus on how these tensions materialise in the way Fluvius deals with questions of spatial planning and socio-spatial redistribution.

In the context of Flanders’ dispersed urban landscape, the relation between the spatial and organizational configuration of energy networks, and processes of urbanization is a particularly relevant dimension of Fluvius’ societal role. Many authors have showed how technical networks have historically facilitated and reproduced Flanders’ nebulous urbanization (De Block, 2014, Ryckewaert 2012, Van Acker, 2014). Heavy transport infrastructures such as canals, railways and later highways were often part of formal plans that had the ambition to modernise and industrialise the nation. Bruggeman shows how lighter supply systems, such as the electricity networks, can be read as an example of how collective consumption was organised through different governance and spatial arrangements within this urbanising territory (Bruggeman, 2019). Usually considered a rather technical question, the spatial organisation of the energy network was rarely an explicit object of formal spatial planning. However, as in other domains like transport or economic policy, many forms of ‘implicit’ planning have contributed to territorialisation processes (Ryckewaert, 2011).

Today the ecological and social limits of Flanders’ dispersed spatial organization are increasingly clear (Van Broeck and van Ypersele, 2019). Understanding the implicit mechanisms that reproduce or could potentially counteract these urbanization patterns therefore becomes crucial and could also inform formal processes of spatial energy planning. Looking at Fluvius today, this paper therefore explores in particular how the organisation of the energy distribution network relates with processes of spatial development, and what forms of implicit spatial planning are at stake in the way it is operated, financed and regulated.

Methodology

The key empirics of this case study research are based on 17 in-depth interviews with 20 people that took place between March and May 2019. The interviewees included staff members from several departments within Fluvius, such as financial management, strategy, and business. We also interviewed multiple stakeholders, such as representatives and civil servants of municipalities, civil society actors (environmental movement, labour unions, energy cooperatives), the Flemish energy regulator VREG, and the Flemish government energy agency. The interviews were semi-structured and lasted between 1 and 3 hours. Interviewees were asked about their role in, or relation with Fluvius, and about the societal, political, spatial and financial aspects of how Fluvius operates. We complemented the interviews with desk-research on secondary documents, such as the Flemish Energy Decree, annual reports of Fluvius, the Fluvius website, and reports by the regulator. The transcribed interviews and most relevant documents were coded and analysed with the software MAXQDA.

Introduction of Fluvius as a case study

To introduce Fluvius as an object of study, we use recurring descriptions by interviewees, as they highlight diverse perceptions of Fluvius' current and potential role as a public actor in the energy transition.

Fluvius is regularly described as *'the extension of the municipalities'*. It is the operating company for electricity and gas distribution for 11 locally organized 'intermunicipal companies' ('opdrachthoudende verenigingen', distribution network operators or DNO's, Figure 1). Ultimately, the shareholders of these intermunicipal companies are the 300 Flemish municipalities, that have transferred the construction and operation of the energy distribution system to Fluvius.

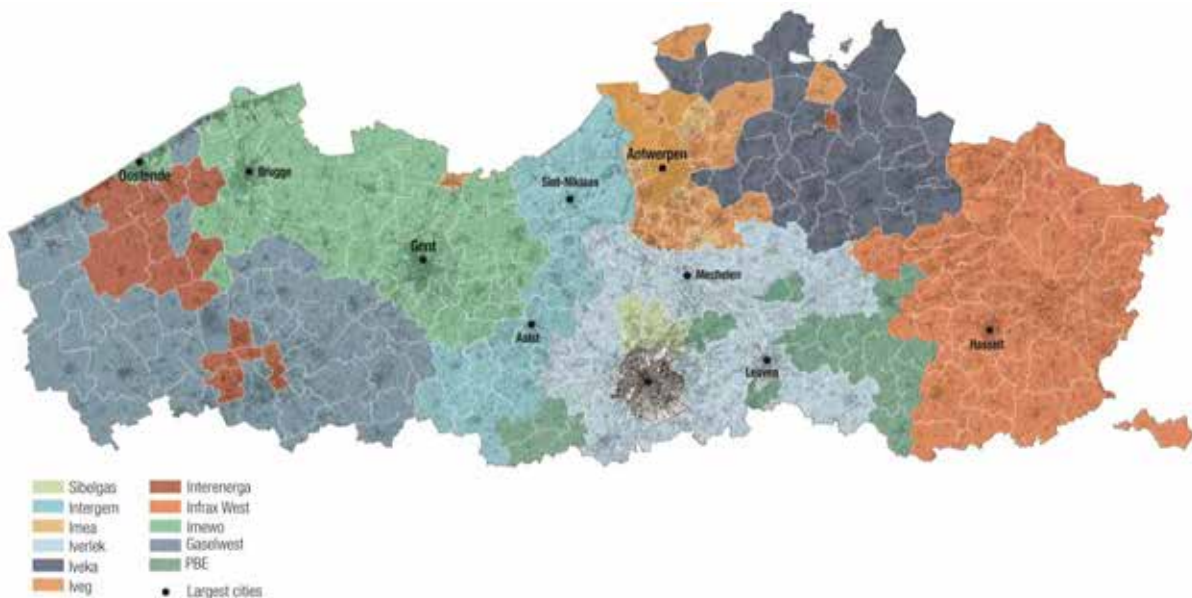


Figure 1. Map of Flanders showing the intermunicipal energy companies for electricity distribution.
Source: elaborated by author based on Fluvius.be, May 2019

Next to operating Flanders' electricity and gas networks, in several areas Fluvius also operates some sewerage, tv cable, public lighting, and district heating. Providing this range of services, the company is referred to as '*the manager of the underground*'. Today, Fluvius explicitly positions itself as a multi-utility company with the ambition to become 'the' network operator for Flanders. On top of its core business of 'managing underground assets', Fluvius also ventures into other activities, sometimes assigned through the Flemish Energy Decree, other times developed independently by Fluvius. This has raised questions about what its 'core tasks' as a public company should be.

As an operating company Fluvius is the result of a merger between the two formerly existing distribution companies Eandis and Infrax. Eandis worked for the so-called 'mixed' intermunicipal companies (historically combining public and private shareholders), while Infrax operated the network for the 'pure' intermunicipal companies that had only public shareholders. Fluvius' current monopoly for energy in Flanders, and multi-utility position explain its perception as '*a tanker*', for which it is difficult to change direction. This monopoly position also challenges the work of the regulator as a comparable benchmark is missing.

Findings and discussion

In the context of an increasing awareness about the ecological, social and economic consequences of Flanders' dispersed urbanization, it is particularly relevant to understand the spatial mechanisms behind the operation of the energy network. How does the organization of the distribution system support or reproduce dispersed forms of urbanization, or does it offer opportunities to rethink these processes? These are crucial elements in understanding the network operator's role in the transition towards a more sustainable energy system and territorial organization. This section therefore focuses on the findings related with the spatial logics behind how the distribution network is planned, operated, financed and regulated. The three concepts of 'density', 'spatial selectivity' and 'scale' will be used to structure these findings. Based on an earlier literature review (Juwet and Ryckewaert, 2018) and on the empirical material, they emerge as useful notions to conceptualise the relation between energy infrastructure and spatial morphology, and to reveal some of the tensions and ongoing debates about Fluvius' role in the energy transition.

Density: energy tariffs and the cost of sprawl

The spatial dimension of the distribution system becomes explicit in discussions about the relation between energy tariffs and spatial morphology. This is particularly relevant in the context of a broader societal debate in Flanders about the 'cost of urban sprawl', and the transition towards a less space- and energy-intensive form of urbanization (Van Broeck and van Ypersele, 2019). This section will illustrate how a planned tariff reform is nevertheless treated as a technical question and public debate about the cost of this extended utility network remains limited.

Today, connection fees for electricity and gas are independent of a customer's location, even though denser areas need less infrastructure per building. Differences in distribution tariffs exist between DNO's, but are related to a historical valuation of the network assets, rather than to the density of urbanization (Figure 2).

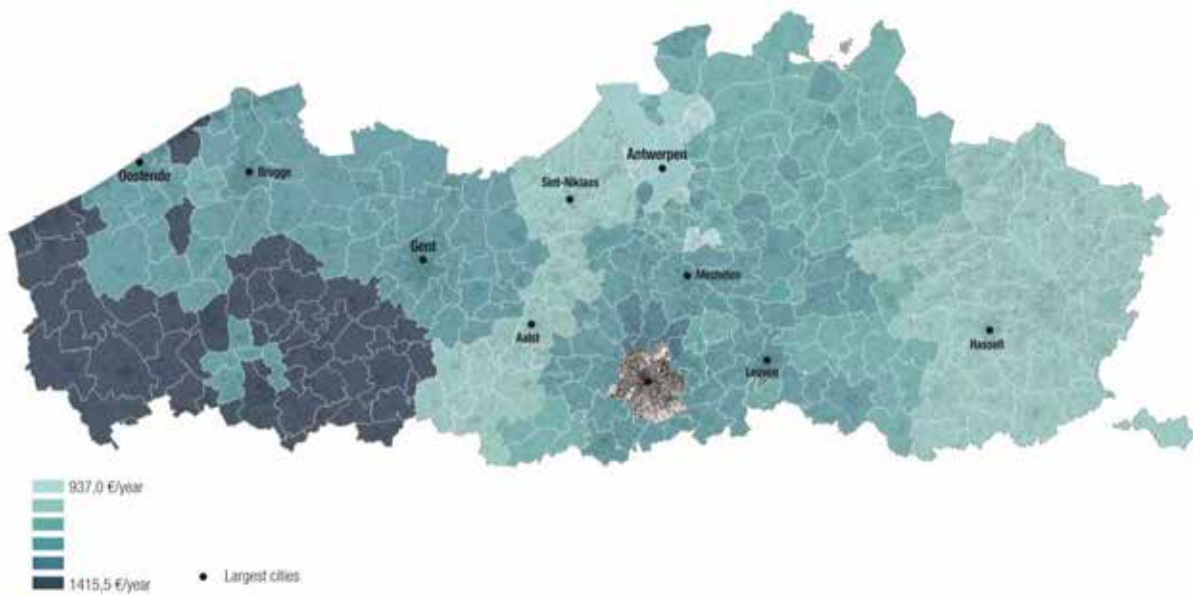


Figure 2. Map of Flanders showing the tariff difference (network cost + charges) for electricity and gas for an 'average family' in each municipality.

Source: elaborated by author based on tariefchecker.be, 2017

Today, a thorough reform of the energy tariff structure is under investigation by the Flemish regulator. Instead of a tariff based on energy use (€/kWh), the reform proposes a tariff based on the capacity of the connection (€/kW), to make the tariff more 'cost reflective' as required in the Flemish Energy Decree. Interestingly, this Decree also specifies that *"when introducing a capacity tariff, the tariffs take into account regionally objectifyable differences"* (Energiedecreet, 2015). One interviewee indicated that *"this passage was added explicitly on demand of the city of Antwerp"* because if energy tariffs would be homogenised in Flanders, *"the city, and other cities probably, would want to keep their comparative advantage of lower tariffs"* (interviewee 1).

The regulator is therefore investigating which 'regionally objectifyable differences' could be identified that influence the network cost, and what criteria these differences should meet. A first study by an external consultancy firm analysed the legal context for such criteria and the use of regionally diversified tariffs in Norway and the Netherlands (Vanden Berghe *et al.* 2018). While the regulator aims to identify these criteria through a scientific study rather than engage in policy discussions, it also recognises that the percentages used to judge the 'significance' of a particular difference, have 'an arbitrary character' (cons-2018-03, p. 8). Possible 'differences' to be considered could range, as they did in the Dutch and Norwegian cases, from landscape characteristics (canal crossings, terrain slopes ...) to technical aspects (number of substations, underground cables), differences in governance (local charges, malpayments ...) or aspects of spatial morphology (distance to roads, building density, connection density, proportion of villages or cities ...) (Vanden Berghe *et al.* 2018).

This rather technical discussion is related to a broader understanding of the historically shifting role of public actors in the provision of basic energy services across the territory, brought up by multiple interviewees. *"When those networks emerged, the private [sector] was only interested in the cities, and they left the 'sparse' areas for the public sector"* (Interviewee 17). But today, the societal cost of this extended provision of utility networks is questioned. *"Yes, energy is a basic need and therefore*

everyone has to have it, and then we [the public sector] have to put a huge amount of money into it. And then you have to ask whether that is the solution, or whether we have to bring people where the opportunities are. That has to do with densification, strengthening centres and such more” (Interviewee 6). That is why some actors are in favour of diversifying energy tariffs according to (building / population / connection) density. *“Moreover [next to paying for capacity], in far-away-land, you probably have a kilometer of cable just for you, so we’ll have you pay for density as well”* (Interviewee 6).

On the other hand, some interviewees doubt the relation between density and network cost. *“At first you would think: such lengths, you’ll have to put more pipes... but one forgets that in the country you only have to ‘pull a cable’ in a ditch. In the city you have to break open the streets, the footpaths, [...], try putting a cable in Antwerp! [...] It has to do with the proportion between investments and maintenance, and the balance between both. [...] My prognosis is that there will be differences, but they will be limited: the disadvantage of being dispersed, is compensated by the complexity in urban areas”* (Interviewee 1).

Interestingly, a study about regionally objectifiable differences for the Netherlands, was inconclusive about the potential factor of ‘connection density’ because there wasn’t enough objective information to recognise this aspect as a regional difference (Vanden Berghe *et al.* 2018). A recent study quantifying the cost of urban sprawl in Flanders, confirms that the investment and maintenance cost per meter of energy infrastructure is higher in urban than in rural areas (85€/m vs. 30€/m for electricity distribution). However, because the length of infrastructure per building in very dispersed areas (86,2m/building) is much higher than in urban areas (9,2m/building), the total cost of energy infrastructure per building is around 3 times higher for dispersed areas (Vermeiren *et al.* 2019, p. 62).

A complex aspect of researching these regional differences, is identifying the appropriate scale to analyse factors such as density. In theory, both tariff differences between intermunicipal companies, and within the area of a distribution network operator are possible. *“As far as I’m concerned, you just look at the level of the DNO, what is the density [...]. For Antwerp it would be best if you would do that per municipality, or per street. But that’s not workable, you shouldn’t make it more complex than it already is”* (Interviewee 6). But investigating regional differences only at the level of the DNO would, in the case of spatial density, even out more significant differences at smaller scales. *“[...] We can’t just say ‘for Gaselwest it’s like this, and for Imea it’s like that. [...] If the one would be purely city, and the other purely villages, you could say there’s a difference. But they are both a mix of cities and villages”* (Interviewee 18). While data gathering and calculation on a finer resolution might be more complex, it would better represent the actual morphology within a region. Therefore, a crucial question is whether data about infrastructure and maintenance costs are available at smaller resolutions, and what approach and spatial data will be used to conceptualise and analyse ‘density’.

Another complication is the suggestion in Europe’s Clean Energy Package (2017) that distance-related factors should be part of the connection cost rather than the distribution tariff: *“We agree that transmission and distribution tariffs shall not be distance-related since distance of a customer from the network is not a cost driver for the operation of the network. [...] therefore, it has to be clarified that only connection charges, in order to be cost-reflective and give locational signals, may well be distance-related”* (Vanden Berghe *et al.* 2018). Some interviewees indicated that such technocratic European guidelines limit the possibility to use tariffs as part of a broader (spatial) policy approach.

Europe assigns competency on tariff matters to the VREG, which indeed treats the regional tariff differentiation as a purely technical question. *“The government can give a few guidelines but can’t say ‘this has to be payed through the tariff, and that not’. Then the VREG says ‘we determine the tariffs, the government can’t decide anything about that’”* (Interviewee 20).

Consequently, public and political debate about spatial tariff differentiation remains limited. To a stakeholder consultation organised by the VREG, only a limited number of actors responded: the Farmers’ syndicate (‘Boerenbond’), FEBEG (Federation of the Belgian electricity and gas companies), and a collective response by several DNO’s. A wider stakeholder consultation could have contributed to a societal debate about the future of the energy system, and include perspectives from civil society or the Flemish Department of environment and spatial planning. However, as emphasised by FEBEG in response to the consultation, *“the introduction of regionally objectifyable criteria can’t be used as a policy measure. Tariffs are only to cover the costs of the DNO, they are not a policy instrument”* (cons-2018-03, 2018, p. 14).

Other interviewees have the opposite view: “The regulator has an independent role, a bit too much for my taste. [...] Those objectifyable differences, ‘objectifyable’ is a word too much for me, you can objectify or de-objectify everything. [...] These are things [...] that should be determined much more by the Flemish government and parliament. Not the technicalities, that should be done by the VREG, but the political choices, for example should we use density and even how to use it [...]. That is a choice you make, but one where it might be easier later-on to hide behind the regulator. My opinion is: make a political choice and defend it” (Interviewee 6). Indeed, diversifying energy tariffs based on density is a very sensitive issue, especially since the dispersed urbanization of Flanders has long been supported by public policy, among which the ubiquitous and cheap connectivity to energy supply systems. It is therefore especially important not to treat energy tariff reforms as a technical matter, but to understand and publicly discuss their socio-spatial implications as an inherently political question.

Spatial selectivity: energy transition and the cannibalisation of the gas network

Electricity and gas networks became historically structured around centrally produced energy, distributed ubiquitously across the territory. But renewable energy production and in particular sustainable heating solutions (individual or collective systems) will be more localised, and therefore spatially selective. Indicative of this evolution is that the obligation for Flemish DNO’s to increase the degree of connectivity to gas networks - up to 99% for urban areas and to 95% for ‘rural areas’, implemented after the oil crisis in the 70s - was lifted recently. It then becomes crucial to understand how decisions are made about what type of infrastructure will be provided where, what criteria are used and who makes such choices. In this section we illustrate how investment decisions by Fluvius are rather justified by arguments of rentability, than through explicit political or spatial planning objectives.

In recent years, Fluvius started developing district heating projects. While the company has a monopoly on electricity and gas, the emerging heating sector is not yet strongly regulated. Fluvius is only one of the district heating developers next to commercial firms and citizen cooperatives. Often such projects are initiated following a request by a municipality: *“We get a lot of questions around heating, it’s a hot issue. Especially when elections are coming up. Then [...] every municipality wants its district heating project. And every request gets answered”* (Interviewee 2). Several interviewees

confirm that the economic feasibility, is the decisive factor for a district heating project. Fluvius looks at the availability of residual heat, the heat demand density, and the business case¹. *“That whole cost (transport, pipes, construction, maintenance, measuring) needs to be earned back through the price people pay, that is a purely economic story.”* From that perspective, this interviewee sees only a limited role for government: *“Who decides this? At those who put money on the table, that take economic risks to build the pipes, supply the heat, or use the heat. [...] What should the government do? We have to make sure the pipe gets in the ground, that the permits are there...”* (Interviewee 6).

According to these criteria, district heating is only feasible for Fluvius in areas where the linear heat demand density is high². *“[drawing a map of Belgium] Here you have Antwerp, Ghent, Brussels, maybe Liege and some other cities that have some waste incineration will have district heating. All the rest will be a mix of everything: all-electric solutions, gas, maybe some geothermal”* (Interviewee 2). The feasibility also depends on local context: *“District heating is interesting in areas with a lot of public buildings: swimming pools, hospitals, elderly homes,... [...] But new allotments, unless we’re talking about low temperatures, classical district heating? No!”* (Interviewee 2). Another respondent explained: *“As a society, we have made a choice for natural gas in the past. Today, district heating is technically and economically not justifiable anymore”* (Interviewee 17). This difficulty to ‘make the business case work’ was confirmed by Fluvius: *“It is an interesting story, but not an easy one. Untill now it [district heating] is making a loss”* (Interviewee 2). At the same time, investing in these projects is also seen as part of Fluvius’ societal role, investing in infrastructure that is not (yet) commercially profitable (Interviewee 2). Another respondent explained: *“Intermunicipal companies have much longer depreciation periods than commercial firms. If you would do this commercially, you’d want to earn back the investment in 7 years, for us that’s after 20 or 30 years. So in that sense there is a great advantage in doing this as an intermunicipal company”* (Interviewee 6).

In practice however, several district heating projects developed by Fluvius, are located in greenfields, sometimes in strategic central locations, but also in peripheral areas with lower densities. Crucially, all the realised projects are located in sites where no natural gas network existed. As one interviewee remarked *“At a certain moment, these intermunicipal companies, Fluvius, that are now developing district heating, are canibalising their other assets, the gas network”* (Interviewee 5). Asked about this internal conflict of interest, one Fluvius employee responded: *“We should nuance this impact on the natural gas network. We see very little projects where we switch from natural gas to district heating from one day to the next. [...] In the total investment needed to realise the energy transition, the residual value of the natural gas network is a marginal fact”* (Interviewee 4). When calculating the feasibility of district heating projects, the company does not (yet) include the cost of ‘stranded’ gas assets (Interviewee 2). Simultaneously, Fluvius emphasizes that the gas network does not have to be a stranded asset. *“The gas distribution network doesn’t hold back a sustainable future. It is often associated with a fossil story, but you can also transport green gas, hydrogen gas, carbon dioxide... such a network can still have value in a sustainable future”* (Interviewee 4).

¹ using the principle that the ‘total cost of energy’ for heat has to be lower than for the alternative, today considered as a gas boiler used for 15 years..

² This interviewee mentions a minimum of 4 or even 5 MWh/m, while other analyses often use an indicative ‘rule of thumb’ estimating that district heating is feasible above 3 MWh/m (Nussbaumer & Thalmann, 2014)

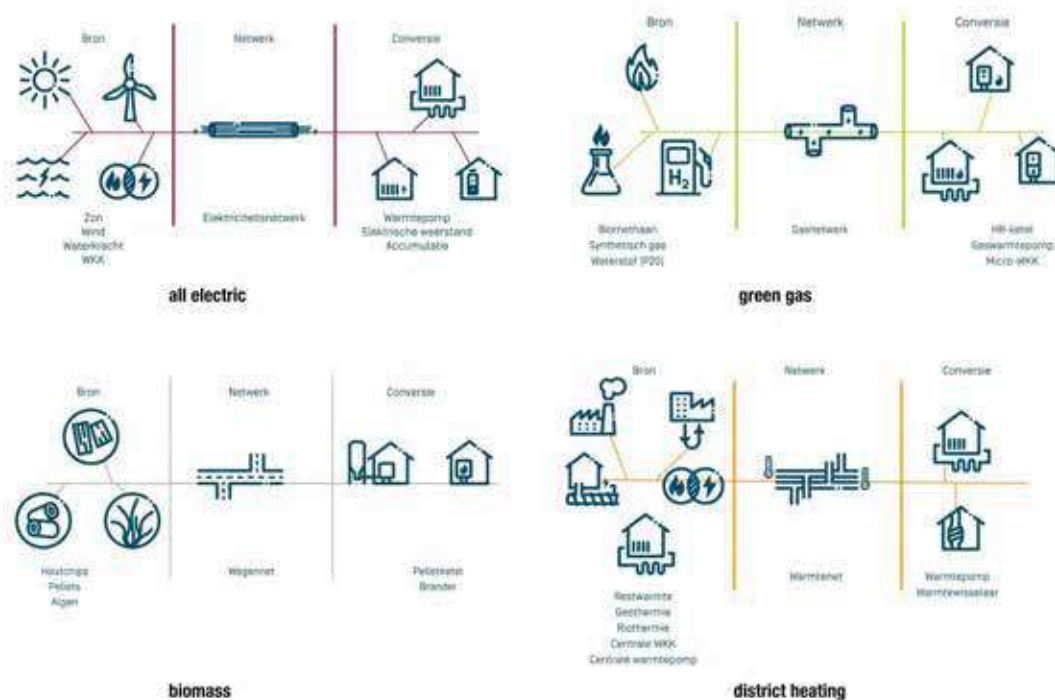


Figure 3. Climate neutral energy concepts. Framework for the approach to energy transition.
Source: Fluvius, December 2018

From that perspective, it is interesting that Fluvius has developed four ‘sustainable heating concepts’ (Figure 3), and sees a role for itself in all electric, green gas and district heating solutions. The status of these concepts remains unclear. Several interviewees hinted at the need for spatial heat planning, but so far Fluvius is not developing plans about which technology would be appropriate where, and suggests this is a question for municipalities and/or the Flemish government. Some consider this a rather technical exercise: *“I think we need the same approach for heating [as we have for sewerage]³. The Flemish energy agency or regulator should make comprehensive zoning plans, based on the heat demand map and residual heat offer”* (Interviewee 5). Others recognise the heat planning efforts of several larger cities, and would like Fluvius to be more involved in those exercises, such as the SEVIA project by the city of Antwerp to develop a ‘Strategic Energy Vision’ (Interviewee 2). On the other hand, the company is often not represented at heat planning workshops organised by local governments. Moreover, it could support such heat planning initiatives by making data about current energy use, but also about the gas network (planned investments, financial value, remaining lifespan) available more easily and at higher resolution.

The question of spatial selectivity also appears in the location of renewable energy production. The integration of intermittent energy sources like solar and wind, challenges Fluvius to reconfigure the distribution network from a one-directional to a multi-directional and smart system that can flexibly balance production and demand. However, rather than trying to steer siting choices for renewable production, Fluvius rather responds to concrete requests for connection. *“When the government imposes certain obligations, the networks have to follow. It would be ideal if a calculation would be*

³ Since 2006, every Flemish municipality was obliged to develop a zoning plan indicating where public, collective or individual water cleaning infrastructure would be developed.

made beforehand to understand what it will cost and keep that under control. But in a dense country like Belgium this should not mean a big added cost, wherever those installations will come” (Interviewee 18). Eandis and Infrax commissioned such a study about ‘reception capacity’ (‘onthaalcapaciteit’) together with transmission network operator Elia in 2012 (VITO, Infrax, Eandis, Elia, 2012). But in practice, the location of wind turbines for example, is determined by many other factors beyond the optimal network configuration. Overall, Fluvius appears to prefer anticipating trends in the energy sector and responding to requests from municipalities, rather than planning or directing the energy transition. *“We can answer questions that exist, but we shouldn’t try to answer questions we don’t know will come. [...] It has to be planable”* (Interviewee 2). Another Fluvius employee explained: *“It is true that we determine what infrastructure comes where, and that the availability of infrastructure has far-reaching consequences for the decisions people will take in the future. We have to make sure that we don’t block better alternatives, but it is very hard for us to know, in 50 year, what will be best?”* (Interviewee 3). This interviewee positions Fluvius as a neutral partner for municipalities: *“We are very neutral, literally, we are an independent, objective partner to think along with municipalities about what is possible, what is sensible and what is not. We’re not there to sell heat pumps or gas boilers. Is it a natural gas net or an electricity net or a district heating system, we’ll build it. For us, it doesn’t matter what goes in the ground, as long as it is durable. Why? In 20 years we’ll still exist, and if it isn’t a durable solution we’ll have to deal with the costs”* (Interviewee 3).

On the one hand it is problematic that Fluvius often justifies investment choices based on arguments of rentability and ‘business cases’ without recognising their spatial consequences and inherently political character. No spatial decision or choice for a specific infrastructure is really ‘neutral’ in a context where energy networks are an essential part of a territorial organization and energy system in need of fundamental transformation. However, such structural decisions transcend Fluvius’ role as operating company, and point to the need for a clear mandate, either from its Board of Directors or from the Flemish government. This mandate should be based on a societal discussion, that sets out the strategic lines for the appropriate energy distribution system of the future.

Scale: socio-spatial redistribution and the cost of transition

A third dimension of how the distribution system is spatially managed, relates to the scale and composition of the intermunicipal companies who own the network and represent the municipalities. This configuration influences how costs are redistributed spatially and socially through the different components of the energy tariff. The companies’ ongoing (re-)composition creates or forecloses possible operational synergies, strategic planning advantages, and coherence in governance arrangements.

Historically, governance of the energy network has evolved towards increasing homogenisation and upscaling. Electricity systems have diverse origins, being set up by entrepreneurs or cooperatives, initiated as public firms by municipalities or expanded through provincial policy Bruggeman, 2019). *“It started with electricity after WWI. In the village you had a brewery, they installed a generator but they had some surplus electricity and started a line to the church and the town hall... and that is how public lighting started. [...] These ‘gemeentelijke regies’ started to grow, and neighbouring municipalities often said: ‘let’s do this together’. Then you had the ‘intercomune’: intermunicipal company. Some did it themselves, but others gave a concession to a local electrician. That is how the*

‘pure’ and ‘mixed’ intermunicipal companies emerged” (Interviewee 2). Over time these local companies gradually merged: “Since 1954-55 the electricity sector was centralised more and more. [...] At a certain moment, the ‘mixed’ intermunicipal companies owned 80% of the distribution networks, and the municipalities had 20%. Those that survived were the ones that organised more efficiently” (Interviewee 17). Since 2003, Eandis and Infrax acted as the operating companies for respectively the ‘mixed’ and ‘pure’ intermunicipal companies. Following the European directive to ‘unbundle’ electricity distribution and production, private shareholder Electrabel was bought out of Eandis and the mixed intermunicipal companies, leaving them 100% in the hands of local municipalities. Eandis and Infrax ultimately merged into Fluvius in 2018.

This process of centralisation also led to a homogenisation of governance arrangements. Several historical constellations, that spark interest in current discussions on remunicipalisation or citizen participation in urban utility governance, have disappeared. Considering several Flemish cities are discussing the possibility to start a public energy company, in the spirit of the German Stadtwerke, it is relevant to know that the city of Ghent, for example, used to have an urban utility company: *“At that time you had the EGW in Ghent: ‘Elektriciteit, Gas, Water’: and urban company like you have in Germany, and the only one of that scale and that integrated in Flanders. But it was sold after the elections in 1983” (Interviewee 17). In light of demands from civil society about citizen participation in the energy sector, and with the increase in citizen energy cooperatives (Interviewees 10, 11, 12, 13), it is interesting to see that customer participation has also existed in the distribution sector: “We used to have something fantastic here at IVEG. We had a ‘consumer association’ where people could buy a certain amount of shares and then got a reduction on the energy tariff. [...] Overall, you had a return of 11%, it was succesful! This association [...] had a voice in the Board of Directors. We wanted to continue this but because of the decree on intermunicipal collaboration of 2001 we had to abolish the association as private capital was no longer allowed in the intermunicipal company” (Interviewee 1).*

Several interviewees mentioned advantages of this increasing centralisation. “Many small municipalities can achieve standardisation this way. By working together they can get better conditions. [...] For example Sibelgas, the smallest DNO, is composed of only six municipalities so the solidarity is limited, the weight of one becomes much heavier” (Interviewee 4). Fluvius’ scale was also seen as an advantage for knowledge and equipment for another respondent. Although he was critical about the level of innovation within Fluvius, he still preferred this arrangement: “So I think you better struggle for your intermunicipal company to become more effective and future-oriented, than to start doing everything on your own” (Interviewee 7). Others regret that the increasing scale of the network operator changed its relation to municipalities: “The position of municipalities diminishes: the distance, it becomes technically complex, it exceeds the level of the average local representative...” (Interviewee 1).

The historical evolution of the intermunicipal companies and the former competition between Eandis and Infrax for municipal concessions, has sometimes resulted in geographically incoherent associations (Figure 4). Moreover, a recent change in the Energy Decree stipulates that municipalities have to contract the same operator for electricity and gas. The process of integration and rationalisation is therefore ongoing. It simultaneously follows two directions: on the one hand forming more geographically coherent and sometimes larger-scale entities, and on the other integrating different types of utilities in one operating company. Such mergers between intermunicipal companies

were realised in the Antwerp region and the Limburg province in April 2019, and considered in Flemish Brabant as well.

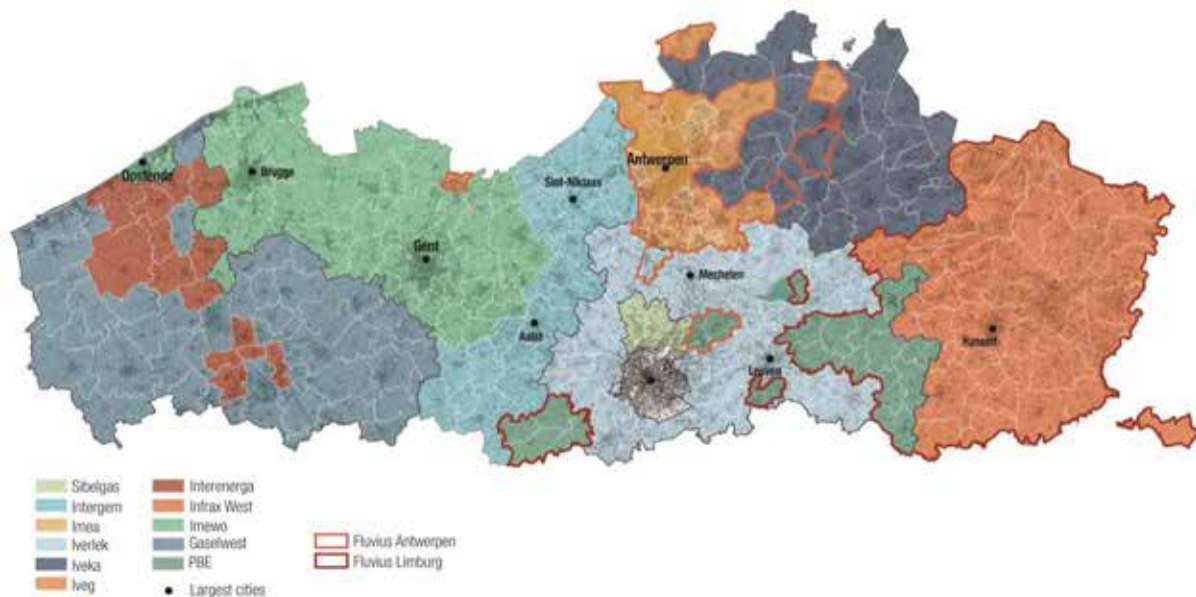


Figure 4. Recent mergers of intermunicipal network operators.

- Antwerp region: Iveg (formerly public, electricity + gas + sewerage) + Imea (formerly public-private, electricity + gas) + Integan (cable) > Fluvius Antwerp (April 2019)
- Limburg: Inter-Energa (electricity+gas) + Inter-Aqua (sewerage) + Inter-Media (cable) > Fluvius Limburg (April 2019)

Source: elaborated by author based on Interviewee 1 and Fluvius.be, May 2019

Because the public companies under Infrax often managed not only electricity and gas networks, but also sewerage and cable infrastructure, Fluvius became a multi-utility company. It publicly claims the ambition to develop further in that direction, and started to realise that aspiration with the mergers in Antwerp and Limburg. “I would like Antwerp to be the first to bring water, gas, heating, electricity, cable, sewerage, all together and say: all my underground assets are in one hand, and one hand will operate and try to manage it better” (Interviewee 6). One of the advantages of integrating different utility systems in one operator is that synergies, and therefore cost optimisation, between different infrastructure works would become easier. Avoiding nuisance from road works was mentioned as an important concern for municipal representatives.

Other interviewees were more critical about Fluvius’ increasing scale and monopoly in energy distribution. “It risks to become a state within the state. From a democratic perspective that is really a point of attention” (Interviewee 1). This concern also resonates with other interviewees, who asked for more transparency, and better stakeholder participation to complement the stepped political representation of municipalities. On a strategic level, more spatially coherent and integrated regional utility operators would provide a stronger governance base to plan and implement regional spatial strategies for energy and other utilities. An interesting reference are the ‘transport regions’ that were recently introduced in Flanders.

Costs of energy infrastructure and ‘public service obligations’ are redistributed on different spatial scales through different components of the electricity tariff (Figure 5). Fluvius is charged with social obligations (eg. supplying energy to customers dropped by their commercial supplier) and ecological

obligations (eg. awarding subsidies for rational energy use investments, buying ‘Green Energy Certificates’ for connected PV installations). These different costs are recuperated through the distribution tariff at the intermunicipal scale, and through Flemish and federal charges on the tariff. These mechanisms organise a social and spatial redistribution that has historically allowed energy to be available as a basic service for almost everyone.

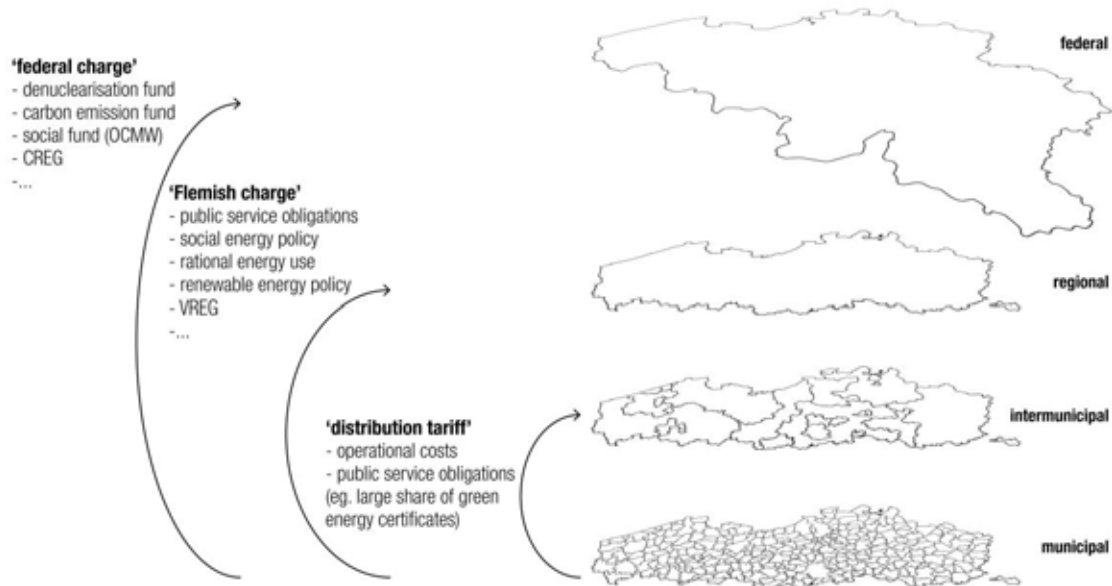


Figure 5. Socio-spatial redistribution of cost for public service obligations on the intermunicipal, Flemish and federal scale. Source: author based on vreg.be, 2019.

However, this system is criticised for multiple reasons. On a structural level, several civil society actors argue for a shift of charges from electricity to fossil fuels. They also criticise the fact that these charges apply only for customers of the low-voltage grid while energy-intensive industries are directly connected to the transmission grid and pay no fair share in the societal cost of the energy transition. These redistribution mechanisms were also a main element in critiques from civil society about the planned introduction of a capacity tariff: *“This includes all kinds of redistribution aspects. Concerning the low-voltage customers, we’re roughly speaking about the redistribution between poor families and families with very low consumption, and rich middle-class families and small SME’s, a butcher and a bakery. The more the capacity tariff works as a fixed cost, the better for the high-consuming low-voltage customers, and the worse for the low-consuming customers. But that has an economic and a social impact!”* (Interviewee 15). However, the regulator’s competency on tariffs, independent from politics, and its technocratic focus on ‘cost reflectivity’ seem to limit the possibility and impact of a more fundamental political debate on the topic. Interestingly, the Flemish water sector shows that it is possible to translate policy objectives into the tariff structure, in this case by distinguishing between a ‘basic consumption’ tariff below a particular threshold and a much higher tariff for ‘luxury consumption’.

Because the cost of buying up Green Energy Certificates is higher in regions where more PV installations were installed, than in others, a solidarisation between different DNO’s was arranged. *“Eandis had 80% of the energy network and Infrax 20%, but Infrax had 30% of the solar panels, and Eandis 70%. Infrax was historically always a pioneer in supporting rational energy use. But it could also be because Infrax had more rural areas and there are more roofs to put solar panels”*

(Interviewee 1). This imbalance is also criticised as an unwanted socio-spatial redistribution: *“Antwerp inhabitants are paying for the solar panels of people in Limburg who have more financial means and live in a detached villa where you need a very long cable to connect, while Antwerp people live in an apartment or rowhouse and the number of connections per cable is much higher. Urban inhabitants are paying for the solar panels on the countryside, and those urbanites are in general less well-off”* (Interviewee 6).

These discussions indicate how governance arrangements for the energy distribution system are part of bigger societal questions about socio-spatial redistribution. They are particularly relevant in understanding and negotiating how the societal cost of the energy transition is distributed, an aspect that will become even more pertinent as more alternative heating solutions are implemented. Sustainable heating systems can be individual or micro-collective installations or larger-scale district heating systems, each with different costs and tariffs. A crucial societal question is therefore how to ensure equality in access to sustainable heating solutions, and a just social redistribution between a diversity of technical and governance arrangements.

Conclusion

While Fluvius’ work is often framed as ‘functional’ or ‘neutral’, and justified through technocratic and economic arguments, the research reveals that investment decisions, tariff structure and regulation, and network governance have fundamentally spatial and political dimensions. We showed how the concepts of density, spatial selectivity and scale allow to expose and analyse these dimensions in seemingly technical discussion.

A first aspect regards the relation between energy tariffs and density. The dominantly technical approach of the Flemish regulator to tariff reform and the inclusion of ‘objectifiable regional differences’, fails to recognise the social and political dimension of spatially diversified energy tariffs. This discussion should be part of a broader societal debate to rethink the mechanisms that support or reproduce dispersed spatial patterns. To grasp the social, economic and political complexity of this question, the insights of civil society, Flemish energy and spatial planning departments, municipalities and other stakeholders need to be brought together. This dialogue should inform a political debate and decision about the energy tariff structure, that forms the basis for a technical elaboration by the regulator.

Second, the energy transition signifies an evolution from a territorially rather homogeneous energy system towards spatially selective and more context-specific energy solutions. Despite Fluvius’ interests in the existing gas network, and while holding the key to the successful integration of decentral electricity production through operating the distribution network, the company positions itself as a ‘neutral’ partner of municipalities. Fluvius doubts the ‘planability’ of the energy transition and prefers to ‘keep all options open’. At the same time it recognises that without clear policy choices the European climate targets won’t be reached: *“Natural gas consumption is declining, despite the fact that there are more connections every year. [...] When we look at 2050, we see a reduction by 50%. That sounds a lot, but if we compare that to the plans of Europe, the ambitions to be climate neutral in 2050, we see a discrepancy between current policy and the ambition, because that would*

mean that carboniferous gas consumption in 2050 should be quasi zero” (Interviewee 3). Most interviewees agreed that strategic decisions about a future energy system should not be made by Fluvius alone but should result from a societal and political discussion. Moreover, the company should support this debate with its expertise and data, pro-actively organise dialogue with stakeholders and engage with energy planning efforts at Flemish and (inter-)municipal level. Co-creating a vision about the future of electricity, gas and heat distribution would allow Fluvius to plan its future investments more effectively and orient its societal role explicitly towards a climate-neutral energy system by 2050.

Third, the discussion about the increasing scale and continuous recomposition of the intermunicipal companies, reveals how governance arrangements for urban infrastructure matter in optimising energy systems. More spatially coherent and integrated multi-utility regional governance structures could provide a stronger basis for operational synergies and strategic future development. These governance arrangements include the redistribution of Fluvius’ ‘public service obligations’ on different scales through different components of the energy tariff. This illustrates how socio-spatial redistribution mechanisms are inherent to the organization of the distribution system in Flanders. The network operator and regulator therefore have a key role to ensure a fair distribution of the societal cost of the energy transition. But also federal and Flemish politics and the Flemish Energy Agency have the responsibility to create a policy framework for a just transition. Civil society has demanded a more transparent and democratic network governance, and more attention for the impact of tariff changes and energy efficiency policy on vulnerable households. More openness from policy-makers and from Fluvius towards these demands is crucial. Particularly in the emerging transition towards sustainable heating alternatives, where solutions are particularly context-specific and technically diverse, a thoughtful approach to redistribution, compensation and support mechanisms will be essential.

By making these socio-spatial dimensions explicit, this research aims to contribute to a broader societal debate that rethinks the role of the distribution network towards a spatially and socially sustainable energy transition. On the one hand this would require Fluvius to further develop a more open attitude towards civil society and policy-makers at Flemish and municipal level. On the other hand, it is a reason for spatial energy planning initiatives at local, regional and Flemish level to consider Fluvius as an essential partner in the energy transition and insist on a more open collaboration.

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Examining the Regional Spatial Spillover Effect of Housing Price in Taiwan –An application of Housing Panel Data

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Abstract: Following the economic booming in Taiwan since 1950's, the housing prices increase in a fast pace, especially in the capital city area (Taipei) in northern region of Taiwan. However, there is an immense difference of rising degree by regions from north to south. The heterogeneity of regional spatial development forms the differences of housing environment attributes and results in different housing price distribution for local regions. In this study, we select three metropolitan municipalities regions in Taiwan, including Taipei, Taichung and Kaohsiung as the empirical areas to construct the so-called the Regional Housing Price Model (RHPM). The RHPM will be constructed empirically in Taiwan area to take into account of the spatial heterogeneity, spatial spillover effects, local environment attributes by metropolitan municipalities regions, and the Taiwan macro-economic factors as well. We investigate how national and regional elements impact on regional housing market by using spatial panel data model. Different from the past studies, this paper considers both spatial heterogeneity and dependency simultaneously. We found that the spatial spillover effect is positive in the northern region, negative in the central region, but insignificant in the southern region of Taiwan. It also shows that the three regions were in distinct stage of development, causing the characteristic of regional housing market to present differently.

Keywords: Housing price, Region Spillover effect, Panel data, Taiwan

Introduction

As seen in Figure 1, The housing price in Taiwan kept increasing in recent years, however the rising of regional housing price is inconsistency. Each housing market has different condition due to the unbalanced development of regions. Taking closer to it, we will discover there is an unbalanced issue in Taiwan. Besides being partial to the construction of western half of Taiwan, government of various periods make development focus region move from south to north (In western half of Taiwan, it can be divided into northern, central and southern regions). In general, unbalanced problem in Taiwan becomes worse and worse, northern region takes role of stronger development core, while central and southern regions are relatively periphery in current situation.

Following upper statements, the regional housing market failure may happen because that the differences of built environment, population, public service and so on, making the mechanism of housing market differs from region to region. The characteristic of regional development plays an important role in housing market, including not only the national and regional factors, but also spatial heterogeneity and spatial dependency.

Previous studies have shown that the national and regional factors have impact on regional housing price. Besides, by the use of panel data (combination of cross-sectional data and time series data, the structural differences(time-invariant) among regional housing market which may causing bias can be controlled. However, the problem of spatial dependency still remains. Instead of operating independently, regional housing market are interlinked, which should be considered in countries or areas where regions are strongly connected to each other. This paper was concerned with the construction of a housing price model that captures not only spatial heterogeneity but spatial dependency.

Spatial panel data can be seen as an extension of panel data with spatial units. By using spatial panel data, the problem of spatial heterogeneity and spatial dependency can be considered at one single model. This study developed a regional housing market model based on previous study, then extended it to spatial panel model to consider not only national and regional factors, but also estimated the spatial spillover effect in northern, central and southern region in Taiwan, with the data in which the spatial units are 19 cities and counties in Taiwan from 2002 to 2014.

The results showed that the three regions were in different stage of regional development, causing the different characteristic of regional housing market. Northern region, where facing the problem of extravagant housing prices, the demand of housing investment affected housing price more than housing consumption. The spillover effect in northern region was positive, meaning that the cities and counties in northern region will affect adjacent cities and counties. The demand of housing investment in central region was not significant, and the spillover effect was negative. The results might due to the reason that the central region is less developed than northern region. In southern region, the elasticity of demand for Housing consumption is the largest in all regions. The spillover effect was insignificant, meaning that there is no spatial interaction in the cities and counties in southern region.

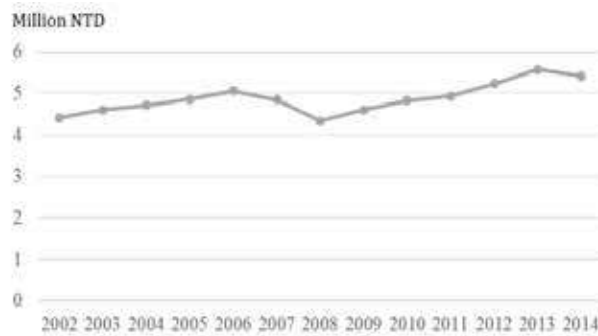


Figure 1 – Average trend of median housing prices in Taiwan counties

Literature Review

In the past, many researches have proved that there were numerous factors which may affect housing price. In terms of supply and demand, if demand of housing is higher than supply relatively, the HP will become higher. Take household as cardinal number, let it be multiplied by income and we will get the result of residential demand (DiPasquale & Wheaton, 1994). A supply and demand equilibrium model was established. The model assumes that HP will reflect changes in national and regional factors differ from regions. Residential demand is regional factors such as new house quality, population, income, employment rate, loan value ratio, etc. With nine regions in the United States as the empirical regions, it is found that the increase in the population or household quantity in six regions will increase the demand for housing, which in turn will increase housing prices (Reichert, 1990).

From the point of housing purchase decision-making, the employment rate and income of the employment market in different regions are distinct. If the employment rate is high, it will have a positive impact on regional housing prices (Reichert, 1990; Tabuchi, 1998; Baffoe-bonnie, 1998; Hsueh *et al.*, 2003). In addition, in terms of the maximum utility of housing, public finances and other consumer goods in the region, a model bases on that theoretical basis was established. Then access the cross-sectional data analysis and found that public finances in schools and other areas are one of the factors affecting population migration, which in turn affects housing demand and regional housing prices.

In theory, if interest rates are low, funds tend to flow into the real estate market or other financial markets to fight inflation, so interest rates represent the opportunity cost of investing in the residential market, and the impact on regional housing prices is negative (Reichert, 1990), but interest rates may also change in the same direction with regional housing prices (Ashworth & Parker, 1997; Meen, 1999), similar to the Pigou effect concept proposed by Pigou (1943), that is, if people's actual property increase (for example, due to rising interest rates or falling prices) will stimulate demand for consumer spending, causing suppliers to produce more goods, increase employment opportunities, etc., which is a positive cycle. This concept can explain why interest rate and housing price have same direction. The phenomenon, as the interest rate rises, increases the actual property of people, stimulating the consumption demand of the house, and the Pigou effect appears between the two. In addition, the rapid growth of housing prices can reduce the cost of residential capital, so the rate of change in housing prices is also a factor affecting investment demand (Reichert, 1990).

The cost of building a house is also a decisive factor in the supply of housing. Due to limited land resources and geographical differences in regions, the supply of regional housing is limited, and the results of different regional planning controls also make regional housings have inconsistent supply (Case & Mayer, 1996; Mayer & Somerville, 2000), the elasticity of housing supply has been reduced due to strict planning controls, which in turn has caused residential prices to rise.

Table 1 – Factors affecting HP from literature review

	Factors	Expected sign	References
Housing demand	Population, Household	+	Reichert(1990); Tabuchi(1998); Zhang <i>et al.</i> (2014); Chang & Chiu(2013); Nanda & Yeh (2013)
	Employment rate	+	Reichert(1990); Tabuchi(1998); Baffoe-bonnie(1998); Hsueh <i>et al.</i> (2003); Meen(1999)
	Income	+	Reichert(1990); Mikhed & Zemčík(2009); Ashworth & Parker(1997) Nanda & Yeh (2013)
	Public service quality	+	Case & Mayer(1996); Lin & Lin(1993); Kuo(2011) ; Kang(2012)
Domestic Economic	Interest rate	?	Reichert(1990); Ashworth & Parker(1997); Meen(1999); Chang & Chiu (2013)
	GDP	+	Reichert(1990); Ashworth & Parker(1997); Chang & Chiu (2013)
	Investment	+	Reichert(1990); Meen(1999)
Housing supply	Housing supply quantity	-	Case & Mayer(1996); Mayer & Somerville(2000); Chang & Chiu (2013)

The interaction of the regional housing market is derived from the population and capital flows between the regions, and the characteristics and reasons of the flows can be examined by the interactions triggered by economic activities between different regions of the regional economic system.

Friedmann (1966) divided the regional development into a four-stage Core-Periphery model, as seen in figure 2. In the initial stage of regional development, that is, the first stage, the regions have no relationship and independent development. Later, some regions grow relatively fast due to external factors, and regional development has entered the second stage. Compared with other slower growing regions, the faster growing core area becomes the dominant spatial structure. The resources of other periphery areas have been diluted cause the absorbency from core area, making the core area increasingly strengthened. Periphery area is declining, that is, the absorbing effect is greater than the extension effect, until the resources in the core area overflow to the periphery area, which makes the periphery area stimulated and begins to develop. At this time, the extension effect is greater than the absorbing effect, which is the third stage of spatial structure evolution. In the fourth stage, the region became a multi-core zone, and resources were closely intertwined with each other, and the economic system was integrated.

In the same way, regional housing prices are affected by their own regional factors and overall factors, or because the regions are not closed, population movements and information, resources are circulated between regions, etc., causing regional housing markets to interact with each other to generate extension and absorbing effect.

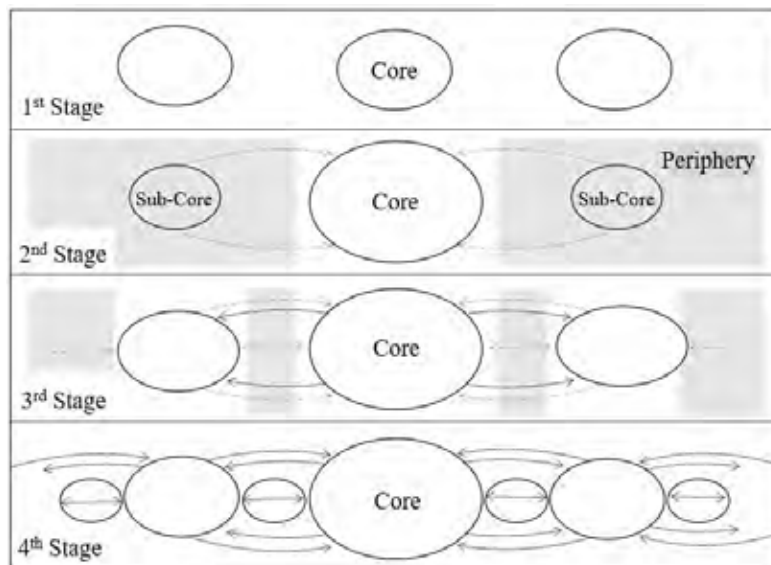


Figure 2 – Friedmann's Core-Periphery theory – model of 4 stages

Reference: Friedmann, J. (1966). *Regional Development Policy: A Case Study of Venezuela*: M.I.T. Press.

Spatial heterogeneity is unique and complicated characteristic of region. It will affect the housing demand and housing price, and it might be ignored because it is hard to be observed, quantified or only works in specific area. Previous relevant research noticed the existence of spatial heterogeneity, often expressed by the assumption that housing prices in different regions are affected by the same factor. Reichert (1990) established a regional housing price model based on regional housing demand and housing supply, and classified the United States into six regions for empirical analysis. It was found that the effects of overall economic factors and regional factors on regional housing prices were not consistent. Hsiao (1986) proposed to use panel data to solve the problem of bias caused by individual heterogeneity (such as region, person, company, etc.), to exclude the influence of heterogeneity on the explanatory variables, and to exploit the characteristics that heterogeneity does not change with time. After superimposing the cross-section data of different periods, it becomes the comprehensive time-space panel data, and controls the influence of the individual effects on the explained variables. Although the reason for heterogeneity is still can't be identified, the influence of other factors on the explained variables is no longer biased by the heterogeneity.

At present, some studies in Taiwan have explored the reason of regional housing price differences. Kuo (2011) used housing price ratios of each two houses in the six metropolitan areas of Taiwan as explanatory variables, with eight indicators within economic and social aspects, and access the panel data explores the relationship between residential price differences and socio-economic development gaps, and finds that employment opportunities have the greatest impact on regional price differences, followed by public expenditures. Although panel data allows the inclusion of individual heterogeneity, if the individual is a spatial unit, there is another obvious problem, that is, the spatial units are non-closed and may interact with each other. Although the previous researches considered the spatial heterogeneity and apply the panel data, due to the study of regional housing prices, the assumption that the regions are independent of each other is unlikely to be established in reality. There are often populations, industrial resources flowing between adjacent regions, and regional residential markets change simultaneously. Therefore, this study intends to introduce the concept of spatial econometrics, further expand the panel data into spatial panel data, and incorporate the possibility of spatial dependence into the model.

Empirical Approach

To consider both spatial heterogeneity and spatial dependency, this study modified a housing price model based on an investment decision model referred to Meen (1999) with fixed effect and spatial spillover effect. For city i in time period t , the 7 independent variables were interest rate ($IRATE$), the number of household (HH), income (INC), the unemployment rate (UER), the amount of housing supply (HS), capital gain (CP), and amenities (AMT). γ_i represented spatial time-invariant heterogeneity in city i . λ is spatial spillover effect, if it is significant index, it can prove that there is the impact the housing price in contiguity city j have on city i .

$$HP_{it} = \gamma_{1i} + \lambda \sum_{j=1}^N w_{ij} HP_{jt} + \gamma_2 IRATE_t + \gamma_3 HH_{it} + \gamma_4 INC_{it} + \gamma_5 UER_{it} + \gamma_6 HS_{it} + \gamma_7 CP_{it} + \gamma_8 AMT_{it} + \varepsilon_{it} \quad (1)$$

The data included 19 cities and counties (6 metropolitan municipalities, 3 provincial cities and 10 counties) in Taiwan from 2002 to 2014. The data was collected from Construction and Planning Agency Ministry of the Interior and National Development Council.

Table 2 – Narrative statistics of variables

Variables	Average	Standard deviation	Maximum	Minimum
Housing price, HP (NT\$)	4,878,000	2,202,000	16,060,000	2,370,000
Income, INC (NT\$)	784,000	175,000	1,344,000	475,000
Amenities, AMT (NT\$/person)	39,064.9	9,621.5	70,778.7	19,321.3
Household, HH (unit)	400,116.4	372,035.2	1,497,018.0	74,353.0
Housing supply, HS (m ²)	1,630,709.3	1,783,541.2	10,494,515.0	90,081.0
Unemployment rate, UER (%)	4.500	0.607	6.000	3.400
Capital gain, CP (%)	0.016	0.104	0.354	-0.371
Interest rate, $IRATE$ (%)	1.962	0.567	3.375	1.250

Results and Discussion

After empirical test, the final model is as followed:

$$\ln[HP_{it}] = \gamma_{1i} + \lambda \sum_{j=1}^N w_{ij} \ln[HP_{jt}] + \gamma_2 \ln[HH_{it} INC_{it}] + \gamma_3 \ln[HS_{it} HH_{it}] + \gamma_4 CP_{it} + \gamma_5 \ln[IRATE_{it}] + \gamma_6 \ln[AMT_{it}] + \varepsilon_{it} \quad (2)$$

As seen in Table 3, the results show that the spatial spillover effect of housing prices in Taiwan's counties and cities is significantly negative. It means that if one county's housing price increases, the adjacent counties' housing prices will decrease. It is inferred that on average, the absorbing effect of Taiwan's county and city housing markets is stronger than the extension effect. Because the high price of the county or the city means that they are more attractive, which stimulates the concentration of housing demand. Capital also flows into the more attractive counties and cities from the areas which has relatively weaker attractiveness. The gap in attractiveness is increasing, the number of high housing prices continues to increase, and those with low housing prices continue to decline, making the effect of space spillover negative.

The key factor affecting the housing prices in Taiwan's counties and cities is the capital gain rate (CP). Considering the definition of the variables in this study, the capital gain rate is calculated by deducting the last year's housing price from the current year's housing price, then divided by the last year's housing price. If the current housing price changes by 1% compared with the previous period, it will increase the current housing price by 22.3%. This conclusion is similar to the conclusion that Reichert (1990) uses the United States as an empirical region.

The income scale of the area (HHINC) has a significant positive impact on the housing prices of the county. The variable is defined as the average disposable income per household multiplied by the number of households, which represents the sum of the income of each household in the area. If the income scale increases by 1%, the average housing price in Taiwan will rise by 1.059%, and the degree of change between the two is equivalent. The amenities (AMT) measures the quality of public services. The model results are in line with expectations. It positively affects housing prices. It is inferred that people will measure the quality of public services in area when they choose their place of residence. In the case of a city with better public services, there are naturally more people willing to move to the city.

Moreover, the rise in interest rates (IRATE) will lead to an increase in housing prices in the region. This conclusion conflicts with the assumption that deposits and residential market investments are substitutes. However, the model results show that the higher the interest rate, the higher the housing price in the region. This conclusion supports the theory of the Pigou effect, which increases the actual wealth of people due to rising interest rates, stimulating housing demand and increasing housing prices.

Table 3 – HP models by regions

Variables	Region							
	Taiwan (pooled)		Northern (Taipei)		Central (Taichung)		Southern (Kaohsiung)	
	$\widehat{\gamma}_k$		$\widehat{\gamma}_k$		$\widehat{\gamma}_k$		$\widehat{\gamma}_k$	
λ	-0.178	***	0.291	***	-0.235	*	-0.001	
	(-3.478)		(4.220)		(-2.297)		(-0.017)	
$\ln(HHINC)$	1.059	***	0.890	***	1.357	***	1.430	***
	(9.867)		(8.346)		(67.085)		(9.261)	
$\ln(HSHH)$	0.012		—		—		—	
	(0.563)							
CP	0.223	***	0.177	**	0.202		0.104	
	(3.064)		(2.481)		(1.370)		(0.971)	
$\ln(IRATE)$	0.235	***	0.086	***	0.113	***	0.069	*
	(3.585)		(3.266)		(2.739)		(1.739)	
$\ln(AMT)$	0.107	***	0.261	***	0.264	***	0.350	***
	(3.978)		(3.228)		(3.396)		(3.215)	
R^2	0.929		0.946		0.937		0.920	
N	228		72		60		60	

Note : *P<.1, **P<.05, ***P<.01,

In the three major regions of north, central and south, only northern and central region have significant spillover effect index. Northern area is positive, while central area is negative. As seen in figure 3, there is a schematic diagram to show the spillover effect result of this empirical study. In this figure, red color means increasing housing price, blue color means decreasing housing price and gray color means no change of housing price. In terms of northern area, if core city's (Taipei City) housing price is on the rise, adjacent regions' (New Taipei City which covered by red) housing price increase, too. The spatial spillover effect of northern region has a value λ of 0.291, which means that if the price of one city in northern area increases by 1%, the housing price of the neighboring counties in northern area will rise by 0.297%. However, central area has negative index, it means that if core city's (Taichung City) housing price is on the rise, but adjacent regions' (Nantou County, Changhua County and Miaoli County which covered by blue) housing price decrease. If the price of one city in central area increases by 1%, the housing price of the neighboring counties in central area will fall by 0.235%. On the other hand, southern area has insignificant spillover effect index. It indicates that there is no spillover effect happening. In summary, the result of spillover effect shows that the three regions were in different stage of regional development, causing the different characteristic of regional housing market.

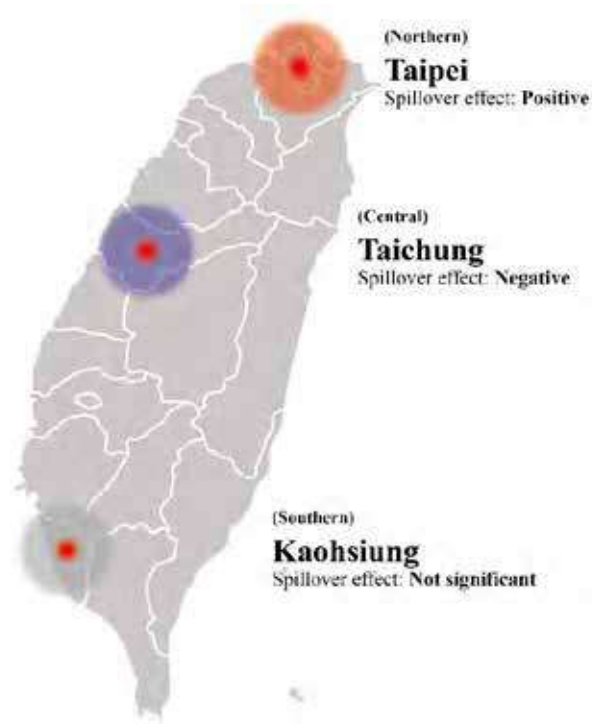


Figure 3 – Spillover effect of housing price in Taiwan

According to Friedmann's Core-Periphery theory, the development current situation of northern region from housing market which belongs to 3rd or 4th stage. In addition, the capital gain rate (CP) of northern region has a significant positive impact on housing price. If CP increases by 1 unit, housing price will rise up by 17.7%. It means that the demand of housing investment affects housing price more than housing consumption.

The demand of housing investment in central region is not significant, and the spillover effect is negative. The results may due to the reason that the central region is less developed than northern region, and central region may absorb resources from neighboring regions. It belongs to 2nd stage of Friedmann's Core-Periphery theory.

In southern region, it is inferred that although southern region developed earlier, but economic development and resources were weaker than northern and central region in late period. Development of region still belongs to 1st stage of Friedmann's Core-Periphery theory. Moreover, compare to the other two regions, the income scale (HHINC), amenities (AMT) have biggest effect among three regions, while capital gain rate (CP) has least effect. It means that household of southern region will be stimulated by increase of actual property. And southern region also has least Pigou effect.

Conclusion

The cities and counties in Taiwan not only have specific characteristic, but also spatial interaction due to the convenient transport facilities and high density population. This study combines panel data model and spatial model to consider both spatial heterogeneity and dependency. The results show that there are structural differences in regional housing market. Through literature review, the differences of regional development are the main reason.

The study limitation

First, this study can only collect data from 2002 to 2014. The number of samples is not sufficient enough to consider more independent variables and discover more phenomenon in housing market, such as the relationships between real estate cycle and the characteristic of regional housing market. Second, this study assumes that the housing price will reflect the changes of the dependent variables in the same period, but it may take times to reflect the changes in reality. Finally, in the model, the interest rate and capital gain are hypothesis to have impact on housing price without considering the possibilities that housing price may also influence interest rate and capital gain.

The study contribution

To investigate the regional differences of housing price in Taiwan, this study combined panel data model and spatial model to consider spatial heterogeneity and dependency simultaneously, finding out that not only the impact of the key factors but also the spatial spillover effect on housing price differed from region to region.

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USING VALUE-ADDED HIERARCHY METHOD TO ANALYZE INDUSTRIAL SPATIAL PATTERN IN THE BACKGROUND OF ECONOMIC TRANSITION -- A CASE OF GUANZHONG PLAIN URBAN CLUSTER IN CHINA

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Abstract: The "Belt and Road" strategy shoulders the important mission of promoting economic transition among nations and regions. The Guanzhong Plain urban cluster, located in the inland center of China, is an important gateway to the western region. The industrial division of Guanzhong Plain urban cluster will be conducive to further promoting the economic network along the "Belt and Road". In 2018, the "Guanzhong Plain Urban Cluster Development Plan (2017-2035)" and the implementation plans of three provinces were compiled to define the industrial division mainly based on the geographical proximity. This paper probes into the rationality of industrial spatial pattern of Guanzhong Plain urban cluster in the perspective of urban division and cooperation. By the statistical data of 11 cities related in the Guanzhong Plain urban cluster in 2017, the research divides all cities into five categories by using the method of value-added hierarchy, reveals the characteristics of industrial spatial pattern, and compares the industrial policies and position defined in the relevant plans. The result finds that the planning does not take the current advantages of industries and urban characteristics into account. Based on this, the paper put forward some optimization suggestions to coordinate development and promote the economic construction.

Keywords: economic transition; industrial spatial pattern; value-added hierarchy; Guanzhong Plain urban cluster

1. Introduction

In the report of "the Nineteenth National Congress", Xi Jinping pointed out the strategy of coordinated regional development. In November 2018, the "Opinions of the Central Committee of the CPC and the State Council on Establishing a New Mechanism for More Effective Regional Harmonious Development" put forward the idea of establishing a new mode of urban cluster development which is led by central cities and promote regional development, in order to promote the integration between regions. It can be seen that the urban cluster is of great significance in the regional coordination strategy, and it can achieve the optimal allocation of resources and enhance the leading role of radiation in a wider range. The "Belt and Road" strategy in China shoulders an important mission to promote economic transition among nations and regions. The latest rising urban cluster, Guanzhong Plain urban cluster, is the starting point of the ancient Silk Road, giving full play to its geographical advantages of connecting the East with the West and connecting the North and the South, which is conducive to

leading and promoting the development and opening up of the northwest area, optimizing the radiation effect of the urban cluster in the western region, and promoting the construction of the “Belt and Road”.

This paper discusses the industrial spatial pattern of urban cluster and takes the Guanzhong Plain urban cluster as an example. It compares and analyses the current industrial spatial pattern and related industrial planning requirements by using the method of value-added hierarchy and explores the rationality of industrial layout policy in the urban cluster development planning and tries to put forward optimization suggestions.

2. Research Basis and Background

2.1 Theoretical basis

Under the background of economic globalization, capital, technology, human resources and other factors of production flow around the world, resulting in the transformation of the spatial economic structure from “*industrial chain*” to “*value chain*”. Through different but interrelated production and operation activities, enterprises constitute a dynamic process of value creation (Fujita M. Krugman P. and Venables A. J. 1999). Logitech's “*Smiling Face value chain*” is just a typical case, in which research and development (R&D), assembly, marketing, management and other behaviors cooperate in the value chain. These behaviors are scattered in different enterprises in different places, and the final production is distributed in various intermediary behaviors in different enterprises (Henderson, J.V. 1974). Value-added hierarchy is the link that produces different values in the value chain.

In the world urban system made by the international labor division of transnational corporations, the horizontal spatial economic structure characterized by “*industry sector*” is changing into the vertical spatial economic structure characterized by “*value sector*”, forming an obvious hierarchical system based on value sector. In the global production network, cities are located in different value zones of international labor division, thus forming a world urban system characterized by “*value zones*”.

By using the method of “*value-added hierarchy*”, Zilai Tang investigates the evolution characteristics of urban system in the Yangtze River Delta urban cluster and analyses the evolution of industrial structure in different regions. Then some scholars do the research of the advantages and disadvantages of the value sections of Jing-jin-ji urban cluster, Yangtze River Delta urban cluster, Pearl River Delta urban cluster and some other urban clusters.

2.2 Background of Urban Cluster Development

Guanzhong Plain urban cluster is the latest national-level urban cluster proposed now in China. It is an important gateway to the western region and an important fulcrum of the Eurasian Continental Bridge. It has a unique strategic position in the pattern of modernization and all-round opening up. The construction background of the “Belt and Road” has promoted the important role of Guanzhong Plain urban cluster in coordinating regional development in economic globalization. Therefore, it is necessary to apply scientific method to analyze its industrial spatial pattern, so as to explore the optimization of relevant industrial planning requirements.

Guanzhong Plain urban cluster radiates outward from Xi'an as the center and is the second largest urban cluster in the western region. It is positioned as a national-level urban cluster with international influence and a new highland of inland reform and opening up. According to the actual development, Guanzhong Plain urban cluster is not bounded by the administrative scope of prefecture-level cities. The specific scope is shown in the table below (Table1). The total land area is 107,100 square kilometers.

Shaanxi Province		Shanxi Province		Gansu Province		
Xi'an, Baoji, Xianyang, Tongchuan, Weinan, Yangling demonstration zone	Shangluo	Yuncheng	Linfen	Tianshui	Pingliang	Qingyang
	Shangzhou District, Luonan County, Danfeng County and Zhashui County	Except Pinglu County and Yuanqu County	Yaodu District, Houma City, Xiangfen County, Huozhou City, Quwo County, Yicheng County, Hongdong County and Fushan County		Kongtong District, Huating County, Jingchuan County, Chongxin County and Lingtai County	Qingyang urban area

Table1: Scope of Guanzhong Plain urban cluster (source: author sort out according to the Planning)

3. Industrial Spatial Pattern of Guanzhong Plain Urban Cluster

3.1 Statistics of industrial data

This paper uses the analysis method of industrial value-added hierarchy proposed by Tang Zilai and other scholars for reference. The first thing is to do the statistics of industrial data of Guanzhong Plain urban cluster.

Statistical objects are 5 prefecture-level cities (Xi'an, Baoji, Xianyang, Tongchuan and Weinan) in Shaanxi Province and 6 prefecture-level cities (Shangluo City, Yuncheng City, Linfen City, Tianshui City, Pingliang City, Qingyang City) where more than 20 districts and counties are located in three provinces in Guanzhong Plain urban cluster planning scope (Figure1).

It should be noted that: 1) The use of prefecture-level cities as research units takes into account the consistency of statistical caliber and the availability of data.; 2) Yangling Demonstration Area in Shaanxi Province was originally located in Xianyang City. It was in 1997 a national agricultural high-tech demonstration area was set up independently there so that it has become a prefecture-level city. But its total economic volume is relatively low, so it is classified into Xianyang City in statistics. 3) The data are selected from the statistical yearbook of cities in 2017(i.e. data of year 2016), which is also the base year of the “*Guanzhong Plain Urban Cluster Development Planning (2017-2035)*” (Hereinafter referred to as “*the Planning*”).



Figure1: Planning boundary of Guanzhong Plain urban cluster and administrative boundary of 11 prefecture-level cities (source: author draw according to “the Planning”)

Drawing on the classification method of industrial types (Tang Zilai, 2010), the industrial types are divided into eight sectors (Table2). Among them: the construction industry has its particularity and is generally not considered; cities with a large proportion of mining industry accounts for other industrial categories are considered separately as special types. The ranking of the six industrial sectors included in the classification ranges from low to high is: agriculture, other services, labor-intensive manufacturing, capital-intensive manufacturing, technology-intensive manufacturing and producer services.

Industry	Industry sectors		Classification of National Economic Industries
Primary industry	Agriculture		Agriculture, forestry, animal husbandry and sideline Fisheries .
Second-ary industry	Manufacturing industry	Labor-intensive Manufacturing Industry	Agricultural and sideline food processing industry, food manufacturing industry, textile industry, textile and apparel, shoes and hats manufacturing industry, leather, fur, feather and its products and shoes manufacturing industry, wood processing and wood, bamboo, road, brown and straw products industry, furniture manufacturing industry, paper and paper products industry, printing and record media reproduction, cultural and educational sports goods manufacturing industry, rubber products industry, plastic products industry, non- Metal Mineral Products industry, Metal Products industry
		Capital-intensive Manufacturing Industry	Beverage Manufacturing, Tobacco industry, Petroleum Processing industry, Coking and Nuclear Fuel Processing industry, Chemical Raw Materials and Chemical Products Manufacturing, Chemical Fiber Manufacturing, Black Metal Smelting and Calendering industry, Nonferrous Metal Smelting and Calendering industry, General Equipment Manufacturing, Special Equipment Manufacturing, Transportation Equipment Manufacturing
		Technology-intensive Manufacturing Industry	Pharmaceutical Manufacturing, Communication Equipment, Computer and Other Electronic Equipment Manufacturing, Instrument and Instrument Manufacturing, Culture and Office Machinery Manufacturing
	Other industries		Petroleum and natural gas mining industry, power and thermal production and supply industry, gas production and supply industry, water production and supply industry, non-metallic mineral mining and dressing industry, non-ferrous metal mining and dressing industry, coal mining and dressing industry, ferrous metal mining and dressing industry, and other mining industries
	Construction business		Construction business
Tertiary industry	Productive Services		Financial insurance, real estate, leasing and business services, information transmission, software and information technology services, scientific research and technology services, water conservancy, environment and public facilities management
	Other services		Agriculture, forestry, animal husbandry and fishery services, transportation, storage and postal services, information transmission, computer services and software industries, wholesale and retail businesses, accommodation and catering industries, residential services and other services, education, health, social security and social welfare industries, culture, sports and entertainment industries, public administration and social organizations

Table2: 8 Industry sectors based on value-added hierarchy (source: according to Tang Zilai, 2010)

According to statistics, the proportion of added value of six major industrial sectors in the gross domestic product of each city is obtained. (Table3)

Province	City	Agriculture	Other services	Labor-intensive Manufacturing Industry	Capital-intensive Manufacturing Industry	Technology-intensive Manufacturing Industry	Productive Services	GDP (¥100 million)
Gansu Province	Qing	14.2%	25.9%	0.4%	16.5%	0.1%	9.6%	598
	Pingli	28.1%	30.4%	18.2%	1.6%	4.6%	16.7%	367
	Tianshui	16.8%	38.8%	1.4%	8.0%	4.9%	11.3%	590
Shaanxi Province	Baoji	8.9%	19.6%	11.1%	11.8%	2.6%	7.6%	1932
	Xian	14.4%	18.6%	18.2%	12.0%	4.8%	8.1%	2396
	Tong	7.7%	27.2%	23.7%	4.2%	2.6%	11.9%	312
	Xi'an	3.7%	42.0%	2.4%	8.4%	7.7%	18.9%	6257
	Weinan	15.1%	28.6%	8.7%	9.5%	2.4%	10.1%	1489
	Shan	13.9%	24.7%	12.9%	1.2%	6.9%	7.9%	699
Shanxi Province	Yuncheng	16.4%	32.3%	3.0%	7.1%	4.8%	13.4%	1222
	Linfen	8.0%	29.8%	-0.5%	-5.8%	0.1%	15.5%	1205

Table3: Statistics of the proportion of added value to GDP (source: author)

3.2 Analysis of value-added hierarchy

3.2.1 Data-based Urban Classification Analysis

Using SPSS software to cluster the data of the proportion of added value to GDP of six major industries in each city, the results of urban classification are obtained (Table4).

Type	City
Type 1	Xi'an
Type 2	Shangluo
Type 3	Qingyang, Baoji and Yuncheng
Type 4	Xianyang, Tongchuan and Weinan
Type 5	Pingliang, Tianshui
Special Type	Linfen

Table4: Cluster analysis and classification results (source: author)

Then, using the statistical method of mean deviation from standard deviation (STD) multiple, the value segments of various cities are characterized by the 'eigenvalue T'. The calculation method of industrial 'eigenvalue T' for each region is shown in formula (1). Among them, 'x' is the average of the proportion of added value of certain industry in GDP of a certain type of city, ' \bar{x} ' is the average of the proportion of industry added value in each type of city, and STD is the standard deviation of the proportion of industry added value in each type of city. If the

eigenvalue of the ‘m-sector’ in the ‘type-n city’ is greater than 1, then the ‘m-sector’ has obvious characteristics in the ‘type-n city’.

$$T = \frac{x - \bar{x}}{STD} \quad (1)$$

According to the statistics and calculation results of 2016 (Table5), the division of urban industry characterized by value-added hierarchy in Guanzhong Plain urban cluster has been formed, but it is not significant yet.

Type	Agriculture	Other Services	Labor-intensive Manufacturing Industry	Capital-intensive Manufacturing Industry	Technology-intensive Manufacturing Industry	Productive Services	* Other industries
Type 1 (Xi'an)	-1.50	1.51	-0.79	0.26	1.58	1.62	-0.69
Type 2 (Shangluo)	0.08	0.31	0.46	-0.90	1.26	-0.10	0.01
Type 3 (Qingyang, Baoji, Yuncheng)	-0.03	-0.42	-0.50	0.81	-0.51	0.46	0.46
Type 4 (Xianyang, Tongchuan, Weinan)	-0.15	-0.58	0.93	0.29	-0.21	-0.49	-0.09
Type 5 (Pingliang, Tianshui)	1.40	0.80	0.09	-0.32	0.41	0.55	-1.28
*Special Type (Linfen)	-0.84	0.12	-1.14	-2.03	-1.50	0.95	2.14

Table5: Calculations of the eigenvalues of five types of cities (source: author)

Type 1 cities: There is only Xi'an in this type, which shows the obvious characteristics of technology-intensive manufacturing, producer services and other services (deviating more than one-fold).

Type 2 cities: Shangluo is in this type, whose technology-intensive manufacturing industry is significant, and other services and labor-intensive services are higher than the regional average.

Type3 cities: Qingyang, Baoji and Yuncheng in this type, whose various sectors are not obvious, only capital-intensive. The concentration type is relatively high (0.81 times deviation from the average).

Type 4 cities: Xianyang, Tongchuan and Weinan, each of which is not obvious, and the labor-intensive manufacturing industry is close to one-fold deviation (0.93).

Type 5 cities: Pingliang and Tianshui, and their agricultural ministries are significant, while the two types of services are higher than the average by more than 0.5 times.

It is worth noting that Linfen's manufacturing industry characteristic value is less than - 1, which shows the weakness of manufacturing industry in the region is very significant. However, Linfen's other industrial ministries are very significant (deviating more than two times), and the obvious characteristic is that it's a resource-based

city depending on the development of mineral mining industry, which should be taken into account in industrial planning.

3.2.2 Spatial Analysis Based on Urban Classification

The spatial distribution characteristics of the 5 types of cities can be observed when they fall into space (Figure2):

On the whole, it presents a circle model with Xi'an as the center. The core circle of Xi'an service industry and high-end manufacturing industry occupies the first place in the region.

Xianyang, Tongchuan and Weinan, which are close to Xi'an, are the second circle, and are all type 4 cities where the lower-end manufacturing industry, labor-intensive manufacturing industry, is more prominent. These cities rely on the location advantages of neighboring Xi'an and the convenience transportation network around Xi'an. So they have gathered a large number of labor-intensive enterprises.

The third circle composed of Qingyang, Baoji, Yuncheng and Shangluo, which belongs to type2 or type3 cities, with prominent middle and high-end manufacturing industries. These cities are often rich in oil and gas mineral resources (Qingyang is rich in oil, Baoji and Yuncheng are rich in non-metallic minerals), which have resource advantages for the development of capital-intensive manufacturing industries.

It is the fourth circle composed of Tianshui, Pingliang and Linfen. In this circle, Pingliang and Tianshui have limited mineral resources, mainly agriculture and low industrial value, while Linfen presents the phenomenon of excessively single industrial structure that other industrial sector is abnormally prominent and the manufacturing level is far behind the regional average.



Figure2: Industrial pattern of Guanzhong plain urban cluster based on value-added hierarchy (source:author)

3.3 Summary

Based on the analysis of the current situation of 11 prefecture-level cities based on industrial data, the five-level classification of cities is obtained, and the industrial value section of urban cluster is interpreted as a circle structure in space. It is found that the surrounding cities of Xi'an develop low-end manufacturing mainly by means of resource adsorbing power of core cities, and the cities farther away from Xi'an develop capital-intensive manufacturing, agriculture or other industries mainly by means of local resources. The industrial division system between cities is more obvious, and the industrial spatial pattern has taken shape preliminarily.

4. Comparison of Industry Orientation and Current Situation

4.1 Planning interpretation

In February 2018, the National Development and Reform Commission approved “the *Guanzhong Plain Urban Cluster Development Planning (2017-2035)*” (hereinafter referred to as *the Planning*). The Planning period lasts until 2035. The spatial layout and industrial system of Guanzhong Plain urban cluster are clearly defined in “*the Planning*”: Taking the construction of National Central City and regional key node city, Xi'an, as the carrier to accelerate the development axis and growth pole and build the overall pattern of ‘one circle, one axis and three belts’ (Figure3). And build an important base of advanced manufacturing industry, strategic emerging industries and modern service industry in China, promote the industry from the low end of the value chain to the high end, and promote the development of northwest and surrounding areas by radiation. While deepening the core functions of Xi'an, it also emphasizes accelerating the development of regional coordination.

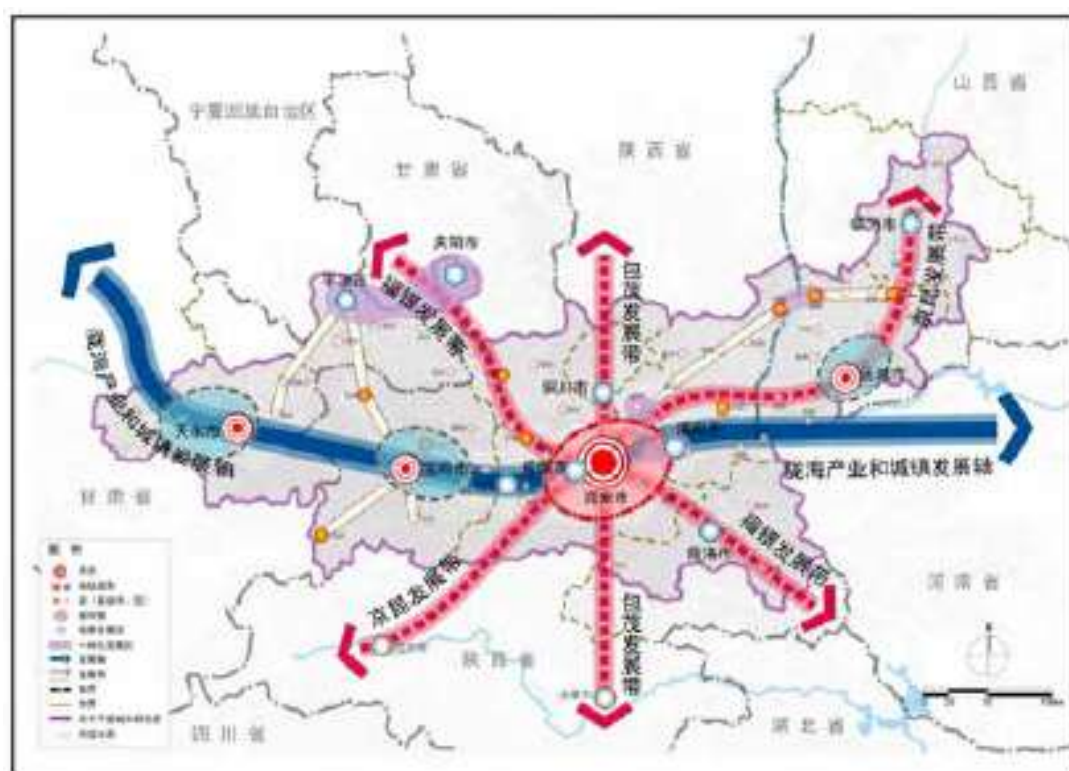


Figure3: Spatial pattern of Guanzhong Plain urban cluster (source: translate according to the *Guanzhong Plain Urban Cluster Development Planning*)

With the development of Guanzhong Plain urban cluster rising to national strategy, Shaanxi Province, Shanxi Province, Gansu Province have also issued Implementation Planning to further clarifying the industrial positioning

and planning requirements of each city. According to the related description of the planned industrial positioning, the author sums up the cities' industry sector according to the leading industry function of each city. (Table6)

Province	City	Industry Sector
Gansu Province	Qingyang	Agriculture
	Pingliang	Capital-intensive Manufacturing Industry
	Tianshui	Other services
Shaanxi Province	Baoji	Productive Services
	Xianyang	Other industries
	Tongchuan	Labor-intensive Manufacturing Industry
	Xi'an	Productive Services
	Weinan	Other industries
	Shangluo	Agriculture
Shanxi Province	Yuncheng	Other industries
	Linfen	Other industries

Table6: Industrial sector of cities in Guanzhong Plain urban cluster (source:author)

According to “the Planning” and the implementation schemes of Shaanxi, Shanxi and Gansu Provinces, as well as the industrial sectors summed up before, the urban classification of the planning is obtained. (Table7)

Type	City
Type 1	Xi'an
Type 2	Baoji
Type 3	Yuncheng, Tianshui
Type 4	Xianyang, Weinan, Tongchuan, Pingliang and Linfen
Type 5	Qingyang, Shangluo

Table7: Urban classification under relevant planning oindustry requirements (source:author)

4.2 spatial analysis

Based on the above-mentioned planning interpretation of industrial system and urban classification, return the classification to the space, and it is found that the pattern centered on Xi'an is still obvious, but the regional industrial system presents a distinct banded structure (Figure4). Compared with the current spatial pattern of Guanzhong Plain urban cluster (Figure3), the overlap degree between industrial division of labor among cities and the main axis of regional development is relatively high, especially in the western section from Xi'an to Tianshui, which is obviously higher than that of surrounding cities and decreases in a ladder shape. On the one hand, such a zonal industrial structure is conducive to the division of labor and dislocation between cities, and to the formation of a spatial economic structure characterized by value-added hierarchy with good "political rationality"; on the other hand, the subjective interference of such zonal structure is intense, and whether it has "technological rationality" is worth further verification.



Figure4: Industrial pattern of Guanzhong Plain urban cluster based on "the Planning"(source:author)

4.3 Discussion on the Rationality of Orientational Industrial Spatial Pattern

4.3.1 Type1 City

According to the relevant planning interpretation, only one city in Xi'an is a first-class city. Its current situation has the advantages of high value sector industry department, and its future leading position in the development of urban cluster industry can be maintained. (Figures5 and 6)



Figure5: Distribution of eigenvalues of technology-intensive manufacturing industry in 2016 (source:author)

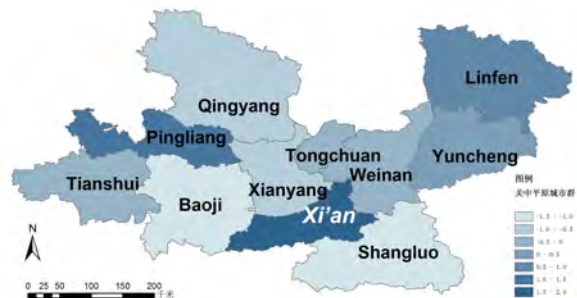


Figure6: Distribution of eigenvalues of productive services in 2016 (source:author)

4.3.2 Type2 City

According to the planning, Baoji is the second type of city in Guanzhong Plain urban cluster. In the planning, Baoji is positioned as a "sub-central city of Guanzhong Plain urban cluster" and a "national comprehensive transportation hub" to develop modern service industry, modern agriculture, automotive parts supporting industries and other productive services and capital-intensive manufacturing industries. According to the author's analysis, the rationality of Baoji's second-class city positioning is insufficient. The reasons lie in:

(1) From the angle of the eigenvalue of industrial sector: the value of its superior industries is relatively low, and capital-intensive manufacturing and labor-intensive manufacturing are higher than the regional average, but not significant (less than 1 times). Therefore, from the point of view of the current industrial structure, Baoji City does not have prominent superior industrial sectors.

(2) From the angle of the Population Growth: Comparing the growth rate of permanent population in Baoji City and Shaanxi Province from 2010 to 2016, we can find that the growth rate of population in Baoji City has been lower than the average of the whole province since 2010, which shows that the current population attraction of the city is low, and the urban agglomeration is insufficient, and it is difficult to support the goal of the sub-center. (Figure7)

(3) From the angle of traffic planning: “The Planning” puts forward the schematic plan of traffic planning for urban cluster at the end of the planning period (Figure8). Compared with Tianshui on the west side of Baoji, only one more general railway is under construction, while Tianshui has a civil airport. Therefore, the target taking Baoji as a national comprehensive transportation hub is too high, which is slightly inappropriate as a second-class city.

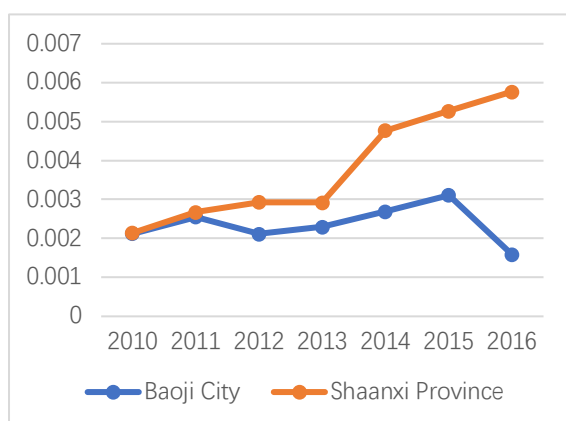


Figure7: Population Growth Rate of Baoji and Shaanxi Province (source: author draw according to the Statistical Yearbook of Shaanxi Province in 2016)



Figure8: The traffic network planning of Guanzhong Plain urban cluster (source: author draw according to “the Planning”)

4.3.3 Type3 City

According to the planning, Yuncheng and Tianshui are the third type of cities in Guanzhong Plain urban cluster. Yuncheng and Tianshui, which belong to Shanxi Province and Gansu Province respectively, are important node cities on the East and west sides of urban agglomeration.

The planning of Yuncheng is reasonable.

The relevant industrial planning of Tianshui requires the development of microelectronics design, electronic information and other industries, and the establishment of national advanced manufacturing and high-tech industry transformation base. These requirements correspond to the technology-intensive manufacturing industry. However, as a national historical and cultural city and an excellent tourist city in China, Tianshui has significant characteristic values of other services (including accommodation, catering and other tourism-related industries). (Figure9) Although agricultural and technology-intensive manufacturing industry is higher than the regional average, it has not become the dominant one. Therefore, it is difficult for Tianshui City to transform into a technology-intensive manufacturing industry in the future.



forms a technology-intensive industry cluster area with Xi'an. The planning requires that its industry return to agriculture is counter-trend and unreasonable.



Figure 11: Distribution of eigenvalues of capital-intensive manufacturing industry in Guanzhong Plain urban cluster in 2016 (source: author)

5. Comparison of Industry Orientation and Current Situation

Based on the industrial spatial pattern of Guanzhong Plain urban cluster in 2016 and the related industrial positioning requirements, the above discussion finds that the industrial planning has not taken into account the current industries and the characteristics of the city. According to the analysis, the following suggestions are put forward for the industrial development direction of some cities:

- It is suggested that Baoji should focus on the development of capital-intensive manufacturing industry in the near future and clarify the dominant industries.
- It is suggested that Tianshui tap tourism resources to make up for the shortcomings of manufacturing industry with the development of high-quality service industry;
- It is suggested that Pingliang develop high-quality agriculture, combine agriculture with service industry, and avoid falling into the competition of homogenization with labor-intensive manufacturing industry in surrounding cities.
- It is suggested that Linfen attach importance to mineral resources, gradually transform into capital-intensive industries related to mineral processing, and gradually optimize the urban industrial structure.
- It is suggested that Shangluo change its industrial orientation of vigorously promoting agricultural development, respect its manufacturing development status, strive to upgrade the transformation of manufacturing industry and climb to a higher value zone.

The Guanzhong Plain urban cluster is proposed to make use of the urban agglomeration to drive the regional coordinated promote the integration between the regions. At every stage of development, the industrial division system should be suitable for the urban cluster, and the industrial spatial pattern of the region should be clearly defined, so as to better grasp the opportunity of the "The Belt and Road " and promote the development of the western region in the new stage.

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SP18

Transition histories

Progress in the nineteenth-century: planning, building and managing the modern urban infrastructures in Coimbra

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Abstract: During the 19th century, cities throughout Europe faced a period of transition. The rise in technical skill, the hygienic theories, the urban sanitation and the new forms of transport created an unprecedented transformation in European cities and dictated the emergence of urbanism. Portugal, a small, peripheral country also faced this transition. Moreover, this change was not limited to the urban fabric, it was necessary to create a body of technicians capable of planning and carrying out the major infrastructure works. It was also required to create institutions capable of programming these processes and municipalities had to form technical entities, commission the first topographic surveys and demanded a large dose of politicians' boldness. Coimbra, a medium-sized city, but until the beginning of the 20th century, the settlement of the only Portuguese University, was an example of these process of modernization. However, the size of the city and the lack of entrepreneurs made it difficult and delayed the process. This paper aims to show how during the second half of the 19th century, Coimbra managed to dare to replicate the improvements in progress in Europe and, beyond the expansion of the urban fabric, introduced modern urban infrastructures into the city.

Keywords: sanitation, urban planning, infrastructure networks, public service

The begging of the nineteenth century and the emergence of public health

In Europe, the nineteenth century is a period of transition. Following the industrial revolution, cities changed, not only because of the increase in population and urban area but also because of the new technology and the introduction of new urban infrastructures and new conditions for comfort (Hall, 1997; Sutcliffe, 1980 and 1980).

At the beginning of the century, Coimbra was a medium-sized Portuguese city, yet the seat of the only Portuguese University, a fact that placed the city among the most important Portuguese Cities, just after Lisbon and Porto. However, faced serious health problems, in particular, because of the Mondego River that recurrently invaded the lower part of the city and because of the lack of the modern public infrastructures.

Moreover, the development of medicine and science had led to a growing concern about the urban conditions of cities and the concept of public health. With the emphasis on the French investigations focusing on the health of buildings and spaces carried out by the *Société Royale de Médecine* and by the *Académie des Sciences*, and which underlined the importance of urban conditions in containing epidemics. The concept of *Public Health* was, then, disseminated, published in texts by some doctors who defended the need to create and impose public hygiene regimentations to improve the health of the people.

In Portugal, we must highlight the work of Ribeiro Sanchez, who published the book *Tratado de Conservação de Saúde dos Povos* (Treaty of Peoples' Health) in 1756, one year after the Great Earthquake of 1755. In this book, he defended the need to preserve human health and argued that the population is the first source of national wealth and so should be protected. This idea, at that time, reveals the rise of a new understanding of government, where what mattered was no longer the individual but the people as a whole. This text was very innovative and defined restricted sanitary police regulation, extended to architectural forms and to the organization of cities, pointing out the dimensions and form for squares and green spaces, as well as the location of temples, convents, hospitals, prisons and housing itself.¹

Despite this innovative thought, only after the cholera morbus epidemic, which devastated the whole of Europe, did the need to reform the city begin to emerge in the early nineteenth century. In this sense, in 1848 London published the Public Health Act and the Law of August 31 which created the General Board of Health, inaugurating a new form of city planning which was to have repercussions throughout Europe, emphasising the importance of urban infrastructure networks, especially water supply and the sewage system for the health of the city.

In Portugal, at the beginning of the nineteenth century was created the *Junta da Saúde* (Health Board) with responsibility for defining a new Health Regulation and for monitoring the country, assessing the "state of cleanliness of the different Cities, Villas, and Places of the Kingdom, and the most effective and convenient way to set up the necessary cleanliness when it does not exist."² After the liberal Regime created the first draft of the General Regulation of Public Health in 1821, however, this was a period of great social, political and economic instability and it took fifteen years to publish the definitive regulation and create the Council of Health and the medical district delegates. In the following years, a set of legal documents was published which shows the difficulties and the resistance to the implementation of some of these measures, which implied new habits and ways of life.³

The main changes concerning urban planning and the sanitation of cities came after two new cholera epidemics in the years 1855-1866 and a decade later in 1865. As a consequence of these epidemics, most cities built public cemeteries and increased their concern with the water supply of the city.

¹ According to miasma tic theory, epidemics were the result of poor air quality, caused by the putrefaction of organic materials or the polluting fumes of industries, so it was necessary to guarantee the cleaning of streets and dwellings, especially in the less wealthy zones of population.

² Ordinance of August 28, 1813, Article X and XII. (Portuguese Court, 1836)

³ This resistance lasted through the century, for example, concerning burials in cemeteries or the generalization of vaccines.

The installation of modern urban infrastructures. The difficulties of a medium-sized city⁴

Coimbra in this period was one of the most important of Portuguese cities; however, the city was mono-functionalized around the University and lacked other activities, namely industry. Nevertheless, the University had a huge influence on what happened in the city, if during the Ancient Regime, the presence of the University was compulsory in the City Council. Later, during the Liberal Regime, this influence prevailed, this time, conquered by vote. In fact, between 1834 and 1934, most of the elements of the City Council and the Municipal Senate were professors of the University.

This may explain some of the innovative projects that were planned in the city, like the early initiative in January 1835 to establish a public cemetery in the city – eight months before the first national legislation that established the obligation of the Municipal Council to create spaces for burials.⁵ This was probably a consequence of the difficulties experienced during the epidemic that devastated the city in the previous year, and despite this, this measurement reveals the knowledge of the Municipal Council about what was happening in Europe and the will to transform the city in accordance with modern hygienic principles. Thus the council asked for two fences of old monastery buildings, one on each side of the river to create two cemeteries. However, it was only on May 4, 1843, that the government ceded land for the implantation of the municipal cemetery, in the former farm of the College of Tomar. Yet this land was unsuitable for establishing a cemetery and the City Council had to buy Conchada Farm. After many technical and financial problems, the city finally blessed the municipal cemetery in September 1860.

In addition to this improvement, the city required some measurements to prevent the Mondego river flooding, like the upheaval of the low neighbourhood and the construction of a new river bank. The wetness of the land and still water were the focus of unhealthiness, which worried the Municipal Councils who repeatedly asked the government to make these improvements. But while on the one hand, the Mondego had this destructive nature, on the other hand, it was the largest source of water supply for the population. Its water was sold by water sellers in the streets and it was used for washing clothes and for bathing. While the water in the public standpipe was scarce or of poor condition. The municipality tried to solve these problems by diverting the watercourse of some springs on the limits of the city, but the problem persisted.

The first attempt to resolve the situation definitively was in 1865. When António Augusto da Costa Simões, a former mayor and a professor of medicine at the University, went to Paris on a scientific visit and during his visit, offered to hire a technician to study a water supply project through the capture and elevation of the Mondego River water. This idea arose in sequence to a series of analyses carried out in the University's laboratories of the city's water sources in the year 1862, in which it was concluded that the best water for

⁴ This paper is based on the work developed by the author's in her PhD dissertation, in this sense the main reference is Calmeiro, M.R., 2015, *Urbanismo antes dos Planos: Coimbra 1834-1934* (Coimbra: University of Coimbra).

⁵ On January 10, 1835, the mayor asked the government for some land from a former monastery to "establish in this city [...] convenient locations for public cemeteries". However, the first national decree to fix the need to create public cemeteries was that of September 21, 1835, in line with the European sanitary legislation created after the cholera epidemic that plagued Europe in the early nineteenth century. Representation of the Chamber of January 10, 1835. In Arquivo Histórico Municipal de Coimbra, Registration of Correspondence, Volume IV, 1829-1835, fl37. Decree of September 21, 1834, (Portuguese Courts, 1837)

consumption was river water. (Simões, 1890). The Municipal Council accepted the offer and Professor Costa Simões hired the engineer Louis- Charles Mary, a well-known engineer (responsible for the water supply project of many European cities like Lisbon or Barcelona), to start the project. Meanwhile, a new Municipal Council was elected, and the project was postponed. A few years later a new council decided to continue the project, but the French engineer's fees were too expensive. Thus, the municipality decided to create invite tenders from companies interested in planning, building and then exploring the new water supply network for the city. There were two proposals, with the winning one from Professor Costa Simões in partnership with engineer Cândido Xavier Cordeiro, a Portuguese engineer who had studied with Mary in Paris. The provisional contract was signed on January 27, 1872. However, this partnership needed to find a construction company with the financial and technical capacity to build their project. Unfortunately, they failed to interest any company and had to request the restriction of the contract in November of that year. The following year, tenders were invited again and Professor Costa Simões and the engineer Cândido Xavier Cordeiro won again, but once again they could not find investors interested in taking on the risk of undertaking the building and exploiting the water supply network of Coimbra.

However, Professor Costa Simões would not abandon the idea. A few years later, as director of the University Hospital, he gained the support of the director of the University Botanical Garden, Professor Júlio Henriques to jointly request a project to supply water to the University. They contacted the engineer Adolfo Ferreira Loureiro, Director of the Improvement Works of the Mondego River. This experienced engineer, confronted with the proposal and recognizing the need to provide this service to the whole city, designed a project that could be extended to the whole city if there was financial support from the central government. On June 20, 1876, the project was presented to the Ministry responsible for the hospitals and the University, but they received no answer.

Meanwhile Professor Costa Simões, again on a study visit in Paris, decided to consult companies to supply the necessary equipment for the execution of the project and was able to establish a partnership with a metallurgical entrepreneur, Hermann Lachappell, for the supply of all the machines and pipes. A new contract was signed with the municipality in February 1879 but the desired water supply network from the Mondego River was postponed once again. The expansion of the project to supply the whole city had tripled the initial budget, and the French businessman was unable to achieve what he had set out to do. But this time Costa Simões managed to pass the contract to an English industrial engineer James Easton, in July 1881. This entrepreneur was trying to build the water supply network in Seville, Spain and the work of the water supply of Coimbra could enhance more projects in Portugal. In December 1881, after finishing the final studies for the network he proposed to also project, construct and explore the sewer network, evoking the reduced number of inhabitants and profit. Despite the need for this improvement, the municipality had no financial capacity and as a consequence, the entrepreneur refused to sign the final agreement and in September 1887 the contract with the English industrial was rescinded, with serious damages to the city, which continued with a water supply from standpipes and faced scarcity and poor quality of water, as well as the lack of any sewage network.

In 1887, a severe outbreak of typhoid fever affected the upper neighbourhood and the university area. According to experts, this fever originated from a water distribution aqueduct, contaminated by a break in a sewer pipe. Because of this incident, the mayor, Professor Luís da Costa e Almeida, asked the government "for the means necessary to undertake the necessary improvements in the city, especially in the sewer pipes and since this was the setting of a remarkable scientific establishment where every year hundreds of students from all parts of the country come"⁶. He also claimed that this crucial work for the University and especially for the University

⁶ Representação de 16 de Junho de 1887. In AHMC, *Representações às Cortes e ao Governo, 1881-1892*.

Hospital should be carried out by the government or at least with its financial support. In response, the government delegated the engineer Adolfo Ferreira Loureiro with the elaboration of a project to create the best sewage system for the city.

Transition in the municipal administration, abandoning reliance on private enterprise and spearheading the installation of the new public services

In 1886, the municipality, headed by João José Dantas Souto Rodrigues, tired of the various attempts to create a modern water supply network and embarked on a new and decisive phase, not only for the water supply but for the future of the city administration. They decided to assume responsibility for the execution of this improvement and undertake the construction of the new water supply network from the Mondego River by their own means. For this, they hired the engineer Adolfo Ferreira Loureiro to update his project approved in 1879. On January 5, 1888, a contract was signed with Eugène Béraud and the work began in March.

At the beginning of 1889, the water pumping station at Porto dos Bentos was ready to operate and in May of that year, the network started to operate. Just nine years after Lisbon and three years after Porto, Coimbra had a modern network of water distribution by mechanical means, with the particularity of it being the exclusive responsibility of the municipality.⁷

Shortly after the construction of the water supply network, the engineer Adolpho Loureiro submitted to the government and the Advisory Board of Public Works and Mines the project and budget for the sewage network for the city. It proposed the use of an innovative solution, applied in Paris, called the *Berlier Metallic Pneumatic System*, composed of a network of iron pipes and collectors connected by pneumatic devices that ensured that the pipes were always empty. It also had the advantage of being easy to apply and completely impermeable and on the other hand, the sewage flow would be reduced, facilitating its use for fertilization of farms along the Mondego valley. Unlike most of the systems applied at that time, this system was designed only for sewage; there was another network for rainwater and this duplication increased the costs but safeguarded the drainage network during river floods. The minister approved the project, but the innovation of the system generated great discussion in the city and as a consequence, when the government invited tenders for the works, the possibility was opened to propose a different solution.

The winners were the engineers José Cecílio da Costa and João da Costa Couraça, who proposed a *System of Continuous Circulation of sewage*, a unitary system for the network of rainwater and sewage. To reduce costs and facilitate implementation, they proposed a set of small section pipes, three main collectors and a reservoir, set up in the Padrão area, which would raise and discharge sewers directly into the irrigation fields of the Mondego valley. (Costa, Couraça, Bessa, 1893)

The construction works began in November 1897 with the main collectors, after which the remaining works would be conducted according to the financial availability of the municipality and with the progressive growth of the city. In fact, at the end of the 19th century, when the city began to build several neighbourhoods and expand its limits, the sanitation network started operating but without the Padrão reservoir, and sewage was

⁷ In Paris, this method of water pumping was used since 1782 and in London at least since 1829. In Lisbon, the method was used early in 1869 but the system had a large deficit of flow and only becomes effective after the water pumping station at Alviela in 1880. (Custódio, 1994 and Pinto, 1972). In Lisbon, the water supply system was leased to Companhia das Águas de Lisboa since 1867. On the issue of municipalization of the Companhia das Águas de Lisboa see Álvaro Ferreira da Silva.(1998 e 2004).

launched directly through the drains of Coselhas into the river Mondego, without treatment and without having been used for fertilizing the fields. The fragmented construction of the network compromised the performance, and only at the beginning of the 20th century was the situation solved.

From the municipal water supply network to the municipalization of all urban services

At the end of the 19th century, in addition to the modern water supply network and the sewage network, Coimbra had a gas network for individuals and public lighting. Thanks to the English entrepreneur Hard Hislop, who was also responsible for the installation of the Porto gas network, the streets and streets of Coimbra had been illuminated by gas since October 1, 1854, one year after Porto and only six years after Lisbon. (Custódio, 1994 and Caetano, 1998)

Regarding the creation of a public transport network, the process was not so fast or simple. The first attempt occurred in 1874 when American Car started to connect the railway station to the city centre (as seen in Figure 1) but lasted only eleven years. In 1885, the new train station near the river in the downtown led the Conimbricense Railroad Company to close. Before that, they had proposed a new line to connect to the Alta, but the new Santa Cruz neighbourhood was not yet built, and the proposal was considered impracticable.



Figure 1 American car route in 1874 (Calmeiro, 2015: 285)

Seventeen years later, the entrepreneur Augusto Eduardo Freire de Andrade, owner of the *Coimbra Carris de Ferro Company*, presented a proposal for the creation not only of a line but of a network articulated with the growth of the city. Although the proposal had the support of the local press, the mayor Manuel Dias da Silva was unwilling to implement it because he wanted an electric system instead, for both public transport and lighting. For this, he invited tenders to introduce electricity in Coimbra. However, the small size of the city did not arouse the interest of external investors and there were no proposals. With this setback, the concession to the Coimbra Carris de Ferro Company was approved and at the beginning of 1904 two lines began to operate, one between the train station and *Largo Príncipe D. Carlos* and another between *Estação Nova* and the Castle.

However, this system of traction using animals soon proved to be inefficient for the slope of the city streets and two years later the concessionaire proposed installing electric traction with the financial support of the municipality. Despite the subsidy, the company started to face financial difficulties, worsened by the death of Augusto Eduardo Freire de Andrade, and the work was postponed.

Meanwhile, the municipality continued trying to install electric light in the city and in 1903 signed a new contract with a Portuguese company, *Almeida e Santos, Lino & Companhia*, but a series of delays led to the termination of the contract. This, in turn, led to a new way for the municipality to work and a new understanding of how urban public services should be managed. The mayor Professor Manuel Dias da Silva tired of the dependence on foreign investors for the municipality decided to repeat the process carried out to install the water supply network and install electricity with municipality resources. Thus, it municipalized the gas factory to create an electricity factory and a new network of electric lighting for all the city.

A few months later a new mayor, Professor Marnoco e Sousa, was elected, a law professor with a new vision of the role of the local administration in the planning and development of cities. As a defender of public service, he was highly critical about the participation of private companies in the city services, affirming even that "the regime of concessions has had its time since only serves to favour the interests of the private companies to the detriment of the community"⁸. Thus, one of his first measures was the municipalization of public urban transport to install electric traction. He claimed that with this municipalization, Coimbra had "the three industrial services of city municipalized – water, lighting, and transport. These services help each other [...] Water is needed for the electricity factory, just like the coke produced by the gas factory. On the other hand, the transport facilitates the transportation of the by-products of the gas factory and helps with this transportation of the coke to the water supply station, solving, in addition, the problem of lighting the great avenues and wide streets of the city with voltaic arcs [...]"⁹

The following July, the Chamber of Deputies approved a loan for the municipalization and installation works for electric traction. On February 11, 1909, the project of the engineer Guilherme de Lima Henriques was approved and work started in September.

On the first day of the year 1911, the electric urban transport network was inaugurated in Coimbra, which became the fourth Portuguese city to have this service, but the first municipality responsible for the service. Shortly after, the electric power of the trams started to be used to light the main streets.

⁸ Marnoco e Sousa's speech in the Chamber Session of April 28, 1905. AHMC. *Vereações*. 1904-1905.

⁹ Marnoco e Sousa's speech in the Chamber Session of May 15, 1908. AHMC. *Vereações*. 1907-1909.

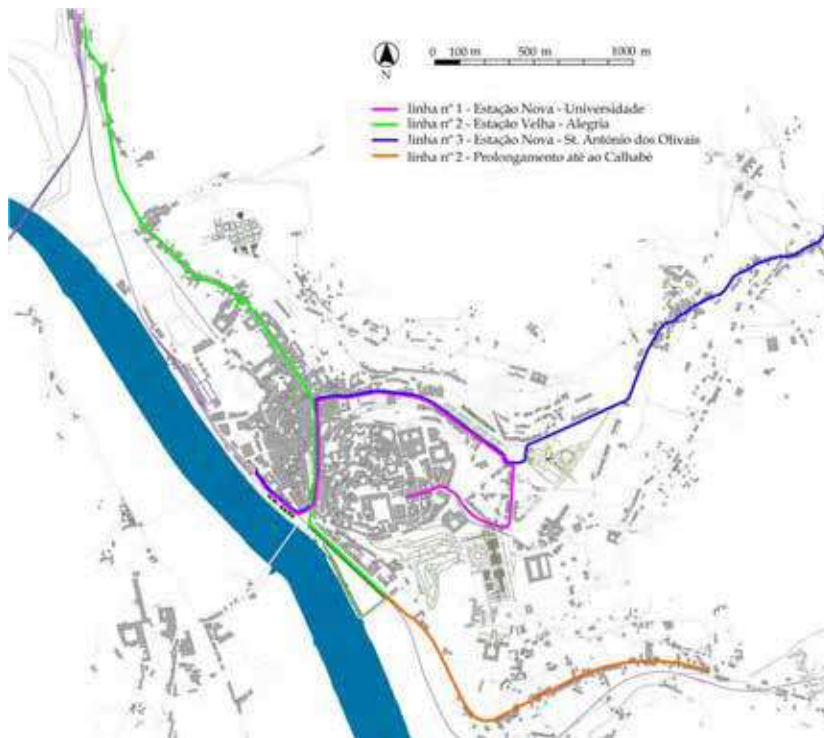


Figure 2 - Electric trams routes in 1913 (Calmeiro, 2015: 290)

Integrated city planning - planning and management of infrastructures and the city by the municipality

Throughout the 19th century, a new way of planning the city was developed. (Tarr and Dupay, 1988; Tarr 2008) This was as a consequence of the growth of cities and their hygiene and sanitation needs, but also of the new infrastructure networks. These networks introduced new ways of living, a new idea of comfort and can be considered as one of the marks of progress in the urban form. The introduction of these networks required a new city form but also large investments and technical expertise that municipal administrations did not have. Thus, this infrastructure became a private enterprise supplying goods and services. The new public services were dependent on private capital to build and manage them and public administration was limited to the regulation of the concession contracts.

In Coimbra, a Portuguese medium-sized city, this model was not applied. After years trying to build a water supply network by concession, the municipality decided to undertake the installation of the water supply network from the Mondego river, as well as the sewage network, two crucial improvements for the health of the city. A few years later, at the beginning of the 20th century, the innovative procedure continued, with the municipalization of the energy and the public transport networks to install new electric energy for transport and lightning. This new way of acting implied some constraints and delays caused by the financial weakness of the municipality and the lack of technicians working in the municipality. However, this would allow the municipality to plan the city in an integrated way, planning the new neighbourhoods and public services together. Thus, the new public transport lines or the new water, sewage and electricity network were drawn up and planned according to the municipal plan for the city's expansion. The new neighbourhoods were planned together with the new urban infrastructures.

This innovative and integrated means of action gave the municipality a new role in urban planning that had consequences in the evolution of Portuguese urban planning. However, this was only possible due to a group of daring and knowledgeable mayors together with a group of skilled and well-trained technicians.

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Special Session 'Transition Histories'

Back to the Past?

Tram City, Motopia and Light Rail Commercialism in Canberra

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Abstract: One of the long-term trajectories in urban development since the late 19th century has been determined by changing modes of movement. Following the city of the pedestrian plus bicycle and horse & carriage and that of trams and railway suburbs, the rise of the automobile city saw the decline and often total disappearance of streetcar systems. Then, the 1980s experienced a wide-spread renaissance of rail transport. Futuristic projections have accompanied these visions right through to current developments around driverless cars and trackless trams. Based on the case study of Canberra, this paper analyses these projections and their legacy in terms of success, failure and portent. The original plans of the Griffins (1911-1918) had proposed a model streetcar city financially supported through income from the leasehold system. These ideas were supplanted by a Motopia vision, which morphed into plans for a linear city shaped by land-use-transportation studies – an automobile-dependent suburbia, yet with the potential for a rapid transit public transport spine. Light rail was eventually introduced in 2019. Financed through the sale of public housing and creating high-rise development along the route, this is resulting in a profound transformation of Canberra's urban form with real-estate values as the central shaping factor.

Keywords: Streetcar cities; Motopia; urban form; Canberra

Introduction

In urban development (as in other fields, too) phases characterised by rapid transitions, by new visions and vigorous new developments tend to alternate with protracted periods of stagnation and periods in which base innovations take effect step by step and in which plans are carried out and gradually modified, before the next wave of innovations breaks its new path, again accompanied by fresh visions and a corollary of individual innovations.

What is the role of planning history in this context, particularly in the phases of rapid transition? When can insight provided by planning history be appropriately harnessed for innovation? And, by contrast, what are the consequences of disregarding planning history or of exploiting history in a manner that is at best selective? A well-known case in point is that of radically modernist urban renewal, which often painted the legacy of the preceding period in dark colours to justify the demolition of valuable historic structures.

In the field on which this paper is focusing, it appears that today we are at a point in time at which innovations in transportation technology associated with advances in fields such as electronics, digital technology and Artificial Intelligence have gained momentum and

are leading to significant changes in urban form and structure. Self-driving vehicles, trackless trams and high-speed trains have already transformed urban regions in parts of the world and are foreshadowing patterns soon to be followed globally. These developments are closely linked with transitions in the fields of the economy, energy and a plethora of related changes in the planning context.

Canberra

In our local case study of Canberra, plans for a tramway system were an essential element of the original design of 1911, but evaporated in 1920 to be replaced by motopia visions in the 1950s. Efforts for the introduction of a tram system following the European models emerged in the 1990s but remained without success for several decades. It took until 2009 before a new dynamic was introduced through a Labor-Greens political alliance leading to the inauguration of light rail in 2019. Although a success of sorts, the result is nevertheless not broadly seen as the desired triumph of the persistent struggle for sustainability. The reasons lie in a combination of issues in the narrow field of transportation planning and the wider, more complex economic and urban development context.

At the heart of this problematic lies the strategy of financing the light rail infrastructure largely through the sale of public housing and land and through value capture from new high-rise development on up-zoned properties along the light rail route. This is resulting in a profound transformation of Canberra's urban form. In order to 'sell' the associated change in character to the public and real estate investors, remarkably aggressive strategies of re-branding the city have been applied over the last decade. They are designed to transform the image of Canberra from what is depicted as a boring garden city and 'bush capital' into an exciting metropolis of luxury high-rise apartments. The Canberra Metro, as the light rail is called, is an integral part of this concept.

In tune with modern information technology and current themes such as fake news and media wars, the Planning Minister (today Chief Minister) and big developers are involved in campaigns via Twitter and You-tube that are based on a selective (re-)writing of planning history in order to advance their joint agenda. In this perspective, today's Canberra is depicted as the product of an old-fashioned plan that has escaped from a Simpsons' Family cartoon, unfit for adaptation to today's challenges and defended only by NIMBYs and senile locals. This sarcastic narrative runs parallel with an interesting mix of thoroughly researched work on the Griffin Plan, real estate spin and selective readings of later phases of planning. In order to sort out fact, fiction and critique, aspects of Canberra's planning with relevance for our theme are laid out on the following pages before analysing the most recent developments.

The Tram City of the Griffin Plan 1911-1920

Conceived very much as a complex "Gesamtkunstwerk", the original plan for Canberra is impressive at many levels – whether as an achievement integrating urban design, landscape planning and sustainability principles (Fischer and Weirick 2014), as a manifestation of "democratic symbolism" (Weirick 1998) or as the artwork drawn by Marion Mahony that was listed as UNESCO world cultural heritage in 2003. Walter Burley Griffin's reports go well beyond explaining the features of the design by embedding the whole in a planning theory context (Griffin 1912, 1913).

In his treatise on land use/transportation, density and building height, Griffin elaborated in which way "the transit system affects the density and character of the city, allowing for a horizontal distribution of building mass that maintains the city in scale with its landscape and increases access to open space. With a liberality of public space... and

directness and speed in communication between all points, the necessity of making these large units stand on end as in the congested American cities, can be avoided" (Griffin 1912:83).

Designed to overcome such disadvantages of the "congested American cities" Griffin's low-rise medium-density city was constructed around a skeleton of avenues with a suburban railway and "a streetcar system that was so simple, logical and comprehensive" (Weirick 2012) that "some 90% of the population would live within a five-minute walk (500 metres) of the service" (NCA 2004:74). This feature was explored in a careful analysis of long-lost plans by officers of the National Capital Authority in 2004. More revolutionary than this was Griffin's idea of free tram travel "perhaps supported financially in the same way out of rents as the lift or elevator" (Griffin 1913:32).

The progressive character of these planning principles was, however, not appreciated. They were alien to the Australian culture of the first half of the 20th century. Already in 1909, architect John Sulman had warned in his explanations for the international competition for the capital: "the European boulevard with its street cafés would be unappreciated in Australia" (Sulman 1909:606), but as we know, the Griffins did not heed Sulman's advice and produced one of the world's most beautiful plans for a city of avenues and tramways.



Figure 1

A closer look also reveals that the plan for Canberra is really that of a multi-modal city, even though the most conspicuous elements of the 1912 version (Figure 1) are the *Railways* and *Street Car Lines*.¹ However, as Griffin pointed out in his 1912 report, the plan

¹ It is only in the 1912 plan, which was drawn while the Griffins were in America that the term streetcar instead of tram is used.

is shaped by *two* new modes of transportation, "tramway and fast vehicle traffic, which mean a very different distribution of trade than where walking range [had] been the determining factor" (Griffin 1912:101). The Griffins were of course well acquainted with the developments in the automobile field through their experience in Chicago and their connections with Henry Ford, for whom Marion had designed the Fairlane estate (Van Zanten 2011:106).

These perspectives vanished from common knowledge after Griffin's demise in 1920, and from the 1950s to this day, re-assessments of the Griffin Plan have frequently been marred by assumptions that the plan dated back to the pre-automobile horse-and-buggy days (Senate 1955:78) and could not be anything than quirky and old-fashioned (Barr 2010). On the other hand, such positions were counterbalanced by people who really dealt with the original materials, beginning with Canberra's Chief Town Planner Peter Harrison in the 1950s and James Birrell, one of Griffin's biographers, who drew attention to the surprising fact that "no major concept in town planning has been put forward in the (then) 40 years since the city as designed that is not incorporated in the original scheme" (Birrell 1963:92). In addition to the plan's urban design qualities praised internationally by Edmond Bacon, John Reys and Peter Hall, the sustainability principles of the plan impress to this day (Fischer and Weirick 2014). Had they been applied in the development of the city, many of the problems of climate change would have been mitigated. However, the rich semantic content of the plan was watered down and impoverished in the following years.

From the doldrum decades to "Fast Forward" in the Fifties

Following Griffin's demise in 1920, the basic change in the conception of Canberra was that from a capital city of clearly urban character to a suburban "garden town with with simple, pleasing, but unpretentious buildings, mostly single storey" (FCAC, 1924, p.8). In terms of the perspective of this paper, this meant that traffic was not much of a theme and public transport did not exactly have an easy task in the "seven suburbs in search of a city". The most memorable feature of the traffic scene during the stagnation of the inter-war years may have been the long row of cars making their way on Sundays to the pubs of the neighbouring town of Queanbeyan leaving the "dry territory" during the years of prohibition.

The dramatic change in Canberra's planning history came in the 1950s with Prime Minister Menzies' program of transferring the majority of Commonwealth Government departments hitherto headquartered in Sydney and Melbourne to the national capital. In this situation, a new set of ideal concepts in planning emerged from the late 1950s on. It was triggered by the initiatives taken by Prime Minister Menzies; it was shaped by the war-time experience and by the break-through of the automobile culture; and it was orchestrated by engaging international networks and by founding an all-powerful organization for planning and development.

A first key person in the international context was the British architect and town planner Sir William (later Lord) Holford. Well known for his work on the reconstruction planning of London, as chairman of the adjudicators on the designs for Brasilia and with connections to Canberra dating back to his appearance at the 1951 *Federal Congress on Regional and Town Planning* there, Holford was personally briefed by Menzies during an overseas visit in London. His *Observations on the Future Development of Canberra* published in 1957 were a clever 'tour de force' presenting ideal concepts with an immediate appeal to his target group of Australian planners and politicians.

Canberra, Holford said, faced two alternatives – to retain the provincial character of the city, with grazing and gravel digging (!) around Parliament House, or "to become a unified

city" (the lake had not yet been created) ... "a cultural and administrative centre and a national capital" (Holford 1957:6). He acknowledged that this would call for "an all-out combined operation of the kind which is so much more difficult to achieve in peacetime than during war." This is why Holford emphasized the necessity of creating a bold, unified design "on a scale sufficient to make an impact on people's imagination" (Holford 1957:7) beginning with the creation of the lake.

In addition to a range of planning proposals including the location of the new permanent parliament building, Holford identified three important objectives for the whole city:

- The development of Canberra into a cultural centre - "the sort of city which people would want to retire *to* rather than *from*"

- the "maintenance of a garden city character in the residential parts of the city, [which] is more important than raising the density"

- and the development of "a modern system of traffic circulation" (Holford 1958:9).

This began with the construction of a freeway link across the length of the northern lakefront. Named "Parkes Way" after federalist Sir Henry Parkes, this six-to eight-lane freeway link is characteristic of the U.S.-American "parkway" concept designed for automobile drivers to experience the world through the windscreen of the moving automobile. Hailed as the epitome of modernity, speedways of this kind were rapidly cutting off urban areas from waterfronts all over the world. Everywhere, the struggle to reduce the negative effects on urban life took decades, and Canberra is still looking for solutions.

In Canberra, the parkway approach has been serving as a model for the urban development plans until today. The organization that conducted the planning and development until the late 1980s came into existence on 1st March 1958. Named *National Capital Development Commission* (N.C.D.C.), its task was "to carry out the planning, development and construction of the City of Canberra as the National Capital of the Commonwealth." Endowed with a large, single-line budget and a high degree of planning control based on continuation of the leasehold system, the Commission's professional planners enjoyed planning conditions that their colleagues elsewhere could only dream of. Over a period of three decades, the planning organization acted as benevolent dictator in a city that was managed like a company town without self-government until late in 1988.

Motopia - triggers, transformations and trajectories

The plans produced in this situation were extreme in their concessions to the 'bungalow-automobile syndrome'. If the post-war decades marked the break-through of automobile culture, then Canberra was an ideal location for translating this into urban development plans, or so it seemed at the time.

The NCDC was convinced: "We are unique - we are in a better position to meet the challenge of this 'growth pressure' than any other capital city. We have the opportunity to benefit from the mistakes made in other capitals and the methods that they use in endeavours to find a solution." Taking advantage of "an opportunity untrammelled by any of the normal inhibitions of planning, and aided by modern science and technology" (N.C.D.C. 1964:2) the planners in Canberra could aim for something that had proved impossible in other "auto-reliant communities of similar size" - to develop a road system that could always stay ahead of traffic demands.

Little wonder that the NCDC's first official long-term metropolitan development plan (NCDC 1965) projected a utopian or rather a "motopian" vision (Figure 2)



Figure 2

that soon revealed its true nature as dystopian (Figure 3). Designing a freeway system that would remain congestion-free even at peak hour for the corona of dormitory satellite districts converging on a CBD expanded close to North Canberra's green belt of Haig Park would have drowned the city centre in a vast sea of asphalt (Fischer, 1989, p.178; Reid, 2001, p. 259). For North Canberra, the plan would have implied the atomisation of the existing residential areas into small islands, some containing no more than eight to ten houses surrounded by expressways and speed ramps.



Figure 3

This insight led to last-minute redesigning which indeed managed to save the central area from being devoured by the asphalt desert of early 1960s' urban expressway planning; and it led to a radical transformation of urban form from radial-concentric to linear.

From Motopia to the Perfectionist Garden City Metropolis

The next plan was no less extravagant in terms of the consumption of space (Figure 4). The congestion that would have choked Inner Canberra was now to be avoided by stretching the urban area into a linear corridor of considerable length.

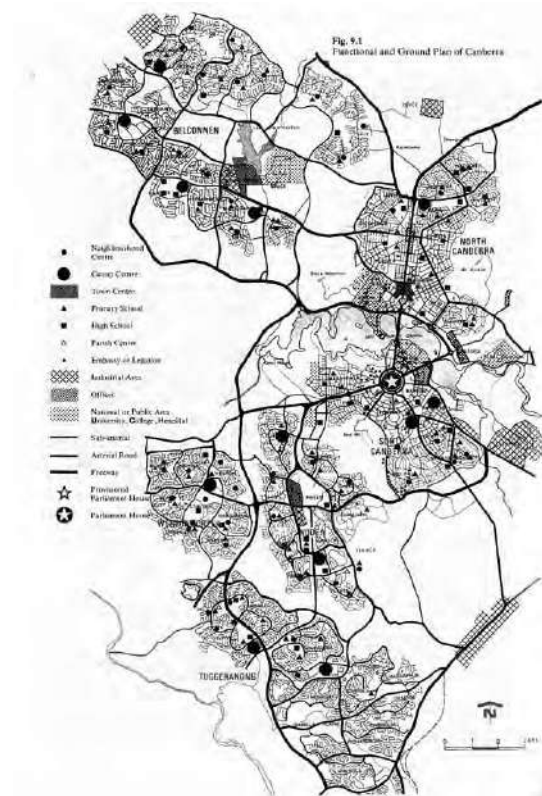


Figure 4

Two important conclusions were drawn on the basis of a Land-Use-Transportation Study (Voorhees, 1967): First, instead of developing a conventional CBD, a significant share of the retail functions and offices would have to be decentralized into the satellite 'New Towns'. This term was chosen in order to indicate that a high level of self-containment was intended. Second, the new districts had to be stretched into the form of a linear city with 'old Canberra' in the middle, and the expressways passing through the whole length of the districts would be connected by peripheral freeways and a central public transport spine. This would allow for the introduction of rapid transit once the 500,000 population level was reached. Dividing the city at its northern end into two branches was intended to make public transport on this spine more effective. The frame of this 'Y Plan' was fitted out with housing and shopping centres, community facilities and streets organized into perfect hierarchies.

Utopia realized?

The product of this approach might be called 'the perfectionist garden city metropolis' (Fischer, 2013, p. ix). One of its amazing features is the degree to which the planning concepts of that period have been implemented. This can be impressively demonstrated

by comparing a visionary artistic rendering of Canberra drawn in the late 1960s, with an actual aerial photograph from 2000. The drawing depicts the city in the manner of an aerial photograph as it was expected to look like in the early twenty-first century. The two images are surprisingly similar, if we exclude the conspicuous new Parliament House (1988), which shows up in the aerial photograph, but which the artist could not have foreseen in 1969.

In a similar way, the city's functional and ground plan drawn up for the book *Canberra – Myths and Models* in 1984 looks very much like a diagram from a planning textbook (Fischer, 1989, 184). In fact, however, it displays the built reality of the then existing city, demonstrating that the hierarchical planning principles were applied with utmost perfectionism: Canberra was a perfectionist manifestation of planners' ideal concepts in the Fordist age – albeit in a non-industrial city. A critical key to this concept lay in the government's power to achieve a balanced disposition of employment centres through its control of the land and the location of its own offices. This, however, began to unravel as early as the 1970s.

Transition into Neoliberal Times

Following the dismissal of the Federal Whitlam Labor Government (1975) the succeeding conservative Fraser Government ended the 'company town' practice of building and owning its own office complexes, creating instead a market for private commercial development underpinned by long-term leases from government departments. The privatisation of office accommodation led in due course to the creation of powerful development interests, which successfully lobbied to concentrate office development in the central city at the expense of the New Towns.

The underlying shift in planning culture (Fischer 2004, Fischer and Weirick 2016) was part of a broader shift to the Australian version of neoliberalism (Harvey 2005) under the heading of 'economic rationalism' (Pusey 1991, Yeatman 2017). In fact, fundamental changes towards a neoliberal agenda had already begun as early as 1970 when, in the fever of a Canberra by-election, the leasehold system was emasculated by replacing land rent with municipal rates, thereby transforming property in the ACT from leasehold to virtual freehold tenure (Brennan, 1971).

While the high level of planning control was not immediately affected, the economic consequences were significant. A result at the short-term level was a windfall benefit to the property sector. In the long term, the ethos of Canberra's development was shifted from the 'common wealth' to conventional property speculation. What the fathers of the leasehold system had once been conceived as a sustainable method of supplying building land at equitable cost for the homes of average citizens was turned into its opposite with land policy now focusing on the maximisation of land values.

The new arrangements also laid the foundations for a new way of financing the capital; and this became important when the Commonwealth Government decided to divest itself of financial responsibility for the city beyond core national capital functions. In the administrative sphere this underpinned the decision to force self-government on the reluctant population of the city, who were only too aware of the privileges they would lose in the process. In 1989, Canberra was finally granted self-government – a step that appeared long overdue in a democratic society.

The system devised in this situation, however, entailed serious defects at different levels (Powell, 2012) and it marked the beginning of a long phase of turbulent political reforms continuing to this day (Fischer and Weirick 2018). At the economic level, a 'city-state' (ACTPS 2011) without a productive hinterland could not operate in the same way as the Australian states raising revenue from mining, manufacturing and industry. Therefore,

the ACT still depends on Federal subsidies, but in a system set up with the intention of minimizing Commonwealth expenses, federal grants proved to be a continuing bone of contention.

Self-Government and Land Sales as a Source of Municipal Revenue

As a consequence, the ACT government has to finance a significant part of its revenue through the sale of its principal asset, greenfield lands (Corbell, 2005; ACT Government, 2005; Sansom, 2009). Unfortunately, this approach is unsustainable given the limited extent of developable land in the ACT. Over time therefore, the strategy of drawing income from up-zoning land for high-density redevelopment gained importance. And by 2012, it turned out also to be an important basis for financing light rail infrastructure.

Right from the start, the exigency of raising revenue for the day-to-day requirements of the territory budget increased the pressure to achieve rapid returns from greenfield development and weakened the ACT Government's negotiating power with the development industry. The low-density, car-based city, which the local government had inherited from the national government thus continued to expand with long-term costs overlooked in favour of short-term gains. To maximise these gains, the process of suburban development was privatised and in the push for low infrastructure costs and maximum yield, 60 years of exemplary neighbourhood planning in the National Capital was overturned, creating some of the worst suburbs in Australia in terms of environmental impact and environmental amenity (Fischer 2004). In this process, the latest district developed at Canberra's northern edge, Gungahlin, emerged as "Canberra's unhappiest new town with... a jungle of badly designed houses and townhouses, unsatisfactory community facilities and a poor quality of social life... a nightmare of planning" and bad transport connections (Clack 1995). At the beginning of the twenty-first century, it seemed as though the neoliberal turn at national and local level had reduced Canberra planning to a travesty of its former self.

Triggering New Visions of Strategic Planning

A turnaround, however, occurred – and from a most surprising source. In 2001, the OECD – that paragon of market economy orthodoxy – was invited to report on Canberra as part of its 'urban renaissance' studies of sustainable urban development in selected cities worldwide. The major findings of the OECD investigation included the lack of a strategic plan for Canberra, and the lack of effective community engagement in the planning of the city (OECD 2002).

Facilitated by the election of a local Labor-Greens coalition in 2001, the Territory government was able to move decisively to address both issues. It prepared a metropolitan strategy with a social plan, an economic plan, and a spatial plan projecting, urban consolidation, a more compact urban form and the introduction of a light-rail system. In recognition of community ideas for a creative, compact city freed from car-dependency, which date back to a path-breaking study of 1991 ('Towards a More Sustainable Canberra' by the pioneers of public transport planning, Peter Newman & Jeff Kenworthy) the Territory government began to draw up plans for the first stage of a light-rail system to connect that northernmost 'New Town' Gungahlin with the City Centre. It took another decade before another deal struck between the Labor Party and the Greens following the 2012 ACT election, at which Labor required support to form government, lead to the implementation of that 12km stretch of light rail.

The announcements by Commonwealth Government for financial contributions have varied significantly in the daily ups and downs of politics. This reinforced the policy of financing the infrastructure to a significant extent through the sale of public housing and through up-zoning land along the light rail corridor for high-density development. The

changes in the character of the “Garden City and Bush Capital” have led to controversial discussions in which the Planning Minister, the Property Council and the biggest local developer Geocon have pursued remarkably aggressive strategies to fight their fears, a low-density vision might constrain future development along the corridor. In 2010, the Planning Minister started this campaign by ridiculing the Griffin Plan by comparing it to the Simpsons Family small town of Springfield (Figure 5). In his role as Chief Minister, he has been continuing this strategy until recently.



Figure 5

In his role as Chief Minister, he has been continuing this strategy until recently, even though he has been praising the element of the tram or light rail that was essential to the plan. In recent years, campaigns by developer Geocon have attacked the garden city and bush capital image. One of their you-tube video films features a young lady smashing a ‘bush capital’ sign with utter disgust (Figure 6), as all around her, a brave new world of beautiful high-rise apartment blocks with beautiful people drinking champagne and jumping into the pool emerges.



Figure 6

These visions are linked to utopian statements by Geocon claiming that the extension of the light rail line to their new developments south of the lake is going to take the new residents into the city within ten minutes (Jervice Bardy 2019) – a remarkable propaganda war on the perspectives of real estate and light rail.

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Alberto Sartoris: transitions to a possible urban utopia (1922-1989)

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Abstract: The events related to the development of urban agglomerations started by Alberto Sartoris in 1922 highlight his uncommon attention to the themes of a transition to a possible utopia, whose structure is constituted by collective solidarity and rational subdivision, aimed at a rigorous use of strict design principles that aim to concentrate the population in specific parts of the city, such as in large buildings or neighborhoods duly sized, in the normalization of housing and traffic regulations. This approach to urban planning is evident observing the first so-called “urban compositions” conceived by Sartoris, such as the project for the Stadium or the University City of Turin, the project for the Satellite city of Rebbio in 1939, with Giuseppe Terragni, reaching the most recent urban plans of Punta Aspera in Varazze and Mont-Fleuri in Montreux in 1963, or the project for a “bridge city” in Barcelona in 1989, within which the unmistakable metaphysical matrix of rationalism is clearly recognizable. The aim of the proposal is to explore the challenges faced by Sartoris in the debate of the 1930s related to the development new urban scenarios and the exact role of the creative and humanist architect in the face of the interpretative change of that time.

Keywords: Alberto Sartoris; modern urbanism; Turin University City; bridge city.

Introduction

Alberto Sartoris (Turin, Italy, 1901-Cossonay Ville, Switzerland, 1998), Italian-Swiss architect and critic, was one of the most important figure in the birth of rational architecture and urbanism. The events related to the development of urban agglomerations, initiated by Sartoris, in 1922 highlighted his uncommon attention to the themes of a transition to a possible utopia, whose structure was constituted by collective solidarity and rational subdivision, aimed at a rigorous application of strict design principles that aim to concentrate the population in certain parts of the city, such as in large buildings or neighbourhoods duly sized, in the normalization of housing and a particular traffic regulations (Sartoris, 1930b). A founding member of Congrès Internationaux d'Architecture Moderne (CIAM) and a signer of the La Sarraz declaration with Le Corbusier in 1928, a “messenger of intelligence” (Belli, 1936) destined to export real examples of Italian architectural culture to South America in 1935 and chairman of the Swiss Permanent Committee on World Town Planning Day in 1949, Sartoris himself was considered a transitional figure respect to the Italian architectural *panorama*. His significant role in the development of European modernism and his lifelong activity have earned him a secure place in the history of twenty century architecture.

Despite the fact that his main books have been published by the Milanese publishing house Ulrico Hoepli¹, and notwithstanding being repeatedly defined as the “father of rationalism Italian” and the “founder of the new architectural culture” (Mariani, 1987), curiously in Italy Sartoris seemed to have never enjoyed the great fortune and recognition due to the spectacularity of his projects (Pozzetto, 1986). After an initial period of training in Turin, judged to be a Fascist in the 1930s, Sartoris was therefore able to conduct his professional activity in Switzerland, with works that included especially residential and religious constructions: with these projects, in the following years, Sartoris has successfully and stubbornly brought to light a so-called “project radicalism” (Pozzetto, 1986), with a stainless faith in rational architectural. Such obstinacy sounded like an offense to the Italian innovators of the time that was certainly difficult to tolerate. Considered as “transalpine” by the Italians and as a “transgressor of the Swiss order by the Swiss” (Gubler and Abriani, 1990), he has earned since the early years of his career a position of transit, even if not of isolation. He, in fact, didn’t remain on the sidelines, as he staying very active in the debates and controversies that have stirred up European architecture since 1928. This transit position has perhaps enabled him to question some of the theories of the great masters of modern architecture in the early thirties of the twentieth century.

The study of issues related to the design development of imposing urban agglomerations is made possible thanks to the analysis of the relationships that Sartoris has been able to establish with the main protagonists of art, architecture and urban planning of the twentieth century, such as, for example, Raimondo D’Aronco, Annibale Rigotti and Giuseppe Terragni. Sartoris’ approach to urban planning is evident observing the first so-called “urban compositions” (Sartoris, 1934a), such as the project for the Stadium or the University City of Turin in 1922, the *Cité-Crémaillère* for Geneva in 1931, the project for the satellite city of Rebbio in Como in 1939, in collaboration with Giuseppe Terragni, reaching the most recent urban plans of Punta Aspera in Varazze and Mont-Fleuri in Montreux in 1963, or the project for a “bridge city” for Barcelona, in 1989, within which the unmistakable “metaphysical matrix of rationalism” (Fagiolo, 1974) is clearly recognizable. His projects were therefore in a transitional phase in which the urban crisis occurred in the presence of an irreversible change in the state of the habitat and social practices. The figurative structure of entire parts of the city represented, according to Sartoris, the synthesis of those expressions considered fundamental for a rational planning, such as traffic, functions and their hierarchy and housing types. Within these interpretations, the search for synthesis, which in Italy can be largely pursued between technical and aesthetic needs in the modernization of cities, sees a deepening in the work of Sartoris and in his constant faith in the application of the principles of architectural rationalism and from which descend reflections on the city and on building in the built.

The focus on issues related to modern urbanism was a real chapter in Sartoris’ career and, at the same time, remained closely related to his reflections on the architectural and urban organism throughout his long professional and academic activity. In particular, during his long career and in his numerous writings, Sartoris tried to highlight the deployment of the design forces that could be activated on all

¹ See the three editions of *Gli elementi dell’architettura funzionale. Sintesi panoramica dell’architettura moderna* (1932, 1935, 1936), the three editions of *Introduzione alla architettura moderna* (1943, 1944, 1949) and the three tomes of the *Encyclopédie de l’architecture nouvelle* (*Ordre et climat méditerranéens*, 1948, *Ordre et climat américains*, 1954, *Ordre et climat nordiques*, 1957).

the transition nodes, between the building aggregate and the territorial network, which was considered his challenge to move towards new and significant images and urban scenarios. According to Sartoris, “We absolutely must resolve the problems soon in order to arrive at unsuspected visions of the city. It’s therefore necessary to realize, in the great urban agglomerations, almost superimposed cities, stratified cities, cities with bridges [...] to elaborate projects of penetration in the apparently abandoned city centres, to insert raised streets and squares, like the bent city, to create spaces and systems of vertical and horizontal circulation at every level [...] Innovation cannot spread if it does not take the road of its conquests that will flourish again under the injunction of the discoveries of the present in a sort of simultaneous emergency of the dimensions and values, past and present, of an urbanism that creates resources and new constructive orientations” (Fabbri and Pastore, 1991). Sartoris has been able to go beyond contingencies and has marked the future ways of becoming of architecture and urbanism, proclaiming the importance of spiritual and lyrical values.

Futurist debut and rationalist ascent

Sartoris’ most important works were not only the built buildings or unrealized projects, but also publications, “because it’s possible to build with words as with reinforced concrete” (Abriani, 1972). Sartoris’ study and publications reflected his theories on architecture and urbanism in a decisive way: his numerous writings revealed a certain vision of the city that was intimately linked to the methods of organisation of collective life and work, new systems of communication and circulation and innovative building materials. Sartoris’ interest in urban issues has been consolidated in the second half of 1929, when he began his collaboration with *La Casa bella*, directed by Guido Marangoni, and *La Città Futurista*, directed by Luigi Colombo, better known as Fillia. With the prestigious collaboration of Sartoris, these magazines began to publish articles aimed at disseminating the most current European experiences in the field of so-called “new architecture” (Sartoris, 1929b). Behind titles that summarized concepts, typologies or quality of materials – *Gli elementi della nuova architettura*, *Architettura standard*, *Introduzione all’urbanismo* – between the end of 1930 and 1936, Sartoris introduced readers to the most innovative architecture produced in Europe, presenting works and architects such as, for example, Le Corbusier, Jacobus Johannes Pieter Oud, Richard Neutra and Walter Gropius. A *panorama* aimed at confirming the transnational nature of rational architecture, later merged also into *Gli elementi dell’architettura funzionale*. *Sintesi panoramica dell’architettura moderna*, published in 1932 by Ulrico Hoepli publishing house (Sartoris, 1932a). The importance of this contribution lied in having identified the roots of functionalism in a broad panorama of avant-garde experiences in the artistic and architectural field, including the futurism and dynamism of Antonio Sant’Elia, from which Sartoris derived the supreme function of modern architecture, namely *urbanism*.

At the root of Sartoris’ work lied undoubtedly the futuristic matrix of Sant’Elia and his futuristic urban and architectural conceptions to which he seemed to have given an unprecedented rationality. First Sartoris’ projects took on a maximum concreteness in the exact geometry of the forms of the blocks of buildings. Since 1920 Sartoris in fact has contributed to the development, and subsequent dissemination, of rational architecture demonstrating that there was a precise and concrete method behind the “crazy” futurism of Sant’Elia:

“Without Antonio Sant’Elia – this heroic unknown – urbanism would not be what it is today. He dreamt of the new city before Le Corbusier and was, before him, the poet who prophetically presented the present and tomorrow’s hours” (Sartoris, 1990).

According to Sant’Elia’s prophecy, “the supreme function of architecture will be fully and totally realized: European urbanism in all its deepest functionality, to reach the building structures in their pure state” (Sartoris, 1990). The dissemination work initiated by Sartoris through his numerous publications focuses mainly on the issue of the so-called “modern urbanism” (Sartoris 1932b). In relation to the intense exchange of images and photographs that Sartoris undertook from 1928, the space reserved for the project of urban planning in the main specialized magazines and newspapers of the period is a fundamental tool to retrace the main stages that testify to the relationships established with the most important protagonists of architecture of the time (Sartoris, 1928). In this context Sartoris also mentioned as worthy of attention some of the most famous experiments conducted by the pioneers of the thirties, such as the *Cité-bloc intégrale* for La Pampa of Wladimiro Acosta, the *Cité verticale* of André Lurçat, the *Cité-ruche* of Richard Neutra, the *Cité-repère* of El Lissitzky, the *Cité en acier* of Szymon Syrcus, the *Cité volante* by Adolf Rading and the *Cité en Tensistruktuur* by Guido Fiorini, projects saturated with inventive and functional power in the wide composition of the structural elements, in the geometric course of the masses that create an ascending rhythm of clear and monumental evidence. Despite Sartoris’ strong adherence to the Italian Futurist Movement, whose *Manifesto* was promoted by Filippo Tommaso Marinetti in 1909, the drawings he produced during his long career as a theorist and designer showed a marked detachment from the representations of the utopian architecture of Sant’Elia or Mario Chiattone and from those produced by the artistic avant-gardes in the early 1920s. The essentiality of Sartoris’ urban projects is to be found not so much in the futurist works of Sant’Elia or Chiattone, but in the relations that he has skilfully established with the most important architects of that time².

Sartoris’ attempt to combine the originality of the Italian Futurist Movement with the themes of European Rationalism is evident when one looks at his famous axonometries (Bardi, 1932). From the very first projects illustrated with this technique of representation, a strong proactive search for that so-called new architecture could be traced. The result was a careful Sartoris’ study of the colour and proportions of the architectural composition. However, his best-known drawings remained the utopian axonometries of buildings suspended in space in which the elements that make up the external context are never represented: Sartoris in fact omitted to include trees, man and all those elements of the urban sphere that strongly characterize even the avant-garde painting. Only in some axonometries the context was represented through a simple line of land, an illusory trait that identifies an ideal imaginary plane, almost as if he wanted to let the viewer imagine a utopian contextualization. Sartoris’ rigorous use of axonometry was understood not so much as a reference to a corresponding built reality but, for its coherent abstractness, as an indicator of the rules of architectural space (Cattaneo, 1993). Therefore, spaces that were not always referable to geometrical or formal factors, but rather to practices of use, changing in time and space. The axonometry used by Sartoris starting from the urban compositions of 1922, reduced to essential traits and well-defined volumes of

² Sartoris was a tenacious supporter of the exponents of the artistic avant-gardes of the early 1920s and the relations with the Italian Futurist movement are documented and well known. See, for example, Sartoris, 1930, Sartoris, 1944, and Sommella Grossi, 1993.

immediate figurative perception, can be considered as the purified and geometrical variant of the one already used during Futurism that was utopian and imaginative. For Sartoris, the theme of axonometric drawing therefore fulfilled the function of a true *manifesto* of Rational Architecture and was highlighted by the numerous publications of the author himself and by his continuous presence and participation in international conferences and exhibitions (Abriani, 1972).

For example, the first axonometric project of the University City for Turin in 1922 can be considered as a sort of evolution of the project of the Stadium Square, area for which Sartoris will draw, in fact a few months later, the two design solutions of the University City. According to Sartoris, the Stadium, in fact, emblem of modern mass society, could quickly become a village, a neighbourhood or a center for university studies. The drawings of the two urban solutions of the University City represent the first project in which Sartoris uses the orthogonal isometric axonometry for the first time. The only two isometric solutions of the project mentioned, as well as the project for the district of Geneva and Orbassano and subsequent urban projects represent, according to Bruno Reichlin, an authentic “figurative statement” (Reichlin, 1979) on the concepts and methods of Sartoris related to architectural design. This project can therefore be defined as a “constructive diagram”, defined by Christopher Alexander as a sort of “bridge” between the requirements and the shape of the building (Graziano, 2016).

According to the critics of that period, with the project of the University City, Sartoris was able to use the means of his art, adapting them to the taste and practical needs of his time. Sartoris chose to ignore the traditional building and administrative procedures and followed the path of the so-called “utopia for optimization” (Sartoris, Angeletti and Carloni, 1979). The axonometries of this project were, in fact, part of a fantastic and unrecognizable territory. Looking at the project drawings fifty years after their execution, the urban layout of the University City still today retains all its attractiveness: the strictly symmetrical blocks are surrounded by a continuous grid absolutely undifferentiated, there are no elements susceptible to scale, there is no stylistic reference (Abriani, 1972). This type of representation is probably the result of the conviction of the theoretical priority of design, understood as an essential and not casual tool of architectural representation. The need to present architectural functionalism as a cultural and educational necessity was evident not only through its famous publications, but in all of *Sartorisian* production, so much so that his urban projects take on the character of a real *manifesto*. According to Sartoris himself: “only the architectural elements reduced to their simplest expression allow a current form, therefore always variable. Architecture is therefore no longer a definitive, perennial composition; it is no longer a closed whole since its dimensions and its plastic and utilitarian elements dynamically undergo radical essential transformations” (Sartoris 1932a).

Also the major innovating architects have insisted that man be led to know the most modern inventions of the new building art. The public, especially the young people, had to be brought intimately into contact with the wide range of architectural discoveries, because a fervent imagination also characterized certain minutiae and certain intimate details of functionalism for the construction of the future city. Already in June 1928, on the occasion of the first CIAM, as Italian delegate, Sartoris claimed that the preliminary examination of the problems related to standardization allowed the novice architect to learn not only the knowledge of the quality of special products but also the ability to find new materials that would allow him to build the future city. Sartoris has also been able to speak of a “metaphysics of architecture”: a trend characterized by a figurative *attitude*, “endowed with

a strong introspective tension, based on the wise dialogue between function and ornament” (Sartoris 1998): he identified, as a field of action, the fantasy, intended as a work of imagination, of the reasoned construction that is based, at the same time, on intuition (Sartoris, 1986). According to Sartoris, Rationalism must also be imaginary and vision architecture which may appear utopian but which are scientifically and plastically realizable (Fronzoni *et al.*, 1998). The international group of architects of rationalism (often solitary interpreters of a universe in full transformation, in full transfiguration) with their inventions for a functional urbanism imagined models of cities according to appropriate and fascinating hypotheses³.

Sartoris’ utopian urban approaches

From 1930 to the 1950s, Sartoris stated that urban planning studies developed on a massive scientific and social basis. Although he didn’t take an active part in the reconstruction activities in Italy with his projects, he affirmed that in order to remedy the damage caused by the Second World War, “regulatory, regional and national plans were drawn up, with heavy reconstruction interventions with the aim of rational remodelling of the cities. Urbanism was becoming the centre of attraction for all architecture” (Sartoris, 1943). In order to heal them, it must be revealed the true face of every city. From this scientific point of view, it will be possible to predict changes, avoid illogical extensions and present the future development of agglomerations with an exact sense of reality (Sartoris 1990).

“Now we find ourselves in the need to delineate precisely the new urban scenes and the exact role of the architect, creator and humanist in the face of the interpretative change of our time. We absolutely must solve the problems soon and this will lead us to unsuspected visions of the city. For example, one of these problems we face today, whether we like it or not, is that of the house that often develops in height, but that must necessarily be linked to the surrounding urban structure, through its characterization not only vertically, but also horizontally. It is therefore necessary to create, in large urban assemblies, almost superimposed cities, stratified cities, cities with bridges. In short, let’s think of a dynamic architecture and urbanism: capable of implementing the city within the city” (Sartoris 1991).

The end of the 1980s and the beginning of the 1990s brought Sartoris’ utopian visions to completion and, among other things, coincided with his latest writings, the most mature in which he identified and clarified his idea of architecture and his stainless faith in architectural Rationalism. Particularly worthy of attention are the studies conducted by Sartoris on the architecture of commerce and the so-called “integrated urbanism” (Sartoris, 1983), destined to the flourishing of buildings aimed at the development of merchants and able to play a capital role in economy’s field in general. According to Sartoris, another need was to develop projects to penetrate apparently abandoned city centres, to insert elevated streets and squares, to create spaces and systems of vertical and horizontal circulation at every level, to make room for new blocks with areas destined for commercial activities. On the other hand, in order to reintegrate the historical centres into vital urban agglomerations, he proposed a model, a system defined as a “dented city”, where, in order to respect the buildings of the past, leaving their stylistic characteristics to the perspective of the street, modern constructions should be backward compared to the pre-existing ones so as to enhance them at a glance. This could be the way

³ “I believe in mystery, I believe in miracles, and therefore I believe in the utopia realized” (Cometa, 1987, p. 20).

to discover the plastic surprises of the new architecture while walking. This idea can also be realized in the labyrinth city without widening the paths, but by creating porticos of disengagement, the new city would thus enter the old one without useless or excessive changes.

Even his latest works bear witness to how his faith in modernity has not resulted in sterile repetitions of stereotypes of his axonometries (Sartoris, 1999), but in a search for the evolution of language, which, while falling within the rationalist tradition, denounce how forms are linked to the epochs of production and linked to specific needs, as in the case of the project for the “bridge city” for Barcelona in 1989 and the recovery of the former woollen mill Bona in the city center of Carignano, in Italy, in 1995. This last project, in particular, is the emblem of how Sartoris was able to interpret the modern in absolute coherence and linguistic correctness, where the careful use of colour and materials indicate that it is still possible to evolve in rationalism. Since 1984, in the numerous opportunities for debate and confrontation relating to the future of the city center of Carignano, Sartoris proposed an interesting vision of the integrated city, in which the question of the adaptation of the cities of ancient formation is brought back, according to Sartoris to the examination of similar “models of transformation” in order to create new urban forms and formulas. In Carignano, in particular, the project of Sartoris was the result of the involvement of the political, cultural and economic forces that have engaged in study days, exhibitions and conferences in search of a suitable redevelopment of the entire industrial complex: from the eighties, on the future of the industrial complex is in fact triggered by a lively debate that, for the historical, cultural and social implications that sees involved also the citizens, transcends the limits of a simple intervention of building recovery. According to Sartoris, the recovery project should not consist in a mere demolition, restoration or simple replacement of the existing building, but in a real “organic metamorphosis” of the architectural and urban complex. The existing structures of industrial building were thus converted on the basis of new functional requirements and would have acquired the role, according to Sartoris, of “a city within a city” (Sartoris, 1994). The new building included new and more current functions, such as horizontal and vertical squares, municipal offices and a multipurpose hall with a stage and 400 seats. The former wool mill thus becomes a gigantic “public equipment” at the service of the citizen, a real “social agent” (Abriani, 1991). The aim of the metamorphosis of the city center of Carignano was to draw from it a renewed architectural and urban centre, destined to become, in the intentions of Sartoris, the revitalised heart of the entire city. According to Sartoris, in fact, recovering the architectural and urban heritage to rehabilitate it, means making the “built state” another “buildable state”: “It is therefore necessary to ‘reinforce’ and ‘refresh’ the existing heritage to make it survive in the functions of the so-called new architecture” (Sartoris, 1994). Before being a recovery plan, the study proposed by Sartoris was a “perceptual design” born from the experience of the transition that have produced a series of relationships and dense relationships that have crossed the area concerned since 1980s (Gavello, 2017).

The 1989 unrealized project of the “bridge city” for Barcelona carried out in collaboration with Daniela Pastore for the international competition *Vivienda y Ciudad* and which won the prize of honour, was also defined as a morphological archetype of elementary structures that can be harmoniously combined with each other. It was a project for a district of 250 residential units located on the *Avinguda Diagonal* of Barcelona, defined by critics as a stimulating “collective dream” (Forte, 1990). This plan showed efficient and impeccable structures with a predilection for the functionality of the spaces and the architectural solutions adopted. Sartoris has in fact identified solutions for

interior spaces that can be extended and rhythmically modulated, where light and air intervene in progressive structural divergence. In Sartoris' projects, his primary objective was very clear: to create transition spaces and new spaces that consist of absolutely essential operations. The proposal, never realized, was part of the utopian dream of reconciling the inexorable advance of technology, machines and progress, with a need for life based on a more human dimension. And also in this case, in order to be able to express the sense of evidence of its vocation with perpetually renewed and renewable acts, the site and the urban fabric must be in close correlation with experience, accomplishment, the present and the future. The phenomenon of architecture integration with life was linked to the idea of movement, dynamism and creativity. Around these reflections he affirmed that the heritage to be saved, to be safeguarded by updating and rereading it, was implanted on the research and on the organization of a new space that can project itself in the metamorphoses of the lived experience continuing the permanence of the invention⁴.

According to Sartoris, Rationalism and functional architecture were neither mechanistic nor formed according to dogmatic canons, but rather it was a dynamic and constantly evolving architecture which addressed contemporary problems with the newest technologies enriched by a "poetic and spatial sensibility". Modern architecture was not an imitation of old or new styles: instead it had to be characterized by the compulsion to give architectural expression to social forces which themselves were in continuous transformation. Change and evolution in architecture would mirror, Sartoris hoped, changes in society and social conditions. Some fundamental principles, some universal systems of art remained immutable because they contribute to the vital process of intellectual evolution (Holl, 1983). Those "eternal principles" of architecture that have become a sort of codes for almost all new European architecture.

For a long time Sartoris wondered about the fate of the metropolis of the future. Trying to imagine, among concrete examples, comparisons and projects that do not fear utopia, the cities of tomorrow that look so much like the cities described by Calvino. Of course, it will be a materially and spiritually new plastic universe, because in these cities the usual roads will be abolished. Heavy traffic (underground and various transports) will take place underground; medium traffic (small cars, motorcycles and motor bicycles) on the ground; light traffic (pedestrian traffic) on roads on piles placed a few meters above ground level and on flat roofs (linked together by the system of vertical lifts outside the New City of Sant'Elia, which will disengage all floors of the houses). These utopian cities will be linked to each other by elevated highways on piles and by aerial runways. The analysis of the documentation in Sartoris' vast archive at the Archives de la Construction moderne of the École Polytechnique Fédérale de Lausanne testifies his long and careful study of American urban planning, especially on solutions to reduce traffic congestion at crossroads in New York, the so-called "spiral roads", where the great arteries bypass each other by means of large radius spiral fittings. He treated also of a creative and humanist architect capable of creating large urban ensembles, overlapping cities, stratified cities, cities with bridges, cities that were penetrated between the ancient and the modern, where even the suburbs are given a persuasive structure (Sartoris, 1982).

⁴ "Architecture, like nature, is metamorphosis; in the history of architecture there is no evolution, only metamorphosis. The avant-garde is only the beginning of a metamorphosis" (Cometa, 1987).

With his latest projects and writings Sartoris considered that the serious social, architectural and urban problems to be solved could not be reduced to those of a reckless or simple adaptation, but gravitate around the categorical reminders of the invention. It is therefore possible to observe that Sartoris associated his figure as an experimenter with prospects of dreams that were strictly achievable. His futurism was however dedicated to the ideas that shake the present (Sartoris 1984).

Today, Sartoris' theories and practice of mechanical development contemporary civilization have given a new metaphysical and intellectual expressiveness to the nature of construction, the so called "building art" (Holl 1983, p. 33). Studies and research carried out by Sartoris, in a certain sense, are the forerunners of a "happy city", always announced through the use of axonometry, in which its architectures are the protagonists of a well-defined urban fabric but still in transition. In recent years before his death, he has been attributed many values: the forerunner of rational architecture, the interpreter of a cultural and operational line capable of maintaining the continuity of thought of the ideas of the great masters of the modern movement, the creator of a new stylistic unity to the cities as a complex of buildings, and a new distributive and typological concept expressed since 1922 with the project of the University City. Even today, the numerous exhibitions of his axonometries set up following his death on March 8, 1998, represent further opportunities to celebrate the activity of the Sartoris-urbanist through an exaltation of his many projects, mostly remained on paper, developed with the aim of defining "an inhabitable art" (Sartoris 1982). Twenty-one years after the death of the so-called "witness of a century" (Dell'Oro, 1995) these celebrations allow us to glimpse, even today, new horizons of research within its vast production.

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Twentieth Century Technocracy – A Transition Aborted

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Abstract: This paper is based on a chapter in the recently published Policy Press book edited by Federico Savini and Mike Raco, *Planning and Knowledge how new forms of technocracy are shaping contemporary cities*. It shows how technocracy began in the early twentieth century as a campaign for the principle of government by experts, linked to Taylorism, scientific management, planning, and the Third Way; and how and why the term lapsed from political vocabulary in its original usage, expressing faith in social transition through science,. But then we see it reemerge in the 1960s in critiques of welfare managerialism, implying an improper capture of democratic institutions by unaccountable expertise. In this sense, top-down planning was commonly criticized as 'technocratic', in contrast to an anticipated transition to participatory democracy. The paper ends in the contemporary era of neo-liberalism, when populist free-marketeers have subverted healthy scepticism about the legitimacy of expertise to undermine all capacity for collective action on the most pressing issues of our time. The history of technocracy is also a history of utopian transitions awaited and aborted. In conclusion it's all the more important to reaffirm the nexus between democracy and science: the modern world needs more, not less, technocracy.

Keywords: technocracy, applied science, planning history

Introduction

Fifty years ago William Armytage opened his history of the rise of technocracy with the Homeric image of Laocoön, the priest of Apollo who tried to convince his fellow-citizens to reject the wooden horse left by the Greeks outside the walls of Troy. Just as he was making his case two serpents suddenly emerged from the sea and crushed him to death. Armytage comments: 'similarly latent, but aggressive, social forces emerge from below the "social horizon" to confound historians' (1965 vii).

Setting aside for the moment their relevance to technocracy, those serpents swimming below the surface are certainly an apt metaphor for neoliberalism. Kim

Phillips-Fein (2009) has shown how neo-conservative ideologues were secretively bank-rolled for decades by American businessmen and wealthy pro-marketeers. Nancy Maclean (2017) has called the radical right agenda a 'stealth plan'. The programme for dismantling the welfare state took shape below the social horizon until the 1980s, since when its offensive has been abrupt, implacable and all-pervasive. Neo-conservatism has shifted the fundamentals of social thought, enabling particularist knowledge to undermine the concepts of collective welfare and public interest. It has hollowed out the institutional apparatus of the nation-state and emptied the distinction between public and private sectors. It has caused local governments to abandon time-honoured methods of accountability and embrace quasi-corporate management structures and remuneration pyramids. The United Kingdom's local government map has been repeatedly redrawn, almost always in the direction of fewer, larger units devoid of municipal identity. The extent of its success could be measured by the extensive termination of local public services in the aftermath of the 2008 banking crash: a process best described, as Tom Crewe notes, not in terms of 'cuts' or 'austerity' but as the deliberate destruction of an entire social infrastructure (2016 7).

The neo-liberal era has brought a fresh cast of actors onto the stage with their own discourses, metrics, analytical techniques, and modes of communication, all of which are discussed in the new book from Policy Press being launched here at AESOP2019 (Savini & Raco 2019). The 'technocrats' discussed by my fellow-contributors include signature architects (Ponzini), brokers (Aalbers), deal-makers (Tusan-Kok), development engineers (Metzger and Zakhour), housing spreadsheet consultants (Layard), fixers (Mössner and Gomes), futurists (Webber), journalists (Livingstone), lobbyists (Hirvola), participation consultants (Brownill), scrutineers (Parker & Street), and smart city wonks (Kitchen). Some of their knowledges arise directly from neo-liberal economic relations, others reflect wider technical shifts in ITC, the ubiquity of smartphones, the integrative power of GIS, the locational pin-pointing of GPS.

To grapple with the changing nature of technocracy - the legitimization of power by expertise – is a continual challenge for planning theory. History is a necessary partner in this enterprise. Making sense of the new technocracy requires understanding of the old. The purpose of the present paper, which closely follows

Chapter 2 of Savini & Raco, is to put the critique of expert knowledge into historical perspective, looking back to the interplay of planning and technocracy in the century of two World Wars, the New Deal, the Welfare State and the Modern Project.

The First Wave

Let's begin with our keyword. The term 'technocracy' entered the English language a century ago and a Google Books Ngram frequency graph of its usage displays two clear peaks, the first in the mid 1930s, the second higher maximum in the early 1970s. Closer inspection reveals significant semantic shifts between the two occurrences.

The word 'technocracy' was coined by the prolific English-born, California-based engineer William Henry Smyth (1855-1940) and used in various papers he published from 1919 onwards (Akin 1977, Fischer 1990). Conjuring up a Trump-like tribe of Clam-Diggers descended from Irascible Strong and his wife Trixie Cunning, Smyth posed the question whether the mentality of primitive hunter-gatherers was adequate to the problems of machine-age society :-

'a nation (and above all an industrial democracy) should have a definite purpose, An army is officered by military specialists; a business organization is officered by business specialists; and industrial democracy – a democracy of technical industries – should be officered by technical specialists – should be in form and in fact a purposive *Technocracy*' (1926 284)

Smyth's useful term was taken up by Howard Scott, a floor polish manufacturer, political entrepreneur and self-styled engineer active in progressive Greenwich Village discussion circles in the 1920s. In 1929 Scott licensed a brand name - Technocracy Inc. - for a movement that briefly captured the public mood in the aftermath of the Wall Street Crash. Its platform was the application of scientific expertise to collective decision-making, and replacement of the monetary dollar with energy certificates, linking economic value to the environmental resource base. The transition held a double appeal: both ideological politics and the vagaries of the market would be replaced by the engineer's dispassionate quest for efficiency. From the late 1920s to the mid thirties 'technocracy' was a vogue term. But the political fortunes of Howard Scott declined precipitately when his

engineering qualifications were shown to be bogus, and the word tumbled with him. Technocracy Inc. remained in existence until his death in 1970 but was a mere shell without political significance.

Armstrong's Laocoön metaphor points to the powerful forces that swim below the surface in the history of ideas. Howard Scott emerged from the discussion circles around Thorstein Veblen at the New School for Social Research in New York City. His 'technocracy' platform blended elements of the Taylorism promoted by the Taylor Institute (followers of Frederic Winslow Taylor) and the Fordism preached by followers of Henry Ford, with the hugely influential Utopianism of Edward Bellamy's *Looking Backwards*. Armstrong contextualises it both historically and comparatively, tracing its antecedents through nineteenth century Utilitarianism and Positivism back to the origins of modern applied science and revealing the multiple connections between American technocratic thinking and European, Russian and Japanese counterparts. The doctrine of scientific management had few more enthusiastic promoters than the Bolshevik Gleb Maksimilianovich Krzhizhanovsky - in Armstrong's words 'the most portentous technocrat of them all' (1965 219) - whom Lenin appointed to chair both the Soviet State Planning Commission GOSPLAN and the electrification programme GOELRO. Soviet Five Year Plans in their turn influenced the American New Deal initiatives, especially its most ambitious spatial experiment, the Tennessee Valley Authority (TVA).

Walter Creese notes the close parallels between TVA's gestation and the Technocracy movement, both drawing utopian inspiration from the transformative potential of electrification (2003 70). However the launch of TVA in 1933 coincided with the collapse of Scott's movement, and the emergence of a different terminology - 'planning' rather than 'technocracy'. In the title of Julian Huxley's widely-read wartime account TVA was the supreme *Adventure in Planning*, a practical demonstration 'that there is no antithesis between democracy and planning, and that planning can not only be reconciled with individual freedom and opportunity, but can be used to enhance and enlarge them' (1943 135).

As Howard Scott's stock declined, technocracy's credit transferred to the wider quest for planning, an active participle with humanistic resonance, as applicable to individuals and social organisations, as to business corporations and governments at every scale (Doob 1940). In the United Kingdom Julian Huxley and his brother

Aldous popularised the perception of planning as a non-partisan Third Way out of the Depression through the medium of a think-tank, *Political & Economic Planning* - PEP - launched in 1931 with Sir Basil Blackett (Bank of England), I M Sieff (M&S) and Lionel Elmhirst (Dartington Hall). The following year President F.D. Roosevelt launched American's New Deal with a leading exponent of planning, Rexford Tugwell, as one of his closest advisers. When Tugwell left the Federal Administration in 1936 he became Chairman of the New York Planning Commission and subsequently Governor of Puerto Rico, in each context applying a planning methodology of data collection, collective goal-setting, and medium-term strategy. In the extensive literature on social reconstruction of the 1940s it was axiomatic that the future division of labour should include an expert-based collective planning system as a third sector, breaking the traditional duopoly of politics and the market. Routledge & Kegan Paul published a prominent series on the topic, the International Library of Sociology and Social Reconstruction, edited by Karl Mannheim, with a logo that showed the tree of science and the tree of life growing from the same rootstock. It included E.A. Gutkind's two volumes on *Creative Demobilisation* (1943) and Mannheim's own posthumous *Freedom Power and Democratic Planning* (1951). For reconstruction read transition. For planning read technocracy.

While Karl Mannheim's preached the doctrine of democratic planning from his new academic home at the London School of Economics his sceptical colleagues and fellow-emigrés Karl Popper and Friedrich Hayek laid the philosophical basis for its antithesis. Popper's *Poverty of Historicism* (1957) argued the impossibility of planning. He challenged both the epistemological basis of knowledge for collective action and the moral claim of its historical inevitability. 'You cannot centralise within a planning authority the knowledge relevant for such tasks as the satisfaction of personal needs or the utilization of specialist skill and ability' (1957 p.64). Given the fundamental flaws in the knowledge base for holistic planning the only rational basis for action, so Popper argued, was piecemeal incrementalism. Hayek's earlier book *The Road to Serfdom* (1944) offered a more polemical critique of the efforts of the planning movement to build a welfare state upon the basis of impartial expertise. He prophesied that specialists and single-issue reformers were being drawn by the promise that their agenda would be advanced in a future planned society: implementation of this utopia was bound to disappoint since it could only bring out the concealed conflict between their aims. Disappointment would trigger further self-defeating attempts to centralise control.

So democratic socialism was a slippery slope, leading inevitably to authoritarian denial of freedoms. Hayek's sophisticated advocacy of private property rights as the only guarantor of freedom appealed to the nascent American neo-conservative movement, causing the business activist Harold Luhnow to arrange for him to be appointed by the University of Chicago with a ten year subsidy on his salary (Phillips-Fein 2009).

Hayek's time would come, but for the first three postwar decades - *les trentes glorieuses* - the advocacy of the planning movement shaped the institutional design of the postwar world: at the local level, in systems of land use planning such as the UK's celebrated Town & Country Planning Act of 1947; in the seminal regional planning mechanisms of the French state, whose designer Paul Delouvrier deliberately excluded the possibility of 'sterile' political participation (Valade 2008 136); in macroeconomic mechanisms of five year plans, devised and implemented by the technical élites of the *grands écoles*, that drove the growth of the French economy over the three decades of *les trentes glorieuses*; and internationally, in the multiple expert-led agencies established under the auspices of the UN, or the Commission established by Jean Monnet as the foundation-stone of European integration. Faith in rationality lay at the heart of the Modern project (Benevise 1977). Technocracy shaped institutions and institutions shaped the contemporary city: in a direct and physical sense the built environment bequeathed to us by the later twentieth century embodies the values and solutions of its knowledge-providers.

The most direct and visible translation of knowledge into physical form occurred within residential neighbourhoods. Mass housing, supplied by the state and designed formulaically to scientific principles of the *existenzminimum*, had always been a defining vision of the Modern Movement. Implemented on a vast scale around the world, the planned residential landscape proved entirely unlike any earlier typology of human settlement (Urban 2012). Thanks to the intrinsic standardisation of mass housing it displayed remarkable similarities to either side of the Iron Curtain (Monclús and Díez Medina 2016). Salient common elements were the emphasis on output, standardisation, economy and movement of assembly cranes, and the disregard for user preferences, tenant convenience, residential mobility and local culture (Pawley 1971; Ravetz 1995; Cupers 2011). Discontent with the depersonalisation of mass housing contributed significantly to a wider disillusion with the supposedly omniscient planner.

The Second Wave

Reaction against the institutional landscape of postwar decades explains the second surge of interest in technocracy. Armytage's *Rise of the Technocrats* (1965) opens with that image of Laocoön and ends with a warning of the inherently hierarchical, authoritarian tendency of rule by experts. The political ferment of the 1960s had thrown open the postwar assumption that the technical knowledge of planners would serve a beneficent public interest, and that the trees of science and of life necessarily grew from the same root system. The Frankfurt school challenged that assumption through the critique of instrumental rationality by Max Horkheimer, Herbert Marcuse and then Jürgen Habermas (1970). Jean Meynaud's *Technocracy* (1968) traced the shift of power and accountability within the French state to autonomous agencies controlled by engineers and scientists, a process critiqued equally from the Christian anarchist perspective of Jacques Ellul (1964) and the humanistic Marxism of Henri Lefebvre. British town planners active in urban redevelopment found themselves challenged from the grassroots by affected residents and workers, their voices amplified by activist social scientists such as Norman Dennis (1970, 1972) and Jon Gower Davies (1972). In a pincer movement, the critique from specific and local considerations was matched by generic shifts of post-modern epistemology that undermined all forms of holistic expertise and emphasizing the relational, provisional nature of human knowledge.

So the word technocracy became, as Gunnell puts it, 'Janus-faced' (1982 p382). 'Few terms in political sociology are used as loosely' (Centeno 1999 p309). On the one hand it continued to be used to describe any institutional arrangement that empowers non-elected professionals, insulating decision-making from the play of political opportunity and market speculation. To take two examples from the relevant literature, Trevor Goldsmith (2011) shows how the Spanish Ley del Suelo of 1956, devised as a technocratic measure under Franco, became a corner-stone of municipal policy after the restoration of democracy. Miguel Angel Centeno (1993) analysing the phenomenon of technocracy among national policy elites of Pacific Rim states such as Mexico, South Korea, Taiwan and Singapore, notes how their acceptance is contingent on an ability to deliver sustained economic growth: should that falter so would the model.

The alternative and more common usage is pejorative. Measured against the implicit norm of democracy, it implies - like kleptocracy or theocracy - a capture of power from the *demos* by an unaccountable elite. Jürgen Habermas's *Lure of Technocracy* (2016) faults Jean Monnet, Jacques Delors and their successors not because they erected the European project on a foundation of independent, functional expertise but because they failed to develop the matching superstructure of discursive politics that would give it legitimacy. As Larochelle notes (1993 p124), this concept of technocracy as 'a deviationist syndrome' came to dominate the literature. Once seen as a solution, the t-word had become an imbalance requiring correction. This was the critique that played into neo-conservatism's emerging attack on public sector expertise. It fed the sea-serpents swimming below the social horizon of the Welfare State.

Technocracy and Neo-Liberalism

The accessions of Margaret Thatcher in 1979 and Ronald Reagan in 1981 marked a turning-point. Both brought advisers from the secretive realm of neo-conservative think-tanks and turned their libertarian conjectures into hard political reality. The shift was sudden and profound. As an illustrative example, consider the White Paper *Streamlining the Cities* published by the government of Mrs Thatcher four months after her second election victory in 1983. It posed an audacious challenge to the conventional wisdom that the governance of the modern metropolis required metropolitan-scale institutions (White, 1975; Barlow 1991). In the libertarian perspective of James Buchanan's Public Choice theory, all big-city governments were Gargantuas imposing redistributive levies to subsidize their inherent inefficiency. The alternative proposed by Vincent Ostrom, Charles Tiebout and Robert Warren in a classic paper for *American Political Science Review* (1961) was for big cities to be governed polycentrically, by grassroots municipalities contracting for shared services as their voters saw fit, and competing amongst themselves to attract population and investment (Bish 1971). *Streamlining* and the resulting Local Government Act of 1986 translated the New Right's theoretical blueprint into an operational design for England's seven largest conurbations. Many aspects of this rash, Nietzschean act (O'Leary 1987) proved unworkable and have been reversed over the past three decades, but the basic shift towards reliance on quasi-market mechanisms was prophetic and has proved irreversible.

It is worth remembering that the New Right were technocratic in both senses of the word. On the one hand they embodied the presence of social scientists at the seat of power: Martin Bulmer writes of the influence of Professors Brian Griffiths, Alan Walters and Milton Friedmann, 'paradoxically the free-market policies pursued by the Thatcher government provide impressive evidence of the impact which social science ideas may have upon practical affairs' (1988 p39). After all, as Centeno notes (1993 p 311) the market logic of non-zero sum games yielding equilibria through the invisible hand of competition might well appeal to the technocrat who aspires to abolish conflict through optimization and efficiency. On the other hand libertarians drew upon the prevailing concept of technocracy as an elite conspiracy. The anti-technocratic consensus, as DuPuis and Gareau (2008) call it, undermined the analytic base of general welfare economics and opened the door to methodological individualism, political particularism and a free play of sectional interest.

Conclusion

Narratives of the history of ideas are rarely linear. Concepts twist and reverse and their meanings are shifted through a process of historical dialectic. In the century since its first appearance, 'technocracy' started as a political movement to empower public expertise in the tradition of Saint-Simon, Auguste Comte and Thorstein Veblen; dissolved into the larger advocacy of planning within the Modernist project; reemerged as a critique of synoptic knowledge and advocacy of discursive pluralism; and has been overtaken a second time by the sea-serpents of Neo-Liberalism as they twine round the institutional structures of the mid twentieth century, privatising many, eradicating others, or penetrating their value systems to align with global corporate agendas.

The narrative can be summed up in terms of two transitions. The first promised technocracy as a destination, the second saw it as a trap from which discursive politics promised to escape. Neither perspective will serve us today. In the neo-liberal world depicted by Savini and Raco, public expertise is more victim than tyrant, squeezed along with every other aspect of the everyday infrastructure of local public services - schools, parks, housing, buses, social care, planning and the local state system that sustained it. The institutional capacity of local governments, built over a time-span of a century and a half, included expertise in strength and depth. Technocracy had its pathologies but was also an essential component of an effective public service.

The heart of this conflict is on the larger scale of environmental planning where the scientific advice of climatologists and environmental economists is pitted against the business interests of global petrochemical corporations for stakes of no less than planetary survival. The periodic reports of the Intergovernmental Panel on Climate Change represent a massive technocratic application of scientific knowledge to the central contemporary question of human welfare. The 1987 intergovernmental initiative to ban ozone-depleting gases (chlorofluorocarbons and methyl bromide) under the Montreal Protocol has often been held up as a successful precedent for greenhouse gas limitation under the Paris Treaty. But implementation of the methyl bromide phaseout has been slowed by the liberal allowance of exemptions, justified not through a general calculus of costs and benefits but through 'market disruption' impact on particular classes of users. In their important study of neoliberal knowledge, the decline of technocracy and the weakening of the Montreal Protocol, Melanie DuPuis and Brian Gareau provide a timely final message for our discussion of 'Transition Histories':-

'The legitimization of a particularist knowledge regime opens up policy making to domination by private interests playing the stakeholder game. Stakeholder input and particularist knowledges are important to democratic decision making. However, technical expertise, despite all its weaknesses, is a form of knowledge that remains necessary to the protection of the environment and public health'. (2008 p1212)

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Re-positioning after the Fall of the German Wall: World Trade Centers Development in Cities of the former German Democratic Republic: Rostock, Dresden and Frankfurt (Oder)

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Abstract: The fall of the German Wall in 1989 symbolizes a fundamental system change for the entire global world order. As a physical boundary, the „Iron Curtain“ had symbolized the separation of Europe into an Eastern and Western block. After this divide, following the German Reunification, cities and regions in the former East took various efforts to re-position themselves within the new world order and its encompassing cultural, economic and political codes, with architecture serving as an agent to represent the new global system. During the early 1990s, for example, World Trade Centers have been established in cities like Rostock, Dresden and Frankfurt (Oder), utilizing the trademark licensed by the World Trade Centers Association, a global organisation that aims to foster a global trade infrastructure by referencing the iconic World Trade Center Twin Towers in New York. This paper asks: What were the intentions behind the establishments of World Trade Centers in cities of the former German Democratic Republic shortly after the fall of the wall, what were the effects? The aim of this investigation is to give an example of how architecture has been instrumentalized as representation of the global system within this transition period.

Keywords: German Reunification, Globalisation, Global Trade, Representation, World Trade Center

Introduction: ‘Wende’ as transition

Today, 30 years after the fall of the German Wall in 1989 and the following German reunification, a system change broadly referred to as ‘Wende’ (German: ‘turn’), remains subject to a variety of research fields far beyond the social, economic, historical and political sciences. The massive ideological, political and territorial changes following the fall of the German Wall obviously had a fast impact on the global system, Europe, and, in its most immediate societal dimension, in Eastern Germany, the area of the former German Democratic Republic (GDR).

The political, economic and societal system change has impacted the built environment in the former GDR on every scale, including rural areas, small and medium-sized cities, state capital cities and, most strongly due to its symbolic impact, the then re-united and reconstituted capital of Germany, Berlin. Large cities such as Berlin, Leipzig and Dresden commissioned star architecture firms for the production of iconic architecture, that would symbolize the new belonging to the global system and its encompassing values. At the same time, a wave of

historic reconstruction projects, pursued in the spirit to symbolically connect to an at times idealised German past and sometimes with an identitarian connotation. In between these two highly visible and critically discussed strains of post-socialist urban development in the former GDR, there has been a quieter and less visual urban development, mostly in small and medium-sized cities, that reflects the societal transformations since 1989. With the new political system, every-day life changed in vital aspects such as housing, job market and work environment, education, retail, leisure time, public life, the media, etc. In all these areas, an orientation towards the Western capitalist culture, its practices and symbols, took place as part of a societal re-positioning. A certain idealization of Western values has served as narrative to support the ideological transition from one political and economic system to the other. At the same time, the political, economic and financial opening, supported by financial development subsidiaries, allowed foreign countries to invest in the new regions and profit from the new market under the narrative of reinforcing national reunification.

The term 'Wende' describes the socio-political change within the GDR, eventually leading to its end and to the beginning of a united Germany. It also describes a system change, the transition from one state to the other. Other terminologies used are *revolution* and *reunification*. The transition taking part with the 'Wende' is one from a bipolar to a multipolar world order, from communism to capitalism, from planning economy to market economy, from a one-party system to a parliamentary democracy, from separation to unity, from a territorial position at the edge of Europe to the Center of Europe, from closed borders to open boundaries and, finally, from a state-governed urban planning system to an urban planning environment, which is dominated by public and private partnerships, developments and investors and highly driven by the global real estate market.

Most research literature describes the developments in post-socialist urbanism as 'transformations', considering the processual character of urban transformations. Oleg Golubchikov differentiates the terms *transformation* and *transition*, describing transformation as a particularized, area-related process, while transition is seen as a political and even ideological, totalizing tool of systemic change, implementing power. He suggests that transition should not be equated with contextual transformations, or else the totalizing power of transitions would be obscured. „Urbanization is a major institutional dimension of transition, not simply its playground“, he concludes. (Golubchikov, 2016)

This paper aims to provide an example of urban repositioning following the years after 1989, that reflects cultural change and its impact on architecture and the urban environment. During the early 1990s, urban planners and developers established World Trade Centers in the East German cities Rostock, Dresden and Frankfurt (Oder), utilizing the trademark licensed by the World Trade Centers Association, a global organisation, headquartered in New York, that aims to develop and strengthen a global trade infrastructure by referencing the iconic World Trade Center Twin Towers in New York as representation of not only world trade, but the global system itself. It aims to show how World Trade Centers have served as a tool to represent global trade and with it the global political and economic system of the free market economy, thus supporting the transition from one ideological system to another. In the following, this paper will first elaborate the specific role of World Trade Center development within the global system. Second, it will specify „World Trade Centerness“ at the examples of World Trade Centers developed in Rostock, Dresden and Frankfurt (Oder) after the 'Wende', describing intentions behind the development and effects. It will conclude by pointing out how architecture is being instrumentalized as representation of the global system within this transition period.

World Trade Centers, architecture and the global system

The term 'World Trade Center' is associated with the iconic New York Twin Tower buildings, which opened in 1974 and were destroyed in 2001 during the terror attacks on 9/11. Designed by Minoru Yamasaki and commissioned by the Port Authority of New York and New Jersey within a decade-long urban transformation of lower Manhattan. At the time, the Twin Towers were intended to serve as a globally visible symbol of power,

wealth and stability. The strong connotation of the World Trade Center name to the New York Twin Towers prevails widely across the world, many years after the physical destruction of the Twin Tower buildings. In fact, it is commonly unknown, that today, more than 300 buildings carrying the name „World Trade Center“ exist worldwide, more of them having been planned since the World Trade Centers Association had started to multiply the concept of World Trade Centers by offering the trademark and with it the promise of belonging to a global network to local planners, city governments, developers and investors. Looking at urban development in the early 1990s in the former GDR, the question arises why private developers together with cities like Dresden, Rostock and Frankfurt (Oder) decided to include the development of World Trade Centers within the process of urban transformation after the ‘Wende’ and the transition from one ideological system to the other.



Figure 1, World Trade Center Twin Towers, New York, 1974

Viewing the history of global World Trade Center development by the World Trade Centers Association, it becomes apparent that, often, World Trade Center development has been part of an urban transition process under the premise to re-position the identity of the specific location. Examples are an increased World Trade Center development in China in the context of China’s economic expansion and opening to the global economy, World Trade Center development in Southern Europe in the context of the global financial crisis in 2008, World Trade Center development in light of the territorial expansion of the European Union, or, as discussed in this paper, the transition of post-socialist cities after the fall of the Berlin Wall.

In the following, the concept of using the New York Twin Tower buildings as representation of world trade by the World Trade Centers Association is being outlined. The global organisation is briefly introduced to provide an understanding of how it operates in developing its global network and brand. Further, it will be argued that the World Trade Centers Association can be used as an example for a global organisation, which is both an effect of the global system and at the same time functioning as an agent of its permanent reaffirmation. Using the term ‘global system’, this paper refers to the process of globalization as it has emerged since the beginning of the 1970s, a timely coincidence with the completion of the New York Twin Towers. The establishment of a globally interrelated unstable currency system, which is seen as the beginning of a Post-Fordist socio-economic

system, along with the emergence of internet technologies, are considered to be key drivers of a paradigm shift, leading to a global society which would be prone to political, economic and financial instabilities and crises. (Spencer 2016). Characteristics of the condition described are increasing privatisation, marketization, competition, commodification in almost all aspects of life, often termed as neoliberalism. The role of cities under this condition has been widely analysed in urban and social studies, geography: Within this global system, cities function as hubs of financialization, inscribing a specific agency to the city, its buildings, places and inhabitants (Sassen, 2001). In response to the paradigm shift in the 1970s, cultural theoreticians started to engage in a broad examination of the cultural conditions of global capitalism, with a particular interest in architecture as representation of capital and as symbolic object. Marxist thinkers examining the conditions of postmodernity, such as David Harvey or Fredric Jameson, took on Marx' critique of ideology and his preoccupation with the dissonance between reality and appearance, the presented and its representation (Jameson 1991, Harvey 1990). In parallel to the preoccupation with representation in the socio-economic and political domain, new, semiotic and linguistic works emerged, discussing representation in the context of meaning, the relation of signifier and signified and the existence of a symbolic system of inter-referring signs. (Architecture, with its inherent double coding of both instantiating society and representing society (Delitz 2010) has been one of the centers of discussion in the discourse about representation and the economic conditions of cultural production. A closer look at this intersection of symbolic representation and the material production of space in European cities shows how these qualities are interwoven and cooperate in the production of the urban environment.

The described global system very much relies upon the narrative of its unity: the unisphere, the one world, the all-embracing global. This unity, however, can also be described as a totality, one that evokes terror and exploitation, as Jean Baudrillard writes in a provoking essay about the destruction of the New York Twin Towers during 9/11, in which he claims that the Twin Towers, representing global unity and the almost absolute exclusion of any other, were built to be destroyed by terror (Baudrillard 2012). As an effect, the unity of the global is presented in cities as well: Here, an exclusive *center* functions both as place and image of global power and connectivity, symbolizing its position and belonging to the global system. This unity, displayed for example in corporate towers, is maintained by the exclusion of the other, creating a system of devalorisation and exclusion. In this system, access and distance to the center is controlled by borders and other access-restricting barriers. The center is always exclusive, a symbol, power and with boundaries. The center itself has become a symbol of the unity and ubiquity of the global.

The World Trade Centers Association was founded in New York in 1970 by Guy Tozzoli, who was then overseeing the Twin Towers World Trade Center design and development in his role as Director of the World Trade Department of the Port Authority of New York and New Jersey (Glanz, Lipton 2011). In 1987, he managed to transfer the licencing fee to the rights of the World Trade Center name from the Port Authority to the World Trade Centers Association for the symbolic amount of 10 US Dollars. Since then, the association has been developing an „international ecosystem' of global connections, iconic properties, and integrated trade services“. (WTCA annual report 2018)

By acquiring the World Trade Center name, the World Trade Centers Association was able to reproduce the World Trade center effect, relying on its symbolic value and the recognizability of that meaning within the global sign system. But how do the World Trade Center buildings in Dresden, Rostock and Frankfurt (Oder) relate to the Twin Towers in New York other than by name, how do they relate to the more than 300 World Trade Centers globally? Contextualizing the building of the Twin Towers, the World Trade Centers Association and the global system, it argues, that the development of World Trade Centers in post-socialist urban planning in the former GDR happened to support the transition from one ideological system to another, the subsumption of the former Eastern Bloc by the global value system of the Western world. The presence of a building in an urban environment that is signified as World Trade Center symbolizes the belonging to the same system, which the

‘original’ World Trade Center, the New York Twin Towers, represents. It hence acts as an agent for unification. (Baudrillard 2012, Golubchikov 2016)

World Trade Center development in cities of the former GDR: Dresden, Rostock, Frankfurt (Oder)

In the following, the concept of „World Trade Centerness“ is being exemplified by looking at the World Trade Center development in three cities in the former GDR, which all took place immediately during the years following the ‘Wende’ in 1989. While the cities of Dresden, Rostock and Frankfurt (Oder) differ from each other in many aspects such as size, number of inhabitants, economic rates and heritage, it is argued in this paper that the World Trade Center development after the ‘Wende’, followed a similar agenda in all three cities: to re-position itself in light of the transition to an already existing global system. In an ongoing doctoral research, a closer comparative investigation into the various World Trade Center developments is underway. Within the restricted frame of this paper, however, a first overview on position, re-positioning effort, World Trade Center development within the transitional character of the ‘Wende’ are briefly laid out and put into context.

With more than half a million inhabitants, Dresden is by far the largest of the three cities in the former GDR featuring World Trade Centers today. The capital city of Saxony is the third largest city in the former GDR after Berlin and Leipzig, bordering the Czech Republic and situated at the river Elbe. Due to its rich heritage as a former royal residence, it features historic buildings, some of them lavishly reconstructed after the ‘Wende’ in an effort to reconnect to its pre-war identity, which had been disregarded and neglected during the times of the GDR. In addition, global star architecture, such as the UFA Filmpalast by Coop Himmelb(l)au had been added to the city. The World Trade Center in Dresden is positioned in the inner city, next to the city ring. Unlike the World Trade Centers in Rostock and Frankfurt (Oder), the World Trade Center Dresden inhabits a building that has been specifically commissioned and designed as such. Situated in the center of the city of Dresden, the building complex features a tower within a multi-functional ensemble, intending to symbolize the global connectivity of the World Trade center network with a filigree roof, spanning over the building complex.



Figure 2, World Trade Center Dresden, 1992

Half the size of Dresden, Rostock's urban identity is very much defined by its position at the Baltic Sea and the river Warnow. As a port city, it is culturally coined by the respective industries, tourism, as well as the connectivity to the bordering Baltic countries. While explicitly relating in its mission statement to the World Trade Centers Association with its chair in New York and the worldwide network, the World Trade Center building in Rostock features a highly inconspicuous morphology. Labeled „World Trade Center“, the Rostock World Trade Center has not much else in common with the New York Twin Towers other than its waterfront location. Situated at the shore, the building complex houses a Best Western Hotel and various business services in relation to international trade, portraying itself as a hub within global business network and its respective symbols of business travel, trade fair, congresses and corporate office culture.

Frankfurt at the river Oder is by far the smallest city of the three World Trade Center cities in the former GDR, with just below 60 thousand inhabitants. Its World Trade Center is positioned within an industrial area just outside the city, in its green belt. The World Trade Center is part of an industrial building complex and merely a nameplate among others. The building housing the World Trade Center is not designed for its specific function, it solemnly serves as address provider, signifying nothing. In lack of the signifier, the World Trade Center in Frankfurt (Oder) uses for its branding activities the image of the most iconic and visible building in the center of Frankfurt (Oder), the Oder Tower. Designed and built during the times of the GDR between 1968 and 1976 and renovated after the 'Wende' in 1992-1994, the Oder Tower serves as a symbol of the city's identity and as cohesion between the pre- and post-, 'Wende' era. Unlike Dresden, who managed to resume its previous wealth and cultural visibility, Frankfurt (Oder) is since suffering from urban shrinkage as well as poorer economic and social conditions such as high unemployment rates. Separated from Poland only by the river Oder, it also functions as territorial border and has been divided as a city since the Oder-Neiße Peace Contract, when a former district of Frankfurt (Oder) became the Polish town Slubice. As such, Frankfurt (Oder) became a symbol of the German separation, with the river functioning as territorial border between the Western and Eastern Bloc, dividing the city. While the city's marginal position before the 'Wende', situated at the edge of Germany, Europe, symbolizing the then bipolar world order shaped its economic and cultural identity, this changed with the end of the Iron Curtain. Suddenly, Frankfurt (Oder) found itself in the territorial center of Europe rather than at its edge, confronted with the opportunities of open borders rather than closed boundaries. As such, the World Trade Center Frankfurt (Oder)-Slubice positions itself as a door opener for Polish German business relations, building on its identity as bridge-maker, the symbolic place of the Oder-Neiße peace contract and cross border relations.



Figure 3, Oder Tower, Frankfurt (Oder), 1976



Figure 4, World Trade Center Frankfurt (Oder)-Slubice, 1992, Figure 5, World Trade Center Rostock, 1990

The cities of Dresden, Rostock and Frankfurt (Oder) implemented World Trade Centers during the same time in the early 1990s, following the end of the GDR and the beginning of a united Germany. Despite their differing sizes, positions, economic and societal situations, public-private endeavours were undertaken to implement World Trade Centers into the city within this post-‘Wende’ transition period. By joining the World Trade Centers Association, a relation to the Yamasaki-designed Twin Towers from 1974, symbolizing World Trade Centerness, is spanned. This relation is obvious in mission statements and other branding narratives; however, it varies in its modes and degrees of representation. While the World Trade Center in Dresden is positioned in the City Center, designed as World Trade Center, designed by an architectural firm, featuring a Tower and aiming to add to the city’s skyline and architectural identity, the World Trade Center in Rostock is less centered and is architecturally un-ambitious. Even more imperceptible is the World Trade Center in Frankfurt (Oder), which has an address within a peripheral industry park, and uses, in lack of an image of a real morphological building, the iconic image of the existing Oder Tower in the city centre as symbolic substitute. Regardless of these different scenarios, in all cases elements of World Trade Centerness and its function within the global system can be seen: the relevance of centerness, marketization, top-down development, the narrative of unity, the role of accessibility and visibility. When lacking visibility, the image of the New York Twin Towers, which is being evoked by the association with the World Trade Center Association, serves as image.

Conclusion: Unity, unification and the representation of world trade

With the geopolitical changes evoked by the ‘Wende’, the territorial, political and economic positions of all cities in the former GDR changed fundamentally; in its position within Germany, Europe, as well as the global infrastructure. This paper has outlined, how the establishment of World Trade Centers has served as a tool for the cities of Dresden, Rostock and Frankfurt (Oder) to re-position themselves within the new post-socialist global system. The three cities in the former GDR are different in many aspects such as population size, economic situation, heritage or industries, as are the World Trade Centers, that have been developed in the three cities in the early 1990s shortly after the ‘Wende’. While they vary in terms such as morphology, use, position, they are all examples of how the World Trade Centers Twin Towers, designed by Minoru Yamasaki in New York serve as representation and symbolic object of world trade and the belonging of the global system, even after their physical destruction. During the transition from one ideological system to another, the need for cities to re-position themselves in the new geopolitical and territorial system, symbolic representation of world trade served as a tool not only for the German unification, but also for the new unity of the global. With referring to the World Trade Center Twin Towers in New York, cities seek to position themselves as hubs within the global network, as participants of the one global system.

Figures

Figure 1, World Trade Center Twin Towers, New York, 1974, Photo: dpa, <https://www.sueddeutsche.de/reise/world-trade-center-vor-40-jahren-eroeffnet-wo-einst-die-tuerme-der-welt-standen-1.1639997>, *Date of access: 31/05/2019*.

Figure 2, World Trade Center Dresden, Photo: Michael Wortmann

Figure 3, Oder Tower, Frankfurt (Oder), 1976, <http://www.wtcbb.de/content/>, *Date of access: 31/05/2019*.

Figure 4, World Trade Center Frankfurt (Oder)-Slubice, 1992, <https://www.luftbildsuche.de/info/luftbilder/ihp-gmbh-innovations-for-high-performance-microelectronics-frankfurt-oder-brandenburg-167211.html>. *Date of access: 31/05/2019*.

Figure 5, World Trade Center Rostock, 1990, Photo: Frank Eiche, https://www.google.com/maps/uv?hl=de&pb=!1s0x47ac5603b45d0773:0x1ca2a90a3c87d818!2m2!2m2!1i80!2i80!3m1!2i20!16m16!1b1!2m2!1m1!1e1!2m2!1m1!1e3!2m2!1m1!1e5!2m2!1m1!1e4!2m2!1m1!1e6!3m1!7e1!5!4shttps://lh5.googleusercontent.com/p/AF1QipOs8DWuHg_sez16c2PwG1QPvie9SCRtrdxIU0N-%3Dw286-h160-k-no!5sworld+trade+center+rostock+-+Google-Suche&imagekey=!1e10!2sAF1QipOs8DWuHg_sez16c2PwG1QPvie9SCRtrdxIU0N-&sa=X&ved=2ahUKEwjSntne2MXiAhVP26QKHVbjAEsQoiowD3oECA4QBg, *Date of access: 31/05/2019*.

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The transition urban planning history of Lisbon Metropolitan Area

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Abstract: Drawing from an ongoing research project 'SPLACH - Spatial Planning for Change, which aims to inform a sustainable planning transition of Portuguese metropolitan areas, this presentation identifies the planning paradigms which have guided the urban planning of Lisbon, its region and metropolitan area, during twentieth century. The influence of specific theories such as the Garden City (1898-1902), the Charte d'Athènes (1933-1943), the Doorn Manifesto (1954) and the Compact City (1997) on strategic planning documents including the 'Plano Director de Urbanização de Lisboa' (1938-1948), the 'Plano Director Municipal de Lisboa' (1954-1958), and the municipal and regional masterplans established after the 1974 Portuguese Democratic revolution are here identified. Such analysis is constructed through an overview of municipal and subregional plans and of neighbourhoods created in them, which allows an analysis of the metabolic and morphological transitions which have marked twentieth century Lisbon Metropolitan Area (LMA) urban planning history. By doing so, we seek to establish which were the impacts of these transitions, including on urban form, how have these changed the role of urban growth in LMA and how to interpret and optimize such built heritage today, when Sustainability urges for change.

Keywords: urban form, sustainability transitions, urban planning paradigms, Lisbon Metropolitan Area.

Introduction

Urban Planning is fundamental for the sustainability of cities and their regions, particularly in metropolitan areas. Global urbanization, with its pressing socio-environmental challenges has led scholars to question existing planning tools (Oliveira, 2006). This kickstarted studies of problematics like air pollution, waste production, greenhouse gas, etc. Such studies accounted for energetic and material balances occurring in specific areas. Developed by engineers, ecologists and civil engineers, these allowed the first metabolic studies of real cities like Tokyo, Brussels and Hong Kong (Kennedy *et al.* 2010). Metabolic data analysis and models to account such data were made available worldwide (Beloin-Sain-Pierre *et al.* 2017, Kennedy *et al.* 2010). Particularly suggestive was the 'black box' metaphor attributed to the city by many urban metabolism studies (Erb *et al.* 2016). The participation of other scientific areas, covering black box analysis, through physical form urged architects and urbanists to pursue a sustainability agenda. However, the application of such knowledge in transformation of the built environment proved to be slow (Jencks *et al.*, 2000). Clearly, urban form concurs to urban sustainability (Marat-Mendes, 2002), but the 'black box' needs to be better understood within architectural and urban design practices. Only then can planning authorities aspire to respond properly to the

sustainability agendas which international institutions (United Nations among other) were demanding, including the directives for the control of water and air quality.

The discourse of sustainability surpassed the engineering and natural sciences (Fischer-Kowalski, 1998) and generated societal pressures for politicians to promote adequate laws for maintenance of resources and planning of the built environment. The use of metabolism as a tool for design remains however inconspicuous in architecture and even urban design. In the beginning of the new millennium sustainability emerged a common goal for cities, and it suggested the need for effective transdisciplinary processes (Baccinni and Oswald, 2008).

The concept of metabolism would be re-examined in neighbourhood (Kennedy *et al.*, 2010) and metropolitan (Rosado *et al.*, 2014) scales, and it underlies recent planning paradigms, including the Compact City (Jencks *et al.*, 1996; Rogers, 1998), which turned into the corollary of the EU Urban Agenda (Schoffham and Marat-Mendes, 2000). Within thirty years, the consolidation and materialization of the first metabolic studies of cities changed urban practice and theory, spawning a new urban model and a proliferous research area. This long process exposes the time loop that a cultural-scientific-political-sustainability-transition process requires in practice, as already argued and identified by Tibbs (2011).

Assuming the existence of this time-loop, an ongoing research project 'SPLACH – Spatial Planning for Change', aims to inform future urban policies on sustainability transitions in metropolitan areas, identifying the impacts of planning paradigms and corresponding urban forms. The role of the food system in sustainability transitions of the Lisbon Metropolitan Area (LMA) is highlighted. However, the functioning of the food system is closely interrelated to land-use and urban form, as well as socio-cultural contexts (Marat-Mendes and Borges, 2019). Thus, identifying planning paradigms which led to the specific context of today, is an important contribution to inform any exercise aiming to change current planning priorities.

This paper focuses on three specific areas of the LMA, as well as three moments of the urban history of its region, while identifying specific paradigms that guided urban development, in their morphological and metabolic dimensions. Furthermore, we analyze socio-ecological potentials for each of these areas today towards a sustainable transition of the LMA territory.

Methodology

For our overview of the LMA urban history, we selected three case-studies, namely the Eastern end of Lisbon, between Vale Escuro and Olivais; the Alfragide zone in Amadora, particularly the Alto do Zambujal neighbourhood and finally, the centre of Oeiras, including the old centre and the neighbourhoods of Nova Oeiras and Santo Amaro (See Figure 1).

Planning instruments relevant for developing these areas include:

- The PUCS (Plano da Costa do Sol), a sub-regional masterplan including Lisbon, Oeiras and Cascais, started by Donat-Afred Agache in 1935-1936, continued and concluded by Étienne de Groër in 1948;
- The PDUCL (Plano Director de Urbanização da Cidade de Lisboa), Lisbon's masterplan, designed by Groër in 1938-1948;
- The PDUL (Plano Director de Urbanização de Lisboa), Lisbon's masterplan, designed by GEU (Gabinete de Estudos Urbanísticos), a municipal planning office;
- Several PDMs (Plano Director Municipal), the municipal masterplans initiated in 1982 by the democratic government.

The first three were designed during the New State, a conservative dictatorship which ruled Portugal between 1933 and 1974. However, from these, only the PUCS was fully approved. The PDM is more concerned for management than for planning itself, and so its nature is different from the remaining plans, as will be explained.



Figure 1 - Case-studies: 1 – Eastern end of Lisbon; 2 - Alfragide; 3 – Oeiras centre

Lisbon Metropolitan Area Urban Planning Evolution

The PDUCL and the PUCS and the Garden City paradigm

The first period under analysis represents the moment when urban planning was adopted in Portugal as strategic for the modernization and development of the Nation, but also as an emerging area within the curricula of Architecture Schools, whose urban dimensions were absent until then (Marat-Mendes *et al.*, 2014). Thus, some Portuguese architects were invited to conclude their architectural studies in foreign universities, including the Institut d'urbanisme de l'Université de Paris (IUUP). It was precisely from the IUUP that architect-urbanist Étienne de Groër came to work in Portugal, invited by the Portuguese Ministry of Public Works (Marat-Mendes *et al.*, 2014). The planning paradigm guiding Groër on his planning work was Ebenezer Howard's (1902) Garden City theory, as Groër (1945-1946) stated himself in his 'Introduction to Urbanism'.

Groër's work, justified in the written document that complemented the drawings of the PDUCL (1938-1948) attests the crucial role of Garden City concepts to the urban development of Lisbon and its region. He planned a rural zone conditioned by urban legislation, a buffer to urbanization he assigned for agriculture. Groër also worked on the urban design scale. Thus, he proposed building principles, and advanced solutions for street sections, urban grids, urban blocks and plots for several neighbourhoods in Lisbon and Costa do Sol. The family unit constitutes a basic issue in Groër's (1948) urban planning, determining public space organization according to family needs (creating schools, churches and

other equipment within walking distance) as well as private space (for instance the requirement of a private backyard for growing food and resting).

The PUCS allowed Groër to deepen his interpretation of the Garden City, working at a sub-regional scale. He established a maximum population for the city and its subregions – 1.100.000 inhabitants for Lisbon and 550.000 for the suburban municipalities (Gröer, 1948). Furthermore, Groër established a zoning system to delimitate different urban land-uses (industry, commercial, mixed, residential) to protect rural zones, prohibiting their urbanization. The green belts were implemented in the surroundings of the Lisbon municipality, as well as in Oeiras and Cascais subregion, known as Costa do Sol (Marat-Mendes, 2009).

Although the PDUCL failed to get approval from the central government, it was partly implemented and changed irreversibly the course of the Lisbon's development (Marat-Mendes and Oliveira, 2013). Municipal architects like Paulino Montez, Luís Benavente and Zinho Antunes drew specific plans for garden-suburbs, including neighbourhoods as Alvito (1937), Restelo (1938-1947), Caramão da Ajuda (1947), all in the Western end of the city, Alvalade (1945) in the north-central area; and Madre de Deus (1942) and Encarnação (1940) on the Eastern end.

The PDUL and the Chartre d'Athènes and the Doorn Manifesto paradigms

While the PDUCL and the PUCS were being developed, Portuguese architects started to urge for political changes and a new modern aesthetic to counteract the one established by the New State. In Europe, modernist urbanism, developed under CIAM – Congrès Internationaux d'Architecture Moderne, produced the 'Chartre d'Athènes', a synthesis for the new functional city.

Selections of the Chartre were translated into Portuguese in 1944 by Nuno Teotónio Pereira and Manuel Costa Martins for 'Técnica', a magazine of engineering students. From February 1948 to September 1949, the integral version was published in the monthly magazine 'Arquitectura', translated by Francisco Castro Rodrigues and Maria de Lourdes (d'Almeida, 2015).

These translations became a public statement of Portuguese architects – and engineers – pursuing new planning paradigms. Nevertheless, such transition would take time. After the approval of the Costa do Sol Plan in 1948, Groër concluded the PDUCL, but the central government did not approve it. New urban plans would be delineated for Lisbon, culminating with the 1959 PDUL elaborated by the GEU, which included 14 engineers, 15 architects and 2 landscape-architects. This new plan acknowledged Groër's contributions and confirmed the importance of the regional scale to tackle urban problematics including overcrowding, inadequate distribution of regional populations, and lack of regional unity which affected social, economic and environmental cohesion (PDUL, Int.3-4). However, the PDUL is closer to the principles of the Chartre d'Athènes, including mobility, functional zoning and high-density construction. The maximum population for the city coincided with Groër's, but the PDUL proposed new treatments for rural zones. While the PDUCL established a green belt around Lisbon (at the northern bank of Tagus) to prevent the city from extending to rural settlements, the PDUL omitted this possibility in the north side of Tagus river. Instead, it identified the green areas of protection (green belts) in the limits of the orographic valley areas (water streams) which constituted the natural areas of provision of open spaces for leisure. Only in the southern bank of Tagus, would the PDUL identify areas for agriculture to be preserved (PDUL, I.2.1-2.2/1). Despite its ambitious project for Lisbon, the PDUL failed to get approval. A new version coordinated by Georges Mayer-Heine was concluded in 1967 but approved only ten years later.

By assigning green areas for leisure, instead of agriculture and food production, the PDUL announces a transition of paradigm, as the ideas of international modernity were slowly being absorbed by Portuguese architects and planners. Moreover, greater attention is given to building structures themselves, instead of the family principles that guided Groër's (and even Howard's) planning ideas. Nevertheless existing rural ways of life were not neglected by the Portuguese architects, which by the late 1950s were highly interested in the debates around popular and traditional architecture (Marat-Mendes and Cabrita, 2015). Would this be a symptomatic reflection of the Doorn Manifesto?

The Doorn Manifesto was written in 1954 by Team 10, a collective formed by younger architects attending post-WW2 CIAM. Members came from collectives such as De 8 (Aldo Van Eyck and Jaap Bakema), MARS (Alison and Peter Smithson) and AT.BAT-Afrique (Georges Candilis and Shadrach Woods). Their previous projects included multi-religious neighbourhoods, new towns, public equipment and council housing (Borges, 2017). The document constitutes a direct challenge of modernist principles, including the partition of land according to functional categories, instead accepting the historical and accumulative processes that shape particular urban forms. It takes a strong influence from the regional geography of Patrick Geddes. The identification of communities with their aggregation patterns and the need to integrate different urban densities and scales also question the rationalist planning paradigms of pre-WW2 CIAM (Borges, 2017). In the 1956 Dubrovnik CIAM, organized by Team 10, the Portuguese group of architects presented a proposal for rural habitat, exemplifying the articulation of modern and local architectural references (Marat-Mendes and Cabrita, 2015) which brings Portuguese architecture of this time close to Doorn principles.

Unlike the Chartre d'Athènes, the Doorn Manifesto was not translated to Portuguese. However, beyond Portuguese CIAM participations, the ideas and projects of Team 10 were known in Portugal through articles and photographic reports in architectural magazines, particularly under the influence of Nuno Portas. The editor of 'Arquitectura', an architect in the Alegria Street Studio, where several council estates were designed (Tostões, 1997) and on the Lisbon GTH (Gabinete Técnico de Habitação), Portas helped the principles of the Chartre d'Athènes and the ideas of the Doorn Manifesto reach the development of Lisbon, including neighbourhoods like Olivais Norte, Olivais Sul and Chelas. This marked a uniquely significant shift in Lisbon's urban history.

Post 1974 – The emergence of the PDM

Since 1982 the PDM, or Municipal Masterplan, is the centre of land-use management and of the democratic planning structure in Portugal (Marat-Mendes *et al*, 2018). The 1982 Law of Soils marked a shift from earlier urban planning. Municipal planning stipulates land-use and corresponding regulations, based on a fundamental opposition between urban and rural, but the PDM is not an instrument for planning the development of territories, instead, it manages its development mostly led by the private-sector (Marat-Mendes *et al*, 2018). The 1982 law was only replaced by a more detailed Ground Basis Law in 1998, updated in 2014. These required PDM revisions every decade, although such rule is not scrupulously followed.

Active PDMs in the LMA have been written in different times, handling specific local, territorial and socio-economic problems. Eight of the 18 PDMs which integrate the LMA are prior to the first Ground Basis Law, while five date from 2015, leaving unclear which Ground Basis Law guided them, and only one was approved after. All municipalities include urban and rural soils, except Lisbon, whose land is entirely urban. Other classes included in other municipalities range from 'rural soils' to specific classes of agriculture, forestry, agroforestry, green protection and natural spaces.

With respect to the municipalities included in our examples, Lisbon, Amadora and Oeiras, they show very different planning situations. We will focus our overview on the most recent versions of their PDMs.

Lisbon published the newest version of its Masterplan in 2012, a lengthy document pertaining to answer problems like population decrease and unemployment, while acknowledging major infrastructure needs are met (PDML, 2012). Other problems identified are resource waste due to a diffuse growth patterns, air pollution and mobility (PDML, 2012). With respect to land-use, the whole of the Lisbon is classified as urban (PDML, 2012, Art.9), containing operative categories as well as functional categories, a relevant set of dispositions for the Municipal Ecological Structure (MES) and an articulating system of Structuring Corridors to connect green and urban areas (PDML, 2012). Given its emphasis on conservation and heritage, the PDM has highly restrictive regulations for new constructions, including on façade preservation, height and occupation of block and lot, with direct impacts on the density of new buildings. However, several important recent buildings have obtained approval from the municipality, despite visibly violating the PDM, particularly in business areas.

The Oeiras PDM, from 2015 defends growth, compaction and multifunctionality. It is one of the few PDMs in the LMA with a clear tendency towards a specific urban model –the Compact City. It seeks sustainable and qualified development (PDMO, 2015). The territory is divided into several systems with specific regulations – from the MES to Systems of Protection for Values and Resources – overlapping with the land-use system. Another important aspect is the defence of multifunctional centres (PDMO, 2015, Art.31). Changes in land-use are allowed and encouraged, announcing a territorial dynamic, perhaps more than a territorial program. There is a certain boldness to how this PDM understands its territory appealing to multifunctionality (PDMO, 2015, Art.25 and Art.30 and Art.31). In ‘Housing spaces’, the goal is conversion into central spaces (PDMO, 2015, Art.31-1), which include housing, services and commerce (PDMO, 2015, Art.30-1). In all of this, the Oeiras PDM meets the theoretical principles of the Compact City, namely the creation of high-density buildings with free space of mixed land-use. Moreover, in 2015, the municipality issued a Regulation for Urban Allotment Gardens (DL.162/2018 – March 14th), acknowledging urban agriculture for its role in environmental quality, soil maintenance, farming techniques and social leisure, but not its role in food-security.

Finally, Amadora presents the most precarious situation of the three municipalities. The active PDM was written in 1994 and is not structured around a clearly stated goal, although it has some interesting points, especially concerning the environmental quality of the municipality, not very common in PDMs written in the 1990s. Not only there are careful stipulation as to natural spaces (and equivalent ones), there is whole chapter on pollution, including dispositions towards preventing it in the air, the water and the soil. The land-use system (PDMA, 1994, Chapter III – Section I) merely establishes land-use classes with regulations on scale, lining and height. Land-use is further distributed in each Operative Unit, adding specific interventions according to the needs of particular zones. On the other hand, it must be added that this PDM does not necessarily envision a multifunctional space: it presupposes urban settlements with industrial parks and natural spaces (or equivalent) between them. Another surprising aspect is the lack of clear goals towards articulation with the Lisbon municipality other than transportation.

Planning paradigms at the neighbourhood scale

Here, we focus our overview on the neighbourhood scale. These are the Eastern end of the Lisbon municipality, the Alfragide area in the Amadora municipality, and the centre of the Oeiras municipality (see Figure 1). The first was urbanized during Gröer’s PDUCL and during the legal void left by the PDUL. The second had a municipal integral plan in 1982, but was mostly constituted by autonomous housing units. The third was one of the areas contained in the PUCS but continued to grow, revealing the non-accomplishment of several goals included in the Plan.

Eastern Lisbon



Figure 2 – Locations: 1 – Madre de Deus, 2 – Chelas, 3 – Olivaes Sul, 4 – Encarnação, 5 – Olivaes Norte

Eastern Lisbon was mostly occupied with industrial facilities near the riverbank, as well as some low-density housing areas, convents, large farms and some slums, most only demolished in the 1960s. The municipality constructed two neighbourhoods in the northern and southern areas of the Eastern end of Lisbon, both included in Gröer's PDUCL.

The Encarnação neighbourhood was planned by Paulino Montez in 1940 for the Northeast end of Lisbon, nearby the Lisbon Airport, also an element planned by Gröer. Housing types are by municipal engineer Jácome da Costa, single-family detached and semi-detached terraced houses with a small front lawn and a backyard. Encarnação is a large-scale neighbourhood and includes gardens, a school, markets, a police station, a church and other equipment. One of its streets was intended for commerce (Montez, 1958), and continues to be so.

The Madre de Deus neighbourhood was planned by architect Luís Benavente in 1942. With a radial plan rising over a hilltop, Madre de Deus is also constituted by Jácome da Costa's housing types. Some blocks are used as public gardens and the neighbourhood is topped by a small school and a green park. After its construction, some four-storey housing slabs were added to its higher and lower ends. The lower one is separated from the Xabregas area by a large guerrilla garden, while the higher eventually turned into Quinta do Ourives, a high-density estate designed by the GTH.

Both these neighbourhoods effectively created low-density housing areas with good living conditions. However, they also confirmed Howard's vision of a Garden City, with a rural area and connected to other satellite towns was not so influential in Lisbon as was the vision of a garden-suburb, presented in Raymond Unwin's 1909 'Town Planning in Practice' (Lobo, 1995).

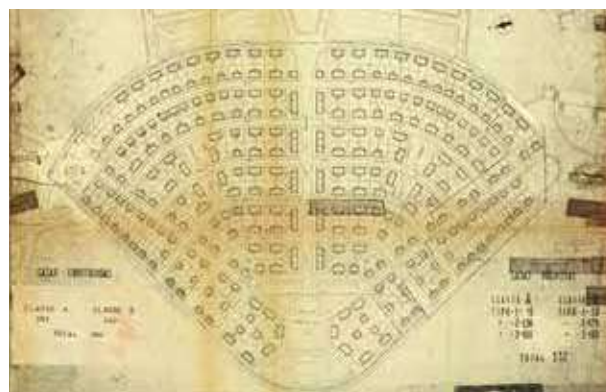


Figure 3 - Madre de Deus plan by Luís Benavente



Figure 4 - Encarnação plan, by Paulino Montez



Figure 5 - Madre de Deus neighbourhood



Figure 6 - Encarnação neighbourhood

During the legal void left by the lack of approval of the PDUL, urban plans drew extensively from the interests of planners. The Olivais Norte and Olivais Sul neighbourhoods followed the principles of the Charte d'Athènes, the first starting in 1955 and the second in 1960. Olivais Norte is a relatively small development, in which housing slabs and towers are placed in a green park, according to a dynamic compositions independent from the structuring motorways and with free space and free circulation within its own limits (Gonçalves *et al*, 2016). Separated from Olivais Norte by the Encarnação neighbourhood, Olivais Sul expands on the planning principles of Olivais Norte. In a cellular partition, housing estates stand in urban green parks, all defined by a regular motorway structure. Traditional urban elements like streets, blocks and plots were rejected, and instead housing slabs, towers and tower-blocks were preferred. Vacant space was abundantly filled with grass and trees, which also harboured public equipment but dismantled pre-existing agricultural activities (Santos, 2015).

The further experience with the development of the Chelas Valley, starting in 1960, shows a different planning attitude from the GTH, more akin to the Doorn Manifesto. Like the Olivais Sul plan, it refuses conventional streets, blocks and lots, and opts for a cellular division. But most of the estates developed according to the original Plan are structured by continuous commerce and service pathways – some pedestrian and some for traffic – around which high-rise housing towers, blocks and slabs stem in informal and anti-geometrical compositions. The Plans for Zone I, Zone J and Zone N2 present several interpretation of these core principles, echoing those of residential neighbourhoods inspired by the Doorn Manifesto, including the Carrières Centrales by AT.BAT-Afrique (1951-1953), the Golden Lane Cluster City by Alison and Peter Smithson (1952-1953), the Park Hill-Hyde Park housing complex coordinated by John Lewis Womersley (1957-1965) and the Toulouse-Le Mirail town extension by Candilis-Josic-Woods (1963-1973). These projects share similarities with Chelas not only in the urban layout, but also in the employment of specific elements of urban form like unifying plateaus, pedestrian walkways, deck-accesses and city-buildings (Heitor, 2001; Borges and Marat-Mendes, 2019).

The impacts of these on urban form are decisive for the development of Lisbon. After more than a decade of new neighbourhoods planned according to the garden-suburb model, the need of optimizing construction and creating a significative amount of new houses led to the adoption of different urban models more accepting of mass-housing, but also more aware of the possibilities of State intervention for strategic planning of equipment, public space and transportation systems. The territory is transformed to a great extent – particularly considering that Olivais Norte, Olivais Sul and the Chelas Valley were previously agricultural areas – but so does the urban landscape, which, for the first time, sees the construction of integral high-density areas, whose urban development continues to this day. Yet, it must be noted that these plans were not totally implemented and considerable changes were made that distanced them from their original goals. Amongst these, transportation systems were paramount, and these areas were deeply affected by their segregation from the city.

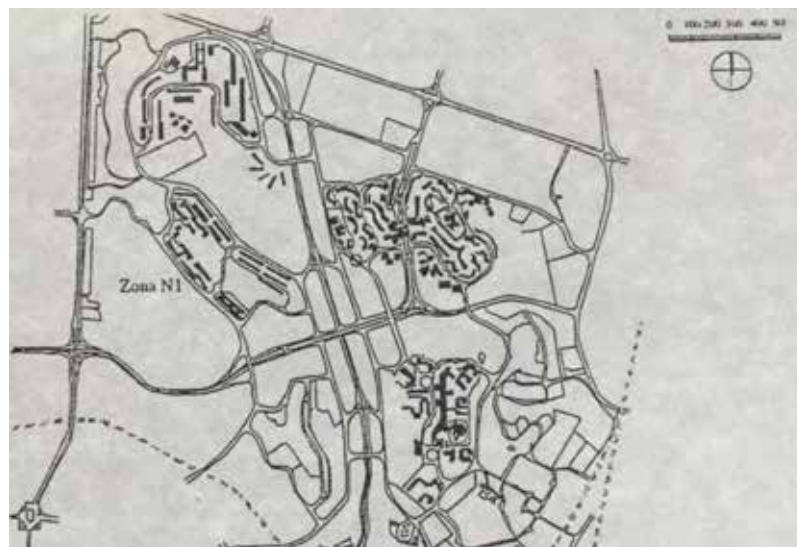
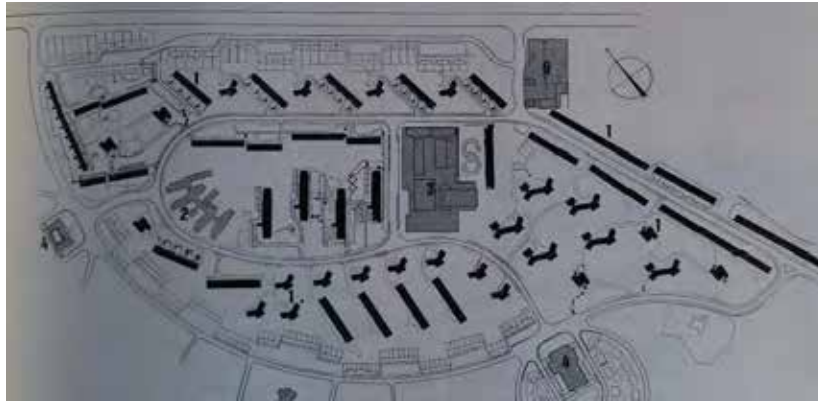




Figure 10 - Olivais Norte neighbourhood



Figure 11 - Olivais Sul neighbourhood



Figure 12 - Chelas neighbourhood - Amendoeiras Estate



Figure 13 - Chelas neighbourhood - Lóios Estate

Alfragide zone



Figure 14 - Location: 1 - Alto do Moínho, 2 - Zambujal

The Alfragide area is now fully urbanized, although most of its area was included in the rural zone assigned by Gröer in the PUCS. Indeed, present-day Alfragide was, by the 1930s, constituted by three large farms, to which a growing amount of industrial facilities was added in the 1940s. The Alto do Zambujal neighbourhood was urbanized in the 1970s, in conditions similar to those of Eastern Lisbon a decade earlier. Its original council estates were however designed in different terms.

Alto do Moínho, on the lower end of the slope, is a low-density estate where urban and architectural form are merged, designed by Francisco Silva Dias. The ‘evolutive’ single-family houses are linked together in a series of slabs separated by patios and small flowerbeds. The estate occupies only a part of the land, leaving a large green area around the ruins of a pre-existing windmill, which are now occupied with small agricultural plots. The design has some distanced similarities to the garden-suburb paradigm, but its scheme is more overtly drawn from the experience of Silva Dias in a survey on popular architecture conducted in Portugal in the late 1950s (Bordalo, 2005).

On the higher end of the slope, the Zambujal estate was designed by Vítor Figueiredo and Duarte Cabral de Mello, a high-density area with several slabs built around urban parks and gardens. As the bottom of the slope is reached, the slabs become a block of two-storey houses. This estate shows a considerable influence of modern urbanism, although it belongs to a critique of the Chartre d’Athènes more than a wholehearted expression of it.

After the democratic revolution, the Alfragide zone continued to be developed, but private-sector urban developments targeted especially the middle-classes, as the Alfragide Towers, designed by the studio of architect Conceição Silva in a Brutalist aesthetic that does not necessarily follow the Doorn Manifesto principles from which English Brutalism emerged (Borges, 2017). Moreover, the Alto do Zambujal neighbourhood, which had been the object of an Integral Plan from 1973 to 1982 ended up being revised, towards greater densification. As such, most of its planned green areas have been urbanized, without a specific development strategy, but clearly guided by principles of compaction. However, as happened in many neighbourhoods influenced by the Compact City model, public transportation was not developed accordingly, and much of the mobility in the area can only be ensured by private car. Despite the relative lack of investment in improving public spaces in the Alto do Zambujal neighbourhood, there has been a considerable amount of community appropriation of vacant space, as several small areas within the urban park in the lower end of the slope are used as small allotment gardens. Moreover, in the terrain between the lower end of the Zambujal Estate, the Laboratório Nacional de Energia e Geologia (LNEG) building and the corridor of the CRIL highway, a large guerrilla garden has

been created by locals, adding another function to an urban area that includes residential, commercial and industrial activities.



Figure 15 - Alto do Zambujal Plan - 1982 version



Figure 16 - Alto do Moinho Estate



Figure 17 - Zambujal Estate



Figure 18 - 1 - Oeiras Centre, 2 - Santo Amaro, 3 - Nova Oeiras

The PUCS is a close interpretation of Howard, with an urban centre linked to satellite towns beyond a rural fringe. These formed a continuous structure of leisure, but mostly of agricultural and forestry activities valued for their role in balancing urban sprawl and ensuring environmental quality (Marat-Mendes, 2009). Gröer was also keen on ensuring the development of existent settlements which needed to grow. In the centre of the Oeiras municipality, he mostly focused on consolidating the old settlement, and integrating it in newly created neighbourhoods, mostly designed as low-density garden-suburbs. That is the case of Santo Amaro, the Eastern zone of Oeiras, in which Gröer planned such a garden-suburb, constituted by detached terraced houses and cottages, with several public gardens facing the beach.

The PUCS will also absorb the plan for Nova Oeiras, a new neighbourhood for the Western zone of Oeiras, with semi-circular streets with cottages placed around a housing estate fully tributary to the urban principles of the Chartre d'Athènes, designed by architect Luís Cristino da Silva.

Although Gröer planned the urban centres in the region, he understood these as parts of an integral scheme that included the rural areas. This shows the greatest changes in the Oeiras centre, as urbanized area has eliminated a considerable rural area. Between Gröer's Santo Amaro neighbourhood and the beach now stands a high-density estate, while on the northern end the Augusto de Castro neighbourhood was built, also with high-density tower-blocks. Other areas were since urbanized in the Oeiras centre, most of them high-density. However, this has often been made possible by land-use conversions which deeply affected the rural structure of the PUCS. This green belt is only visible in fragments now, and some of its remnants have not been prioritized in urban planning (Marat-Mendes, 2009).



Figure 19 – Oeiras centre and Santo Amaro Plan by Étienne de Gröer



Figure 20 – Nova Oeiras Plan by Luís Cristino da Silva



Figure 21 - Old Oeiras Centre



Figure 22 - Nova Oeiras neighbourhood



Figure 23 - Santo Amaro neighbourhood

Discussion

The case-studies enlighten transitions within the urban history of Lisbon and its region. These are verified at three levels. First, the political, with the development of planning instruments for multi-scale development of the territory. Second, the cultural, with different urban paradigms informing the urban design. And third, the socio-metabolic, with the regional transformation of landscapes, ecosystems and lifestyles.

Considering the ruralist politics of the New State, Gröer found in Lisbon a political climate favourable for exploring his interest in the Garden City – expressed before he came to work in Portugal (Gröer, 1932). He succeeded at planning low-density comfortable neighbourhoods but failed to predict the real changes the city would undergo and design solutions to tackle such problem. However, Gröer's vision is not without merit, as it balanced urbanization with the preservation of rural activities, with positive metabolic impacts.

Ideas emerging from modernist planning and its post-WW2 critics would eventually become influential in Lisbon, although the PDUL, which integrated those references, was not approved. High-density was a necessary solution for housing shortages in several urban centres of the region, and although most urban designs would plan great amounts of green space, these no longer negotiate with the agrarian past of their territories. A schism is assumed between urban and rural that lasts until today.

Democratic planning became more focused on territorial management, rather than planning, to respond to a liberalized market, but recent construction is moderately compromised with the principles of the Compact City in high-density construction, but less in transportation or reduction of car-dependency.

The case-studies reveal urban form contrasts in planned neighbourhoods according to their urban models. In these contrasts are implied different metabolic processes. In neighbourhoods planned during Gröer's PDUCL and the PUCS, the garden-suburb model is the most preponderant, as new neighbourhoods do not have particular relations with either the city centre or a rural hinterland, fundamental for the Garden City. Individual detached or semi-detached houses are the preferred type, with individual yards and public green areas providing free space and sometimes public equipment.

This changes in the 1950s. Given Gröer's unrealistic predictions for urban growth and the continued existence of slums in Lisbon, urban models reviewed in architectural publications were used by several architects working in the development of Eastern Lisbon. High-density solutions are accepted, and multi-storey buildings were incepted into green parks divided by large motorways in Olivais Norte and Sul. In Chelas, there are similarities with the Doorn Manifesto, as mass-housing estates cluster around a central motorway.

These neighbourhoods represent great metabolic changes– they stand on former agricultural land expropriated by the Lisbon municipality, and present a great variety of residential density, from single-family houses to massive tower-blocks within a large extension of green areas mostly meant for leisure and landscape. In Chelas, an horticultural park and guerrilla garden are the exception, while several guerrilla gardens of several dimensions can be found in the fringes of Madre de Deus today. Another important aspect is the conversion of pedestrian and low-traffic routes into motorways, and the appropriation of green areas for parking, showing a dramatic increase in car-use (and corresponding CO2 emissions), despite the presence of public transportation (except in Madre de Deus).

Either inspired by the Garden City or by ulterior ideas, these neighbourhoods are mostly linked with agricultural production (fundamental for Howard) through grassroots initiatives. That these and other initiatives did happen proves there were socio-cultural but also spatial conditions for their development, confirming space is the asset that allows urban change to happen (Scoffham and Marat-Mendes, 2000). However, aside from the Chelas Horticultural Park, the municipality seems to promote mostly urban rehabilitation and redevelopment in these areas.

Considering the Alto do Zambujal neighbourhood and its surroundings, one can detect a planning tendency towards compaction, as most housing is high-density and land-uses are relatively mixed. However, ease of access and public

transportation which are core to the Compact City model are lacking, as transportation is based on the major nearby motorways. The loss of green space in the Alfragide area is also noteworthy, particularly considering that nearly 100 years ago, it was an agricultural area. The guerrilla gardens in Alto do Zambujal are important counterbalances for such loss, but it must be noted they have no legal right to occupy the land.

Despite having been minutely planned, the PUCS rural structure was dismantled. Its network of farms decayed with lifestyle changes throughout the 20th century (Marat-Mendes, 2009). This also signals a socio-metabolic shift, with agriculture withering, along with local ecosystem, irrigation systems and soil-maintenance practices (Marat-Mendes, 2009). Furthermore, this effaces most of the Garden City principles applied in the PUCS, and often, low-density neighbourhoods planned by Gröer are surrounded by tower-blocks and large public buildings, showing an increase in construction, but also in population and urban activities. Gröer's restrictive planning of the urban centres, based on his own underestimation of population growth, may have determined the ill fate of the rural areas, since these were later considered less important than avoiding housing shortages. However, the urban forms of new housing schemes did not consider the implied metabolic changes in the territory, with great increases in traffic and waste, as well as corresponding infrastructure.

In Oeiras, the development of several high-density residential neighbourhoods runs parallel to a great emphasis on industrial and urban activities. Although the current Oeiras PDM encourages residential suburbs to become mixed-use, it is unclear if the envisioned multifunctionality is only directed at fundamentally urban activities. Although it is not discarded that rural soil may turn to urban (PDMO, 2015, Art.25-3), the opposite is less evident. The Compact City model implies high-densities and mixed land-uses, but also ease of transportation, while Oeiras remains strongly car-dependent with an underdeveloped public transportation system.

Concluding remarks

The socio-ecological urban history of Portuguese cities is a promising field of research, Lisbon in particular. Considering that after an earthquake in 1755, the city was rebuilt as the capital of the Kingdom of Portugal (Marat-Mendes, 2002), such urban vision would change drastically. Under the New State's rural politics, Portugal remained underindustrialized for a significant part of the 20th century. Many problems associated with the industrial socio-ecological regime (Fischer-Kowalski, 1998) arrive late to Portugal. The PUCS tries to turn the Garden City model to the regional scale, planning an integral sequence of urban and rural areas. Only after the planning of the Alvalade neighbourhood high-density solutions start to be accepted, to be taken to a greater scale in the GTH neighbourhoods in the Eastern end of the city. In Lisbon, these neighbourhoods were developed in land expropriated by the municipality, but elsewhere, as is the case in Oeiras, further development implied land-use conversions and significant subtractions from Gröer's green belt.

What has also been lost throughout the 20th century was part of the productive capacity of the LMA, particularly in urban centres and their surroundings. Gröer's strategies have perhaps too hastily been identified with the conservative politics of the New State. However, his municipal and regional plans emerge as those which more strongly identified the important role of rural areas for food-production. As the phenomenon of urban agriculture continues to grow in the city (Marat-Mendes et al, 2018), perhaps in the future we will need to articulate the high-density solutions that are adequate for the increasing urban population, with regional rural structures as those which have been decimated until now.

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Naples in transition: A multidimensional decision-making process for the Naples port area sustainable development

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Abstract: Current and increasing transformation makes it more than ever necessary to develop an ability to plan and manage the different changes. Nowadays in order to make cities more resilient, policymakers are required to consider the various challenges that climate change related to urban development can bring under conditions of uncertainty. Within the conceptual framework that defines the design process as a decision-making process (ED 2014/89, Maritime Spatial Planning), climate change focus is changing from a problem-oriented to a decision-oriented approach. Considering the interaction among the cities several dimensions and the multi-level governance, it is possible to understand the complex governance system as urban transition management, in order to evaluate and implement alternatives within uncertain, dynamic and complex socio-ecological systems. The study objective is to experiment a transition model, taking into account adaptation and mitigation to climate change of the whole city, addressing the commercial port of the city of Naples (Italy) with its potential sustainable development.

Keywords: decision-making process; transition; sustainable development; port-city system

Introduction

Natural disasters due to climate change impacts, ecological crises and growing socio-economic unrest are just some of the challenges that contemporary cities and territories are facing. Considering that over half of the world's population lives in cities, in order to address the challenges of climate change and urban development, new policy instruments are required (Rosenzweig *et al.*, 2011). According to recent literature, in the context of climate adaptation science, the decision-oriented approach to analytical focus is replacing the problem-oriented one. To manage the change of urban systems under deep uncertainty, indeed, the decision makers need increasingly robust and dynamic adaptive instruments, through which assess and implement long-term, flexible and sustainable policy options (Wise *et al.*, 2014). Taking into account several studies in landscape ecology, the key environmental transformation is recognised as the primary driver responsible for the changes (Wu and Robbs, 2002). In turn it is believed that the landscape is strictly influenced by the relationships between humans and nature (Burgi *et al.*, 2004), so much as to claim that the history of the production, as much as economic and social relationships of that place have determined the structure of the landscape (Echeverria *et al.*, 2012). Studying climate change mitigation and adaptation, several approaches (e.g. incremental, transformative or reformist adaptation) and conceptual models (e.g. Adaptation Action

Cycles, Transition Handbook) have been adopted in order to direct the transition toward sustainable urban development and make cities more resilient and sustainable (Park *et al.*, 2012). Sustainability transitions have been defined as long-term and multi-dimensional transformation processes in which the governance play a relevant role with the aim of orienting socio-technical system towards more sustainable models (Markard *et al.*, 2012). These are flexible processes susceptible to change over time (Garud *et al.*, 2010) and characterized by long-term goals, in which the institutional actors cover the major role in forming the direction of the transition. In literature, the transition is approached from two main perspectives: the transition community and the adaptation community. Although both communities address transition studies in urban context from the system theory perspective, whereas transition community, assuming transition as non-linear long-term process, analyses how societal and technical systems coevolve over time (Smith and Stirling, 2010), the climate adaptation community approach, anticipating long-term change, responding to immediate shocks and recovering from such events, aims at improving the adaptability and transformability of socio-ecological systems. Indeed, starting from the concept of resilience, instead, the climate adaptation community analyses the capacity of socio-ecological systems to maintain function under changing conditions (Rijke *et al.*, 2013). Considering interactions between social and natural dynamics, the concept of adaptive management (Willows and Connell, 2003) is formulated starting from the adaptive cycle (Park *et al.*, 2012) through which changes in socio-ecological systems are described as the result of natural or socio-economic or institutional responses (Pelling, 2011; Bosello *et al.*, 2013). The concept derives from the integration of two thematic areas (Gunderson and Light, 2006): natural resource management (Gunderson and Holling, 2001) and self-governing institutions (Ostrom *et al.*, 1992). Adaptive management is considered more analytical and substantial than transition management, whereas the latter has a strong process orientation with a focus on sustainability (Williams *et al.*, 2009).

According to the above perspective, the paper aims to elaborate a methodological approach to the transition of the port-city system, able to taking into account at the same time specific sectors (e.g. energy and waste), and identifying planning and design criteria they have in common (e.g. land use, urban geometry and morphology, governance, socio-demographic aspects) (Mendizabal *et al.*, 2018). The multidimensional theoretical framework of sustainability, in fact, enables to consider environmental, societal and economic aspects in a long-term vision for energy generation and consumption (Folke *et al.*, 2005; Bloesch *et al.*, 2015; Vergragt and Quist, 2011), but also leveraging on social and governance dimensions, where sustainability transition has been recently defined as a radical transformation towards a sustainable society as a response to a number of persistent problems confronting contemporary modern societies (Grin *et al.*, 2010), integrating individual and societal perspectives. Port-cities, marked by natural and anthropic functions at once, is the pivotal hubs connecting coastline with the behind territory (Badami and Ronsivalle, 2008). The port areas are complex systems characterized by multiple functions, which involve multiple stakeholders, whose activities, relating to the environmental, social, economic and cultural dimensions, are able to have resonance both at the urban and territorial scale. The conditions of risk and uncertainty determined by the transformations of our time further problematize the already complex management of coastal areas compromising the balance of the ecosystem natural and therefore the quality of human life (Hein, 2014). The raised interest in urban transformation processes of port cities has recently opened new possible research fields on the risk conditions and on the anthropic pressures within port-cities planning. The growth of maritime commercial traffic, which is recorded due to the economies of scale triggered by globalization, has negative impacts/effects on the coastal areas. The data reported by The

First Global Integrated Marine Assessment, attest to a pressing state of decline that affects the health of the oceans (World Ocean Assessment I, 2015). "The seas and oceans have always played a predominant role in the evolution of human civilizations. [...] The twenty-first century will experience the most intense maritime activity in history. The economy will become increasingly maritime due to and due to globalization" (Global Ocean Science Report, 2017). In the light of all the above new policies are required that can manage change in a sustainable way. In this context, the paper provides a transition model approach, aiming to combine economic, environmental and social dimension, in order to pursue sustainable development. The paper analyses materials and methods in Section 1, describes the case-study in Section 2 and discusses the results in Section 3.

Materials and methods

Within the conceptual framework that defines the design process as a decision-making process (European Directive 2014/89, Maritime Spatial Planning), the governance of transitions is required to address complexity and uncertainty (de Lima *et al.*, 2016). Considering not only the interaction among the several dimensions of the cities, but also the wide range of stakeholders and multi-level governance involved in their process, we understand the complex governance system as urban transition management (Loorbach, 2010; Nevens *et al.*, 2013; Moallemi *et al.*, 2014), in turn framed within the adaptive governance approach (Timmermans *et al.*, 2015), with the aim of evaluate and implement alternatives within uncertain, dynamic and complex socio-ecological systems.

Assuming the stakeholder's engagement and collaboration with researchers as crucial in a successful adaptation process (Mimura *et al.*, 2014) the paper focuses on governance process and the methods and tools useful to support decision-makers in sustainability transition. The methodology adopted in pursuing the above-mentioned objective is the adaptive pathway assumed as a solid framework to manage city transition both from transition community and from the adaptation community. In order to support choice within the proposed adaptation pathway, a multi-methodological approach has been elaborated, taking into account four main phases (Figure 1).

The first phase, related to *knowledge structuring*, has been defined in two parts: the first one dedicated to the collection and elaboration of data, both quantitative and qualitative, that describe the territorial and socio-economic characteristics of the selected context and to the elaboration of a stakeholders map, able to identify the main interests of the possible key-players; the second focused on to the selection of some relevant good practices of port-city development strategies. This phase is relevant for the identification of evaluation criteria and related indicators necessary to formulate the alternative of transformation for the port-city system of Naples.

The second phase is focused on the *local actors' involvement* in order to identify their preferences. This phase has been articulated in two different steps. The first one oriented to enable the stakeholder's dialogue, with specific attention to Port Authority, Municipality of Naples, National Railway Company, Shipbuilding Company, and Shipowner Company. The second step was dedicated to the implementation of a role-playing tool involving traders, cultural associations and leadership.

In the third phase has an *assessment* process has been elaborated by the implementation of the Novel Approach to Imprecise Assessment and Decision Environments - NAIADE method (Munda, 1995) in order to identify the preferable choice. Among the multicriteria evaluation method, NAIADE allows the comparison of alternatives using uncertain information. Using a pairwise comparison technique

within a finite set of alternatives, NAIADe sorts the latter into ranking classes. Employing NAIADe two kinds of evaluation are carried on. Basing on the score of values assigned to the criteria of each alternative, the first evaluation is performed using an impact matrix (alternatives and criteria). The latter, expressed throughout equity matrix (linguistic evaluation of alternatives by each group of stakeholders), starting from conflicts among the different interest groups, aims at detecting the possible formation of coalitions according to the proposed alternatives. Basing on a comparison algorithm of the alternatives, the multicriteria analysis is carried out throughout the impact matrix, able to define a ranking of alternative. The process consists of successive phases: (i) defining impact matrix starting from criteria and alternatives; (ii) pairwise comparison of alternatives using preference relations; (iii) aggregation of all criteria; (iv) ranking of alternatives. From equity matrix, a similarity matrix is calculated with the purpose of undertaking the equity analysis. The equity matrix is the result of multi-group analysis and is oriented to identify a ranking of coalitions among the different stakeholders and face the possible conflicts that characterize their positions.

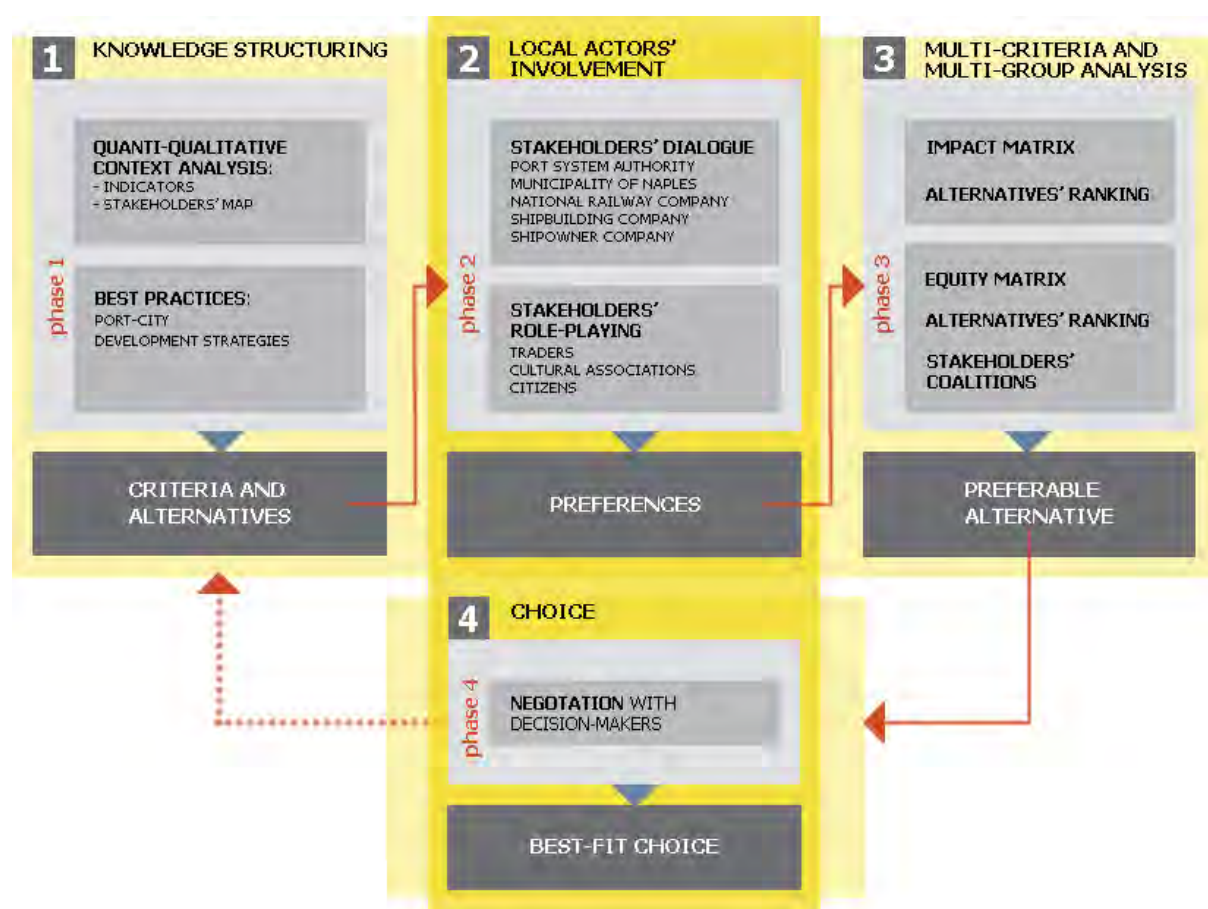


Figure 1. The multi-methodological approach

The fourth phase was that of *negotiation* with decision makers. In this phase, the results of the previous phases were discussed with the Port Authority and the Municipality of Naples in order to support the identification of the best-fit choice for the transformation of the Naples port-city. This last phase is particularly relevant because represents the conclusion of the decision-making process, but also the opportunity to improve the interaction among decision makers and the quality of the final choice.

Case of Study: Naples port-city system in transition

Over the last decades, various transformations have concerned Naples port-city, in the South of Italy, that is currently involved in the changing pattern of land uses. Owing to the process of de-industrialization, a strong decrease in demand for industrial activities has affected the productive fabrics of Neapolitan area, triggering an economic, social and cultural crisis of the city (Fusco Girard, 2012). The commercial port of Naples, located in the eastern part of the city, behind the industrial area, has been a driver for the whole urban settlement due to the economic and social connections that have crossed it. Nevertheless, the eastern side of the coastal strip has later become a parking area between the port and the surrounding districts. The area of interest is, indeed, currently marked by a large number of residential properties and abandoned industrial buildings and brownfields, making the coastline even more neglected and inaccessible. Located in the eastern part of the Gulf of the same name, it is bordered to the North by the industrial area, to the west by the central railway station of Naples and to the east by the Vesuvian municipalities, whereas to the South is bathed by the Tyrrhenian Sea. Nowadays the inhabitants are 11,159 and population density is approximately 6,841.9/Kmq. The unemployment rate is 36.5%, while the young unemployment rate is 69.4%. The administrative boundaries are regulated by policy systems of the Metropolitan City of Naples and Municipality of Naples and Port System Authority of the Central Tyrrhenian Sea (AdSP), which are the main stakeholders in force.

The present study, assuming planning as design-process is in line with national and European legislation on. Within the theoretical framework provided by the concept of Urban Transition Management (Drift, 2011), and recognising the policy guidelines prepared by the regulations, Maritime Spatial Planning could be regarded as a useful tool able to manage the transition, taking into account the interactions among the economic, social and environmental urban dimensions and the multi-level governance. More in-depth, Maritime Spatial Planning has been considered as a decision-making process (ED 2014/89, Maritime Spatial Planning), through which responding to real issues, through the definition of an appropriate management plan. Divided into several phases, the process includes the collection of information, decision-making, implementation, review or updating and enforcement control, within which different stakeholders are involved and the long-term transformations due to climate change are considered (Linee guida contenenti gli indirizzi e i criteri per la gestione dello spazio marittimo, Italy, 2017). Considering planning as a central tool for coastal zone management and maritime governance, the “Integrated Maritime Policy of the European Union”, recognises its character as a decision-making process and identifies it as a cross-sectoral policy instrument enabling public authorities and stakeholders to apply an integrated, coordinated and cross-border approach. In this context, a multi-methodological approach provided by integrated assessments is to be understood as a structured and simultaneously adaptive process, that guides and supports the decision process and the choice of preferable scenario (Cerreta, 2010).

According to the above perspective, within Master’s Degree Course Level II in “Sustainable planning and design of port areas”, Department of Architecture, University of Naples Federico II, starting from the adaptation pathway methodology (Mendizabal *et al.*, 2018), a cyclic and adaptive design-process has been elaborated with the aim of manage Naples port-city transition.

The study of the focus area has been approached according to the methodological process illustrated in the previous paragraph, with the aim of structuring the knowledge framework and identifying the

different stakeholders involved in the dynamics relating to the selected area of interest. Combining the information thus obtained with different city typologies pointed out under a preliminary desktop study, three strategic development scenarios have been defined. The latter ones, including also the development strategies underlying the project proposals allocated over time, are defined as no-intervention (A0), tourist port (A1) and commercial port (A2) (Figure 2).



Figure 2. The port-city system alternatives

The three above mentioned alternatives have been then presented to the stakeholders. The following phase related to stakeholders' analysis, has been addressed combining a top-down with a bottom-up approach. The applied methodology aims to build interaction between "common knowledge", which derives from experience, and "expert knowledge", deriving from scientific and technical knowledge. In order to detect social actors' preferences and their interactions with the context, a stakeholder dialogue (SD) (Terenzi, 2015) exercise has been carried on. Institutional stakeholders representing local authorities currently in force in the focus area, together with influent private companies have been involved. Each participant was asked to qualitatively evaluate alternatives. The results obtained from stakeholder dialogue have been successively combined with extracts from literature in order to simulate the sustainable transition on of port-city system. Assuming environmental and social issues as pivotal within transition management of the socio-ecological urban system, a review of the design-alternative proposed by Port Authority leveraging exclusively on the commercial development has been carried out. Has been therefore adopted a hybrid development strategy, taking on board, on the one hand, the principles underlying design-layouts proposed by government bodies, and the drivers of change identified from the desk analysis combined with literature extracts. Resulted scenarios have been, then discussed with citizenship. For this purpose, in the context of "City-port-System and the Waterfront as Common - IV International Workshop", role-playing approach (Adamatti *et al.*, 2005) has been applied. In particular, among the actors involved in local dynamics, some categories considered as the most significant have been selected: institutions (Port System Authority of the Central Tyrrhenian Sea, Municipality of Naples), National Railway Company (RFI), shipbuilding companies, shipowner companies, traders, cultural associations and citizens.

In order to analyse the implications determined by the implementation of scenario alternatives in relation to the different social and economic groups, the game of role approach focuses on bringing out social actors' preferences related to alternative of intervention.

The information so far systematized has subsequently been used for the third phase of the process related to the evaluation of design alternatives. In this context, structuring results according to the

systemic relationships means defining management model within the decision-making processes, in order to address complex situations, marked by divergent points of view, where clarifying issues and orienting choices is required. More specifically, aiming at defining an overall assessment of the different solutions proposed, the NAIADÉ method has been implemented because it allows to compare and sort alternatives into ranking classes of preference among a finite set of ones and using uncertain information too. Analysing different groups of actors' preferences in relation to different alternatives, NAIADÉ method allows to test possible coalitions, and in accordance with the latter to rank the alternatives. In addition, it is considered that the level of consensus informs on the ability of the design alternative to responding satisfactorily to the demands of social groups, taking into account the different views and expectations.

The first kind of achievable evaluation employing NAIADÉ method has been carried on structuring the impact matrix, in which the score of values assigned to the criteria of each alternative is shown. Quantitative and qualitative indicators have been associated with each criterion, in turn, identified taking into account the guidelines of the Sustainable Development Goals. Each indicator is characterized by a unit of measurement for which a “positive direction” has been indicated, as it may occur that the preference of an alternative over the others is obtained in the event that the value associated with the criterion considered has the greater intensity (positive impacts to be maximized), or in the event that this value has the lowest intensity (negative impacts to be minimized). In the first case, the symbol “max” has been associated with the unit of measurement, in the second case the symbol “min”. The impact matrix including 16 indicators grouped into 5 criteria classes has been structured as showed in figure 3. The final ranking (figure 4) identifies the alternative A2 as the preferable scenario according to the selected criteria. Then, a multi-group evaluation is allowed implementing NAIADÉ method. Through the equity matrix (linguistic evaluation of alternatives by each group) (figure 5), starting from conflicts among the different interest groups, possible coalitions according to the proposed alternatives have been detected. The different stakeholders have been described considering some main categories of clusters: governors, providers, influencers and users. Indicators of conflict between the different groups have been calculated, obtaining the “dendrogram of coalitions” which shows the views of the different groups on project proposals (figure 6).

In addition, through NAIADÉ method is obtained the so-called “veto diagram”, which explains the alternative on which all social groups are willing to form a coalition and sort out the other alternatives on which, instead, they have expressed their veto. Indeed, each node in the graph of the dendrogram is associated with a conflict indicator which reports the aptitude of all groups for a coalition. The lowest node at the top of the dendrogram, through which veto diagram is obtained, shows how the likelihood of coalition occurring at the alternative recognizable as the “social compromise solution”. On the other alternatives, on the whole, the various groups have vetoed. In particular, the veto diagram sorts out the three alternatives in a ranking structured according to the different groups' judgements. Alternative C, which corresponds to scenario A2, is preferable and represents the social compromise solution (figure 6). It may be pointed out that “expert knowledge” and “common knowledge” recognize the same alternative as preferable.

CRITERIA	INDICATORS	CODE	ALTERNATIVE 0	ALTERNATIVE 1	ALTERNATIVE 2	MAX/MIN VALUE
Economic Growth and Development	Construction costs	EGD1	0	77	653	-
	Job potential	EGD2	Very bad	Good	Good	+
	Unemployment rate	EGD3	Extremely bad	Good	Good	-
	Incidence of high-medium specialized jobs	EGD4	More or Less Bad	Very Good	Perfect	+
	Incidence of low specialized jobs	EGD5	More or Less Bad	Moderate	Moderate	+
Traffic Accessibility	Cargo handling (import)	TA1	536	536	1200	+
	Cargo handling (export)	TA2	499	499	1116	+
	Number of docks	TA3	200	828	500	+
Urban Metabolism	Air Quality Index (AQI)		40.9	40.9	150.3	+
	Community composting - OW-MSW recycled in the district	UM2	0	0	150	+
Society and Culture	Number of social-cultural association	SC1	0	0	390	+
	Number of cultural services	SC2	8	8	10	+
	Number of high school involved in cultural initiatives	SC3	10	10	18	+
Urban Landscape Quality	Walkability (length of pedestrian path)	ULQ1	2.23	1.32	5.29	+
	Drosscapes	ULQ2	62.03	27.05	1.91	-
	Green public spaces	ULQ3	3.66	4.36	9.7	+

Figure 3. The impact matrix



Figure 4. The ranking of alternatives

		ALTERNATIVE 0	ALTERNATIVE 1	ALTERNATIVE 2
CLUSTERS	STAKEHOLDERS			
GOVERNORS	Port System Authority of the Central Thyrrenyian Sea	More or Less Bad	Very Bad	Perfect
	Municipality of Naples	Bad	More or Less Good	Moderate
PROVIDERS	National Railway Company (RFI)	Moderate	More or Less Good	Very Good
	Shipbuilding companies	More or Less Good	Bad	Very Good
	Shipowners companies	More or Less Bad	Bad	Very Good
INFLUENCERS	Cultural Associations	Good	Very Good	Bad
USERS	Traders	More or Less Bad	More or Less Good	Good
	Citizens	More or Less Bad	Very Good	Bad

Figure 5. The equity matrix

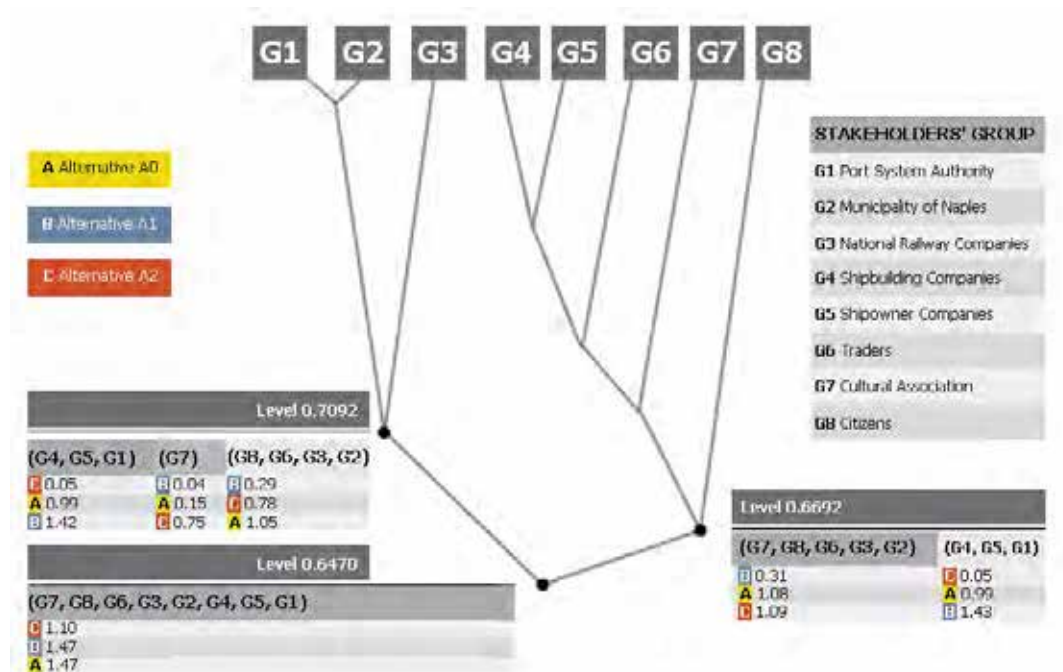


Figure 6. The dendrogram of coalitions and the ranking of alternatives by the veto diagram

Finally, the preferable design-alternative thus identified have been presented again to institutional actors, in order to obtain their approval. In short, starting from the identification of the stakeholders' preferences and their interaction with the context, within the wider framework provided by adaptation pathway methodology, an integrated and cycling conceptual model for transition have been employed.

Discussion and conclusions

A multi-methodological decision-making process can be conceived as an opportunity to integrate different knowledge and expertise, elaborating territorial strategies able to manage transformations over time and space. In this perspective, the ability to predict the trajectories of future development of the port-city is of fundamental importance for the definition of urban development plans. The current configuration of the territory has been significantly influenced by the economic, social and environmental dynamics at the urban, local and territorial scales. Therefore, a multi-dimensional approach is proposed for managing change in the context of a broader framework of a procedural nature, able to support the transition model. In this context, NAIADE method has been chosen with the purpose of rationalizing the decision problem and provide a framework for communication among stakeholders. Therefore it is deemed useful for policymakers in developing pairwise comparisons, which may reduce the degree of conflict between different social groups or stakeholders (Carbone *et al.*, 2000). In the absence of weighting being assigned to the criteria (Browne *et al.*, 2010), qualitative and quantitative data have been used to rank alternatives in order to identify the preferable scenario. The ranking alternatives basing on a set of evaluation criteria is performed by the use of an impact matrix (De Marchi *et al.*, 2000). Nevertheless, the goal of NAIADE is not the definition of the optimal scenario, but the opportunity to allow “an actor taking part in a decision process either to shape, and/or to argue and/or to transform his preferences, or to make a decision in conformity with his goals” (Munda, 2006). According to Multicriteria Decision Aiding (MCDA) research field, indeed, the decision process is considered as important as the final solution and involves both substantive and procedural reality. Carried out evaluation has led to a clear preference for alternative C corresponding to the scenario A2. Employing a multi-methodological evaluation approach a twofold result has been achieved. If on the one hand the preferable alternative has been identified, on the other improved understanding of the negotiation process leading to conflict resolution, increasing the transparency of the decision-making process and of the evaluation path, and allowing to build the choice that is able to reflect the different needs and expectations. In this perspective is intended to help local communities to become more aware both of their own opinions and preferences and of those of other stakeholders, building collaborative and shared solutions.

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White Revolution: Planning Soft Transition to State Socialism

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Abstract: 1963 to 1979 marks a period in the history of Iran when the country went through a massive speedy development, a program that is often referred to as The White (bloodless) Revolution. This revolution was a socio-political transition that had land reforms, urban/rural developments, welfare, women rights, health and education at its core. Albeit, for scholars and involved parties, a sixteen-year program of reform was a megalomaniac endeavor that, in spite of its claims, mainly served the political agendas of the King in relation to local and international Leftist threats. In order to pilot this plan correctly, many efforts were made to question the project and pave a reasonable landing for it.

The ICA 70 or International Congress of Architects in 1970 was one of such effort that invited experts to Iran to collaborate with the ministry of Housing and Urban Planning, as well as the Association of Iranian Architects, in order to tie development plans to the international context. This happened through a process of questioning the relationship between the traditional (national) architecture of Iran and architectural practices abroad. Among the participants were Paul Rudolph, B.Fuller, George Candilis, Otto Hann, Yoshinobu Ashihara, Philip Will Jr, M. Oswald Ungers and Louis Kahn. Four years after ICA70, the second International Congress of Architecture took place in an attempt to discuss the effect of urbanization in Iran and other industrializing countries at a regional level. This round, Moshe Safdie, Josep Lluís Sert, Kenzo Tange and B.K Doshi were additional members. The outcome of this symposium was the “Charter of Habitat Rights,” which was edited by the group and presented by the government of Iran to the United Nations Conference on Human Settlements in Vancouver in 1976.

As a result of these congresses, the government of Iran hired many of the mentioned architects as active agents in urban planning reforms during The White Revolution. This paper will mainly focus on semi realized and unrealized projects that were the result of such interactions; projects that are reminiscent of a futuristic vision for a city in transition that ultimately remained on paper because of the Islamic Marxist revolution of 1979. Study of this meticulous planning, however, can reveal the current landscape of jump cut urban developments in Iran.

Keywords: Socialism, Planning, Revolution, Development

Introduction

A tea container, a glass of tea, a wine glass, a glass vase, a glass rosewater sprinkler, a glass lamp base, a glass bowl. All these glass objects are modest domestic elements rendering a colorful and delicate interior of an Iranian home during the reign of Qajar dynasty in late 19th century Iran. Albeit their humble and fragile domestic presence is elevated to a bold statement while being showcased in a museum of glassware in Tehran.

All of a sudden, a forgotten and outdated lifestyle creeps onto a lit stage demanding respect and attention. The object becomes a mediator through which history is told. This history, however, is far from the tea parties and religious rituals of pre-modern Iranian homes.



Figure 01: Selected Qajar glassware

This army of glass and ceramic objects sit in a neutrally-gridded black cube that is nothing but a strange oddity in the middle of a Qajari house that once belonged to Ahmad Qavam, a prominent and influential Iranian politician who stood against the nationalization of oil in 1952 — an act that united the National Front, Islamists, Socialists and the Tudeh (mass) parties of Iran in massive demonstrations against Qavam and Mohammad Reza Shah Pahlavi, the king of Iran. Years later, the same house was purchased by Farah Pahlavi's bureau (the Queen's office) in 1976, in order to convert the collective memory of this space into a museum that advocated for the development of a progressive future built upon the shoulders of a glorified past. The glasswares became traditional ambassadors of a lost identity within the modern black cube and floating mushroom pillars of Hans Hollein's design for a museum to be; a museum for a society in transition.



Figure 02 (above left): Interior of Abgineh Msuseum by Hans Hollein. Figure 03 (above right): Exterior of Abgineh Museum, former Qavam residence. Figure 04 (below left): Protests in favor of Nationalization of oil in Iran in 1952. Figure 05 (below right): Iranians carry posters of Mohammad Mosaddeq, the elected Prime Minister of Iran who was removed by the CIA in a coup in 1953.

Nevertheless, 1976 doesn't mark the start of Hollein's involvement with the Royal Commission of the museum. It is the end of a trail that goes back to the second International Congress of Architecture in Iran in 1974, when Hollein sat shoulder to shoulder with Safdi, Candilis, Doshi, Tange, Fuller, Ungers, Pei, Sert, Benevello, and many more renowned international architects in Shiraz, to discuss "the role of architecture and urban planning in industrializing countries." This congress itself was a continuation of the first International Congress of Architecture in Isfahan in 1970 with more names added to the list of architects; a congress where Zavaroni, Quaroni, Mistri, Kahn, Ashihara and many more elaborated on "the interaction of tradition and technology" in Iran. These congresses were unprecedented initiatives that nourished and legitimized the role of architects and planners in the building of a massive state structure that was ostensibly in the people's interest but had the stability of the monarchy against communism at its heart. When the Viennese-American architect Victor Gruen was commissioned to draw up a new master plan for Tehran in 1966, Iranians were busy processing the White Revolution of 1963 (a revolution that was commonly advertised as the peaceful revolution of the king and people). Albeit, the massive superimposition of Gruen's American city on the historical fabric of Tehran laid the ground for a more intuitive and participatory investigation towards the making of not only this "metropolis" but the whole country, a process that required many players to foretell the future of this expanding state.



Figure 06: Pages from Art & Architecture magazine announcing the ICA 74 and the international speakers of the congress and their resumes ©National Library and Archives of Islamic Republic of Iran.



Figure 07: Pages from Art & Architecture magazine announcing the ICA 70 and the content of each international speaker's lecture in the congress ©National Library and Archives of Islamic Republic of Iran.

Text format

Between Hollein's glassware museum and Ahmad Qavam's residence, our late 19th century brick house is the bearer of another defining story, a story that frames one of the main drivers of the White Revolution": the story of Iran and Egypt. The brick house with its glorious interior was sold to the Egyptians as the new premises for the embassy of Egypt, and remained in their possession for seven years. Iran-Egypt relations, however, were strained at the time of Abdul Nasser in the 1950s, resulting in the closure of the Egyptian embassy in Iran prior to its conversion into a museum. Egypt, a strong regional ally, turned into the enemy of Iran when Nasser led the overthrow of the monarchy in Egypt in 1952, nationalized the Suez canal, called for pan-Arab unity, and initiated major socialist measures and modernization reforms after his appointment as the president of Egypt. Nasser's skyrocketing popularity in the Arab world was quite alarming for a king who was an American ally and had his kingdom in the vicinity of a communist country. The rise of the Middle Eastern anti-imperialist movement, along with the Cold War between the United States and the Soviet Union, placed Iran in a tangled relationship that needed a survival plan; a plan that revealed itself through 16 years of rapid developments; A plan that was called a White (bloodless) Revolution.

Politically speaking, the Shah's position as initiator of the White Revolution was merely as the facilitator of a calculated move against the politics of the Left. Many scholars believe that the White Revolution was intended to address all the issues that could otherwise be exploited by the radical Left in Iran. These reforms were implemented in multiple formats, targeting novel economic concepts as well as social restructuring.



Figure 08 (left): LIFE magazine in 1962. Figure 09 (right): Selection of stamps from Iran in celebration of the White Revolution in 1964 (left to right: land reform, nationalization of forests, sale of shares in state-owned factories, profit sharing for industrial workers, reforming voting rights, literacy corps, public health care, affordable housing). © Cambridge University Press

The re-established political relationship between Iran and the Soviet Union in the early 1950s was a key driver behind the flow of imported American ideals to Iran. Truman's Point IV Program of economic aid was of particular importance in regards to the Post WWII discourse about international development, and this included

Iran, which sought improvement in such sectors as health care, education, agriculture, housing and urban planning (Karimi 2013). Consequently, the Shah's White Revolution was considered a wise move against a socialist effect and was funded by many international agencies, such as the United Nations, the World Bank, and the government of the United States. While the early years of this bloodless revolution had its international financial supports, the Shah's development plans benefited from the spiked price of oil later in 1973, when the OPEC countries (including Iran) announced an embargo on petroleum exports — a phenomenon to which the Shah of Iran decisively contributed. Iran's oil revenues rose from \$34 million in 1954-55 to \$5 billion in 1973-74, and further to \$20 billion in 1975-76. In the course of 23 years, oil provided Iran with more than \$55 billion (Abrahamian 2018). It is no surprise that this petroleum state, or as some would say, a rentier state, was about to have the superimposition of an American dream city on the narrow streets and alleyways of its capital by the father of shopping mall design, Victor Gruen, in late 1960s. In an interview, Kamran Diba, the architect of the Tehran Museum of Contemporary Art (TMOCCA) and one of the active members of the two congresses says "The king paid us a visit at TMOCCA to check Noriyuki Haraguchi's oil installation in 1977. Incredulously, he dipped his hands in the pond and touched the oil to know this black volume that is reflecting everybody's image in its sheer darkness is really the "crude oil" upon which his pseudo-American modernized kingdom has taken shape" (Gholipour 2018).

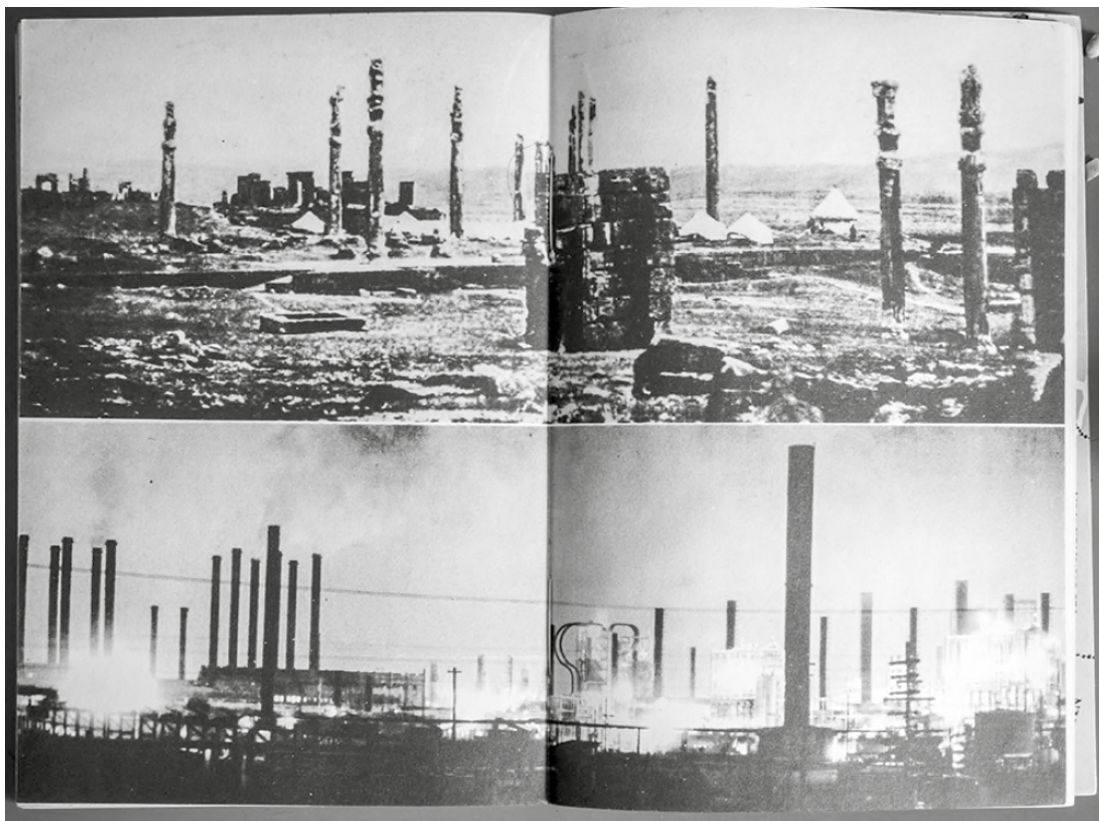


Figure 10: Pages from *Petite Planete*, a travelogue by Chris Marker during his influential 1950s travels. The image shows the visual resemblance between oil refineries of southern Iran and remains of Persepolis in Shiraz.

The pseudo-American master plan of the capital was the framework for the satellite towns, apartment and office buildings, recreation and healthcare projects, parks, highways, road systems and many more facilities built in and around Tehran in 1970s. Describing Gruen's approach to town planning, Vanstiphout Wouter presents the Tehran master plan as a straight descendant of Howard's garden city movement:

" The plan is an enormous flowerlike structure, repeating itself inwardly as you come closer. The organic hierarchy of families, neighborhoods, communities, towns, cities and the metropolitan core are held together

by an elegant tracing of highways, embedded in a flowing of parks and other green landscapes. Around the metro core there revolved ten cities, each city consisting of ten towns around the city center and each town consisting of four communities around a town center, with lastly each community consisting of five neighborhoods around the community center ... The commission by the Shah of Iran to draw up the Tehran Comprehensive plan gave Gruen the chance to realize his metropolis in the scale and the way it was meant to be. The petro-dollar driven White Revolution provided him with the autocratic power and the ridiculous amounts of money he needed.” (Wouter 2006)

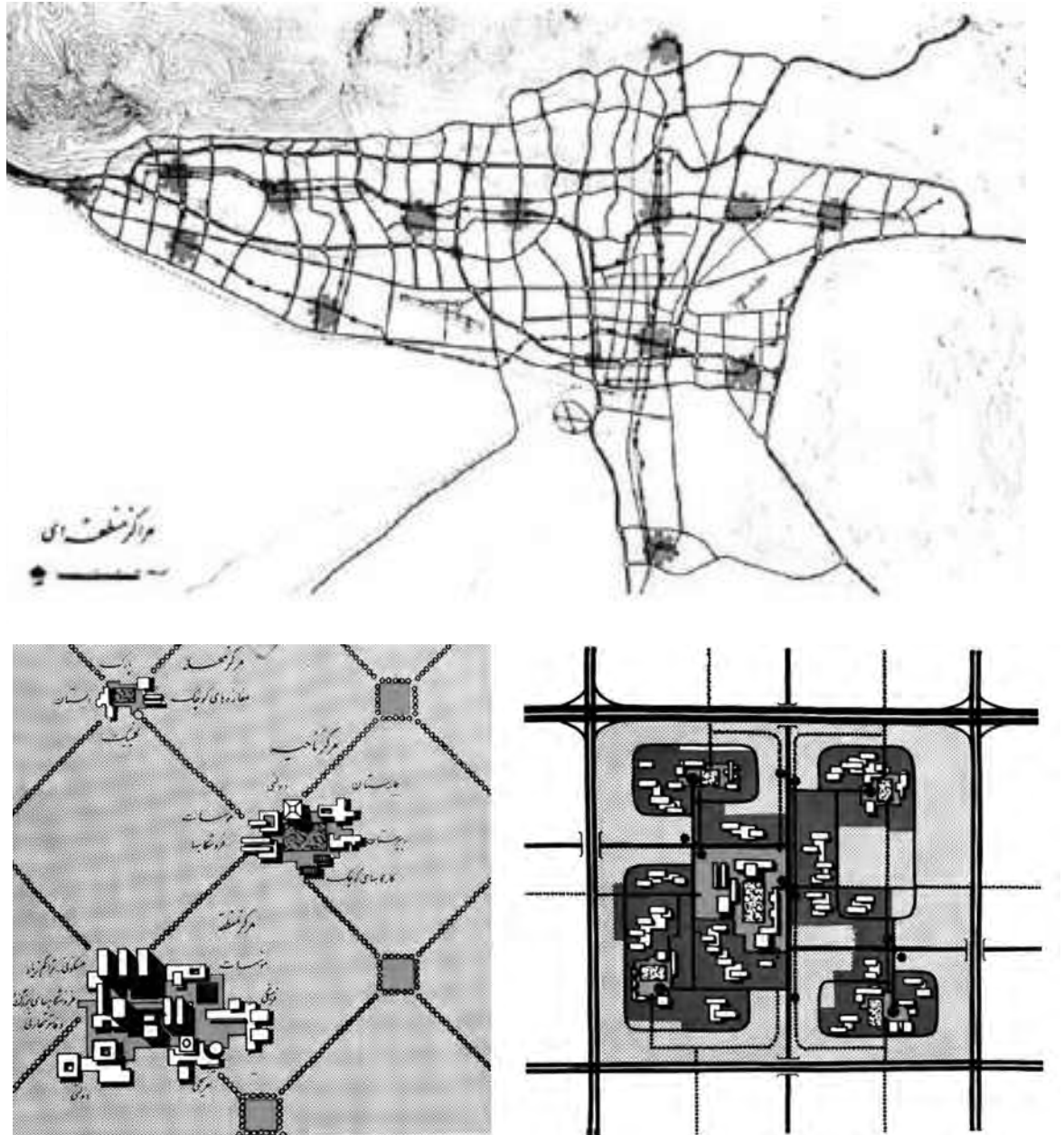


Figure 11: Diagrams from the comprehensive master plan of Tehran by Victor Gruen and Aziz Farmanfarmanian (1966) ©National Library and Archives of Islamic Republic of Iran.

In spite of many great efforts, the story of this master plan, like many other projects, was destined to be left unfinished after the 1979 Revolution in Iran. The initiative, however, became the blueprint for identifying

cultural gaps and differences in the field of the built environment and created new projects that were actually the realization of its metropolitan cores and flowing of parks in different parts of Tehran. The collaboration of Victor Gruen and Aziz Farmanfarmaian was the beginning of many collaborations that came out of the 1970 and 1974 International congresses — congresses that set out to rectify and enrich the realization of future plans such as Gruen's in first place. In this way, Iran's history of architecture in the 1970s is fulfilled by certain key commissions that went to leading international architects, such as but not limited to, the Tehran Hotel by Kenzo Tange, the Glassware Museum renovation by Hans Hollein, the Iran Museum of Modern Art in Shiraz by Alvar Aalto, the Imperial Medical Center of Iran by William L. Pereira Associates, the Industrial Credit Bank by I. M. Pei & Associates, and Tehran Habitat by Moshe Safdie. In the field of city planning, new development projects were undertaken on a vast scale, including the Shahestan Pahlavi by Louis Kahn, and later, the Llewellyn-Davies International and the Pardisan Environmental Park by Ian McHarg. Needless to say that most projects were under the leadership of Iranian architects working with an international team of professionals.

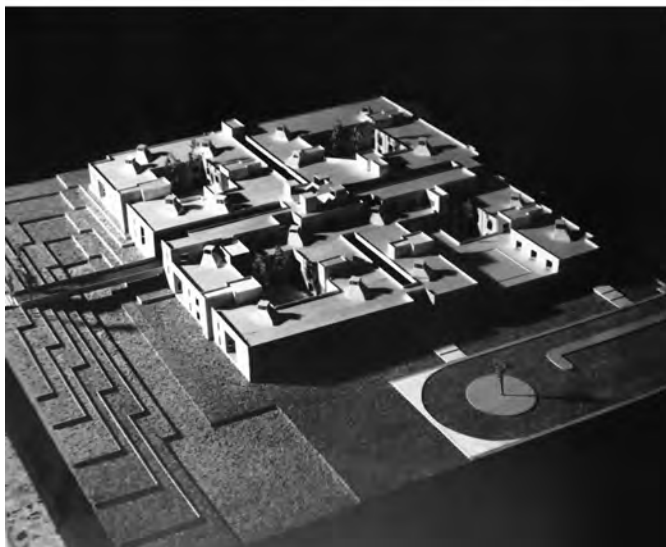
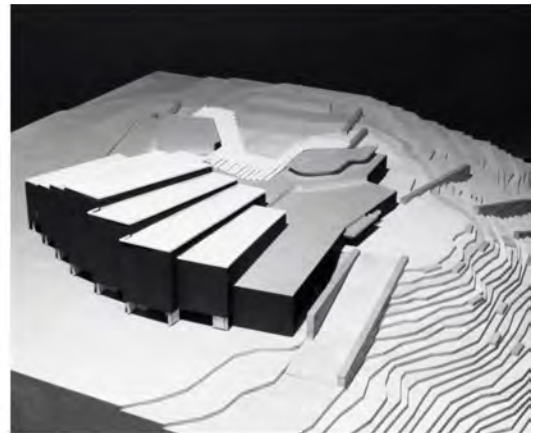


Figure 12 (top left): Tehran Habitat by Moshe Safdie © Safdie Architects, Figure 13 (top right): The Iran Museum of Modern Art in Shiraz by Alvar Aalto © Alvar Aalto Museum, Figure 14 (bottom left): Bu Ali Sina University by The Mandala Collaborative & George Candilis Architects and Planners ©Nader Ardalan, Figure 15 (bottom right): The Industrial Credit Bank by I. M. Pei & Associates © McClelland & Stewart Publication



Figure 16: Interior of Abgineh Museum by Hans Hollein.

Yes, the projects were banks and hotels, but they were also houses, hospitals, schools and universities. They were promoting capitalist infrastructures of leisure and entertainment, but also Leftist goals of providing public health, community living and comfort for nuclear families. Even though these reforms were aligned with a global wave of modernizations and industrializations, they had a very particular tone and orientation to them. They were intended to render a triple position: fast-moving yet thoughtful plans that not only would turn Iran into an advanced nation with the help of Western technologies and finances, but to also present an opposing position against those imported Western modernization plans, and above all, to stand against the kind of modernization sponsored by the nouveau riche, oil-centered state economies aka the Arab states (Mohajer 2006). But what they all had in common was the presentation of a newborn culture that was both modern and Iranian. Therefore, as Peter Avery describes it in his book *Modern Iran*, Iranian culture started to become either the handmaiden of nationalist and rightist propaganda, in which case it ceased to be genuine; or sank into a sullen and shadowy retirement, meaning it was either inarticulate or articulated only in various forms of a rather arid pedantry (Avery 1967).



Figure 17: (Left) Imperial Medical Center by William L. Periera Associates ©University of Southern California, on behalf of the USC Libraries Special Collections. Figure 18 (right): Kavar health project

In an attempt to turn culture into a political instrument of power, the Shah established an alternative court and appointed the Queen as its chief advisor. In this way, the Queen, a former student of architecture at the École

spéciale d'Architecture in Paris, became the beacon of cultural advocacy; an attempt that transformed itself into many key organizations that were heavily involved in the artistic and architectural development of the country¹. And this is how architects, both locally and internationally, became active agents in construction of a triplicated plan for a bloodless revolution of the king and his people. But also, they became active agents in the conflict between the two courts: one promoting tenacious political ideas, and the other humanistic and cultural agendas.



Figure 19: International Congress of Architecture in Isfahan in 1979. The image presents Empress Farah Pahlavi together with guest speakers of ICA70.

In 1976, when under the influence of the Queen, Iran presented the “Charter of Habitat Rights” at the United Nation Conference on Human Settlements in Vancouver, the spark of an uprising was happening in Iran. The Charter was the outcome of CIA74 and was edited by Nader Ardalan, Jose Lluís Sert, Moshe Safdie, George Candilis and B.K Doshi. While the Charter highlighted that the problems of human settlements are not isolated from the social and economic development of their respective countries, and that they cannot be set apart from existing unjust international economic relations, the socio-economic gap between rich and poor was widening among Iranians in Iran. The White Revolution and the escalated oil price raised people’s expectations but did not necessarily meet them at the same pace. Three years later, the bloodless revolution of the king and his people was put to an end by the bloody Marxist-Islamist revolution of 1979; a new paradox that has shaped 40-years of troubled domestic and international affairs since then.

Strolls on streets and alleyways of Tehran can be very heartbreaking. This city proves that un-built plans are not only a bunch of lines on a stack of papers that gathers dust every day. These lines are the tangible and intangible scars on the face of the urban scenery. It was not long ago that I first stepped on the Tabiat Pedestrian Bridge, an Agha Khan award-winning project that made it into the news headlines of 2016. The strategic location of the

¹ *Queen Farah Pahlavi Foundation, Iran Cultural Foundation and High Council of Architecture and Urban Design* are of great importance in regards to Iranian architectural developments during the White Revolution.

bridge was reminiscent of many moments in the history of the modern and contemporary built environment in Iran. The elevated level of the bridge places the viewer at a height where the upward and outward flow of the city is quite tangible, an experience that has a meaning to those who are aware of the tale behind this magical scenery. Tabiat Bridge is a connection that stitches the city to the beautiful hilly landscape of the Abbas Abad district. This location was first introduced in the famous future master plan of Tehran as a potential site for a new urban city centre. Gruen's designated spot was later named "Shahestan Pahlavi," a grandiose project that was supposed to represent the best of urban developments during the final years of the White Revolution. It was a perfect example of the different paradoxes the revolution presented: a battle between tradition and avant-garde, a battle between artistic production and political statements, a battle between primary and alternative courts — and contrary to what it claimed — not the revolution of a king and his people but rather a battle between the public and the sovereign. The project started as a competition between two of the key speakers at CIA 70 and 74, Louis Kahn and Kenzo Tange, who were supported by the Queen. The two proposals were then combined in a third proposal by Arata Isozaki. The final plan, however, was commissioned to the British office of Llewelyn-Davies International in order to give the king a massive development worth \$3 billion with a focal point larger than Red Square in Moscow: an open space that was called the Shah and Nation Square. In 1975, Eric Pace, a New York Times journalist wrote:

“The Shah was on hand for a ceremony last week to present a 540,000 commemorative gold' plaque that was buried at the site before bulldozers began growling over the surrounding hills, which once were used by the Iranian Army for training. The Shah ordered the city of Teheran to take over the land in 1971. Though the Shah gave no explanation for the decision to highlight the square, the Mayor, in his opening address, stressed the importance of open space and greenery in beautifying the capital.” (Pace 1975)

Regardless of all the ups and downs, Shahestan Pahlavi ended up being a megalomaniac project that ended with the massive uprising of the 1979 Revolution. Even though a project like Tabiat Bridge revitalizes the nostalgia for a Shahestan, other corners of the city betray the aftermath of a failed plan in a spatial language. Gruen's master plan, like many other master plans, surpassed the life of its creators. It was meticulous, and well calculated and piloted for execution. Yes, it was a scheme of the Monarchy. Yes, it was a Western invention and, yes, it was doomed to exclusion after the Islamic revolution in 1979. However, it was too useful to be perfectly abandoned.

Given the post war situation of Iran in the late 1980s and early 1990s, this comprehensive plan could be a financial asset because of its exact calculation for the distribution of densities. The plan, therefore, could assist the city in selling off densities to whomever was interested in maximizing their built-up areas. Ignoring the five-year intervals in the expansion plan, the city accelerated the boundaries to the 1991 end-boundary in order to maximize the selling of densities. In this way, the abandoned master plan became a source of income through severe densification of the city (Wouter 2006).

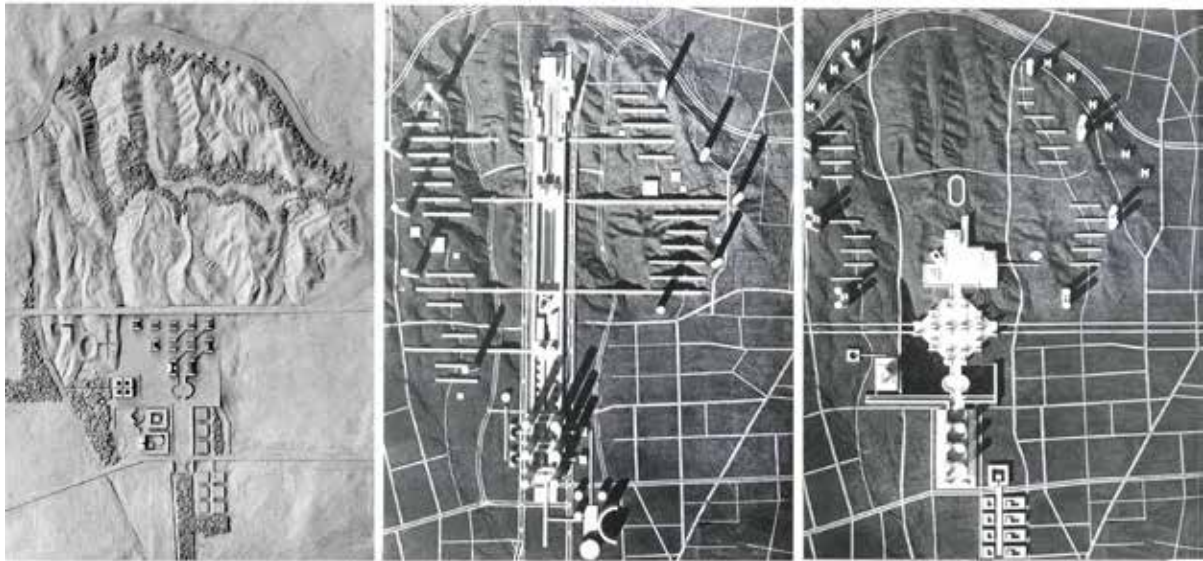


Figure 20: Master plans of Shahestan, from left to right: Louis Kahn's proposal, Kenzo Tange's proposal, Arata Isozaki's proposal. ©Louis I.Kahn Collection, The University of Pennsylvania and the Pennsylvania Historical Museum Commission.



Figure 21 (right): The New York Times, announcing the end of an era, Figure 22 (left): Master plan of Shahestan by Llewelyn-Davies Associates ©Jaquelin T. Robertson

While glimpses of residential or public structures were erected here and there, the executed plan is largely missing the basic principles of its original design: an industrial and modern metropolitan city with Shahestan as its core center; 10 logically-distributed, pivotal urban centers, with elegantly-designed cultural, institutional and recreational buildings, and parks, public spaces and commercial nodes as the hearts of the city. For as much as it is joyful to imagine the city in its original rendered view, and as it was envisioned, it is disturbing to realize that the cityscape of contemporary Tehran can be read as the result of a master plan that has been forced to eat itself (Wouter 2006). Strolls through Tehran, like the story of its modern plan, have always been open ended too. While first steps are nostalgic attempts, the last ones are always left hanging in the air; one wonders where to land them in order to rejigger the jigsaw landscape of an envisioned plan. Could they be among the lush greenery of the McHarg's Pardisan Park? Could it be among the Japanese-style gardens of Tange's hotel or the gigantic plaza of Jacqueline Robertson's Shahestan? Or instead, are they destined to land in haphazardly planned and isolated projects that never manage to define a sense of unity in what we know as "Tehran" today? In the last 50 years, Tehran has faced a revolution, a war, massive migration, multiple natural catastrophes and many environmental threats. The planning of the city has shifted from a collective and international effort to an isolated and domestic one. In the midst of such transformation, the major effort of the post-revolutionary government has always been to (un)make and (un)do all planning agendas of the previous regime. As a result, this metropolis has turned into a handicapped giant that is losing more and more functions day by day. The giant, unquestionably, is a bad version of its original blueprint. It is true! This is a dialectical process whereby a transition strategy has been challenged and morphed and switched to raise a question: how can collective planning envision a trajectory for this city that becomes the base for a transition? A transition that liberates or, perhaps, connects the city from or to its own past?



Figure 23: Tabiat bridge, the winner of Aga Khan award in 2016 © Mohammad Hassan Eftefagh

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SP19

Urban tourism,
neighbourhood change
and social conflicts

Placing Slums in the Globalized Tourist City: a performativity and Actor-Network approach

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Abstract: This paper aims to analyze the role of tourist practices and performances and their capacity, real and potential, to re-signify and transform the physical, social and cultural landscape of slummed communities at urban tourist destinations. Tourism in informal urban settlements is a phenomenon studied interdisciplinarily for about 20 years and covers fieldwork in destinations around the world. The transition of slums to tourist destination has been approached from its historical roots, tourist motivations, systems of representation, economic benefits and contested moralities. This paper seeks to address the literature on slum tourism and incorporate new insights from the Performative Turn and Actor-network Theory. This shift entails changing the focus from the representations of slums within a global audience towards the doings and behavior of human and non-human actors during slum tours and how the ordering of their relations and synergies -existing and potential- represent a possibility for new spatial-social-economic interpretations and representations of slums as urban agents.

Key Words: Slum tourism, Urban informality, Globalization, Performative turn, Actor-Network Theory

Introduction

Reflecting on Edward Said's (1978) conceptual analysis of Orientalism, Cohen and Cohen (2015) stay that the act of performing tourism is closely related with the tourist quest of *difference* from her/his everydayness: different natural landscapes to rest on or cultural scenarios to amuse with, different food to try out, gazes upon architecture icons and enjoyment of 'authentic' place atmospheres. Slums would not be traditionally considered as places to deliver such background for joy, diversion and relaxation; since they have historically embodied the "dark", the "low" and the "unknown" constructed by the hegemonic urban bourgeois as the place of the "Other". There is a contextual frame for this construction that allows the spatial-temporal mobility of this imaginary, as Steinbrink (2012) stays, every constructed otherness will exist as a mirror of current issues in society, targeting or forgiving certain social groups. In the case of some slums, they no longer represent only the place of the Other but the place of the "authentic" (Frisch, 2012).

The definition of “slum” carries with some structural difficulties because their characteristics, numbers and aesthetics are far from homogeneous. The UN Habitat (2003) defines them as a group of individuals living in an urban area who are lacking -one or more- of the following services: durable housing; sufficient living space; Access to safe and affordable water; Access to public or private sanitation; security of tenure. Slums are considered to be places of informality, dirt, insecurity, usually but not necessarily confide to the material poor and the cultural “Other”. For this analysis, poverty would be understood as a consequence of political and economic structural processes that define the material reach of individuals or sectors.

The shift from the Fordist model of organized capitalism and mass consumption-production to post-Fordism, placed the consumers individual needs and desires at the head of the production of goods and services and displaced industrial infrastructure from city centers to further districts. This transition has also been notable on the tourist sector. Poon (1993) defines ‘New Tourism’ to the flexible and customized travel patterns and tourist quest for ‘authentic’ experiences. The most evident aspects of the transition to a post-Fordist economy take place in cities, since they concentrate most of creative workforce that sustains such economic changes (Russo, 2012). Tourism -in its old, new and yet to come format- had and still have great deal of agency on the making and remaking of tourist cities, at a physical and symbolic scale.

Slum tourism (ST) defies traditional activities that tourists do while travelling. Despite the unclear boundaries in the ontology of ST, I will take Dürr’s (2012b:710) concept that defines it as a “type of mobility where tourists venture to an area beneath his/her own social category and beyond their socio-geographical space (Heap, 2009: 103)”. The hosts and guests asymmetry made ST controversial from its early beginnings, for contesting power relations and images of representation. However, as long as tours are complicit between visitors and locals, respectful of one and other, and mediated by local tour guides, the process of mutual recognition can be highly enriching for the actors involved (Williams, 2008).

Experiencing the Other is the most primitive reason for visiting slums and it can be traced back to the 19th century Victorian London (Steinbrink, 2012). With the advent of industrialization many cities went through a rapid demographic growth followed by a dramatic rise of urban poverty, and new actors -government and charities- were trying to manage the moral and physical crisis (Seaton, 2012). In London, by then the most powerful city in the world, the elites would often visit the East End either with a philanthropic agenda, impelled by social paranoia or mere curiosity to observe how people lived in the chaos of impoverished conditions (Steinbrink, 2012). Modern historians recognize that those encounters were key to have a better understanding and empathy among social clusters (OBrien, 2011). Organized slum tours started in the beginning of the 90’s in South African Townships with a strong socio-political focus showing livelihood in communities under the Apartheid regime (Rogerson 2004), and were short after followed by Brazilian *favelas* (Freire-Medeiros, 2009). Nowadays, a growing number of tourists looking for unconventional and exciting ways to experience cities have turned ST into a global phenomenon challenging stereotypes and power relations.

As Crouch (1999,2004) stays, tourism is a process rather than a product, shaped by what people *do*. In this process tourists emerge as both consumer and producer of spatial and social events through embodied practices -tourist encounter with material and semiotic space- and performances -tourist experience of places achieved after a set of actions-. This paper will critically address the literature to date on ST to contribute on

its theoretical debate importing concepts from the realm of performance studies and Actor-Network Theory (ANT). The aim is to analyze the role of -culture based- tourism practices and performances on the re conceptualization of slums as legitimate actors in the neo-liberal urban fabric. The focus is placed on the *material outcomes* of ST rather than the systems of representations (re)produced by it. The networks interwoven among hybrid (human and non-human) actors resulting of ST practices and performances are to be considered the material outcomes of tourism. I will overlap the theoretical framework on the case of Brazilian tourist favela Santa Marta to show how this analysis can give insights on the potential of networks to produce new social spaces, re-signify slums at a spatial, social, cultural and economic scale, and the agency that brings to slum dwellers to break with the isolation of the powered class/hegemonic city.

Tourist cities on the making

The latest report made by the Organization of United Nations (2016) states that 54,5% of the world's population lives in urban areas and it is expected to reach 68% by 2050. This tendency can be framed within the intermingled processes that entail Globalization, understood as the restructuring of global capitalism that begun roughly around the '70. The geographer David Harvey recognizes a set of geographical implications of Globalization, since it fostered the (re)production of spaces to enable its systematic growth and resistance, thus producing "new forms of uneven geographical development, a recalibration and even re-centering of global power (with far greater emphasis upon the Pacific and newly industrializing countries) and a shift in the geographical scale at which capitalism is organized" (Harvey, 2001:24).

Globalization was partly achieved through what Harvey (2006a, 2001) coined as the "Spatial fix". Taken from Marxist Theory, Capitalism has the constant need to place surplus to create new capital that would otherwise become stationary. Hence, the geographical expansion of capital becomes desirable and necessary to prevent the system from an over accumulation crisis of uninvested capital. To enable this expansion surplus was initially invested in innovations of transport and communications that then made possible to move on into physical building. Urban development proved to be an effective tool to fix capital through the build environment; therefore, the mobility of capital has the potential to reshape the geography of the place it is embedded and empower new economic sectors, mainly the construction and real estate industry.

The restructuring and reshaping of cities following capital flows encompasses a contradiction: foremost, investments are placed to produce space and connectivity infrastructure guided by the spatial trends of global capital; on the other hand, they are highly speculative since their profitability depends on the continuity of that flow of capital, commodity and people towards that space, otherwise it would be devalued and lost. The result of this dynamics is uneven spatial (urban) development in which the State would play a key role by allowing or denying the spatial allocation of capital relying on regulation, planning practices and ideology. The softened policies of neo-liberal States to rule on capitalist flows accelerated the polarization of cities and crescent inequality of wealth and power pushing 33% of global urban population to city's edges or to downtown encapsulated slums (Harvey, 2001).

Cities assumed a central role as places of consumption enabling the mobility of goods, people and information, and the spatial support for the production of a wide variety of economic, cultural and tourist activities. This development strategy has been used globally and made evident that the neo-liberal market forces are the ones now shaping the urban landscape (Harvey, 2012). However, as Harvey (2012:15) notes “how we view the world and define possibilities depends on which side of the tracks we are on and on what kinds of consumerism we have access to.” Hence, the wealthy elites not only are primal users and consumers of the city’s services and infrastructure but have legitimate authority to play an active role on the decision-making process that shapes the urban space, leaving the poor and marginalized to suffer the consequences of neglect. Spatial thinkers often rely on the romantic ideal of the latest to rise claiming the right to the city; nonetheless, this desire lacks of further guidance on a practical *modus operandi* for how to actually accomplish it (Garnier, 2012).

Tourism is a significant component to the political economy of many cities in the world. To thrive as tourist destinations, cities needed to go from good and services manufacture and distribution centers, to sanitized, safe, comfortable and service oriented places, affecting particularly down-town areas (Judd and Fainstein, 1999). Within the beautification, specialization and creation of what Judd & Fainstain (1999) coined ‘tourist bubbles’, often achieved by the use of violence and oppression, comes also a rise in the cost of living, gentrification and displacement of traditional local business and consequently creating not only new urban spaces but also new capitalist conglomerates (Yrigoy, 2014). This is the case heritage centers, inner-city areas (see Füller and Michel, 2014 on the case of Berlin-Kreuzberg) and former industrial neighborhoods (See Degen, 2003 for the case of Raval in Barcelona and Castlefield in Manchester) refurbished into hip and modern cultural hubs attracting dwellers from the ‘creative class’ (Florida, 2005), setting art galleries, shops and gastronomic enclaves that create a bohemian atmosphere attractive for tourists, commerce and real estate developments.

The discourse of local agents pushing towards strategic planning (that is to say the construction and service industry, political cluster, and the media) praise on the economic and cultural benefits of tourism within urban development. Given the competition of cities to attract global mobile capital investments, high skilled residents and visitors, almost every aspect of the everyday life can work as a commodity, having tourism, cultural and knowledge-based industries and the non-stop entertainment business on the bases of the city’s economic growth machinery. (Van Der Borg and Russo, 2008). Resuming the notion of the Spatial Fix, on his analysis Yrigoy stays that “the production of tourist spaces encompasses the double moment of the ‘spatial fix’: it implies a process of geographical expansion of capital, but also the fixation of this capital in physical buildings” (Yrigoy, 2014: 640). I argue that in the context of urban tourism, capital fixity may not only be materialized through physical buildings, but also through the material outcomes of tourism: the networks stitched between hybrid actors, as it would be more carefully developed.

The unexpected rise of a tourist attraction

The rivalry among tourist cities is so fierce, that unexpected assets have risen to become tourist attractions. Such is the case of a growing number of informal urban settlements in the Global South first and

then eventually also some in the Global North that have made their way to tourist attractions, often advertised by tour operators as an exciting opportunity to experience the “complete” and “real” life of the city. South African *townships*, Kibera in Nairobi, Dharavi in Mumbai, Brazilian *favelas*, Medellin *comunas*, the Parisian *banlieue* and the Neukölln district in Berlin, are some of the cases where informality was targeted by tourism global growth strategies pursuing the benefits expected from the tourist capital gear.

There won't be identical slums even within the same city, as they are compelled to the particular historical and physical context in which the slum is embedded; thus, tourism products -real and potential- will differ as well (Frenzel and Koens, 2012). Despite these singularities, the emerging of ST destinations show to follow a certain pattern highlighting the importance of mainstream events in the global projection of slums (Frenzel, 2012). The earliest slum tours developed in South African townships around 1990s for anti-apartheid activists and political motivated visitors and by the beginning of the 2000s they would become a “must see” activity for South African tourists (Rogerson, 2004). Almost simultaneously, attendees to the 1992 Earth Summit on Environment and Sustainable Development in Rio de Janeiro insisted on getting inside favelas; soon after this would motivate Marcello Armstrong to start Favela Tour followed by a growing number of favela tour providers (Freire-Medeiros, 2009). Similarly, Nairobi's massive slum Kibera was first toured by the attendees of 2007 World Social Forum (Mowforth and Munt 2009). Whilst in Dharavi, an English entrepreneur and his Indian partner opened in 2006 Dharavi Tours and Travel inspired by favela tours (Meschkank, 2011). And so the trend spread to slums in urban destinations North and South of the World.

Still, not every slum has the potential to become a tourist attraction. As Linke (2012) asserts, the success and expansion of ST is related with the (re)production of mobile images of slums. The media has a fair amount of responsibility on the creation of images and myths, and had successfully triggered ST destinations (Ma 2010). Brazilian slums experienced a popularity outbreak after the shooting of the polemic video of Michael Jackson's single “They Don't Care About Us” (1994) in favela Santa Marta; documentaries such as Favela Rising (Jeff Zimbalist and Matt Mochary 2005); mainstream movies like Cidade de Deus (Fernando Meirelles 2003) and Tropa de Elite (Jose Padilha 2008) successfully helped crafting an exotic, sexy and cool image of favelas that transcended geographical and political borders (Freire-Medeiros, 2009). Similar was the case of the movie Slumdog Millionaire (Danny Boyle 2009) firing the number visitors to Dharavi in India (Meschkank, 2011). Travel book guides promoting slum tours as “must see” also make their contribution: most tourists in Dharavi were drawn by the featuring of the tour at Lonely Planet (Ma, 2010). With the advent of Internet platforms and the high reach of social media, tourist themselves became the most suitable agents to produce new narratives based on their unique experience and understanding and reproduce them globally (Williams, 2008).

Bianca Freire-Medeiros (2009) places ST in what she coined “Reality Tours”, a kind of tourist practice under the wide umbrella of alternative tourism that promises authentic, interactive and extreme experiences involving an exoticized Other. She breaks this conceptual category in two relying mainly on their motives, even though their limits are far from clear while performing. On one hand, she names Social Tours to those trying to bring social awareness through participative experiences in under privileged locations; it also includes tourist products intending poverty alleviation for the host community, labelled by Ashley et al. (2001) as Pro-

poor tourism. I would add to this sub-field slum tours designed and operated following Community-Based Tourism principles by local entrepreneurs with the aim of enhancing the socio-economic and cultural implication of hosts in ST practices. At the other end, Freire-Medeiros places what Foley and Lennon (1996) call Dark Tours referring to those offering products based on commodified real suffering. I argue that, even though poverty is a constant in the context of every slum tour, therefore it is a decisive factor that makes it ST and no other kind of tourism, poverty and its aesthetics are not always the core feature that tour guides - especially among local tour operators- are supporting their narratives on.

Slum Tourism in Debate

ST was first opened up to debate on the academia after the *Destination Slum!* Conference in 2010 (Bristol, UK) gathering researchers with diverse backgrounds and nationalities. Most research is primarily compelled to ethnographic fieldwork in urban destinations of the Global South, mostly featuring: Johannesburg, Cape Town, Rio de Janeiro, Mumbai and Nairobi. Although, the rapid spread and diversification of ST products provided for a wide variety of cases of study enabling researchers to establish parallels and influences among them; the theoretical achievements are constraint to the contextual reality of every case study. This limitation is partly due to slums spontaneous nature and high dependence on external conditions (Frenzel and Koens, 2012).

Regardless the particularities of each destinations, analyses of slum tourists' motivations often show similar results: curiosity for the cultural Other and how this otherness live and function in a poor environment were noticed among the primal motivations in academic research (Coles and Hall, 2006; ; Rolfes *et al*, 2009 Ma, 2010; Dürr, 2012a; Mekawy, 2012); closely followed by the desire of urban tourists to explore and experience the "real"/"complete" scenario of a city a priori assumed as fragmented (Freire-Medeiros, 2009; Rolfes *et al*, 2009; Ma, 2010; Meschkank, 2011; Dyson, 2012); Chhabra and Chowdhury (2012) also point out tourists desire to contribute to the socio-economic development in Dharavi; Rolfes *et al* (2009) added the wish to interact with locals and get some knowledge on Townships cultural products. There is also a certain homogeneity regarding slum visitors around the world. Most of them come from Northern and European countries, especially from United Kingdom, Scandinavia, United States and Germany. After the tour, tourists often express their surprise by the friendliness of residents, and a shift on their original preconceptions in matter such as safety, sanitation, and infrastructure development (Rolfes *et al*, 2009; Ma, 2010). However, interaction between visitors and visited it is scarce mainly due to the tight schedule during the tour and language barrier between hosts and guests (Rolfes *et al*, 2009; Freire-Medeiros, 2010).

Understanding tourist motivations is key to draw on the moral debate around ST (Ma, 2010). Critics often recall to the allegory of slum residents as zoo animals showcased in a romanticized scenario of poverty, asserting that slum tours suppose an invasion to dwellers privacy and emphasizing on the asymmetry of host-guest relations (Scheyvens, 2007; Selinger and Outterson, 2010; Dürr, 2012a). However, such considerations are often isolated and paraphrased opinions, which in addition to ethnocentrism and the author's baggage can jeopardize their accuracy (Frenzel, 2015). In opposition to this scepticism, some scholars advert on the

potential of ST to be social and politically transformative, with educational and philanthropist value and an opportunity for economic development (Rogerson, 2004; Freire-Medeiros, 2007; Williams, 2008; Frenzel and Koens, 2012; Burgold and Rolfes, 2013). Freire Medeiros (2009) explains how tours represented an opportunity to break with the isolation of favelas in Rio de Janeiro and how they effectively helped to change negative stereotypes of communities. Similar results were noted by Rolfes *et al* (2009) in South Africa claiming that tourist negative images had improved after taking a Township tour.

Some tours follow a cultural agenda re-directing the spotlight into their sense of community, cultural production, creative survival and historical background, rather than showing the slums crudest privations and struggles (Rogerson 2004; Freire-Medeiros, 2009; Rolfes *et al*, 2009). Only ST practices based on such assets could lead to create social awareness, economic development and cultural inclusion (Phillips, 2003). However, offering a superficial reading of livelihood conditions in slums to visitors can lead to undermining the complexity of struggles and romanticize an idea of poverty, making it look “poor but happy” (Crossley, 2012).

To date, there is a great amount of research focused on how were slums globally (re)produced and consumed as tourist attractions by mobile images and narratives (Phillips, 2003; Williams, 2008; Freire-Medeiros, 2009; Dürr, 2012b; Frisch, 2012; Linke, 2012; Steinbrink *et al*, 2012; Burgold *et al*, 2013; Chege and Mwisukha, 2013; Frenzel and Blakeman, 2015). Economic benefits and inputs to poverty alleviation were also addressed (Rogerson, 2004; Chege and Mwisukha, 2013; Truong, Hall, and Garry, 2014). Empirical findings reveals hosts perspectives in different destinations (Freire-Medeiros, 2010; Kieti and Magio, 2013; Slikker and Koens, 2015); as well as tourist profile, motivations and their perceptions (Ma, 2010; Dyson, 2012; Freire-Medeiros *et al*, 2013; Frenzel, 2014; Nisbett, 2017). And of course, a long-lasting debate regarding power relations and the ethics of this practice (Rolfes, 2010; Selinger and Outtersen, 2010; Whyte *et al*, 2011; Chhabra and Chowdhury, 2012; Burgold and Rolfes, 2013; Goodwin, 2014; Iqani, 2016; Giddy and Hoogendoorn, 2018). Hereby, instead of going after symbolic traces of meaning, branding or myth creations of slums, the importance is placed on the materialities of tourists embodied practices achieved after certain spatial performances and the consequent relations interwoven between human and non-human actors.

Moving forward: Performing networks

John Urry’s concept of the tourist gaze has been used in the analysis of ST to draw on how voyeurism sets the power relations between the Self (mobile subject) and the exotic Other (immobile object). However, travelling entails more than the mere visual, it involves walking, touching, feeling, reflexive thinking, smelling, meeting others, tasting and so forth; as Urry and Larsen (2011) already noted on the latest edition of the *Tourist Gaze*: is a multisensory embodied activity, in which the gaze is also seen as a *performance*. The Performative Turn (See also Crouch, 2004; Edensor 2001; Bærenholdt *et al*, 2004) is formed in opposition to Urry’s initial theory of the Tourist Gaze and other representational approaches privileging the sight. It was inspired by sociologist Erving Goffman’s dramaturgical metaphor of the world as a stage and comes after the development in social sciences and humanities of Non-representational Theory, which places the individual as a thinking agent bodily engaged with the world it inhabits. It was applied on tourist studies by arguing that ““tourism

demands new metaphors based more on being, doing, touching and seeing rather than just “seeing” ’ (Perkins and Thorns, 2001:189; Cloke and Perkins, 1998)” (Haldrup and Larsen, 2010:3).

From this perspective tourism is seen as an encounter between people and spaces that entails a sensual set of *doings* (Crouch 2004). The negotiation of identities and power relations during ST encounter goes beyond the consideration of slums as object to be observed and tourist as passive observant subject. The comprehension that human actors may develop during that encounter is not only compelled on how they see each other, but on how they bodily experience and react to practices enacted in a certain time-space. Hence, a performative analysis of ST calls for redirecting the focus from the *posited meaning* -Representational Theory- of slum images (re)produced within the practice of tourism, towards the *material composition and conduct* of this representations (Dewsbury *et al*, 2002:439. From Haldrup and Larsen 2010). While playing tourists, the stages of tourism encounters come alive baring with the unpredictability of their behavior, producing and reacting to new images and myths whereas consuming the place and its hybrid elements, creating connections between people and the everyday, (re)structuring space and social life (Haldrup and Larsen, 2010). Hence, “Tourists emerge from this critical reflection on practice and performance as both consumers and, themselves, producers” (Crouch, 2004:86).

However, narrowing the analysis to ST practices and performances would fail to show the complexity of the interaction among people, objects and institutions and their implications at a spatial, social and economic scale. Actor-Network Theory is “an “alternative” social theory based on relationalism (Emirbayer, 1997)” (Van Der Duim *et al*, 2013:5) and influenced by post-structuralism that when applied to tourism studies shifts focus from *what* tourism *is* towards *how* tourism *works* (see also Law, 1999; Van Der Duim, 2007). This approach proposes to trace the practices of hybrid actors and their associations into more or less stable networks to describe the multiple and heterogeneous orderings of events. Actor-Networks link spaces that go from local to global setting fruitful conditions for different orderings to emerge and prevail. It can therefore give probabilistic insights on how tourist events make spatial/cultural sense of slums as urban actors, the collaborations and outcomes ST practices and performances are enhancing (Van Der Duim *et al*, 2013).

Identifying the Cast of Slum Tourism

Identifying the actors and the synergies (re)created by ST is crucial to understand the power relations that evokes or discharges. I will use the case of the tourist favela Santa Marta to overlap the theoretic principles of Performativity and ANT to analyze ST within processes of social and physical urban regeneration framed by globalized capital flows. I will identify the key actors playing on four scales at which power forces and negotiations are articulated: Local (L) for the supposedly immobile actors performing ST practices; Regional (R), for those whose actions reach the rest of the city and the State of Rio de Janeiro; National (N) referring on representatives and institutions with federal reach of action; and International (I) for the global stakeholders lobbying on tourism; the Tourist (T) will be the mobile actor (re)creating networks by consuming tourist services.

Favelas have been growing at a fast pace since 1920s in the biggest cities of Brazil and they've been target of public policies aiming their eradication since the 1970s. However, when Rio de Janeiro was being prepared to host of international events -specially the Olympic Games (2016) and the male Football World Cup (2014) (I)- the strategic relevance of favelas territory dragged even more the attention from the government, the media and private investors. With a double discourse of economic development and improvements in mobility and visitors/dwellers experience of the city, Rio's state government (R) allowed major urban development projects (such as the waterfront and port area regeneration, transport infrastructure, and sport and leisure facilities) that caused the eviction of informal settlements of the city center and southern area. Also, a special Pacification Police Unit (Unidades de Polícia Pacificadora, UPP) was set to sanitize communities, clear traffic gangs away and re-establish the State's lost power in the favelas (Freire-Medeiros et al., 2017). While some favelas were being displaced and replaced, others, especially those in the city center that already enjoyed some foreign popularity on their own, were thriving in the tourist sector and benefiting from investments and social projects, for instance: the Mayor's office (R) declared Morro da Providência (the oldest favela in Rio) an Open-Air Museum in 2005; the municipality (R) implemented housing and urban upgrading social programs that embellished house fronts and endowed communities with sanitation and infrastructure (mainly for transportation); favela tours are promoted officially by Brazilian Institute of Tourism (EMBRATUR) (N); EMBRATUR in alliance with CUFA (L) (an organization of young favela dwellers working to enhance education, sport, cultural and citizenship activities in their communities) developed an educational project to train young professionals for tourist related careers.

Santa Marta is a tourist favela located on a hillside in Botafogo, a middle-class neighborhood in the prestigious South Zone of Rio de Janeiro. This was the first favela to have an UPP (R), which contributed to improve safety standards for tours to succeed. Santa Marta also received public investments with the "Rio Top Tour – Rio de Janeiro from a new perspective" program (R) from the state government to upgrade tourist infrastructure in the context of urban regeneration for mainstream events. Probably the most iconic outcomes of that project is the construction of a funicular -free of charge- and the colorful painting of house fronts that will later on turn into the most featured image of that community. Even though the number of visitors have dropped due to the economic and political instability that have been shaking the country for the past years, tourists still take tours mostly during the weekends and demand rises in the summer season.

Favela Scene (L) is a community based tour operator performing tours in Santa Marta since 2012. The very first activity of the tour is taking the funicular: there tourists (T) would share with local residents not only their mean of transportation but their daily routine. This first encounter represents the primal spatialized ordering of hybrid actors triggered by a single tourist practice. At a glimpse, it could be schematized as: Tourist - Favela Scene - Funicular - UPP - Rio Top Tour - Megaevents. By the act of taking the funicular, made possible by the mediation of the local tour guide, tourist are justifying physical changes -by being consumers of it- that was initially motivated by international trends of capital investments allowed by the state government. Even though the utility and beneficiaries of these transformations are arguable, the display of networks shows the direction on the flow of capital, people and information, placing favelas no longer on the margin but on the center of certain political and economic decisions.

The example set before can be transposed to urban geography to draw on the mobility of capital and shows existing, potential and even failed synergies within ST. This practical focus goes beyond the analysis of ST (re)production of representations and contributes to have a more visual sense of the material outcomes of tourism and its capacity to shorten the semiotic and economic distances among urban spaces and communities. This approach encourages to deconstruct the system of representation of slums and reinterpret their spatial-social-economic status based on the ordering of relations with other hybrid actors, disclosing the political implications of ST and its potential to introduce material and practical changes.

Conclusions: towards an interdisciplinary research agenda

In this article I review the literature to date on ST deviating the scope from representations, ontologies and ethical concerns towards the material outcomes of tourism to assert the quest of how ST could be a potential avenue to legitimize slums as urban actors at a spatial, economic and symbolic scale at urban destinations. Applying notions of non-representational geography, I focused on spatially embedded and embodied practices and performances that trigger a certain ordering on the relations between ST heterogeneous actors. By departing from the stand that ST opens a contact zone for tourist, operators, institutions and dwellers, I argue that is during these encounters that actors have the opportunity to (re)negotiate and (re)define the representations on each other.

This field of study calls for interdisciplinary research efforts with a post-structuralist and holistic approach highlighting the entanglement of processes that make sense of the world. Urban geographers can enrich this debate by unveiling the spatial consequences of the power relations that ST entails at every range. At a political economy level, the exposure gained after ST practices and performances can redirect the fixation of capital towards urban slum and potentially re-signify communities due to the global reproduction of myths and images that represent them. On this scenario, slums could be relocated in the center of a political agenda conducted by actor-networks and materialized through urban development policies and tourism governance strategies.

The conceptual framework exposed on this article aims to be empirically applied in the future with field study in Rio de Janeiro. I sought to identify specific culture based ST practices and performances in tourist favelas and trace down the networks created along to draw on the influence these connections have on the making of slums both as urban agents and tourist destination. This methodology yet to be tested could be helpful to analyze the intermingled processes and events on the stages of ST destinations and enhance our understanding of the role that tourism plays on tourist cities all over the world.

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WHOSE HERITAGE? CHALLENGES COMING FROM TURNING CITIES AS TOURIST PLACES.

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Abstract: The tertiarisation of society along the second half of the 20th century and the correlated growth of culture and leisure industries created an unprecedented pressure for change on historic centres, creating paradoxical relations between tourism, heritage preservation and urban development. This model of development provided a more intense cross-cultural confrontation, with the corresponding differences in recognition of heritage(s) values. This paper intends to discuss the transformation of heritage from 'shared heritage' into 'consumer good' cross-checking its effects on middle-sized cities Portuguese. The desertification, abandonment and degradation of the old areas created the challenge of their repopulation and their reuse. In turn, tourism has provided reuse of buildings and built new social and cultural dynamics, making it necessary to discuss how can one preserve the values and meanings of historic centres, and for whom. Recently, the Portuguese government has created fundamental changes in housing, rental and rehabilitation policies, with specific financial and legal instruments. However, their effects have not prevented the emergence of local challenges in housing law because of tourism, nor have they contributed to the promotion of new social constructions associated with heritage(s) understood as shared heritage(s). That is, public investment has not been able to enhance the heritage of the historic centres as good of public interest. For its part, the 'touristification' shows it has the power to catalyse its rehabilitation but implies changes that we intend to discuss focusing the perspective of who visits and who lives and assessing the losses and the gains for the communities.

Keywords: shared heritage, heritage-led development, urban rehabilitation, tourism

Introduction

The newest international urban planning policies defend a change in development from the urban expansion model to a densification model, evoking the return to the city. (UN, 2016) The purpose is to reduce the urban sprawl and create sustainable, inclusive and resilient cities, which requires a shift of urban policies to reinforce urban cohesion that needs, in its part, an increase urban rehabilitation.

However, the ancient urban districts, especially since the eighties, were abandoned by the urbanisation policies focused on urban expansion and got decayed. This process is unsustainable but also represents a threat for our understanding of ancient cores as centres of identities, since with the loss of their inhabitants, which have switched the traditional areas for the new modern neighbourhoods built on the peripheries, with larger streets and more comfortable houses, we assist to a loss of significance and importance in urban identity.

Besides the new agendas advocating the return to the city and the need to shift urban development to a rehabilitation model, in Portugal, the 2008 economic crisis contributed to foster these desired tendencies. The

media and the governments defunded the idea that the solution to the crisis would be the investments in buildings rehabilitation and tourism. (Diário Imobiliário, 2016). Consequently, a new wave of interventions in the old cores is taking place, mainly the rehabilitation of buildings for housing and hostels. However, they are being made without any integration into strategic planning for the development of cities, as advocated by technicians and researchers. Many of them applied questionable criteria, and despite regenerating some ancient areas, they are also contributing to their desertification by the abandonment of the few inhabitants that still live in these areas. Due to the pressure caused by tourism or by new social classes, mostly foreign investors, inhabitants are leaving and/or protesting. This change of user from inhabitants to tourists creates new challenges regarding the authenticity and integrity of this heritage.

This paper, focusing on the case of Coimbra, a medium size city, whose university was inscribed in the world heritage list, in 2013, discusses the rehabilitation policies being put in place in Portugal in the last years, trying to understand the real impacts of those interventions and the contribution of tourism to the rehabilitation and revitalisation of the old urban districts. Moreover, it claims that local cultural heritage led development may integrate tourism as an added value.

Urban development and decay of the ancient cores

Cities in Portugal, like in the rest of Europe, have suffered an unprecedented expansion in the last five decades. Due to some political weaknesses and wrong options of urban plans, together with the ease of accessing bank credit to build residential neighbourhoods on the outskirts, many cities doubled their perimeter. The new urban areas solved some of the housing shortages and created easily accessible services and equipment, but at the same time contributed to the gradual abandonment of the ancient neighbourhoods.

The simultaneity of the development model of the last five decades focused on growth, the excessive restrictions of building interventions due to heritage policy, and the lack of private investments to improve the living conditions on old urban districts led to the weakening of its physical and socioeconomic framework.

In addition to these factors, the displacement of trade and services to more accessible areas or large shopping centres built on the outskirts has also contributed to the same effect. Progressively, the old districts, centres of identity, were abandoned and occupied only by the elderly and the poor.

Some urban rehabilitation programs were created to control the raising problems of the old districts, including the provision of financial incentives and the financing of the rehabilitation of degraded housing. Alongside the implementation of these programs, most of the municipalities made some improvements to urban infrastructures and public spaces.

However, as shown by the fragile condition of most historical centres, these policies had very few results, except for rare cases of success, such as Guimarães, although using different methodologies. The reasons for this are several, but they are related to an understanding of urban rehabilitation as a policy associated with safeguarding historic nuclei, with a protectionist purpose only. This purpose made sense in response to the urban transformations of the 19th century but at the end of the 20th century and today, the pressures in the city have changed. Today the city and the country population is sharply decreasing, and the most concerning problem of the ancient areas is the abandonment and the desertification.

Moreover, the interventions carried out within these rehabilitation programs were restricted to building rehabilitation and requalification of the public spaces, always limited to the preservation of its image, disregarding the most significant weakness, the lack of people and the need to attract people.

Today the challenge is to attract people and maintain the liveability of the ancient cores; however, this can become even more difficult when we consider the demographic projections for Portugal, marked by a low birth

rate and an ageing population. According to the National Statistical Institute (INE) by 2060, the Portuguese population will have decreased around 40 per cent (INE, 2014). With this framework, the question might be who will use this heritage? Moreover how? How will it be appropriated?

The previous models of urban management policies proved to be ineffective in attracting people and containing desertification, likewise the consequent degradation of the physical and social environment.

Tourism, rehabilitation and urban transformation

The World Tourism Organization (WTO) defines Tourism as "the activity of persons travelling and staying in places outside their natural environment for [...] no more than one consecutive year for leisure, business and other purposes." (WTO, 2005) Although not a new activity, it has developed mostly after the Second World War with the stabilisation of the middle class and in recent years it has grown more sharply, mainly because of the increase of low-cost airlines, which have made air travel accessible to a higher number of people.

As for cultural tourism, ICOMOS defines "all forms of tourism that allows visitors to get an experience of the cultural aspects of the place of destination, their way of life, gastronomy, topography, environment, cities and towns, as well as their sites historical, cultural and artistic performances." (ICOMOS, 1999) In this sense, culture and heritage become a factor of differentiation, attracting people and investments, and through tourism becomes an economic catalyst.

Today cultural tourism has crucial importance for the economic development of some countries, namely Portugal, directly promoting sectors such as hotels, restaurants and handicrafts, but also for the preservation and valorisation of cultural heritage as a distinguishing factor of each city.

In fact, in recent years, in Portugal, tourism has been seen as an opportunity for development and enhanced some changes in urban policies. The first measures were local and municipal initiatives and limited to sectorial actions, improving public space, rehabilitating some monuments and creating a set of cultural events to attract visitors.

At the same time, the government has encouraged private investment in rehabilitation through tax incentives and by a set of political measures, mainly putting into force the New Urban Rehabilitation Legal Regime (2014), which has simplified the rehabilitation process¹, and streamlined the New House Rent Law² and the first Lodging Law³. Also, some other initiatives such as the strategic promotion of tourism with marketing operations stressing the country's excellent conditions, with rich landscapes, good weather, but most importantly the

¹ The first Urban Rehabilitation Law (RJRU) was approved by Decree-Law 307/2009, of October 23, amended by Law 32/2012, of August 14 and by Decree-Law 136/2014, of September 9. Also noteworthy is the publication of Decree-Law 53/2014, of April 8, which creates an exceptional and temporary regime applicable to the rehabilitation of buildings or fractions built for at least 30 years or located in Areas of Urban Rehabilitation.

² The New House Rent Law was approved by Law no. 6/2006, of February 27 and amended by Law no. 31/2012, of August 14, by Law no. 79/2014, of December 19 and Law no. 42/2017 of June 14.

³ The first legal regime governing local lodging was Decree-Law no. 128/2014. This decree was the subject of the first (small) amendment in April 2015, with Decree-Law no. 63/2015.

climate of peace and security, and the affordable costs of living for most European countries. Finally, and the most contested measurement was the encouragement for foreign investment, by tax reduction for those who decided to live and invest in the country⁴. This measure enhanced a wave of building rehabilitation works in the ancient cores. Despite the advantages of the investments, this contributed to the rise of property prices and encouraged the abandonment of the local population that could not afford to live in the ancient areas.

This policy had more significant effects in Lisbon and Porto the most prominent and more accessible Portuguese Cities. In fact, in these cities, most of the rehabilitation interventions were focused on the construction of luxury housing, much of it for foreigners. Between 2010 and 2016, the numbers of foreigner people living in Lisbon increased from 43 142 to 53 470 (INE |SEF/MAI, PORDATA, 2011). Moreover, the prices of housing for rent increased and for acquisition increased up to 25,2% depending on the area of the city (Idealista, 2017). The abandoned of these districts and the gentrification process is becoming a severe social problem in the two major cities, Oporto e Lisbon. Also raises the issue of the authenticity of these heritage areas where the population that forms the basis of its identity and local culture tends to disappear or to be replaced by tourists.

Besides, these interventions are based only on the economic impacts of tourism and made for the tourist to see. Also, the focus is to preserve the exterior image and renewing all the interiors, in some cases even disregarding the urban pattern by connecting several buildings to increase the building area and changing the typology and the structure of the buildings. Although called rehabilitation, these new processes have nothing to do with the urban rehabilitation that experts have come to define and to advocate. However, they are the result of processes of adaptation and urban transformation that need further reflection and problematization, because they are more than design options and demand a new responsible urban policy.

The rise of the housing prices caused social protests, contesting the municipal policies or the lack of them. They required “the urgent adoption of a national and municipal housing policy that favours and stimulates leasing, public and private, with rights and duties, security and stability”.

Coimbra. Alta and Sofia World Heritage

Coimbra is an excellent example of the difficulty of maintaining and attracting population to its old nucleus. On the other hand, after the inscription of its University in the World Heritage List in 2013⁵ (UNESCO-WHC, 2013), the city faces an exponential increase in the number of tourists and have begun a new dynamic with the rehabilitation of buildings in the ancient core.

⁴ We highlight some measures to attract foreign investment, such as the very favourable tax regime for Non-Residents (since 2009) and Real Estate Investment Funds, as well as the Golden Visa or Residence Permit for Activity program of Investment. The effects of these measures were most pronounced in Lisbon and Porto.

⁵ On the basic criteria (ii) Exhibit an important exchange of human values over a given period of time, or within a particular cultural area, on the development of architecture, technology, monumental arts, town planning or landscape design (iv) Offer an outstanding example of a type of construction and of an architectural, technological or landscape ensemble, which illustrates significant periods of human history. (vi) Be directly or tangibly associated to events or living traditions, ideas, beliefs or artistic and literary works of outstanding universal significance. (UNESCO-WHC, 2013)

However, like all other cities, urban sprawl was responsible for the desertification of the ancient areas of Coimbra, in fact between 2001 and 2011, the population decreased around 20,4% in the four ancient parishes (Almedina, Santa Cruz, São Bartolomeu and Sé Nova), decreasing from 17 538 inhabitants to 13971 inhabitants.⁶ The opening of commercial areas in the new peripheral zones fostered this expansion, which resulted in the closing of the traditional commerce that characterized the Baixa, the old commercial district, situated by the river. Also, the construction of two university campus in the peripheral zone of the city fostered the displacement of students from the Alta area, that is, foundation hill where Coimbra's University is seated.

The desertification and the degradation of the ancient areas fostered some municipal interventions mainly in public spaces, improving the pavements and creating stairs or by technical and financial support to the owner who intended to rehabilitate their houses, framing these interventions in national support programmes. However, these incentives have not been able to reverse the depopulation trend.

In addition to these interventions, the municipality began to envisage a plan that would safeguard the ancient core and promote urban rehabilitation. In 2003 while the city staged the Portuguese Cultural Capital event, the municipality requested the University a detailed study of the physical and social characteristic of Baixa, to drawn up a plan. However, and despite this survey, the plan was never drawn up.

After years of abandoned and without policies, in 2012 was finally approved a strategic plan for urban rehabilitation of this, and another two areas, one for the riverside and another for Alta, including the University hill and the surrounding buildings. This strategic plan proposed a set of six objectives and defined a set of 30 structuring projects for urban rehabilitation. Meaningfully, two of the six objectives referred to the promotion of cultural heritage and tourism. The objective number five proposed *valuing the cultural heritage*, planning the rehabilitation of some monuments and particularly the revitalization of Rua da Sofia (a street built in 1537 to set the University) and the development of tourism, proposing an increase in the number of hotels in a specific area and the creation of facilities for tourists. (Parque Expo, 2012)

One year later, in 2013 the University was inscribed in the List of Mundial Heritage, and since then, the city faces a sharp increase in the numbers of tourists. This tourism has allowed the development of a set of private investments. However, at the public level, the approved plan and the structuring projects already built have not been able to encourage change and captivate more residents or even prevent the departure of existing ones.

While private investments are limited to the economic profit and do not question who lives in and who uses the ancient core, creating services for tourists use. Thus, the old residential buildings have given place to new lodging houses, like hotels and hostels. Only in four years, between December 2013 and December 2017 the capacity of lodging increased from 2348 beds to 3873 beds, this increase was sharper in the numbers of local accommodations, from 23 to 197 while the number of hotels increased from 19 to 20 hotels.⁷

⁶ The reduction o the numbers of inhabitants is not exclusively of the ancient parishes, but the decrease is much sharper, in the entire city the population decreased from 148 443 inhabitants to 143396 inhabitants, around 3,4%. (INE, 2011)

⁷ In December 2013 there were registered 23 local accommodations with capacity to accommodate 106 guests, while in December 2017 there were registered 197 local accommodations with the capacity for 1408 guests. Hotels, in 2013 were 19 with the capacity to accommodate 2301 guest and in December 2017 there were 20 hotels with the capacity to 2561 guests. (TURISMO DE PORTUGAL, 2017)

Similarly, the number of souvenir shops is increasing and replacing the local commerce and sell the same products sold in any souvenirs shop of any other Portuguese city, with no relation with the city, its unique values or its traditional products such as porcelain.

At the same time, the municipality has encouraged tourism by replicating attractions and events. Some are promoting the local culture, such as fado's recitals, gastronomy fairs and local folklore performances, others less typical, such as the mediaeval or handicraft fairs that are taking place in other cities.

However, the increase in tourism has led to the rise in the rents price and lead to the detachment of residents of these areas. Even the student rental market, which in the Alta of Coimbra was very important, is today at risk. The buildings occupied by students are giving place to local accommodations for tourists, and students are looking for housing in the periphery, next to the new university campus.

It is time to rethink what is happening and act before it is too late to do something. Tourism can and shall remain a driving force of Coimbra's development. However, local authorities must prevent the loss of the resident population. Otherwise, the old core might become an open-air museum or a large lodging facility.

Some notes and recommendations

Cities are much more than places of living, production, storage and socialising, they are attractive and consumer goods, mainly because of its distinguishing features and its built heritage. Tourism has become an essential activity for many cities. However, once tourism is primarily an economic activity, it should be considered that the city and its heritage by becoming a consumer product, must respond to the expectations and motivations of the market. In this sense, cities tend to become artificialized constructions (Ashworth, G. J. and J. E. Tunbridge 1990), such as thematic parks, replicating actions and models, such as "street markets", "ethnic neighbourhoods", "medieval fair" that we must counteract.

In the current competitiveness between cities, every city must be attractive, especially medium-sized ones (Gomes, 2012), however in a scenario of demographic decrease more than attract tourists; the older urban districts must attract residents. The resident population is the base of the ancient cores' identity and heritage.

The challenge is to establish a global vision for the city future and then define a policy and management framework for the city and its heritage that can articulate the various agents and articulate the development of tourism with housing, the central function of all cities.

Heritage-led development can be a driving force of local pride, enhancing the character of the neighbourhoods and increasing the attractiveness of a place to invest and live (Barrera-Fernandez, 2016). Besides, it is also necessary to reinforce rules for housing and local accommodation, ensuring the dynamics and variety of functions in these areas, thinking mainly in the more permanent residents; in their quality of life, in their needs, in their jobs, in their daily lives. Investing in public transport and urban mobility, in schools, in green spaces, in support for the elderly, in civic centres, in cultural spaces of proximity, create housing incentive programs with credit lines for those who want to live in these areas and develop areas of conditioned leases.

Also, drive policies that include those who inhabit and create this heritage, creating forums meetings, measures to listen to the needs of the residents as the participatory budget, among other initiatives. Moreover, involve the

communities in the advantages of tourism, for example, by preparing and sensitising the population so that they can be the tourist guide, showing the visitors their neighbourhood.

Moreover, the urban planning and management policies cannot be limited to the old centres but need to recognize the city as a whole, with a holist understanding. Nonetheless, more than traditional urban preservation policies is required an integrated approach that involves physical, economic, social and environmental initiatives, in particular, consists of the integration of residents into decision-making processes, ensuring consistent governance, shared and inclusive.

Only in this way, it will be possible to respond to the new challenges that desertification and tourism are placing, especially since the nomination of Portugal as the best European destination for the third year (Santos, 2019). This designation promises an increase in tourism which can only be sustainable with local management and policy capable of driving the transformation of the current urban development, and then "people [will] have rediscovered their land after a long time." (Távora, 2003)

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SP22

Planning and designing
green infrastructures

Green Infrastructure: from benefits to planning

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Abstract: The increase of urban land use and in general human activities lead to disruptive effects on ecological functionality, environmental services, land naturalness and landscape quality, especially evident in peri-urban areas. Territorial planning and management have to aim at a better coordination among settlement and transport development policies, biodiversity and landscape protection, hydrogeological structure, land use for agricultural and forestry purposes. In this new planning scenario Green Infrastructure (GI) can play a strategic role. The MaGICLandscapes project, to which the Metropolitan City of Turin (CMTo) is taking part, focuses on how to identify, protect and enhance GI for the benefit of the environment and society at transnational, regional and local level. Collaborating with stakeholders, the project aims at providing land-managers, policy makers and communities with tools that help to assess and increase GI functionality. CMTo is testing the methodologies provided by the project in its case study area - Po Hills around Chieri - in order to assess GI functionality, to develop a Public Benefit Assessment Tool that takes over local specific needs and to provide the decision makers with an Action Plan in order to support them to maximize benefits provided from GI within their spatial planning and management process.

Keywords:: green infrastructure; ecological functionality, ecosystem services, landscape planning.

Introduction

Green Infrastructure (GI) is a concept, not a set of rules and there are many interpretations of this concept across Europe and the rest of the world.

As we all know, the benefits of well-planned and well-managed GI are manifold: they go beyond those often associated with natural green spaces such as providing space for wildlife. GI also provides the benefits and services that we as human beings require to thrive as well as to maintain a quality of life. GI should be considered as *multi-functional*, with different types providing different services/benefits dependent on local needs and circumstances. Those needs include making space for and protecting wildlife, providing access to nature, recreation and social interaction, reducing flood risk, improving despoiled landscapes (including those within our settlements) and reducing the negative effects of climate change among many others. A lot of research have already proven GI to be a sound investment with returns far higher than the initial investment (i.e a proven reduction in costs to health services where **GI** is accessible and promoted).

Finally GI is a key strategy in the European Landscape Connectivity Agenda aimed at reconnecting vital natural areas to urban hubs and restoring and improving their functional roles. It is an essential planning concept towards protecting natural capital and simultaneously enhancing quality of life.

While this approach is not yet implemented in Central Europe's landscape planning policies, which seldom consider the ability of land to deliver multiple benefits, ten partners from five Central European countries (Austria, Czech Republic, Germany, Italy, Poland) are working together within the project *Managing Green Infrastructure in Central European Landscapes* (MaGICLandscapes)¹ to introduce public to the GI concept, to improve its management and enhance the benefits and the services it provides.

The goal of MaGICLandscapes is to provide tools and information to help policy-makers, land managers and communities to manage GI in a way that meets local needs and maximizes the benefits it provides at the local, regional, national and transnational level.

The concept of GI

The first output developed by the MaGICLandscapes project was the *GI Handbook - Conceptual & Theoretical Background, Terms and Definitions*. It covers issues such as definitions of important terms or GI and its relationships to territorial laws/policies of the five partner countries and EU regulations and programmes. As a conclusion of this work the GI definition on which all partners agree is the one provided by the European Commission:

"a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity. The Natura 2000 network constitutes the backbone of the EU green infrastructure (EU Commission 2016)"

As this Handbook covers the territorial/international needs for a green infrastructure approach, its contribution to sustainable development, and how a GI approach can address specific territorial and common challenges, we expect it to be used as a reference for stakeholders and target groups wanting to know more about GI.

To increase and maximizing the public benefit that can be achieved through GI approaches to issues such as health and well-being/recreation, mitigating climate change, flooding or loss of pollinators, supporting productivity of the land, protecting and enhancing our natural capital, as a second step, a guidance was developed to assess the structure and types of GI at the transnational level: the *Manual of GI Mapping - Decision support tool*. Also if there are manifold datasets available, only few are suitable for a transnational GI mapping. Due to its full coverage and a low amount of misclassification the CORINE land cover (CLC) dataset was proved to be the more appropriate dataset. The suitability of data provided by the European Copernicus Programme was chosen for assessing GI in Central Europe, together with the provision of a method for ground-truthing at a more regional level. At first a GI map on transnational scale for whole Central Europe was produced based on the transnational legend using CLC data from 2012. The CORINE classes were then classified in a simplified

1 MaGICLandscapes is a project cofinanced by the European Commission within the Interreg Central Europe 2014-2020 Program. <https://www.interreg-central.eu/Content.Node/MaGICLandscapes.html>

transnational legend with just three classes (GI, GI under specific circumstances or partly GI, no GI), based on a coordinated legend among the project partners., as seen in Figure 1.

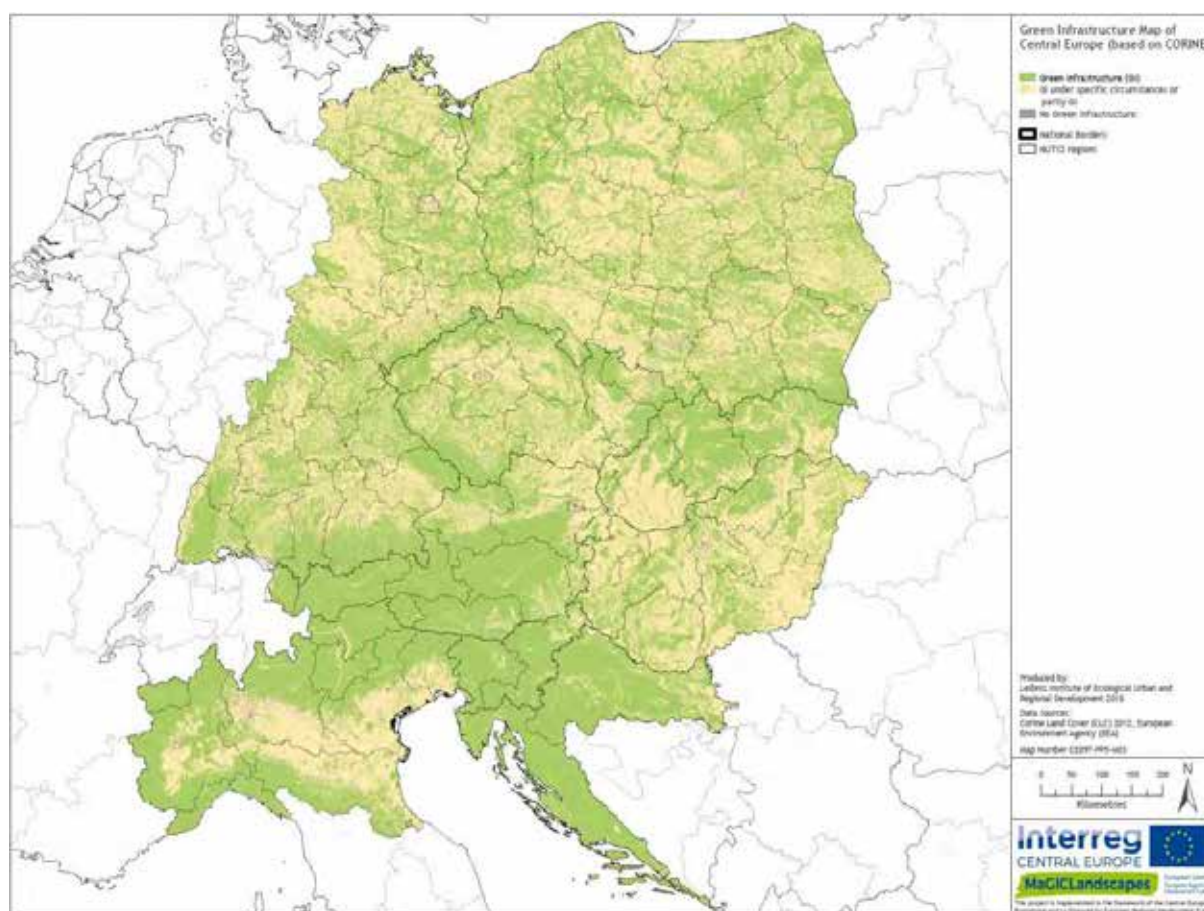


Figure 1: Map of green infrastructure for the Central Europe Programme Area – simplified legend (CORINE land cover data 2012)

Due to some shortcomings regarding transnational data, such as their spatial resolution, accuracy or the type and scope of the classified elements, the mapping was refined at the national/regional level and nine regional maps, one for each case study area, were produced. Among them CMT0 produced the map showing the GI/ GI under specific circumstances or partly GI/ not GI elements within its case study area “Po Hills around Chieri” as seen in Figure 2

Also if these maps provide a useful tool to raise awareness into the public of GI and its benefit to humans, a close cooperation with local stakeholders is needed in order to elaborate strategies and action plans for enhancing the existing green infrastructure resource in Central Europe.

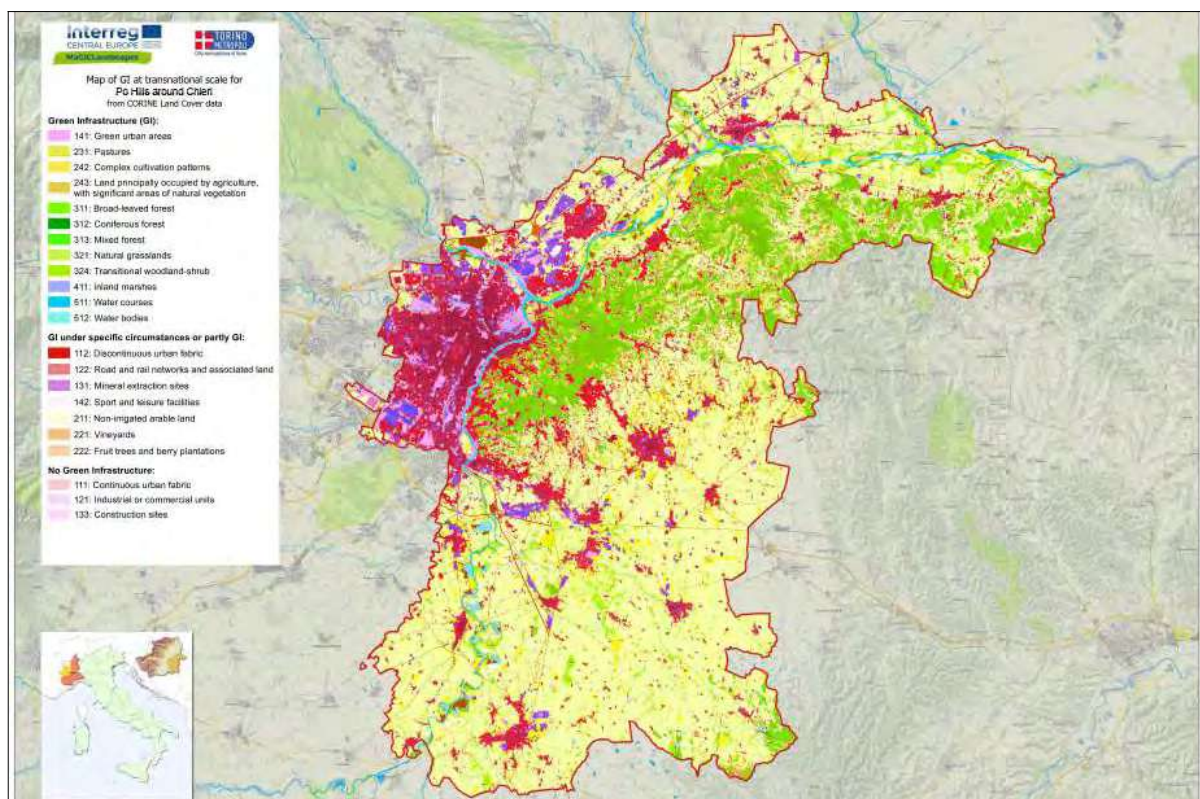


Figure 2: Map of GI for the Italian CSA Po Hills around Chieri based on the transnational legend using CLCdata from 2012 refined with Land Cover Piedmont data.

GI functionality assessment

The field survey is a key component for the testing of the assessment method for elements of GI. To gain in-depth knowledge of crucial zones within our case study areas (core zones, nodes, corridors, etc...) and to close gaps of coverage of geodata each partner tested a shared methodology for the assessment of the naturalness level of the main elements of GI. CMTo selected two sample quadrants of 1 square kilometre located in areas of special interest: the Natural Protection Zone of Arignano Lake and the "Isolone Bertolla" inside the Natural Reserve and Special Conservation Area of Meisino and Bertolla Island. Through a field work activity we attributed a range of local hemeroby² (human influence) according to a 7 degree scale for gradients of human influence: from the highest level (ahemerobic) = natural/non-disturbed to the lowest level (metahemerobic) = totally disturbed or "artificial", as seen in Table 1

In combination with the regional biotope catalogue based on the list of EUNIS habitats (level 3), produced by each project partner referencing the extract of EUNIS to their national/regional classification system, habitat types and landscape features were digitalized in a geographic information system (GIS) integrated with the information on the level of naturalness detected through the field surveys.

2 We adopted the Reference scale for hemeroby values of Joint Research Centre, European Commission - Institute for Environment and Sustainability

Hemeroby value	Hemeroby level	Degree of naturalness	Example	Processes/Human impact
1	Ahemerobe	Natural	Bogs, tundra	No disturbance
2	Oligohemerobe	Close to natural	Forest with species typical for the site, semi-natural grasslands	Limited removal of wood, pastoralism, minor changes in matter circles, emissions through air and water
3	Mesohemerobe	Semi-natural	Forest with species atypical for the site, extensive grasslands	Clearing and occasional ploughing, extensive grazing, rare and small doses of fertiliser
4a	β -euhemerobe	Relatively far from natural	Annual crops associated with permanent crops (extensive), agro-forestry	Use of fertilisers and biocides melioration, ditch drainage
4b			Intensive grassland, extensive arable land,	
5a	α -euhemerobe	Far from natural	Intensive arable land (short rotations), intensive vineyards	Deep plowing, planting, major changes in matter circle, drainage, heavy use of fertilizers and biocides
5b			Cereal monocultures, rice fields and irrigated crops (intensive)	
6	Polyhemerobe	Strange to natural	City green, golf courses, pits	Strong changes in biocenosis, covering of the biotope with external material
7	Metahemerobe	Artificial	Streets, buildings	Sealed surface, biocenosis destroyed

Table 1: Reference scale for hemeroby values (Joint Research Centre, European Commission)

Connectivity analysis

As in digital image analysis concepts of mathematical morphology are widely used (Soille, 2013) we opted to use the Graphical User Interface for the Description of image Objects and their Shapes (GUIDOS)³ to perform the Morphological Spatial Pattern Analysis (MSPA). The MSPA is a generic and universal pattern analysis framework provided by a custom sequence of morphological operators (Soille & Vogt, 2009) that performs a segmentation on a binary image to identify and localise mutually exclusive morphometric feature classes describing the shape, connectivity and spatial arrangement of image objects by mapping and classifying them into seven categories: Core, Islet, Perforation, Edge, Loop, Bridge, and Branch (Vogt et al., 2017) as seen in Figure 3.

3 GuidosToolbox is a free software collection by Peter Vogt (Joint Research Centre, European Commission) and offers a variety of modules targeted to investigate several spatial aspects of raster image objects, for example pattern, connectivity, cost, fragmentation, etc.

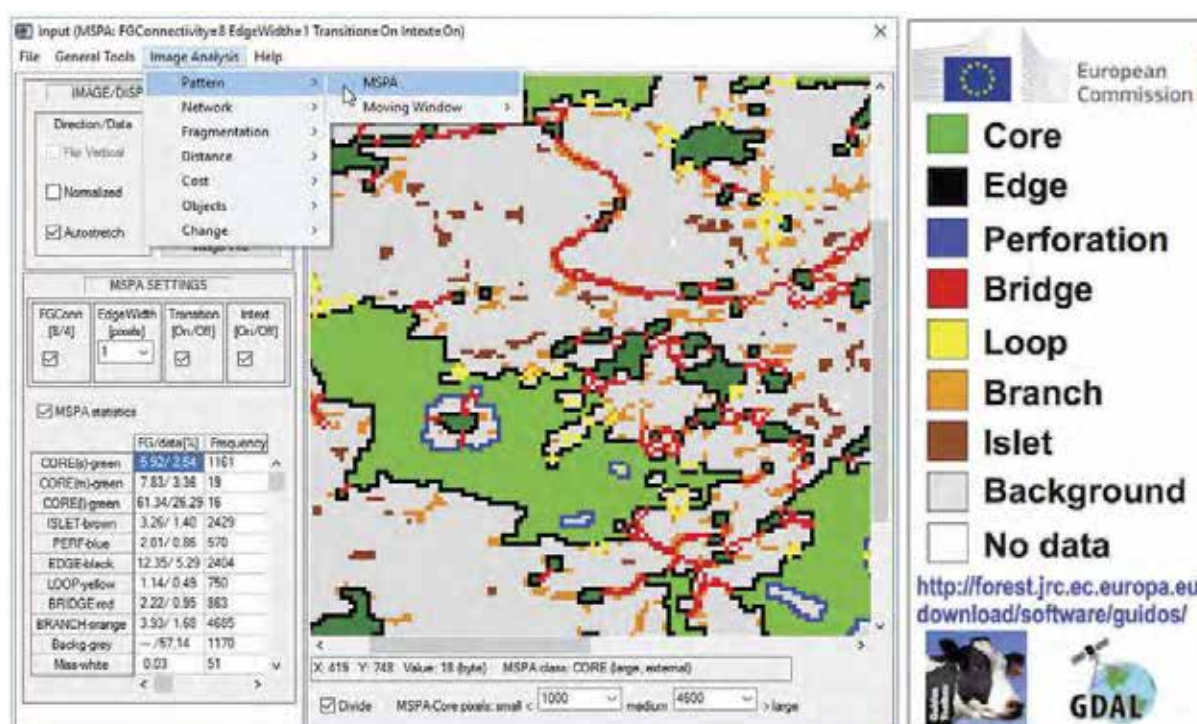


Figure 3: The GuidosToolbox software interface showing the MSPA pattern analysis illustrating various morphological feature classes: Small Core areas (dark green); large Core areas (green); Core area boundaries (Edge/external–black, Perforation/internal–blue); connecting pathways between different Core areas (Bridge–red) and returning back to the same Core area (Loop–yellow); isolated forest patches and too small to contain Core area (Islet–brown); and Branches (orange), reprinted from (Vogt et al., 2017)

In terms of assessment of GI connectivity MSPA uses a series of image processing routines to identify hubs, links (corridors), and other features after reclassifying the raster land-cover map into foreground (Green Infrastructure) and background (all other classes) (Vogt et al., 2007). To align the terminology of GI, the category of *core* was considered equivalent to hub, and *bridge* as synonymous to link (corridor). As the input map must contain only two data classes: foreground and background, we integrated the geodata-base with the attribution of each CLC class as GI or not GI element. The attribution of the patches belonging to the "partly GI" classes was performed considering as not GI all the artificial and anthropic surfaces, with the exception of the Green urban Areas and some specific typology of agricultural uses as shown in Table 2. Moreover, in the application of MSPA in MaGICLandscapes we used eight-neighbour connectivity and edge width values of five (5) respectively ten (10) (depending on the pixel size of 20 respectively 10 metres) corresponding an effective pixel size of 100 metres for this analysis.

CORINE Land Cover (CLC)			
Level 1	Level 2	Level 3	Revised
1. Artificial surfaces	1.1. Urban fabric	111 Continuous urban fabric	
		112 Discontinuous urban fabric	
	1.2. Industrial, commercial and transport units	121 Industrial or commercial units	
		122 Road and rail networks and associated land	
		123 Port areas	
		124 Airports	
	1.3. Mine, dump and construction sites	131 Mineral extraction sites	
		132 Dump sites	
	1.4. Artificial non-agricultural vegetated areas	133 Construction sites	
		141 Green urban areas	
		142 Sport and leisure facilities	
2. Agricultural areas	2.1. Arable land	211 Non-irrigated arable land	
		212 Permanently irrigated land	
	2.2. Permanent crops	213 Rice fields	
		221 Vineyards	
		222 Fruit trees and berry plantations	
		223 Olive groves	
	2.3. Pastures	231 Pastures	
	2.4. Heterogeneous agricultural areas	241 Annual crops associated with permanent crops	
		242 Complex cultivation patterns	
		243 Land principally occupied by agriculture, with significant areas of natural vegetation	
		244 Agro-forestry areas	
3. Forests and semi-natural areas	3.1. Forests	311 Broad-leaved forest	
		312 Coniferous forest	
		313 Mixed forest	
	3.2. Shrub and/or herbaceous vegetation associations	321 Natural grasslands	
		322 Moors and heathland	
		323 Sclerophyllous vegetation	
		324 Transitional woodland-shrub	
	3.3. Open spaces with little or no vegetation	331 Beaches, dunes, sands	
		332 Bare rocks	
		333 Sparsely vegetated areas	
4. Wetlands	4.1. Inland wetlands	411 Inland marshes	
	4.2. Coastal wetlands	412 Peat bogs	
		421 Salt marshes	
		422 Salines	
		423 Intertidal flats	
5. Water bodies	5.1. Inland waters	511 Water courses	
		512 Water bodies	
	5.2. Marine waters	521 Coastal lagoons	
		522 Estuaries	
		523 Sea and ocean	
Legend:			
no GI			
GI according to specific circumstances			
GI			

Table 2: Correspondences between CLC classes and GI/not GI classes

In the CMTo case study area “Po Hills around Chieri”, as shown in figure 4, the MSPA produces a Core area of GI with notable extension in the upper half part of the area and some smaller ones along the rivers within the southern part of it. Both, the Po river and the Stura river are identified as bridge (red). The landscape structure in terms of provision of GI decreases from the north-east to the south-west due to the change in the morphology of the territory that passes from the hill to the flood plain. In the hilly upper area the cores of GI seem to be provided almost exclusively by broad-leaved and mixed forests with a more or less high level of hemeroby, while, going down in altitude mixed formations of complex cultivation patterns consisting of vineyards, wood-lots, pastures and land principally occupied by agriculture with few spots of areas of natural vegetation predominate. In correspondence of the city of Turin, instead, the flat territory at the foot of the hills on the left bank of the Po river is almost entirely covered by urban areas.

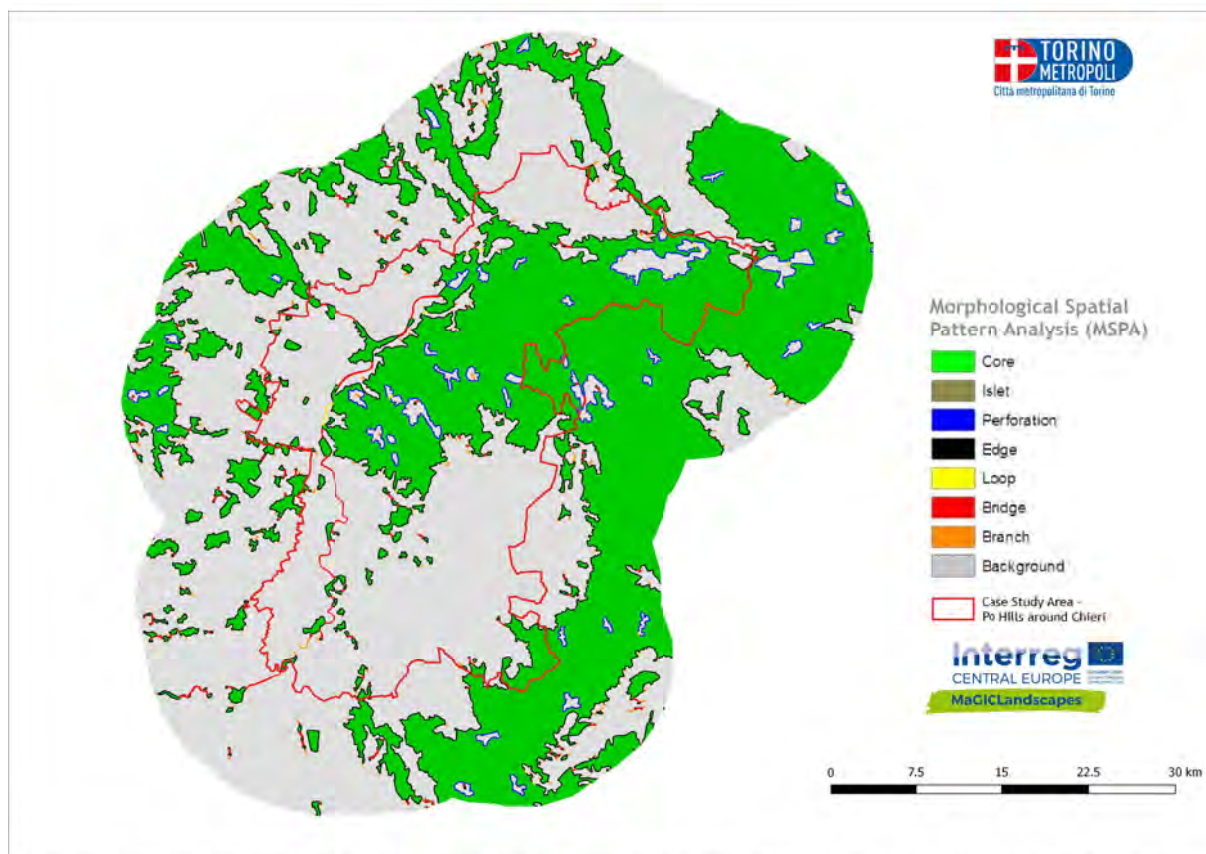


Figure 4: Result of the Morphological Spatial Pattern Analysis of the extended case study area “Po Hills around Chieri” in Piedmont Region – yellow circles indicate the primary links which should be reconnected.

In these zones, as in the southern part, , due to the fact that the land is mostly occupied by intensively farmed agricultural landscapes, complex cultivation patterns and, along the Po river banks, mining activities and sand and gravel extraction sites, there is a generalized lack of GI as shown in Figures 5 and 6.



Figure 5: Corridor cut by a urban settlement



Figure 6: Canalised water with poor occurrence of vegetation

Network analysis

Another informative feature of the Guidos Toolbox is the automatic detection of connecting pathways between core areas of image objects based on the results of the initial application of MSPA and their ranking with respect to the relative importance of each component, node and link, in a given network consisting of Nodes (MSPA class: Core) and Links (MSPA class: Bridge respectively connectors between various Cores); the remaining MSPA classes are neglected (Vogt et al., 2017).

This analysis shows the connectivity importance for each node and each link of the network, displaying their relative importance in decreasing intensity of black (nodes) and red to green (links) colour. (Saura et al., 2010).

Within the CMTo case study area, as shown in Figure 7, the network analysis highlighted two nodes, respectively of high and medium importance and value: the confluence between the Stura and the Po Rivers (actually a Protected and Special Conservation Area) and the upstream connected area, always along the Stura River: both these areas represent the main corridor through the flat plain that connects the Po hills with the mountain valleys. Its conservation and implementation in terms of connectivity preservation is therefore essential.

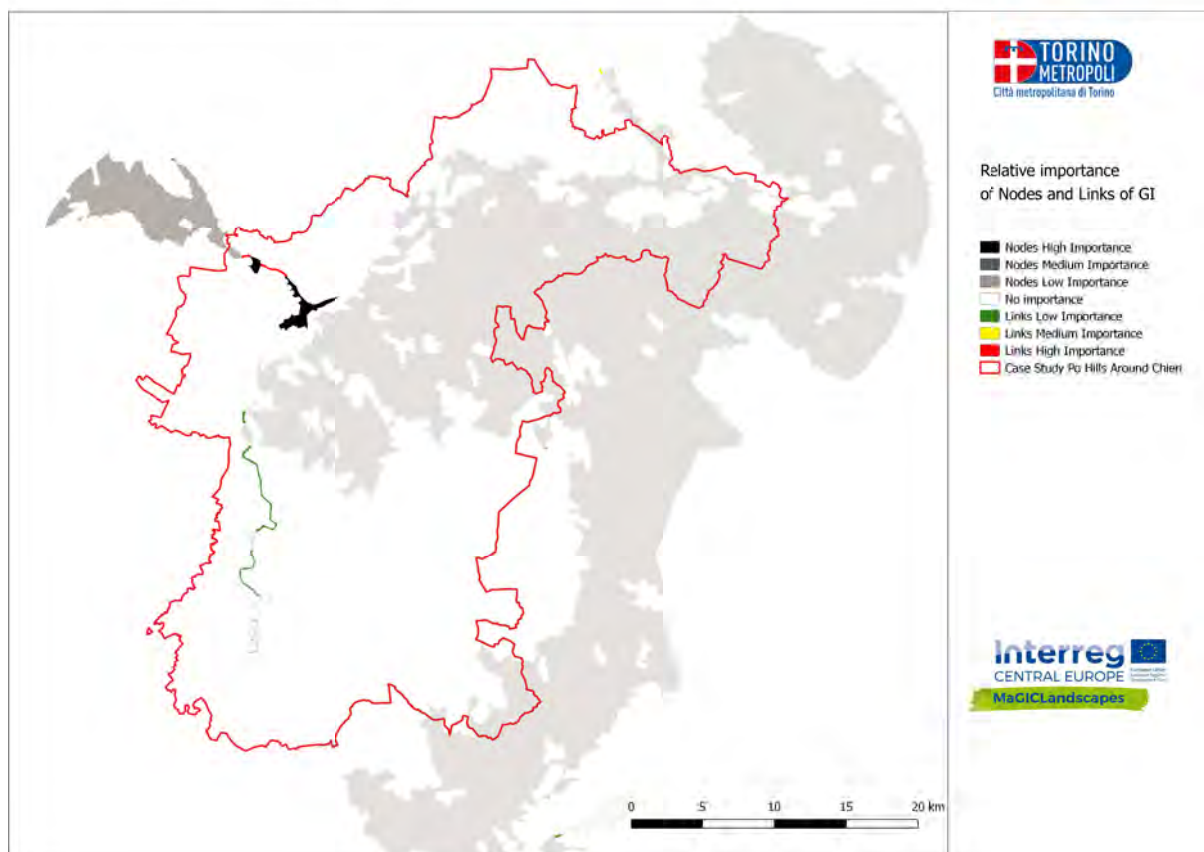


Figure 7: Result of the network analysis based on MSPA of the CMTo case study area "Po Hills around Chieri". In black the most significant areas in terms of connection.

Measuring Euclidean Distance

To measure the degree of intactness, shape and spatial arrangement of patches on a given binary map, the analysis methodology of Euclidean Distance and Hypsometric Curve (HMC) offers a practical and effective method of implementation. This module is available in GuidosToolbox, too and uses the same input data as the MSPA described above. This application creates maps of objects of interest showing the Euclidean distance map inside and outside those objects. This type of analysis may be further pursued to illustrate the influence zones of each object and to derive the pairwise proximity between neighbouring objects. Proximity, then, may be used for the establishment of cost-efficient reconnecting pathways in restoration planning (Vogt et al., 2017).

In terms of the connectivity of GI the generated distance maps provide spatially explicit information allowing for highlighting hotspots of highly fragmented areas or those dominated by well-established networks of GI. The spatial information of these distance maps of GI may be of high importance for monitoring, planning and risk assessment.

Additionally the simple, yet intuitive analysis scheme is easy to communicate and can be related to a variety of spatial planning measures by illustrating the degree of fragmentation or intactness.

Through the analysis of Euclidean Distance of elements of GI, as shown in Figure 8, existing connections and extensions in turquoise to blue colours illustrate both efficient links and reconnecting pathways useful to enhance the connectivity of the network of GI based on the Cores represented by the woodland and mixed formations of complex cultivation patterns displayed in green and red colours.

Deepening the investigation we can observe that the actual and potential connecting elements are represented almost entirely by the hydrographic network, both the natural as the canalised. The natural rivers Dora Baltea, Orco, Malone, Stura and Sangone, in addition, obviously to the Po river, form the main ecological network between the Turin hills and the alpine foothill area, despite the widespread presence of urban fabrics and roads.

But the results underpin the importance as an element of GI of the channeled streams, too. Also if they are often characterised by a lack of natural buffer zones like riparian strips, woodlands or wet meadows. they can be a useful support for the recreation of the ecological connectivity.

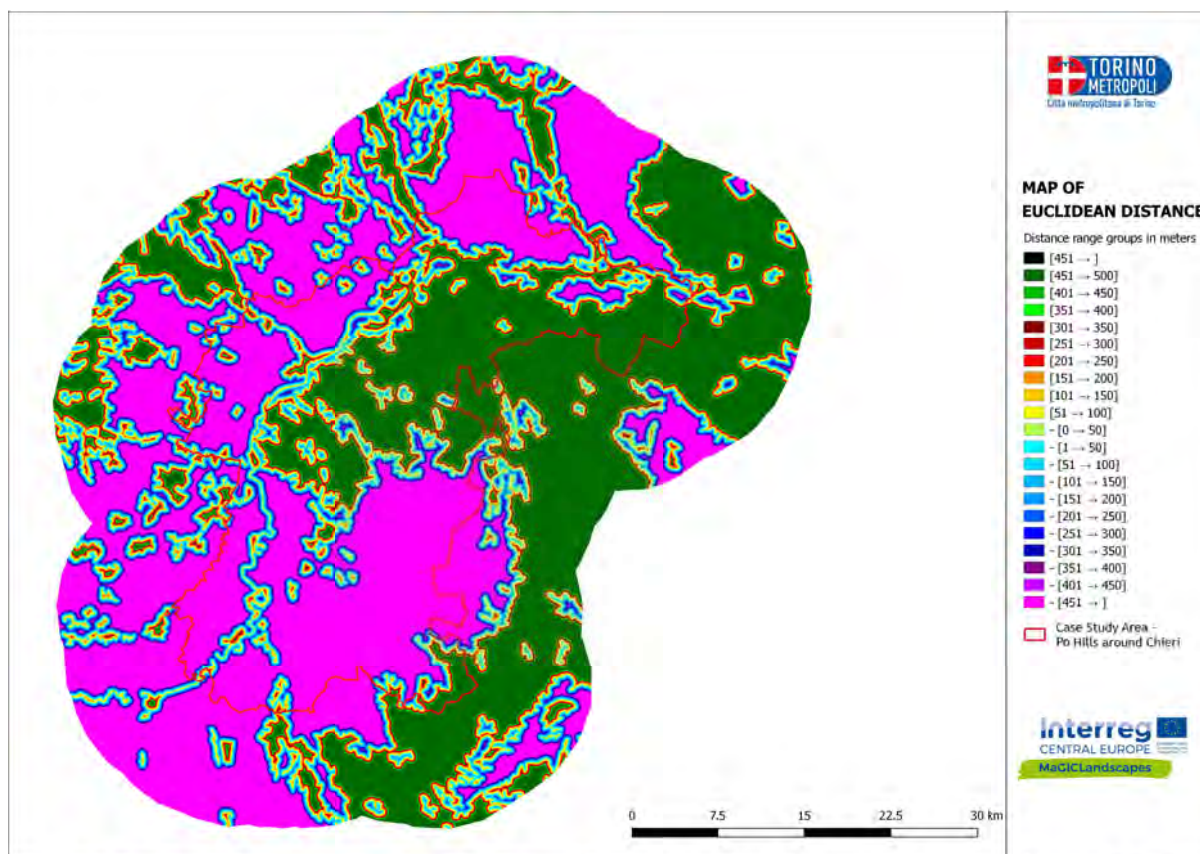


Figure 8: Result of the measurement of Euclidean Distance of GI in the extended case study area “Po Hills around Chieri” in Piedmont Region with highlighting of high value links that should be joined.

Conclusion

The considerations made above are the result of a large scale analysis. Deepening at a more local scale we noted that also within the hilly wooded areas, a less uniform and homogeneous situation comes out.

As the main objective of the MaGICLandscapes project is to provide local land managers, policy makers and communities with the tools and knowledge to ensure the persistence of GI functionality and the consequent benefits to society, of course they couldn't base managing choices on so raw data. For this reason, with the upcoming project activities, we are going to apply the MSPA analysis using the Land Cover Piemonte (2010) a more detailed geodata produced on the regional basis, to better survey the different typologies of land use cover.

Moreover a "Public Benefit Assessment Tool - PBA - is envisaged by the project to enable organisations to develop GI strategies and action plans based on evidence from GI assessment and local needs, opportunities, and threats.

The PBA will be aimed at producing an analysis of the Public Benefit situation on a local scale in order to allow the definition of strategies and action plans to preserve and increase GI in each partner case study area. Thanks to this integrated approach, strategies and action plans will be based on the evidence of the situation in the targeted areas and will respond to specific local and regional needs,

will mitigate the threats and will seize the opportunities for the local stakeholders to maximize multiple benefits from investment in GI.

The PBA procedure is going to be based on two contemporary processes:

- the assessment of the level of "available" public benefits provided by the territory of each case study and their location within the analysed territory
- the gathering of the information to identify existing needs and perspectives regarding the implementation of the Green Infrastructure network in as well as the collection from the territory and from the institutional stakeholders of additional data on the benefits provided by the existing Green Infrastructure (as an integration to what was obtained with the previous process).

On the basis of the land use, a series of maps will be produced presenting the distribution of the benefits supplied by each territory. Subsequently, on the basis of the single needs or the single opportunities linked to one or more benefits, each partner will identify the better policies and strategies that could support the drafting of the local action plans.

Acknowledgements

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The Aniene River: a green infrastructure to set up a metropolitan strategy

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Abstract: The latest territorial government tools have embedded green infrastructure with the aim to preserve the natural character and to stimulate regeneration processes of public open space and social cohesion, especially in peri-urban areas, where suburbs melt with agricultural and natural landscapes, and along the rivers, often neglected. This contribution will investigate the preparatory works for the new General Master Plan of Tivoli. A special focus is about the Aniene River as a potential Green Infrastructure, capable of restoring continuity to the ecological and functional fragmentation of landscapes heavily compromised by urban growth and production pressure. During the last decades, peri-urbanization and industrialization phenomena in these areas have ignored the river basin. The results are features of brownfields, industrial archaeology sites, informal settlements whereas open space is abandoned or unfittingly occupied by landfills, junkyards, brownfields. The Aniene River system boasts a relevant geographical dimension in order to test a strategic metropolitan governance able to address different sectoral issues. In this direction, the Aniene River Contract, that has recently started its official process, complements the traditional planning tools and represents a main opportunity for participatory processes where the community turns out to be central.

Keywords: Aniene River, planning tools, green connectivity, cultural benefits, metropolitan strategy

Introduction

After the Second World War, urbanization was characterized by a multiplicity of settlement and land occupation patterns that do not convey an overall idea of the city. Definitely, due to a series of extensions, enclaves, settlement interruptions and resumption, the Roman area, the so-called 'Agro Romano', witnessed huge aggression of agricultural land and exploitation of natural resources. This contribution focuses on the linear city that lies between Roma and Tivoli along the low course of the Aniene River before its confluence in the Tiber River.

A specific feature of the so-called 'Tiburtina City'¹ is long term interdependence between the two outposts of Rome and Tivoli, favoured by the different uses of the river. Over time, it served as a waterway for the transport of essential goods like high quality olive oil, for the shipment of travertine and other construction materials extracted from the quarries, as a reservoir for domestic water demand, as an energy source for typical proto-industrial activities linked to paper mills and ironworks, and, lastly, for electricity needs for the Capital City.

Today, many plants are abandoned, standing as monuments of industrial archaeology among quarries, brownfields, factories still in use, illegal settlements, and shopping centres.

The low course of the Aniene basin, with some 800.000 inhabitants, falls under the jurisdiction of different local authorities (Figure 1) – the Municipalities of Tivoli and Guidonia Montecelio, the Roman Municipal Districts II, III, IV, V, VI – and is featured by a great variety of historical and natural assets displaying manifold landscapes thoroughly intertwined with the Aniene River.

¹ The term 'Tiburtina City' is here referred to the huge hook constituted by the eastern Rome districts and the Municipalities of Guidonia Montecelio and Tivoli, following the Tiburtina consular road and the Aniene River.

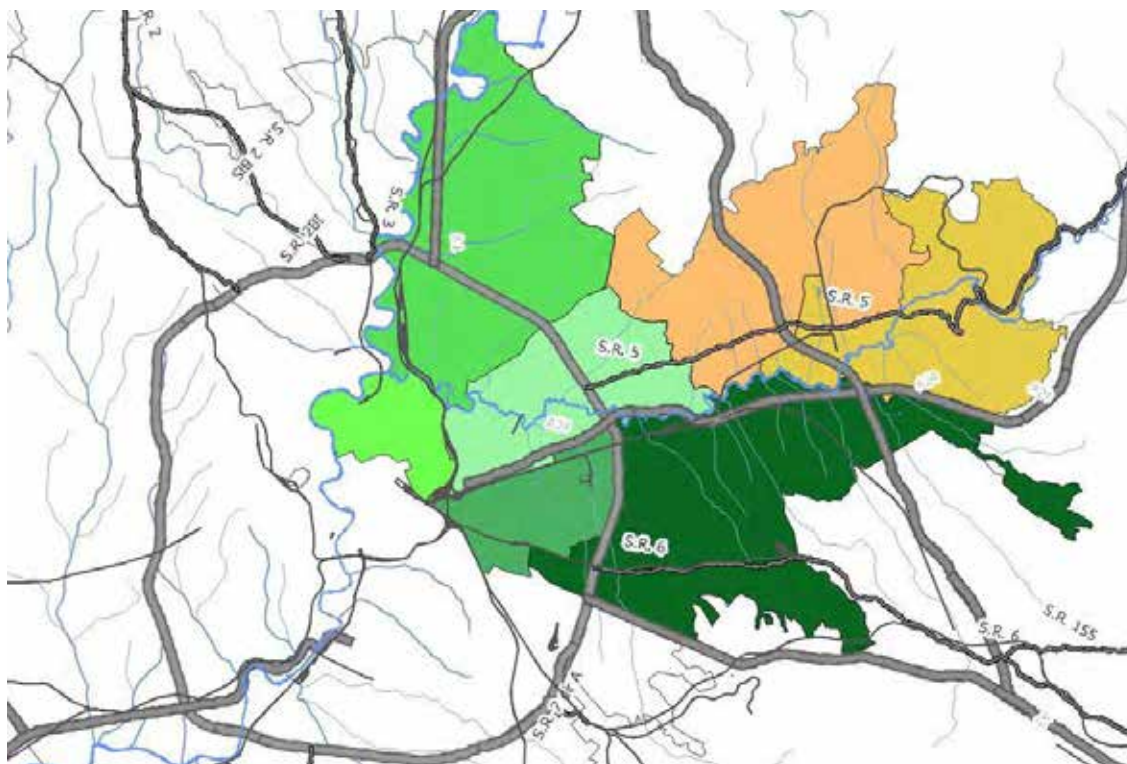


Figure 1. The Metropolitan area east of Rome. In green the Municipality of Roma, in yellow Tivoli and in orange Guidonia Montecelio.

GIS elaboration: Romina D'Ascanio. Sources: <http://websit.cittametropolitanaroma.gov.it/>, http://geoportale.isprambiente.it/tematiche_pt/idrografia/, <https://geoportale.regione.lazio.it/>

Despite being the backbone of such linear city gathering unsuspected naturalistic qualities along with excellence industry, the Aniene discloses settlement and environmental criticalities and is mostly perceived as no man's land. Thus, the future of the Tiburtina Valley is challenged both by the needs of an 'urban continuum' to be treated as a whole and by ecological connectivity issues. Although these aspects sound dissonant, convergence should be found in order to effectively intervene by matching sectoral policies, as proved in the case of ecological transition objectives reported in urban and metropolitan governance agendas all over Europe. Within this frame, the Aniene river is to be intended as the key connection factor, playing a strategic role in terms of resilience, and thus requires to be managed and designed on a case-by-case basis.

A glance of the recent history

In 1913², the Tiburtina area was a rural context – the 'Agro Romano' by the side of Rome and the 'Agro Tiburtino' by the side of Tivoli – controlled by huge estates: a mosaic of large tesserae dotted with rare farmhouses and extensive exploitation patterns. In the first post-war period, due to strong urbanization, the natural overflow of the city coupled with spontaneous or authorized 'urban nucleuses', such as suburbs, isolated allotments, hamlets or centers of agricultural colonization. Over the years, spontaneous settlement processes linked to migratory flows invested Rome and its hinterland in successive waves. Local concentration of an urban 'underclass' mixed with farmworkers due to persistent land ownership in the hands of few, and the strong production vocation recalled by the Aniene and the Roma-Tivoli railway, are among the main reasons leading the Regime to establish in 1941 the II Industrial Zone of Rome, for a total of 1,500 hectares, on the left bank of the Aniene.

² It is referred to '*la Carta dell'Agro Romano*' of Pompeo Spinetti, published in 1913, which shows the cadastral ownership subdivision

Housing needs of the second post-war period allowed for new hamlets and settlements randomly occupying and compromising the Agro. These enclaves variously display urban lifestyles on remnants of rurality: small residential plots are interspersed with agricultural uses wholly or partly efficient, with *terrains vagues* and industrial sites.

In fact, it is no longer possible to take into consideration the logics and the syntax behind previous arrangements related to the river and its multiple utilities. This reflection points out that landscape quality objectives and transformation rules need to be rethought from the opportunities stemming from residual open spaces, including both natural and historical signs still in place³ (Figure 2).



Figure 2. The peri-urban areas of the ‘Tiburtina City’, where two landmarks face each other: on the left the historical farm ‘Tenuta del Cavaliere’ and on the right the massive Agroindustrial Center of Rome.
Photo credit: Romina D’Ascanio, March 2019.

Nature and culture: planning tools and bottom up initiatives

Worldwide, ecological continuity has become crucial in addressing landscape fragmentation in new planning and management tools. On the one hand, it guarantees the biodiversity conservation and, on the other hand, it provides a wide range of benefits for people and society. In this direction, the European Green Infrastructure Strategy has prompted towards cross-disciplinary approaches linking biological and ecological issues to cultural and economic effects of well-being.

The Charter of Rome on Natural and Cultural Capital⁴ clearly underlines how the European natural capital is closely related to cultural values. Landscape construction is embedded in agricultural practices, economic systems, cultural backgrounds, communities’ traditions and habits and respectful use of natural resources. From this perspective, the Charter would like to strengthen the EU Birds and Habitat Directives (2009/147/EC; 92/43/EEC) goals to meet “ecological, scientific and cultural

³ In the Metropolitan City of Rome, soil consumption touches 71,000 hectares, increasing by 500 hectares between 2012 and 2015 at the expense of agricultural land.

⁴ In 2014, within the activities for the Italian Presidency of the Council of the European Union the Ministry for the Environment organized the Conference ‘The Natural and Cultural Capital: the Future of Europe’ at the Botanical Garden of Rome and, the informal EU Biodiversity and Nature Directors meeting at the Ministry of Foreign Affairs. The final working document was the ‘Charter of Rome on Natural and Cultural Capital’. It is a tool aimed at raising awareness of the important synergies between the Natural and Cultural Capitals, as well as increasing the integration of biodiversity issues into sector policies, also with a view to developing a greener economy. The main themes of the Charter concern the improvement of knowledge and investments on Natural Capital, the guarantee of a high functionality of natural ecosystems, the integration between Natural Capital and Cultural Capital and finally the creation of synergies between green infrastructure, rural and urban areas

requirements, while taking account of economic and recreational ones”. In this scenario, connections among natural resources, signs of history and human perceptions build up a complex system that also inspired the European Landscape Convention (2000) where, according to a holistic view, territorial vocations and communities’ expectations might converge.

Matters of fact and law – both the different uses and utilities along the river, and general and sectoral planning tools -, are actually raising relevant environmental, settlement and production conflicts. The issue of ‘open space’ as a *proxy* for connectivity is approached quite differently by the Regional Landscape Plan (RLP)⁵, whose aim is to preserve and enhance landscape patterns, and by the Provincial General Plan of the Metropolitan Area (PTPG, approved in 2010). This latter, in providing a strategic overview for local planning tools entrusted to implement its provisions, has drawn up the Landscape Ecological Network (LEN, Figure 3), that represents the main green infrastructure within the metropolitan areas (Blasi *et al.*, 2014). One of the most important purposes of this Plan is to acknowledge nature and history as main features of identity and environmental sustainability, and to assess consistency of ongoing transformations with the historical construction of the territory.

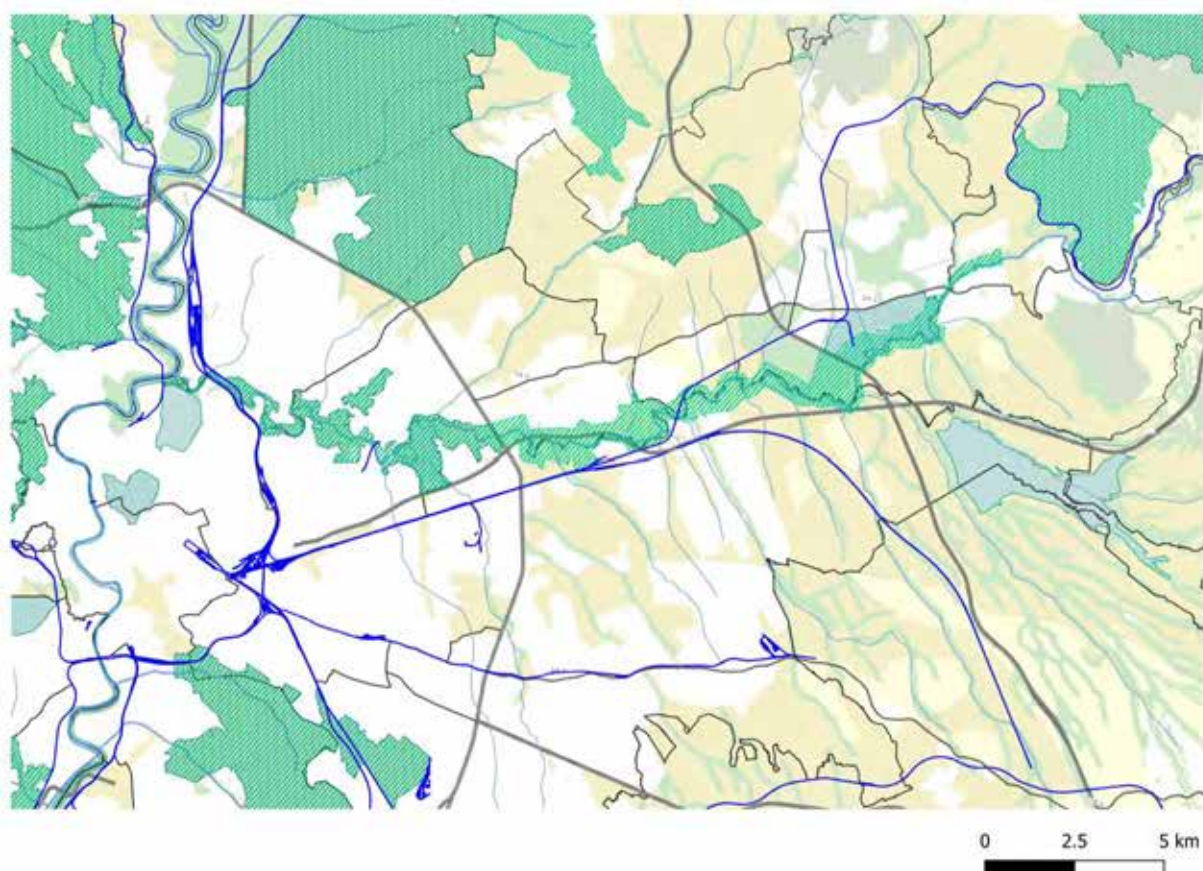


Figure 3. Landscape Ecological Network of PTPG, 2010.

GIS elaboration: Romina D’Ascanio. Sources: <http://websit.cittametropolitanaroma.gov.it/>, http://geoportale.isprambiente.it/tematiche_pt/idrografia/, <https://geoportale.regione.lazio.it/>

Furthermore, the PTPG takes as a frame the three general objectives proposed in several EU directives, such as the improvement of economic and social cohesion, the safeguard of natural resources and cultural heritage and the creation of a more balanced metropolitan competitiveness, explicitly calling upon the dimension of functional agglomerations, with their peculiarities. The ‘Tiburtina City’ is mentioned within this frame.

⁵ Despite having undergone procedural steps for some fifteen years, the RLP has not been approved yet.

At the basis of the strategy of the Plan there is the priority to enlarge some protected areas, such as the Aniene Park of a further 1,300 hectares⁶, in order to systematically protect, reconstruct and extend the allocation of naturalistic-environmental resources, promote the recovery of nature's features, even in the residual areas where naturalistic reconversion is possible.

The Landscape Ecological Network is based on levels of biodiversity and ecological functionality. It is constituted by core areas, buffer areas, and landscape connections.

The object of our analysis is mainly part of the so-called 'Lower Aniene Valley Unit' and has three core areas: the Site of Community Interest (SCI) '*Palude della Cervelletta*', the SCI '*Travertini delle Acque Albule*' and the *Valley of San Vittorino*. The Aniene River, together with its tributaries and the buffer boundaries provide landscape connection in natural and semi-natural areas.

Finally, a wide portion of the agricultural land uses may perform as ecological connection between agricultural land and settlement systems. The agricultural landscape mosaic corresponds to the still existing portions of the ancient 'Agro Romano Tiburtino' with a prevalence of olive groves.

At city level, the General Masterplan of Rome (2008) set up its own Ecological Network, but the municipalities of Guidonia and Tivoli still have General Masterplans dating back to the 1970s. During the drafting of these General Plans, both cities had addressed some criticalities, such as illegal occupations and land subdivisions, that have worsened over the last decades of building speculation. Overall, the demand for housing has seen private interest prevailing over the public one.

Since 2016, in order to face the obsolete and ineffective General Master Plan, the Municipality of Tivoli has set up a Special Office for the preparation of the new one, whose first results have been presented in May 2019. Due to the interference of manifold rules belonging to different planning tools (included the River Basin Management Plan, RBMP), and affecting the same areas, the main idea was to build a common ground and a common agreement around the Aniene system as the backbone of the entire settlement.

Being the Aniene River the core issue for the establishment of the Aniene Park, other areas, notably the protected sites, the UNESCO sites, several plots with olive oil groves, '*pizzutello*' vineyards or with typical quality agriculture productions still in place in the 'Agro Tiburtino', and plots with vegetable gardens, have been taken into account by the new General Master Plan: the overall idea is to structure the green network arranging even some minor ecological connections.

Paradoxically, the Aniene better performs the ecological role than the one linked to leisure time: to access it all along its course stays a critical issue. Time after time, morphology (deep slopes), property, illegal uses, poor mobility system, prevent people from enjoying free and safe use. Thus, the river is mostly perceived as a 'foreign element' in the community life, and only recently neighbourhood committees have claimed the need to regain possession of their historical and cultural heritage. These expectations couple with the emergent slow and eco-tourism fashion and with an increasing leisure time for citizens.

These insights have emerged along the path of the 'Aniene River Contract'⁷, for which the *Manifesto of Intent*s was signed in June 2018. As early as December 2018, the first three thematic working tables were held on the issues of water quality, hydrogeological risk and sustainable development for the three sections of the river - high, medium and low course - gathering wide participation from associations, local authorities and citizens. The path of the Contract, thanks to the awareness campaigns of the 'Aniene Committee'⁸, has been led by the Comunità Montana 'Valle dell'Aniene'

⁶ The lower course of the Aniene in the Municipality of Rome within the Grande Raccordo Anulare is already protected by the Aniene Natural Reserve, under the management of 'RomaNatura' Authority and 'Insieme per l'Aniene' non-profit organization. However, the area still suffers problems due to anthropic pressure and illegal activities.

⁷ The River Contract is an agreement that allows to adopt a set of regulations in which criteria of public utility, economic return, social value and environmental sustainability equally take part in the search for effective solutions for the river basin's recovery. (World Water Forum, 2000)

The River Contract is a voluntary tool of strategic and negotiated planning for the protection and better management of water resources, valorization of river landscape and mitigation of hydraulic risk, contributing to the local development. (Italian Environment Code, 2006, mod. 2015)

⁸ The 'Aniene Committee' is made up of numerous associations and citizens, committed to promoting concrete actions for the care of the river basin. They have been working together for more than ten years.

and currently collects about seventy actors among institutions, municipalities and associations. The River Contract (RC) has proved a new governance approach capable of matching nature, environment and historical landscape, able to create a common ground of discussion and shared ideas among all the stakeholders operating in the basin, trying to include private sectors initiatives by empowering communities and raising awareness in public sector.

Although this path is in its beginning with some difficulties in terms of organization, participation, economic support, the Aniene River Contract is aligned not only with the Water and Floods Directive, but also with the Green Infrastructure Strategy, both for environmental principles and community participation, with the perspective to enhance historical and landscape systems of great relevance.

Insights and perspectives

Along the ‘Tiburtina City’, different typologies of green infrastructure (Church *et al.*, 2014) can be found, such as forests, green space, protected areas, urban parks, blue infrastructure, farmland, historical parks, etc. (Figure 4).

The river itself could be seen as a green-blue infrastructure able to deliver different cultural ecosystem services to improve sense of place, by reinforcing the awareness of cultural heritage.



Figure 4. The Aniene River landscape. In the background the ‘Casale di Sant’Eusebio’, a medieval fortified settlement. Photo credit: Romina D’Ascanio, April 2019.

The cultural ecosystem services, which are one of the four key service components identified in the ecosystem services frameworks, are sometimes less tangible or measurable but strictly related to human well-being and social cohesion. The Millennium Assessment (2005) defines cultural ecosystem services as the non material benefits people obtain from ecosystems such as cultural diversity, knowledge systems, educational values, aesthetic values, social relations, sense of place, cultural heritage values, recreation, and ecotourism.

The opportunity to activate a comprehensive and shared strategy, starting from the river and the open space as reservoir of natural and cultural resources, represents a way to set up a convergent green infrastructure agenda matching planning perspective and bottom-up initiatives. A structured and participative strategy on the river could improve not only its environmental quality (air, water, biodiversity), but generate a variegated spectrum of wellbeing benefit, interacting between environmental space and practices (O'Brien *et al.*, 2017).

The need to build a vision focused on the main signs of nature and history able to overcome the inconveniences of our controversial recent urbanization, should be a key feature of the Roman area. Notwithstanding, on the grounds of heritage, despite century-old acquaintance between people and a huge legacy likely to better shape our everyday life by inspiring place-specific regeneration processes, general neglect is still the norm.

The 'Via Tiburtina' and the railway between Rome and Tivoli, which is being strengthened thanks to the construction of the second track, will enhance the metropolitan mobility system. The integration between such traditional infrastructure and the green one is expected to largely contribute to the regeneration of deprived neighborhoods along the Aniene River.

In such contexts, public promotion could activate widespread recovery interventions with particular attention to management issues, which are currently a relevant challenge in urban regeneration, taking into account compatible proposals from private initiative and community participation.

This scenario calls upon the new Metropolitan City, entrusted with additional powers to rule strategic planning processes and likely to play a decisive mediation role among stakeholders, identifying and addressing effective policies towards sub-functional areas homogeneous in terms of history and development trends. According to the subsidiarity principle, all government levels are advised to cooperate on the aspects that intercept their own scope for action. Environmental policies are most promising, since they advocate cross-disciplinary tools. They should provide governance models able to match top-down compulsory policies towards the primary ecological networks (Aniene Natural Reserve, Monte Catillo Natural Reserve, etc.), with bottom-up practices concerning local connections, stemming from municipalities and private action.

Complementarity, or rather solidarity, between city and country, currently assessed by reciprocal flows of tangible and intangible assets, and benefits in terms of ecosystem services, should be supported by green infrastructure and slow mobility networks.

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Planning and designing green infrastructures

Milton Keynes, the “Forest City”

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Abstract: This article presents the case of the British New Town of Milton Keynes. Programmed in 1967, this true urban laboratory is the setting of numerous experiments. From the origins of green infrastructure in landscape planning to city planning, we will explore how its designers contributed to preserving and creating habitat areas for wildlife. The landscaping project implemented is sophisticated and detailed, designed according to a search for efficiency in a long-term perspective. Milton Keynes foreshadows some of the current challenges related to territorial development and green infrastructure.

Keywords: Milton Keynes, landscape planning, road verge, park network

Introduction

To participate in this special session, I have chosen to present a case study of Milton Keynes, a New City in England. This article is organised in three parts. The first identifies the contextual elements necessary to understand the city's project and its challenges, the second details Milton Keynes' specific landscape planning and the third puts into perspective the contributions brought through this project in relation to current issues.

1. Origins of an urban laboratory

The New Town movement began in England in 1946, following the publication of the New Towns Act. This document preceded the planning of around thirty new cities over a period of about thirty years, exceeding by far the initial objective to develop ten cities. The creation of these cities or city extensions took place during the reconstruction period following the Second World War and aimed to unclog the capital city of London, which had become saturated by polluting industries and insalubrious. Milton Keynes is one of the last planned New Towns and is the most important and ambitious New Town developed in Britain.

Programmed in 1967, Milton Keynes is implemented at a later date and in different circumstances as compared to the first New Towns. Reconstruction in the context of the creation of the first New Towns is marked by a strong development of industries accompanied by an improvement of living

conditions and an increase in household consumption. The quest for opportunity and freedom of choice defines the time of Milton Keynes' construction.

Milton Keynes' master plan was designed between 1967 and 1970, just before the two oil crises of 1973 and 1979, which deeply impacted consciences and economies worldwide. These crises, among other situations, became triggers for ecological awareness. The 1970s and 1980s were defined by the development of a great variety of experiments around alternative lifestyles and autonomous housing systems. (Maniaque, 2014, p. 52-76)

Influenced by this historical context and the experience of previous New Town developments, Milton Keynes is projected to offer a new way of life, redefining housing, work, travel and entertainment. Abundant experimentation on sustainable housing was carried out in the 1980s and today autonomous vehicles are developed and tested in the New Town. Also, its urban planning is one of its most highlighted assets today, both in terms of its heritage value and as reference for future planning.

The development area designated for the implementation of Milton Keynes was made up of agricultural land and composed of about ten villages that were integrated into the city project. Several master plans were produced, the first one by Bucks County planner Fred Pooley and later by the planners of the Milton Keynes Development Corporation[1] (MKDC) before a feasible project could be achieved, taking into account the budgetary constraints imposed on the designers. Very different planning solutions were considered thanks to Milton Keynes' status as a New City, where almost everything was to be conceived and created from the beginning.

The city of Milton Keynes presents a number of specific urban and architectural features. We will focus on the development of green and natural spaces, one of the major aspects of city planning conditioning the quality of living environments. We shall see how issues that arise today related to territorial planning are already taken into consideration in this context.

2. Green infrastructure: policy tool and precedents

Today, fifty years after Milton Keynes' planning, European natural areas are degraded and their role as habitat for a great number of animal and plant species is compromised. To respond to this situation, the European Environment Agency (EEA) aims to develop green infrastructures as planning policy tools. And so, the European Union in its *green infrastructure strategy* recommends that they be fully integrated into spatial planning policies.

Gorm Dige (2015) explains that green infrastructure is a tool to understand the advantages offered to human society by nature, and to mobilise investments to sustain and enhance these benefits in order to generate ecological, economic and social services through natural solutions.

Here we borrow the EEA definition of green infrastructure as explained by Gorm Dige (2015) and defined as a strategically planned network of natural, semi-natural areas and green space that provide ecosystem services. These services, defined as supporting our well-being and quality of life, include water and air purification, biodiversity conservation, biomass production or the mitigation of surface runoff. A combination of services can thus be obtained from one vegetated area. Most of these services are essential but require significant investment and maintenance efforts when they are implemented as “grey”[2] infrastructure solutions, while green infrastructure solutions prove more socially advantageous and less expensive.

Green infrastructure is a spatial and ecological concept aimed at promoting the vitality and resilience of ecosystems. It helps to preserve biodiversity and promote ecosystem services for the benefit of humans, such as reducing the effects of global warming, identifying and preserving critical habitat areas and connecting them.

In 2015 the EU biodiversity strategy aimed at preserving and improving ecosystems and their inputs through green infrastructure by 2020 and for 15% of degraded ecosystems to be restored.

Once again, according to Gorm Dige, green infrastructure remains a new and complex concept for which there is no widely recognised definition. He also points out a lack of indicators and quantitative analyses.

However, Mayté Banzo (2015) explains that green infrastructure originates in landscape planning, which is defined as the development of the urban environment through the landscaping of “open spaces”. This planning model was introduced by Frederick Law Olmsted [3] (1822-1903) in the 1870s in the United States and aimed at ensuring a connection between landscape spaces at different scales, organising the city around public spaces and landscaped traffic lanes (Banzo, 2015, p. 7). The green belt imagined in Ebenezer Howard's garden city project (1850-1928) falls into the green infrastructure project category. In fact, Ebenezer Howard and Raymond Unwin (1863-1940), with whom he collaborated, as well as Patrick Abercrombie (1879-1957), who put into application his recommendations for the Greater London Plan (1944), incorporated what is known today as green infrastructure in their development projects (Banzo, 2015). The Modern Movement dissociates urbanised areas from agricultural or natural areas but integrates tree-lined walkways as part of the urban tissue (V7 walkways, according to the categorisation of roads proposed by Le Corbusier (1933)), mainly in linear form, which ensure the continuity of habitat of animal and plant species (Corbusier, 1933). According to Le Corbusier, parks and tree-lined walkways allow wildlife species to travel across the city. Their linear shape is similar to the layout of traffic lanes allowing vehicles and their users to move within or around the city.



Figure 1 - Grid road, park and river network plan, Milton Keynes. Source: from the author and Campbell Park, Silver photography, November 2018. field research. Source: from the author.

The green infrastructure, considered as a policy tool by the EEA, stems from previous work related in particular to landscape planning. It is therefore possible to enrich future green infrastructure projects with elements from theories and applications developed since the end of the 19th century. Consequently, Milton Keynes allows us to study the application of principles defining the green infrastructure approach.

3. Milton Keynes: supporting for the creation of natural habitats

Before 1967, most of the geographical area defined for the implementation of the New Town of Milton Keynes was composed of agricultural land hosting a small variety of wild animal species and few habitat areas. Wildlife in rural areas is therefore under great pressure from the use of pesticides (Kelcey, 1975) and monocultures. Animal species would take refuge in hedges, on roadsides and in the few remaining forests. Most of these habitats were already the product of human intervention.

When Milton Keynes was conceived, two linear parks crossing the city from North to South were designed with the aim of safeguarding natural areas as biodiversity reserves. The Grand Union Canal and the River Great Ouse are two pre-existing natural or semi-natural elements. They host a variety of fauna and flora that the designers of Milton Keynes chose to preserve. The two linear parks are connected through the Milton Keynes city centre, as shown in figures 1 and 2. It is an area of activities and businesses with a lower density of vegetation and a lesser variety of species as compared to the parks, but which aims at ensuring ecological continuity.



Figure 2 - Diagram of the park network, Milton Keynes. Source: from the author.

As Michael Edwards (2001) reviews the history of the City's planning project, he explains that the dense land reservations along grid roads result from specific traffic related changes. Initially the main roads had a speed limit of 50km/h and intersections were managed by traffic lights. Activities, housing structures and bus stops were to be implemented along these main roads. But as traffic lights are replaced with roundabouts, automobiles start circulating at 100km/h and houses and activities are pushed away from the grid roads and into the grid squares, as shown in figure 3.

The density and activity zones, initially located along the main roads, are moved and end up being implemented in the middle of sectors, which has consequences on the activity of local centres and on the use of public transport. The entire organisation of neighbourhood units is also affected. And so MKDC planners and landscape architects propose a landscape plan to be applied along the grid roads.

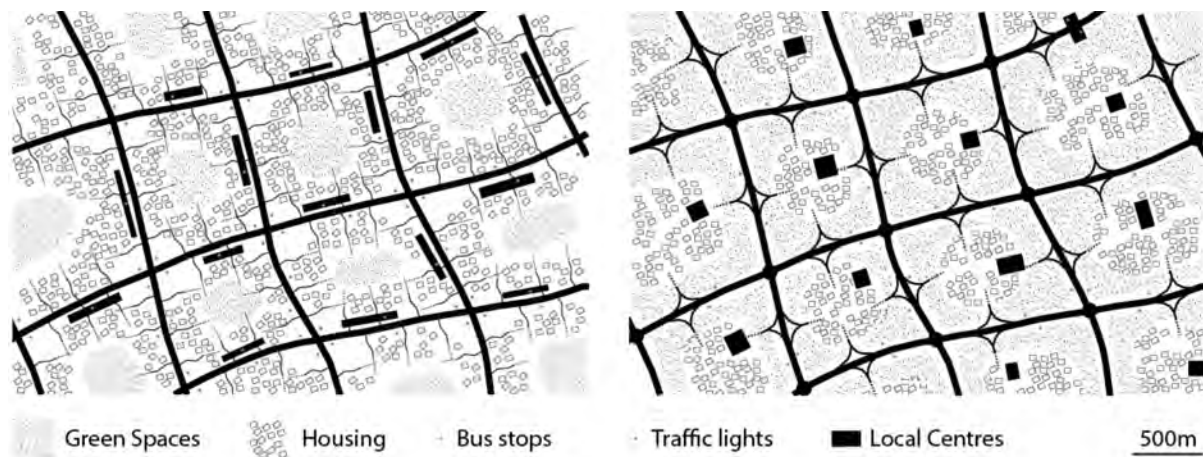


Figure 3 - Sector organisation around grid roads - project/development. Source: Edwards, 2001. Redrawn by the author.

4. Roadsides in the service of ecosystems

This landscape project is detailed in the *Ecological Studies of Grid Roads in Milton Keynes* (Kelcey, Milton Keynes Development Corporation, 1974). One year after the publication of the study, John Kelcey, a member of the MKDC, writes an article in the journal *Urban Ecology* (Kelcey, 1975) in which he analyses the development of road verges in the New Town from an ecological perspective, focusing on the diversity of wildlife habitat areas along roads.



Figure 4 - View of a grid road. Silver photography, November 2018, field research. Source: from the author.

The *Ecological Studies in Milton Keynes, Grid Roads* (1974) show that the design and implementation process developed into four phases and included recommendations for short- and long-term maintenance. Diagrams (plans, sections and drawings) shown in figures 5 and 6, were

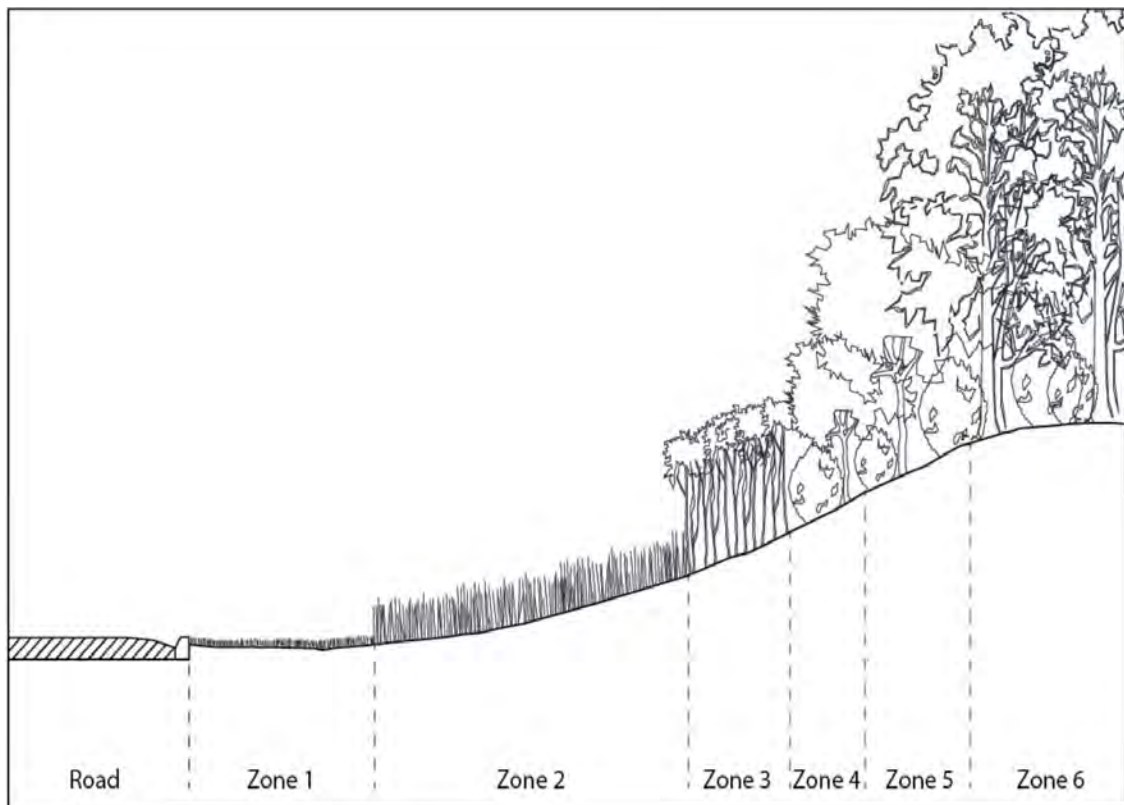


Figure 5 - Section across a grid road verge sowing the zonal structure. Source: Kelcey and MKDC, 1974. Redrawn by the author.

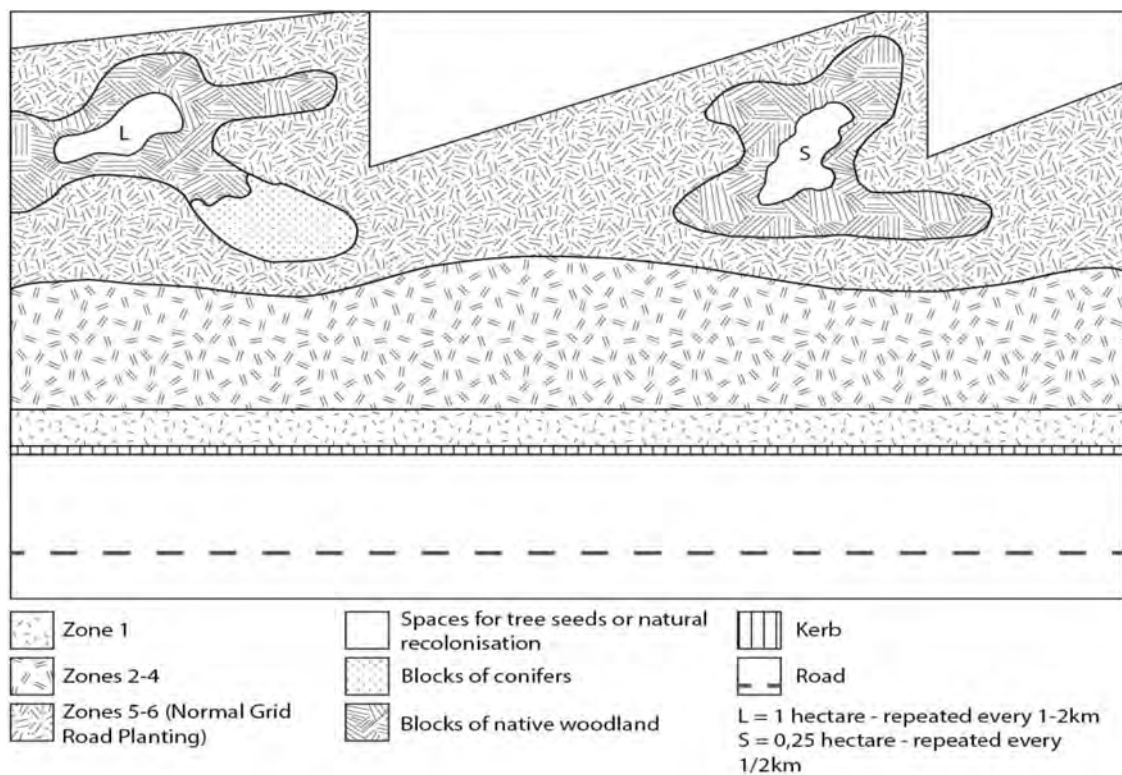


Figure 6 - Plan of grid road zonal structure. Source: Kelcey and MKDC, 1974. Redrawn by the author.

produced in order to provide landscape recommendations for roadsides. The proposed spatial organisation is intended to produce variations that are pleasing to the eye. The diversity of plant species provides a wealth of habitats for animal species and can therefore accommodate a variety of animal species present on the site. Grid roads are a unique means of creating landscaped areas that can compensate for or even increase the quality and variety of habitats for animal species. This potential improvement is due to the fact that agricultural monocultures preceded the city, limiting the diversity of natural habitats.

The recommendations made are detailed and define planting areas and the vegetal species to be included, taking into account the maintenance required in the short term and long term.

In terms of design, roadsides are divided into zones, structured together. Each zone plays one or more specific roles. The plant species that make up each area and the frequency of their maintenance are specified in the landscape plan.

As shown in figures 5 and 6, Zone 1, a strip one to two metres wide, hosts grasses that require mowing three to four times per year while Zone 2 is occupied by medium-length grasses, to be cut once every year. Zone 3 is home to tall grasses that require cutting once every two to three years. Lastly, Zones 4, 5 and 6 require some intervention during planting and in the years following planting, and very little maintenance once the plants are developed. Zone 4 is mainly composed of shrubs that form a visual screen between the road and the residential areas. Zone 5 is planted with small trees and shrubs. And Zone 6 is composed of forest trees combined with plant species found in Zones 4 and 5. An urban planning rule determines that the tallest buildings may not exceed the height of the tallest trees. This landscaping treatment makes it possible to circulate on the grid roads almost without seeing the city. What makes MK its name as a forest city.

In addition to spatial instructions, the *Ecological Studies, Grid Roads* (1974) state that certain roadside areas are to be used to sow seeds and plants from threatened areas elsewhere in the city, particularly during the construction phase of the project. Other areas are saved to carry out experiments making it possible to assess the impact of the use of certain soil types. Specific recommendations are also given for the maintenance of green spaces. For example, it is specified that no herbicides may be used except under exceptional circumstances. These clarifications provide indications as to the designers' vision, leaning toward respecting wildlife and preserving soils.

5. A quest for efficiency and sustainability

The process of designing and setting up vegetated areas along grid roads unfolds over four stages, each playing a particular role to ensure the quality of the final result. As stated by John G. Kelcey (1975), the first stage concerns engineering and landscaping, that is, the study and development of

conditions for the implementation of the future green infrastructure. This involves levelling the ground, making embankments or excavations and managing the slopes and type of soil, which are mainly dictated by the layout of grid roads and can be modified by engineering design. For example, on portions of grid roads located near residential areas, the excavated soil generated through road construction activities is used to create mounds that reduce vehicle noise. The second stage consists of depositing a layer of soil on the surface of the developments carried out during the first phase, then sowing a mixture of grass and herbaceous plant seeds. The third stage concerns the planting and short-term management of vegetation. This stage extends until the canopy is almost closed and therefore includes the required maintenance to control the development of vegetation during the first five to six years. Once the canopy is closed, the weeds give way to woody plants requiring less frequent interventions. It is specified that landscape project design and maintenance activities are complementary and may not be considered separately.

This organisation demonstrates that MKDC aimed to take into consideration the investment and maintenance required to operate the infrastructure, from the design phase and with a long-term perspective. This reflects a systemic vision and a search for efficiency defining the overall project as well as guiding the design of all of the city's infrastructure and facilities. While efficiency issues and even profitability issues in some areas remain central, MKDC never underestimated the aesthetic value of all solutions considered.

6. The aesthetics of diversity

John Kelcey (1975) explains the decision to incorporate non-local plant species. England is not a region that naturally hosts a wide variety of plant species, so the designers chose to import plants from other regions that are compatible with the local climate in order to provide variety in landscaping. The designer made sure that these new species did not compromise the natural habitats of animal species or even increase biodiversity - variety was mainly sought-after due to its aesthetic appeal. The Ecological Studies on Grid Roads, (Kelcey, MKDC, 1974) specifies in Appendix 1 that trees and shrubs must be planted randomly in order to achieve a natural appearance.

The aesthetic research linked to landscape design carried out throughout Milton Keynes is often associated with the notions of variety and diversity.

7. Milton Keynes, an example in the face of current challenges

- The quality of the living environment

Philippe Clergeau (2012) invites us to consider environmental issues in the city as requiring an “act of construction and reinforcement” of natural spaces, instead of a few measures aimed at avoiding their degradation. Today, landscape design is an intrinsic part of sustainable development and is no

longer practiced for merely sanitary or aesthetic purposes. Indeed, many ecosystem services can be made available through green spaces and are classified into three categories according to the Millennium Ecosystem Assessment, as follows: provisioning (production of food and water, biomass), regulating (of ecosystems, climate, disease) and cultural (aesthetics, recreation). These three categories of ecosystem services contribute to the well-being of dwellers across the cities and territories concerned, through four essential components: security (food, access to resources), access to basic needs (a balanced nutrition, employment, housing), health and social relations. These four components grant opportunity and freedom of choice (Millennium Ecosystem Assessment, 2005), precisely one of the conditions that Milton Keynes originally aimed to provide (Milton Keynes Development Corporation, 1970a and b).

The three categories defined by the Millennium Ecosystem Assessment concern ecosystem services potentially provided by green infrastructure. In practice, oftentimes they remain under-developed or untapped. The first category of services, provisioning, is rarely effective. Indeed, the food sovereignty of cities is an issue in the transition debate, and today many cities are unable feed local populations. On the other hand, objectives in terms of aesthetics and recreation are most often met, and the importance of green spaces in connection to climate regulation issues is also generally acknowledged. Open spaces such as parks or tree-lined ways are used for walking, contemplation or to find a cooler spot when the weather gets hot. However, further information is still needed to determine the impact of vegetation on urban heat islands and to specify the species and forms that are better performing.

- Questioning density through mobility

Richard Llewelyn-Davies (1966), who joined MKDC at the time of its creation in 1967, invites us to start a reflection on density and urban quality. He questions density in relation to traffic, considering the fact that many households own one or even two vehicles and pointing out a strategic threshold beyond which the travel time savings made possible by density no longer compensate for the increased maintenance costs of the latter. Between hyperdensity and urban sprawl, the English choose an intermediary situation, whom R. Llewelyn-Davies himself qualifies as being either the golden mean or a combination of the worst characteristics of each of the two extremes.

As for Milton Keynes, we can mention oversized road infrastructures in relation to the density currently supported by the city. Indeed, one hundred and sixty kilometres of expressways criss-cross the New Town on a grid of about one-kilometre intervals, for a population of 250,000 inhabitants. Grid road traffic is congested at peak times due to the intensive use of private vehicles by a majority of unaccompanied drivers[4]. A shift toward new mobilities, collective or even autonomous, which

seems to be a trend in Milton Keynes, could allow for an optimised use of the road infrastructures already in place.

8. Conclusion

Milton Keynes, being a New Town, functions as an “urban laboratory” and as an experimental site for housing, mobility and landscape related developments. The aim of this article is not to offer recommendations for the implementation of efficient green infrastructure solutions, but to understand the objectives and choices made in this context by taking into account local characteristics and available resources. The case of Milton Keynes allows us to question aspects of urbanity that are being re-evaluated today, and which are common to many cities, such as density, mobility or our relationship to the landscape and to the ecosystem services on which we depend.

Browsing through studies and reports dating back to the city's construction period, we can see an evolution of the terminology and notions used in the field of landscape ecology. What was referred to as an interest in wildlife turned into a quest for the preservation of biodiversity and the search for a diversified flora involving ecosystems. Numerous and increasingly published studies on environmental issues have contributed to a redefinition of terms, but the designers of Milton Keynes put forward, as early as in 1967, a global vision that included life protection and soil preservation in an environment inhabited by humans. The proposed project is phased in the short term and in the long term and takes into account the management and maintenance of spaces from their conception. Many spaces are self-regulating, which testifies to the project's quest for efficiency and cost control. MKDC, the entity responsible for the design, financing and maintenance of green spaces and the entire city, aimed at creating and maintaining a quality environment for human life. The choice was also made to preserve soil quality and biodiversity. Operational, political and spatial dimensions linked to the development of parks and roadside areas prefigured the current notion of green infrastructure.

Milton Keynes, a project that stemmed from the New Town movement, is in continuity with the English garden landscape tradition while at the same time integrating elements from the radical break represented by the Modern movement. As such, this example helps to deconstruct the myth of a polluted, polluting city versus a rural, natural countryside. Urban areas can be a refuge for animal species driven away from cultivated areas by pesticides and other soil sterilisation processes. The landscape project is designed to represent the aspirations of the designers over the long term, i.e. seventy-five and one hundred or fifty years after its creation and so Milton Keynes may be perceived as a young and evolving venture, a future example and a viable context for experiments aiming for a more optimal use of ecosystem services provided by an existing green infrastructure.

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[1] The Milton Keynes Development Corporation was created to oversee the planning and design of the New City and coordinate its construction. It is a planning and governance body. The creation of each New Town is accompanied by the formation of a Development Corporation. Milton Keynes' was dissolved in 1992.

[2] "Grey" infrastructure involves the construction of elements such as roads or evacuation networks, often limited to a single function.

[3] F.L. Olmsted is known as the "heir" to Andrew Jackson Downing (1815-1852) - himself considered the founding father of garden art in the United States - because of the convergence of their work and the fact that Olmsted, with Calvert Vaux (1824-1895), designed New York's Central Park, while Downing was suspected of doing so but died early in a boat accident. Downing was greatly influenced by Humphry Repton (1752-1818) who was responsible for the first road segregation.

[4] Observations made during fieldwork, May 2019.

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When constraints become assets in the design of blue-green infrastructures: an insight from two cases in the Western part of France (Loire River Basin)

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Abstract: Our presentation focuses on two recent projects of blue-green infrastructures located in the very heart of French middle-size cities in the Western part of France, in the Loire river basin (the Ile aux Planches in Le Mans and the Parc Balzac in Angers). They constitute good illustrations of recent and innovative approaches in the design of blue-green infrastructures. In the two cases, it is interesting to point out the major challenges that planners had to face. First, innovative solutions have been found to overcome technical difficulties (flood-prone areas, brownfield sites, heavy pollution and so on). Second, planners also had to address local conflicts during the definition and implementation of those projects. At last, we point out how those various constraints have been mainly turned into assets and synergies to design multifunctional blue-green infrastructures.

Keywords: multifunctionality; blue-green infrastructures; Loire river basin (France); middle-size cities

Introduction

Since a few years, green infrastructures have become a cornerstone in the urban projects of most major cities. Locally, they improve the quality of life and may contribute to the image of metropolis worldwide. Some cities such as Berlin, London or Toronto are at the forefront and provide great case studies (Kazmierczak, Carter, 2010) but we believe it is also interesting to explore smaller scale projects in medium-size cities, which are less invested but might be more easily replicated in most urban areas. In this context, our presentation focuses on two recent projects of green infrastructures in French middle-size cities, located in the Loire river basin (Western part of France). As stated by the European Commission (2013), those two cases are examples of “*strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services*”. More specifically, they can be defined as blue-green infrastructures as they consist of a network of wetlands and associated open spaces along rivers (Ghofrani *et al.*, 2017). The “Ile aux Planches” in Le Mans and the “Parc de Balzac” in Angers are blue-green infrastructures which have been planned and designed around the years 2000. Those two cases are interesting to study together as they share

similarities and constitute good illustrations of recent and innovative approaches in the design of multifunctional blue-green infrastructures. The two of them are former urbanized or industrial areas, close to city centers. Planners had to face similar challenges: high-flood risk, heavy pollution but also the involvement of local inhabitants. In this presentation, we describe how planners turned those challenges and constraints into assets and found solutions to build synergies in their projects. In the two cases, water retention is the first objective, but multifunctionality is at the roots of those projects. Indeed, as often defined (Ahern, 2011; Hansen and Pauleit, 2014), the objectives of planners were to combine different functions (ecological, social but also economic) in limited space, also leading to various services for local inhabitants (before all flood protection).

All along this presentation, we mainly focus on the case of the “Ile aux Planches” (Le Mans, Sarthe) which we have studied extensively during the last 4 years (Gatien-Tournat *et al.*, 2016, Fournier *et al.*, 2017a, Thaler *et al.*, 2019) and we compare it with the “Parc Balzac” case (Angers, Maine-et-Loire).

Background

This presentation is mainly based on the results of the empirical phase of the TRANS-ADAPT project. TRANS-ADAPT is a JPI Climate Project (2014-2017) which examined bottom-up and community initiatives within flood risk management policies in four European countries: Austria, France, Ireland and the Netherlands. In France, it has received funding from the French National Research Agency (ANR). Three cases were carried out in the Loire River basin, in Le Mans, Angers and Blois. The case of the “Ile aux Planches”, in Le Mans, was one of them.

The “Ile aux Planches” is an urban park located on the Sarthe River. It is a 3-hectare island. Formerly it was a frequently flooded wide pasture which became an island in 1831 when a 680 meters canal was dug to make the Sarthe River navigable to boats. Several industries settled on the canal banks, including a gas plant in 1842. Owner of the site, the French Electricity Company (EDF) operated an electricity plant on the island until 1945. Then, it was used as a repair center and to store material and vehicles. The company progressively started to relocate its activities to another district in the late 1980s and until 1993. They decided to get rid of the site and make it profitable. In agreement with the city council, a housing project was launched. However, residents were vigorously opposed to this project. Instead, there were claims to turn the island into a public park. After several years of conflict, all parties reached an agreement and the park opened in 2008. Today, the “Ile aux Planches” is a multifunctional blue-green infrastructure, combining a recreational area, a flood risk mitigation area and a residential estate. Both flood issue and bottom-up pressure from local populations for more green urban spaces led to the planning and design of this multifunctional infrastructure.

Methods used

The empirical phase of the TRANS-ADAPT project was based on extensive desk-based analysis of academic and grey literature. It was accompanied by several semi-structured interviews with key actors involved in the implementation of those projects (more than 10 interviews for the “Ile aux Planches” case). These interviewees were mainly stakeholders of flood risk management initiatives at local level. They were representatives of different types of organization related to public authorities

(at regional or local level), market or civil society (Non-Governmental-Organizations (NGOs), land users and so on). Participants were questioned on the design and implementation of the project, their personal contribution and the integration of bottom-up initiatives at both definition and implementation phases.

Results

The two cases in Le Mans (“Ile aux Planches”) and Angers (“Parc Balzac”) share several similarities. Both sites are really close to the city center, along the main local river (Sarthe in Le Mans, Maine in Angers). The “Ile aux Planches” is a 3-hectare blue-green infrastructure, while the “Parc Balzac” is about 50 hectares. In the mid-1990s, they were still brownfield sites, heavily polluted. In Angers, 50% of the area was covered with alluvial meadows and 50% was a former controlled landfill. As described above, industries on the “Ile aux Planches” were derelict and most grounds were polluted. However, both sites were identified by local municipalities as potential areas for new urban projects. Their location is interesting. The “Ile aux Planches” is close to the train station and the city center of Le Mans. The “Parc Balzac” is located next to very recent urban estates. However, the 1995 flood strongly hit the two cities and solutions needed to be found to better deal with the risk. Local authorities decided to define and design mitigation projects on those sites. Since 2007, mitigation is identified by the Floods Directive as a key strategy within Flood Risk Management policies. As defined by Hegger *et al.* (2016), “*Flood risk mitigation focuses on decreasing the consequences of floods through measures inside the vulnerable area. Consequences can be mitigated by a smart design of the flood-prone area. Measures include spatial order, water retention within the protected area, or (regulations for) flood-proof building*”. In a nutshell, most flood risk mitigation projects include measures to retain water in the flood-prone area. If mitigation projects are quite common in several North-western European countries since the 1990s, it remains quite an innovative strategy in France (Fournier *et al.*, 2016). However, more and more French local authorities start to launch such mitigation projects (Fournier *et al.*, 2017b). Indeed, if central government authorities do prohibit building in the most exposed zones or limit this in moderate-hazard flood-prone areas that can remain constructible, developers, in these places, must consider various “necessities” and make sure they do not increase flood exposure either locally or at the level of the overall urban system. In this context, blue-green infrastructures constitute great potentials towards a “resilient urban planning” (Liao, 2012, Barroca and Serre, 2012, Barroca and Hubert, 2008) thanks to those “flood expansion areas”.

In our cases, the need to deal with those constraints had a great impact on the design of the two blue-green infrastructures.

First, both parks follow a gradient of several levels. The “Ile aux Planches” is a hydraulic system. A discharge channel is at low level on the island. It is about 50 meters wide and is covered by lawns which cannot be planted, so that water can run easily from the canal to the river. However, other uses have been defined and organized. A playground has been settled much higher. It is not accessible in case of flooding and several gates prevent children from running towards water. Tiered seats have also been installed on the side of the discharge channel, so that concerts, plays or any other public events can take place on open space. Seats are straight and not designed in curves, to facilitate the water flow. Extra costs were invested as the whole structure had to be reinforced with poles to sustain

walls at one end of the park. The southern part of the island is occupied by a residential building and a small patch of land remains non-accessible because of ground pollution. If the “Ile aux Planches” has become a key hydraulic infrastructure to mitigate the flood risk in the city center of Le Mans, the project was designed as a multifunctional blue-green project to meet other services (leisure and housing mainly). The objective of creating an urban park and the reduction of flood risk has been achieved. Multifunctional use is at operation but in case of flooding, the flood risk management function takes it all and no other use of the park is allowed.

Below, the illustration indicates the general organization of the site, when flooded (right side) or not (left side).

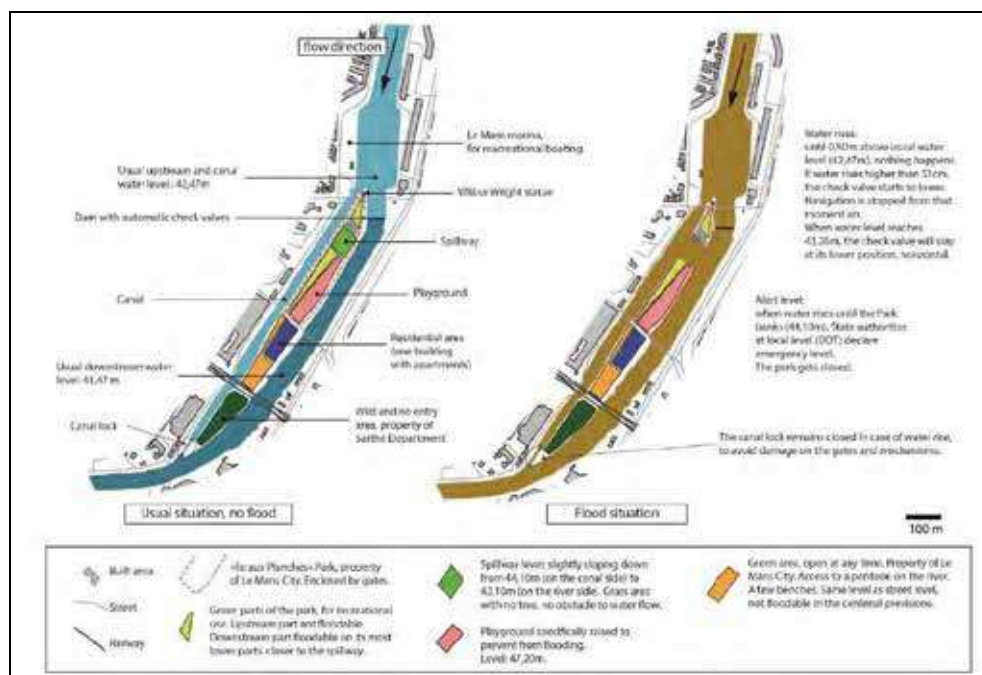


Illustration 1. The “Ile aux Planches” in Le Mans: no flood/flood situation (Gatien-Tournat, 2015)

The design of the “Parc Balzac” infrastructure in Angers is based on the same principle and makes the best out of local constraints. The whole project valorizes height differences to meet several objectives (environmental, social, safety). At low level, a network of ditches and channels has been dug and organized to restore a wide marsh/wetland (instead of the landfill). This wetland is flooded regularly in winter and spring. More than 1000 trees were planted on about 12 hectares (poplar trees, willows, alders and so on). The water level can be controlled with hydraulic works in this low wetland. This is particularly important in spring time as this network of ditches has also been restored to provide spawning grounds for fish. Higher in altitude, wet meadows were kept and cattle graze there. Planners chose rustic races (Highland cattle, donkeys (baudets du Poitou, ânes du Cotentin)) for extensive grazing, adapted to wetlands and able to stay outside for several days with little care. Thanks to cattle grazing, the whole area is kept as prairies, which is also interesting for biodiversity. Indeed, some protected bird species nest in those meadows (such as corncrakes protected by the Birds European Directive). More than 60 bird species have been identified in the park. Meadows are flooded when the river Maine is high (about once or twice a year) but most of the time, they remain out of water. In

some meadows, a landscape of “green dunes” has been created and vegetation varies depending on the altitude. When flooded, we can see waves from above. Information for the public is provided on several spots about various environmental issues (biodiversity, floods, landscape) and it is possible to walk all through the area (even in case of flooding). Higher in altitude, orchards with fruit trees but also bushes were planted so that a variety of birds may nest. About 120 family gardens were also organized and managed by a local association. This area is only flooded in case of major flood events.

Those two cases illustrate well planners’ current strategies in French cities to create synergies between various uses and services in blue-green infrastructures (Scarwell *et al.*, 2014). The need to give room back to rivers, even at the very heart of cities, has led to flood mitigation innovative projects. Safety is the key issue but planners design projects within which water flows and water retention areas are used to address other objectives (biodiversity protection, landscape, leisure and so on). Some synergies between the different functions of those infrastructures may appear. In the case of the “Ile aux Planches”, complementarities between functions are still limited. Most of the time, there is no water on the “Ile aux Planches”; when not flooded, there is no evidence of the hydraulic role of the site. The “Parc Balzac” project is much more integrated. Wetlands, prairies and water courses are at the core of the infrastructure. Water is always present in the landscape and the various uses and services of the area are regularly explained on site. As such, the project really can be described as a multifunctional blue-green infrastructure. However, to conclude on that aspect, it is important to remind that the “Ile aux Planches” project has also led to positive loops. Locally, aldermen acknowledged river banks in Le Mans were under-exploited and some projects have been launched to improve this situation.

Second, if those projects may seem quite innovative, it is important to point out that multifunctionality must not be taken for granted. It may be at the roots of projects, but it can also be the result of local negotiations during the definition and implementation phases.

In our two cases (“Ile aux Planches” and “Parc Balzac”), it is important to point out that there has been a strong involvement of residents and associations. In Angers, local inhabitants’ involvement was granted from the start. A first public inquiry was launched in 1992 to identify some potential uses for this derelict land. The municipality of Angers launched the definition and design phases of the “Parc Balzac” with local NGOs. The Ligue for the Protection of Birds (LPO) took an active part in the design of the orchards as well as in the definition of maintenance practices for the prairies. A local fishing association was involved in the design of the ditches’ network. Local gardeners’ associations (*Fédération des Jardins Familiaux Angevins* and *Association des jardiniers de Belle-Beille*) contributed to the organization of the family gardens. Today, those associations are still strongly involved in the management of the park. The LPO monitors bird populations and the fishing association participates in the maintenance and monitoring of the network of ditches as they are potential spawning grounds for fish (pikes). In spring time, the water level is controlled in this water network for fish reproduction. A gardeners’ association (*L’Amicale des Jardiniers de la Doutre*) is also responsible for the management of the family gardens. At last, biologists from the University of Angers are involved to monitor oak trees. Therefore, a variety of actors has been involved from the start in the decision-making process and the design of “Parc Balzac”. Today it proves to be quite successful thanks to this collaborative local governance. As already stated and discussed in literature,

this case is a good example of an inclusive governance leading to environmental and social benefits (Buijs *et al.*, 2016).

In the “Ile aux Planches” case, public participation started from a conflictual situation. By nature, planning projects often prove to be conflictual (Subra, 2014) as they transform local land uses and activities. Several authors also point out the various outcomes of those conflicts on planning projects (Melé *et al.*, 2004; Melé, 2013). In the case of the “Ile aux Planches”, it is interesting to see that the conflict between the municipality and local inhabitants contributed to the transformation of the initial residential project promoted by local authorities into the “Ile aux Planches” blue-green infrastructure as we know it today. In this case, we can speak of active citizenship, as defined by Moro (2012, quoted by Buijs *et al.*, 2016), that is to say, “*citizens’ ability to organize themselves in a multiform manner, to mobilize resources and to act in the public (...) in order to protect rights and take care of common goods*”. The conflict started during the 1990s, when the municipality of Le Mans decided to launch a housing project on this island which had been recently bought from EDF. Two public inquiries were carried out in 1996 and 1997. The commissioner came to the conclusions that the housing project was not beneficial to the ‘general interest’ and showed how vigorously residents were opposed to such a project on the island. Claims were written down to turn the island into a public park. A petition was initiated by a resident who had lived in the district his whole life, Mr. Marcel Bréjou. He went door to door for several weeks in 1998 and collected 800 residents’ signatures. After 2 years of failed negotiations with the municipality and EDF, the “Ile aux Planches” association was created to defend the project of an urban park. Active members were present every Saturday on the district market to inform residents and to collect ideas. Several press articles were published between 2000 and 2003. The members of the association were district residents, made of diverse socio-professional profiles. Aldermen and Department representatives also supported them. In the end, in 2003, the City Council approved the creation of a park. The safety issue and the need to build a protection system was a priority but local authorities and members of the association reached an agreement so that the area would be designed as a green park. After the project was completed, the island association began to lose members. However, some active members wanted it to continue and started to diversify its activities (towards leisure, entertainment and cultural activities). Today, the association is still active and carries out various educational and social projects. Every year, the association participates in several social events which take place on the “Ile aux Planches” and its members organize educational activities.

Discussion

If many French middle-size cities still lack public urban green spaces in the very heart of city centers, it is interesting to see how the flood risk issue and growing uncertainties about our capacities to deal with major floods lead to the definition of innovative projects in flood-prone areas. Today, the “Ile aux Planches” and “Parc Balzac” are key blue-green infrastructures in middle-size cities with few parks in their inner urban area.

The design of those blue-green infrastructures has been very much influenced by the various constraints that planners had to face, but those latter have succeeded to overcome them and even turn them into assets in their final projects. This is mainly the case in “Parc Balzac”, in Angers. Flood retention is the first objective, but the presence of water is also crucial for other functions (especially

biodiversity). In this case, the flood risk has been really changed from a constraint to an opportunity. If such a planning strategy is already quite frequent in other European countries like Germany or the Netherlands (Kerr, 2017), this remains very new in France. In Le Mans, in the case of “Île aux Planches”, all other uses still stop when a flood occurs.

Eventually, those two projects have been successful thanks to the great involvement of local inhabitants, various associations and the setting up of arrangements between all users. Such involvement is mainly explained by the variety of functions and services which have been identified in those projects. On that aspect, it is possible to compare with other similar projects in neighboring middle-size cities (for instance Blois (Morisseau, 2012, Bonnefond *et al.*, 2017)) where safety issue has clearly prevented support and involvement from residents.

It is also interesting to point out that both parks are now part of the networks of green infrastructures at the city scale. Even more, they constitute a connection between the river in the heart of the city and larger green areas at the outskirts of the urban area. As such, it is a major challenge for local authorities to integrate those blue-green infrastructures in a larger strategy.

To conclude, it would be interesting to analyse more how neighbourhood experts' techniques and know-how could be harnessed to great benefit in the very process of urban design, to better assess the risks, reduce vulnerability and enhance resilience in those projects. To successfully reduce vulnerability and enhance resilience at the scale of the city, urban, hydraulic, landscape and ecological issues must be articulated in a coherent manner. For this purpose, these projects must go beyond the current range of regulatory technical solutions and articulate urban project with blue-green infrastructures. On that aspect, there are different other examples or attempts in the Loire basin, as Matra Fluvial City project in Romorantin-Lanthenay (Rode *et al.*, 2018, Bonnefond, 2018). In this case, flood mitigation and blue-green infrastructure are central in this project which combines hydraulic modelling, urban, landscape and architectural conceptions.

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Special session - Planning and designing green infrastructures.

Farming in a city without farmlands.

Cadastral mapping of agriculture in Turin and early
assessment of multifunctionality viability.

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Abstract:

In Turin, agriculture still does not officially exist in the zoning of the masterplan. Recently, the City opened to the opportunity to include agricultural areas in the plan, a subject still under discussion. Peri-urban agriculture is a controversial topic. Not only it is impactful on the landscape and on the ecosystem, but it also is scarcely profitable due to price volatility. However, peri-urban farming is often not negligible in dimensions. In the City of Turin, the productive farming soil amounts to at least 650 ha and it is even more extensive (10,000 ha) by looking at the cities of the first belt. The study shows that the agricultural sector of the City is currently struggling, and the very role of agriculture, in peri-urban areas, may be under discussion. Can agriculture, in Turin, become environmentally sustainable, integrate multifunctionality, recover its social value and dialogue again with the historical cultural heritage of the green belt? Before answering these questions, it was necessary to have a starting point. This paper will present the state of affairs of agricultural cadastral parcels and farmers in Turin.

Keywords: peri-urban agriculture; multifunctionality; mapping; productive green infrastructure

Introduction

This study was born within the proGIreg Project -Productive green infrastructure for post-industrial urban regeneration-, an EU Horizon project about Nature-Based Solutions (NBS) for Green Infrastructures. The local partners of the project are the City of Turin, the Metropolitan City of Turin, the Regione Piemonte, the DIST (*Dipartimento Interateneo di Scienze, progetto e politiche per il Territorio*), the DAD (*Dipartimento di Architettura e Design*) department, several cultural and trade associations; the international partners participating are Dortmund, Zagreb, Ningbo (China) as leading cities; Cluj, Zenick, Piraeus as follower cities; Aachen University, ICLEI as organizers and CNR (*Centro Nazionale di Ricerche*) as a partner for research and monitoring in Italy. The first phase of the work from the DIST, comprised within the proGIreg work package n.2.1 -spatial analysis in front-runner and follower cities- (Elisei, Leopa, 2018) focused on agriculture and farming in the City of Turin. The ratio behind this choice must be searched in the inherent nature of agriculture, which creates, on all effects, a diffuse productive green infrastructure on the territory. It is also necessary to assess how peri-urban agriculture can also fulfill the adjective *green* in *Green Infrastructures*, which is related to sustainability and support towards the ecosystems; a feature that conventional agriculture somehow lacks without applying proper farming methodologies (Power, 2010).

The study consisted in a direct survey of agricultural businesses. The broad objective of the work was to evaluate the opportunity to integrate multifunctionality in agriculture. Multifunctionality, in fact, can facilitate the conversion toward a more sustainable agriculture, and contribute to the requalification of the peri-urban territories. The *Comune di Torino* recently started an overall revision process of the main planning tool (Comune di Torino, 2017, 2018), also with the opportunity to add agricultural zoning, which was historically missing. The origin of the absence goes back to the original Masterplan of the City -PRG-, which purposely omitted this use of the land, distributing formerly agricultural areas in zones of further expansion of the City or, more recently, integrating them under the definition of *parks* and *green areas* (Area Urbanistica, 2018). Agriculture, with the urban expansion and the increase of the industrial production, was expected to become a marginal sector for the economy of the City. The recent opening of the administration toward this subject must be traced back to 2015 when the first 301 variants was originally proposed (Comune di Torino, 2015). Agriculture was further investigated in 2018, when the City undertook a path of deep revision of the main planning tool to integrate sustainability processes.

To understand the phenomena on a territorial standpoint, the priority was to build a database to distinguish between areas that are just maintained by farmers and surfaces where the agricultural production happens. This has been the main scope of the study since there was almost no direct nor complete source of data to obtain this information. It was also an important moment to study the current state of peri-urban agriculture in Turin from the point of view of the farmers and their farms, which represents a source of strategical information to develop future strategies and new policies. Before being able to successfully integrate multifunctionality and new concepts for green agriculture and ecosystem services, it is important to assess the readiness of the farmers.

The methods used

The work was carried out with qualitative and quantitative approaches, in four phases. A quantitative approach was used to collect and process the necessary data to analyze the farm enterprises activity on the territory of the City and to compose a GIS map. A qualitative approach, consisting of semi-structured interviews, was used to gather information about the condition of the farms from the farm holders (Russo, Tomaselli, Pappalardo, 2014).

The first phase entailed a review of the former works done on this subject on previous years in the City of Turin by the DIST. The data collected was in form of questionnaires, but it also provided a former mapping of the locations of the farm fields. The second phase involved interviews of the owners and collection of information on the farm about the quantities of production and the presence of threats to the farming activity. The third phase consisted in the scouting of the regional database and the use of cadastral maps to represent agriculture in Turin, with the support of local farming-trade unions and farmers, to identify more in detail which soils are kept by the farmers on the City and build a preliminary GIS dataset. The last phase was to identify, between the formerly collected data, which cadastral parcels are currently and actively used for agriculture, which are simply maintained by farmers but are not directly involved in production because are abandoned, have undergone urbanization processes or are occupied by parks or forests.

Quantitative analysis:

Agriculture is not directly planned in the uses currently regulated by the PRG *-Piano Regolatore Generale-*, and therefore little information is available about it in the City. In order to capture the spatial extension of agriculture in Turin, it was necessary to operate indirectly, using ownership, funding and cadastral data. To study the characteristics of the farms that are active on the territory the *Regione Piemonte* provided access to their *Unified Agricultural Registry* and data warehouse *Sistemapiemonte*.

The service is publicly available for use on the official site of the Region and can be queried about multiple issues regarding the agricultural sector (presence of livestock breeding, prevailing crops, Utilized Agricultural Area), with the capability to restrict the investigation down to the municipal level. For this work, however, the interest was on the cadastral data used by this system and, since it held sensitive information on the companies, the owners and on production, it was subject to a request for special access. In order to be as comprehensive as possible, the data extraction was extended to all the cadastral parcels owned by each company that declared at least one parcel on the territory of Turin. This was done to investigate the business dimension not only within the survey area, but also its extension into other municipalities.

The results, elaborated with the GIS, allowed to spatialize the data to better understand the agricultural phenomenon. The Regional dataset, although exhaustive in the quantity of information contained, is built on a yearly basis with the interactions that farm owners have had with the administration while applying for tax deductions and funding requests related to the Common Agricultural Policy. This means that the parcels declared by the farmers do not coincide with agricultural productive areas, but with all those areas in which farmers intervened, for productive purposes or maintenance. Fluctuations on the collected data can, therefore, alter the precision of the information. To contain these variations as much as possible and to make the sample as exhaustive as possible, the cadastral data were extracted for all the available years (from 2007 to 2018).

The data extracted from the Regional database served two purposes.

- A general analysis of the Farms: number of active companies in the Municipality of Turin, quantification of farms by class of UAA *-Utilized Agricultural Area-* the legal form of the company, the historical data of the farmlands, the ownership of land, the demographics of the owners, the variation of the UAA over the years; for which the extractions were used without reworking, to maintain the consistency of the content, and allow future comparisons and monitoring with the original database.
- The mapping of farmlands based on the cadastral survey and the GIS cartographic display of the cultivated surfaces in Turin. For the location of the surfaces of the agricultural land, UAA data of the farms distinct between Turin and the municipalities of the Metropolitan City, detail of the non-agricultural uses, surfaces of the companies inside and outside Turin, UAA within and outside Turin; an extrapolation from the *Sistemapiemonte* database, provided by the Region was

used. The contents of the database extraction were subject to a partial rework, due to the inconsistency in the records of the land uses inside the cadastral parcels (empty, partially filled, doubled database fields, overlapping uses and surfaces, differences in the registration methods depending on the municipality of origin).

Qualitative analysis:

The semi-structured interview is based on a questionnaire designed by *DIST, Coldiretti Torino* and *ODAF (Ordine dei Dottori Agronomi e Forestali)*. It is structured to acquire, from the farmer, qualitative and basic quantitative data together with observations on the state of health of the company, on the perceived quality of the environment in which the parcels of the farmer are located and on the possible external sources of threats (pollutants, illegal dumps, industries).

The information collected through the interview concerned the following topics:

- Company size and localization
- Type of Production
- Direct product transformation
- Cultivation methods
- Employees and economic yield
- Active Multifunctional activities
- Future/project multifunctional activities.
- physical limitations and threats to the land
- Necessity for new areas
- Livestock food supply dynamics
- Irrigation systems adopted
- Possible future company projects
- Need for new volumes or transformation of existing volumes
- Opportunities from proximity to the city
- Disadvantages of proximity to the city

The observations provided by the farmers were also useful to assess multi-functionality viability in the croplands of the City.

For the administration of the semi-structured interviews, the work was carried out together a current student in urban planning and with the help of *Coldiretti Torino*, which takes care of the company files of a large portion of the farms present in the City. The trade union association acted as intermediary with the farmers, selecting the companies that, for the purposes of this research, represented a relevant sample. These were a mix of small (family-led, less than 30ha), medium (again family led but with a greater amount of land between 30 and 100 ha, also outside Turin) and large (farming and livestock breeding companies over 100ha) farm enterprises, established in Turin or neighboring municipalities which farm land in the City under property, loan or rent. The questionnaires, for reasons of accessibility and timing, represent a sample, albeit significant, of companies with these characteristics.

Results

The city of Turin represents an attraction pole for farms operating in the Metropolitan context, that also reach the regional scale. This is due to the presence of the numerous wholesale and outdoor markets that attract farmers. From the data extraction on *Sistemapiemonte*, as of 2018, there are 360 registered farms gravitating on Turin, of which 41 also carry out livestock activities, for a total of 10495 animals.

Farms and farmers

Farms operating in the Municipality of Turin

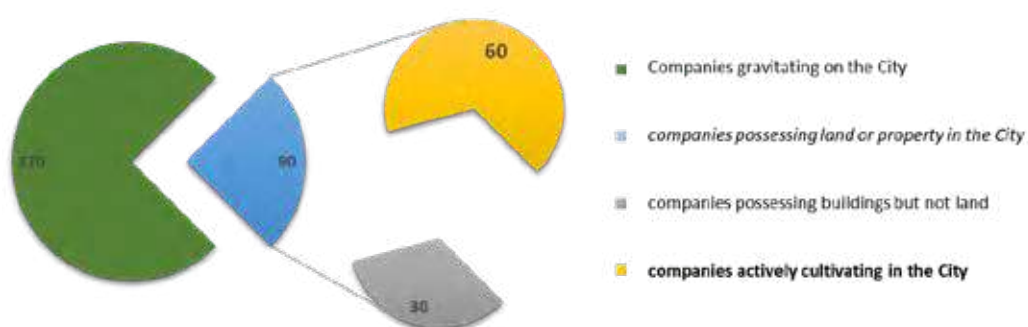
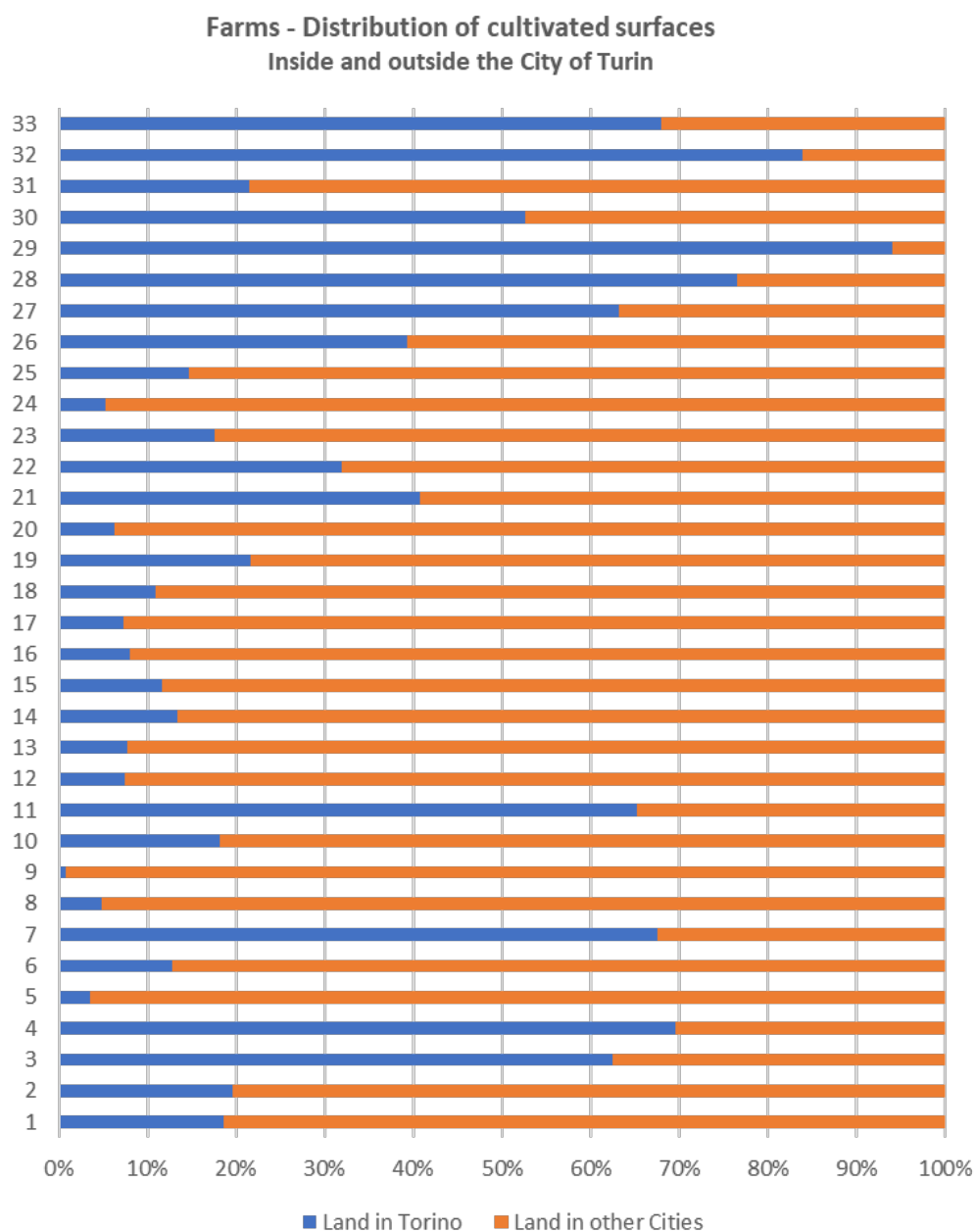


Figure 1 – farms operating in Turin

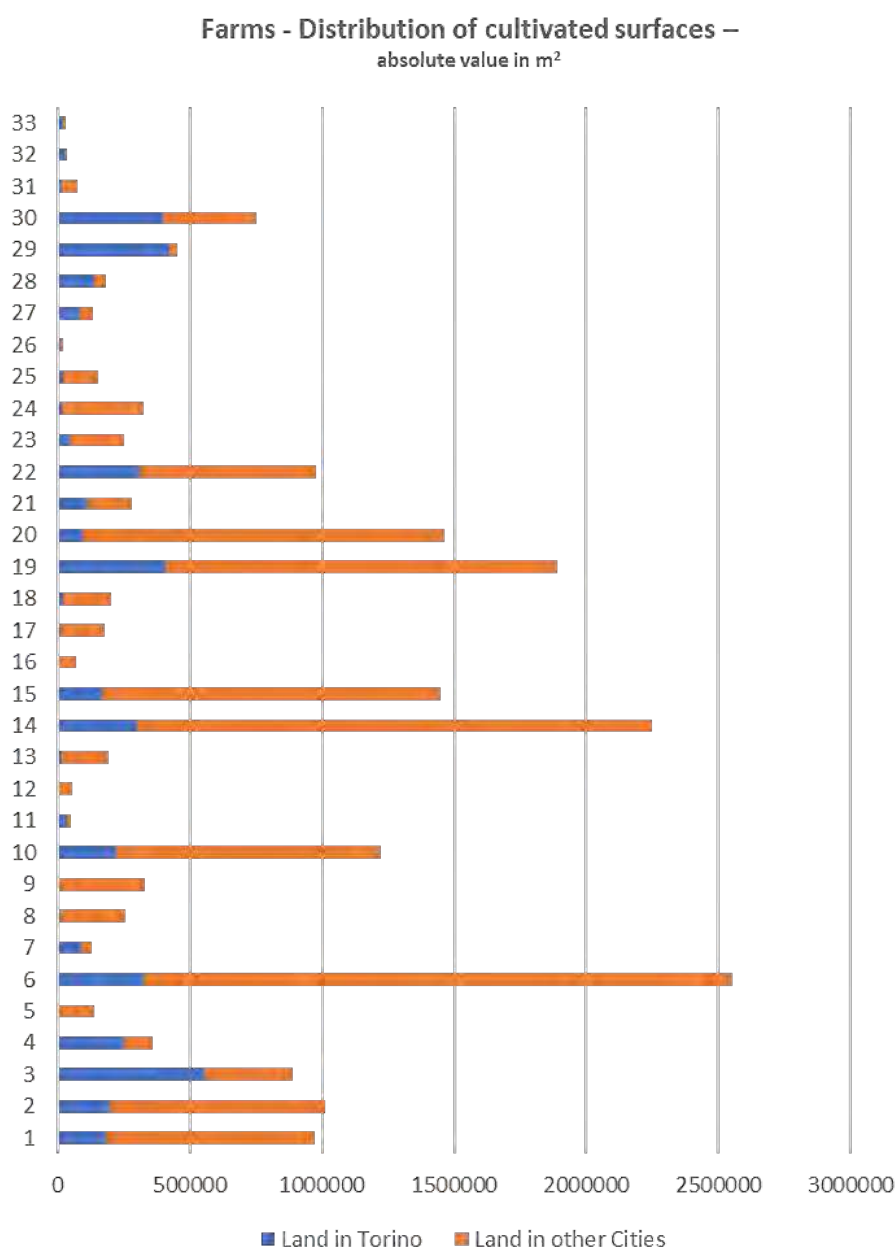
Out of these 360, 270 farms carry out commercial activities in the City of Turin, 30 possess a building property, but only 60 of these declared a piece of land -used for production or just maintained- inside the boundaries of the City. Of the 41 livestock farms, 29 have their livestock in Turin, for a grand total of 1700 animals. It is important to refrain that if a farm declares the upkeep of a field, not necessarily it means that the field is owned by the company, or that it serves a productive agricultural function.

To better understand the phenomena of farming in Turin, the parcels declared by the farmers were differentiated between those inside the City of Turin and those inside other towns of the Region. The last ones were not spatialized since the farmers, usually, own land in several different municipalities, resulting counter deductive to show this level of detail in the data.



Graph 1 – proportion of land inside and outside Turin per farm.

In order to provide a more relevant representation it was decided to extrapolate a sample from the population of the 60 farms owning a piece of land in Turin. Only the companies whose surfaces, overall, fell inside the standard deviation, and were subject to the interview, were included. In graphs n.1 and n.2, each number represents a farm, and the bar split represents the ratio of land inside the City, and that in other towns of the Region.

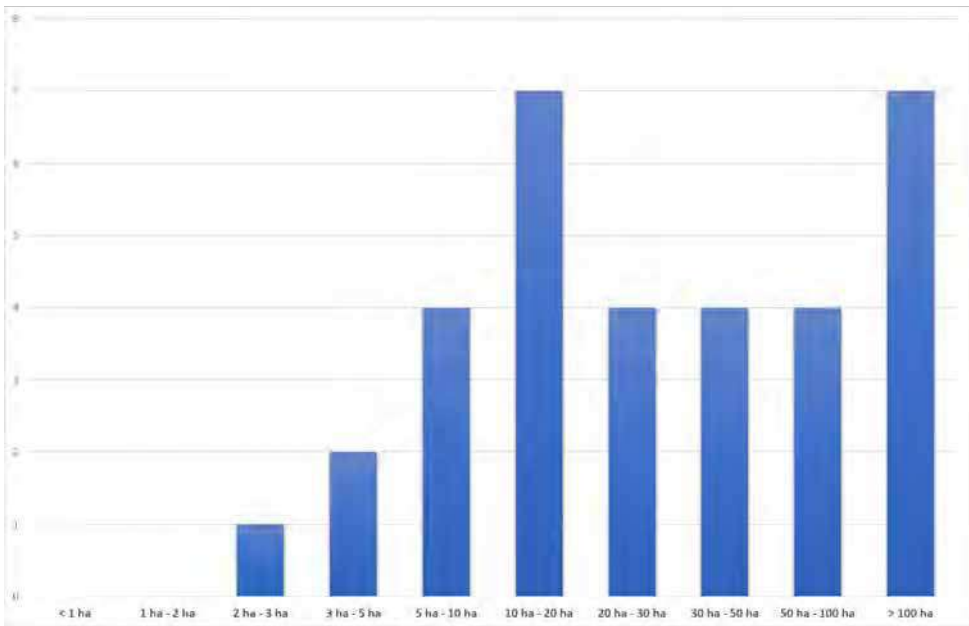


Graph 2 – effective weight of each farm of the sample and distribution between inside and outside the city

The larger a company in terms of surfaces, the more likely these will be outside the City. A consideration taken for granted, given the limited agricultural land in Turin. However, we must also specify that the biggest companies, despite having potentially less interest in maintaining or protecting their possessions in the City, are interested in maintaining their relevance on the territory, given the large slice of demand coming from Turin. It is unlikely they will give up their presence in the area even in the event of difficulties or crises. Indeed, potentially, these are the farms that could acquire the land left vacant by farmers who will physiologically retire due to seniority. On the contrary, companies with land predominantly on the Municipality are smaller and often founded only on family management. These are the ones that run the greatest risk of losing relevance or disappear, given their relatively simple structure

and lack of economic differentiation. But they are also those that have deeper ties with the territory and can contribute more actively to preserve and maintain it.

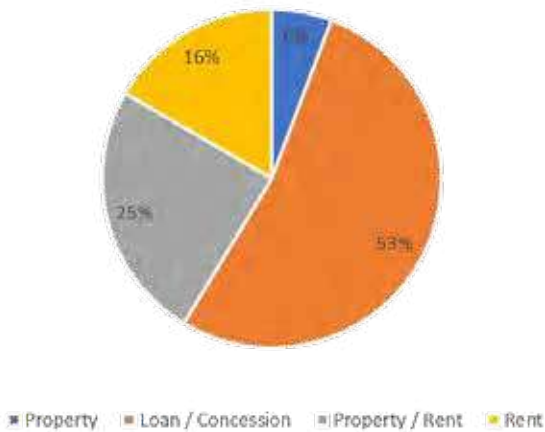
Farms by class of UAA size in hectares



Graph 3 – classification of farms based on the dimension of their UAA

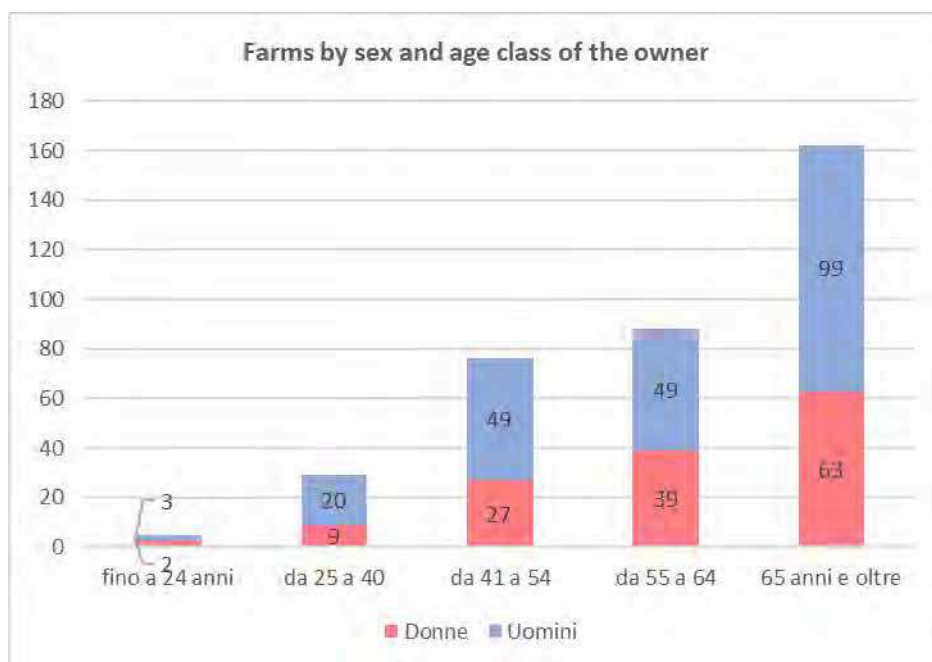
Even though farmlands in Turin are limited in extension, the average dimension of a farm is around 60 hectares. This data, connected with results in graphs n.1 and n.2 (that show an average split of 30% of land inside the City, 70% outside), tell us that, an average farm in Turin will hold 18 ha inside the City, and the remaining 42 ha in other Towns; which indirectly confirm the marginality of the sector in the Turin, where most of the enterprises need extensive farmlands outside the boundary to maintain their economic sustainability.

Tenure status of the land



Graph 4 – Tenure of property of the land declared by the farmers

Overall, 69% of the land is leased or loaned. Only 6% of the total land declared is owned in property, while 25% of the surfaces of the farms are mixed, with used surfaces that can be partially owned and partially under loan from third parties.



Graph 5 – farms by sex and age of the owners

On the 360 companies registered in Turin, the aging of the owners is noticeable. Half of the companies are managed by over 65 holders, 25% of the owners are between 55 and 64 years old, while the other quarter is divided among the residual age groups, where young owners (up to 40 years old) represent just a 9%. The data itself is not enough to draw up a risk profile of interruption of activity due to the lack of new generations interested in carrying out agricultural activity. It shows, nonetheless, a significant threat, which does not only affect continuity, but also competitiveness and profitability. Furthermore, it is not possible to know how many of the owners represented have a successor who can, or wants, to carry on the activity, or if there are any associated forms that guarantee continuity.

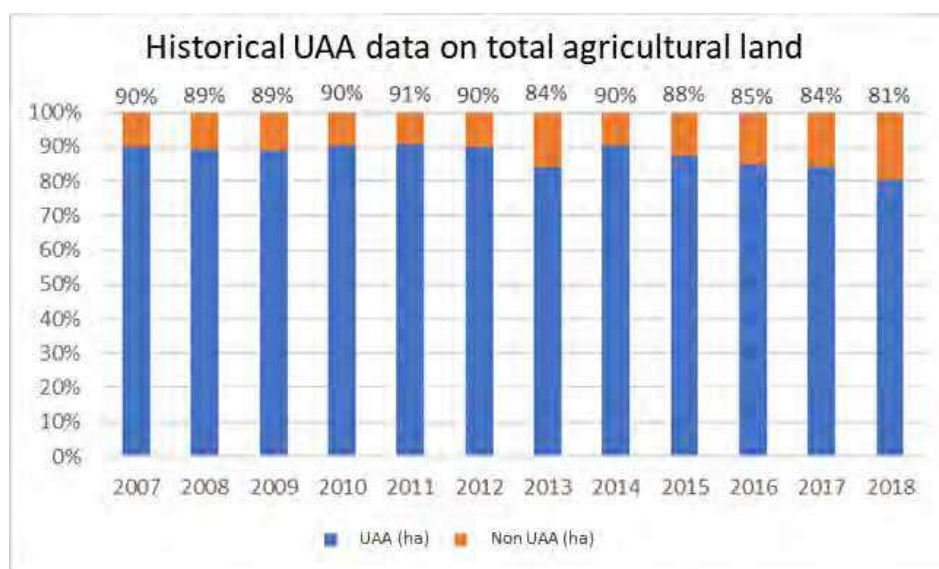
Farmlands in Turin

As stated before, the sources from which to obtain data about agricultural surfaces in the City of Turin are few, and their precision is not entirely reliable. However, the information registered on the data warehouse of agriculture by the *Regione Piemonte* represents a starting point. These surfaces are not strictly dedicated to farming, but are those declared by farmers, on which they also performed other agriculture related activities that are not necessarily connected to production (mowing and general maintenance for example, also in the parks and the forest areas of the City).

Year	Farmswith farmalands	UAA (ha)	Total surface (ha)
2007	90	602.04	670.29
2008	88	620.31	696.48
2009	84	640.66	720.34
2010	80	610.22	677.02
2011	78	637.70	702.98
2012	80	574.30	638.15
2013	95	539.44	642.86
2014	82	583.64	647.21
2015	92	514.33	587.51
2016	96	516.79	608.69
2017	91	536.95	638.69
2018	99	537.98	667.90
Average	88	576.20	658.18

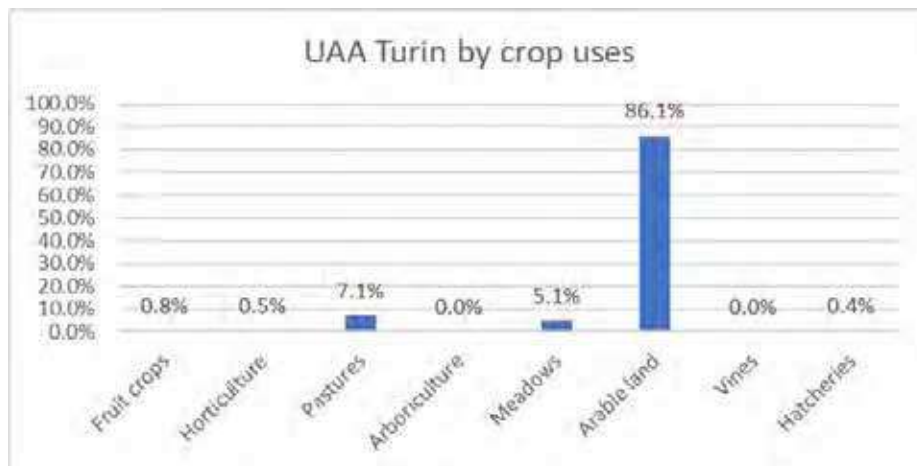
Table 1 – Variations in the declared surfaces in the period 2007-2018

The data in table n.1 helps to determine the dimension of agriculture in Turin. It shows variations, which can also be steep, in the declared surfaces on a yearly basis. In the 12-year data series, on average, the active farms in the city are 90, and the declared land amounts to around 660 ha.



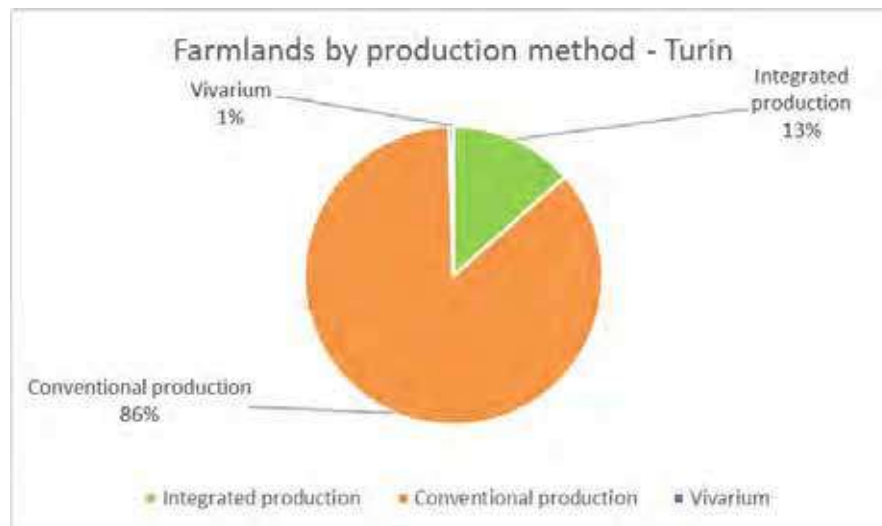
Graph 6 – Variations of the ration of UAA in the period 2007 - 2018

When the surface of each year is normalized to 100%, the quota of UAA fluctuates, with a tendency of reduction in the most recent record, where the non UAA surface comes near 20%, up from the typical value of 10% registered in previous years. The composition of non-UAA surfaces confirmed that more surfaces are being classified as non-agricultural in the data warehouse. Which may suggest that an increasing amount of surface has lost the original purpose. Although a more detailed survey to confirm this trend is needed.



Graph 7 – Crop categories in Turin, 2018

Graph n.7 highlights the prevalence of arable crops over the others, which is coherent with the prevalent vocation of companies covered by the interview. The graph highlights the monofunctional character of Turin's agriculture.

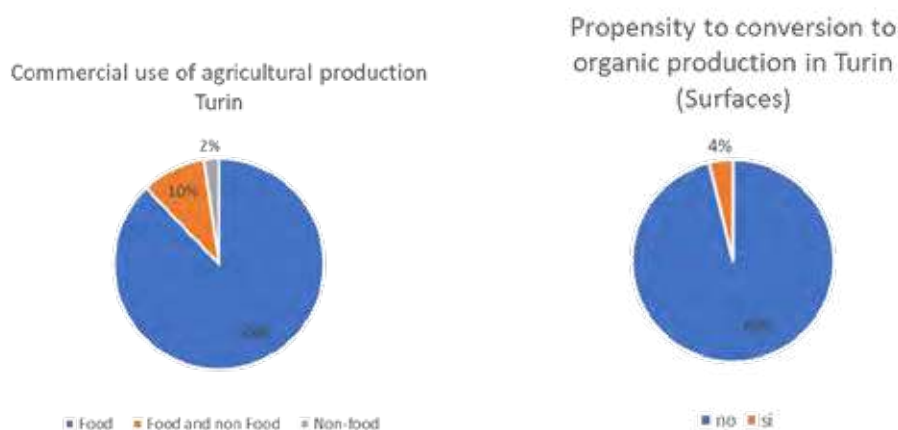


Graph 8 – different production techniques in the City of Turin 2018

Conventional agriculture is the cultivation system commonly used in intensive production. It involves the use of chemical aids to maintain soil fertility and defend plants. This can lead to the discovery of residues (which must be in any case below the legal limits defined by the EU) in products and environmental problems linked to certain practices (monoculture, continuous use of the same active ingredient in the pest control, etc.). However, even conventional agriculture currently moves towards a production model with a lower environmental impact that is, therefore, less intensive.

Integrated production is the food production system that uses methods and means of production and defense, against the adversities to agricultural production, aimed at reducing the use of synthetic chemicals and rationalizing fertilization, respecting ecological, economic and toxicological principles. For the integrated agricultural production of the *Regione Piemonte*, reference must be done to the commitments envisaged by the technical standards drawn up in compliance with the National Guidelines

for Integrated Production and approved with the “*Determinazione Dirigenziale del Settore Fitosanitario e Servizi tecnico-scientifici n. 230 del 14 febbraio 2018*”. The *Regione Piemonte* identifies specific practices and regulations for this method, detailing agronomic practices, fertilization, phytosanitary defense, weed control and plant growth regulators methodologies (Regione Piemonte, 2018). From the questionnaire component of the interview it results that, in Turin, 86% of the production is carried out with conventional methods and integrated production is only diffuse on the 13% of surfaces.

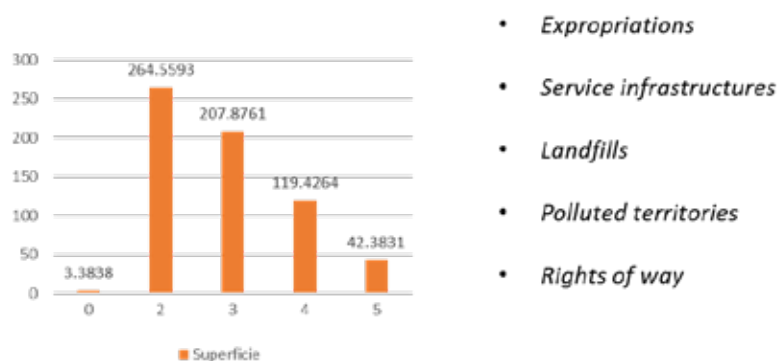


Graphs 9 and 10 – Destination of the production / Propensity of conversion to organic production

Farm owners declared that most of their productive lands are devoted to food production in Turin. Only a minor percentage of surfaces is dedicated to mixed uses, and just 2% of declared lands are devoted to non-food productions. The interview also exposed a very low propensity of the farmers to organic conversion.

The proximity of the City, the presence of multiple contaminated sites, the seniority of the owners and the very nature of the companies (intensive production for the purpose of food consumption and breeding) are often limiting factors that push farmers to renounce organic farming. Is important to notice that, on the metropolitan scale, the conditions change and the propensity to organic seems to be greater (a subject that needs deeper investigation), also because urbanization leaves more space for agricultural areas, reducing the factors of impact and making organic a more viable choice. Difficulties that companies encounter as regards the conversion to organic will be further developed in more detail in the qualitative analysis of the questionnaires and results.

External pressure factors on agricultural areas



Graph 11 – Farmlands surfaces by number of pressure factors

In the interview it was asked to the farmers what types of pressures and externalities their fields were under. The information collected, associated with the cadastral data, allowed to quantify the agricultural soils that are subject to external critical factors such as:

- expropriations and service infrastructure systems, which contribute to the fragmentation of production and ecosystems;
- proximity to landfills, also illegal, and abandoned or polluted land;
- presence of rights of way on the soils of the farm, which hamper agricultural activities.

The results are, of course, limited by the fact that the interview was on a sample of farms. This output covers a sample of soils inside the City and in the first belt (we asked to the farmers to identify, on a map, the lands they referred to, in order to quantify them with cadastral data). Nearly all the farmland of this sample was subject to at least two limitations, for a total of 250 ha analyzed in Turin, and 360 ha analyzed in the first belt of the City.

Interviews

Farmers were questioned on the topics described in the methodology, and asked to provide points of view, ideas, personal observations on the addressed issues. The sample consists of 45 farms of the City, and the interviews currently covered 25 of them, due to low response rate. The questions of the semi-structured interview concerned the following themes.

- *Propensity to conversion to organic farming* - on the environmental sustainability front, almost all the farmers interviewed showed a good sensitivity to environmental issues and to reduce the pollution of agricultural activities. The owners show awareness and try to reduce their environmental impact by containing the use of pesticides or artificial fertilizers. However, they expressed themselves, in most cases, negatively when asked if they are inclined to convert to organic production (96% gave a negative answer in Turin, while 69% gave a negative answer for the fields in less urbanized areas outside the City).

- *Observations on adopted cultivation methods and employees* - owners prefer to use as little as possible external personnel, taking over the workload of the farm almost entirely on a family level, thus failing to deal with alternative projects. Farms are therefore specialized on a limited number of productions that guarantee the maximum possible yield while keeping the commitment constant in terms of necessary working hours.
- *Propensity to multifunctionality* - at present, the interviewed farmers have shown little interest, and sometimes concerns about multi-functionality and the introduction of innovative agricultural practices (only 27% of farms are positive about multifunctional farming activity). Among other things, it emerged that farms that also breed livestock are less likely to differentiate their activities than those that only carry out agricultural activities.
- *Observations on physical limitations to land* - farmers are aware of the conditions of the land and the impact of large transport infrastructures, proximity to landfills or areas polluted by the presence of industries. Elements of risk that, in the periphery of Turin, are a constant. Contributing to the contamination of the lands are the frequent abusive discharges complained by the owners, especially those located in north Turin. These discharges take place on the street or in the irrigation canals and contaminate the waters and therefore the lands. Farmers in addition to complaining about this issue have also highlighted the difficulties in dealing with the abusive waste which, in some contexts, cannot be collected by the waste companies.
- *Observations on the irrigation system* - all the farmers expressed positively about the quality of the water they collect from the irrigation canals, which started improving with the gradual dismissal of industries. Today water quality is not a concern, however, the farmers with land near the border of the City complain about the disruption of the canal system by the urbanization processes. This results in fields that cannot be irrigated and, therefore, can only support non-irrigated crops.
- *Future company projects* - owners were tendentially negative about new projects to differentiate their activity. 82% answered negatively to the opportunity of experimenting with new crops, 88% would not try to process their own products in the company, 82% do not contemplate of opening a structure for direct on-site sales. On the other hand, 65% of the farmers have machinery renewal projects and 49% of them need new structures, but most of them do not have a clear idea or the funds to pursue these needs.
- *Opportunities and disadvantages deriving from the proximity to the City* - we observed a clear split. Owners of small farms mostly expressed negatively about the proximity, listing in the major disadvantages the fragmentation and the loss of land they had to withstand. For them the big demand of the City is not enough to offset the drawbacks. They often do not have the resources to counteract differentiating their activity. On the other side there are the big owners. They are often owners of livestock, that need extensive surfaces to feed their animals, or big cultivators that can offset the problems of the City with the fields they farm also in less compromised environments far from the city. For them the City still represents an opportunity. Livestock owners find easier

to sell their products, while other big farmers usually experiment multifunctionality in different ways, and try different productions.

All farmers agree on the main disadvantages of proximity to the city: pollution, landfills, abusive discharge of trash near the fields, conflicts with other citizens living near the farmlands, fragmentation of the soils due to the pervasive infrastructure system, and difficulty of movement with the agricultural machines on the roads.

Mapping

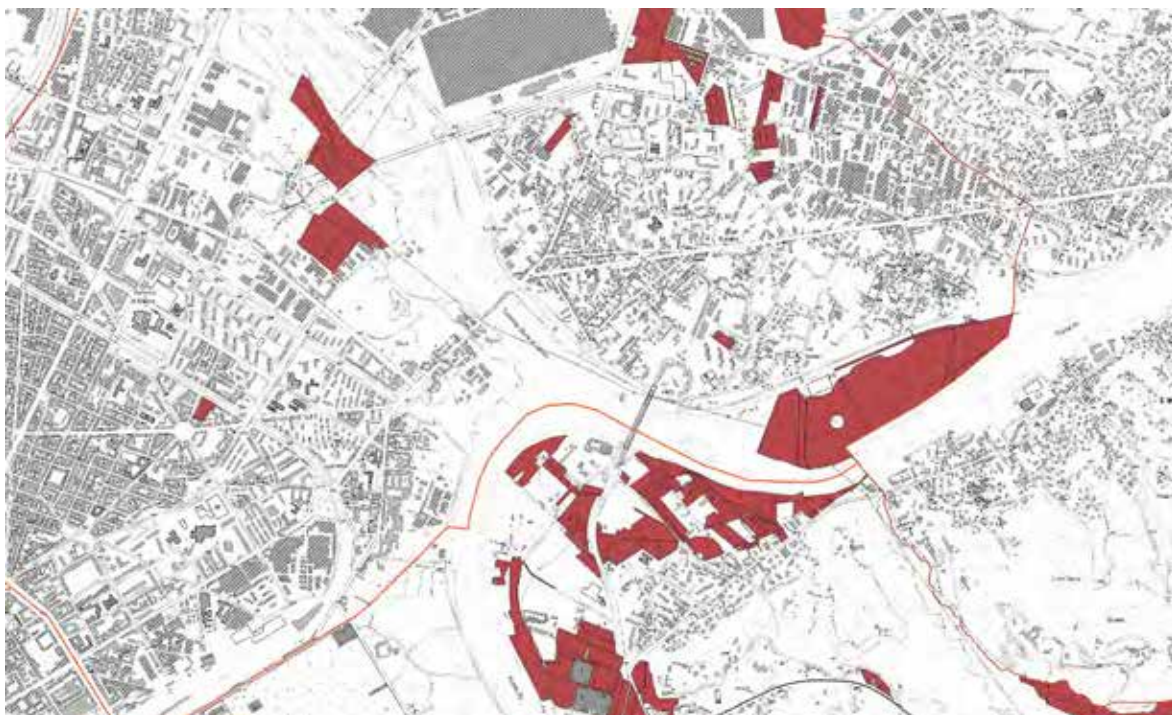
The mapping process to identify agricultural use and cultivated areas started with data collected in previous works (Sini, 2015) which has been integrated with the database extraction the *Regione Piemonte* (table 2) provided us, and an updated cadastral map of the City.

Comune	Foglio	Particella	Nome azienda	Macrouso	Occupazione	Superficie	SUP1	PERFICI3	PERFICI4	PERFICI5	SUPMAX	Destinazione uso
TORINO	1359	1	2183830013	Superfici seminabili	899 - prato pascolo	0,0243	243	0,04	0,0391		391	002 - DA FORAGGIO
TORINO	1119	1	2323740031	Uso non agricolo - Tare ed incolti (aree	770 - uso non agricolo - aree n	516	516	1459	1,4581	942	14581	0
TORINO	1119	1	2323740031	Superfici seminabili	001 - granturco (mais)	0,9421	9421	1459	1,4581	942	14581	002 - DA FORAGGIO
TORINO	1119	1	2323740031	Uso non agricolo - Fabbricati (aree occo	660 - manufatti	0,4601	4601	1459	1,4581	942	14581	0
TORINO	1192	1	4302030012	Superfici seminabili	001 - granturco (mais)	1,0923	10923	1215	1,2222		12222	011 - FAVE, SEMI, GRANELLA
TORINO	1192	1	4302030012	Uso non agricolo - Fabbricati (aree occo	660 - manufatti	0,1055	1055	1215	1,2222		12222	0
TORINO	1192	1	4302030012	Elementi caratteristici del paesaggio	788 - siepi e fasce alberate	0,0244	244	1215	1,2222		12222	015 - ELEMENTI DEL PAESAGGIO/EFA - AREA
TORINO	1027	1	6345300013	Uso non agricolo - Tare ed incolti (aree	780 - uso non agricolo - tare	73	73	4,3422	4,3363	4,2633	43422	0
TORINO	1027	1	6345300013	Uso non agricolo - Tare ed incolti (aree	770 - uso non agricolo - aree n	73	73	4,3422	4,3363	4,2633	43422	0
TORINO	1012	1	6345300013	Superfici seminabili	001 - granturco (mais)	1,1537	11537	1,1565	1,1565	1,1534	11565	002 - DA FORAGGIO
TORINO	1012	1	6345300013	Elementi caratteristici del paesaggio	788 - siepi e fasce alberate	0,0028	28	1,1565	1,1565	1,1534	11565	015 - ELEMENTI DEL PAESAGGIO/EFA - AREA
TORINO	1027	1	6345300013	Elementi caratteristici del paesaggio	788 - siepi e fasce alberate	0,0017	17	4,3422	4,3363	4,2633	43422	015 - ELEMENTI DEL PAESAGGIO/EFA - AREA
TORINO	1027	1	6345300013	Superfici seminabili	001 - granturco (mais)	4,2633	42633	4,3422	4,3363	4,2633	43422	002 - DA FORAGGIO
TORINO	1115	1	BSCMSM70D01L219R	Elementi caratteristici del paesaggio	788 - siepi e fasce alberate	0,0157	157	1285	1,2833	1,2275	12833	015 - ELEMENTI DEL PAESAGGIO/EFA - AREA
TORINO	1115	1	BSCMSM70D01L219R	Superfici seminabili	575 - fave, favino e favette	1,2275	12275	1285	1,2833	1,2275	12833	011 - FAVE, SEMI, GRANELLA
TORINO	1115	1	BSCMSM70D01L219R	Uso non agricolo - Fabbricati (aree occo	660 - manufatti	0,0401	401	1285	1,2833	1,2275	12833	0
TORINO	1066	1	CHMGCR62E11L219T	Uso non agricolo - Fabbricati (aree occo	660 - manufatti	95	95	0,66	0,6806	0,5287	6806	0
TORINO	1066	1	CHMGCR62E11L219T	Superfici seminabili	587 - grano (frumento) tenero	0,5287	5287	0,66	0,6806	0,5287	6806	011 - FAVE, SEMI, GRANELLA
TORINO	1066	1	CHMGCR62E11L219T	Elementi caratteristici del paesaggio	788 - siepi e fasce alberate	0,0569	569	0,66	0,6806	0,5287	6806	015 - ELEMENTI DEL PAESAGGIO/EFA - AREA

Table 2 – cadastre-parcel based database of declared farmlands, *Sistemapiemonte*

The first cartographic output was jointly checked with farmers, employees and managers of trade associations, to collect as much information as possible to complete the map with the missing -non declared- areas.

The last step was the identification of the areas that are effectively devoted to productive purposes. For this, the *Comune di Torino* provided a 4-band orthophoto (Red, Green, Blue plus near infrared) updated to 2019. With a multiple overlay of the orthophoto, the regional BDTRE database, the uses already declared and a raster analysis application for QGIS (*From GIS to Remote Sensing plugin*), the cultivated areas were discerned from other areas.



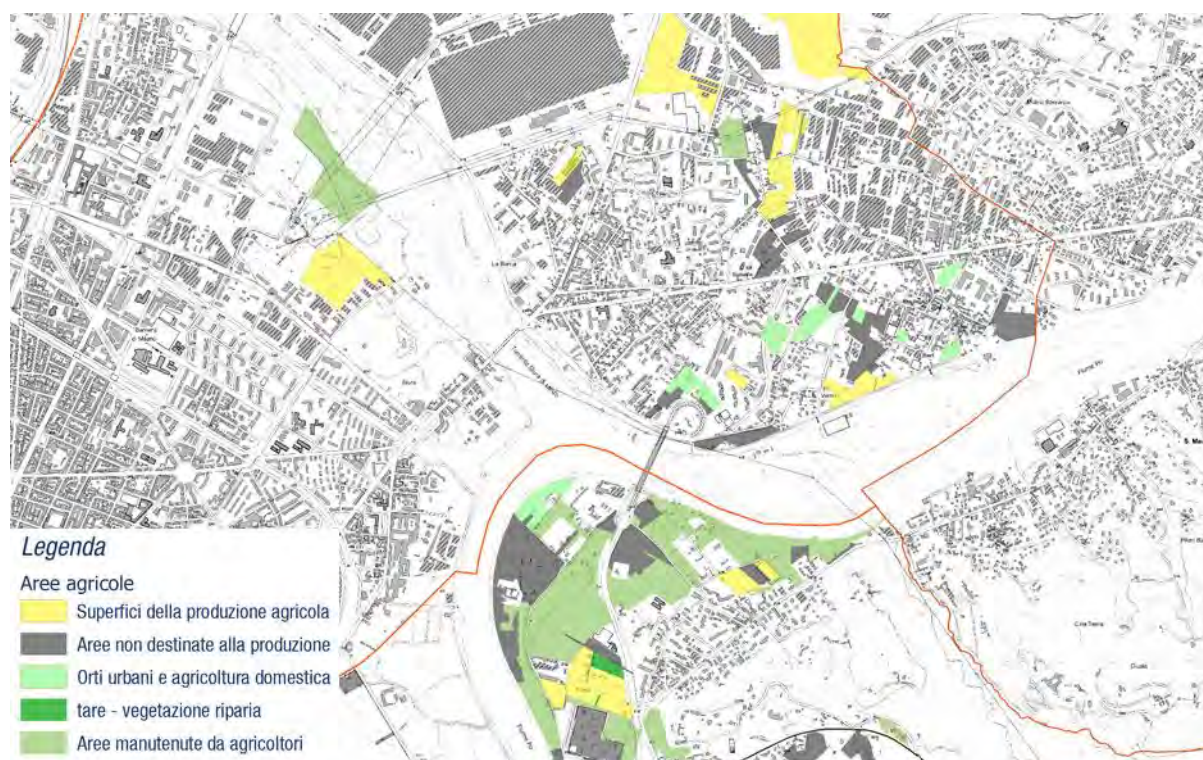
Picture 1 – agriculture related soils, previous data and information, 2015

Mapping initially involved the collection of previous maps created on this subject. The data was extracted for each available year, from 2014 to 2018, from the data warehouse. These were integrated on the Cartographic cadastre of the City of Turin, with GIS join functions. With the general map available, the next step was to integrate data about the owners of the farms from the database shown in table 2.

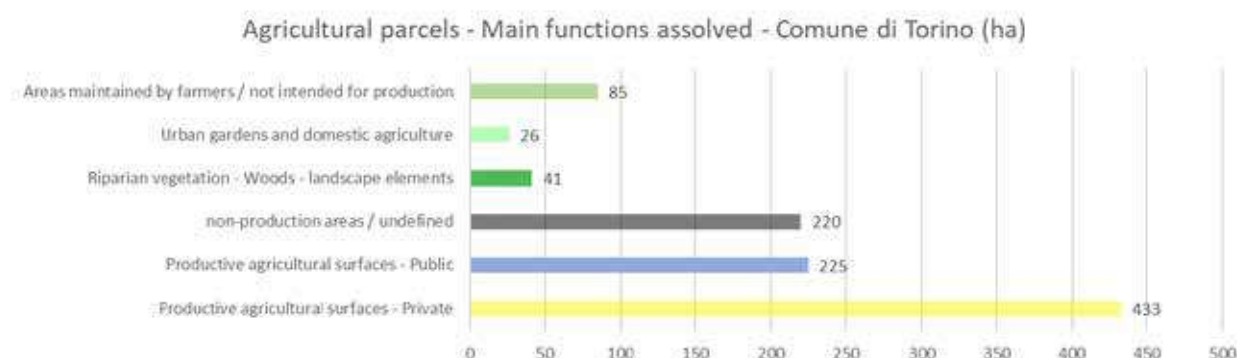


Picture 2 – 4-bands orthophoto- Torino 2019

At this point however, the map represented both the lands of the production and the parcels where the farmers were doing regular maintenance for third party or in the City parks, without a clear distinction. To detect the productive farmlands the former areas were, when possible, identified through the declared uses. The process to recognize the parcels that were not declared -but clearly served a productive function- was supported by the experience of the farmers and representatives of the farming trade unions active in the City, who helped to identify and confirm the areas. Some further areas were then located with the raster analysis tool for QGIS (Congedo, 2016).



Picture 3 – Final output and definition of productive farmlands, 2018



Graph 12 – Surfaces related to agriculture, 2018

In Turin, in late 2018, there were 658 hectares of parcels used for production, that (considering the UAA ratio of graph n.6) amount to at least 530 hectares of UAA on the City. With this study, moreover, it was possible to identify 85 hectares of land that are actively maintained by the farmers in public areas and parks. Public farmlands amount to the 34% of the total productive parcels and are given in conduction to local farmers by the City. Moreover, at least 41 hectares of parcels are occupied by woods and vegetation

related to farms. There still is an amount of parcel surfaces that need further examination to be clearly identified. It can be stated, therefore, that farming contributes to upkeep at least 780 hectares of land in the City.

Final Observations

The results, especially from the interviews, show that agriculture in the peri-urban space of Turin is currently under pressure. Agriculture's main problem is the resilience toward changes in the economy and globalization dynamics. The low added value generated (complained by all the farmers subject to the interview), in fact, make it susceptible to external pressures. The sensitivity is amplified in the peri-urban space, where the landscape has often little recognized value, and the soil represents a precious and scarce resource for many other, not always environmentally friendly, uses.

Farmers, in the peri-urban space of Turin, show low propensity to differentiation, and farms tend to be strictly mono-functional. This can be brought back to the next causes:

- The seniority of the farmers, who prefer to simplify the activity;
- the desire to reduce as much as possible the use of labor outside the family and the recruitment of employees;
- the low economic value generally attributed to agricultural production that favors latifundiums;
- the shortage of time and resources, not only economic, determined by the previous points.

A situation that does not lend itself to multifunctional agriculture activities and practices, making the penetration of new ideas and projects difficult. On the contrary, multifunctionality requires a different approach, more specialized professionals and asks farmers to project and plan with a business mindset (Zasada, 2011). Ideal conditions for this to happen may also be the reduction of the age of the owners and a greater attention to their training on the management. Substantial economic investments, supported by profitability evaluations, are also fundamental (problematic for companies that have difficulty in the update of the machines).

Needs that clash with the reality, were price volatility (European Parliament, 2017) hinder economic planning of major transformations or long-term projects in local farms. Proximity to the city is a natural opportunity for a farm that also carries out tertiary service functions. But it is also a threat, given the frequent landscape degradation of the residual rural peri-urban areas of Turin. Hardly a farmhouse inn will be economically sustainable near the belt highway, the numerous landfills the industrial areas or the incinerator. Moreover, all the interviewed farmers expressed a negative outlook towards their work and, in general, the agricultural sector in the proximity of the City.

Nonetheless, they also showed good sensitivity to environmental issues and about reducing the footprint of farming. However, in most cases they expressed themselves negatively when asked if they are inclined to convert to organic farming. Farmers are aware of land conditions, external pressure factors and territorial criticalities, such as large transport infrastructures, proximity to landfills or areas contaminated by the presence of industries. They show low propensity to undertake the process of conversion because the results are not entirely under their control.

The City of Turin owns 225 hectares of agricultural land, and leases or loans it to farmers. This represents an opportunity, as the administration can decide to implement, on these lands, practices and pilot projects aimed at multi-functionality and sustainable agriculture. A solution that would also make it easier to deploy the necessary facilities and infrastructures. The same principle applies for the implementation of sustainability policies. However, currently, the PRG includes rules about farming in the areas that are inside the parks, but still there is no clear planning strategy or framework for the *agricultural parks* that the City identified (NUEA, art. 21 - Parchi urbani e fluviali).

With regards to the mapping process, it was useful to better understand the layout of the soils that, in several respects, are related to farming or farmers. But the databases are currently not enough to directly understand which terrains are used for production. Besides, it was possible to discover that, apart from the productive soil, there are at least 85 hectares of land that are maintained with the help of farmers, and most probably this number is higher. Farmers, hence, already offer a service to the City, also on private land. Over 780 hectares of land are associated to agriculture and upkept by farmers in Torino.

The survey highlights how the issue of peri-urban agriculture needs to be addressed in a systemic perspective that transcends the municipal dimension. In fact, most of the analyzed companies have the largest part of their land outside the Municipality of Turin. In the first belt of the metropolitan area the agricultural system, whose offshoots penetrate inside the Turin peri-urban area, is much more relevant and many of the criticalities detected for Turin still apply. The complex of these areas constitutes a real infrastructure of agricultural production, a landscape that joins other not only anthropic but also natural and green infrastructures. In addressing the issue of green infrastructures, especially productive ones, the metropolitan area is an ideal field of study. Also it should be noted that, for the definition of any strategy about peri-urban agriculture and agricultural park, the local dimension is not enough, and areas identified by the city as Agricultural parks should be studied in connection to the system of rural and natural areas connected to them, also outside of the city borders.

The methodology used to assess agricultural areas in the City of Turin can be replied on the metropolitan scale, especially in the first belt, although with some adaptations. The interviews should be administered on specifically chosen farms, based on the identified issues of the study areas. Factors of pressure can be identified through spatial analysis and databases on polluted sites with the help of the administrations (especially the *Città Metropolitana*); cadastral data can be collected for a multitude of communities, thanks to a project (*progetto catasto*) which is a collection of GIS based cadastre files; the data extracted from the regional database can be reworked with semi-automatic methods, in order to fix the intrinsic errors already found during the development of this study. An addition to the method may also be the inclusion of the datasets of the project *Corona Verde*, which will add information on the historic and cultural heritage of this space, that is strongly connected to agriculture and can be an important source to define restoration policies integrated with agricultural production (Gottero *et al*, 2018).

To conclude, it is still difficult to implement sustainability practices in agriculture in peri-urban landscapes like the one of the City of Turin. Here agricultural land is an actual third space (Fanfani, 2006), sparsely treated on the local scale and still somehow overlooked at the regional one. For this space, a different planning framework is necessary, that does not rely on traditional planning practices. What is important to note, though, is the value of farmers' land management, which would be difficult to replicate

if the agricultural areas were converted to entirely different uses or hindered in their productive dimension. A value not only economic, but also social, since agriculture is one of the few activities that involve citizens in the active upkeep of land and soil. Before converting these spaces in parks (due to abandonment) or sacrificing them because of lack of interest from the farmers themselves, this should be kept in consideration. Multifunctionality can serve a role in this transitional phase, but it should be supported by a clear strategy. A possible answer for a more environmentally sustainable peri-urban agriculture would be to promote its conversion to integrated production. It would result in a higher control over the chemicals used in the soils, potentially recovering the ecosystem value of the farmlands (PAN, 2010). A move that can raise the quality of food production near the City and, therefore, positively impact also on its economic sustainability.

Contribution

This small work was an opportunity to deepen the knowledge about peri-urban agriculture in the City of Turin. The acquired information is a starting point that can be used to orient future research. More importantly, this work focused on the point of view of farmers, which was useful to highlight some of the weaknesses of the system on a socio-economic perspective. Multifunctionality, in agriculture strongly depends on the capabilities of the agricultural system. If the farmers do not have the necessary resources, policies will be difficult to apply. This represents a useful starting point to expose some of the factors limiting its diffusion.

The cartographic output of this study has already been used to implement the next City masterplan update. It may further prove to be useful to the City if new policies for agriculture will be discussed in the future. But mostly it is a way to highlight again that, also in a deeply urbanized metropolitan Capital, agriculture can still be relevant, not only for the production but also for the other services that farmers can carry out in parks and other areas. This document and its outputs can be a reference for the City to understand how to better exploit a territorial resource that is both material and immaterial.

Acknowledgements

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5. Planning and designing green infrastructures

Landscape and Ecological Networks in Urban Planning: Technical Standards for Implementation

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Abstract: This paper proposes a reflection on the possible role of landscape and ecological networks within the local urban planning practices. We are faced with a constant population growth in cities and peri-urban and marginal areas are increasingly subject to environmental degradation. Therefore, it is necessary to identify and recognize the ecological values of the environment to define plans and natural resources. This contribution, starting from some pilots conducted in Piedmont Region, reflects about the urban planning operational paradigms, the importance of green infrastructures and ecological quality for sustainable and resilient city is sustained by a proposal of local planning regulations. The paper aims to tackle the quest for a new forms of implementation based on the integration of the approaches to planning the urban and ecological problems with the aim of ensuring complete compatibility between urban transformation and the demands for environmental quality. The ecological regulations described in this paper propose an evolution of the meaning of the planning schemes, especially those applicable to green space: the regulations in fact consider the collective use of green infrastructures as a crucial requisite, while according priority nonetheless to the role of private areas as an invaluable factor in the environmental regeneration of urban tissue. Therefore, this contribution focuses on an innovative model of planning and management at the local scale, the role of ecosystem services, the relationship between biodiversity of the ecological network structural areas and periurban and agricultural residual ecological areas to be strengthened to improve connectivity between ecosystems.

Keywords: Ecological Networks, Regional and Urban Planning, Planning standards, Ecological Regulations

1. Introduction: ecological networks, protected areas and new urbanizations

Many researches in recent years focusing on how ecological networks and ecosystem services can contribute to healthy and resilience cities. Worldwide, more than half of us live in cities, and the number is increasing, making urban sprawl a specific fact of our common future: there can be little doubt that cities are where “our struggle for global sustainability will be won or lost” (United Nations [UN], 2012).

Meanwhile, in cities, peri-urban landscapes and beyond, concerns have grown regarding loss of biodiversity and degradation of natural resources, giving rise to recognition of the central role that ecological networks have to play in these territories. The European Commission [EC] in 2013 published a document to promote green infrastructure planning, and mainstream it in Europe (European Commission, 2013). This strategic document



underlines the green infrastructures may contribute to sustainable development, enhancing social cohesion, supporting the economy, and adapting to climate change, and highlights the importance of ecological networks and nature-based solutions in cities, where more than 60% of the EU population lives.

In view of these data, in recent years we have seen an exponential growth of urban land use towards more natural spaces: external urban areas (uncultivated land, cultivated land abandoned, the burnt areas, degraded forests) are often been confined to a “inessential” position and sometimes simply considered as “waiting for a new urbanisation”. Too often, this is due to poor operability of local plans to lead an urban development coherent with the preservation of natural areas and ecological connectivity. We can identify the consequences of these processes in 6 significant phenomena (Benedict and McMahon, 2002; Voghera and La Riccia, 2018):

- the substantial loss of natural areas: urban development has led in recent years, a reduction of natural areas (in the world, in the years 2000-2010, the rate of decline amounted to about 16 million hectares lost each year);
- the fragmentation of natural areas: a process that determines a breakdown of structural areas of ecological networks into smaller patches, and consequently more isolated from the point of view of connectivity;
- the degradation of wetlands, which have always been an important ecological function for the control of water flows, for the ability to block the sediments, for the support of plant and animal species (stepping stones function) and for the ability to provide nutrients for the ecosystems;
- the inability to ecosystems to respond to change and find a new ecological balance: that is to say a significantly reduced resilience;
- the loss of ecosystem services: natural systems have important “services”, such as the control of water, the filter functions for pollutants, the preservation of the climatic risks;
- the increased costs for public services, due to the response to natural disasters as a result of the ecological footprint by man.

Nature conservation in the city is one of the biggest challenges for sustainable urban development, as a result of a social and ecological coevolution. The value of nature in the city, however, goes far beyond its influence on the inhabitants’ quality of life or rather an intrinsic value: urban areas are surprisingly rich in biodiversity. The conservation and management of nature and biodiversity in urban areas is often vary complex (Antrop, 2001, 2004): there are more people, stronger development pressures, less space, a multiplicity of actors involved, etc. Often, the analyses reveal that the urban natural reserves are few but large and have a high density.

Large natural reserves can be especially important in urban landscapes, as the difference between the urban and natural environment can be high (Powell, Selman and Wragg, 2002). It should be noted, however, that the strategies of urban planning and those of nature are in Italy generally separated. One possible reason is that the protection of nature has favoured a purely “conservative” vision towards nature outside the city and has made trivial and distorted the vision of urban nature conservation.

However, the identification of urban nature is also part of a broader change in perspective within the conservation policies and remains as a necessary point of reference for a sustainable urban development. In many cities, this change of perspective was manifested through the institution of urban areas for nature conservation, supported by a general concept of “urban landscape”. In the urban context, the establishment of these areas has been started during the twentieth century as a reaction to the rapid degradation of the urban environment due to industrialization and the consequent urban growth. It was therefore seen as a necessary step

to keep nature and landscape away from private exploitations. Today, instead, the public interest is more oriented to the preservation of social values, biodiversity of nature and landscape. In the recent decades, in effect, the nature conservation and landscape policies have changed: today, a possible alliance between nature and landscape (Gambino and Peano, 2015; La Riccia, 2015) is assumed to be an essential condition for sustainable development and lays itself at different scales (United Nations Environment Programme [UNEP], 1992; European Council of Town Planners [ETCP], 2003; Hooper et al., 2005; Potschin and Haines-Young, 2006; Selman, 2006; International Union for Conservation of Nature [IUCN], 2012).

Until the 1970s, in Italian urban planning, we could not speak about a real ecological paradigm, but of “urban greening”, the distribution of which was generally expected in new districts as well as in historical centres. The creation of urban parks also became one of the focal points of the urban plans. Keeping them indicated a fundamental aspect of environmental continuity in urban space. The consideration of nature and landscape in the Italian urban planning tradition has privileged the aesthetic approach, oriented to the historical and cultural heritage of excellence. During those years, when in Italy the debate was focused on the general “crisis of planning” (Gabrielli, 1995), at the international level an important shift on focus could be observed towards the “landscape planning at the local level” (La Riccia, 2017), a new way of understanding the landscape in the plan, closer to the urgency of reducing ecological problems and supported by an emerging environmentalist currency in the cultural and political scenes. On the one hand, there was a growing need to put an end to environmental disasters; on the other hand, the issue of landscape merged forcefully in different disciplinary contexts.

Urban planning, rewritten through a new ecological paradigm, does not appear to be capable of solving the identification, convenient, of landscape with the natural environment, still promoting an approach, especially design, which remains “promotional”. Sustainable development requires more than designed landscapes that are created using sustainable technologies. Design is a cultural act, a product of culture made with the materials of nature, and embedded within and inflected by a particular social formation; it often employs principles of ecology, but it does more than that, enabling social routines and spatial practices, from daily promenades to commuting to work.

In the Italian experience, indeed, green areas acted as a common element for re-joining city and countryside, that is to say, for the redevelopment of the modern districts in order to reduce the pressures on both historic centres and new districts. The ecological paradigm is therefore a different vision and has guided the practice of urbanism towards a new direction. The environmental provisions now seem to articulate the new practices, coordinating behaviors and reconfiguring the spaces of the city: this means defining new and more ecological functionalist provisions.

To harness the full potential of local ecological networks, however, a carefully conceive, experience-based approach is required. This paper aims to support such an approach by providing information on how to plan for and develop local ecological networks. We can define local ecological network planning as a strategic planning approach that aims to develop and detail the networks of ecological structural areas, designed and managed to deliver a wide range of ecosystem services and other benefits at the local scale. Local ecological network planning can help also to tackle key urban and peri-urban challenges that cities face:

1. Protecting biodiversity
2. Adapting to climate change
3. Promoting green economy
4. Increasing social inclusion

Considering these challenges, local ecological network planning must be based on the integration and coordination of green infrastructures with the urban uses; creating and restoring connections to support and protect processes, functions and benefits that marginalised ecological structural areas cannot provide alone;

delivering and enhancing multiple functions and ecosystem services; and finally, including collaborative and participatory planning.

While these challenges provide a fundamental basis for local ecological network planning, certain supporting approaches could be also taken into account:

- *Multi-scale approach*, linking all spatial planning levels, ranging from regional to local scale;
- *Multi-object approach*, including all types of green and blue spaces, public and private, considered as part of a green infrastructure network;
- *Transdisciplinary approach*, linking disciplines, policies, and practices from different fields (landscape ecology, regional and urban planning, landscape architecture, etc.).

2. Local ecological network planning and new urban challenges

Since the Seventies, urban planning practices demonstrated the potential of ecological network to contribute to challenges such as health, species protection, biodiversity protection, climate change adaptation. When understood as part of local ecological network, these and other emerging challenges and trends must be considered not just as obstacles to overcome, but as important drivers for investing the future urban planning choices.

2.1 Protecting biodiversity

Despite the Protected Areas and Natura 2000 sites are now considered the “backbone” of the European policy for biodiversity, at the local level they are included with a clear difficulty within the urban policies and plans. The policies for the improvement of ecological networks are in fact necessary to overcome the fragmentation of the habitats and natural areas, which is the main cause of biodiversity loss in Europe. From this point of view, in fact, the Natura 2000 network, now implemented in 28 Member States and considered, at Community level, such as the exclusive policy for the conservation of biodiversity values, covering a total of 18.36% of the surface of the member states and It includes a set of sites of Community interest for about 60 million hectares. Then, there is a considerable overlap of these with the surface of Protected Areas that instead corresponds to approximately 22% of the surface of the Member States (European Environment Agency [EEA], 2017).

Loss of biodiversity is a major threat worldwide, requiring attention from policy-makers at the local, regional, national and global levels. Support for halting biodiversity loss has gained increasing attention since the release of the United Nations’s Convention on Biological Diversity in 1992. Major recent initiatives include the UN Strategic Plan for Biodiversity 2011-2020 (United Nations, 2011) and its Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Service [IPBES]¹, as well as the EU Biodiversity Strategy to 2020 (European Commission, 2011), in addition to many plans at the regional and local levels.

Biodiversity includes diversity within and between species, the variety of original, semi-natural and man-made biotopes (such as forests, dry meadows, or private green spaces) and, at the large scale, the diversity of ecosystems themselves. Although urban growth often negatively impacts upon biodiversity, urban areas can also

¹ IPBES website at: <http://www.ipbes.net/>

harbour significant number of species and habitat types, thus offering opportunities both for biodiversity protection and for people to experience nature. Through strategic, integrated coordination and management, local ecological network planning seeks to enhance these opportunities.

2.2 Adapting to climate change

As a matter of fact, whatever the warming scenarios and however successful mitigation efforts could be, the impact of climate change will increase in the coming decades because of the delayed impacts of past and current greenhouse gas emissions. Cities are increasingly facing the risk and consequences of climate change. Among them, flooding from heavy rainfall, heat extremes, drought, effects on health, higher energy demand for heating and cooling, and reduced availability of water and food (Wilby, 2007). This condition requires an urgent imperative to both mitigate the effects of climate change and adapt to them.

Therefore, adaptation planning is needed to deal with the unavoidable climate impacts and their economic, environmental and social costs. Due to the specific and wide-ranging nature of climate change impacts, adaptation measures need to be taken at all levels, from regional to local, aiming at minimising the risks connected to climate change, protecting public health by improving the adaptation capability of natural ecosystems and the social and economic systems. Climate change adaptation involves making changes to existing systems (natural and urban): this means anticipating adverse effects and taking appropriate action to prevent or minimise the corresponding damage, as well as seizing opportunities that may arise.

Adaptation differs from mitigation, and they should not be considered alternative or conflicting approaches. Rather, they both represent complementary aspects of a comprehensive and more successful policy to tackle all the impacts of climate change. While mitigation operates on a longer time scale and requires a world-wide coordinated approach to reduce gradually greenhouse gases emissions, adaptation acts mainly at the local level and can be modulated according to the different local situations (e.g. local impacts, vulnerabilities and resilience capacities, see Intergovernmental Panel on Climate Change [IPCC], 2014). Both mitigation and adaptation strategies are needed to address the impacts of climate change, however, it is important to be aware that they do not always work in harmony with one another.

Local urban settings show different features than rural and natural areas resulting in different vulnerability profiles concerning the sensitivity of local systems to climate changes (e.g. local dependency on ecosystem services and products, concentration of cultural values, economic activities, etc.), in relation to the adaptive capacity (availability of easily accessible infrastructures or public services). For instance, increasing ecological networks may reduce overall urban density and thus create less-energy-efficient cities, whereas urban densification may reduce the adaptive capacity of cities. For this reason, local ecological network planning can play a key role in strategies for climate change adaptation and, to a lesser degree, mitigation, by delivering ecosystem services (multifunctionality). Important, planned adaptation is more cost effective than emergency measures and retrofitting.

2.3 Promoting green economy

The recent global economic crisis and ongoing environmental challenges, such as climate change, have sparked a renewed interest in alternative economies and forms of growth. Among these, green growth and the transition towards green economy are the most widely discussed (United Nations Environment Programme [UNEP], 2012). A holistic approach to sustainability underpins the green economy concept, which aims for simultaneous environmental, social and economic benefits. Alongside the conventional goals of avoiding costs and fostering economic efficiency, competitiveness and business opportunities, a green economy seeks to improve the quality of urban environments, reduce resource consumption by creating synergies between functions, and provide opportunities for people to engage with each other and with their environment. It is an emerging concept yet to

be fully embraced by ecological network planning, although many cities already have planning objectives tied to related concepts like sustainable planning, green jobs, a low carbon economy, or attractive public spaces.

Local ecological network planning can benefit cities' economies in a range of ways, both directly and indirectly. Attractive ecological structural areas can not only improve the city's competitiveness as a destination for new residents, businesses and tourists, but also help to generate income (e.g. food and service industries, through leisure activities and special events, see Rolls and Sunderland, 2014). For local business owners, "greenery" has been linked to positive shopper perceptions, lower stress levels and increased walkability (La Riccia *et al.*, 2019): encouraging sales, while also increasing staff motivation. It could also support local food production and sale at farmers' markets. A green economy would see all such economic benefits weighted up against their corresponding social and environmental impacts in evaluating their net effect.

In addition to generating income, local ecological network planning can also help to avoid costs, e.g. by creating healthier communities or avoiding the damage caused by extreme natural hazards. About this, a study estimated the average avoided costs from flood damage to housing in a 100-mile-long green infrastructure along the Meramec river in USA to be \$7.7 million per year (Kousky and Walls, 2014).

2.4 Increasing social inclusion

Social inclusion can be understood as the capacity of a society to ensure the welfare of all its members, minimising disparities and avoiding inequality. It in general refers to the involvement of a wide range of social groups (including vulnerable ones that are often excluded) in all spheres of life. Making local ecological network planning socially inclusive demands attention to the needs of these different groups. Of particular concern are those with the most difficulties accessing information and articulating their interests.

Social inclusion is related to social cohesion, yet these are not the same. The latter concerns the outcome of local ecological network planning with regard to its social effects, while social inclusive ecological network planning is instead a process of including all social and cultural groups people in decision-making processes. Social inclusion is often talked about in association with the term *governance*, a concept entailing a widening of focus from state-centric government, to further include the role of non-state actors. The concept of governance has emerged in a context where the distinction between "top-down" and "bottom-up" is becoming increasingly harder to see. Instead, both approaches are often in play at the same time: e.g. when a local government authority moves to define a grassroots initiative.

Even though governance is emerging across Europe, recognition of the concept does not automatically lead to the involvement of all population groups and equal consideration of their interests, nor does it mean that social considerations are always given high priority. Recent projects on peri-urban green infrastructure development² found that economic growth motives continue to dominate urban planning decisions, and, while ecological protection is of growing policy interest, social justice concerns receive very little attention. Local authorities have a crucial role to play in mainstreaming social inclusion in local ecological network planning together with members of civil society who are empowered not only to participate, but also to take action.

Many levels of participation in planning are possible and these have often been represented along a spectrum, starting at one end with simply informing citizens, all the way to complete citizen control in decision-making at

² On this regard, see the EU-funded project of the Alpine Space Programme 2014-2020 "LOS_DAMA! Landscape and Open Space Development in Alpine Metropolitan Areas" at https://www.alpine-space.eu/projects/los_dama/en/home

the other end. In European cities, information and consultation processes are usually dictated by laws or regulations. Despite their formality, these processes can help to reveal citizens' point of view. However, ensuring that they sufficiently reflect all residents' interests requires different efforts to engage people. Consultation tends to be less formal in cities where citizens' landscape demand is part of the public policy culture and strengthened by bottom-up initiatives. To promote collaborative decision-making, some cities, such as Aarhus, have agreed on guidelines for people involvement from the outset of all municipal plans, strategies and projects³. Another way to think about participation is in terms of co-governance, where power is distributed between authorities and citizens. Citizens can be rewarded with increased influence over decision-making processes and outcomes, while governments may benefit from building trust with citizens and accessing non-traditional forms of local knowledge.

Allowing for and considering social participation in local ecological network planning is a step towards a co-governance framework: there are many ways to increase the willingness of citizens to express their preferences and participate in different stages of the planning process.

3. The construction of the ecological network at the local level

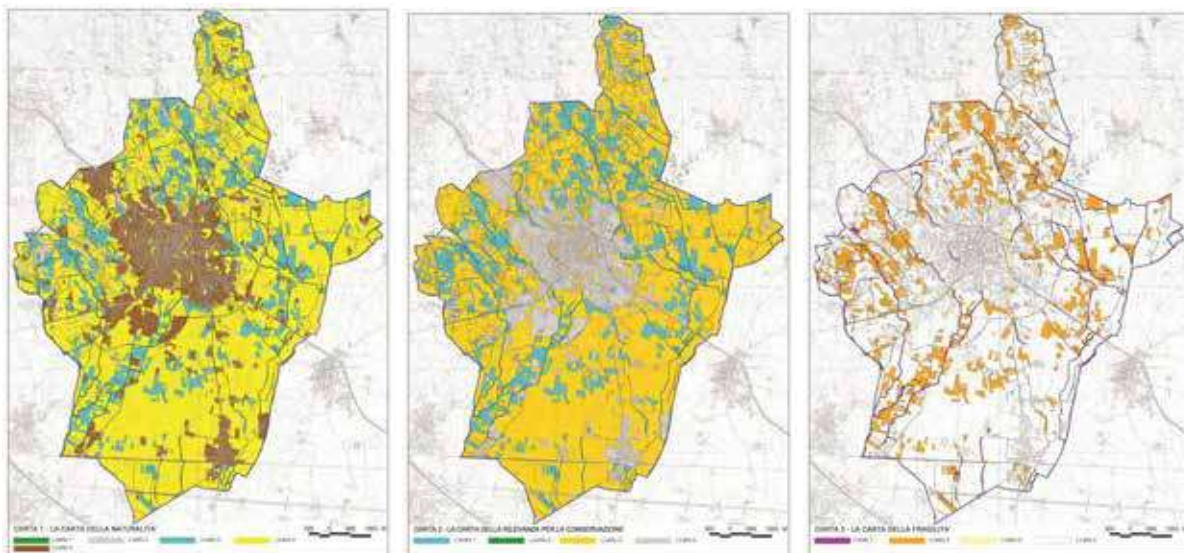
Attributing ecological significance and therefore an ecosystem role, not necessarily secondary, to territory means reflecting on a general renovation of the urban planning paradigms, considering the importance of productive, business and policy interests. Therefore, a clear need to define the objectives, which avoid simple "territorial schemes" of new ecological corridors, maybe excellent in aesthetic terms, but lacking of all meanings from the point of view of biodiversity. For this reason, it is important not to stop to analyse only the state of naturalness and diversity at different scales, but it is necessary go further to give priority to the pursuit of ecological coherence of the whole territory: that is to say to link the network with the impacts deriving from human activities and, more generally, to define a framework for urban planning operability.

In this context, several interesting experiences about this issue have been launched in the Piedmont region (Italy) with the aim to improve the overall ecological quality of the natural and landscape areas and specifically indicate the operational procedures to avoid the ecological fragmentation. Between 2014 and 2016 the research "Guidelines for the Green System of PTC2" (convention between Metropolitan City of Turin, ENEA and Polytechnic of Turin) and the "Operational proposals for the ecological network of Chieri" (Polytechnic of Turin and Comune di Chieri, Turin) were conducted with the objective of defining a proposal for the implementation of the ecological network at the local level in two municipalities of Turin (Ivrea and Chieri).

In these experiences, the approach proposed by ENEA was reconsidered to guide governments with specific measures to limit anthropogenic land use and, where possible, orient and qualify the conservation of ecosystem services. Habitats, natural areas and landscape have not been interpreted only by exclusively ecological point of view (a mosaic of ecosystems) but also considering a broader perspective that embraces cultural, social and economic aspects of the Ivrea area. The proposed methodology identifies the ecological character of the territory and defines the criteria for the evaluation of different types of land use: in the Chieri area 97 types of use, according to Corine Land Cover database, were identified. Subsequently, we applied five key indicators for assessing the ecological status (see Figure 1):

³ See more at City of Aarhus website: https://www.aarhus.dk/sitecore/content/Subsites/CityOfAarhus/Home/The-City-Council/The-Aarhus-model.aspx?sc_lang=da

- *Naturalness*: the types of land use are classified into 5 levels of naturalness, considering the closeness to the formations that would be present in the absence of disturbance (climax). So, the natural levels ranging from the 1st which includes all natural formations up to at maximum the 4th considering the types of land use at total anthropic determinism but not artificial (like almost all cropland) and the 5th level which includes the types of land use corresponding to artificial areas.
- *Relevance for conservation*: the types of land use are classified on four levels of relevance based on the relevance/suitability of land use for biodiversity conservation at the same time considering the importance for habitats and species. It introduces the concept of interest habitats for species of the Natura 2000 network including not only the habitats of Community interest but also the complex habitats whose conservation is necessary for the protection of species of the Natura 2000 Network.
- *Fragility*: the types of land use are classified in terms of intrinsic fragility due pressures such as pollution, ingression of exotic and invasive species, human disturbance in general. The 1st level includes types of land use that define both natural environments with very low resilience as rock fields or glaciers is semi-natural areas and significant anthropic determinism but easily fragile for both types of land use and poor resilience such as artificial water reservoirs or areas with sparse vegetation.
- *Extroversion*: the types of land use are classified on the basis of the potential “capacity” to put pressure compared to the neighbouring patches. We have considered the pressures in an integrated way that goes from pollution of productions to the spread of invasive alien species. It ranges from level 1st, which includes types of land use that coincide with the areas with the highest human settlement and able to exert pressure, to the 5th level, containing natural types of land use types of use of the natural ground.
- *Irreversibility*: the types of land use are classified on the basis of the potential possibilities of change in the intended use. The 1st level includes all artificial types of land use totally characterized by the irreversible intended use (for example: urban, commercial industrial zones).



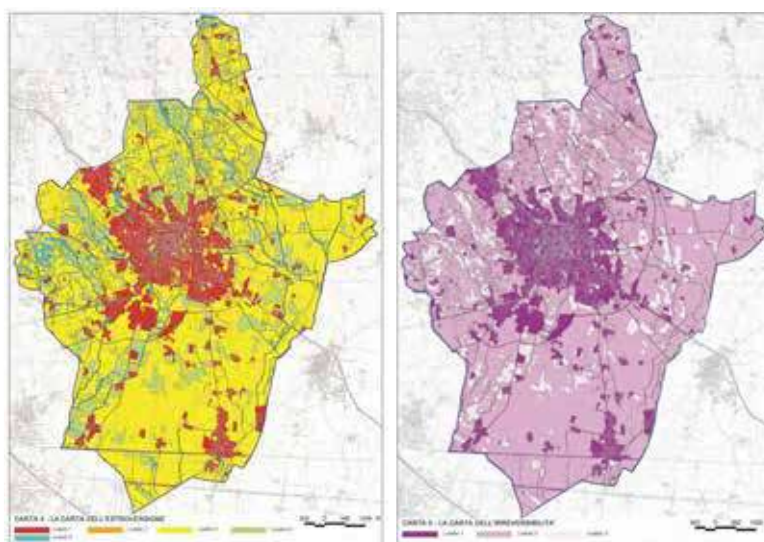


Figure 1. Maps of Chieri territory according to the considered five indicators (in the order of appearance): Naturalness, Relevance for the conservation, Fragility, Extroversion, Irreversibility. Processing Politecnico di Torino, 2016.

From the integration of the results of different indicators the so-called “Structural map of the ecological network” has been obtained (see Figure 2). This map shows the elements of the Local Ecological Network system, chosen on the basis of the levels of naturalness, ecological functionality, geographical continuity, and consists of three main elements:

- *Structural elements of the network* (primary ecological network), namely the areas of high and moderate ecological functions, as well as areas that hosting the specific conservationist emergencies, i.e. of natural and significant importance for the conservation of biodiversity.
- *Priority Network Expansion areas*, namely the at residual ecological function areas where priority action to increase the functionality of the primary ecological network and for which the implementation of protection measures for the maintenance of primary ecological network. These areas are further divided into: *Connection areas* and *Contiguous portions to the structural elements*.
- *Possible expansion of the network areas*, i.e. areas at residual ecological functionality, but on which it is possible implement new interventions aimed at increasing naturalness useful to protect the habitat and species of interest for the conservation of biodiversity.

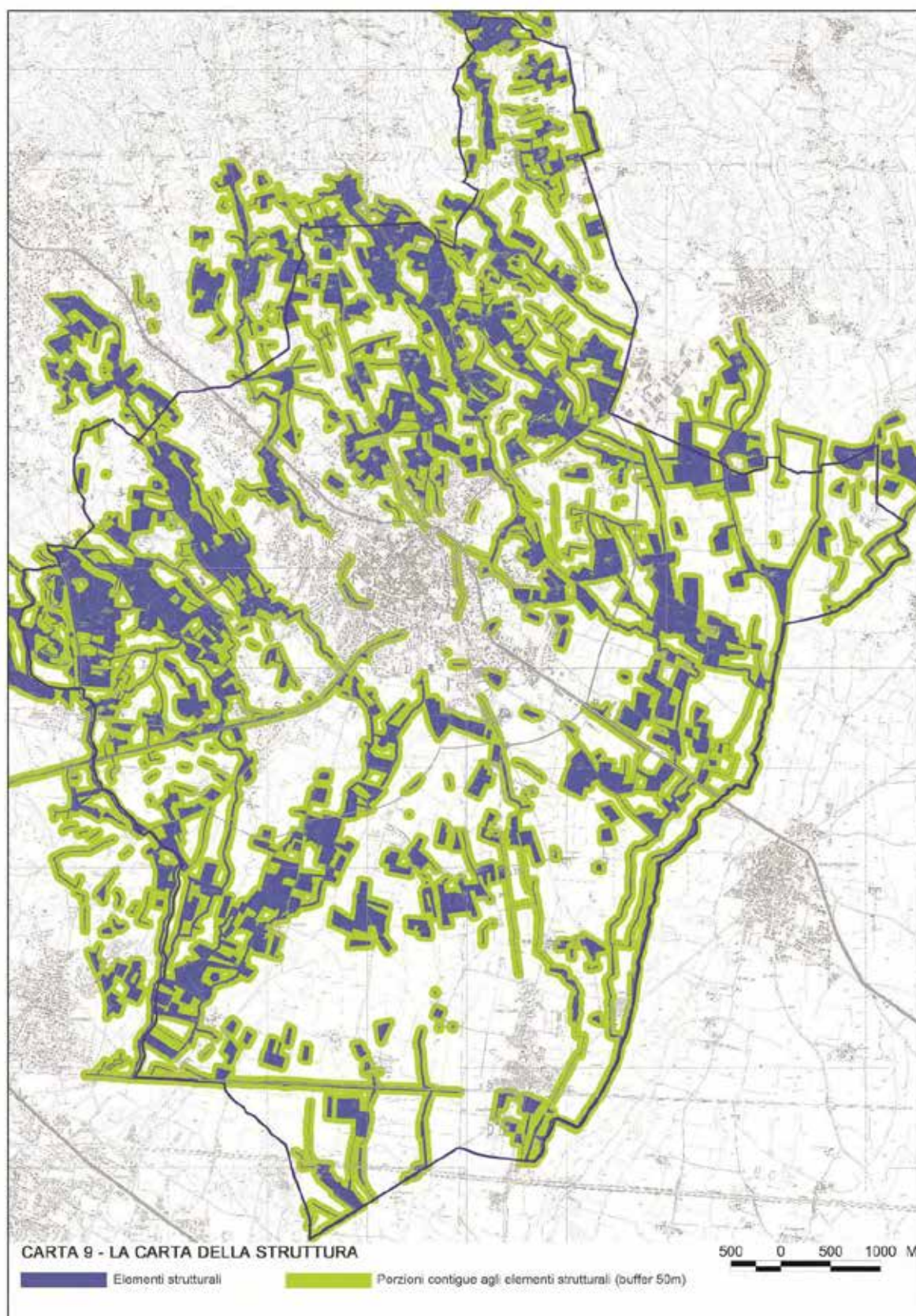


Figure 2. Map of the ecological structuring of Chieri territory. The picture shows the two components of ecological structuring (Structural elements and the Contiguous portions to the structural elements). Processing: Politecnico di Torino, 2016.

4. Rules for implementation of local ecological network in urban planning

In the considered case studies, from an analytical process (framing of the territorial ecological system and public consultation through negotiating tables) it has come to drafting of rules, directly integrated with the urban plans, which include provisions for the implementation tools, such as spatial equalization measures, compensation and mitigation of impacts and provisions for the urban green management.

These implementation mechanisms are designed to intervene where projects and actions included in the urban plan could lead to changes of the level of the local ecological functionality. The procedure for the definition of the compensatory measures for impacts not mitigated includes an analytical phase, an assessment phase, a phase of planning/design, an implementation phase and a phase of management and monitoring:

1. recognition and evaluation of the ecological relevance of the compensatory areas, through the evaluation of urban-environmental state;
2. definition of possible measures for improvement and protection of the ecological and landscape value, for each area identified for compensation;
3. setting priorities for action, to increase biodiversity and the sustainable use of the territory;
4. choice of the compensatory measures;
5. design of compensatory measures, based on the characteristics of each lot chosen;
6. updating the natural value of the areas subject to compensation.

For the implementation of the ecological network into urban planning the selected measures have to be concrete, feasible, included into the landscape framework and coherent with the sectoral strategies defined at higher levels. In order to enable institutions to act towards a well-implemented local ecological network the following factors need to be considered:

- provisions of incentives, funding and authorisation to enable local action;
- strategic direction through regional level strategies and action plans;
- regional coherence of local urban plans and measures through coordinating activities.

Some rules are introduced for the urban green: the idea is that urban green spaces can contribute, with the green development of the rural environment, to the landscape quality of the territory. The defined parameters for the green management integrated (i.e. in the case of the City of Ivrea) the list of plant species adapted to the general urban conditions (climate and soil), as well as the conditions imposed by the urban environment, such as the resistance to pollution and pests. In the selection of plant species, it is indicated to have to consider: at least 50% of native species or particularly suitable to the urban environment and less than 25% of non-native species or naturalized (hence excluding the weeds or plant with relevant on-going diseases).

The urban nature conservation requires also new conditions: ecosystems, such as landscape, transcend the scales, beyond just the urban area. We need to understand, within the rules and projects, that green is no longer just a mere architecture of context but contributes, primarily, to create a complex system, unitary consistent with historical heritage and environmental dynamics. We can identify five key passages through which to build this system (Voghera and La Riccia, 2016):

1. Transposing the ecological network elements at regional level and verifying the implementation and the possible expansion at local level (the network project must become an integral part of the territorial vision).

2. Defining the appropriate modalities for intervention favouring the natural use for the areas included in the network.
3. Making the local ecological network also through the institution of urban and territorial equalization models giving priority to the protection of rivers areas and public lands.
4. Ensuring the correct inclusion of allowed building work and the prohibition of definitive elimination of trees and shrub formations, including rows, hedgerows, etc.
5. Defining compensations and mitigation measures of impacts deriving from urban transformations, consistent with the goals of enhancing the local ecological network and the landscape quality.

An important section of the legislation on a local scale for the construction and implementation of the ecological network at local scale is represented by the penalty system, according to two main aspects. For the purposes of protecting the ecological-environmental system that constitutes an asset of landscape interest, the author of a damage in the matter of the protection of landscape assets must, alternatively, either restore the state of the places at his own expense or pay a sum equivalent to the cost to restore the damage caused by the administration. For the purposes of protecting the ecological-environmental system that constitutes an asset of landscape interest, the author of a damage in the matter of the protection of the landscape assets has two alternative measures: the sentence to the remittance in restoration at his own expense of the state of the places or of the failure realization of a project concerning the environmental system. In the first case, it will have to pay a sum equivalent to the greater amount between the damage caused and the profit achieved through the transgression, entrusting to the administrative authority in charge of safeguarding the constraint the choice, deemed most appropriate, between one or the other sanctioning measure. In the second case, it will be sanctioned with a fine equal to the payment of the expense to be sustained for the realization of the project increased by 20%.

5. Conclusions

The case studies have been shown to be an effective means of testing new approaches. They can encourage similar methodologies and convince decision-makers that an idea is worth pursuing. Learning from these examples can also help to adjust and refine a local planning strategy.

Before developing a planning strategy based on local ecological network implementation, local priorities need to be defined. Such priorities are often driven by widely-recognised challenges may present windows of opportunities for urban development and decision-making overall. The underlying principles of ecological network planning here need to be understood as part of a holistic approach based on landscape and need to be adapted to the local planning system, social, economic and environmental conditions, as well as the available stakeholders.

Local ecological network planning requires a complex whole of interventions useful for the optimal provision of services and the quality of living conditions, aimed at production and production public and private wealth distribution, characterized by an eco-systemic approach, with which the city is negotiable as a dynamic organism. Water, energy, waste are the cycles on which to intervene. Bring natural components into harmony different urban forms allow to recover relations between spaces open and built spaces, buildings, soils, morphologies. Production urban agriculture, new solutions for public lighting linked to sustainable mobility and energy production, the reconfiguration of urban fabrics to improve conditions microclimatic and for perceptive wellbeing, aesthetic quality and the functionality of the pedestrian and cycle paths, the connection among parks, city gardens, cultural assets are components a positive environmental balance, which, at the same time, favour

inclusion, propensity to care and sociality, restore degraded values, recover residual and abandoned spaces, produce common goods.

Therefore, urban planning it is not a field confined into the technical sector; it can be to become a collective field, assigning to social and environmental values an economic relevance, putting to centre of attention, habitability, defining new types of spaces public, overcoming the season of volumetric rewarding, for an effective and concrete solution to the inequalities: between centrality and marginality, between city and modern campaign, places, redeveloped parts and parts that will have to looking forward to the conditions to be reborn. With this change of approach, it is possible to change behaviours and lifestyles, financial costs and environmental factors associated with current urban conditions; new economies can be activated, together with job opportunities. It is time, therefore, to move from the technical standards designed for growth of the city to the facilities for the quality of the various urban forms, from destinations of use to activities, from predetermination to compatibility and environmental suitability.

Ecological networks are the key to planning the city of tomorrow, to strive to the settlement balance, to reduce risks, to promote policies integrated, adhere to the contexts and support the improvement of conditions of populations and productive capacities. The networks the operational fields of structural planning are no longer confined to municipal administrative limits, so as to provide territorial standards for citizens moving in the areas metropolitan and vast, interdependent ones. Finally, they involve the necessary integration of management into projects, to measure ecological quality and the supply of ecosystem services, abandoning an administrative approach based only on protection of territorial assets.

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Nature-based solutions: new challenges for urban planning

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Abstract: Nature-based solutions (NBS) are broadly defined as the use of solutions based on nature and ecological functions to address societal challenges, such as climate change adaptation and mitigation, population health, food security, and natural disasters, through the delivery of multiple ecosystem services (ES). This paper aims to outline some of the main challenges associated to the development and mainstreaming of NBS in urban planning, providing valuable insights for the integration of NBS in urban planning processes and instruments. To this aim, five challenges are proposed and discussed in this paper, namely: to provide decision-makers with tools and methods for mapping and assessing ES that substantiate evidence of NBS effectiveness in providing multiple benefits; to use more flexible and qualitative planning approaches that can foster the implementation of NBS such as performance-based planning; to develop indicators that can be used to evaluate and compare possible NBS during strategic environmental assessment of urban plans; to include the assessment of ecosystem disservices that may emerge when considering and comparing NBS interventions; to develop adequate measures of progress for the monitoring of NBS effects over time to strengthen the evidence base for their benefits and co-benefits.

Keywords: ecosystem services; nature-based solutions; urban planning; assessment of co-benefits

Introduction

Over the past years, an increasing number of perspectives have reflected an anthropocentric view of the management of nature and natural resources, including biodiversity and the environment (Nesshöver *et al.* 2015, 2017), focusing on the benefits that humans gain from nature (Díaz *et al.* 2015, MA, 2005, TEEB, 2010, Nesshöver *et al.* 2017). The most recent entry to this discourse is Nature-Based Solutions (NBS), a concept that brings together well-established ecosystem-based approaches, such as Ecosystem Services (ES), Green-Blue Infrastructure (GBI), ecological engineering, ecosystem-based management, natural capital (Nesshöver *et al.* 2017, Nature Editorial, 2017, Raymond *et al.* 2017) and urban forestry (Escobedo *et al.* 2018) with assessments of the social and economic benefits of resource-efficient and systemic solutions that combines technical, business, finance, governance, regulatory and social innovation (European Commission, 2015, Raymond *et al.* 2017). Although NBS approach shares similarities with the abovementioned approaches, its objective towards the management of the natural resources for human well-being is quite different, indicating that such a topic has evolved over time. In fact, although NBS concept shares a similar root for example (and particularly) with the

concepts of ES and GBI, the latter pays more attention to the spatial pattern and connectivity of the natural network, whereas ES to the multiple natural functions that can benefit both nature and humans (Escobedo *et al.* 2018). Thus, the emergence of NBS denotes the recent expansion of the scope to particularly encompass the applications for addressing (i.e., resolving or mitigating) multiple urban environmental, socio-political, and ecological challenges (Escobedo *et al.* 2018), being directly relevant to several policy areas such as land use and spatial planning (Raymond *et al.* 2017). On a technological and applicative perspective, another difference with previous approaches, particularly ecological engineering, is the notion that NBS are explicitly considered as alternatives to human-made infrastructure that require large investments in materials and energy (Nesshöver *et al.* 2017).

The concept of nature-based solutions

Among the various definitions proposed for NBS, the IUCN (Cohen-Shacham *et al.* 2016) defined NBS as “actions to protect, sustainably manage and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”, while the European Commission defined NBS as “living solutions inspired by, continuously supported by and using nature, which are designed to address various societal challenges in a resource-efficient and adaptable manner and to provide simultaneously economic, social, and environmental benefits” (European Commission, 2015). The NBS concept suggests that natural (or self-regulating) ecosystem processes are essential for the definition and that it is implicit that a particular challenge or problem should be solved through the contribution of such ecosystem processes (Albert *et al.* 2019). In order to understand their functioning and added value with respect to alternative solutions, NBS can be described as actions that utilize ecosystem processes of green and blue infrastructure in order to safeguard or enhance the delivery of ES, which can in turn contribute to the alleviation of societal challenges, simultaneously providing economic, human security, social/cultural, and ecological co-benefits, in spite of technical alternatives which usually simply target the challenge without providing additional benefits (Albert *et al.* 2019).

Eggermont *et al.* (2015) classified NBS by considering two dimensions: (i) the required level of engineering of biodiversity and ecosystems involved in the NBS; and (ii) the level of enhancement of ecosystem services achievable by the NBS. Particularly, NBS are classified into three main types:

- Type 1 consists of “no or minimal intervention in ecosystems, with the objectives of maintaining or improving the delivery of a range of ES both inside and outside of these preserved ecosystems” (Eggermont *et al.* 2015). Solutions included in this typology are the ones that involve making better use of existing natural or protected ecosystems, such as measures to increase fish stocks in wetlands to enhance food security (Cohen-Shacham *et al.* 2016);
- Type 2 concerns “the definition and implementation of management approaches that develop sustainable and multifunctional ecosystems and landscapes (extensively or intensively managed), which improves the delivery of selected ES compared to what would be obtained with a more conventional intervention” (Eggermont *et al.* 2015). Solutions falling within this typology are based on the development of sustainable management protocols and procedures for managed or restored ecosystems, such as the re-establishment of traditional agroforestry systems based on commercial tree species to support poverty alleviation (Cohen-Shacham *et al.* 2016);
- Type 3 consists of “managing ecosystems in very intrusive ways or even creating new ecosystems” (Eggermont *et al.* 2015). Solutions included in this typology are the ones that involve the creation of new ecosystems, such as the establishment of green buildings – green walls, green roofs – to mitigate urban heat island effect and clean polluted air (Cohen-Shacham *et al.* 2016).

Examples of NBS are green buildings (e.g., green roofs, green walls), urban green areas connected to grey infrastructure (e.g., alley and street trees, railroad bank, house gardens, green playground/ school grounds), parks and (semi)natural urban green areas (including urban forests), allotments and community gardens, green indoor areas, blue areas (e.g., rivers, lakes, seacoasts, wetlands), green areas for water management (e.g., rain gardens or sustainable urban drainage systems), derelict areas (e.g., abandoned spaces with patches of wilderness) (Almassy *et al.* 2018).

Challenges for urban planning

As NBS development and evaluation spans the requirement of lowering of systemic trade-offs and increasing synergies (Maes and Jacobs, 2017), the task for planning and science is to critically assess, for each proposed intervention, to what degree it can alleviate the problem at hand and what kind of co-benefits and trade-offs the intervention might yield (Albert *et al.* 2019). The analysis of co-benefits and trade-offs (e.g., trade-offs among ES), as well as of gaps in ES supply and demand, can enhance the transparency and understanding concerning the respective advantages and disadvantages of proposed actions (Raymond *et al.* 2017). This enables more informed decision-making processes about sustainable development by informing urban land use and management decisions and maximizing an ecosystem's benefits to society (Lafortezza and Chen, 2016), implicitly referring to the spatial scale of the effects of an intervention. As the added value of the NBS approach is that they are strongly solution-oriented, such co-benefits and trade-offs (spatial) analysis need to be addressed taking into account the perspective of solving societal challenges (at different scales, from global to local). However, there still is lack of knowledge about how to assess the impacts of and the co-benefits simultaneously provided by NBS within and across different societal challenges, since existing frameworks do not cater for such complexity (Raymond *et al.* 2017) and previous studies mainly assessed (co-)benefits by making reference to single indicators or challenge areas (e.g., Maes, 2013, Bain *et al.* 2015, Rao *et al.* 2016, Mouchet *et al.* 2017). Moreover, in order to ensure the feasibility of NBS, these solutions require to be embedded within viable governance and planning frameworks due to the need for cooperation and knowledge integration of actors from different fields or sectors, the institutional context within which these actors operate, and the financial options that are available (Albert *et al.* 2019). Thus, for the development and mainstreaming of NBS in urban planning on the one hand evidence is needed to motivate, guide, and support decision-makers in decision-making processes, and on the other hand approaches supporting the development of NBS are required to be integrated into proper planning processes and instruments to guarantee their effective implementation. Below, some challenges associated to the development and mainstreaming of NBS in urban planning are outlined and briefly described. It has to be noted that these challenges are presented not necessarily in order of relevance but just randomly.

The first challenge is related to the development of methods and tools to support decision-making for NBS. Such methods and tools are aimed at substantiating evidence of their capacity and effectiveness to provide co-benefits and simultaneously address different societal challenges while contributing to human well-being, e.g., decision-making toolkits and processes that simplify and systematize the monitoring and evaluation of co-benefits in decision-support (Ürge-Vorsatz *et al.* 2014), as well as model, explore, and suggest solutions (Bell, 2012). Since the effectiveness of NBS is strictly related to the capacity to provide multiple ES, once identified the problem(s) that should be solved and potential solutions, it is essential to create/make use of scientific and spatial models to define, explore, and analyse the spatial scale of the co-benefits that such solutions can provide through the supply of multiple ES, as well as who and where are the beneficiaries. The spatial analysis and mapping of the effects of NBS on the provision of ES is essential to conduct ex-ante assessment – and provide ex-ante evidence – to inform decision-making, since makes it possible to analyse both ecological and socio-economic aspects of an intervention in a spatially-explicitly manner, as well as the beneficiaries of the services (and associated co-benefits) the interventions might yield. Different scientific models already exist and can be used to map and assess ES. However, some ES are considered as difficult to capture through scientific models and indicators, such as cultural ES (La Rosa *et al.* 2015, Cortinovis and Geneletti, 2018). In fact, cultural ES are

characterised by intangible dimension, relation with non-material values, and inherent subjectivity (Chen et al. 2012) and can be investigated through stakeholder involvement (Luederitz *et al.* 2015, Wolff *et al.* 2015, Cortinovis and Geneletti, 2018) instead of applying scientific models that are typically used with biophysical data (e.g., for regulating ES). In general, methods for mapping and assessing ES are intended to:

- portray the current situation in relation to the supply and demand of ES, in order to identify those areas characterized by *low performances* in terms of ES that are associated to a series of social and environmental issues, or societal challenges, and, consequently, affect human well-being (e.g., urban and peri-urban areas that are difficult to access or have scarce presence of facilities have *low performances* in terms of recreational services; residential areas with scarce presence of vegetation have *low performances* in terms of regulating services, such as microclimate regulation or water flow regulation);
- develop scenarios associated to the implementation of NBS aimed at addressing societal challenges (e.g., to address the impacts of climate change, permeable areas for stormwater retention can be created) and enhancing human well-being (e.g., planting a large amount of trees can support the alleviation of health problems associated to air pollution or high temperatures thanks to their ability to capture pollutants and cooling capacity) through the provision of ES (e.g., by bridging the gap between ES demand and supply for stormwater retention; by creating areas characterized by *high performances* in terms of ES supply associated to the presence of trees such as microclimate and air quality regulation); potential ecosystem disservices and options to avoid or mitigate them should be investigated and included in the analysis when developing scenarios (for ecosystem disservices see also the fourth challenge presented below).

Once scenarios based on ex-ante assessments of ES associated to NBS are implemented, cost-effectiveness assessment of NBS projects can be performed on the basis of the evidence base, so that alternative solutions can be compared considering the place-specific implications of each alternative in relation to the expectations for solutions in any particular context. It has to be noted that cost-benefit analyses alone may not adequately capture the multiple benefits over time of NBS, thus methods including integrated sustainability assessment and mapping (long-term and short-term) multiple benefits and how they change over time are required for ex-ante assessments (Xing *et al.* 2017, Raymond *et al.* 2017).

The second challenge concerns the use of performance-based planning approaches, which support better land use integration as long as performance criteria are met instead of more traditional planning approaches and regulations that are typically based on zoning, thus on segregation of land use zones (Frew *et al.* 2016). Performance-based approaches are composed of two components: “first, criteria that describe the desired end result, and second, methods to define standards used to measure the acceptable limits of impact to ensure the desired end result” (Baker *et al.* 2006). Performance-based planning approaches are therefore more suitable to foster the implementation of NBS since it uses clear standards that set acceptable environmental performances (Porter *et al.* 1988; Blackwell, 1989; Frew *et al.* 2016), and can be tailored in order to include more qualitative objectives in urban planning. Performances of urban transformation and management options in relation to such objectives can be measured and assessed by making use of appropriate data and indicators (i.e., performance-based indicators) that are typically used to map and assess ES. Performance-based planning approaches can be linked, for example, to ex-ante assessment frameworks for the evaluation of i) the suitability of any urban development resulting in land use and/or land cover change with respect to some minimum standard requirements, desired results, and/or qualitative and quantitative objectives (in terms of ES supply), and ii) the effectiveness of NSB projects to meet agreed goals or desired end results, e.g., through the selection of a set of easily measurable criteria for the ecological, social, and economic effectiveness of the interventions.

The third challenge is associated to the development of appropriate indicators that consider direct effects and associated co-benefits and that can be used to assess and compare the effectiveness of possible NBS in addressing environmental issues during the strategic environmental assessment of urban planning instruments. It is argued that planning decisions would benefit from systematic considerations of their effects on ES (e.g., Geneletti, 2011). Since many of NBS benefits and co-benefits rely on the supply of multiple ES, systematic considerations of their effects on ES can be founded on the testing and assessment of alternative actions by using such indicators so that advantages and drawbacks of the different alternatives can be highlighted. When assessing NBS, it is of great importance to take into account also long-term benefits and effects, as NBS projects often show their advantages in a longer period of time with respect to traditional solutions (Kabisch *et al.* 2016). This could help to fill the knowledge gaps that exist with regard to long-term benefits and effects of NBS, as well as their contribution to increasing the resilience of cities against foreseen environmental changes (Kabisch *et al.* 2016).

The fourth challenge regards the inclusion of potential disservices or negative externalities that may emerge when analysing, assessing, and comparing the effects of NBS interventions. Some authors (e.g., Lyytimäki, 2015, Schaubroeck, 2017, Blanco *et al.* 2019) advocate that an integrated assessment of both ES and disservices will help towards a clearer understanding about the role that nature has for humans and human well-being, and towards the formulation of more effective and innovative sustainability policies. The inclusion of ecosystem disservices valuation is therefore crucial to estimate the sustainability of NBS (Schaubroeck, 2017). If properly applied during decision-making processes concerning NBS projects, the inclusion of ecosystem disservices in the assessment phase can help to develop ad-hoc management and policy instruments that address potential solutions to avoid or manage them (e.g., long-term management options, appropriate selection of species, or compensatory measures), as well as provide information to inform decisions on alternative solutions.

The fifth challenge concerns the development of adequate measures of progress and success towards agreed goals in order to strengthen the evidence base for the benefits and co-benefits provided by NBS projects, for example through a selection of a set of easily measurable criteria for the ecological, social, and economic effectiveness of the interventions (e.g., Heink *et al.* 2015, Hobbs and Harris, 2001, Nesshöver *et al.* 2017). Many indicators have the potential to be considered as success criteria, but these will need to be clearly related to the specific *solution* goals in terms of biophysical aspects and ES (e.g., carbon sequestration, water use efficiency, pollination, microclimate regulation, cultural and recreational services), and the same applies to the economic and social spheres in terms of value, capital or investment/revenue in the system, or to the effects on health and well-being (Nesshöver *et al.* 2017). Monitoring of NBS impacts/effects over time is considered a fundamental step of NBS development and assessment phases, as it is crucial for their continuous refinement and testing. In fact, when monitoring shows that targets are not met, the community is informed and corrective measures can be taken such as revising the goals, changing planning practices, or improving the implementation of the plan or project (Ahern *et al.* 2014).

Conclusions

The promotion of NBS builds on the increasing evidence and experiences showing that natural resources can play an important and cost-effective role in addressing societal challenges and enhancing human well-being through the provision of multiple ES. These evidence and experiences are largely related to the agricultural and forestry sectors, with relatively little focus on urban areas (Munang *et al.* 2013). This paper presented five challenges associated to the development and mainstreaming of NBS in urban planning, so as to provide directions for their promotion in urban areas. Such challenges are related to the development of decision support methods and tools aimed at providing evidence of NBS effectiveness, to the use of performance-based planning approaches instead of traditional zoning approaches since NBS are strongly performance-oriented, to the development of indicators to assess and compare the effectiveness of possible NBS during the strategic environmental assessment of urban planning instruments, to the analysis and assessment of potential disservices

or negative externalities that may emerge from NBS interventions, to the development of adequate measures of progress and success towards agreed goals to monitor the effects of NBS over time and to strengthen the evidence base for their benefits and co-benefits. The main features of these challenges are introduced and discussed in order to provide insights for the integration of NBS in urban planning processes and instruments.

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Ecosystem Service Evaluation for Landscape Design: The Project of a Rural Peri-Urban Park as a Node of the Local Green Infrastructure

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Abstract: Green Infrastructure (GI) multifunctionality – namely the capacity to deliver a wide range of Ecosystem Services (ES) – is one of the main GI planning principles. It is for this reason that the integration between GI and ES concepts and approaches is increasingly tested. This paper presents the outcomes of an applied research that took up the challenge of implementing GI at the local level through the landscape design of a peri-urban rural park (Chieri, Italy) conceived as a GI node. The park's project was based on the evaluation of ES, that allowed to highlight the ES performance of alternative design choices and to support the GI design towards multifunctionality. Eventually, Payment for Ecosystem Services (PES) schemes were defined in order to foster the implementation of the park's project. The research, thus: (i) puts in action a multiscale approach, translating at the local level, through landscape design, GI planning indications; (ii) promotes GI multifunctionality based on a “place-based” vision, that is through the assessment of local features, highlighting the actual area's potential to provide ES and the existing ES trade-offs; (iii) identifies PES as a tool for increasing the effectiveness of GI implementation.

Keywords: Ecosystem Services; Green Infrastructure; landscape design; peri-urban park.

Introduction

The integration of Ecosystem Service (ES) evaluation – namely both ES biophysical assessment and economic valuation (Häyhä and Franzese, 2014, Mavsar and Varela, 2014) – into spatial planning policies is today widely promoted. This integration is generally assumed to be a crucial step to address territorial transformations towards sustainable development, since the ES concept effectively connects environmental, social and economic issues (Braat and de Groot, 2012). Several recent studies addressed the question of how to operationalize ES evaluation for spatial planning and landscape planning in particular (see, among the others, Gómez-Baggethun and Barton, 2013, Von Haaren *et al.* 2016, Tammi *et al.* 2017, Hian *et al.* 2018, Lam and Conwey, 2018). To date, this is a still open and experimental issue (Lerouge *et al.* 2017).

In the last decade, the relationship between ES and landscape design has been increasingly investigated too. After the publication of the Millennium Ecosystem Assessment Report (MEA, 2005), the ES paradigm started to fertilise landscape design science (Nassauer and Opdam, 2008, Termorshuizen and Opdam, 2009). An increasing number of studies proposed ES as a conceptual framework for landscape design, to address it towards multifunctionality objectives, that is the capacity of providing at the same time environmental, social and

economic benefits (Lovell and Johnston, 2009). Performance indicators for designed landscapes based on the delivery of ES were defined (Windhager *et al.* 2010, Sustainable Sites Initiative 2015).

It is precisely this capacity of the ES concept to support *multifunctionality* that makes it a central element in the Green Infrastructure (GI) paradigm as well. Multifunctionality is actually one of the main GI planning principles (together with “connectivity”, “multi-functionality”, “integration”, “multi-scale approach” and “multi-object approach”, Hansen and Pauleit, 2014). GI has been defined as a “strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” (EC COM(2013)249). The integration between GI and ES concepts and approaches is thus increasingly studied and tested (Arcidiano *et al.* 2016, Marino *et al.* 2019). It is worth underlying that multifunctionality should not be seen as a straightforward and simplistic result of GI promotion, but as a “place-based” vision, based on the local assessment of GI environmental, social, cultural, economic and institutional context (Madureira and Andresen, 2014). This, in turn, entails the need of meeting another GI principle, that is a multi-scale approach able to link different spatial scales. The construction of an effective link between the planning and design levels is still an open issue in landscape planning policies and ecological network policies (Voghera and La Riccia, 2018).

This paper presents the outcomes of an applied research that took up the challenge of implementing GI at the local level, through the landscape planning and design of a peri-urban rural park that was conceived as a GI node. The park’s project was based on the evaluation of ES at the local scale. ES evaluation (biophysical assessment and economic valuation) was developed both for the area’s current state and for three different design scenarios, allowing to highlight the ES performance of alternative design choices and supporting the GI design towards multifunctionality. Eventually, PES schemes were implemented in order to foster the actual implementation of the park’s project.

Territorial and Institutional Context

The project area, known as *Fontaneto*, is a rural area of 100 ha close to the city of Chieri (Turin, Italy). It is a residual peri-urban zone, surrounded by residential and industrial buildings and transport infrastructures. The area, which is crossed by two minor watercourses (Rio Tepice and Rio del Vallo), is mainly characterized by an intensive agricultural activity (cereal and forage crops), that has non-negligible impacts on the nearby residential areas, due to the use of chemical plant protection products and fertilizers. Despite some punctual restoration projects developed by the Municipality, today *Fontaneto* presents a general low environmental and landscape quality. The area is mainly private and highly fragmented (439 cadastral parcels and 175 owners).

This area has been identified in the Chieri Local Ecological Network¹ as a part of a “*cuneo verde*” (green wedge). Green wedges are areas with a high density of zones with relevant ecological functionality. These areas act as important ecological corridors that penetrate the urban and peri-urban context. *Fontaneto*, in particular, is situated in the northern part of a green wedge (Figure 1) and it is a crucial transitional zone between the city and the surrounding rural landscape. In green wedges, interventions to increase ecological performance are needed in order to improve the quality and connectivity of the overall network. A Plan (“*Biciplan*”, closely connected to the Ecological Network Plan) aimed at improving the soft mobility network in Chieri highlighted the need for integration of bicycle pathways in the city and in the *Fontaneto* area as well.

¹ “Local ecological network and Biciplan of Chieri” (2016) is a study developed by Politecnico di Torino – DIST (research group: Angioletta Voghera, Luca Staricco, Stefania Guarini, Gabriella Negrini, Luigi La Riccia), on behalf of Chieri Municipality.

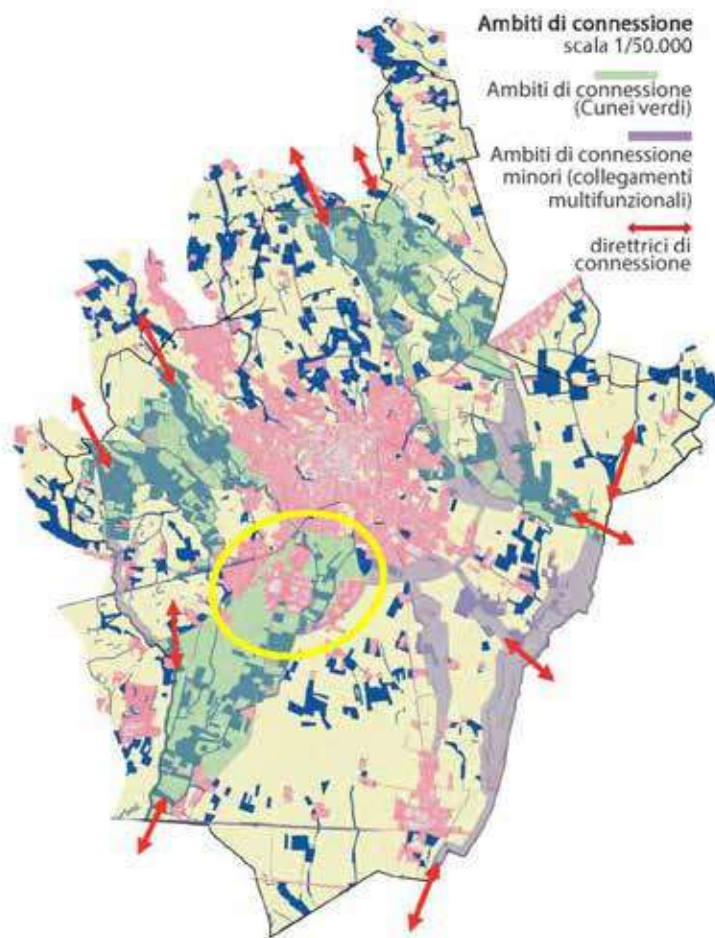


Figure 1. The *Fontaneto* area in the context of the Chieri Local Ecological Network (Source: *Variante strutturale n. 15 del Piano Regolatore Generale Comunale*. Urban areas are highlighted in pink, green wedges are highlighted in light green, the *Fontaneto* area is circled in yellow).

On the wave of these studies, and of a more general Municipality's effort to develop policies that reduce soil consumption, in 2019 Chieri Municipality approved a modification of its local urban plan (*Variante strutturale n. 15 del Piano Regolatore Generale Comunale*). According to this modification – that was supported by the LIFE+ project SAM4CP (<http://www.sam4cp.eu/en/>) and explicitly aimed at maintaining and enhancing ES provided by soil – some areas of *Fontaneto* that were previously classified as industrial zones and golf courses have been converted in rural areas. The Municipality aims to create in *Fontaneto* a rural-recreational park that could act as a crucial node of the local GI (here intended as the combination of the local ecological and mobility networks above-mentioned), in which sustainable agricultural areas, natural areas, and recreational areas coexist and, in the meanwhile, a more sustainable relationship between the dense city and its peri-urban rural context is promoted.

The research here presented – developed by SEACoop, in collaboration with Politecnico di Torino, on behalf of Città Metropolitana di Torino (December 2017 - July 2018) and the Chieri Municipality (October 2018 - today) – meant to support the area's transformation by developing a design vision based on *Fontaneto* environmental and landscape enhancement. To this aim, the concept of ES has been assumed as an operational paradigm to address the area's design towards the requested multifunctionality and to envisage a peri-urban park capable of delivering provisioning, regulating and cultural ES. Evaluation has been thus conceived not only as a knowledge tool but as an operational tool, able to sustain and address landscape design choices.

Ecosystem Service Evaluation for *Fontaneto* Landscape Design: Methodological Framework and Outcomes

Evaluation was carried on in relation to nine ES (Table 1). Starting from the ES classification framework provided by the Common International Classification of Ecosystem Services (CICES, V5.1, 2018, cices.eu), ES were selected according to their representativeness of the main ES classes – Provisioning, Regulation and Maintenance, and Cultural ES – and the primary functions that are currently performed by the area and envisaged by the project. In order to evaluate ES, both biophysical and economic indicators were used. Because of the site-scale of the evaluation, indicators, when possible, relied on empirical and in-situ collected data (e.g. water quality is based on the analysis of extracted soil samples, Habitat maintenance on local avifauna observation, Agriculture production on a survey of local agriculture land uses).

Ecosystem Services		Biophysical indicator	Structure	Economic indicator	Structure	Economic valuation method
PROVISIONING	Agricultural production	Amount of agricultural products	ql/ha/year	Value of agricultural products	€/ha/year	Market price
	Wood production	Volume of extracted wood	m ³ /ha/year	Value of extracted wood	€/ha/year	Market price
	Groundwater	Volume of water extracted for irrigation use	m ³ /ha/year	Value of water extracted for irrigation use	€/ha/year	Market price
REGULATION AND MAINTENANCE	Hydrogeological protection	Surface of vegetation areas acting for prevention of riverbanks erosion	ha	Value of the protective function played by riparian vegetation	€/ha/year	Replacement cost
	Habitat maintenance	Surface of areas able to maintain nursery populations and habitats	ha	Value of the ecosystem capacity to maintain nursery populations and habitats	€/ha/year	Avoided cost and Benefit transfer
	Water quality	Amount of nitrogen absorbed by soil	g/m ³ /year	Value of the water purification function played by soil	€/ha/year	Replacement cost
	Climate regulation	Amount of carbon absorbed by soil	t/ha/year	Value of carbon absorbed by soil	€/ha/year	Market price
CULTURAL	Recreation	Number of visits	Visits/year	WTP/visits	€/ha/year	Benefit transfer
	Aesthetic values	Number of visitors	Visitors/year	WTP/visitors	€/ha/year	Benefit transfer

Table 1. Biophysical and economic indicators for the evaluation of Ecosystem Services.

To make evaluation an effective tool to sustain the landscape design choices, ES evaluation has been developed as tightly connected to the design phase.

Firstly, we evaluated the baseline, namely the current provision of ES in the *Fontaneto* area. Through the application of indicators, we defined, for each ES, per unit (ha) and per year biophysical and economic values, and we applied them to the different land-uses in the area that contribute to specific ES production.

We then defined a Masterplan for *Fontaneto* aimed at improving the delivery of ES in the area and at meeting the Municipality's request for a multifunctional park where rural, naturalistic and recreational areas can coexist. The Masterplan entails three main types of landscape design interventions: (i) interventions explicitly aimed at improving the area's environmental quality, such as cultivation changes from cereals to oil and protein crops to grant a more sustainable agriculture, creation of a wetland to improve local biodiversity, and planting of riparian vegetation for hydrogeological protection; (ii) interventions to improve the area's landscape quality (here meant in terms of scenic-perceptive values), such as a planting of vegetation for the mitigation of the visual impact of buildings situated inside and nearby the area; (iii) interventions to improve the area's recreational potential, such as the creation of recreational areas and tree-lined bicycle paths.

With regard to interventions, we envisaged three different implementation scenarios: (i) in the first one (the optimum scenario) all the interventions are carried on; (ii) in the second one (the medium scenario), some landscape elements aimed at improving the area's environmental quality (e.g. wetland and riparian vegetation) and the recreational potential are not implemented; in the third one (the worst scenario) only tree-lined bicycle paths are implemented. For each scenario we evaluated the overall ES provided, applying indicators to the new envisaged land-uses. The comparison between the scenarios and the baseline, and among the three scenarios (Table 2), gives interesting insights to support the definition of the final project for the rural-recreational park.

Ecosystem Services		Scenario 1 (optimum scenario) €/year	Scenario 2 (optimum scenario) €/year	Scenario 3 (worst scenario) €/year	Baseline €/year
PROVISIONING	Agricultural production	95,105.18	96,586.88	99,620.18	101,724.37
	Wood production	139.24	119.41	87.02	87.96
	Groundwater	45.81	47.22	46.81	45.55
REGULATION AND MAINTENANCE	Hydrogeological protection	18,866.34	17,630.23	17,630.23	17,325.31
	Habitat maintenance	6,109.17	6,092.92	5,839.81	5,810.30
	Water quality	24,282.36	24,246.16	24,028.07	9,297.66
	Climate regulation	89,008.39	90,412.60	89,642.13	60,698.30
CULTURAL	Recreation	50,585.83	37,846.65	25,969.91	19,273.92
	Aesthetic values	47,886.39	27,841.64	5,283.75	1,869.97
TEV		332,028.71	300,823.71	268,147.90	216,133.34

Table 2 Evaluation outcomes: baseline and scenarios.

The TEV of ES delivered by each scenario is higher than the baseline. The envisaged interventions thus improve significantly the value of ES provided by the area, even if we consider the worst scenario. Concerning the three

scenarios, the values of ES differ consistently among them. In most cases, ES values grow from the worst to the optimum scenario (only Groundwater and Climate regulation present non-linear dynamics). Agriculture production is the only ES whose values decrease from the worst to the optimum scenario. This negative dynamic is due to the conversion of a part of the current agricultural areas to different functions (e.g. recreational functions, through bicycle paths, or environmental functions, through riparian vegetation). This trend of values catches the trade-off phenomena that can occur among ES: maximizing the delivery of all ES simultaneously is often difficult, if not impossible (Torkelboom *et al.* 2018). This is particularly true for provisioning ES (such as agriculture production) whose dynamic is usually inversely proportional to regulating and cultural ES (Braat and ten Brink, 2008). In *Fontaneto* this relationship is clear and poses issues regarding social acceptance and feasibility of the project.

Potentialities and Challenges of Payments of Ecosystem Services as a Tool for Supporting Green Infrastructure Implementation

PES can be defined as incentive mechanisms to promote the provision of ES. More specifically PES are “voluntary transactions where a well-defined ES (or a land-use likely to secure that service) is being ‘bought’ by a (minimum one) ES buyer from a (minimum one) ES provider, if and only if the ES provider secures ES provision (conditionality)” (Wunder, 2005, p. 3).

This theoretical scheme proves to be significantly more complex when applied in reality (Muradian *et al.* 2010). Every PES is necessarily a site-specific solution. This is even truer in Italy, where there is not a legal framework for ES (the legislative decree which should have regulated PES in accordance with the principles laid out by Section 70(1) of Law 221/2015, art. 70.1, is still to be enacted). Moreover, a strong tradition of “command and control” planning tools and a widespread land property fragmentation do not favour the implementation of PES in our country, that are less common² compared to other European contexts (Maztdorf *et al.* 2014). PES are currently a technical testing ground for environmental and landscape policies in Italy.

However, despite these challenges we think that PES could represent a valuable tool for implementing in *Fontaneto* the landscape interventions described above, and, more generally, for fostering the actual implementation of GI. Thanks to the main features that should characterize PES – i.e. conditionality, additionality and permanence (DEFRA, 2013) – this tool could improve the effectiveness of the design action by: (i) granting a real and long-term provisioning of ES, (ii) fostering local actor “responsibilisation”, and (iii) contributing to solving potential social conflicts linked to ES trade-offs. In *Fontaneto* PES could be used to incentive farmers to provide cultural and regulating ES, through giving up portions of arable land for creating bicycle paths, or planting and maintaining riparian and mitigation vegetation.

We thus identified possible “buyers” of ES in *Fontaneto*: the Municipality itself, other public institutions (such as the Local Health Authority), private actors that are already committed with the Municipality to pay for landscape-environmental compensations (e.g. local companies) or that could be interested in sponsoring PES. Concerning the ES “provider side”, farmers have been identified as the main potential ES providers in the area. However, due to the high fragmentation of the land properties, an Association of owners has been identified as the most suitable actor to be involved in a PES scheme that could assure a consistent management of the area.

Conclusions

This applied research aimed to link ES and GI concepts and approaches. We think that the *Fontaneto* project can be considered a valuable experience of GI implementation because of the following reasons:

² Beyond some interesting, punctual experimentation (see for instance Marino 2017).

- it puts in action a *multiscalar approach*, translating at the local level, through landscape design, planning indications concerning the local ecological and recreational network;
- it promotes *multifunctionality*, by considering the provisioning of different ES as a key criterion for the Park's design. Multifunctionality is not a "simplistic result" of the GI concept, but it is based on a "place-based" vision. The assessment of the local features highlighted the actual area's potential to provide ES and the existing ES trade-offs;
- it identifies *PES* as a tool for increasing the *effectiveness* of GI implementation. A path for activating PES schemes between the Municipality and some locale farmers has already been started. The Municipality has recently dedicated a part of the 2019 annual budget to finance PES on private rural areas. Moreover, the Municipality is currently working on the hypothesis of decreasing the rental price of public rural areas in order to incentive farmers to deliver certain ES. Several operational aspects still need to be stated (e.g. constitution of landowner association, drafting of PES contracts, definition of the monitoring processes), but the process for the activation of PES schemes in *Fontaneto* can already be seen as an innovative and experimental practice in the national framework of landscape policies.

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SP23

Land development and management in post-socialist countries

Land development and management in post-socialist countries

Územní Plánování vs. Generalbebauungsplanung:
A Comparison of Planning Concepts and Practices
between the former Czechoslovakia and the German
Democratic Republic

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Abstract: While there is no denying that the Soviet Union had great influence over the patterns of urban growth and development of land in Central and East European countries in the 20th century, yet a qualitative comparison of how each country defined urban planning and spatial planning during their state socialist regime have not been examined in depth. The nuances in meanings would reveal local perspectives on how the planning process operated in each respective country, thus unfolding the unique trajectory path of each city based on its location and importance within the country even after the transition to post-socialism. The aim of this paper is to expose the particularities of planning practices in Czechoslovakia compared to the German Democratic Republic (GDR) and to explain the differences in urban development in strategically located cities of East Berlin and Bratislava. The first part of this paper introduces the definitions and concepts of urban planning in the Czech, Slovak and German context and how they evolve throughout the four decades of various planning and building stages during state socialism. Then it discusses the concept of spatial planning and the instruments used respectively in each country. The third part will then demonstrate how these concepts and instruments were applied in an important aspect of planning infrastructure, the nation-wide transportation network, and its influence on growth in East Berlin and Bratislava.

Keywords: comparative planning history, state socialism, infrastructure, centralised economies;

Introduction

Much of the discussions in the current discourse on post-socialist cities acknowledge the need for critical analysis of their respective history rather than orienting the research as an East and West divide (Tuvikene, Hirt, Ferenčuhová, 2017; Ferenčuhová, 2016). This is due to the fact that the cities of Central and East Europe as well as the former Soviet Union experienced diverse development pathways after the fall of socialist regimes. An overview of the presentations during the recent *Three Decades of Post-Socialist Transition* Conference in Darmstadt, May 2019, which brought academics and experts from cities all around Europe and the former Soviet Union, revealed the individual responses and measures in urban development during the transition to global capitalism that varied from each other. Indeed, authors who have studied these developments have categorized them into sub-regions, e.g. Baltic, Balkans, Central Europe, Russia and the former Soviet Union cities as distinguishable from one another (Tosics, 2005; Bohle, Greskovits, 2012). While it may be helpful to categorise these developments, researchers advocating comparative urbanism have highlighted the need to analyse cities as products of their own history rather than just results of empirical studies (Roy, 2016; Ferenčuhová, 2017). This paper aims to contribute to the discourse by analysing the

contextual meanings of urban planning in the German Democratic Republic (GDR) and Czechoslovakia, and by juxtaposing them, exposing the differences in their approaches to further understand the imprint on today's urban development. This paper is based on a discourse analysis through texts derived from architectural journals, textbooks, maps and documents from the former educational institutions and the ministries of the GDR and Czechoslovakia as well as local contemporary secondary literature. While it addresses that each region has national histories of urban planning dating back hundreds of years, the paper will focus only on the socialist regime period. The first part introduces the local definitions and concepts of urban planning, the second section touches upon the concept of spatial planning and the instruments used respectively in each country, while the final section demonstrates how these concepts and instruments were applied in an important aspect of urban planning, the transportation network, with examples in East Berlin and Bratislava.

Urbanismus and Städtebau

It is insufficient to explain the planning history of the former socialist countries without considering how planning was understood from their own perspectives. The understanding of the current usage of *Urbanismus* in Czech (or *Urbanizmus* in Slovak) can be referred to *Slovník Soudobého Urbanismu* (A Contemporary Dictionary of Urbanism) written by Jiří Hrůza (1977), a prominent Czech urban planner from Prague. He describes *Urbanismus* as “the most general expression for a set of working methods and procedures for the purposeful formation of human settlements and especially of cities.” The term *Urbanismus*, borrowed from Latin, began to be used at the end of the 19th century and at the turn of the 20th century when Prague experienced an expansion of new districts such as Vinohrady and Žižkov. Hrůza admitted that *Urbanismus* is a rather nebulous term, and was used in Czechoslovakia in its most general sense (p.266). At the time of writing, he pointed out that *Urbanismus* has more emphasis on the notion of the cultural and artistic aspects of urban planning, and not associated with the technical and economic aspects of the creation of settlements as defined by the Czech term for spatial planning, *Územní plánování* which will be discussed in the next section. Karel Maier, a Czech planning expert from the Czech Technical University, described *Urbanismus* broadly as a discipline to create and develop settlements as functional and balanced entities (Maier, 2000). What is clear between the definitions from these experts is that *Urbanismus* is about the development of an *osídlení*, a populated area or settlement, be it town, village or city. With regards to the etymology of the word *urbanismus* in the Czech or Slovak language, Hrůza mentioned that it evoked concepts of developing urban estates, or the solution of general municipalities, parks, landscapes and the whole wider territorial unity (Hrůza, 1977, p.266). In practice, the technocratic terms of *městské inženýrství* (city engineering) and *městské stavitelství* (city building) was more widely used.

In the German language, the word *Städtebau* is frequently used and loaded with complex meaning. In their book ‘*Urbanism and Dictatorship*’, Max Welch Guerra, Harald Bodenschatz and Pierro Sassi (2015) refers to *Städtebau* as the “planned, drawn and built structural form of the city” and that it is also the “processes, and production conditions that lead to the creation of an urban structure.” *Städtebau* refers to the profession as well as the science behind the aforementioned aspects (Guerra, et al., 2015). Dieter Frick, a professor of *Städtebau und Siedlungswesen* at the Technical University in Berlin provides a more precise definition, that by perceiving the city as an object, *Städtebau* is the ‘*Bauen von Stadt*,’ or building activity upon that city, such as the production, regeneration, removal of buildings, technical installations and landscaping. Apart from this aspect, *Städtebau* is also about the arrangement of buildings and their relationship and connection to each other and about the coordination and control of the building activity in that area. Moreover, Frick considered *Städtebau* as

the structural-spatial organisation of the city (Frick, 2008, p.15-20). As industrial and urban development emerged hand in hand in German-speaking countries in late 19th century onwards, the term *Städtebau* became an interdisciplinary term that was widely discussed. Renowned engineer Reinhard Baumeister (1876) and architect Josef Stübben (1890) emphasise the technical, structural and organisational aspects of the city while art historian Camillo Sitte (1889) considered the city as an object, a work of art drawn from historical patterns (Kress; Ed. Hein, 2017, p.178). As Germany underwent the *Neues Bauen* movement of housing development, the term *Siedlung* for housing estates and its relations with surrounding regions became synonymous with *Städtebau* (Frick, 2008, p.20).

A degree of uncertainty of what specifically constitutes the word *Urbanismus* enabled several adaptations throughout the existence of the Czechoslovakian state especially during the state socialist regime, depending on the socio-political and economic situations of its time. Architects who practised during the era, Emanuel Hruška and Jan Krásný wrote extensively with regards to this issue in the *Architektura ČSR* journal entitled *Tricet let urbanismu v ČSSR, Jeho teoretický vyvoj i praktické realizace* (Thirty years of *Urbanismus* in the Czechoslovak Socialist Republic, its theoretical development and practical realisation) in 1975. From 1948 to 1952, the socialist realism period, which was also referred to as the 'formalistic' era, *Urbanismus* was defined as urban development which followed the national economic plans and with formalistic tendencies. Examples are Ostrava-Poruba, "Prednádraží" in Banská Bystrica and Nova Dubnice in Slovakia. Before the overcoming of formalism, there was the period of the controlled formalistic approach in 1952-1956. At this stage, *Urbanismus* was reduced to the construction of superblocks in new housing complexes, or 'nova sidliste' on the peripheries of existing cities. These include Invalidovna in Prague, Ružinov in Kladno and Terasa in Košice. The years 1957 to 1961 was when *Urbanismus* took on a more technical term, rejecting previous flamboyant concepts of formalism as the industrialised construction industry flourished. Urban design, which was based on crane tracks and superstructure of the construction site, was embedded in *Urbanismus* at this stage. In the experimental period 1962-1966, Czechoslovak urban planners realised that *Urbanismus* could not just be confined to the idea of housing production, hence they attempted to include civic amenities in the pursuit of 'complexity' in the search of an ideal housing complex. Proposals for the largest housing estates in Prague and Bratislava, Jižní Město and Petržalka respectively, were conceived at this stage. In the late 1960s to early 1970s, as sociological issues in housing development came to the fore, *Urbanismus* expanded its definition to include a more quantitative approach with prognoses into the long-term social and economic development of cities and their increasing agglomeration. These concepts develop rapidly during the normalisation period after 1968. The socialist idea of *Urbanismus* eventually expanded as concerns about the regeneration of the inner cities appeared from mid-1970s. At this stage, *Urbanismus* became linked to a more creative and artistic aspect, while the term to characterise organizational solutions of land-use was attributed to *územní plánování* (Hruška; Krásný, 1975, pp. 152-164).

In the GDR, the focus was more on how they could use *Städtebau* to forward their agenda to provide better living conditions in comparison with West Germany. The objectives of *Städtebau* was, among others, to increase efficiency of socialist production, the territorial development should provide good working environment for labourers, improve housing conditions and to reduce the differences between the different living standards of residential areas (Lammert, 1979, pp. 20-21). From 1949 to mid-1950s the architectural form was oriented towards classicism in connection to the national construction tradition. Following the GDR architects' trip to Moscow, the 16 Principles of *Städtebau* was established in 1950, and as the GDR architect Bruno Flierl elaborated, that while it was inspired in part by the Athens Charter, it was an alternative model that was social. While the Athens Charter assumed functional differentiation as a solution to the overcrowded older cities, the 16 Principles

considered the city as a unifying entity in which the functions exist and where they should be arranged (v. Beyme, 1987). In this period, *Städtebau* was expressed in the new city centres, central plazas and great monumental thoroughfares such as the Altmarkt in Dresden and the Stalinallee in Berlin. During de-Stalinisation in the mid-1950s onwards, *Städtebau* became industrialised and rationalised with the dominance of industrial building construction. In this period, the references were made to the earlier Neues Bauen in the 1920s and the search towards a concept of a social-oriented *Städtebau* (Grönwald; Ed. Bernhardt et. al, 2012, pp. 188-189). Large housing estates began to emerge, such as Halle Neustadt and Hoyerswerda in this period, as *Städtebau* became rationalised to produce superblocks of panel buildings, generated in large spaces. Finally, during the last stage of the GDR, from mid-1970s onwards, there was much awareness on qualitative renewal of the old city centres at the same time as large *Siedlungs* of housing estates were reproduced in the outskirts of the cities such as Berlin-Marzahn and Leipzig-Grünau as part of the infamous Housing Building Program. In this period, *Städtebau* was about the transformation of old city areas into pedestrian zones and concentration of individual civic buildings while contending with the ongoing large-scale housing development (v. Beyme, 1987).

What is noticeable about *Urbanismus* in its application during the state socialist regime was the heuristic tendency in its quest for meaning. In contrast, while the idea and concept of *Städtebau* remained constant, its approach changed as urban planners in the GDR had to adopt rationalised methods from the 1950s onwards (Pretzsch, 1979, p.570). Nevertheless, for both countries, *Urbanismus* and *Städtebau* must consider and operate on the investments and regulations provided by the national economic policies, which changed every five years. To understand how cities develop in the socialist period, even though each had a distinct and individual trajectory, they generally operate as a 'synchronized instrument' based on the master plan of 'economic production and social transformation in physical space', according to Kimberly E. Zarecor in her paper '*What was So Socialist about the Socialist City?*' (2017).

Based on figures from the Warsaw International Statistics Yearbook in 1965, (Goldzamt, 1975, p.18), Czechoslovakia had a larger area to contend with (127,900 km² to GDR's 108,300 km²), as the Slovak lands were not industrialised or urbanised as Czech lands after the Second World War, hence there was more intensity in urban development and building new cities, while GDR built fewer new cities and focused more on rebuilding and restructuring their own existing cities. As we compare the 1965 population density per area between the two countries, Czechoslovakia had a higher percentage of people in the rural area (39%) and more land than the GDR (26.9%) while the GDR had a higher population density (157 people per km² compared to Czechoslovakia's 111 people per km²). Furthermore, there was an almost 10% increase in rural-urban migration in Czechoslovakia from 1950 to 1965 compared to 2% increase in the GDR during a similar period.

Taking into account Zarecor's frameworks for analysing socialist cities, she introduced the concepts of infrastructural thinking and the socialist scaffold. To put it in simple terms, the former are the decisions made based on the scale of urban infrastructure and the latter refers to the 'basic infrastructure for future growth' where the economic, social, political and environmental systems could attach and become activated (Zarecor, 2017, p.7). Thus, the cities expand but it was in a controlled and rationalised way dictated by a master plan of several levels. If these cities operate on a state master plan of the whole country or regions that determine the socialist scaffold of managing growth of labour, capital and infrastructure over time, then the concept of spatial planning is a dominant feature in former state socialist countries than urban planning alone. To comprehend how the urban actors make decisions in the development of the city is to grasp the concept of this master plan as an important intermediary sanctioned by the state and left to the actors to translate these goals in physical space.

Územní plánování and Generalbebauungsplanung

Spatial planning is rarely used in the English-speaking countries compared to the terms urban planning or city planning. This concept is mostly used in the European context. To elaborate, the definition of spatial planning, according the European Commission (1997), are methods utilised by the public sector to influence the distribution of activities in space with the aim of creating a more rational territorial organisation of land uses. The goal of spatial planning is to ensure a balance between demands for development and need to protect the environment to achieve social and economic development objectives (p.24).

There were many stages of spatial planning processes with regards to these two socialist countries. In the 1980s, Czechoslovak spatial planning journals have frequently looked to their German neighbour to evaluate the effectiveness of their own systems (Kuthan, 1984). The *Územní plán* and *Generalbebauungsplan* were important instruments for which any development decisions on cities and agglomerations take place. They were both developed in coordination with the national economic plans. Both were adaptable with accordance to changes in the five-year plans and used for short or long-term development. The plans were developed and approved by the top central organs in accordance with the general traffic planning and other sectoral planning. By the mid-1970s after three decades of centralised economic planning experience, both countries have refined their methods for effective spatial planning. From these the local councils, municipalities and architects had to develop plans for the cities, land use, urban design, concepts for the regions with allocated investments from the state planning commissions (Hrůza, 1977; Lammert, 1979; Gál & Furdik, 1984; Kadatz, 1997).

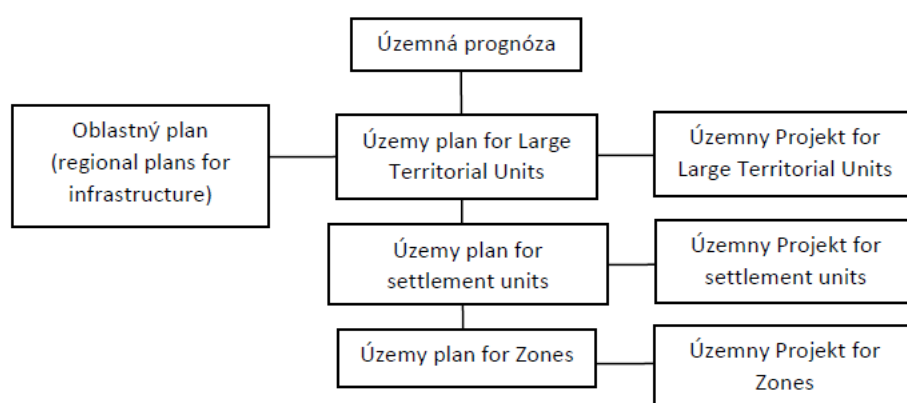


Chart 1: Simplified diagram of the hierarchy of the *Územní plán* documentation in Czechoslovakia after 1976

According to the slovik.seznam.cz official Czech-English translation, the word *území* refers to territory. Hrůza (1977) defines *území* as a territory with natural resources which creates possibilities for exploitation and rational utilization. He went on further to say that *území* does not only include areas with high population densities and controlled urbanization, but also in a relatively large rural area undergoing urbanization (p.269). Hence, *Územní plánování* means the planning of the *území*. Under the context of the Czechoslovak centralized economy, according to the textbooks from the Faculty of Architecture at the Slovak Technical University in Bratislava (1984), *územní plánování* is the development of the environment in a large territory into a uniform settlement system (Gál, Furdik, 1984, p.6). The *územní plánování* has three different stages; large territorial units, zones and

settlement units. The cities of Prague and Bratislava are each separate territories with their own agglomerations and have their own territorial development plans, the *Územný plán*. There are separate regional plans for infrastructure which must be coordinated with the *územný plán*. These documentations form the basic framework of the long-term development of the territory, including land use, social transformation, economic production, traffic planning and environmental protection. Based on the Building Act No. 50/1976, in which building regulations must be strictly bound to *územní plánování*, each *územný plán* must be accompanied by the *územná prognóza*, an economic, social and demographic forecast of the territory and the *územný projekt*, a time-based development plan for the territory (Ibid, p.26).

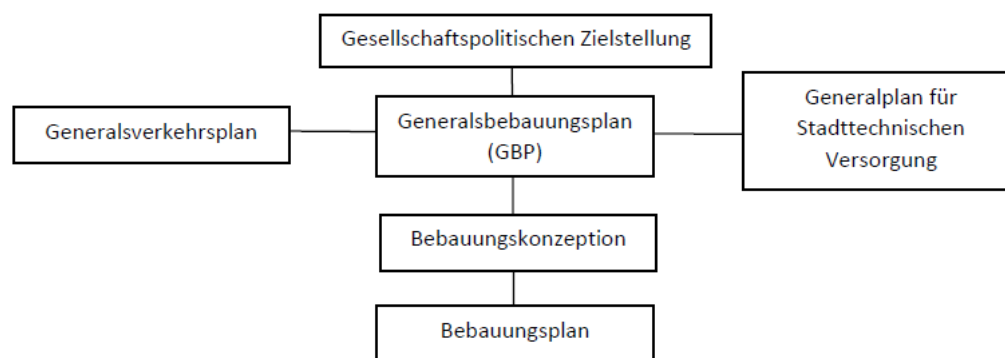


Chart 2: Simplified diagram of the hierarchy of the *Generalbebauungsplanung* documentation in the GDR in 1972

In the German context, the *Generalbebauungsplanung*, according to the Langenscheidt Routledge German-English Architecture and Construction Dictionary, means master plan whereas the *Bebauungsplan* is defined as development plan. The root word *Bebauung* means development, house-building or built-up area (Gelbrich, 2007). More specifically, for Frick the *Bebauungsplanung* should not be limited to construction of buildings according to the Building Code, but rather all the objects and corresponding procedures that are connected with the qualitative control of the building activity in the area such as land division, public spaces or green spaces. *Bebauungsplan* intended for an entire city or agglomeration is referred to as the *Generalbebauungsplan* (pp.167-168). The *Generalbebauungsplan* in the context of the GDR was introduced in 1965 and used more as an instrument for the long-term management, planning and coordination of urban development from effective traffic planning, identifying suitable residential locations and nature reserves (Kadatz, 1997; Rietdorf & Werner, 1972; Lindemann, Eds. Bodenschatz, Brake, 2017; Sommer & Weise, 1971). The *Generalbebauungsplan* had to be coordinated with the *Generalverkehrsplan*, the General Traffic Plan and *Generalplan für Stadttechnischen Versorgung*, the General Plan for Urban Technical Supplies. Each municipality or district had its own *Generalbebauungsplan* approved by the top organs and was responsible for drawing up its own *Planwerk Generalbebauungsplan*, a plan of work for development projects, under which there were *Bebauungskonzeption* and *Bebauungsplanung* (Lammert, 1979, p.232), dealing with the development and urban design of each subareas of the district, e.g. the Marzahn *Bebauungskonzeption*. For important projects such as East Berlin, the state and district planning commissions, as leading economic organs were directly involved with the development of the *Generalbebauungsplan* (Lindemann, 2017). The *Gesellschaftspolitischen Zielstellung* was a prerequisite for each *Generalbebauungsplanung* in each council of the district. This provides the comprehensive view on population growth, labour force and workplace developments, funds and

planned stages of development, planned infrastructure, recreation and environmental protection (Kadatz, 1997).

Comparing these two terminologies used in the local context, *územní plánování* has more to do with the exploitation of the territories, their rational utilisation in the distribution of settlements, infrastructure and economic production. On the other hand, *Generalbebauungsplanung* concerns itself with development and the structural spatial organisation of either rural or urban areas, akin to the *Städtebau* concept. This is not to say that territorial planning in the GDR did not exist, but the responsibility to develop the city or urban areas was not strictly bound to territorial plans as they were with the *Generalbebauungsplan*, based on sources in the 1970s (Junker, 1976) and could range up to 1:25 000 in scale (Maaß, 2006, pp.88-89). In fact, territorial planning in the GDR was directly under the State Planning Commission and had more in common with West Germany, as the system was already established before the divide (Fege & Menge, 1992).

As for the *územní plan*, the plans of the large territorial units were the most crucial derivation of the national economic plans, and they could range from smaller scales of 1:2500 depending on important projects in which the centralised regime wish to focus in detail, to large 1:200 000 of a specific territory (Gál & Furdik, 1984, p.27). The laws that bound planning activity and urban development in any village, town or city to the *územní plánování* dates back to 1949 and up to 1976 (Maier; Šlemr, 2016, pp. 164-179). The plans for settlement units could be 1:25 000 in scale while their zones up to 1:10 000. Considering these are large scales to work with and several layers of bureaucracy that projects have to go through, as they must conform to the non-negotiable plans for the wider territory, there was more room for ambiguity as they become translated and processed into *zastavovací* (building) plans from the federal ministry to the local state organs.

As we go over the problems of these methodologies discussed by practising architects and urban planners in the official professional journals during the 1970s and 1980s, the specificities of the issues that they raised in the GDR differ from that in Czechoslovakia. In the late 1970s, the GDR architects discuss the lack of clarity in the *Generalbebauungsplan*, which led to confusion when they tried to develop the *Bebauungskonzeption*. For instance, where to locate the social and retail centres and tram stops at a reasonable distance from the dwellings, green corridors, the practicality of technical installation in the area to the arrangement of spaces to reduce noise pollution (Schattel, 1977; Pretzsch, 1979). In Czechoslovakia, the problem with the *územní plánování* process that the planners and architects frequently complain about was the incoherency between the layers of *územní plán* and the national economic planning. They admitted that the long-term goals and concepts eventually got lost along the stages of the process when it came to land management and construction (Hrůza, 1977, p.272). Representatives of the local municipalities claim that there was a lack of guidance in implementing the plans into design and construction of the area, in addition to the lack of coordination between the *oblastný* and the *územní* plans (Matoušková, 1985; Zibrinová, 1988, p.23). Maier and Šlemr (2016) stated that the *územní plánování* method had more consequences in the urban development of Slovakia more than the Czech Lands. From a German perspective, Hans-Joachim Kadatz from Berlin, an expert on urban development in central and east Europe noted that there were no clear distinctions between urban and regional planning in the case of Czechoslovakia.

The reason for the bigger issues in Czechoslovakia was the rapid growth the country was facing as the state governments had to ensure that the largely agrarian Slovak lands must develop to be on par with

their Czech counterpart. This was also associated with the idea of the Slovak Affair, by increasing higher standards of living by providing jobs, housing and infrastructure in Slovakia to legitimise the existence of the regime. They saw their own *územní plánování* as an efficient way to control the development of the villages, small towns, cities in the regions. Of course, there had to be a degree of flexibility and devolution of authority to the local councils, enterprises for urban development, as long as it fulfilled the needs of the *území* plans of the larger territorial units. The regime also allowed more private housing ownership compared to the GDR, and people were allowed to build their own family houses in the countryside especially during the normalisation period (Šlemr & Maier, 2016 p.173). For instance, The proportion of private apartments in Czechoslovakia was 35.5% while in the GDR it was only 9.8% (Landmann, 2017). Moreover, when Czechoslovakia was federalised in late 1969, the Slovak Socialist Republic had its own Slovak National Council and its own ministries to develop the Slovak *území* plans with approval from the Czechoslovak central government based in Prague. Despite federalisation, laws for urban development and infrastructure were still centralised.

Transportation Networks and Subsequent Urban Development

Referring back to the concept of socialist scaffold (Zarecor, 2017), the cities that developed in the GDR and Czechoslovakia had roles to play as nodes in an integrated system. Each city or town was a component of economic production that contributed to the socialist scaffold, and the transportation networks connected these nodes, increasing the efficiency of the centralised economy. This section will discuss how the respective centralised spatial planning processes of Czechoslovakia and the GDR were instrumentalised in the construction of infrastructural networks.

Between 1950 and 1970 alone, no less than 16 new industries were established throughout Slovakia by the central government, including the chemical and engineering industries in Bratislava, Trenčín and Košice (Czech National Museum, 2018). In order to increase the efficiency and the productivity of these nodes, the connectors in the socialist scaffold had to be strengthened. Even though the Czechoslovakian state was federalised after 1969, the central government needed to reinforce control especially during normalisation as the modernisation and construction on the Prague-Brno-Bratislava highway began in the late 1960s, allowing better connections between the Czech cities and the developing cities in Slovakia (Šteis, Hulej, 1989). The highways served the booming automobile industry and increased the capacity of recreation activities as city residents have better access to the Tatra mountains and forest parks throughout Czechoslovakia, during the era of social-pacification. They also served an ideological purpose as the central regime needed to strengthen the idea of Czechoslovakia as a state within its national boundaries, to orientate itself away from the previous Austro-Hungarian Empire. Modernisation and construction of highways throughout the whole country from late 1960s until 1990 influenced the *územní plánování* of the cities, eventually establishing new housing estates along its path. The largest housing estates ever built in Czechoslovakia were fed off this highway; these are Jižní Město in Prague and Petržalka in Bratislava. The modernisation of Bratislava cannot be attributed to the socialist regime alone, as regulatory plans under the Hungarian authorities in early 1900s showed the influences of scientific and technical urban planning from German experts Baumeister, Stübbern with the artistic approach of Sitte (Moravčíková, Lovra, Pastoreková, 2017). The final version of the regulatory plan submitted by Budapest architect Antal Palóczi in 1917 before the end of the empire already showed the proposal of three bridges across the Danube, proposing an outer ring for cars bypassing traffic in the city centre (Ibid) which was also an effective strategy adopted by the socialist regime later on.



Figure 1: Sketch of the road networks from Prague and Brno to the cities in Slovakia implemented in 1970s.

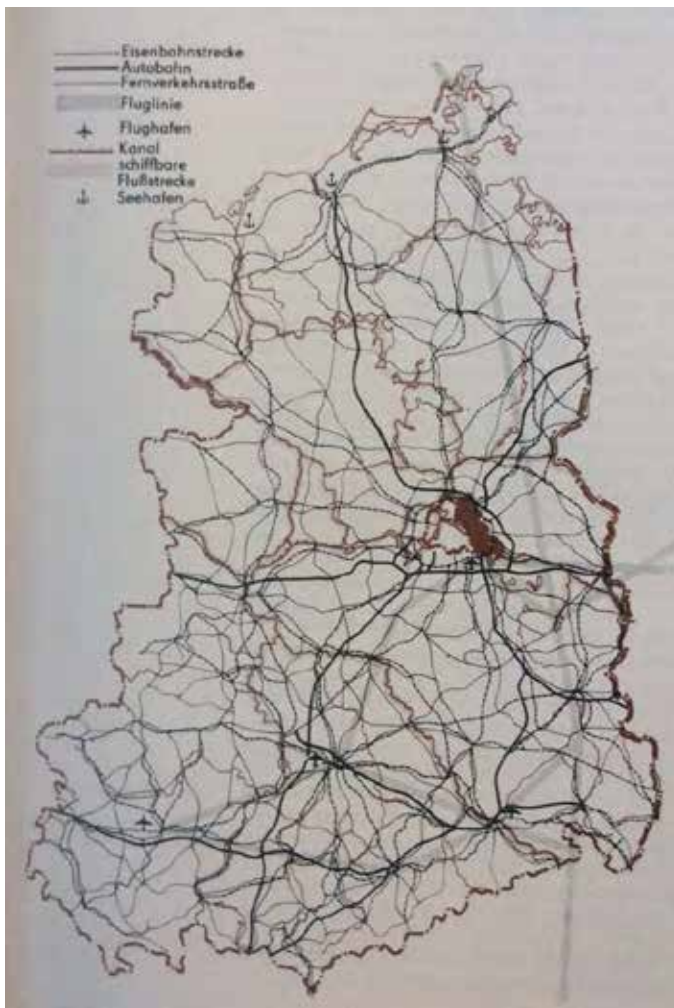


Figure 2: Transportation networks throughout the GDR. Source: Lammert, Bauakademie der DDR, 1979, p.61

In comparison to Germany, an integration of comprehensive and efficient public transport system in Berlin along with the Autobahn network was already obvious in 1926-1929 during the Weimar Republic (Bodenschatz, 2018). Hence, when the GDR was founded after the Second World War, they only had to inherit the Autobahns left by the Third Reich, which were already efficient connectors to the nodes needed to establish an effective socialist scaffold; hence, only minor adjustments were needed. The Autobahns were extended to new GDR cities such as Eisenhüttenstadt, Hoyerswerda and Halle-Neustadt and directly to Warsaw through Łódź in Poland. They also successfully extended the railway networks, in 1960s and 1970s (Lammert, 1979, p.60-61).

As we take a closer look at the development of Bratislava, the highways, roads and bridges that were constructed around the city drastically changed its urban structure. The old Jewish quarter in the old city was demolished to accommodate the road that led onto the SNP Bridge connecting the main city to Petržalka. To divert traffic from the old city quarters, the D1 highway was built, with the Lafranconi Bridge taking it through Petržalka and thus creating faster connections. The D1 was part of the Prague-Brno-Bratislava highway, and the urban planning of Bratislava focused on deconcentrating the functions of the city, also due partly to its geographical limitations. Several housing estates were developed because of the planned highways. Indeed, this resulted from the infrastructural thinking of the regime. According to the proposal for the 1984 Directional Plan of the Bratislava *územný plán*, the housing estates of Dlhé diely, Lamac, Líščie údolie as part of the housing building programme in the 8th Five-Year Plan had

to be located along the highway, supposedly because excluding these sites would ‘reduce the efficiency of transport and engineering investments’ (Hauskrecht, 1983, p.4). The intensification of traffic planning and concentrating growth along the highways was apparent in the 1963 Bratislava *územy plán* and was more prominent in the 1976 Bratislava *územy plan* (Hladký, 1978; Hollarek, 1983; Hauskrecht, 1983; Žalman, 2016). While works on the highway construction through Bratislava was given priority, public transportation such as railways and trams were placed on the backburner (Nigrin, 2018, p.61-76). Although there were plans to include trams and metro in Petržalka, the new residents who moved in the 1980s had to rely on buses instead.



Figure 3 General proposal for traffic solutions by the Bratislava Public Transport authority in 1970s. Source: Hladký, *Architektura ČSR 1/1978*, p.11

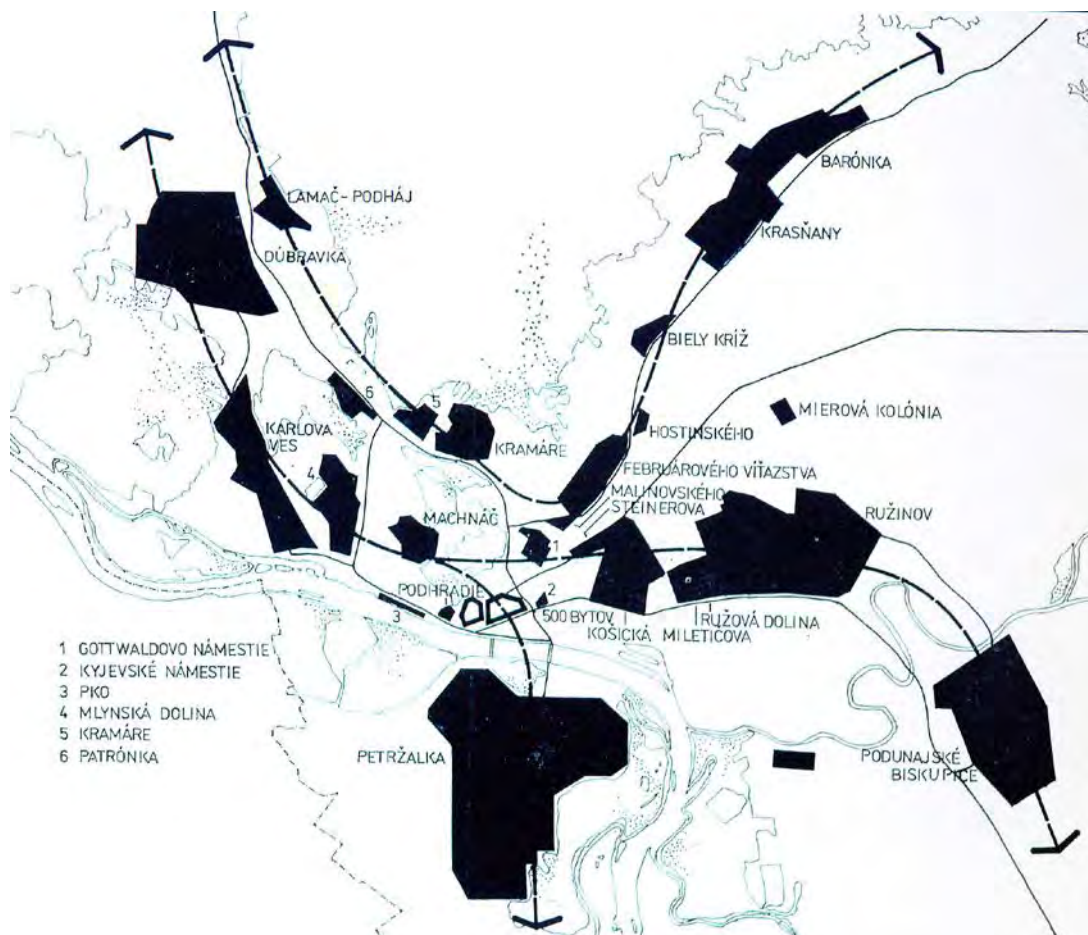


Figure 4 Location of new residential developments following the expansion of the road networks. Source: Zalčík, *Architektura CSR* 1/1978, p.5

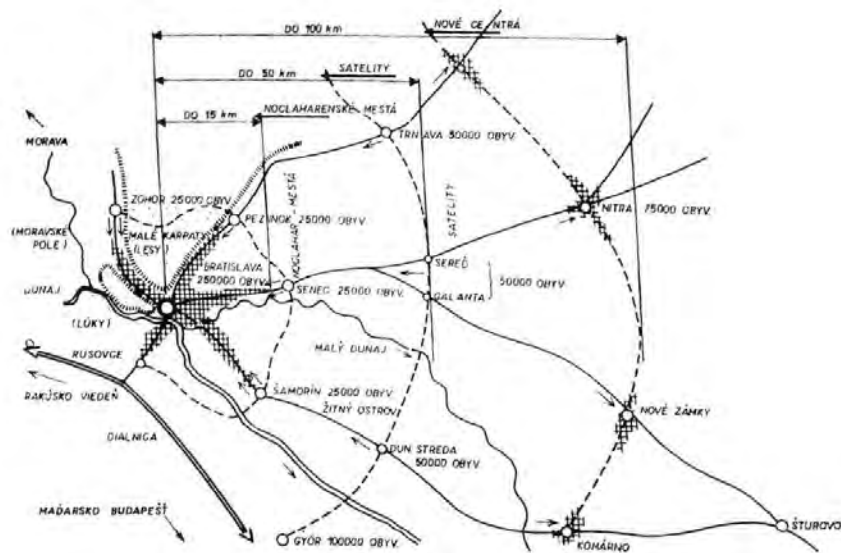


Figure 5 Emanuel Hruška's concept of the expanding satellite settlements in Bratislava. Source: Goldzamt, 1975, p.84



Figure 6: Tangentialverbindung concept. Source: Krenz, Weidner, & Stiebitz, 1969, p.39



Figure 7: 1968 Generalbebauungsplan showing the integration of public transportation networks with the development of new housing settlements. Source: Korn, Schweizer, Walter (1976): 9. Stadtbezirk in Berlin. In Architektur der DDR (9), p. 549

The case was different in East Berlin. The 1968 *Generalbebauungsplan* included more planned public transportation networks, detailing where the S-Bahn stations would be, incorporating them with the existing and planned Autobahn and road networks. In conjunction with the 1973 Housing Building Programme to build more flats in the city, areas were already allocated at the outskirts for Marzahn-Hellersdorf in 1969, served by several S-Bahn stops along the edge of these *Siedlungen*. With the expansion of the S-Bahn and the U-Bahn networks, setting up trams and trolleybuses, the regime paid attention to the provision of public transport infrastructure in their vision to develop East Berlin. The map showing the network of S-Bahns refer to the radius of new and existing S-Bahn stops as *Einzugsbereiche*, or 'catchment areas' and this idea of 'catchment areas' allowed suitable connecting paths to be made to areas of interest such as new housing estates, cultural institutions and schools when planning infrastructure. Even when developing the road networks in East Berlin, the GDR traffic engineers were more pragmatic in their approach with its planned *Tangentialverbindung*. East Berlin city centre was to be a compact urban area with direct road connections to the large housing estates, industrial areas and recreation areas. The *Tangentialverbindung* is the main road network consisting of a system of radial roads with tangential connections, creating a grid system effectively distributing traffic to connect individual city areas (Krenz, et al., 1969, p.38). The main transport for the residents

of the new housing estates in the 1970s were the S-Bahn connections and the *Generalverkehrsplan* was in alignment with the *Generalbebauungsplan*, in the sense that the planned new residential areas in principle should not be interrupted by main roads to eliminate disruptive crossings (Schattel, 1977, p.390).



Figure 8 Map of the S-Bahn network and its Einzugsbereiche (Catchment Areas). Source: Bundesarchiv, DC 20-BILD/148, Ministerrat der DDR, Generalverkehrsplan der Hauptstadt der DDR Berlin, circa 1970s (not dated)

Comparing these socialist scaffolds built between the two cities in the 1970s, the planning model for Bratislava was a more automobile-oriented city, while East Berlin was more transit-oriented. Paradoxically, despite the so-called federalisation of Czechoslovakia, the centralised system of the *územní plánování* method on a larger scale allowed major interventions on the land-use of the territories within and around the cities and their agglomerations, affecting greatly the urban developments at smaller scales. They imposed highways, bridges and main roads that circulate around the city to ensure efficiency and faster connections for the vehicles transporting and delivering goods between Prague, Brno and the rest of Slovakia. In East Berlin, the emphasis was more about the rational use of public transportation, effective traffic network around the compact city concept. Housing developments built during the normalisation periods of Czechoslovakia in 1970s-80s seem to be an afterthought of the highway and road infrastructure while in the GDR there was more

consideration of integrating the housing estates into new and existing public transit networks. An explanation for this contrast is that East and West Germany experienced a more advanced modern car-planning movement in comparison with the other Central and East European countries. After the war, both East and West Germany had already altered their urban landscapes with large motorways running through their cities in Berlin, Dresden and Halle. The turning point for the GDR was in the 1970s, when they were influenced by the intellectual discourse critical of the automobile-friendly city and its effects on the urban environment in West Germany since the 1960s (Aßman: Bernhardt, Butter, de Rudder, 2016). Central and East Europe saw the start of the great car-friendly urbanisation in the 1960s, as was evident in the *územý* plans of Prague and Bratislava compared to East Berlin in the same period. As a symbol of Western modernity, the car was largely denied until it became accepted in the 1960s and are still influential in the present day, as design stages for urban development still show signs of being automobile-oriented (Aßman: Brzosteks, 2016). Mobility was linked to modernity and it was crucial to provide the necessary infrastructures despite the restrictions and hurdles to individual car ownership (Beyer, 2011; Tuvikene, 2018).

The four decades of policies that characterised land-use planning under the state socialist central-planned economies are some of the factors which contribute to the divergence in the urban development patterns between Berlin and Bratislava today. For instance, the current planning system in Slovakia is still based on the 1976 laws, which were refined in the 1992 constitution before its independence in 1993 (Finka, 1997). The particularities of how urban planning in one country developed can only unfold in comparison with the other, and this is reflected in how they gave meaning to the concepts of urban and spatial planning.

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Towards comprehensive and integrated land management practices in Albania. How can the new paradigmatic shift in land use planning and growth management foster a positive impact on local finances and the tax base? The case of Municipality of Tirana.

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Abstract: This research draws upon the array of changes that have occurred in the spatial planning system in Albania over the last decade, and examines possible impacts at local level, namely on the financial situation of local governments. The research is conducted in two inter-relational directions: firstly, it tackles the possible impact of land use changes and tools that determine the change patterns, on taxation and local budgets; and secondly, it analyses the strategies used to address urban growth, through development indicators, principles, etc. and assesses their possible influence on the tax base. These aspects are analyzed for the municipality of Tirana, which has the highest development rate and financial growth in the country; and are anchored to the current planning document in place: the General Local Territorial Plan (GLTP) of Tirana, for the period 2016-2030. The research contributes to the overall discussion on the relevance of local planning instruments, with respect to improving the tax base, the fiscal autonomy of local governances, the provision of services, the urban growth in terms of sprawl or densification, and the prioritization of investment projects. Methodologically, the research is based both on desk review of land use planning theories; current planning legislation and documents in Albania, and local finance studies; as well as sample studies of specific spatial typologies in the city of Tirana, and their development scenarios in relation to the proposed land use changes and development indicators, in terms of tax revenues. This research, albeit not exhaustive, draws conclusions on the real potential of using land development instruments to induce growth in local financial capacities, both through property tax, and other taxes that are related to land and property.

Keywords: land use change; local finances; growth management; land development indicators

1. Introduction

The majority of the world's population now lives in urban areas and depends on urban systems for housing, job opportunities, health services and all typologies of social and economic activities. Particularly in developing countries, the size of urban areas will continuously increase as cities daily blossom and expand to accommodate the new comers/residents.

In an effort to contribute to successful urban policies (both in terms of growth and investment capability), this research explores how plans, policies and development normative affect planning systems to their core: the fiscal local autonomy, in order to support the upcoming challenges of urban growth.

THE LAND BENEATH OUR CITIES - AND ALL POLICIES THAT REGULATE IT - SHAPE THE CHARACTER OF HUMAN SETTLEMENTS. THIS IS A CRITICAL AWARENESS FOR A RAPIDLY URBANIZING PLANET. LAND IS, QUITE LITERALLY, FOUNDATIONAL TO THE DEVELOPMENT OF PRODUCTIVE, SUSTAINABLE, AND EQUITABLE CITIES.

(Moody, et al,2014)

2. Context overview

This chapter introduces the main pillars of the research work in a theoretical and legislative point of view. Firstly, an overview of the main challenges faced in Albania in the last decades is presented, which highlights the main reforms that are still under way, and their impact on territorial governance, especially at local level.

Secondly, it sets the context on the relationship between land-use changes and the fiscal situation of local government units, underlining the possibility to use land-use zoning as a tool to make effective investment plans in the territory. Thirdly, it draws some conclusions on the strategies used to address urban growth in different contexts, and the way they are implemented in the Albanian legislation after the planning reform.

2.1 Albania - filling the gaps towards a comprehensive integrated approach to planning

The planning concept in Albania has changed drastically in the recent years, with a paradigmatic shift from an 'urbanist' approach in city planning, to a more comprehensive and integrated style¹. (European Commission, 1997). This constitutes an emergent need to also change the mentality of perceiving the city as a rigid division of forms and functions, as was the case in the "central planning period 1950-1990". (Toto, 2012) The idea of *building complexes* and *building blocks* functioning as compositional parts of one-another, in hierarchical way, albeit theoretically very stimulating, has long been outdated in the urban realities Albanian cities (and not only)

¹ This is referenced to the classification of the Planning Systems in Europe in 4 main traditions in accordance to the political and legislative context: (1) Land use / (2) Urbanist / (3) Regional Economic Development / (4) Comprehensive Integrated Approach). For the purpose of this comparison, the other dimension: (5) South East Europe, where Albania would fall under, is not taken into consideration. For more information see: European Commission, 1997. *The EU compendium of spatial planning systems*. Luxembourg: Office for Official Publications of the European Communities.

are facing today. Urban areas are multifunctional. They are also, in most cases, built realities, where property issues need to be met in urgency, before taking action on idealistic planning instruments. Furthermore, the change in planning systems in Albania has been introduced in parallel to several political processes, such as: the Decentralization process; the territorial administrative reform, and the ongoing Europeanization process². The issue gets more complex, when the challenge of territorial governance is accompanied by the overwhelming issue of poor local capacities, both, in human resources, and financial aspects. Indeed, it comes as no surprise that the urban context in Albania is hampered in an irreversible way, and the fact that the planning system and the instruments are changing quickly and continuously makes it almost impossible to observe and benchmark real results from the reform in the territory. (Co-PLAN, NTPA, USAID, 2015)

The General Local Territorial Plan (GLTP) is the main instrument of local planning to date, which defines the framework policies for territorial planning, as well as all proposed interventions, development scenarios, and investments for the next 15 years. The implemented zoning principle is very similar to the form-based codification system, used in the US³: the territory is divided into the so-called *structural units*, which are supposed to be manageable areas in terms of land development, divided upon given criteria. In other words, structural units are the smallest scale where the standards and land development norms are set and applied, serving thusly as a basic unit of planning and development. (Dhrami, 2018)

² In 2014, a newly elected Albanian Government defined the decentralization reform as main priorities. A territorial Administrative Reform was implemented, resulting in the amalgamation of 373 municipalities and communes (urban and rural local self-government units) into 61 consolidated municipalities. This was followed by the preparation of a new Decentralization Strategy, aiming to give more power and autonomy to local self-government units in Albania, and the preparation of a Law on Local Finances, which should address further the fiscal decentralization for Local Government Units.

³ Form-based codes are a land management instrument used in the USA that falls into the category of zoning, but also differs considerably from conventional zoning. This coding system divides the territory into different districts based on the character and intensity of land development, as well as the desired urban form. (Marshall, 2011)

Figure 1. Example of division of territories into structural units- Municipality of Fier (on the left- the whole municipal territory ; on the right, excerpt from the center)



Source: Municipality of Fier, Co-PLAN, 2015

Moreover, this planning reform also created the opportunity to expand the concept of public-private partnerships to land development, by promoting area-based development instead of rigid, profit oriented plot based development. (Allkja & Toto, 2018) Law no. 107/2014 introduced the General Local Detailed Plan as a planning instrument, bringing together 4 typologies of stakeholders (developers, landowners, the municipality, and citizens) in the development process, through the implementation of several financial instruments⁴.

In terms of development indicators, the following table summarizes the requirements on national level, to be determined for each structural unit.

Table 1. Development indicators to be defines at the level of structural units

Development indicators	Definition	Comments
Code	[Municipality_System code_Land Use Subcategory code_No.] This is a unique code for each unit	

⁴ The instruments include, but are not limited to: Transfer of Development Rights, Land Readjustment, Betterment Fees, Bonus FAR, etc.

Area	ha	
Number of inhabitants	No. of inhabitants expected to be accommodated in the unit, as regards to the carrying capacity	There is no indicated way to calculate the carrying capacity based on the typology of the structural unit and the proposed development indicators
Population density	inhabitants/ha	
Territorial system	In accordance with article 72 of DCM 686 Each structural unit should be part of one territorial system	The categories of territorial systems are: urban, infrastructural, agricultural, natural, water. This makes it impossible to have a structural unit with 2 land uses that are not part of the same system, making the zoning process more rigid (f.e. the case of adjacent agricultural and urban plots)
Land Use Category (percentage of each)	In accordance with article 77 of DCM 686 Each of them is defined according to the percentage occupied in coverage area or in built area.	The categories of land use are pre-defined into 22 main ones, followed by subcategories and functions. Among the main categories, 2 mixed ones can be found: agriculture-residential; and residential - service. Both are interpreted vaguely and overlap with the idea of distinguishing between percentages of uses in one structural unit.
Other allowed land uses	In accordance with article 77 of DCM 686, all other allowed uses should be listed	This takes into consideration land use changes that can occur during the implementation period, that do not impact the typology of the area in a thorough way, or land uses that are not covering significant percentage of the total area. Hence, the total percentage of proposed land uses does not always total to 100%
Prohibited land uses	In accordance with article 77 of DCM 686, all prohibited land uses or activities should be listed	
Conditioned land uses	In accordance with article 77 of DCM 686	
Land Use Subcategories	In accordance with article 76 of DCM 686	All subcategories and functions are listed in a detailed way in the Planning Regulation. The development indicators are defined on the basis of main categories of land use, so the subcategories and functions are more suggested, rather than obligatory
Functions	In accordance with article 77 of DCM 686	
Floor area ratio	Total built area / Total buildable plot area for each category of land use (maximum value)	This definition of FAR for each land use makes the process rigid, since it relies on the idea that an exact estimation of each land use area / percentage can be defined. This is not always the case, thus the FAR is usually defined at unit level, even though the regulation states otherwise. This indicator is calculated at plot level or area level, depending on whether the unit is subject to DLP or not.

Plot Coverage Ratio	Total ground floor area/ Total buildable plot area (in percentage), for each category of land use (maximum value)	Same as FAR.
Road Coverage Ratio	Total road area / Total unit area (minimum value)	This indicator is calculated at unit level, and it is perceived as indicative, since it is not always possible to know the exact network of proposed street area. Especially when the unit is not subjected to an DLP, this indicator is very difficult to implement.
Public Plot Coverage Ratio	Total public plot / Total unit area (minimum value)	The definition of public plot takes into consideration all properties that are of public nature, from public gardens to state-owned facilities. Hence, the indicator is not a fair measure of livability, but more of division of public and private rights.
Height	both, in meters and number of floors	
Minimum plot size		There is no national law defining minimum plot sizes for different typologies of buildings. This is the only element in the local planning documents that regulates subdivision.
Distance indicators	According to the Territorial Development Regulation (DCM 408, dated 13.05.2015)	The regulation has changed the distance norm many times in the last decade. It defines three parameters: distance from building to building, distance from plot boundaries, and distance from the road. This is one of the most defining factors of plot-based development
Green areas/inhabitant	m2/inhabitant for units belonging to the urban system	The standard for green areas used to be defined at national level (9m2/inh for all types of greenery, and 2.5m2/inh for zone level), but it was recently removed from DCM 686 with all other planning standards. It is responsibility of the local authorities now to define the minimum green areas per person
No. of parking spaces	no/inhabitant	This standard for parking used to be defined at national level (6 m2/inh) but was removed.
Proposed intervention	densification, regeneration, redevelopment, consolidation, conservation, urbanisation, etc.	Categories of intervention are defined more thoroughly by the local level. In theory this indicator should be the basis of all decisions on FAR, Coverage ratio, DLP, etc.
Spatial typology	to be defined only for the units belonging to the urban system	Categories of spatial typology are to be defined at local level. In theory this indicates many spatial characteristics of the unit, such as FAR, plot size, etc. Nevertheless, in practice the typologies are so mixed, that this serves as an indicative measure

Detailed local plan	According to article 68 of DCM 686, all units that are subject to development or redevelopment; major regeneration; major change of land use and development indicators; major public investments should be designed through a Detailed Local Plan	The DLP is a process that involves all actors in the structural unit (or the part of the structural unit where it is applied), and is approved by the mayor. If a unit is subject to DLP no building permission can be issued before the approval of the DLP.
Development instruments	By law: Bonus FAR, transfer of development rights, etc.	These instruments aim at balancing the public and private interest through new financing mechanisms. The law proposes 2 instruments but the local authorities have the right to implement as many as they see effective, as long as they mention them on their planning documents and draft detailed programs for the implementation.
Development phasing	Short term (1 year) Mid-term (1-4 years) Long term (4-10 years) Long term (+10 years) etc.	The phasing process should define development priorities according to the Capital Investment Plan and the Mid Term Budget Plan of the Municipality. Nevertheless, this correlation almost never exists.

Source: DCM 686, dated 22.11.2017 ‘For the approval of the Territorial Planning Regulation’; author’s contribution

The table shows that, while more comprehensive in scope, planning at zone level has become increasingly more rigid in Albania. This is manifested firstly in the wide array of pre-defined indicators at national level, which are not always relevant to local contexts, and moreover, reduce local autonomy in decision-making processes that are related to land management. Secondly, there is visible discrepancy between the indicators used, both within themselves, and the principles of flexibility, comprehensive approach that are stipulated in the legislation. While the new planning and development legislation⁵ brings new paradigmatic changes in the planning system, the accompanying bylaws (DCM 686 and DCM 408) are reintroducing similar concepts to the ones of the 1993 Law on Urbanistics, such as functional zoning, the ‘yellow line’ of urbanization, etc. What is even more troublesome, is the fact that indeed these new bylaws have changed repeatedly in the last 8 years, and these changes have not been favourable to the local autonomy or public interest. For example, the distance norm has been reduced and all standards that regulated public amenities, such as green areas, parking, public spaces and structures, sport terrains, etc, removed all together from the national legislation. The case of GLTP of Tirana demonstrates better than any other municipality the issues of normativity and growth management.

2.2 Land use changes and the impact on fiscal autonomy

Regardless of the geographical location, genesis or the size of a territory (urban or not), land use patterns are constantly changing in time as the result of human activities running for the best locations through demand and

⁵ Law no. 107/2014 ‘On territorial planning and development’

supply forces set out by the market. As stated above, cities are more than the sums of their built environment. In terms of territory, their character is defined in large part by land policies, ranging from planning for development to the collection of land based revenues, from new environmental challenges to the provision of affordable housing and adequate services.

Experiences in drafting general local plans, territorial development strategies, detailed or partial plans etc. have shown that land use analysis as an instrument is one of the key steps in assessing spatial and developmental impacts of urban growth. And while research has shown that urban growth and land use change analysis have to be linked to urban form and processes to lead to effective urban interventions (Longley and Masev, 2008), any urban intervention is associated with several decisions / fiscal issues.

Every day, new opportunities for good land use policies to improve the lives of urban populations expand, as these cities grow too. Responding to this (and climate challenge we must add being a very expensive proposition), comes at a difficult time when most local governments are burdened by financial stress.

From an economic perspective, land is one of the factors of production, which attracts investment and generates wealth at the same time when socially is a sensible and scarce source, thus taxes on land (or property) are the oldest and most common form of taxation. But the European and developed countries experience has shown that the basic forms of taxations are not really enough to finance all the required development. New and innovative forms of taxation and adequate and reliable land-based revenue streams will be needed to finance the delivery of urban services and supporting urban growth and expansion of our cities.

In this framework, the Municipality of Tirana, being the main growth centre of the country, is the most interesting case to study in terms of fiscal capacity, and other ways to foster urban growth and provide better services.

2.3 Growth management strategies and the approach to normativity

Traditionally, zoning and subdivision control plans have been the two main instruments embedded in most planning legislations and culture, to enable sustainable growth management. Of course, this is only one of the functions of zoning.

For example, zoning codes that include the distribution of density for permitted use areas determine a theoretical figure of the maximum population. On the other hand, subdivision control regulations affect liveability by determining the minimum size of the parcel. This, in turn, influences the phasing and the development rate of the areas. (Juergensmeyer & Roberts, 2007)

Literature on property development suggests that there are some concepts of growth management that are strongly connected to each other: carrying capacity, impact analysis and sustainable development. The origin of all these concepts is in the environmental legislation. "Carrying capacity" is used to determine the environmental criteria upon which land use decisions will be based and refers to the level at which the land in its current or natural state can develop without degrading the ecosystem. This comes as a very crucial concept in terms of attributing development rights in urban areas in Albania.

Another growth management instrument, with a more advanced approach to planning, is the Smart Code, an integrated land development ordinance, created by Duany Plater-Zyberk in 2003. Its aim is to have a more 'new urbanism' oriented legal model of city development. Essentially, it is a form-based code that incorporates Smart Growth and New Urbanism principles. This coding system divides the territory into different districts based on the character and intensity of land development, as well as the desired urban form. Zoning usually regulates only land use, and development standards (maximum building height, distances, FAR, coverage ratios, etc.). But form-based codes regulate things that are not typically part of zoning, such as the design of streets, sidewalks,

and other public spaces, which conventionally would be regulated by subdivision manuals, or public work manuals. Thus, Form based codes bring all these manuals together, in an integrated document that addresses land use, development indicators, provision of public/non-profitable services and subdivision regulations. The integration ensures that these documents are coordinated and coherent with each other. (Marshall, S., 2011).

Is this approach applicable in Albania? Following the subtle tendencies of ‘Europeanisation’ of planning traditions in EU member countries, Albania has seen some drastic changes in the way it approaches spatial (territorial) and urban planning. The level of normativity has increased, and the responsibility to establish norms and standards is shared between the central and local governments. Even though the system is supposed to be more flexible, it adopts various concepts of the post-New Urbanism planning framework, including zoning, form based codes, as explained above. (Dhrami, 2018)

It is yet to be seen, whether an integrated model such as Smart Code, or even more flexible, can be applied in the context of Albania.

Figure 2: Example of transect zoning in Handsboro Community Plan



Source: Handsboro Community Plan, 2008⁶

3. Methods

From a methodological standpoint, this study is of a comparative and empirical nature. Specific areas of distinguished typology have been extracted from the General Territorial Local Plan, Tirana 2030 and analysed accordingly. Based on the theoretical framework set out above, this study attempts to calculate, in a simplified and general way, the level of local tax revenues that may be collected by the Municipality of Tirana, based on these proposals and development indicators, as to understand the impact of the proposals on the possible fiscal autonomy of the municipality. On the other hand, the research sheds light on the growth management instruments applied and whether they are realistic or not.

⁶ Handsboro is the third existing community in Gulfport to make the SmartCode mandatory within its boundaries. Its Community Plan was adopted as an integral part of the City's SmartCode in February 2008. The Regulating Plan depicts the boundaries of the planning area, assigns the new Transect zones, and features new overlay districts such as transportation and retail corridors, density-receiving areas and neighborhood conservation districts.

This research takes into account all the limitations set out in the study, such as the lack of an accurate database on land use, lack of information on potential investments carried out in the study area as part of the plan projections, or lack of the precise indicators of monitoring the implementation of the plan. On the other hand, taking into account the complexity of both the planning and the tax burden estimates, the study is limited to the calculation of the 4 potential taxes that represent a more direct link to land use and development, which are:

- Tax on agricultural land
- Tax on Infrastructure Impact for the new buildings
- Residential property tax
- Commercial property tax

The main research question raised by the study is: How can the new paradigmatic shift in land use planning and growth management foster a positive impact on local finances and the tax base?

In order to validate this hypothesis, in an imbalanced real estate market situation with the inability to generate enough revenues and a shortage of taxpayers, the study raises a simple matrix to answer the above question. The study also tries to give an assessment of the legislative and territorial context where the respective plans are implemented, to understand how land development and the implementation of local plans directly affect the fiscal situation, and can have a greater contribution to growth management in Tirana Municipality.

Table 2 Framework of empirical research

	Area A (urban) 3 samples	Area B (periurban) 3 samples	Area C (rural) 3 samples
General Local Plan Proposals			
Area of the sub-unit			
% of land use categories			
Development indicator			
Area of agricultural land			
Area of residential urban land			
Area of commercial urban land			
proposed Built area			
Potential revenues as per taxable base			
Tax on agricultural land			
Tax on residential building			
Tax on commercial building			
Tax on Impact in Infrastructure			
Estimated total Revenues			

The selection of the case studies (or samples) has been done strategically based on the categorization of spatial typologies assessed in the TR030 Plan.

However, land value after development varies from many factors, such as distance to the centre, vicinity to main services, etc. In the same way, the reliability of various revenue sources (considering here taxes) likely will vary

with factors such as the rate of urban growth or decline, the national legal structure, etc .Therefore, this value will be generalized.

4. Tirana - from planning to economic growth

4.1 Main principles of growth management adapted in the General Local Plan of Tirana

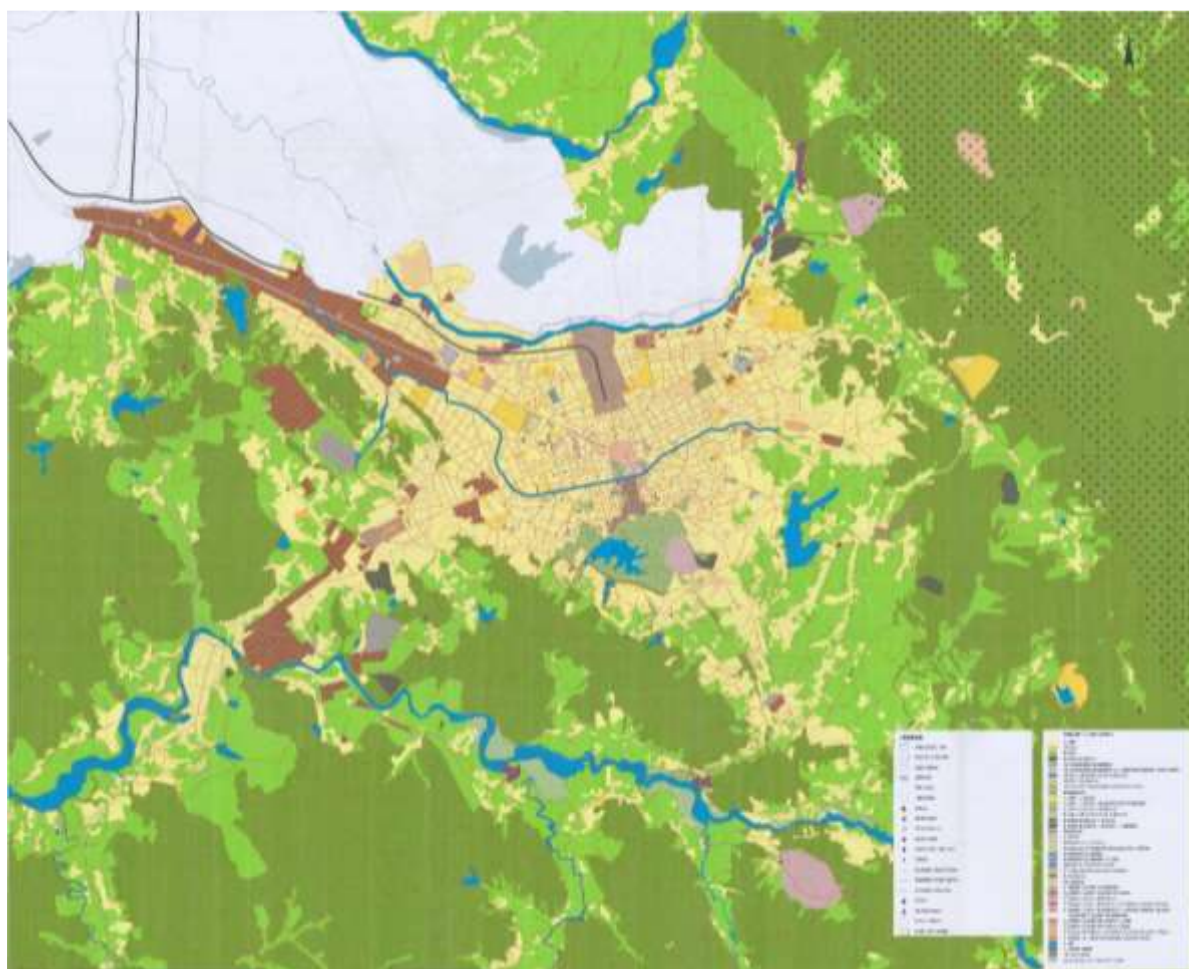
The Local Territorial Plan 'TR030' is the first designed for the municipality after the territorial reform. It was prepared by Stefano Boeri Architetti, UNLAB, IND in cooperation with the Municipality of Tirana and financed by the Ministry of Urban Development and the National Territorial Planning Agency. At present, this plan is the guiding document of territorial development policies in the Municipality of Tirana, and is implemented for the period 2016-2030.

In 2016, Tirana's overall local plan shows the future of a polycentric and kaleidoscopic metropolis, which will host in every part of it a balance between city and nature. The vision identified the ten strategic objectives that aim to direct urban development , economic and social development of Tirana in the next 15 years.

TR030 envisages the territory as a hierarchic correlation between 3 main typologies: urban, peri-urban, rural:

- a. The urban territory includes all urbanized areas, which are almost completely constructed and comprised of compact urban medium and high density urban areas where urban residential, tertiary and commercial services prevail.
- b. The suburban area includes all medium density built areas that consist of informal residential palaces, industrial and commercial buildings dispersed in different ways and the presence of the main infrastructure in the city's service.
- c. The rural territory includes all areas located outside suburban areas and include urban units (poles) and agricultural and natural areas characterized by the presence of scattered buildings with mainly agricultural and residential purpose.

Figure 3. Proposed land use at city level, Municipality of Tirana



Source: Tirana 2030, Municipality of Tirana, 2016

4.2 Fiscal autonomy in Tirana - an overview

Catchphrases such as “metropolitan areas are the engines that pull the national economy” turn out to be fairly accurate. But the same comparative advantages of metropolitan areas that draw investment also draw migrants who need jobs and housing, lead to demands for better infrastructure and social services, and result in increased congestion, environmental harm, and social problems. Roy W. Bahl, *et al.* 2013.

The structure of financial resources for municipalities can be used as an indirect indicator to assess their financial capacity, the ability to undertake investments independently and meet community service requirements. While Local Government Units (LGU) revenues in Albania are made up of its own revenues, governmental transfers and separate taxes, *local own source revenues* are essential for an efficient, effective and autonomous local government. Yet the financial performance of the municipalities in Albania remains still, while investment needs become more and more urgent. On average, for the 61 municipalities in the country, revenues from its own resources accounted for only 25.4% of total resources at the end of the first half of 2018.

The view that local governments have little capacity to deliver services (or collect revenues)⁷ is, however, too broad a generalization, after almost 20 years in decentralization process.

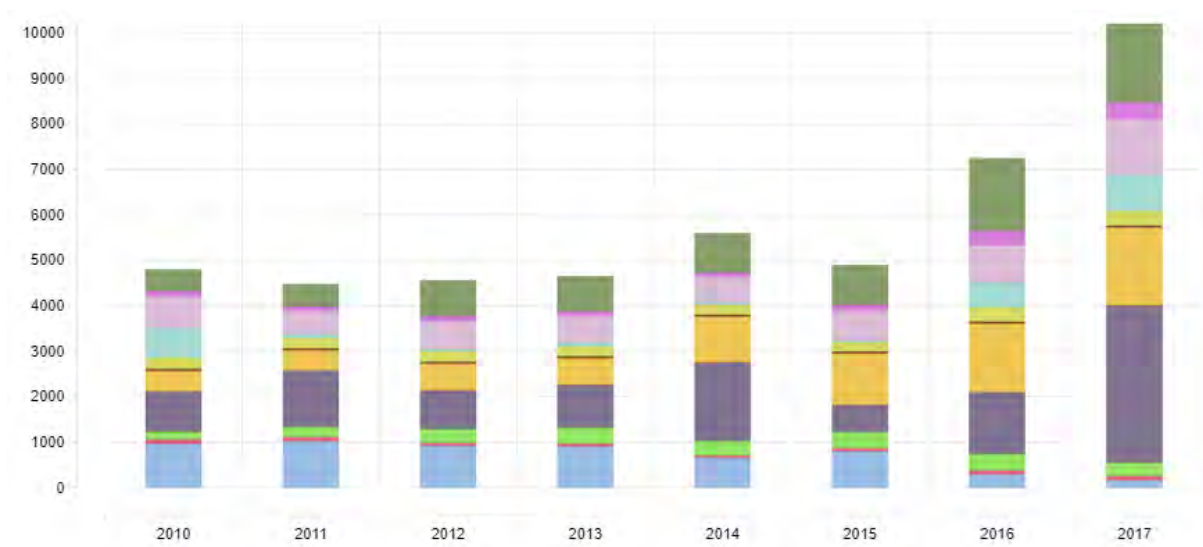
Tirana Municipality reports significant improvements in urban public management. And the quality of public services delivered in the metropolitan area is far better than that provided in the rest of the country. The financial resources available in the Municipality of Tirana have followed an upward trend in recent years. In 2017, the available resources were about Albanian Lek (ALL) 16.7 billion, up by about 16.2% in annual terms. This performance was largely determined by the increase in local source revenues, the increase in infrastructure impact tax and real estate tax shown in the chart below (Local Finance Portal, 2017). Namely, the transition from 600,757 ALL in 2015 to 3,466,070 ALL in 2017, taxes collected from the infrastructure impact tax, clearly demonstrates the increase of the construction activity in the Municipality of Tirana, which is directly related to the increase of the number of construction permits after the approval of the Plan.

Tax on buildings, in the other hand, reports lower incremental rhythms (1,145,184 ALL in 2015 to 1,718,480 ALL in 2017), which in comparison to the allocations provided by Impact on Infrastructure Tax, is approximately ½ less of it. Even though many may justify the potential of allocating revenues from property tax by the fact that only in June 2018 the property tax will be applied on the basis of its value, (and that before this period it is very difficult to estimate the potential of property tax in a context where data on taxpayers are still missing), this reform is not really fundamental. The property tax reform in Albania remains still much generalized, calculating the tax burden, on the basis of several macro-zones with a fixed estimation of the property values on the whole area, rather than apprising the real property value regarding the real estate market. This shift in the way this tax is calculated, has only increased the tax burden by 0.05%, thus making really small difference in terms of lump sum allocations in one hand, and not really making the differences between well-serviced and high valued properties with the lesser ones⁸.

⁷ Local revenues and taxes in Albania are regulated through the legal framework specified in Law no. 139/2015 'On Local Self-Government' and Law no. 9632, 2006, "On the Local Tax System", as amended.

⁸ It is a common evidence in the city of Tirana that within these macro-zones high rise building, new building residences, and well maintained streets, or better school provisions lie beside (sometimes just across the streets) with low rise old building, historical ones, amortized infrastructure etc.

Figure 4 Distribution of local own revenues through the years, Municipality of Tirana (respectively purple color representing the infrastructure impact tax and in yellow tax on buildings)



Source: Local Finance Portal in Albania, 2018 (www.financatvendore.al)

Though the Municipality of Tirana is one of the few municipalities in Albania that show a positive balance in terms of government dependency, the potential to further improve its performance fiscal policy has not yet been captured. The challenges of Tirana metropolitan public finances are to capture a share of the economic growth, as a consequence of new developments, that is adequate to finance the new and growing expenditure needs and to organize governance so that services can be delivered in a cost- effective way. At the same time, care must be taken to avoid over densification, over taxation and short term financial resources, which will hamper the successful implementation of the planning instrument.

All this is well-articulated in the principles of GLP TR030, but there's an evident missing of any instrument/ tool which ensures the implementation and the monitoring of these principles.

5. Empirical analysis and preliminary findings

Following is a summary of the chosen areas for study and their characteristics.

	<p>1. Building complexes of the communist period</p> <p>This typology is represented by apartment blocks, constructed by the state in the period 1945-1990. Some general characteristics of these areas are: the densification of the area after the fall of communism; good access to services, poor quality of public spaces. The typology occupies about 9% of the urban areas in Tirana.</p> <p>Structural Unit: TR371</p>
	<p>2. Historical urban tissue</p> <p>This typology is comprised of villas constructed in the early 20's and 30's, mixed with high-rise buildings, constructed after the 90's. The oldest villas date back to the ottoman period and are part of very small plots. These plots are merged eventually to make room for high-rise dwellings, which make for a lack of public space. The road network is not regular, but is well-connected with the center. This typology makes up 3% of the urban area in the city.</p> <p>Structural Unit: TR317</p>
	<p>3. Mixed central areas</p> <p>This typology represents a mix of form and function, from villas to longitudinal buildings and high rise buildings. They are characterized by a rapid densification, a quadratic road network and a good access to public services. This typology makes up 5% of the urban area in the city.</p> <p>Structural Unit: TR363</p>
	<p>4. Informal areas</p> <p>The informal typology is comprised mostly of 2-3 storey buildings, constructed after 1990. These areas usually have a quadratic road network, poor access to services, and tend</p>



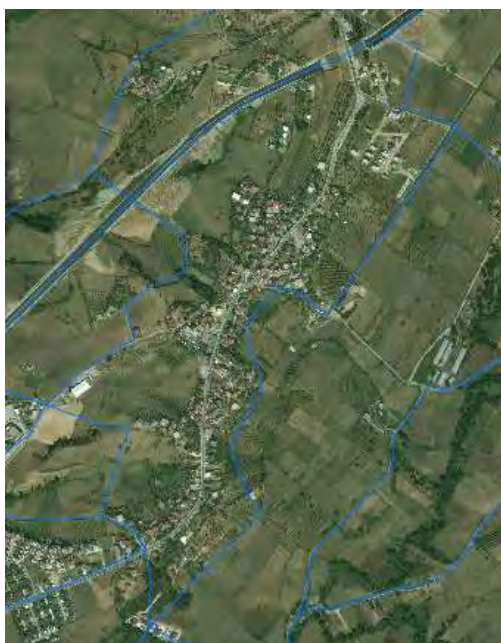
to be densified in height. These areas make up 41% of the cities urban area.

Structural Unit: TR412



6. Urbanized village centers (T5)

These areas are located in administrative units around the Tirana urban center, and differ in mixing between old structures of villages and new housing. Usually have poor or medium access to public services, road system in irregular networks, and gradual densitization. Typology constitutes 3% of the residential area and 2% of the population (TR030). To represent this typology, Unit TR69, Sauk Village was selected.



7. Areas developed around rural infrastructure (T7)

This typology includes all urban areas developed along the connecting roads between small centers. They predominate an individual home, with a height of 2-3 floors, with significant deficiencies in infrastructure and public services. This typology occupies about 13% of the inhabited area (TR030). To represent this typology, Unit FA30 was selected in the Farkë administrative unit.



8. Areas developed in mountain relief (T8)

This typology refers to high-rise areas, built in recent years. Occupy about 5% of residential areas in Tirana (TR030). To represent this typology, Unit DA75 was selected in the administrative unit Dajt.

9. Area developed along main economic stripes (T9)

These are mainly industrial zones, with mixed economic



and commercial functions, extending along the Tirana-Durres interurban road. This typology occupies about 5% of urban territory (TR030). To represent this typology, Unit KA158 was selected, part of the Kashar One.

Below the main finding are shown in a conclusive table:

Unit	TR372	TR317	TR363	TR412	KA252	DA75	KA158	TR69	FA30
Code	T1	T2	T3	T4	T5	T6	T7	T8	T9
Category	urban	urban	urban	suburban	suburban	suburban	suburban	rural	rural
Typology	Communist blocks	Mixed central	Historic	Informal area	Tower buildings	Mountain areas	Economic areas	Urbanized villages	Areas along infrastructure
Area (m2)	77,100	47,200	33,300	188,400	43,300	140,900	76,300	115,900	524,700
Existing FAR	1.99	0.95	1.54	0.42	2.36	1.07	0.56	0.51	0.09
Proposed FAR	3.5	2.95	4	0.6	2.5	1.6	2.6	0.6	0.6
% of categories of land use (existing)	A (73%); AS (9%); IN (9%); S (4%); AR (5%)	A (82%); AS (7%); IN (11%)	A (73%); IN (15%); AS (12%)	A (62%); IE (22%); B (12%); IN (4%)	A (73%); B (21%); IN (6%)	A (85%); N (6%); S (5%); IN (4%)	IE+S (83%); A (9%); B (5); IN (3%)	A (73%); B (12%); S (2%); IN (12%); AS (1%)	B (92%); A (5%); IN (3%)
% e of categories of land use (proposed)	A (78%); AS (9%); IN (4%); S (5%); AR (2%)	A (89%); AS (7%); IN (4%)	A (82%); S (5%); IN (7%); AS (6%)	A (97%); IN (3%)	A (70%); B (14%); S (10); IN (6%)	A (78%); N (16%); B (4%); IN (3%)	IE+S (98%); IN (2%)	A (93%); IN (3%); AS (3%); B (1%)	B (52%); A (46%); IN (2%)
Total revenue from TII	3,428,123,476	8,574,646,667	5,896,235,846	287,841,046	23,340,400	1,141,630,688	0	109,065,810	1,148,780,819
Total revenues from tax on agriculture	0	0	0	-7,941	-1,055	2,029	-1,437	-4,450	-76,605
Total revenues from tax on residential property	3,390,254,644	10,718,308,333	6,599,066,808	359,801,308	-1,215,699,500	1,427,038,360	0	662,281,100	2,487,699,950
Total revenues from tax on commercial property	3,579,598,800	0	4,627,368,000	0	4,979,500,000	0	80,682,086,016	0	0

As it seems, in the 9 typologies studied there are different models of land use changes. Mainly, the trend has been the expansion of the residential area both in the parcel and in the densities. Five of the areas provide DLP instrument, accompanied, where appropriate, by conditional intensity instruments. This means that redevelopment and alienation of most of the existing typologies is proposed and, in some cases, of the land uses.

It is estimated that classifiable typologies such as urban areas (including historic areas, state-owned and mixed-use areas) may generate tax revenue of approximately 45,000,000,000 Lek⁹, based on plan proposal. Of these, the TII, which is only collected once, in the process of obtaining the construction permit, is estimated at about 17,899,000,000 Lek. The rest are revenues that would be generated periodically every year. These areas, at the level of interventions proposed by the local plan, mainly undergo significant densification, and a small increase in the percentage of occupied services.

Suburban areas, including informal areas in northern Tirana, and peripheral housing blocks (in Kashar and Dajti) and the Tr-Dr economic zone, may generate revenues of about 103,821,000,000 Lek in the first year, out of which 17,589,229,337 are only one time beneficial from TNI, and the rest are generated year after year in addition to the existing one. The suburban typology is considered as a predominant relative to the urban territory of the Municipality of Tirana (with about 57% of it), therefore the tax values are considerably higher.

Finally, rural areas, represented by village centers and developed areas along the roads, represent about 12% of the urban terrain of the Municipality of Tirana, and usually experience very small changes in intensity but major changes in land use: agricultural territory replaced by urban territory at 50%. Thus, the taxes generated from these areas by TII are around 218,130,000 Lek, while other periodically collected taxes amount to 3,149,981,000 Lek (additional to the existing ones). Of course, in these areas, from the conversion of agricultural land, they lose about 81,056 Lek each year.

6. Conclusions and discussions

As far as efficient investment planning and budgeting matters are concerned, drafting a realistic planning document can be considered the most important step. In the absence of proper financial analysis (Capital Investment Plan being one as such), the actual GLP for Tirana misses the linkage between its strategic objectives to foster future urban growth with its actual efforts (and possibilities) for implementation.

The empirical analysis above has shown that the building proposals of the GLP can generate a high immediate value from Impact on Infrastructure Tax (20 billion ALL). But this tax, remains a one-time tax, which partially justifies the need for investments needed for including these new buildings to the city. In the other hand, maximizing the efforts for improving the system for collecting the property tax on buildings might result in a collection of considerable budget of 184 billion ALL, each year. These values together, exceed the actual municipal budget, highly rising the opportunities for better services to its residents.

As a consequence of the above discussion, it is necessary to improve the system of asset registration, tax collection, etc., so that this potential is not untapped. Adapting new and innovative financial instruments for land development as well, remains a highly considerable solution to foster future urban growth, while ensuring public goods to the community.

⁹ 1 euro is equivalent to approximately 122 Lek

On the other hand, it is important to link the taxation (purpose, base, etc.) to territory through land use instruments and normative. The first one, with the requirement of being more flexible, might help better planning and better projections of financial resources that can be allocated from the differentiation of the tax types.

In addition, in the way the rules for structural units have been drafted, this study highlights some of gaps as follows:

- Often the proposals on land use categories (in percentage) do not really reflect the reality (the existing land use situation).
- On the other hand, the Kshp and Kshr proposals contradict the Surfaces in% estimated for Infrastructure, Education, Recreation and Similar uses as well as the greening areas specified in the passport. In any case, the document becomes speculative as far as the standard you can refer to in each case.
- With regard to the proposals, taking into account unit holding capacity, the expected population in the Municipality of Tirana for the next 15 years will increase by an average of 421,000 people, i.e. by almost 50%. This does not reflect the real growth trends of the city.

Finally, it is certainly worth mentioning that this assessment takes into account the ideal situation, where any Local Plan is implemented. This is not realistic in the long run. However, it should be borne in mind that the planning function is to predict the country's socio-economic, territorial, environmental, etc. dynamics as precisely as possible, and to precede it with instruments and orientations to enable development and increase prosperity.

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Application and Verification of Municipal Administrative Areas Spatial Zoning Model in New Town Location Selection

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Abstract: As one of the three most important location-oriented policies in urban and regional development, the location selection of new towns largely determines the strategy of urban economic development and regional economic development. In the previous study, an objective model of municipal administrative areas spatial zoning model (MAA-SZ model) is constructed based on the theory of spatial equilibrium and mathematical logic deduction, which can provide guidance for the location of new towns. This paper takes a city in the south of Heilongjiang Province as an example to verify the value and superiority of the MAA spatial zoning model in the location selection of new towns. The results show that the consistency Kappa value of the model is 77.2% when the MAA-SZ model is compared with Glaeser-Gottlieb new town location selection model new towns that has been widely used, which verifies the accuracy of the model. In addition, the spatial differentiation and DEA effectiveness of the model are higher than the contrast model. The superiority of the MAA-SZ model over the contrast model mainly lies in two aspects. Firstly, the MAA-SZ model effectively reduce the influence of some factors that can not be assigned objectively while inheriting the economic relationship among the factors of the contrast model. The MAA-SZ model makes it easier to simulate and operate, and more practical. Secondly, it effectively reduce the contradiction between development, agriculture and ecology, which is often caused by the traditional site selection of new town basing on center-urban gravitation. The MAA-SZ model solve this problem by balancing the relationship among construction, agriculture and ecological land from the macro-perspective of the MAA. Therefore, the MAA-SZ model has the characteristics of high accuracy, high balance, high effective, high spatial differentiation, and high practicality. We believe the MAA-SZ model can also provide a reference for the development of urban system.

Keywords: spatial zoning, municipal administrative area, new town.

1. Introduction

From the perspective of urban economics, new town construction is an important carrier to promote the rapid development of urbanization and the sustainable growth of regional economy. With the increasingly prominent problems of environmental pollution, traffic congestion, and the decline of quality of life in urban central areas,

new town construction has become an important way to solve urban space expansion and function optimization (Sun, 2016). As an important location-oriented industrial policy, the location of new towns has a significant impact on the layout of urban industries. The location of new towns largely determines the urban economy and is an important part of the strategy of regional economic development (Johnson, 2007). At present, most of the models used to solve the problem of new town location are based on the economic factors that attract consumers from the city. Their application is not practical enough, and there are great differences between the valuation of some economic factors and the actual situation (Nouri *et al.* 2013). At the same time, many new town location models focus on the city gravity and lack of balanced consideration from the perspective of the city, resulting in conflicts between the location of new town and the location of agricultural and ecological land (Sun, 2016). In order to solve the problems of new town location, it has become the primary task of regional economic development strategy to establish a highly practical and balanced MAA spatial zoning model to guide the new town location.

At present, the new town location selection models can be divided into five categories: agricultural location model, industrial location model, single-center new town location selection model based on the gravity of the central city, multi-center new town location model, and new town location model based on agglomeration economy. The core idea of agricultural location model (Johann, 1826) and industrial location model (Alfred, 1909) is from producers' version and aim to maximize the production profit. It selects the appropriate new town location through the producer input/output ratio. The new town area has little connection with the traditional central urban area and is relatively isolated. With the continuous deepening of the relationship between the new town and the traditional central city, a single-center new town location model focusing on the gravity of the central city based on the logical deduction between economic factors was developed. Developers determine the location of the new town according to their target income. Among them, the number of enterprises, population size and land area of the new town are endogenously generated by the gravity of the traditional central city. Chen Hongxia (Chen, 2008) started with the gravity of the central city, and aimed at the theoretical and practical problems of the new town formation and development, constructed a general endogenous theoretical model of the new town. And the mechanism of the new town development was also studied. With the development of multicenter city and urban diffusion, Krugman's multi-center new town location model was proposed. Based on the single-center new town location selection model and the principle of attraction and repulsion between enterprises, this model organically connects the new town and the traditional central city to clarify the inner structure of the economic spatial pattern of the city (including the new town and the traditional central city) (Krugman, 1993). Recently, the impact of agglomeration economy on new town location selection increase, so some new town location selection models based on agglomeration economic factors and balancing the central and suburban areas have been proposed. For example, Gottlieb and Glaeser (Glaeser and Gottlieb, 2008) pointed out that the agglomeration economic effect under spatial equilibrium between the central city and the new city is an important economic factor behind the new town location selection policy. At present, this model has been widely used in the location selection of new towns, and many meaningful results have been achieved (Minha, 2017, Liu, 2016).

Generally speaking, the existing five types of new town location selection models differ from each other due to the differences in urban structure and morphology, and all of them show shortcomings in the application practice of new town selection location. Firstly, the existing models are constructed by the logical relationship between economic factors. Some of the economic factors, such as consumer preferences and the number of urban products, can not be assigned in practice, which leads to the weak applicability of the models. Secondly, most of the existing models advocate that the location of new towns focus on the gravity of the central urban areas. It is lack of rational consideration to the relationship between the development of new towns and agricultural and ecological land from the perspective of MAA. Therefore, it aggravates the contradiction among construction, agriculture and ecological land. Thirdly, most of the existing models are based on different urban forms and structures, and their scope of application is limited.

In our previous study, the model of MAA spatial zoning was constructed by using the economic logic derivation and the objective derivation of the relationship between the model factors. The MAA-SZ model aim to study the suitability of MAA spatial development construction basing on the theory of spatial equilibrium. It is used to simulate and analyze the MAA spatial zoning and the results are compared with three existing models: urban structure model, UGB delimitation model and functional regionalization model. It is found that the average Kappa value is 81.3%, which verifies the correctness of the model (Zhao *et al.* 2018). Theoretically, it is possible to use the MAA-SZ model to solve the problem of new town location selection. In order to verify the application value of the model in the new town location selection, this paper take a city in southern Heilongjiang as an example and applies the new town location selection model to it. Meanwhile, we compared the spatial differentiation and DEA effectiveness of the MAA-SZ model and Glaeser-Gottlieb new town location selection model (Glaeser and Gottlieb, 2008). The results show that the model has advantages in solving the problem of urban new town location selection. Moreover, the model show many advantages than the traditional Glaeser-Gottlieb model, such as it is more balanced, more effective, as well its more spatial differentiation, easier value assignment, wider application scope and more convenient application.

2 Research Method and Research Area

Based on the practical problems existing in the existing model for the new town location selection, this paper starts with the introduction of the model and the research area.

2.1 Introduction of the Model

2.1.1 MAA Spatial Zoning Model

In the previous study, through data, personnel research and economic derivation, under the condition of the restriction of the main functional areas, the model of MAA spatial zoning was constructed, and the correctness of the model was verified by comparing with the existing spatial zoning model. The MAA-SZ model is used to solve the spatial differentiation of urban areas (including central and new towns), urban systems and village and town systems. The factors included in the model are: available land resources; population aggregation; economic development level; location advantage; traffic advantage; number of development zones; topography; natural disasters; available water resources; environmental capacity; ecosystem vulnerability. Among them, the factors contributing to D are: available land resources, population aggregation, economic development level, location advantages and transportation advantages; the second factor contributing to D is the number of development zones, topography and topography; the lowest factor contributing to D is natural disasters, available water resources, environmental capacity and ecosystem vulnerability. (Zhao *et al.* 2018) In order to reflect the superiority and practical value of the established model of MAA spatial zoning, this paper uses the model to further apply in the new town location. The MAA-SZ model is as follows: Formula 1.

$$D(r) = \left(\frac{L_1^2 N_1 \lambda t Y e^{(\lambda t |r - r_0|)}}{e^{\lambda t r} - 1} \right) \left(p^{x_1} (y + r_0)^{x_2} J^{x_3} \right)^{(1-\mu)} \left(\frac{\sigma - 1}{\sigma} \right)^{\mu} M_1(r)^{\left| \frac{\mu}{1-\sigma} \right|} \quad (\text{Zhao et al. 2018})$$

The weight of each factor in P value is 0.15 for natural disasters, 0.15 for topography, 0.3 for available water resources, 0.2 for environmental capacity and 0.2 for ecological vulnerability. The parameters of μ 、 t 、 x_1 、 x_2 、 x_3 、 σ are 0.5, 0.005, 0.45, 0.2, 0.35, 2 (Fujita *et al.* 1997, Fujita and Mori, 2005, Wang *et al.* 2009), respectively. (Zhao *et al.* 2019)

2.1.2 Glaeser-Gottlieb New Town Location Model

$$D = \theta N^{-\sigma} (1-t) W P^{-\beta} \quad (\text{Glaeser and Gottlieb, 2008})$$

In which, D represents the suitability utility of MAA spatial development, N represents the population, W represents the wage rate, T represents the location advantage, P represents the preference of MAA participants to the land commodity. The values of parameters θ 、 σ 、 β are 1.9, 2 and 0.5, respectively(Fujita *et al.* 1997). What we need to explain here is that because the value of P consumer preference is difficult to determine, the p value of the MAA-SZ model (the model of MAA spatial regionalization) is adopted in the simulation, that is, the preference value of the main body of the MAA.

2.2 Introduction of Research Area

The study area is located in the south of Heilongjiang Province. The main landform is low mountains and hills. The elevation is between 100 and 850 meters. The distribution of water resources and available land resources is uneven, and the difference of natural environment is significant. In 2018, urban population accounted for more than 1/2 of the total population, urban area accounted for more than 20% of the total urban area, leading industries were secondary and tertiary industries, and its GDP accounted for more than 80% of the total GDP.

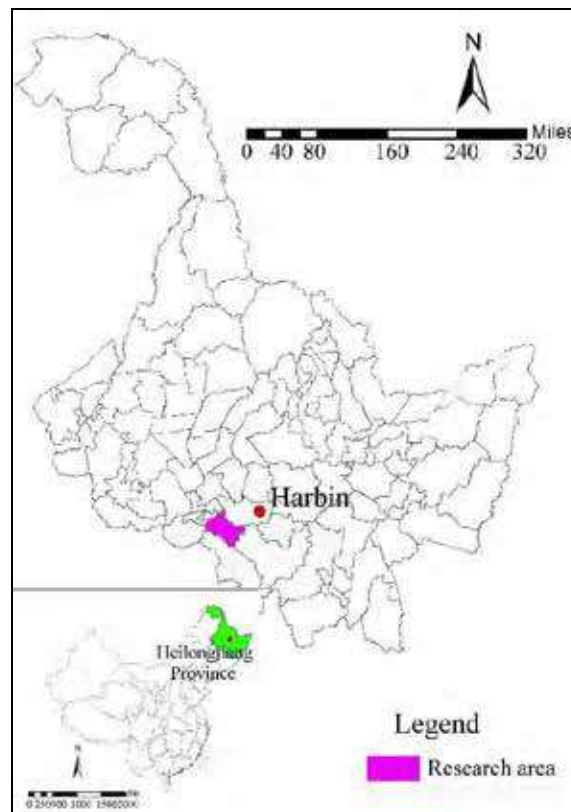


Fig. 1 Location of the research area.

3. Application and Verification of MAA Spatial Zoning Model in Location selection of New Town

Based on the current situation and research methods of the research area, the model is applied by starting with the consistency test, spatial differentiation and DEA validity of the model and the comparative model (Glaeser-Gottlieb New Town Location Model).

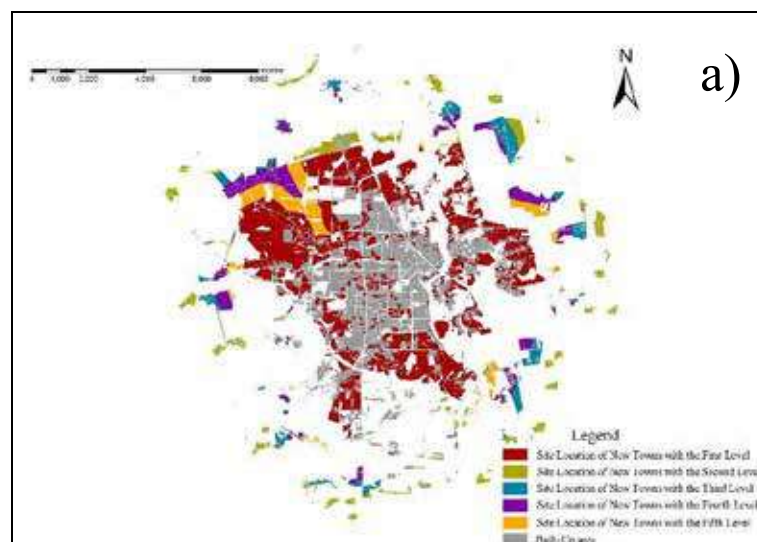
3.1 Consistency Test and Nonlinear Regression Analysis of MAA Spatial Zoning Model and Glaeser-Gottlieb New Town Location Model

Combining the distance factor with the old city and the local policy orientation, the new town location simulated by the MAA-SZ model is compared with the new town location simulated by Glaeser-Gottlieb model, as shown in figs. 2a and 2b. The consistency kappa value is 76.1%, and the consistency test value is high. The main reasons for the difference are the determinacy of the model factors and the restriction of the main functional areas. Especially, compared with the uncertainty of consumer preference and the quantity factor of urban products in the comparative model, the MAA-SZ model can be replaced by the factor of available water resources, topography, environmental capacity, ecosystem vulnerability, natural disasters, and the number of development zones through preliminary validation and deliberation (Zhao *et al.* 2018). As a result, the MAA-SZ model has more advantages than the comparative model in delineating new cities. Because of the limited role of the main functional area, the model can balance the relationship between development, agriculture and ecological land from a macro perspective. Compared with the comparative model, it is easier to deal with the contradiction between development, agriculture and ecology when selecting the location of the new town. In conclusion, the MAA-SZ model is more balanced than the comparative model.

By comparing the consistency kappa values of the model, the comparison model generation map and the government behavior map, the kappa values of the comparison between Figure 2a and Figure 2c of government behavior are 83.8%, and that of Figure 2B and Figure 2c of government behavior is 79.7%. Compared with the government behavior, the consistency of the model is higher than that of the comparison model, which verifies that the model is more consistent with the current situation. It further illustrates that the model has a good guiding role in the location of urban new towns.

By using the MAA-SZ model and the Glaeser-Gottlieb new town location model, the multiple non-linear regression analysis and linear regression analysis show that the R_2 value of the MAA-SZ model is 0.79 while that of the comparative model is 0.73, which proves that the MAA-SZ model is more objective than the comparative model in the actual fitting process.

As can be seen from Fig. 2a, the land on both sides of the northwest and southeast of the city is more superior, and can be used as location selection for new towns. It is suggested that urban construction land be reserved in the northwest and southeast of the city in the future. And gradually adjust the future construction land and nearby agricultural land, ecological land, population transfer and other policies. This will help to adapt the development of new towns and population changes gradually.



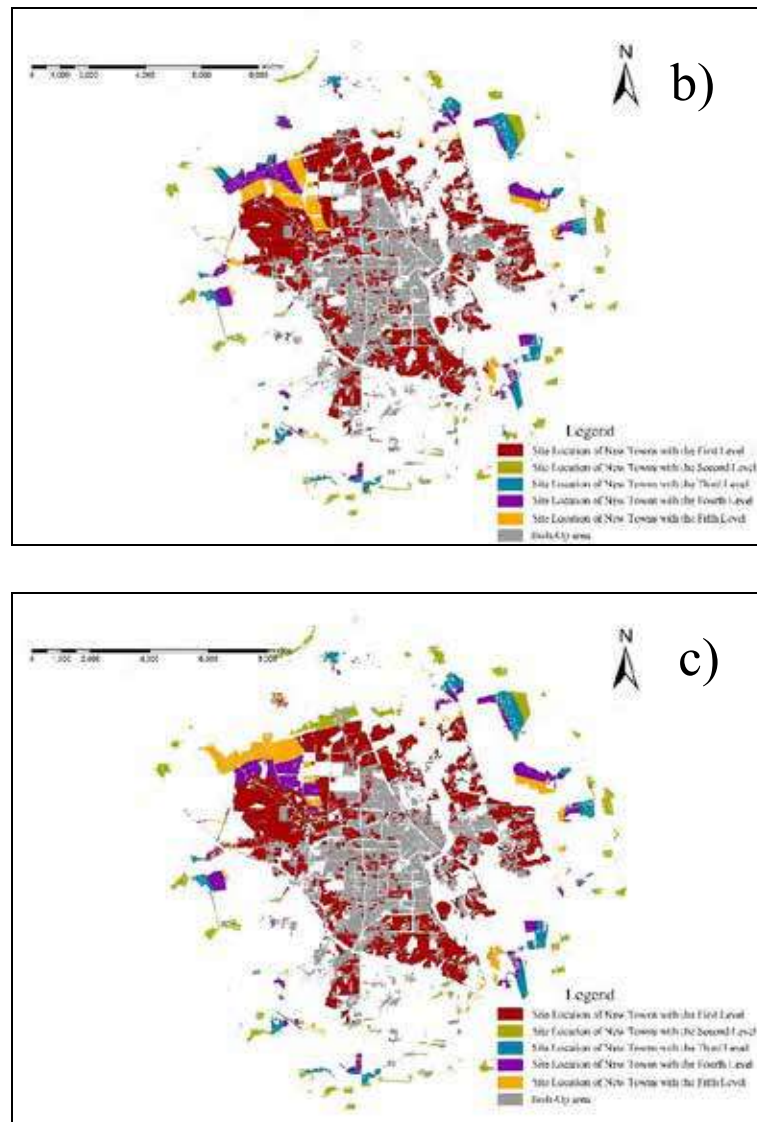


Fig. 2 Evaluation of New Town Location Selection. a) Simulation Results of the MAA-SZ model. b) Simulation Results of Glaeser-Gottlieb model. c) Government Behavior Results.

3.2 Comparison and Analysis of Spatial differentiation between MAA Spatial Zoning Model and Glaeser-Gottlieb New Town Location Model

Generally, the spatial differentiation of simulation results between two models is measured by the degree of variation of the semi-variogram of the model. Therefore, this paper tests the spatial differentiation of the two models by comparing the degree of variation of the semi-variogram of the two models. Before calculating the variation degree of the semi-variogram of the model, it is necessary to process the data with special values, analyze the spatial correlation and test the determinant coefficient of the semi-variogram and the normal distribution of the data. The processed special values are substituted into the data to test whether they belong to the normal distribution or are transformed into the normal distribution, and have good spatial correlation and the determinant coefficient of the semi-variogram. The premise of simulating the variation degree of semivariogram.

3.2.1 Special Value Processing

Geostatistical analysis requires that the data analyzed be of normal distribution, and the existence of special values will cause discontinuity of the continuous surface of variables, and then change or even conceal the

original spatial structure characteristics of semi-variogram (Li *et al.* 2014). Therefore, in this section, the domain method is first used to detect and process the special values in the simulation results of 10 models. That is to say, the values in the range of 3 times standard deviation of sample average are normal values, while the values outside this range are regarded as special values, and the normal maximum is used to replace the special value (Li *et al.* 2014).

3.2.2 Semi-Variogram Fitting

Geographic statistics is based on the theory of regional variables and the main method of semi-variogram (also known as semi-variogram function). It has been applied in urban spatial regionalization, land spatial economy and ecological pattern evolution (Zhang *et al.* 2019, Xu and Hao, 2017, Jiang 2015, Yue *et al.* 2005). In this paper, semi-variogram model is used to study the spatial differentiation significance of several models. In the semi-variogram model, the nugget value represents the quantity of random variation, reflecting the variation caused by artificial and other random factors in the experimental error. The base value represents the structural variance of spatial variation, indicating the total variation in the system. The higher the base value, the higher the total heterogeneity of the system. The nugget coefficient is the ratio of nugget value to base value, which is caused by the random part. Spatial variability accounts for the proportion of total variation in the system. The nugget coefficient < 25% indicates that the variables have strong spatial correlation, 25%~50% indicates that the spatial autocorrelation is obvious, 50%~75% indicates that the variables have medium spatial autocorrelation, and > 75% shows weak spatial autocorrelation. The variation is mainly composed of random variation (Tatem *et al.* 2002).

Statistical analysis requires the data to be normal distribution, and Kolmogorov-Smirnova normal distribution test (K-S test) is used before the spatial analysis. If $P_k-s > 0.05$, it is considered that data obey normal distribution, otherwise data conversion is needed. The results of normal distribution test show that the significance level of the MAA-SZ model $P = 0.82 > 0.05$ and the comparative model $P = 0.85 > 0.05$, that is to say, the two sample data pass the K-S test and obey the normal distribution, so there is no need for data conversion.

Based on GS+9.0 software platform, the semi-variogram formula is fitted. The semi-variogram fitting results show that the decision coefficients of the fitting functions of the MAA-SZ model and the comparative model are greater than 0.5, which are 0.91 and 0.83, respectively. It shows that the function fitting effect of the spatial differentiation of the new town location selection land in the study area is good under the Gaussian model, and the model can explain the spatial structure adequately (Table 1).

Tab. 1 Fitting result of semi-variation function

Model	Nugget	Abutment value	Nugget coefficient	Range change (m)	Coefficient of determination	Spatial differentiation model
The MAA-SZ model	0.25	1.44	17.4%	322	0.89	Gaussian
The comparative model	0.23	1.53	15.0%	243	0.82	Gaussian

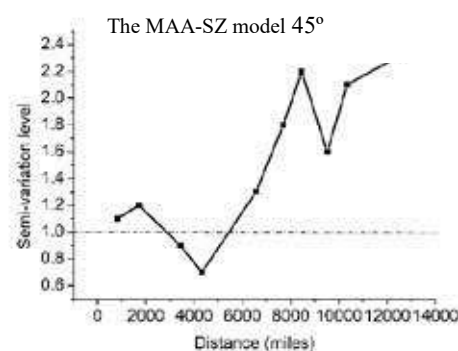
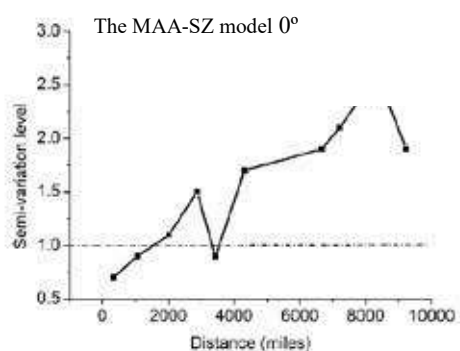
3.2.3 Anisotropy analysis of semi-variogram

The variation degree of semi-variograms in the four directions of 0 (east-west), 45 (northeast-southwest), 90 (south-north), 135 (southeast-northwest) of the model and the comparative model is plotted in Figure 3. The dotted line in the graph indicates the variation degree of "semi-variance/sample variance=1", which can be used to measure the variation degree of elements in four directions. When the semi-variance/sample variance is greater than 1, the elements exist. When the semi-variance/sample variance is less than 1, the variation of elements is weak, even there is no variation.(Zhang *et al.* 2011)

The MAA-SZ model simulates the land evaluation of new towns site selection, which varies significantly in four directions. Wave-like fluctuation trends were observed in all four directions. Small peaks of variation appeared in the direction of 0° near 2876 miles and 8340 miles respectively, which may be caused by the high variation of population and economic factors in the two places above 0° from the annex. The U-shaped trough appears near 4321 miles and 9514 miles in the direction of 45° , which may be caused by the weak variation of economic and traffic factors between the above two locations in the direction of 45° and the appendages. In the 90° direction, the correlation factors of the model change relatively little, so the variation level presents a relatively stable low level state. The small variation peaks appeared at 1431 and 7521 miles in 135° direction, which may be caused by the high variation of population, location, economy and traffic factors between the two places above 135° direction and the accessory.

When the comparative model was used to simulate the land evaluation of new towns site selection, the similar variation trend was also found in four directions. However, compared with the model, the degree of variation is not that obvious. There was a significant variation near 9304 miles in the direction of 0° , which was mainly influenced by consumer preferences in that direction, and in a smaller range. There are some variations in the direction of 5° 847 miles and 12 238 miles, which are mainly influenced by the wage rate and consumer preferences in this direction. A small peak appeared in the vicinity of 5026-977 miles in the direction of 90° , which may be affected by consumer preferences, location, wage rate and population in that direction, and show great variation in this range. There are two U-shaped troughs near 4873 miles and 11373 miles in the direction of 135° , which may be caused by the weak variation of population and location factors between the two places above 135° and the appendages.

Generally speaking, the model simulates the variation of the evaluation of new town location selection in four directions, which is more obvious than the comparative model, indicating that the model has a higher degree of spatial variation, that is, the spatial differentiation is higher than the comparative model. The high-low alternation in the semi-variogram simulated by the MAA-SZ model may be attributed to the important position of economic development level, location, population and other factors in the MAA-SZ model. The high-low alternation in the semi-variogram simulated by the comparative model may be due to population, location, economic development level, consumer preferences and other factors.



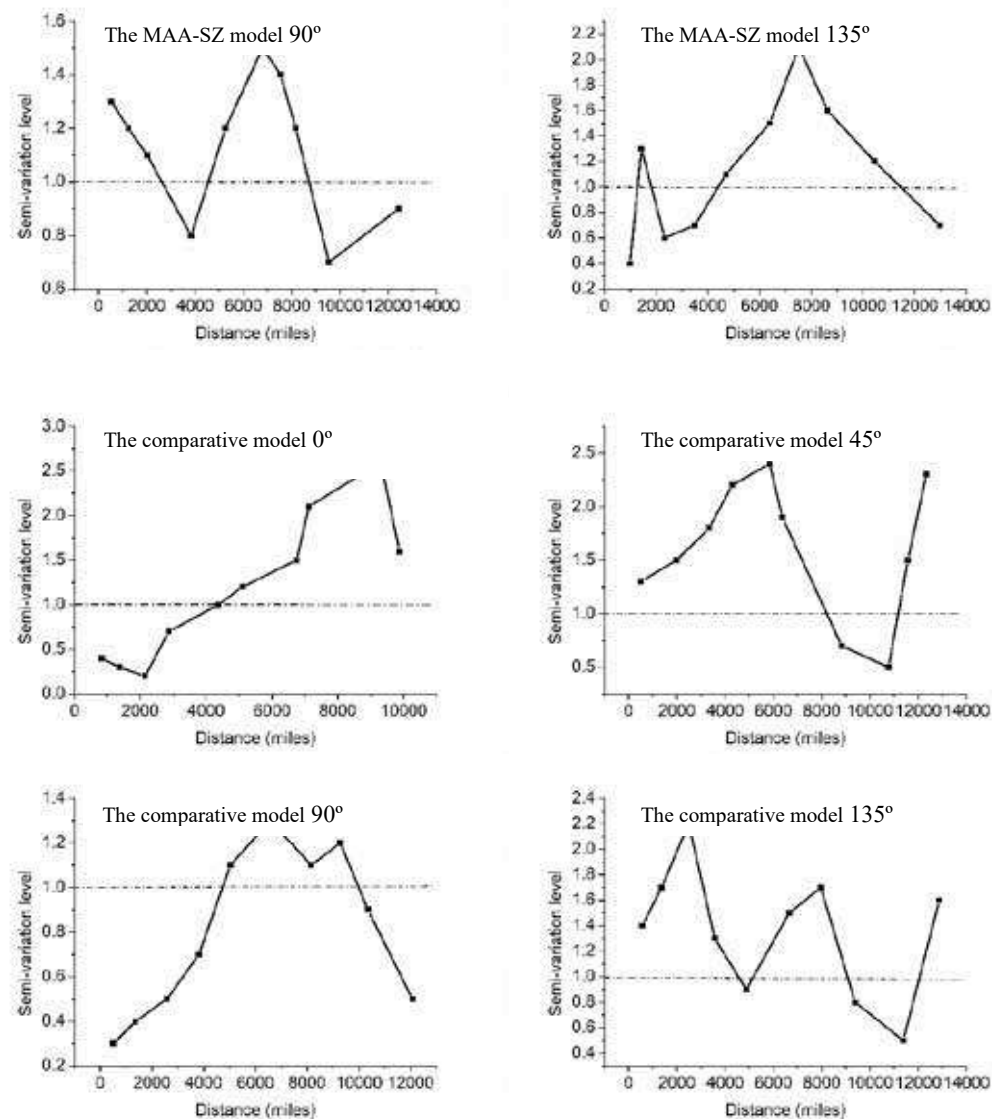


Fig. 3 The spatial differentiation of the model and the Glaeser-Gottlieb model.

3.3 Comparison and Analysis of DEA Effectiveness between MAA Spatial Zoning Model and Glaeser-Gottlieb New Town Location Model

3.3.1 DEA Model Method

DEA is a method to evaluate the relative effectiveness or benefit of the same type of decision making units (DMUs) based on the concept of relative efficiency and the multi-index input and output of the model. It is one of the commonly used methods to test the validity of the model. (Zhang *et al.* 2014) This method has been widely used in the validity test of relevant models such as urban planning and land use (Tonts *et al.* 2013, Sun *et al.* 2012). The correctness of this method has been verified in practical application. In this paper, DEA validity test method is applied to the model and the comparative model respectively, in order to verify which model is more effective. In this study, DMU refers to a block unit with a single evaluation result of the suitability utility of MAA spatial development. Among the DEA models, C2R and C2GS2 models (Li *et al.* 2017) were used more widely. Among them, C2R model reflects the comprehensive efficiency of the corresponding production state of DMU, including technology and scale efficiency; C2GS2 model reflects the technical efficiency of the corresponding production state of DMU. This paper chooses C2R model to simulate the validity of the above

four models in order to reflect the synthetical effect of the model on the suitability of urban spatial development. Its construction is as follows.

In the C₂R model, assuming that the performance of n research blocks is evaluated, and that each research block has m input indices and s output indices; suppose x_{ij} ($i = 1, 2, 3, m; J = 1, 2, 3, n$) and y_{ij} ($r = 1, 2, 3, s; J = 1, 2, 3, n$) represent the total input and output of the first type of factor and the total output of r, respectively; then the input and output of each research block can be expressed by vector X_j and Y_j . According to the evaluation idea of DEA method, a linear programming model based on input reduction and output invariance is established.

$$\begin{cases} \min \theta \\ s.t. \sum_{j=1}^n \lambda_j x_j + s^- = \theta x_{j_0} \\ \sum_{j=1}^n \lambda_j x_j - s^+ = \theta y_{j_0} \\ \theta = \frac{\sum_{i=1}^s \lambda_{ij} x_{ij}}{\sum_{i=1}^m \lambda_{ij} y_{ij}} \\ \lambda_j \geq 0, j = 1, 2, 3 \dots n \\ s^+ \geq 0, s^- \geq 0 \end{cases}$$

In the formula, θ is the efficiency index of the research block; λ_j ($j = 1, 2, 3, n$) represents the combination weight of the n research block (since the research block is equally important here, the weight is set equal); $\sum_{j=1}^n \lambda_j x_j$ and $\sum_{j=1}^n \lambda_j y_j$ are the input and output vectors of the block combined according to this weight; X_{j_0} and Y_{j_0} are the input and output vectors of the J_0 block; S^- and S^+ are the relaxation variables, representing pure excess and insufficient, respectively. In the C₂R model, θ , S^+ , S^- are the important basis for evaluating the suitability efficiency of the development of MAA.

The criteria for determining the validity of the study block are: (1) DEA is effective: when $\theta=1$, and $S^+=0$, $S^-=0$; (2) DEA is weak: when $\theta=1$, at least one input or output is greater than 0; (3) DEA is ineffective: when $\theta < 1$. (Zhang *et al.* 2014)

3.3.2 Data Resource

The MAA-SZ model involves 11 input and 1 output indices while the comparative model involves 4 input and 1 output indices. The data of population, economy and wage rate come from Heilongjiang Province's 2016 Population and Economic Statistics Yearbook; the amount of available land resources and the price of land in Heilongjiang Province come from the Heilongjiang Land and Resources Department's data of 2017; the amount of available water resources in Heilongjiang Province come from Heilongjiang Taxation Bureau's data of 2017. The data about the number of undeveloped development zones in Heilongjiang Province of 2018 was provided by the Ministry of Construction. The data of natural disasters in Heilongjiang Province in 2016 was provided by Heilongjiang Seismological Bureau. Heilongjiang Elevation and Slope Data in 2016 were provided by Heilongjiang Surveying and Mapping Bureau. The Annual environmental capacity and ecosystem vulnerability data of 2016 come from Heilongjiang Forestry Bureau. The input and output evaluation system of the MAA-SZ model and the comparative model is shown in Table 2-3.

Table 2 The Suitability Evaluation System of New Town Spatial Development of the MAA-SZ model (Zhao *et al.* 2019)

First level index	Second level index	Third level index
Input index	Available Land	Area of Available Land
	Population aggregation	Population growth rate
	Economic development level	Economic growth intensity
	Location advantage	Internal location advantage
		External location advantage
		Railway stations, expressways and main roads at all levels
	Transportation advantages	Arterial airport
		Regional airports and ports
	Number of development zones	Number of undeveloped or uncompleted development zones after adjusted by the state or government
	Topography and topography	Altitude
		Slope
	Natural disaster	Risk of floods, droughts, earthquakes and forest fires
	Available water resources	Available water resources per capita
	Environmental capacity	Individual environmental capacity bearing index
		Population density
		Gdp density per capita
		Ratio of construction land
		Cod emission intensity
		Environmental quality index
		Value of ecosystem services
		Water resources per capita
		Net income per-capita
		Proportion of urban population
		Total power consumption of industrial enterprises
		Gdpcod quantity
		Sewage treatment rate
		Government investment in environmental protection
Output index	Suitability utility of urban new town spatial development	

Table 3 Glaeser-Gottlieb model of Suitability Utility Evaluation System for New Town Spatial Development (Glaeser and Gottlieb, 2008)

First level index	Second level index
Input index	Wage rate
	Location advantage
	Population size
	Consumer preferences
Output index	Suitability utility of new town spatial development

3.3.3 Operation Result Analysis

In this study, three kinds of validity of a city in the south of Heilongjiang Province were counted (Fig. 4). First, the second-level input indices of the model and the comparative model were taken as the unit; then, the land

with the same evaluation result of the second-level input index of each model was merged into one block unit to ensure that each block had the reasonable evaluation result under the same model. The total research blocks of the MAA-SZ model is 1327, and the total research blocks of the comparative model is 1124. Under C_2R model, the number of DEA valid in the MAA-SZ model is 1115, accounting for 84% of the total; the number of DEA weak valid is 146, accounting for 11% of the total; and the number of DEA invalid is 66, accounting for 5% of the total. The effective number of DEA in the comparative model is 888, accounting for 79% of the total; the weak effective number of DEA is 90, accounting for 8% of the total; and the invalid number of DEA is 146, accounting for 13% of the total. Compared with Glaeser-Gottlieb New Town Location Model, the MAA-SZ model is more effective and less invalid.

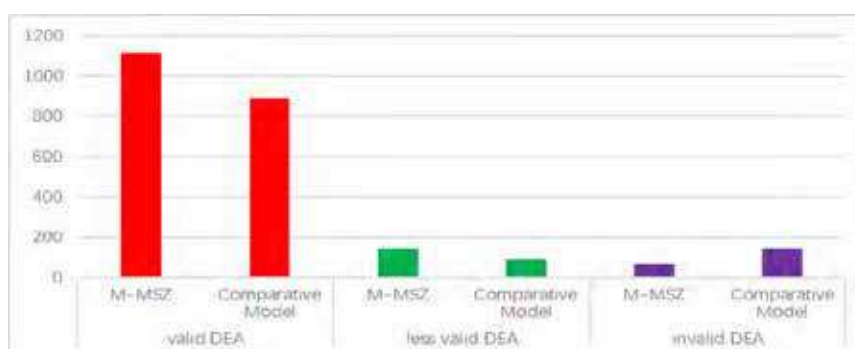


Fig.4 DEA effectiveness of the MAA-SZ model and the Glaeser-Gottlieb model.

4 Conclusions and Discussion

4.1 The kappa value, spatial differentiation and validity of the model and the comparative model

Based on the basic idea of spatial equilibrium theory, this paper applies both the MAA-SZ model and Glaeser-Gottlieb New Town Location Model to the practical application of New Town Location under the restriction of main functions. The validity, superiority and application value of the MAA-SZ model in new town location are judged by comparing the kappa value between models, spatial differentiation and DEA validity analysis.

Compared with Glaeser-Gottlieb model, the consistency kappa value of the MAA-SZ model is 76.1%, which verifies the correctness of the MAA-SZ model. At the same time, because of the determinacy of the model factors and the restriction of the main function area, the MAA-SZ model is more accurate in the new town. Because of the limited function of the main functional area, the model is more macro-balanced. Meanwhile, the consistency kappa value between the MAA-SZ model and the government behavior map is 83.8%, while that of the comparative model and the government behavior is 79.7%, which proves that the model is more consistent with the government intention.

Nonlinear regression analysis shows that the R_2 value of the MAA-SZ model is 0.79 while that of the comparative model is 0.73, which proves that the model is more objective in the process of fitting with the actual situation.

By comparing the spatial differentiation between the MAA-SZ model and Glaeser-Gottlieb new town location model, it is found that the determinant coefficient of the semi-variogram model is 0.89 for the MAA-SZ model while that of the comparative model is 0.82. And the nugget coefficient of the MAA-SZ model is 17.4% while that of the comparative model is 15.0%. From the simulated variation map, the MAA-SZ model has a higher degree of variation, which proves that the spatial differentiation of the MAA-SZ model is higher than that of the comparative model.

The DEA validity of the MAA-SZ model and Glaeser-Gottlieb new town location model were analyzed. It is found that the number of effective DEA accounts for 84% of the total, the number of weak effective DEA accounts for 11% of the total and the number of invalid DEA accounts for 5% of the total for the MAA-SZ model. For the comparative model, the number of effective DEA accounts for 79% of the total, the number of weak effective DEA accounts for 8% of the total and the number of invalid DEA accounts for 13% of the total. It proves that the MAA-SZ model is more effective than Glaeser-Gottlieb model in DEA.

4.2 The Widespread Application of the Model and Its Enlightenment to New Town Location Model

Based on the certainty of factor selection and weight assignment, it is believed that the model has greater application generalization and inheritance, as well as wide application area.

The MAA-SZ model not only enriches the equilibrium theory, but also provides new ideas for the location of new towns. The application results show that the model can effectively and reasonably divide the development, agriculture and ecological space from the macro-equilibrium point of view, and more accurately determine the location of the new town through the development time of the MAA. It promotes the balanced and rational utilization of the macro-direction of urban land. In addition, it also provides scientific basis for the future development direction of urban system.

Generally, compared with the traditional models, the MAA-SZ model show three advantages. Firstly, the MAA-SZ model maintains the objectivity of the existing new town location model, and extends the spatial regionalization equilibrium of the existing new town location model. Briefly, the traditional new town location model advocates the balance from the central city to the new town, while the idea of the MAA-SZ model is the balance of construction, agriculture and ecological land within the city area. Secondly, the MAA-SZ model widens the scope of application of existing new town location selection model. For example, different traditional new town location models were used to meet different requirements of urban structure and morphology, while there is no limitation for the MAA-SZ model. Lastly, the MAA-SZ model facilitates the application of existing new town location model. As we know, some factors of existing new town location model can not be assigned, while the MAA-SZ model reduces the factors that can not be assigned. We believe these improvements will make the model easier to operate and practice.

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SP24

Home sharing.
Short-term rentals affecting
local housing markets

Built Commons: Reclaiming the Sharing Economy

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Abstract: The advance of distributed computing research in the U.S. during the 1990s led to the conception of novel channels for subletting surplus space right after the burst of the U.S. housing bubble. The coincidence of the new technologies with the biggest increase in house prices (1990-2008) resulted in a new sharing culture which we know today as the “sharing economy”. This paper suggests that even if sharing platforms today are failing by exacerbating the housing crises around the globe, they could provoke other *alter-sharing* practices. The paper aims to reevaluate the sharing economy in relation to housing and in particular, its spatial implications. It looks into historical non-digital stranger-shared housing precedents and their architectures by deploying the theoretical framework of the commons as autonomous, resilient grassroots sharing networks. Finally, it explores contemporary online listing accounts looking for spatial evidence for both the effects of the sharing economy today and the potential emergence of alter-sharing practices. While regarding housing as a resource, it speculates if the pressures of its ever-growing scarcity and unaffordability could lead to the emergence of a collective political action.

Keywords: sharing economy; commons; housing; architecture

Introduction

A decade ago, as the sharing economy was just starting to gain momentum, it was initially advertised through stories of resilience and sustainability. This soon gave way to a critical wave and the realization that the practice was, among other things, disregarding employment protection legislation and exacerbating housing crises in metropolises around the globe (Slee, 2017). Recent research points to strong evidence of how short-term rentals are taking housing stock off the market and making it unaffordable through “gentrification without redevelopment” (Wachsmuth and Weisler, 2018, p.7). At the same time start-up founders and sharing advocates continue building upon the positive “feel-good” rhetoric.

The term “sharing” is very suitable for appropriation due to its lexical ambiguity – one can share a language, a meal, a room (Belk, 2010). The same could be said for the term “economy”, it can relate to both the production/consumption of goods/services, and to the careful management of resources especially in the context of today’s global housing landscape. So it is understandable that in both academia and practice there is a disagreement on what the term “sharing economy” actually means. Koen Frenken and Juliet Schor (2017) refer to this as a “definitional issue”. They argue that the sharing economy is very similar but not equivalent to other preceding practices such as second-hand economy (eBay), product-service economy (car rentals) and on-demand/gig-economy (using the

professional services of a handyman). Instead, Frenken and Schor define the phenomenon as “consumers granting each other temporary access to under-utilized physical assets (‘idle capacity’), possibly for money” (Frenken and Schor, 2017, p.5).

Both Belk and Schor and Fitzmaurice argue that stranger-sharing today was enabled through technology. For Belk the decisive development was the emergence of user generated content (Belk, 2014), while Schor and Fitzmaurice understand it as the guarantee for trust between strangers (Schor and Fitzmaurice, 2015). This paper traces how both stranger-sharing and collective content (value) generation are not new and have an analogue precedent in the face of the commons.

Theoretical Background

The commons have a long history, going back to open-field system England where the term “common” was used in relation to “common land”. Few centuries later Elinor Ostrom (1990) suggested a new definition, arguing that the common is neither private, nor public, but communal. The work focused on grassroots strategies for natural resource governance as an alternative to existing state or privatized models. Another important contribution to the debate is Antonio Negri and Michael Hardt’s (2009) definition. Here the common (singular) is the social space where the multitude arrives at a shared subjectivity, and which acts as the foundation of the emergence of the commons (plural) – the social product of collective political action. And finally, Massimo De Angelis (2017) suggests that the commons are autonomous grassroots systems for the production and governance of shared resources – both material and non-material. Drawing on the theoretical discourse described above the paper will suggest the potentiality for today’s sharing practices to transform into “commons” as a response and solution to a failing housing market.

Unfortunately, today’s sharing economy platforms have still a long way to go as they currently conceptualize sharing as distributed value. Yochai Benkler (2004) draws a direct comparison between the popular at that time distributed computing trend and the material culture of car-pooling in post-war America. Benkler suggests that today’s sharing practices are originating in projects such as SETI@Home, the distributed computing experiment of NASA as an attempt for an economical supercomputer. The incentive was working through volunteers all over the globe who participated by downloading and running a screensaver and by doing that donating their underutilized computational capacity.

Benkler (2004) explains that idle capacity is generated by specific characteristics of the shared product such as “indivisibility”, which refers to the way a product is bundled and packaged. Computational power is a good example, as it is not fully utilized all the time and this inevitably generates idle capacity. One could argue that housing has the potential to be indivisible too. And here lies one of the main conflicts of the sharing economy in relation to architecture. If the platform is conceptualized to understand sharing in such quantified ways, it proves to be problematic especially in relation to space.

The essay even goes as far as claiming that sharing is an “economically attractive modality of production” (Benkler, 2004, p.342). However, those systems have commercial value only if a certain profit threshold is crossed. Otherwise the idle capacity stays an object of “social sharing rather than market exchange” (Benkler, 2004, p.317). Looking at the house prices curve in the U.S. for the last

decades (Shiller, 2015, p.20), this statement seems to be confirmed. Positioning the two most popular platforms today, Airbnb and Couchsurfing, one can clearly see that the barter platform emerges in 1999 at a low point, while the commercialized market version Airbnb is conceived in the peak of the housing prices, just before the bubble burst.

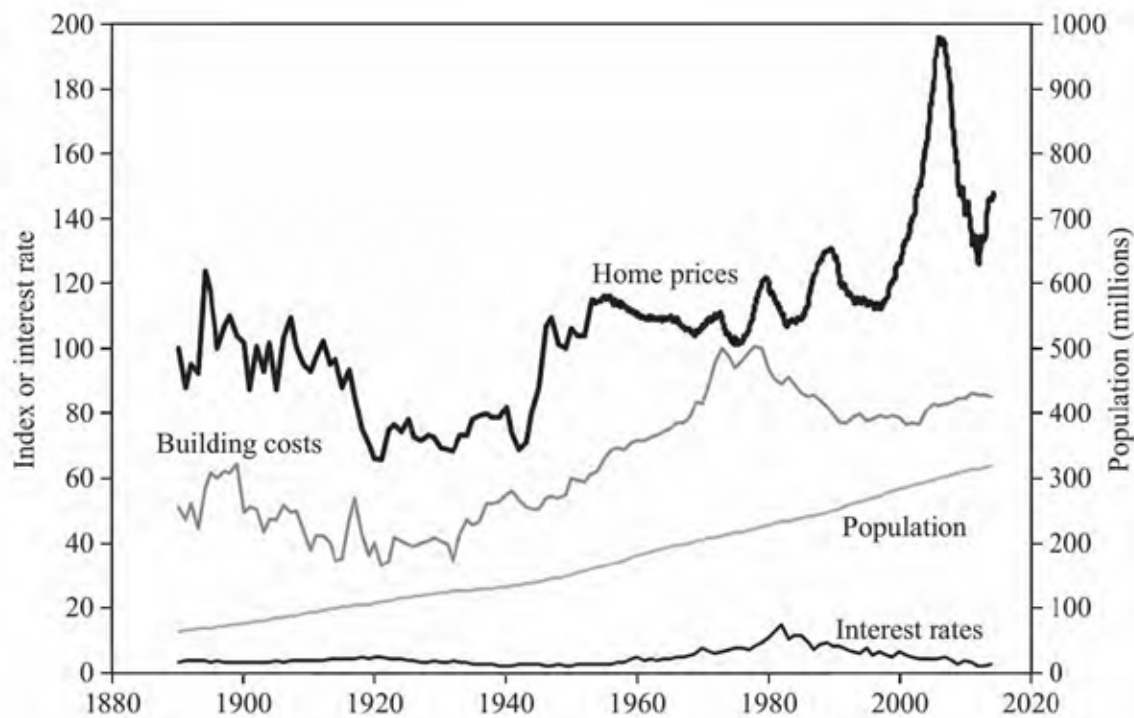


Figure 3.1
**U.S. Home Prices, Building Costs, Population,
and Interest Rates, 1890–2014**

Figure 1 Schiller's Study of U.S. Home Prices (Shiller, 2015, p.20)

The technological developments mentioned above coincided with another major shift, one in the housing market. In the last few decades one has witnessed a steep increase in house prices, turning housing into a desirable investment asset (Monnery, 2011, Minton, 2017). The merging of soaring real estate prices and dysfunctional digital sharing platforms has marginalized the practice by reducing it to a transactional scheme. In this context idle capacity often gives way to new capacity allowing for housing units to be acquired as an investment only (Frenken and Schor, 2017). Taking housing stock off the market and exacerbating housing crises all over the world is only one side of the problem. Turning domestic interiors into staged home-themed experiences as in the documentary of Ila Bêka and Louise Lemoine (2016) reveals another dark side of the sharing economy today. The work tells the story of an Airbnb user Mark who in the pursuit of constructing the perfect host storyline, ended up giving up his marriage, home and day job. But where does all this leave us and does this mean we need to give up sharing altogether?

Research Methods

The paper argues that technology was merely the channel and not the reason for today's sharing popularity. Moreover, it claims that "sharing economies" have existed before in various analogue forms. The historical overview will construct a genealogy of stranger-shared housing and place the sharing economy within a tradition of preceding practices. It will also examine the relationship between the home and the common and how it has been actualized in space historically to then further assess today's sharing economy.

Following the historical overview, the work is going to introduce accounts of contemporary platforms through analysing online listings. The investigation will explore listings as constructed images of today's domestic condition but also as an economic marker.

Historical Overview

The following historical overview will explore a group of cases where the relationship between the home and the common was manifested differently and, essentially, formalized to a various extent. This includes the Diggers in Surrey, ca. 1649, the Oneida Community house in Oneida, New York, 1848, the Communal House of the Textile Institute in Moscow, 1931, and finally, Zollhaus in Zurich, estimated completion date 2020.

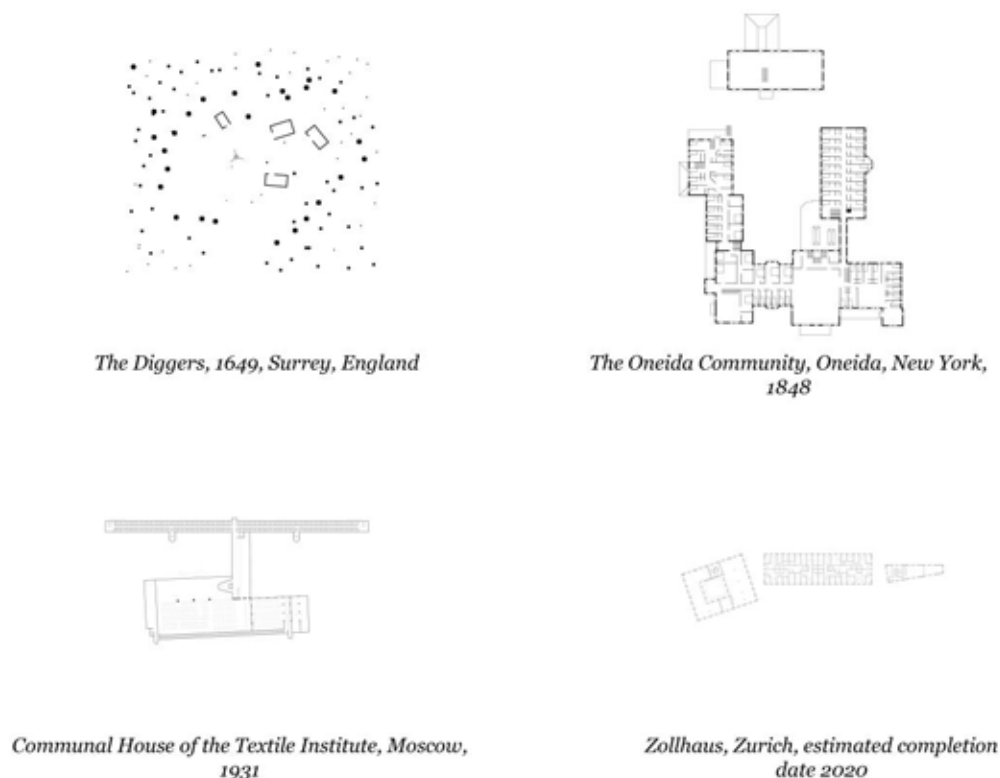


Figure 2 Historical Examples of Stranger-shared Housing

The Diggers are quite often referred to as one of the first accounts of autonomous counterculture projects. In fact, they have acquired an almost mythological status for many following counterculture

movements culminating with the SF Diggers group in San Francisco in the 1960s (Carlsson and Elliott, 2011). The story of the Diggers begins in 1649 as they settle on a piece of common land in St George's Hill, Surrey and start cultivating it. The historical background of these events was accompanied by the already on-going enclosure in England which minimized common pastures and woodlands that used to be available to all manorial tenants under the open-field system (Gurney, 2015). Other historic events of the same period included the English Civil War (1642-1651), the overthrow of the English monarchy with the execution of Charles I., and the following takeover of Oliver Cromwell (1653-1658). At the time cultivation of common land was comparable to today's squatting culture. It was a strong political statement but also a solution to an urgent necessity. The same period was marked by a famine in Northern England in 1649, and generally, food and wool production were regarded as very profitable enterprises at the time. The home on the other hand was by far not understood as something valuable. Apart from a rather wealthy urban segment of the population, it served purely utilitarian functions. Perhaps this is also the reason for the limited historical material on the architecture of the colony. John Gurney offers a brief description: "they have built them some few little hutches like calf-cribs, and there they lie anights, and follow their work adayes still with wonderful joy of heart" (Gurney, 2015, p.73). Those lines depict an agglomeration of small-scale agrarian buildings scattered through the wood. The built structures are used only as collective bedrooms and the rest is defined by the spatial condition of the landscape. The common land, which is also the site of the production of the common in this case, is also reflected in the architectural language. Borrowing the architectural vocabulary of the site of production of the common, "little hutches like calf-cribs" affirms the insignificance of the home. One could even argue that the home was inserted in the predominant condition of the common.

The Communal House of the Textile Institute in Moscow on the other hand suggests the reverse case by attempting to reproduce the common in the home. In fact, a very particular kind of common. The building dates back to 1931, a time in Soviet Russia when housing was particularly involved with reinventing the "byt" or the everyday life of the Soviet citizen (Trotskii, 1973). This political project was truly important to the extent of the state relaxing banks borrowing policies in 1929 for housing projects that addressed the question (Crawford, 2015). The common here was used to support a certain political project through architectural form. Similar to the Diggers the architectural language was borrowed from the site of collective production - the factory. But this time it was inserted into a new housing typology, one where the private spaces were minimized to "sleeping cabins", completely identical and efficiently stacked together. In that sense the Communal House of the Textile Institute has succeeded in inserting the common, in this case an externally constructed one, in the home. As Christina Crawford (2015) points out there was no place for a mid-scale familial gathering, the choice was between the individual and the "ideological family". This managerial way of dealing with domesticity had a very strong sense how architectural form could be engrained in the domestic condition and have behavioral consequences, essentially formalizing a political ideology through spatial arrangement.

The Oneida Community was founded by John Humphrey Noyes in 1848 in Oneida, New York. The specific historical context included the American Independence and the Civil War. This was a time of exploration, prospecting dreams and the utopias of Robert Owen and Charles Fourier. Having initially originated as a religious community, the Oneida were very skeptical towards both private property and marriage. They advocated for common ownership and polyamorous relationships. Their ideology

was strongly expressed in their “architecture of the complex marriage” as Dolores Hayden (1976) refers to it. The space was very carefully orchestrated especially in relation to the production and sustenance of the common. The Oneida believed in having designated spaces for specific uses (Hayden, 1976). Here too the private bedrooms were as small as possible in order to encourage social interaction. At the same time private space was superseded by Oneida’s “Victorian Sexual Revolution” as described by Hayden (1976, p.187). Besides being minimized physically the very essence of privacy was ruled out. Additionally, mid-sized living spaces were scattered along the corridors between the bedrooms to both surveil and encourage interaction. Those spaces had a function to police and sustain the community’s behavioral protocols. And finally, there were the large-scale gathering rooms, where the communards could enjoy the community’s company and the common was consumed in social terms. Those different scales of architectural interventions related to the common in different ways and constituted together an intricate strategy between space and social code. In that sense one could argue that there was a complete correspondence between the common and the home. The common has managed to permeate every aspect of the domestic and was strongly expressed in space.

The historical overview will conclude with a housing project by the Kalkbreite cooperative in Zurich. Having originated from various squats during the city’s real estate bubble in the 1990s cooperatives developed an efficient strategy to counteract real estate speculation. This happened at the time of a state-driven relaxation of the interests rates from banks allowing for cooperatives to kick-off housing projects all over the city. According to the new cooperative ownership model units were not owned in traditional sense but corresponded to shares which the members could acquire. The shareholders were paying back the loan through their rent which, independently from market prices, would go lower once the initial construction costs have been repaid (Bridger, 2016). This alternative housing micro-market is reflected in the architectural diversity of the unit mix in Kalkbreite’s project Zollhaus. The building offers great variety of flats from a studio to a 8-person unit and even some completely open floor plan units, free for the residents to spatially equip them as needed. The specific housing units are self-contained and private and there are designated large-scale gathering spaces in the building. Zollhaus has managed to counteract the market dysfunctionalities by collectively engaging in the conception and delivery of the physical space of the home. Unlike any other cases, here one can see a common which is the very subject of the commons. At the same time the common-home relationship is facilitated by the cooperative which leads us to today’s sharing practices.

The historical examples described above provide evidence that stranger-sharing is not really new. In fact, it has often been related to a socio-economically driven collective response. If the steep increase in housing prices of the past few decades has indeed led to the emergence of a new subjectivity, the following contemporary accounts will investigate how this is actualized spatially in today’s sharing economy.

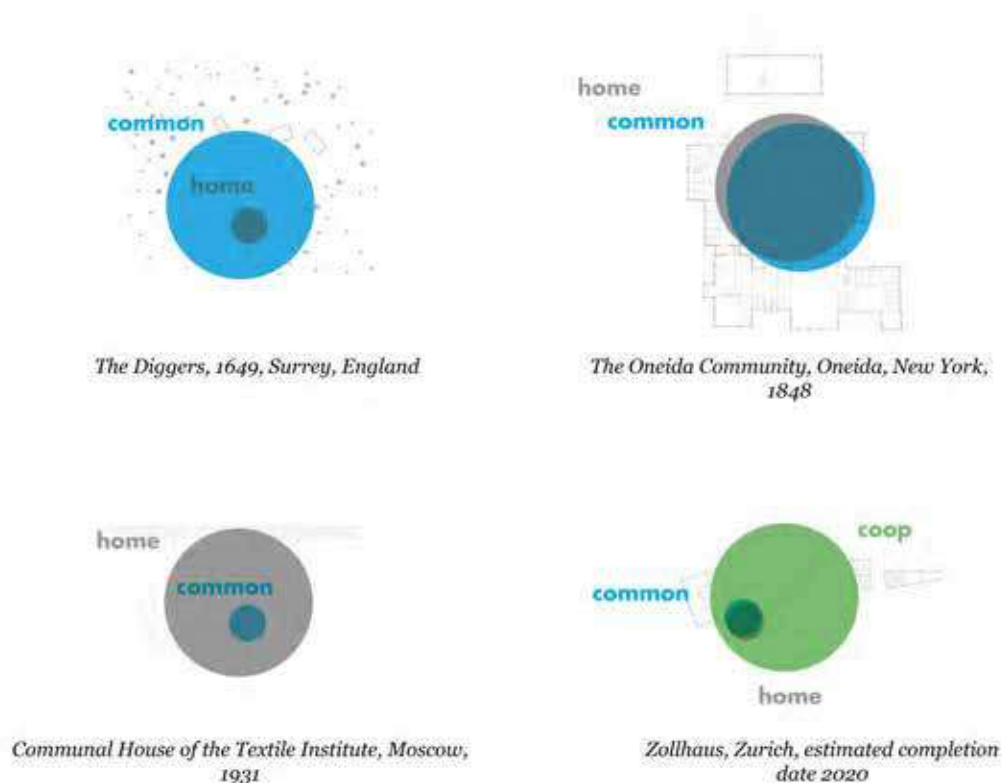


Figure 3 Common-Home Relationships in Stranger-shared Housing

Today's Home Sharing

One could perhaps draw a comparison between today's sharing practices and the pursuit of the "byt" in Soviet Russia, as the common has been conceived and managed outside the community - by the platform. How exactly does this impact the architecture?

Preliminary study in the form of online listing analysis is to explore this question further. Airbnb distinguishes between four "home types": entire place, private room, hotel room, shared room. From that one could assume that there are two different types of space occupation – parallel, when there is actual co-habitation in the same unit of guest and host, and non-parallel, when the host and guest are there at different times. The following study is going to focus on the "shared room" category, as these would be the type of listings where negotiation would be most present. The selected listings were acquired from a publicly accessible dataset of Airbnb listings provided by OpenDataSoft (<https://publi.opendatasoft.com/explore/dataset/airbnb-listings>).

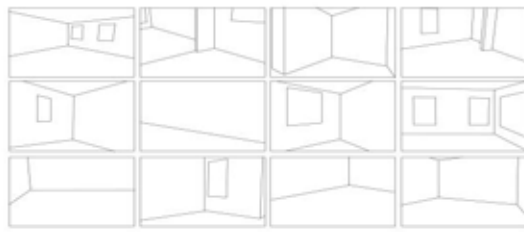


Figure 4 Built vs. Shared Space – Airbnb Shared Room Listings

If one takes a closer look at those spaces, one can see that the room outline doesn't change much. What is regulating the negotiation of space is the arrangement of the furniture. The fact that the architectural envelope has been rendered absolutely obsolete, and that furniture is the main representational medium, asserts the assumption that perhaps the sharing economy was not only a result of an economic crisis but of an architectural one too. In a time when housing is treated and traded as a valuable asset, the domestic interior is the only artefact where one can trace the agency of the inhabitants. In this scenario the architectural elements constituting the typology such as walls and thresholds are almost too precious for any interventions.

A closer reading of online listings reveals various strategic uses of furniture such as surplus, scarcity, affect, utility, presence. In some of those cases the furniture is there not only to negotiate shared space but to overcome a spatial issue too like surplus or scarcity.

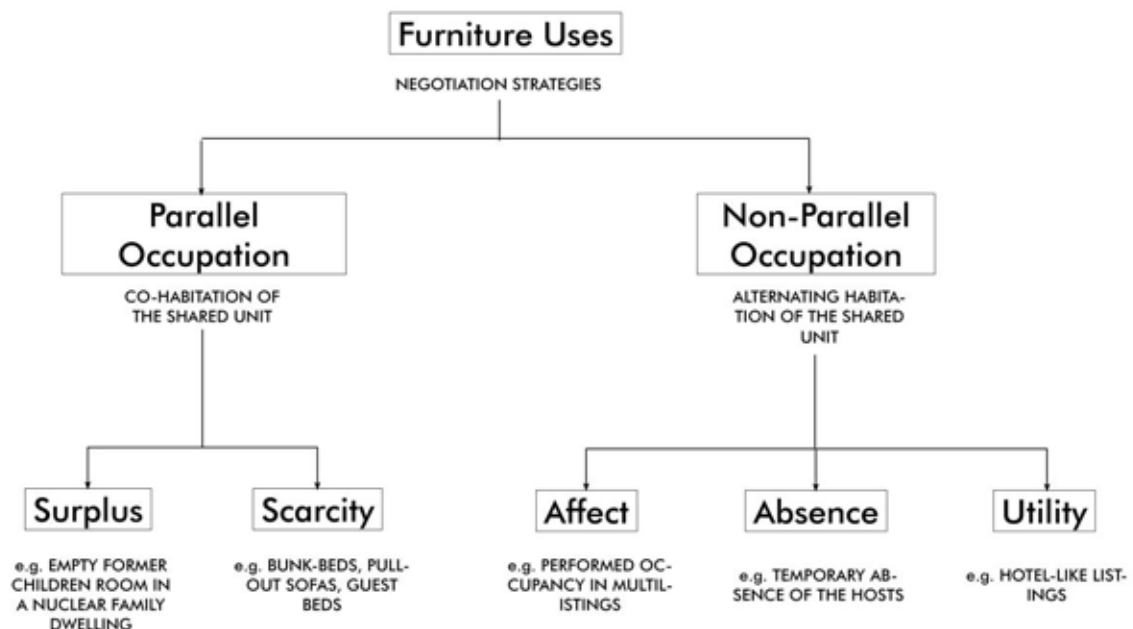


Figure 5 Sharing Negotiation Strategies Through Furniture

In a moment when housing has become so valuable, furniture is deployed not only to negotiate space with other people but also to negotiate space with a conflicting architectural design.

Conclusions

Sharing has indeed proven to have destructive effects on the accessibility of housing (Slee, 2017; Wachsmuth and Weisler, 2018) but it hasn't always been that way. Sharing economies have historically existed in other forms and successfully managed not only *not* to exacerbate market speculation but to counteract it. Without underestimating the sharing economy's negative effects, the pressures of the dysfunctional platforms and market could act as the common ground for new housing concepts to emerge. These new models could, similar to the Swiss cooperatives, have the potential to counteract market failures and create alternative economies.

There is a new generation of platforms which, having witnessed the dysfunctionalities of the existing models, has other aspirations. Notions such as networked home ownership (Doma, Strelka Institute), diverse economic transactions (Nookzy), or platform cyber currencies (Bee Token) address the question of value and how it can be retained within the community. It is perhaps simply a matter of time for those new alternatives to gain wider popularity and reclaim the otherwise conflicted practice.

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SP25

Dynamic change, uncertainty
and planning for adaptivity

Spontaneous Living Spaces – Dwellings and Settlements in Pemba (Mozambique)

A typo-morphological analysis in changing urban environments

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Abstract: Self-construction determines large parts of the urban landscape of cities in developing countries. Self-built houses born from need, haste and limited economical resources, with formal or informal methods, are often conceived as temporary when built but then become constituent parts of the urban fabric. Loosing the character of temporariness, it becomes necessary to consider them as an integral part of the city. This research is aimed at mapping the “spontaneous living spaces” of changing urban environments, in terms of dimensions, inhabitants, used technologies, etc. identifying a stage of development and analysing the characteristics of contemporary living in contexts not designed by professionals. The results produced by this research experience can be useful for the development of policies and projects respectful of local, contemporary ways of living. Up to 2019, the research has analysed three case studies: the favela Guapira II in Sao Paulo, Brazil (2012); Pok Fu Lam neighbourhood, Hong Kong (2013) and four selected neighbourhoods in Pemba, Mozambique (2016-2018). Focusing on the evolution of architectural and urban elements that characterize self-built urbanization in Pemba (Mozambique), this paper illustrates the main evolution lines that define the relationship among the house, the city and the main settlement trends, addressing how traditional self-built architecture is evolving and creating new forms of living within the city. Architectural and urban categories, as conceived in the western tradition, such as formal/informal or planned/unplanned are not applicable in developing contexts. Thanks to a typo-morphological on-site survey on, and analysis of, 50 houses in four selected neighbourhoods, this research gives its contribution to a critical understanding of their role, creating a more conscious background on living systems in Pemba. The analysis was integrated with schemes, architectural drawings, photographs, videos and interviews to the inhabitants.

Keywords: Development, Self-built architecture, Typo-morphological survey, Pemba (Mozambique), Sub-Saharan Africa, Living Spaces

Introduction

World population is increasing and cities are exponentially growing, especially in those countries that are now facing the industrialization process. Trends report that by 2100 the 70% of people will live in cities. If these trends will verify the world will have to face new dynamics of urbanization. Self-built houses constitute the main part of the urban landscape in developing countries. Their relevance requires a deep analysis of the present typologies and the comprehension of the characters of variance and permanence from the traditional living typology. Furthermore, globalization is influencing the living typology in terms of city investments, new economies (such as tourism) and architectural functions, elements and materials. Therefore, the research recognizes the importance of self-built architecture within the urban fabric analysing the houses linkage with the street and the city dynamics, looking at the urban morphology and typologies in their bottom up and top down implementations. Understanding different cultures is becoming crucial for a deeper comprehension of cultural diversity and *home* is a concept intrinsically connected to the culture of living, connecting the private to the social life. Self-built settlements are the spontaneous answer to the spatial need of home and represent an important expression of the local culture of living. In most of the cases, the number of people moving towards cities and the speed of this phenomenon are so high that the municipalities cannot really control it. This leads to several problematics among which is housing. New urban residents answer to the housing need with self-construction, and often, coming from the countryside, import rural typologies into the urban fabric¹. The challenge of this research is to create a transversal knowledge of different cultures' way of living contributing to the cultural mapping (Pillai, 2013) of the nowadays-moving society. The research proposes tools and methodologies to:

1. contribute to the mapping of the contemporary cultural landscape;
2. increase the awareness on local cultural diversity, therefore, contribute to intercultural dialogue;
3. contribute to the cities' management in the transformation processes;
4. create the basis for the understanding of the living landscape of places (UNESCO, 2011);
5. inform designers and planners with preliminary studies on local contemporary spontaneous living.

Within this framework, since 2012, the research selected three case studies, belonging to the tropical climatic zone, in which the phenomenon was relevant. The first case study analysed a block in the *favela* Guapira II, within the area called *Jardim Filhos da Terra*², in 2013 the second case study took place in *Pok Fu Lam*, a traditional Hong Kong neighbourhood, then from 2015 the study focussed on the Mozambican coastal city of Pemba, with the survey of four selected city neighbourhoods³.

The research tries not to use the terms formal/informal, planned/unplanned as often are not fitting the contexts that have completely different interpretative categories, both one case study from the other and

¹ It is not an exception to see that self-built houses have some rural materials, characters and functions, such as hen houses, kitchen gardens etc.

² The research found its origins in 2011 during the work at Stefano Boeri Architetti for the exhibition *São Paulo Calling*, and concluded in 2013 with the author's master thesis awarded *cum laude* at the Politecnico di Milano, supervisor Stefano Boeri and co-supervisor Pier Paolo Tamburelli. The research was then published by Pacini Editore in 2014 with the name *Jardim Filhos da Terra*.

³ The case study represented the PhD research carried out at the Politecnico di Milano, Dipartimento di Architettura e Studi Urbani, supervisor Michele Ugolini and co-supervisor Michael Turner. The PhD was concluded *cum laude* in December 2018.

also from the western concept, as often there is a contamination between what is planned and what is not and what is formal and what is informal and both the categories could be used. In order to expand the point of view on the topic, in this paper the author tries to avoid these categorizations.



Figure 1 location of the three case studies developed since 2012 and located in between the tropics

Methodology

Climatic and environmental conditions are crucial in the designing of the house and neighbourhood and also in the way of living in them. Therefore, the research carried out three case studies that belong to the tropical climatic zone: Sao Paulo (Brazil), Hong Kong (China), Pemba (Mozambique). The tropical zone was chosen as it allows a quite *easy* relationship between the human and the environment⁴. Further indicators for the choice of the study cases were

1. the economic growth of the country (GDP),
2. the size of the city,
3. the speed of growth of the city.

The studied typologies of spontaneous domiciles differ consistently and highlight the different cultures of living.

⁴ The geographic zone is characterized by mainly two seasons (the humid and the dry one) with temperatures never severe and with days and night length of around 12 hours along the whole year.

In this research the survey of spaces and functions and the analysis of the houses, couples with a wider analysis of socio-economic factors, developed through a participant-observational approach, that is considered crucial instrument for mapping spontaneous cultures of living and providing guidance for policies in urban planning and for the architectural and urban design.

From the survey methodological point of view, the main references are related to the typo-morphological schools of urban and architectural analysis, both the Italian school, with Muratori's studies on Venice (Muratori, 1960) and the British school, with Conzen's work in Alnwick (Conzen, 2012). Other relevant surveys taken into account are those of Simounet in the *bidonvilles* of Algeri, the inquiry *Inquérito à Arquitectura Regional Portuguesa* on Portuguese popular architectural elements (AAP, 1988) and the studies of Bernard Rudofsky on architecture without architects. The architectural method is integrated with anthropological tools of analysis, pictures and videos to represent the diversity of cultures within the city with a synoptic picture even if with the consciousness that, as Lévi-Strauss affirms, no culture is capable of giving a true judgement on another one, and that it is only possible to give a representation of them (Lévi-Strauss, 2017).

Being aware of the complexity of the urban organism, the research tries to represent it with an analysis that is integrating the study on the urban morphology and houses typologies, with various scales of detail⁵ and various tools⁶. Furthermore, the analysis is integrating the historical reconstruction of houses and settlements development through historical maps.

Finally, in this research the interaction with the local community is crucial, as there is the need of creating a relationship of trust in order to interview the inhabitants and builders and let them open their doors to the author in order to survey the spaces and functions of their houses and the neighbourhood's dynamics. According to the context different strategies were used to get in touch with locals⁷.

Research Goals

The research is based on the idea that in order to work in developing contexts it is necessary to use context specific categories, therefore, the western categories and intervention methodologies whether should not be used or should be adapted. For this reason the research, in the framework of the *New Urban Agenda – Quito Declaration on Sustainable Cities and Human Settlements for All* – and of the *Sustainable Development Goals*, is aimed at giving its contribution to the comprehension of the urban issues related to self-built dwellings and settlements through:

1. acknowledging that popular self-built houses are a consistent part of the urban fabric of most of the changing urban environments and constitute their city landscape;

⁵ From the regional framework at various scales (1), the territorial analysis usually at the scale of 1:5000 – looking at the selected layers that create the city, such as the main streets, secondary streets, street fronts (2), the neighbourhoods analysis at 1:1000 – through the layers: green, voids/built-up, infrastructures, public/private property, community functions - (3), the blocks survey analysis at the scale of 1:500, looking at the relationships between public and private and open and closed spaces and the connection elements among them (4), the houses spaces and functions at 1:200 (5) and the photographic survey of the elements and objects within the houses (6).

⁶ Used tools, beside the traditional architectural maps and drawings, were geolocalized pictures and tracks, videos, pictures, sketches and interviews to inhabitants.

⁷ Contacting the community leaders, the Municipality, the local associations or schools.

2. studying self-built houses, linking the house to the street and city dynamics and recording urban morphology and typologies in order to recreate the bottom up and top down implementations;
3. giving to self-built architecture the dignity of being studied as any other part of the city. Therefore, to acknowledge the cultural value of self-built urbanization and architecture;
4. address challenges for alternative solutions taking into account the spatial, social, economic and environmental factors.

The results of this research will enable planners and designers operating in the analysed contexts, or in similar urban environments, new tools to comprehend the city development and therefore, to design in respect of the local urban and architectural identity in order to preserve the diversity of its cultural expressions.

Furthermore, the research could give its contribution to Municipalities, GOs and NGOs working on site, in particular the research would be useful for the improvement of living conditions and building techniques and would encourage sustainable forms of tourism and increase the awareness of the relevance of traditional constructive methods and the preservation of the urban and cultural landscape.

Three case studies

Up to today three case studies were developed, belonging to three continents (South America, Africa and Asia) and the *atlas* is still under development. Comparing them, they have similar contexts in terms of economic resources and weather, with heavy seasonal rains and droughts, but cultural differences are highly differentiating living spaces and residential neighbourhoods.

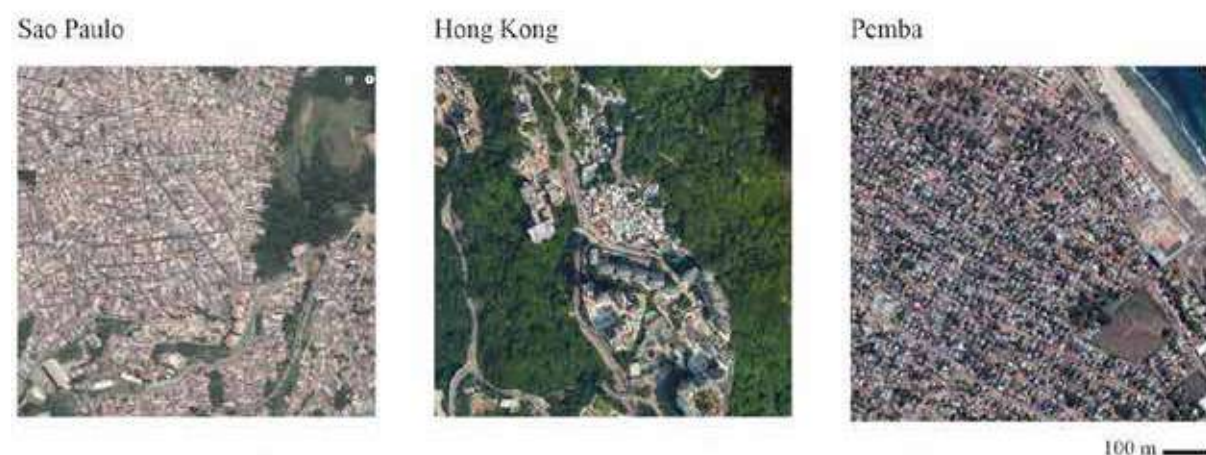


Figure 2 the three case studies: from the left the neighbourhoods of Guapira II in Sao Paulo, Pok Fu Lam in Hong Kong and Natite in Pemba. Image Google Maps 2019.

The first case study that has been developed is the one of *Jardim Filhos da Terra*, an area in the northern region of Sao Paulo where the *favela* Guapira II, born at the end of the 90s is located. The “*favela* phenomenon” in São Paulo started at the beginning of the 70s, when the city began its economic growth, and summoned labour forces from all over the country without having the tools or the time to provide

sufficient housing to all. This phenomenon became extremely critical in the mid 80s and continues to be so⁸: the city is now dealing with the problem of regularization of urban housing and it is solving the most high-risk situations. Since 2000, a new middle class is emerging and an important number of its representatives is living in *favelas*.

From a social point of view, *favelas* usually have a strong community life that is conducted in houses, bars, commercial activities, streets and community centres. From a technical point of view, beyond the lack of transportation and sanitation, residents live in highly precarious conditions since houses are often without stable foundations, ventilation and basic infrastructures.

The development of the surveyed area was carried out all at once by a group of people that acted all together, and that divided the block between Boa Vista, Planalto and Davi street, in regular and equal plots which are still recognizable by shape. Here 68 plots were surveyed.

Looking at the *favelas* constructions around the city of São Paulo, it may be observed that there is quite a diffused typology. São Paulo is a city with a harsh topography that exposes the area to landslide risks, and the predominant typology has adapted to it. Houses are gradually built upwards in rectangular plots, by using several construction materials available: reinforced masonry, concrete blocks, metal sheets etc. A multi storey typology is the prevailing in the area with two to four floors⁹. The stairs, a key feature because of the topography, are usually semi private spaces, closed by a door or a gate (with or without a key or locker), for ventilation purposes they are partly or completely open at the roof level. The sensation when entering the staircase is of disorder and noise, caused by the overlapping functions of this area. Although one can experience a sense of comfort from the dwellings, the space usually is insufficient in size for the number of occupants. The stairs distribute the floors and, if separated, the apartments. In facts, the property on each plot can be either for a single family or for multiple families. Each apartment is usually made of two to four bedrooms, one to two bathrooms (with at least one shower but never bathtubs), a kitchen, a living room and in most of the cases a garage at the street level. Each apartment is around 65 square meters.

Houses are rapidly built by the inhabitants and can be improved by the addition of several upper floors, according to the the family's needs. People build them during weekends and holidays and the materials and the workforce are provided both by the family and by the *mutirões*¹⁰.

The finishing is usually very rough even if sometimes plaster is used on the cladding. Technical equipment is usually positioned outside the walls and pavements are usually finished in concrete.

Home is a place open to everybody, with non exclusive bedrooms usage, it is a place for family and friends and the only place for being alone is the bathroom. Bathrooms are also generally very big spaces with good quality finishing. Invariably most showers do not have a base, though the floor is tiled. On the whole, each family member makes an intensive use of it taking around two showers per day. Courtyards represent the entrance to the houses and are used both for leisure activities and services.

⁸ Sao Paolo has 11 million inhabitants in its micro-metropolitan region. In this area, the Municipality counts more than 5100 informal settlements. This informality includes a variety of settlements among which the *favelas*, the *loteamentos*, the *cortiços*, the *nucleos urbanizados* and the *conjuntos habitacionais*.

⁹ In the surveyed area of Guapira II, it was possible to identify three types of housing: the most diffused is the multi storey house, then is the one consisting of one floor, finally is the wooden hut.

¹⁰ Neighbourhood solidarity groups.

They usually follow the longitudinal axis, and as they incorporate various functions tend to be very large.

In terms of public space, at the neighbourhood scale, the only present and respected is the street space that is used for various neighbourhood activities. As a consequence, there is a generalized lack of “breath” in the urban fabric.

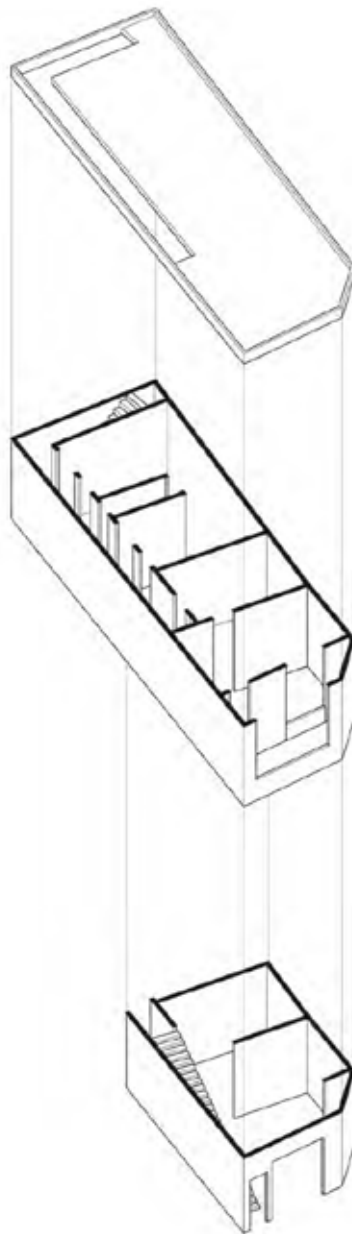


Figure 3 one of the houses of Guapira II in 2012. Drawing by the author.



Figure 4 the street front of one of the houses of Guapira II. Photograph by the author.

Three case studies

Shifting to Asia, in Hong Kong, due to the density of the city, often the “traditional” informality phenomenon develops in rooftop communities (Canham and Wu, 2015) but this is not the case of *Pok Fu Lam*, an ancient and unique neighbourhood in Hong Kong, one of the very few historical neighbourhoods and with low-density buildings left in the city. The first residents got to the *Pok Fu Lam* area in the 1660s but it is in the 1810s that the first descriptions of the neighbourhood are findable. In between the 60s and the 80s of the 19th century, because of the British colonization, the village, went through changes especially concerning building typologies and infrastructures. In these years the area turned from a rural area to a composition of commercial, residential and agricultural compound. After the end of the Second World War the important migration from China to Hong Kong increased the neighbourhood population from 20 to 100 families.

As in the 1980s Hong Kong economy rapidly grew, as multinational, globalized commercial activities and population increased¹¹ so land price. The population kept increasing until the 2000s

¹¹ The population increased from 76900 people in 1981 to 84500 people in 1985 (ref. Record from town planning notes – Outline Zoning Plan No.: S/H10/1, February 28 1998)

when the population had a small decrease¹². High rise residential development started spreading around the neighbourhood (for example the nearby Chi Fu Garden). Up to 2006 redevelopment works were carried out but villagers still did not have a title guaranteeing them the right to live in those houses. Therefore, people were not improving their houses and the village was rapidly becoming a slum. With the title clarification in 2006, a boom in building started: in one year from 20 to 30 houses were rebuilt and mainly the typology increased both in section and plan as floors were added and the front was extended. This boom created a rapid and uncontrolled rebuilding process. After this first boom, in the middle of 2007, the land department made rectification orders with restrictions in height and in the use of rooftops¹³. For the purpose of this research in *Pok Fu Lam* ten houses were surveyed.

As Benjamin Sin Chiu Hang said in the interviews: “The area was an area of pig houses belonging to the *Hakka* main residential buildings (18 units) in the Wai Chai. As pigs were very valuable they were having the safest and therefore highest place in the village. The area is well repaired in case of typhoons, storms and landslide. These houses have an average of 100 years. Of course this is the age of the original ground floor level. Then the addition of further floors was starting during the 50s’ and the 60s’. In 1960 the British Communities developed the community to involve people in the social community life, to facilitate people to get together and improve their life quality by themselves and not by the government. The plots’ shape was so regular because land was partitioned by the owners of the *Hakka* houses for the pig houses. Within the village a company established within the community does the maintenance works. In 5 years the sewage system should be built. There are threats after the village because of the value of Hong Kong land. People stand up to be able to stay there but the Government power is very strong, CARITAS gives a help.”

Entering in Pok Fu Lam the visitor has the perception of entering in a private, closed neighbourhood. The use of the streets and alleys, mainly pietonal and characterized by small steps going up and down the hill, is semi private. Often sinks are located along the alley, and with sinks also toothbrushes, kitchen pots and dishes and other private objects and often residents wash their face and hair in these sinks or in buckets along the alley. Furthermore, as residents take off their shoes in the house, usually these are tidily left in front of the door along the street.

Here the prevailing house typology is usually made of two parts: the “wet part” (kitchen and bathroom) and the “dry part” (living room and bedroom), here these two parts are often separated by the street on which two doors stand on the two sides of the alley, one for the wet and one for the dry part. While the wet part is one floor high, the dry part of the house can be of two or three floors and adapt to the topography of the area, especially on those plots that have a transversal double entrance. Staircases or just few steps distribute the multiple floors present inside the houses, which are mainly built in concrete blocks or in PVC sheets, and roof is usually in PVC sheets.

In this context the conception of public and private space is very different, the public space also includes neighbourhoods gardens, spaces where to sit and where private chairs are left all time long.

¹² From 86000 inhabitants in 1998 to 81900 in 2001.

¹³ The information comes from Benjamin Sin Chiu Hang, team leader of the Community Development Service, Caritas Pokfulam Community Development Project, interviewed in September 2013.

Public and private deeply interact and contaminate one each other with their functions and the community life is highly affected as it is more difficult to be accepted but once physically entered the neighbourhood you are part of a community.

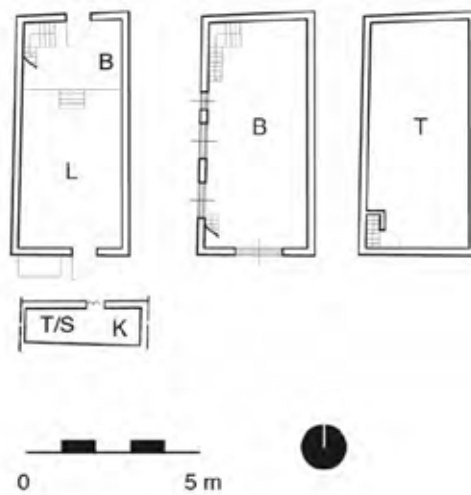


Figure 5 the plan of a house of *Pok Fu Lam*. Drawing by the author. Plan legend: B – bedroom, T – terrace, K – kitchen, L – living, T/S – Storage

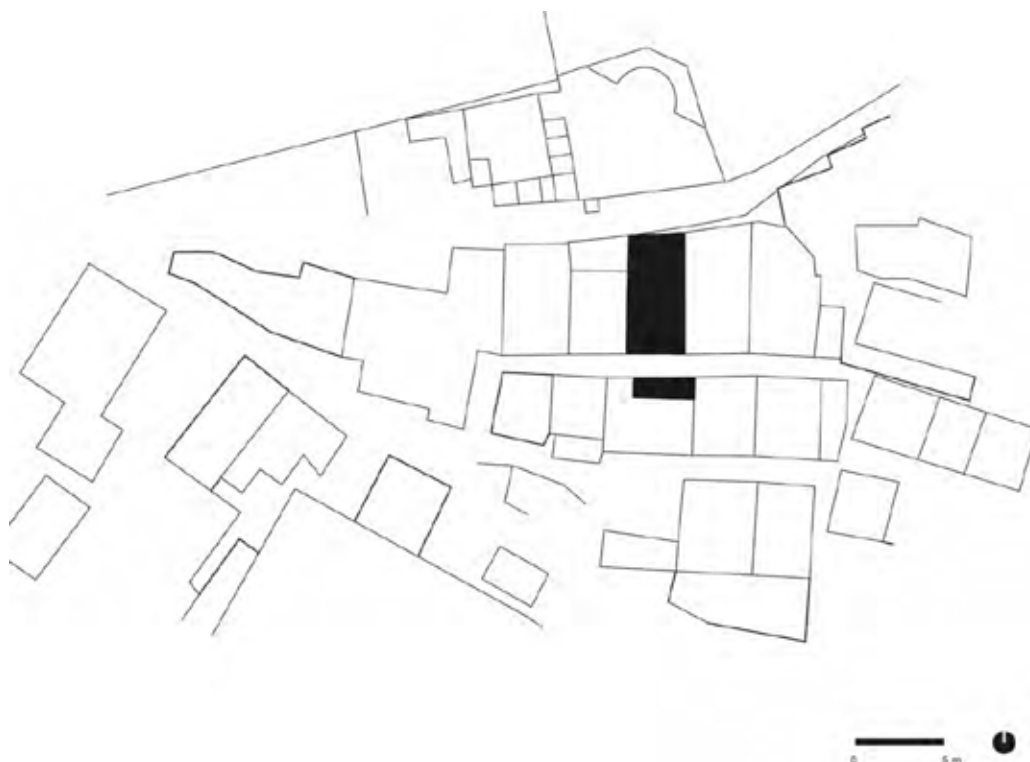


Figure 6 localization of the house in Figure 5 in *Pok Fu Lam* neighbourhood. Drawing by the author.



Figure 7 street fronts and alleys of *Pok Fu Lam*. Photographs by the author.

Pemba is a coastal city in the northern region of Cabo Delgado in Mozambique. Being located on a natural bay it was born as a harbour during the Swahili time and kept its vocation during the Portuguese colonization and up to today.

Here four neighbourhoods were selected for the analysis: Alto Gingone, Paquitequete, Chuiba and Natite. In these four 56 houses were surveyed. These neighbourhoods have different morphological and architectural features as they represent the popular living in different periods of the city expansion.

In terms of age of the settlement the first one is Paquitequete, belonging to the pre-colonial period, then Natite represents the colonial settlement, the independence period generated the neighbourhood of Alto Gingone and Chuiba represents the actual expansion¹⁴.

The four neighbourhoods have similar topographic conditions. The geographical homogeneity of the settlements was crucial to allow the comparative analysis of the house typologies, therefore, all the areas are settled on a plane area of Pemba and even though all the neighbourhoods are close to the coastline, Paquitequete, Natite and Chuiba are directly facing the sea.

The selection of the neighbourhoods also took into account the feasibility and safety of the survey operations, the disposability of community leaders to participate in the research and to create the connection with the local inhabitants. According to the statistics, Pemba is a safe environment, however the main threats documented by the *Plano de Desenvolvimento Municipal 2014-2018* (PEDM) are corruption, malaria and cholera. Generally, the population is open to dialogue with foreigners, however,

¹⁴ Paquitequete <1857, Natite 1934-1960, Alto Gingone 1960-1975, Chuiba 2000<.

the delicacy of the survey, asking people to enter in their private space and to collect information on it, needed to be introduced and prepared by locals¹⁵.

Furthermore, the choice of the neighbourhoods took into account the number and ethnicity of people living in it¹⁶. In spite of the homogeneity in the number of people, all the areas differ significantly in terms of ethnic provenance. In fact, Mozambique hosts a plurality of ethnicities and Pemba is well representing this mixture. The main ethnic groups in the four neighbourhoods are the Mwani, Macua and Maconde¹⁷.



Figure 8 prevailing ethnic groups per neighbourhood. Photographs by the author.

The house typology of Alto Gingone neighbourhood is findable in all the city neighbourhoods, and its presence is due to the fact that people have the competences for self-building it and its general construction rules are clear and diffused. Furthermore, people recognize themselves in the life-style generated by this typology, being part of their cultural identity.

Here, the house is conceived as a sequence of open and covered spaces within the plot. In most of the neighbourhoods the plot is delimited by a physical boundary that increases in thickness and material durability as the density of the area increases. The prevailing materials used for the boundaries are bamboo sticks, interlaced or simply aligned and fixed together to wooden bars with nails and cement blocks. The constructions within the courtyards are at least two: the main building and the hygienic services, such as bathroom and latrine. The main building is usually made of a wooden structure, often simply leaning on the sand or in other cases on a concrete slab of about 10 cm thick. Walls, internal and

¹⁵ The only neighbourhood in which several inhabitants refused to be part of the research was Natite, a neighbourhood that is very diversified in terms of ethnic groups, and that is a commercial area where usually foreigners pass through and in which the sense of community is not as strong as in the others. In that case some plots were not surveyed and are reported as “not surveyable” in the integrated analysis.

¹⁶ Concerning the number of inhabitants, just Chuiba differs, with a number between 4,000 and 9,000 people, while the other three neighbourhoods host between 9,000 and 22,000 people.

¹⁷ Mwani, Arab provenance, mainly of Islamic religion. Historically they were considered servants and submitted. This ethnic group was always devoted to fishing and commercial activities. Paquitequete hosts a big community of Mwani people; however, they are living also in the other neighbourhoods in family cells. Macua, is an African tribe, believing mainly in Islamic and African beliefs. Groups of these people can be found in Natite, Alto Gingone and Chuiba. This is a gentle population living in respect with nature. Both women and men wear a beauty white mask made from wood. Their society is traditionally patrilinear. Maconde, is an African tribe, they were the warriors who fought for the independence of Mozambique. Their people usually had their faces covered with tattoos, a tradition that is being lost by the latest generations. Maconde speak ChiMakonde (or Makonde language) that has Bantu origins. Their society is traditionally matrilinear. Traditionally they believe in animistic beliefs, even though many of them are now Catholic or Muslim. They are famous for their artworks in carved blackwood. In Pemba they live mainly in Alto Gingone and Natite.

external, are usually made in *pau à pique*: a local constructive technique in which two layers of bamboo sticks are filled with stones and mud. Vertical finishing is often absent and if it is present it is in *matope* (Swahili word for mud) that can be of different colours, from light brown to red. The roof is made of a wooden structure and covered in vegetal materials or in metal sheets.

Regarding the functions and their distribution within the house, the main building is used for sleeping, resting and for storage. The interiors of the building are usually distributed by a central corridor that is linking one entrance to the symmetrical one, and it is distributing four rooms of similar dimensions, two on one side and two on the other. One of these rooms, usually the one facing the street side, is used as living room, the others are used as bedrooms. The other always-present construction within the yard, is hosting the hygienic functions of bathroom and latrine. This construction is made to be moved within the yard, as there is no sewage system, therefore it is considered temporary and it is located in the furthest point from the house, on the back side of the yard. Its surrounding walls are or in bamboo, or in plastic materials, or in fabric. Often, they have no over-head covering. Waste of every type is usually buried or left at the edges of the neighbourhoods or buried in the courtyards. The courtyard is usually hosting vegetal elements, decorative and/or productive, such as a kitchen garden or fruit trees and in most cases a hen house. The type of paving inside the house embraces a wide range of varieties, from concrete with decorations, to concrete without decorations, to plastic coverings, to clean sand. Clean sand characterizes the flooring of all the surveyed courtyards, and this makes the distinction from the street paving that is usually in dirty sand. This distinction occurs also in those houses that do not have a physical plot boundary.

The openings often are obscured for privacy and security reasons. As a consequence, the interiors are usually dark and not properly ventilated. Windows can be voids within the wooden structure without obscuration or obscured by metal sheets or by fabrics. The artisanal window frames are always framed in wood and can be decorated and have a mosquito net. Doors are framed and delimited within the structure and are made of wood, industrial or handmade, or of iron. Usually the openings are symmetrical both on the street side and on the courtyard. Most of the elements of the houses are made of local materials, which make the houses environmentally friendly and cheaper. The insertion of industrial elements is today perceived as wealth recognition, but still the purchased elements, such as window or door frames, are often not properly employed (often used just as decorations or for symbolic and religious purposes). These elements are affecting the typology; today the main change is represented by PVC roofs, replacing the vegetal ones, often modify the whole structure and distribution of the house.

Among the architectural and spatial elements of the typology, two are the main ones that increase the quality of life, in its interior/exterior and public/private relationships: the courtyard and the veranda. The courtyards of the houses are empty spaces that are used for multiple purposes among which the family food production, mainly poultry and kitchen gardens. The courtyard, as it is conceived, creates the possibility of a green productive space that is a resource for families. The veranda is the architectural element that creates a powerful interaction between the public and the private space, increasing the quality of the streets through permeable street fronts. It is present in all the houses of Alto Gingone and it is deriving directly from the Swahili typology. The veranda stands on the two larger sides of the main building and it is used for several functions such as cooking, working and resting.

At the neighbourhood scale, the typology is easily aggregable and independent from the urban structure. Public space is present, respected and perceived as important by the community.

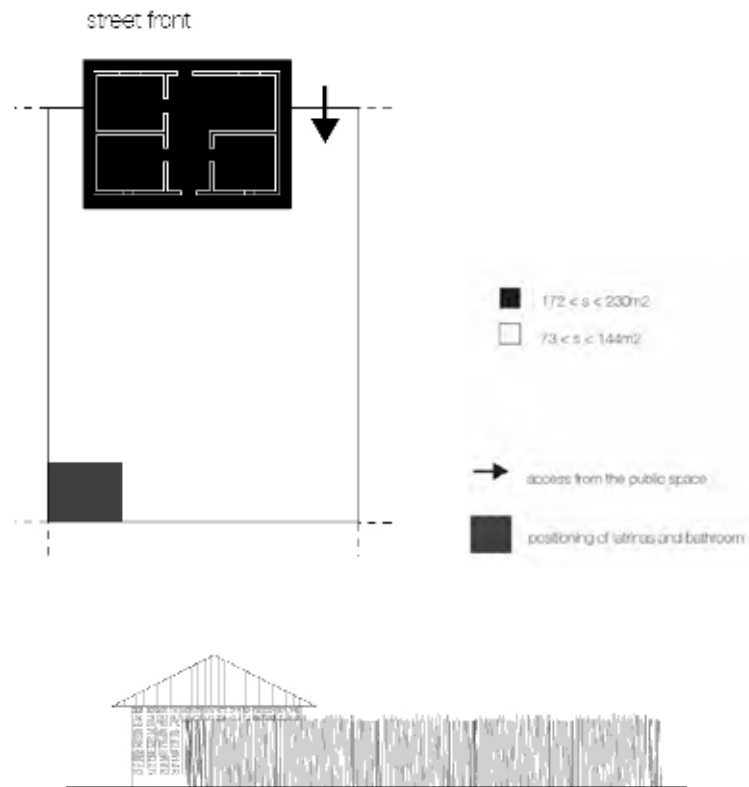


Figure 9 prevailing house typology derived by the superposition of the houses surveyed in the Alto Gingone neighbourhood. Schemes of the plan and of the side elevation. Drawings by the author.



Figure 10 street front of a house in one Paquitequete neighbourhood. Photograph by the author.

Conclusions

Self-built houses are a powerful answer to the urbanization phenomenon in all the contexts as they represent the local culture of living and should be studied for the implementation of new local projects. They represent the social, economic, cultural background of a place, highlighting the intangible and tangible culture of living.

The morpho-typological surveys, accompanied by the study of the bibliographical sources, leads to context specific conclusions at the architecture and at the city scale.

Assuming the fact that some contexts cannot afford substantial public investments, it is important to plan a development that can use alternative resources such as the creativity of the local inhabitants and their productive and building capabilities.

In spite of the differences, the self-built houses of Sao Paulo, Hong Kong and Pemba represent a stage of the evolution of the local living typology mixing the rural and the urban one with a cross-fertilization process. The bottom up construction rises the possibility of improving them much easier providing information tools to the citizens, to improve their living quality.

The spontaneous characters of living relate to the local cultural identity and represent a strength for the local development and could innovate the existing urbanization models.

As Lévi-Strauss stresses, each culture has its own path of evolution inscribed in a peculiar system of criteria that determine the process (Lévi-Strauss, 2017).

It is precisely in contexts in which urbanization has not already verified, where there are no existing infrastructures of the industrial sector and where the urban culture is created almost *ex-novo*, from the rural culture, that a new concept of city can evolve and be developed.

Changing the spatial hierarchies through the implementation of the local self-built typology and enriching it with a diffuse production, the possibility of creating a new type of city is generated, in which the need of transportation, time of commuting and the related economy of scale change their meaning. A city in which the strict division between the urban and the rural does not occur and in which it is possible to get the advantages of a diffused production and of a process of urban forestry¹⁸. This would be possible only if it is intended as a natural evolution by the citizens, and this is a further reason why local typologies should be employed, so that their vernacular building knowledge is not lost.

¹⁸ World Forum on Urban Forestry, Mantova, 30 November – 1 December 2019

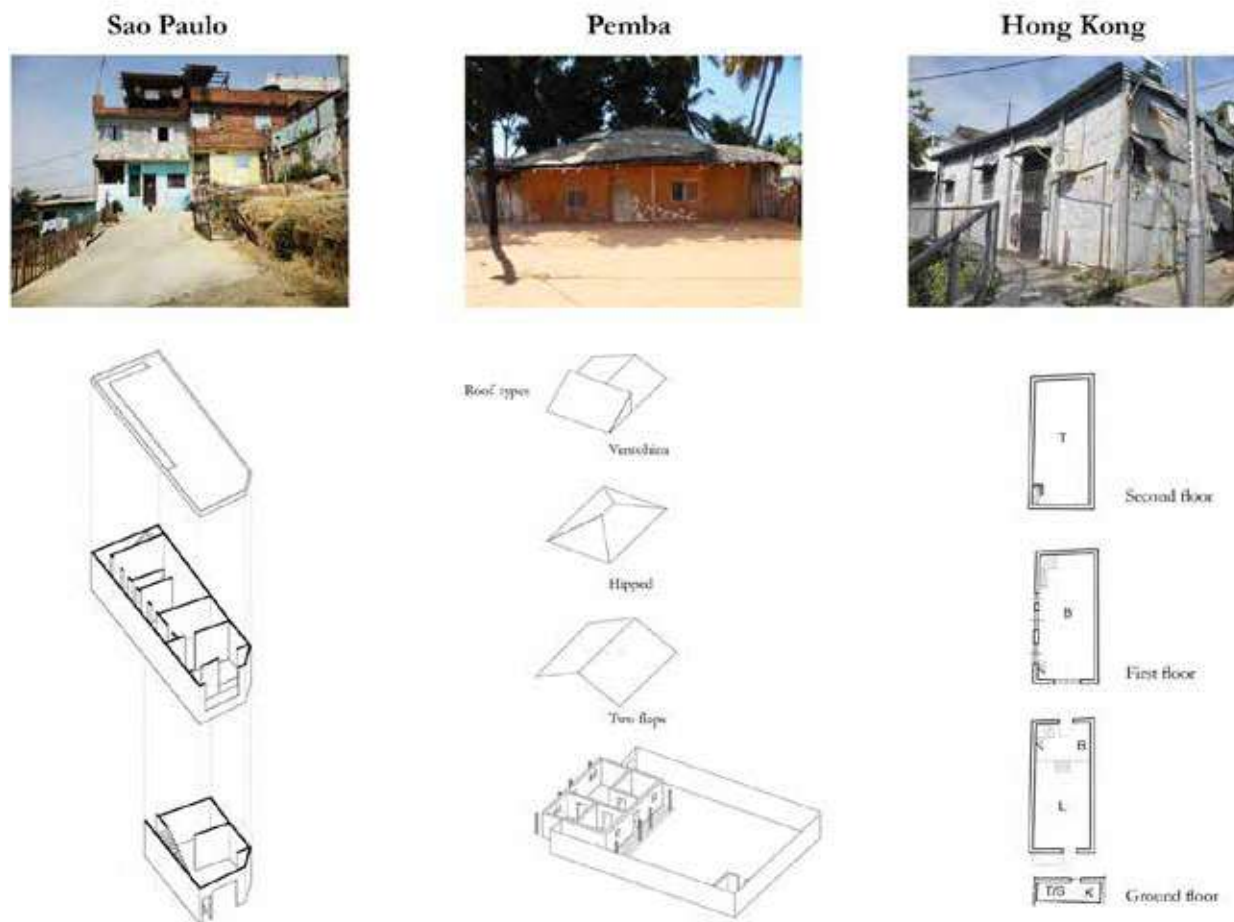


Figure 11 comparison of the houses prevailing typologies in the three analysed case studies.
Photographs and drawings by the author.

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SP26

Space, citizenship and
identity: the eu-mena region

The Jericho Gate Project: Planning Challenges and Political Struggles around a Megaproject in the Oldest City in the World

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Abstract: Starting from 1993, after decades of occupation and political conflicts, the Palestinians enjoy some form of local self-government in areas of the West Bank (areas "A"), through elected bodies like municipal councils and the National Government. Those young institutions that are in charge of urban planning, have to deal with a highly complicated set of challenges, with a very modest experience and a legacy of old and inadequate laws. In Jericho, a heritage-rich town in the Jordan Valley, the Palestinian company PADICO has recently proposed a leisure-oriented, multi-billionaire, 300 HA mega-project, called Jericho Gate (JG), including tourist and entertainment facilities, villas, hotels, resorts, a sports city, amusement and water parks, malls and other facilities. JG follows a national and regional trends of privately financed new cities that is common in the region (i.e. Rawabi), that are marketed as development and job creators, and as a tool to improve the living conditions of the Palestinians who are struggling for an independent and sovereign country. In this study we will explore and analyze how that project has been received by the different actors, in particular, the local and national government and the local public opinion, how it was presented to the population through the media and how it was debated and finally approved by the official bodies. Despite its glittering architectural envelop and its promise of economic development, the JG project arises a number of questions about the capacity of the local context to benefit from it. Will the municipality, weakened under the state of occupation, be able to handle the needs of the new temporary residents, given its modest resources and capabilities? Will this upper-class oriented project increase socio-spatial fragmentation between wealthy visitors and the local population?

Keywords: Mega Project, Conflict area, Planning challenges, Jericho- Palestine

Introduction

In the Jordan valley, almost in the lowest point, one can admire an Oasis in the desert, called “Jericho” the oldest city in the world, 8 km from the Dead Sea and from the “baptism site” in the Jordan river, 25 km from Jerusalem. It’s one of the Palestinian cities lying in area “A”, encompassing 20% of the Occupied Palestinian Territories, subdivided in Areas A, B and C based on the Oslo agreement between Palestinian and the Israeli. According to it, Palestinian can manage directly the civil and security issues in Area A. The municipal territory is surrounded by areas “C”, where the control of civil and security issues is in the Israeli hands. The area, as well as the Jordan Valley, has a very low population density due to the dry weather. Nowadays it has about 21107 inhabitants (PCBS¹, 2018), and it remains one of the few cities in area “A” that has unbuilt lands to be developed.

Starting from 1993, when the Oslo agreement was signed, and the hope of a final settlement of the Palestinian Israeli conflict was high, the economic situation of the Palestinian starts to improve. Since the 1990s, the real estate sector enjoyed an important growth, despite a slowdown during the difficult periods of the second intifada (2000-2005). After that, due in part to the high natural growth of population, the demand for new houses returned to be high. At the same time, because of limited available constructible land within area A, leading to a considerable increase of lands and houses prices, new kind of development appeared, such as the construction of entire neighborhoods and master planned cities like Rawabi, promoted by private sector investors². In the last decade, this new trend appeared in Jericho, notably in the form of the mega-project called “Jericho Gate” (JG), a 300 Ha new mixed-use development in the southern part of the city. Referred to as “a new integrated township”, by Mr Al-Sayed Ahmad, general manager of JG, in an interview on Arabian business, this large scale project will affect the economy and change the identity of the historical city. The city’s economy, primarily based on agriculture for centuries, is now possibly undertaking a transition to become a touristic city for leisure and entertainment, as the promoters of JG hope to attract more local and foreign tourists thanks to new cultural and commercial areas. Furthermore, the project boosts a large residential area of high-end second-homes addressing a clientele of Arabs coming from East Jerusalem and Israel.

This new project, completely market-driven by the private sector, are proceeding under a very weak planning system with enjoy a bad reputation as a tool of foreign ruling powers. Historically, The Palestinian Territory experienced successive occupations and was ruled by different authorities, such as the Ottoman, the British, the Jordanian and Egyptian and finally Israeli occupation that used the local planning as an instrument to control Palestinian urban development and to serve their colonial interests (Abed Alhamid, 2005). In fact, During the British Mandate (1920-48), "Master planning" approach was part of a British colonial policy aiming to control and

¹ Palestinian Central Bureau of Statistics

² Interview with Mr Issa Qassis, CEO of Palestine Mortgage and Housing Corporation on <http://www.alhayat-j.com/sooq/HayatWaSouq143.pdf>

restrict Palestinians development at the local level by issuing orders and laws that facilitated land confiscation while restricting Palestinian communities expansion and growth (Coon 1992, Khamaisi 1994). This situation continued during the Jordanian administration in the West Bank and the Egyptian administration in Gaza Strip. After 1967, the Israelis have continued to use the same planning laws and regulations, while modifying them to meet their own interests of land confiscation and control over Palestinian growth (Abed Alhadi, 1990; Coon, 1992; Khamaisi, 1994; MOLG, 2005). During all these periods, the planning system was considered a tool to confiscate Palestinian lands, to restrict development and a prelude to further expropriations and disposessions. Israel policy contributed to make it clear in the Palestinian mind that land use planning, land expropriations and settlements are three interlocking aspects of a global policy aimed at the Judaification of the territories occupied in the 1967 (Abdulhadi, 1990).

When the Palestinian national authority (PNA) took the control of civil matters on areas “A” and “B”, including the responsibility for urban planning, they inherited a system whose evolution has been greatly influenced by the previous Israeli military orders and regulations, as most of them remain applicable in the Palestinian territories (MOLG, 2005; Daoud, 2009). The planning approach and process remained centralized, not participatory, physical oriented only, with no consideration of community's developmental aspects. Thus planning efforts remained largely inefficient, time consuming and rigid, and considered as a problem rather than as a solution for most of the Palestinian cities and villages. Despite the adoption of the Physical Planning Manual in 2010 by the PNA, a new planning tool that introduces of the analysis of community needs in development and mandates some form of community participation, the new planning processes are still not consolidated and young³.

While the unprecedented scale and cost of JG may result in substantial social and economic transformations in Palestine and the historical city of Jericho, this development has not received scholarly attention to date. Most attention has been paid by local media: short articles have been published in newspapers and Palestinian TV has broadcast interviews with the developers and some stakeholders about JG. This paper aim to fill a gap in the literature on Palestine's new cities, by exploring the national ambitions manifested in the JG project, contextualizing it within the international new cities trend, and providing an overview and preliminary analysis of JG's detailed plan. We also critically examine challenges facing JG with regards to sustainability and relation with the local authorities, mainly the Jericho Municipality (JM). This paper draws on several sources for material including: JG's own promotional material, interviews and reports on different Palestinian Newspapers, official documents from the Palestinian Ministry of Local Government (MoLG) and the JM, personal interviews with JG officials and JM's staff directly involved in dealing with the project conducted in Jericho in the beginning of 2019, and documents and recommendation about JG issued during the preparation of the Jericho Master Plan⁴ of 2012-2014.

³ Interview with Tamara Erikat from Jericho Municipality in 2019).

⁴ Project funded by the Italian cooperation finalized to prepare a model of sustainable development through new Master Plan for the city of Jericho in collaboration with the university of Ferrara and JM in the period of 2012-2014.

Building to Communicate

Recent scholarship illustrates how cities are not only the medium by which the powerful express their influence, but they can also reveal the aspirations of the State and how it wishes to be seen by others (Vale 2008 [1992]). In this sense, a primary objective of many master planned cities is to construct, communicate, and normalize a particular sense of identity to the citizenry (Moser, 2012). This dynamics are already at play in another recent project in Palestine: Rawabi, a completely master planned city, the first of its kind in the West Bank. With this project, Palestinians are trying to express and send a message to the world: they are not only the bad and violent people depicted by international media, but they are also able to build modern cities and neighborhoods, improve themselves and be civilized⁵. As city building is a powerful vehicle for expressing ideology due to its highly visible and symbolic nature, the Palestinian government supports these types of economic activities and encourages them by facilitating the approval process and by providing some basic services, such as police and civil defense stations, health centers, etc.

Palestinians also construct houses to express their intention to remain in their lands and not to leave and immigrate despite the occupation, they use to do so constructing even along the cities edges far from the main infrastructures and services, this way of thinking or doing is leveraged by the developers to promote their projects saying that their efforts support the resistance against the occupation.

Building to protect vs Building to confiscate: Who build first?

The Israelis are continuing to construct housing units everywhere in areas “C” of the West Bank. From 1967 through 2017, over 200 Israeli settlements were established in the Palestinian Territories (including East Jerusalem) and their current population is almost 620,000 inhabitants (B’Tselem, 2019). Israeli settlements are visible as they surround the Palestinian cities and so are part of Palestinian’s everyday landscape, when passing by the main roads. This constant physical presence affects profoundly the Palestinian mentality, vehiculating the idea that Palestinians should build as much as possible to protect their lands from confiscation. This “rush to build first” is happening with no connection to real needs and without thinking into account minimum sustainable planning criteria. Thus, when developers are proposing such projects to the public opinion, it’s very difficult to oppose it on factual grounds or even to open an objective discussion about the real need, because of a diffused idea that building new houses means to save the land from confiscation. This message is strongly leveraged by promoters: talking about a real estate project in the Jericho governorate called ‘Moon City’, Eng. Munif Treash, CEO of the Ammar Group⁶, said that this type of projects aims to protect the Palestinian lands and to increase the population density in the Jordan valley area⁷.

⁵ Interview with the founder of Rawabi, Mr Bashar al Masri, 2015.

⁶ Amaar Group is Palestinian investment fund’s investment arm in real estate development, and was established in 2009 with a declared capital of 140 Million U.S. Dollars.

⁷ Interview on Alwatanvoice, 2014.

The approval Process

Planning of JG has been a lengthy and challenging process. Jericho's residents expressed concerns fearing that the project could come to somehow replace Jericho, serving as "a new city", that will feel like a new Dubai," as Hulileh⁸ puts it. The municipality and the Governorate, found it a big challenge to deal with such unprecedented large-scale project. In public meetings the promoter of JG, Padico, used spectacular and appealing ways to present the project, advertising it as a job creator, of capital importance for the national economy, and, of course, as a tool to protect land from Israeli confiscation. Most of the people attending these meetings were in favor of JG. In other meeting and political discussions, promoters stated that this project would increase the Palestinian population in Jordan Valley area, that because of its very low population density is threatened of be confiscated by Israeli to construct more settlements. Mohammed Abu Mohsen, director of the Finance department in the municipality, 2019, thinks that such project will create a real economic development in the city, bringing new residents from the middle and high class that will benefit local businesses, since they mostly come from outside the city. Others believe that the project will improve social cohesion among Palestinians, as different people from different part of Palestine will live close to each other, as was the case in Jericho for many years.

When the project was first proposed in 2011, the municipality was preparing a new master plan, the Jericho Master Plan (JMP) funded by the Italian cooperation, by a group of Italian and local planners in close collaboration with the Municipality and the ministry of local government (MoLG), which is responsible for approving and following the planning process. The leader of the JMP planning unit, Prof. Paolo Ceccarelli, expressed worries and perplexity about JG project. In fact, the area of JG was located outside the old Master plan, and the new master plan didn't envision to expand the city in the southern area where JG was proposed. Based on natural growth and the assessment of the actual situation, like population growth and available natural resources, primarily water, the JMP considered that there was no need for such a large expansion of the built-up area and that it was extremely difficult to guarantee its economic and environmental sustainability. Moreover, a high number of empty plots and tracts of lands inside and around the actual built-up are, accounting for about 1439 ha, were still available for infill development (JMP, 2014).

Despite the concern expressed by the JMP team, the approval process went forward with several meetings between the developer, the municipality and other stakeholders. Changes were made as the municipality asked to apply the standard building regulations mandated in the Palestinian cities, requested to allocate service areas for public use, and to avoid high density and multi-storied buildings. The detailed plan was approved by the municipality and, following the normal procedural steps through the regional committee, the supreme planning council, and a period of objection period, the project obtained the final approval on March 2015⁹.

⁸ Hulileh is the CEO of PADICO company.

⁹ Interview with Tamara Erikat from JM, 2019.

CHALLENGES AND SHORTCOMINGS OF A NEGOTIATED PLANNING PROCESS

JG Project: Exploration and Analysis (a flawed market background)



Figure 1: Entrance Design of the new neighborhood of JG as appeared on a Palestinian economic web site of Aliqtisadi. Source: http://www.aliqtisadi.ps/ar_page.php?id=15ad47by22729851Y15ad47b

The project is being led by Munib al-Masri's Palestinian conglomerate Padico Holding, and is aiming for a \$3 billion worth of investment by the time it is completed in 2024. It will encompass 300 Ha, 7% of the area of JM and almost the size of the existing built-up area of Jericho. When finished, it will have 1,500 villas, up to seven hotels, a water park, along with a shopping complex and a museum.

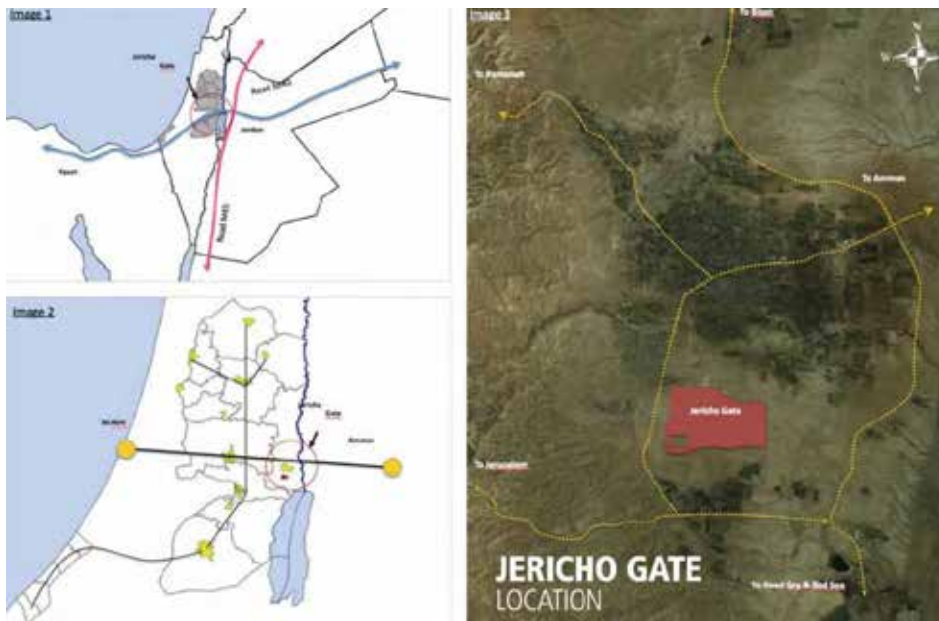


Figure 2: Location of Jericho Gate Project. Source: <http://www.jerichogate.com>

An early planning stages in 2011, Padico identified what they believed to be an important gap in the market for hotels, restaurants, and most importantly, attractions "if you want to stay there for a whole day" for short-time visitors. According to Hulileh, Jericho is visited annually by around 1

million Palestinian tourists, 1 million foreign tourists, as well as another 1.5 million crossing through to Jordan at Allenby Bridge; thus, "you need to entertain them, to take care of them."

JG is situated in the Southern part of the city, and it is advertised as strategically positioned only 50 Km from Amman, 25 Km from Jerusalem and 8 Km from Dead Sea, so theoretically located within a short car trip from large urban areas and main touristic attraction. In reality, as anyone who is familiar with this region knows, the main important travel factor here is the time and not distances, as travel time are highly uncertain because of fixed and "flying" check points, border controls and by pass roads that unpredictably affect movements time and freedom.

An unbalanced detailed planning negotiation

The detailed plan (DP) of the project was negotiated and approved by the different local, regional, national levels, after a process of meeting and adjustment characterized by external pressure by different actors in favor of the project. The approved plan comprise different land uses and some rules regarding the types of materials and shapes of buildings, all aiming at conserving a "high quality and modern" urban environment. The residential zoning is the larger one and represents 43.31% of the total area, followed by different uses like commercial, touristic and cultural. It is worth mentioning that the DP envisions the presence of 35400 m² of "aquatic elements", as this will be a big challenge for the developer given the water scarcity in the desert climate of Jericho.

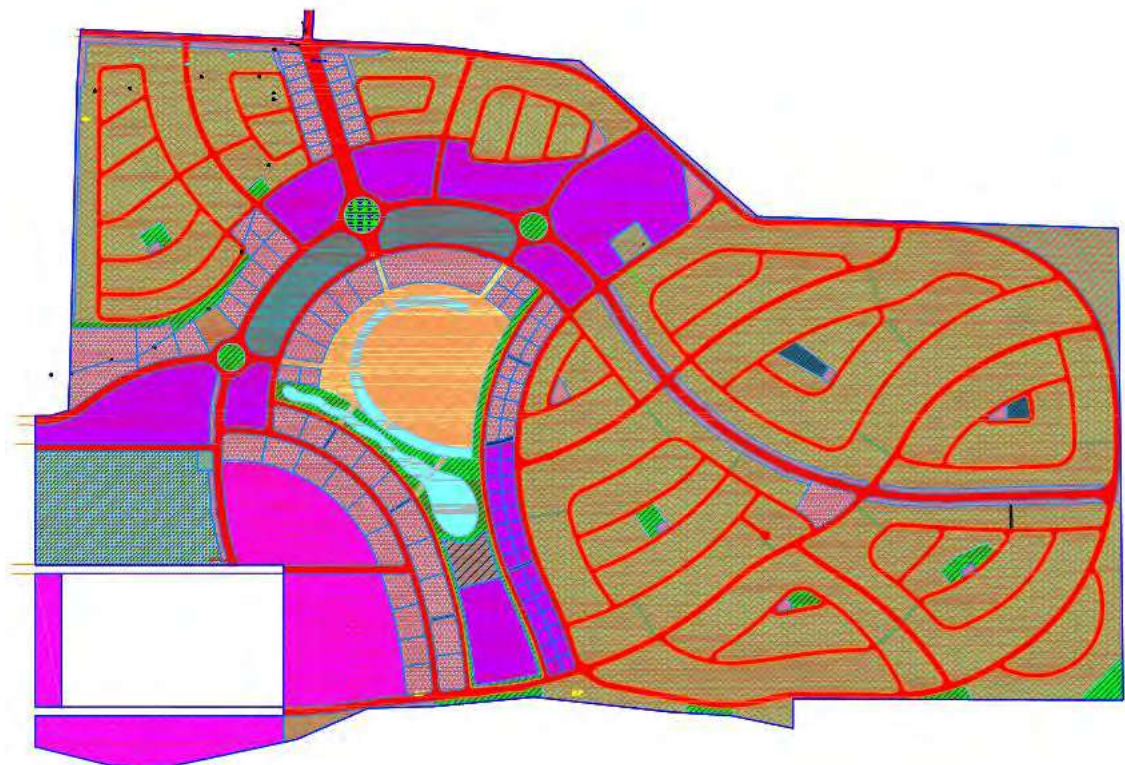


Figure 3: Land uses Plan of JG, Source: JM



Figure 4: Different Land Uses of JG Project, Source: JM

All residential buildings can be no more than 3 floors high, while in the area zoned for tourist, commercial, cultural and entertainment purposes (around 26,77% of the total), 6 floors will be allowed. The exception is made the “Jericho Tower”, a multi-storied and multi-purposes iconic building (commercial, tourist and residential), that will represent the architectural identity of the project; with its 50m height, it will be by far the tallest in Jericho, a relatively horizontal city, well known in Palestinian imaginary as the cities of low heights buildings, and renewed worldwide as the “Oasis city”, with a spectacular landscape, where palms and trees cover buildings and look taller than them. The JG project is a major shift from this urban landscape.

There are also some aesthetic rules regarding the external appearance of buildings, such as the material to be used in residential buildings’ facades that have to be built from hollow blocks with plastering finishing. Nevertheless, this aesthetic became common in the area during the modern period, while the traditional construction technique in Jericho employed mud adobe and finishing. Unfortunately, the DP shows no interest in the use of mud construction techniques, which are the natural and original material used in the past in Jericho, Furthermore, any other types or material have to obtain previous approval by the owner (JG Company), other rules regarding water containers and Satellite dishes on top of houses, have to be covered and invisible.

During the preparation of JMP, Prof. Paolo Ceccarelli, in one of his letters to the mayor of Jericho, regarding some of the basic regulations for new large-scale residential estates in undeveloped areas, formulated some guidelines based on the need to adequately preserve the unique landscape of Jericho that constitutes one of its main attractions. The main concerns were regarding the height of the buildings, size of the parcels, open spaces and the adoption of sustainable architecture principles.

Analyzing the DP regulation, we can observe that JG project accepted completely or in part some of Ceccarelli's recommendations, while ignoring others (see the comparative table 1 below):

Table 1: Comparison between Detailed Plan of JG and Paolo Ceccarelli's recommendations

Criteria	DP of Jericho Gate	Paolo Ceccarelli's recommendations
Height of the buildings	3 floors for residential	Two floors
	6 floors for touristic and commercial	
	15 floors for Jericho Tower	
Size of the parcels	750 m ²	1,000 m ²
size of the buildings	Max 225 m ²	Max 200 m ²
floor space ratio	30%	20%
Building types	Not Traditional Villa with pool style	architectural tradition of the region
Building materials	traditionally used in the lower Jordan Valley	traditionally used in the lower Jordan Valley
Sustainable architecture		
Water recycling	The project will be connected to the treatment plant of JM	Must be
Water Saving	There are different water elements for tourist and houses like pools and aquatic games	Must be
Passive solar energy design	No rules, depend of the developers	Must be

Ununcertain phasing

A controversial aspect of the project is the implementation phases of the JG. To date, it is still uncertain which is the planned order, which parts of the project (housing, hotels, commercial facilities, etc...) will be implemented first and how long it will take to fully implement the project.



Figure 5: Under construction's roads. Source: <https://geomolg.ps> and: <http://www.jerichogate.com>

The high uncertainty of market demand and of the general political situation makes such predictions on the project time schedule very complicated. In the selected business model the JG main developer will only provide the main infrastructures while other developers will purchase the land and invest in the implementation of the different parts of the project. Few information have been provided by the JG company about the possible timing, apart from a generic three phases schedule as in figure 6. No agreement has been signed with official bodies engaging the company on an official phasing, and the planning law does not provide any guideline or restriction about that. In discussion I had about this issue with one of the employers of JG company, he confirmed that it depends totally on market demand and supply¹⁰.



Figure 6: Project's Phases. Source: <http://www.jerichogate.com>

Jericho Gate Project is envisaged to be developed over 10 years in three major phases as seen in figure 6. Phase one has already started and will expand until the end of 2018. Phase 2 will commence in 2019 through 2021. Phase three will commence in 2022 (Interview with Al-Sayed Ahmad from JG Project, 2016), based on the aforementioned information and the DP analysis, we can explore the contents of the three phases of the project as below:

Phase 1

Phase 1 will include the construction of the main infrastructures by the JG main company itself, the realization of the project core which includes a vast complex of hotels and villas centering around a plaza with artificial lakes, the eponymous “Jericho Gate”, a structure equal in size to

¹⁰ Interview with Omran Abu Sbeih, March 2019.

Paris' Arc de Triomphe (Hulileh, 2017), the aforementioned Jericho tower. Further touristic and aquatic areas, hotels and recreations will be implemented by other developers.

Phase 2

Phase 2 include the first residential area and other tourist and commercial zones. Once the residential area is completely built and inhabited, the total population will be of around 7600 inhabitants, (considering three floors and the media of family size 5.6 (PCBS, 2017)), almost the population of the Aqbet Jaber refugee camps, which is less than 1.5 km far. The head of license department in JM believes that the building typologies will be large villas, which means single-family houses with two floors (interview, 2019), this mean that the number of expected residents will reach a maximum of about 2600 residents.

Phase 3

Phase 3 is envisaged as completely residential area, including around 1500 plots where building up to three floors are allowed, so if full completed and inhabited it will potentially accommodate more than 25000 inhabitants (considering the media of family size 5.6 (PCBS, 2017)). This would mean duplicating the number of the city population with this phase alone. Even if larger single family dwelling are constructed, as is more probable, it can still accommodate up to 9000 residents.

Project progress

During a site visit made in March 2019, we observed works on infrastructures, like roads, water and waste water pipes and electrical/telecommunications cables are undergoing. Furthermore, villas construction in phase two has already started, while no construction for commercial or tourist purposes within phase one has yet commenced.

Since there is no external control on phasing implementation, the JG company is following markets request, so in reality implantation phases of DP are purely indicative and the administrative body of JG is changing it continuously, and so it is doing with the DP itself¹¹: some requests of changing are already being submitted to the municipality to emend the DP, requesting, for example, to reduce the water element due to the clear water scarcity or changing the number of hotels¹².

¹¹ Interview with Omran Sabaih from JG, March 2019

¹² Interview with Tamara Eriat from JM, March 2019.



Figure 7: Residential Villas construction in phase Two, Source: Mohammed Isayed, 2019

A mega Project without local agreement

Despite the formal planning process, the municipality of Jericho didn't reach any understanding with JG Company. Several meetings were held throughout the process, but without tangible results, and local request were regularly ignored or downplayed. For example, despite the municipality clearly stressed many times that it was not able to provide the needed services for the new population in JG, notably an adequate supply of drinking water, these concerns were outplayed, as the JG company assured that they were planning to supply the site with water from Mekarot¹³ and not the Jericho municipal network¹⁴. However, as no final deal or agreement have been signed with Mekarot, the municipality officials and council members fear that the municipality will be responsible for providing water and other basic services (as they are mandated by law) and that they can guarantee it only based on its availability. To protect itself, the municipality find itself forced to write it in a statement on "the site plan", an official document which the municipality issues when citizen request for a building licenses.

Moreover, as Municipality Licenses fees and other fees related to building constructions have already been paid by the JG Company, the municipality is in theory mandated by law to provide basic services. Unclear regulations and leave little leverage to the municipality to regulate a development that can potentially put a huge burden on local financial and natural scarce resources, that's why the municipality think an agreement is essential to clarify the obligations and rights of each parts for such mega project.

An alternative to the real Jericho and the worries of social segregation

"People do not like this word 'entertainment'," says Samir Hulileh (interview on Maan news, June 3, 2015) the project's chair and CEO of Padico. "They feel that it is contradicting what

¹³ Mekarot is the national water company of Israel and the country's top agency for water management.

¹⁴ Interview with Eng, Mohammed Fityani, head of water department in JM, 2019.

occupation is all about". But he adds: "There is no way that anyone can know when this conflict will end, and we believe it's a must that people should survive the conflict and survive the process until it ends. Survival does not mean that we just barely live."

About one million local visitors (Jericho SDIP¹⁵, 2018-2021) are coming to Jericho annually to enjoy the good weather in different tourist facilities (Hotels, restaurants, commercial buildings) so there is a risk that most of these tourists will be diverted to JG instead while leaving existing local businesses in the city center deserted. The new indications at the main entrance of Jericho are already tempting the visitors to go to the new development.



Figure 8: Street signage in the entrance of Jericho city in the southern part. Source Isayed, 2019.

Conclusions

JG is rising in a context where there is insufficient awareness and capacity, both on official and unofficial levels, to deal with the potential consequences of such a large development. This mega project, that can potentially transform in depth the identity and the landscape of a unique and historical city, has been handled through a very weak and immature planning system, with no obligations regarding the management of implementation, leading to continuous requests by the developer to amend the DP to adapt it to changes in market demand, with little capacity for the municipality to oppose profit-driven request of the developer. The case of JG shows in these market-driven urban mega projects, a totally new trend for Palestine, the government and the local authorities managed to play only a passive and minimal role in the decision-making process, despite the fact that this development address to a limited range of the population and have a big impacts on the rest of the it, probably a very negative ones, such as social segregation, competition over scarce natural resources, loss of job and turnover in existing city businesses, etc.

To mitigate this outcomes, the government and the municipality of Jericho should move forward to sign, as soon as possible, a solid agreement with JG company to deal with the sustainability issues of this mega-development, as it will affect the city, determining reciprocal rights and obligations in order to save what can be saved, reducing the impact on the historical city of Jericho.

¹⁵SDIP is the Strategic Development and investment Plan

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SP27

The role of the local in
improving cohesion and
spatial justice

Session 17. Emerging spatialities and eu policy instruments: cases and perspectives

The *Pla de Barris*: a remarkable case of place-sensitive territorial policy

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Abstract: Spatial injustices are rapidly growing and, in the wake of the so called “revenge of places that don’t matter”, there is urgent need for better territorial policies. Ranging on a wide variety of contexts, territorial policies should implement strategies that are not only place-based, but also coherent, effective and place-sensitive. Aim of the paper is to give a contribution to the debate, shedding light on one lesser-known yet remarkable case of territorial policy for social cohesion. The *Pla de Barris*, Plan of the districts of the Catalan Region implemented between 2004 and 2010, is here investigated. The research followed two main methodologies: on one side, quantitative socio-spatial analysis; on the other side the tools of policy analysis to investigate its implementation. It shows that the measure was efficient and effective in targeting spatial injustices thanks to integrated place-sensitive implementation mechanisms. A fairly balanced combination of centralized analytical apparatus, multi-level governance and involvement of the local administrations explains its success in addressing spatial injustices. There is much to learn from this experience, since this approach can make the difference in providing a coherent framework in which to develop place-sensitive interventions in deeply variable local contexts, that is the crucial point for the endurance of European Union.

Keywords: Urban regeneration; Urban governance; place-sensitive territorial policies; cohesion policies.

Introduction

Territorial inequalities are increasing all over Europe. As shown clearly by Rodriguez-Pose (2018), the more dynamic regions of Europe are leaving behind the less dynamic ones: places that ‘don’t matter’, where there is very little possibility of economic development and where a revenge going on through the ballot box. In the last decade, all over Europe, lower economic performances have turned out into anti-establishment vote, expressing the voice of big parts of the society that feel an increasing distance from where the development concentrates and consequently where the decisions are taken. These communities that don’t matter can be described as ‘peripheries’, indicating a distance from the ‘centre’ that is not only geographical but multi-dimensional (Petrillo, 2013).

In this sense, Regional Studies describe that peripheries exist on a European scale (e.g. the South and East of Europe) but also on national scale (e.g. the South of Italy, all Spain except Catalonia and Castilla, most of France except Paris, etc.). Parallely, Urban Studies focus on peripheries that exist on a metropolitan and urban scale, often referring to the district level. More recently, the importance of peripheries inside the scale of a

region has been acknowledged, for example with the notion of ‘inner areas’ (Barca, 2013) that also became an operative framework of the Italian government.

In this panorama, cohesion policies (not only European) act on different scales and with different mechanisms for targeting inequalities. On a national level, in Italy the territorial cohesion has been promoted through the investments of *Cassa del Mezzogiorno* that, stressing particularly on infrastructures as means to recover the gap between South and North, had often the effect of wasting resources and consume the trust of the people. Since the 1980s, following the importance given to the urban dimension of inequalities, cohesion policies integrated operational frameworks that targeted the cities and the regeneration of the city centres (e.g. Urban, Urban II, etc.) and of some peripheral parts considered more vulnerable, like *Programmi di Recupero Urbano* (PRU).

These regeneration programs aimed at concentrating resources where the vulnerability is concentrated, using the space as a factor that assures more efficiency and effectiveness to the measures activated. Nevertheless, these programs had a weakness: they stressed a lot on the physical restoration of the built environment, often forgetting the urban and social fabric and therefore failing in addressing the multiple dimensions of inequalities. Nowadays, in the wake of the ‘revenge of places that don’t matter’, all the levels of administration call for more efficient and effective ways to invest in the territorial cohesion, particularly regarding the response that those policies can have on the territories (Nello and Gomà, 2018).

Barcelona: a city with strong traditions of Urban Planning

The history of the urban development of Barcelona is very peculiar and is due to an accumulation of trends and events that had no comparable in Europe. During the dictatorship of Franco, the urban development was led by the interests of major real estate companies and developers that pushed for a ‘developmentist’ model. This, together with the lack of democracy and social policies, resulted in evident social and spatial segregation, and consequently to strong social mobilisation. After the death of Franco in 1975 and with the economic recession, the city - together with the entire Spain - required a deep institutional and economic restoration. From the point of view of urban development, the transition from industrial to tertiary economy followed an approach that changed completely from the ‘developmentist’ one and was described as ‘qualitative’, because it tended to target specific areas of the city with projects of requalification of the public spaces instead of savage urban development. Moreover, in the 1980s a season of big investment in the social services was inaugurated.

At the same time, as the city was nominated for the 1992 Olympic Games, a big change was on the run. From the ‘qualitative’ approach that had dominated after the dictatorship, the so called ‘Barcelona Model’ was being settled. This season was dominated by a strong, top-down, strategic planning approach that aimed at an urban development on the global city scale through big interventions: the Olympic facilities, the new downtown areas and new infrastructures – such as the famous *Ronda*, the new city Beltway. If in the previous phases the planning was led by different public bodies, the ‘Barcelona Model’ was heavily based on public-private partnerships in the form of mixed-capital companies with considerable autonomy. Thanks to this, and to the relatively good level of consensus around the measures, the transition of Barcelona from a mainly industrial city towards an important global city was rapidly accelerated.

This ‘new developmentism’ relied a lot on the attraction of capitals and on the interest and collaboration of the economic elites, but also on a completely new idea of administration. New management techniques were adopted by the Public Sector: the figure of the ‘local manager’ was appointed executive control on the administration; mixed-capital companies were created to manage autonomously special urban functions and processes; privatisation and externalisation of activities; spending review and tax reduction. The ‘Barcelona Model’ demonstrated many cracks in the ten years that followed the Olympic Games, such as the failure of the 2004 Universal Cultures’ Forum, and was highly criticized and opposed (Delgado, 2007). At the beginning of

the 2000s, Barcelona had reached a very high status in the European global cities, but it was still affected by social and spatial segregation.

A new generation of planning? The *Pla de Barris de la Generalitat*

Following this period in which Barcelona had grown a lot in terms of economic indicators but also in inequalities, a new approach was released. In 2004 the Parliament of the *Generalitat de Catalunya* [Region of Catalonia] approved the *Llei de Barris* [Law of the Districts], also known as *Pla de Barris* [Plan of the Districts] with the aim of “promoting projects of rehabilitation of those districts where major urban deficiencies are accumulated and where, as a consequence, the population that need more social attention is concentrated” (Nello, 2012) on the scale of the whole region (Figure 1).

The Law 2/2004, for the improvement of districts, villages and urban areas requiring special attention, of June 10th 2004. The norm was the first legislative text carried out and promoted by the government presided over by Pasqual Maragall. In fact, the draft bill was made public on 19 January 2004, by order of the Minister of Territorial Policy and Public Works, Joaquim Nadal, only three weeks after the new government had taken office (Nello, 2003: 25–28).



Figure 1. Map of the interventions that were funded by the Law 2/2004, between 2004 and 2010 . Source: Nello O. (2012), *Ordenar el territorio, La experinecia de Barcelona y Cataluña*. Elaboration by the author.

As visible in Table 1, the *Llei de Barris* financed between 2004 and 2010 projects in 141 districts, where more than one million people lived (at that time, the 13% of the total population of Catalonia), with a very important investment of 1.330 million Euros, of which: 693 million from European FEDER funds obtained by the Catalan Region; 513,2 million from the involved municipalities. It is based on the creation of a fund for the promotion of the ‘programme for districts and urban areas that require special attention’, provided with budgetary resources

from the government of the *Generalitat*, attached to the Ministry of Town and Country Planning and Public Works.

Number of calls	7
Number of districts	141
Total population in the 141 districts	1.005.214
Total funding	1.330 mln Euro
Funding from the <i>Generalitat</i>	693 mln Euro
Other funding (municipalities, privates, etc.)	513,2 mln Euro

Table 1. Some numbers of the Plan of the Districts. Source: *Generalitat de Catalunya. Departament de Política Territorial i Obres Públiques* [Department of Territorial Policies and Public Works].

Even if in some ways the Plan of the Districts represents a typical area-based program, a series of characteristics distinguishes this program from the mainstream of the various generations of neighbourhood programs of intervention that were released in Europe and makes it represent a very important step in the Catalan planning history (Scarnato, 2015).

Multi-level governance and inter-administrative cooperation

First of all, a big role was played by the Catalan regional government, that decided not to focus on single urban areas but to maintain the whole regional territory as a scale of intervention. Indeed, the planners acknowledged that segregation is originated also at a big scale, due to the real estate market. As explained by Oriol Nello: « due to the process of metropolitanization [sic] and the growing integration of the territory, the housing market in which the citizens and the economic operators make their decisions is not longer [sic] local, but rather has a much wider scope. Thus, segregation not only appears between districts in the same town but also – and usually, at first, between districts in the same urban area and even throughout the whole of the region» (Nello, 2009). It is here acknowledged that only from the regional scale it would be possible to distribute the necessary resources in an equal way for the districts and municipals that require interventions and services to face the concentration of vulnerability and which, due to the concentration itself, face great difficulties in providing them.

At the same time, in the mind of the planners, proximity to the field of action is essential for the success of urban policies. Their execution by higher institutional bodies (as in the French case), in the mind of the planner, could entail errors of appreciation and action which may lead to failure. The role of the *Generalitat* is therefore to promote, select and evaluate the projects, whilst the responsibility of the execution of the project lays completely on the town council concerned. In other words, the town council is the body responsible for the design and execution of the programme, having direct knowledge of problems and potential of each district, while the *Generalitat* maintained a role of mere funder and supporter, renouncing to be the protagonist. The Plan of the Districts, relying strongly on the potential of local government, fully applies the principle of subsidiarity.

The inter-administrative cooperation was considered of mayor importance and the law was designed in a way in which not only execution of the projects but also the selection process itself is conducted in cooperation. The law established an organism that is responsible for the selection and assignment of the resources: the Commission for the Administration of the Funds for the Promotion of the Districts and Urban Areas that require special attention. It is composed of 30 members, equally of representatives of the different Ministries of the *Generalitat* and municipal entities (Federation of Municipals of Catalonia and the Catalan Association of Municipals), as well as professionals of the Architects and Technical Architects professional bodies. This marked the beginning of a new era in the relationship between the *Generalitat* and local governments.

In conclusion, through the instrument of the competition the Region aimed at building a multi-level governance model. On one side, the leading role of the regional authority guarantees the coherence of the projects with the aim of social cohesion, the multi-institutional “tuning”, certain funding availability and territorial equity in the access to the funding. On the other side, the protagonist role of the municipality in promoting the project guarantees knowledge of the local situation and correspondence with the specific problems; the requirement of conspicuous co-funding ensures the “determination” of the municipality in effectively implementing the proposal.

The localisation of the interventions and resources

The plan aimed at reducing inequalities targeting specific neighbourhoods – *barrios* [districts], representing a precise administrative division of the territory that is nationwide recognized – that fall on the ‘areas of special attention’. A municipality could apply for one or more districts, making one or more applications. The application, in order to be successful, must target a district that belongs to the ‘areas of special attention’. This measure is to assure that resources go where there is actual need of it.

Anyway, there is to say, there is not a general overview of the Catalan districts that fall in the ‘areas of special attention’. The districts where to intervene are proposed by the municipalities and then examined by the same commission that is in charge of the evaluation of the projects. From an operational point of view, the Law of the Districts works in a way that is inspired to by the European programme URBAN. The proposed districts are examined by the commission through a set of quantitative parameters, as in Table 2, with a scale established by the regulations of the Law of Districts. In order to be considered an ‘area of special attention’, a district must obtain a minimum amount of points from all of the indicators in the scale. Then, a score is awarded adding the points given to the project and, based on the resulting score, the resources available in each call are distributed among the participating municipalities.

Criteria (defined by the Law 2/2004)	Shortfalls in works, facilities and services	Demographic problems	Presence of economic, social and environmental problems	Social and urban deficits and problems of local development
Objective statistical indicators (defined by the regulation of the Law of the District)	Insufficient level of conservation of buildings	Density of population	Number of people that receive assistance and non- contributory pensions	Lack of public transport
	Buildings without running water or water disposal systems	Decrease and accelerated population growth	High level of unemployment	Lack of parking spaces
	Buildings of four or more floors without a lift, designated mainly to housing	Dependent population	Lack of green areas	Low economic activity
		High percentage of immigration	Low level of education	Percentage of the population at risk of social exclusion

Table 2. The criteria and indicators individuated by the Law 2/2004 and its regulation to verify that the district of application is in the ‘areas of special attention’. Source: Nello O. (2009), *The Law of Districts. A collective commitment to social cohesion*, Generalitat de Catalunya. Elaboration by the author.

The reason for this is to assure that the targeted district is among those that actually deserve it, avoiding that resources go to places that are in a relatively good condition but where certain municipalities would like to intervene with very good projects. However, the notable aspect is that the selection is not only based on statistical evidence of the urban and social deficits of the district. Indeed, the planners thought that establishing and publishing a ranking of those districts which find themselves affected by segregation would cause the stigmatisation of those in worse conditions and, therefore, further worsen the conditions of vulnerability of the district. Therefore, they elaborated an evaluation method that took into consideration the strength of the proposal on the side of the project.

‘A plan for projects, not for problems’

As said, the analysis of the proposed context with 16 statistic parameters is done to indagate the effective state of need of the proposed district and avoid a competition based merely on the efficacy of the projects, while the evaluation of the project means to push the focus from vulnerability to planning, trying to avoid possible effects of stigmatization.

Therefore, after the initial analysis of the districts with objective indicators, there is a second stage of evaluation based on the projects presented by the municipalities. The evaluation is done through four criteria: the level of comprehensiveness of the proposed proposal; its general coherence; the level of economic commitment of the town council; the parallel execution of complementary actions. Those two evaluation criteria have the same weight in the score, aiming to generate a combined evaluation method (as in Figure 2).

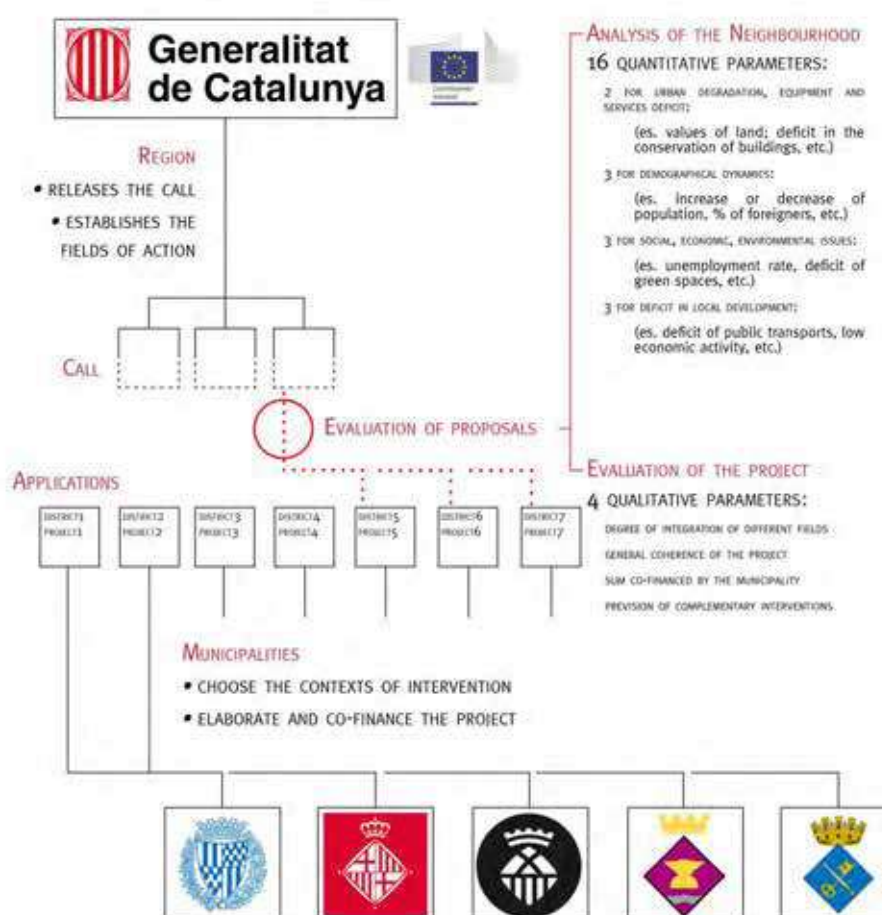


Figure 2. The governance scheme and the evaluation criteria established by the regulation of the Law 2/2004. Source: Nello O. (2009), *The Law of Districts. A collective commitment to social cohesion, Generalitat de Catalunya. Elaboration by the author.*

One of the main factors for the evaluation of the process is the degree of integration of the actions included in the proposal, assumed as a fundamental device to assure the success of the project on the district. The Law establishes 8 different fields where the projects of the municipalities should intervene in the same project, for each district. The fields regard mainly 3 areas: urban design and equipment; improvement of energy, environmental and communication infrastructures; social actions that support the population. Looking at Table 3 it is possible to see that, even though the far largest part of the funding were dedicated to strictly physical interventions like public spaces, green areas, installations for collective use and accessibility (with about 2/3 of the budget), an important role has been played by the involvement of the population through social programmes (with 1/10 of the budget) and with the refurbishment of the common elements of private building (another 1/10).

Improvement of the public space and provision of green areas (paving of streets, planting of trees, lighting, creation of gardens)	44,24%
Refurbishment of the common elements of buildings (facades, drainpipes, lifts, roofing)	9,96%
Provision of installations for collective use (civic centres, centres for the elderly)	21,83%
Incorporation of communication technologies (wiring of building, establishing of wi-fi areas)	1,28%
Introduction and improvement of energy and environmental infrastructures (collection of residues, putting rubbish containers underground, establishment of recycling centres, promotion of renewable energies, water saving mechanisms)	4,74%
Promotion of gender equality in the use of urban spaces and installations (premises for women's associations, specific training activities, interventions for the improvement of women's safety);	2,13%
Development of programmes that entail social, town planning and economic improvement of the districts (actions for the support of collectives that are facing social exclusion, training programmes, dynamise commerce)	9,39%
Improvement of access and removal of architectural barriers (widening of pavement, building of ramps, putting in escalators, elimination of obstacles).	6,26%

Table 3. Fields of intervention required by the law with examples, and the weight that each field had on the fundings. Source: Generalitat de Catalunya. Departament de Política Territorial i Obres Públiques [Department of Territorial Policies and Public Works].

In addition, the law required that the applications of the municipalities should consider two collateral actions that aim at strengthening the plan:

- the creation of complementary programmes by the different Ministries of the Generalitat;
- the constitution of comprehensive follow-up mechanisms.

Regarding the first action, the complementary actions established by the Ministries of the *Generalitat* in the districts included in the programme have been of great importance. The program 'Jobs in the Districts', created by the Ministry of Employment, has led to the establishing of 81 agreements in 92 districts included under the law in order to set up training and school-work transition programmes, with a total investment of 30 million euros. Similarly: the Ministry of Health has carried out studies on public health and health care in the districts participating in the programme; the Ministry of the Environment and Housing has established specific lines of aid in the refurbishment of common elements of buildings for the 37 districts of the programme; the Ministry of the Home Affairs, Institutional Relations and Participation has contributed to the financing of the process of citizen participation in a special way in a further 14; the *Incasòl* (Catalan Land Institute) has signed agreements in order to carry out urban remodelling actions (especially the replacement of obsolete housing with new housing) in 24 districts of the programme, with an investment of about 200 Million Euros. In the effort to cover all of the substantial aspects of the life of all of the areas of intervention

The Evaluation and Follow-up Committees (one per district) include the mayor of the municipality, representatives of different areas of the town council (directly involved in the management of the district), representatives of seven ministries of the *Generalitat*: Town and Country Planning and Public Works, Environment and Housing, Governance, Social Action, Economy and Finance, Health and Employment, as well

as a representation of the Delegation of the Government in each territory. These Committees are configured to bring together all of the services of the *Generalitat* and the Municipality that are concerned with the district. The Committees are held approximately once a year per district and are not meant to substitute the daily action of the administrations, but to maintain a coordination on the action on every district and to create the basis for integrated and transversal action.

Conclusions

In conclusion, this analysis shows how this plan has represented a very important step and pioneering application of some of the precepts of the place-sensitive approach. Of course, the place-based approach with the space as a means to understand the vulnerability of the society, and the neighbourhood as a unit of investigation of the territory and of concrete intervention. But also: the importance posed on the project and its strongly integrated character; the fact that the proposal (both of the neighbourhood and of the project) has to come from the local administration, with a pro-active role of the municipality; the devices to assure the communication and coordination among different levels (vertical) and sectors (horizontal) of governance and the implementation and follow-up of the actions.

Even if, it has been admitted, the process of adaptation of the administrations to act in a more area based and less sectorial manner (in the districts of special attention and in many other fields) required a long process of adaptation, it was a very important turning point in the innovation of the governance of this kinds of plans of intervention. Concerning Barcelona, that has had a very central role (approximately one tenth of the interventions of the Law fell on the Metropolitan Area), in comparison with what had happened before in the history of the physical transformation of the city of Barcelona, a shift was made from the top-down, architecturally hard and punctual intervention of the era 1979-2004, to a softer, more integrated and co-designed intervention that has a dimension of plan. This was very important, in the wake of the huge protests and critiques that previous plans (e.g. the one related to the Culture Forum 2004) had faced.

Not all the aspects of the plan have been investigated in this paper, even though some of them are very important and would require further investigation. The first regards the housing market: even if the Law of the Districts did not include any direct measure in that field, it was very clear in the mind of the planners that bettering the conditions of those neighbourhoods, especially those that are in the city centres, would increase the value of the land and the housing prices, with possible effects of residential exclusion or expulsion. For this reason, a combined plan was designed with the *Pla d'Habitatge 2004-2010* [Housing Plan 2004-2010] that was assigned the role of avoiding speculation effects, providing measures that promoted the social role of housing. Since the value of the lands has actually increased after the interventions of the Law of the Districts, it would be very important to examine whether the Housing Plan was able to contrast possible negative effects on the side of housing.

Considering possible replications of such a pioneering experience presents some complications related to the specificity of this case. It is important to underline that the Law of the Districts was made possible in very peculiar conditions: in a national administrative system, that of Spain, that leaves heavy financial autonomy to the regional level; in the richest and more economically advanced region of Spain; after the accumulation of many experiences in urban regeneration; in a relatively stable political situation and before the financial crisis of 2007-08. Nowadays, it would be very hard to imagine such an alignment. Nevertheless, it brings a quantity of lessons that were learnt and that could be adapted to other cases and situations, wherever there are 'geographies of discontent', in order to give concrete answers to the questions posed by the 'places that don't matter'.

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Thematic villages as the example of neo-endogenous local development in rural areas

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Abstract: This paper is focused on a set of activities undertaken by the local community of peripherally located Polish village and their various cultural, economic and landscape effects. The selected village of Masłomęcz (Lubelskie Voivodeship) is one of over 50 active thematic villages in Poland and well presents the problem of post-war settlement of people from various parts of the country and the long process of their adjustment to the new living environment. The paper is based on quantitative and qualitative data gathered both infield (observation, individual in-depth interviews, focus group, research walk) and along the desk research (the study of literature, documents on local development strategies). The multithreaded analysis in a local scale enabled to present the anatomy of undertaken activities in the scope of the Theory of Change framework. Thematic village of Goths in Masłomęcz presented as the example of neo-endogenous local development in rural areas of Poland is one of the 33 case studies analyzed along the Horizon 2020 Framework RELOCAL Project.

Keywords: Thematic Village, local development, rural areas, Theory of Change

Introduction

In Poland, just like in other countries, rural areas are in the time of intensive transitions. Since the beginning of the market economy in the 1990s, we observe the dynamic emergence of a multifunctional rural regime which influences new non-productive functions in local economies and new lifestyles reflected in the rural landscape. The parallel process within these transformations is the empowerment of local communities and thus reinforcement of social and territorial identity. However, it has to be stressed that these are complicated processes, difficult in view of the economic crisis of that period, bad living conditions, and a number of other phenomena, which turned out to be a serious obstacle for the real social change, based on the recovering of the cultural and territorial identity (Bukraba-Rylska 1992). In some areas, especially on peripheries this transformation was delayed, and became possible only with the acquisition of the structural funds from the EU directed to the strengthening of the social capital and to the broadly understood rural renewal (Czapiewski 2010, Fedyszak-Radziejowska 2010, Jeziorska-Biel and Psyk-Piotrowska 2012, Idziak and Wilczyński 2015).

This paper aims to focus on the idea of thematic villages, which may lead to widely understood rural renewal reflected by redefining local identity and multifunctional development in areas that are

economically and socially impoverished. Activities undertaken along the process of the local development exemplified on the case of Masłomęcz village will be reflected within the Theory of Change approach with the special attention paid on the use of local physical and human resources supported by external incentives, which resulted in a set of cultural, economic, and landscape-related changes.

Theoretical background

The classic formulation of rural development in post-war Europe was an exogenous model that put industrialisation at the centre of development. The key principles, referring to economies of scale and concentration, saw the primary function of rural areas in providing food for the expanding cities. Early models of rural renewal implemented since 1960s in Germany, focused on modernisation of the countryside and increasing the effectiveness of agricultural production, might serve as the example of exogenous approach to local development. By the late 1970s, this model was falling into disrepute. It was criticised as dependent development, reliant on continued subsidies and the policy decisions made by external stakeholders, experts and planners as well as erasing the cultural and environmental differences of rural areas. Among its side effects observed European-wide were: destruction of traditional rural landscape, depopulation and weakening of social capital. In response, a new – endogenous development approach was introduced and the strategies of rural renewal started to focus on social and cultural aspects, sustainable development and thematic villages as a tool in this process. Three fundamental aspects have summarised the endogenous development approach in a rural context: 1) the territorial instead of the sectoral frame, 2) the valorising and exploiting of local physical and human resources, and 3) the focus on “needs, capacities and perspectives of local people” (Ray 2000).

It should be mentioned, that in Poland, similarly to other post-socialist countries, new paradigms for regional and local development appeared with a delay. This was mainly due to ideological factors whose impact weakened along with the transformation and democratization of political and social structures. Within the last 30 years, social sciences in Poland are subject to theoretical and methodological revolution, manifesting primarily in the interest of culture in various contexts and dimensions (Tobiasz-Lis and Wójcik 2014).

Some authors have criticised endogenous development ideas. They argue that any locality will include a mix of exogenous and endogenous forces, and that the local level must interact with the supra-local. The critical point is how to enhance the capacity of local areas to steer these broader processes, resources and actions to their benefit. Recently, an increasing interest in governance dynamics, institutional changing and participation practices has been widely recognised, especially in peripheral and inner areas. Their development and in particular actions that promote local assets and knowledge enhancement, new possibilities of cooperation, new governance structures at different administrative levels, social innovations and participation are considered as the centre of neo-endogenous development and an essential prerequisite for its success (see further: RELOCAL Project applied under Horizon 2020 framework).

In the neo-endogenous rural development two interrelated notions are central, e.g., local resources and local control. The endogenous part refers to development along bottom-up approach that is when the search for possible resources and mechanisms focuses on the local territorial level. The “neo” part

identifies various manifestations of the supra-local and their roles in local development (Ray 2006, 279).

Taking into account the issues listed above, in the case of Masłomęcz village presented in this paper, the process of learning and adapting to the new environment started just after the II World War with the post-war resettlements of people. Based on local historical assets (impact of the territory) and developed thanks to a bottom-up initiative together with external actors' assistance (impact of social capital and relations between local and supra-local), a thematic Goth Village has been established there, which well exemplifies the neo-endogenous concept of local development.

Thematisation of space is a method, widely described to make the “place” known in the broader scale through development of thematic spaces, amusement parks, cultural events and festivals (see: Lengkeek *et al.* 1997, Boruta and Markova 2012, Blichfeldt and Halkier 2014). In a narrow sense, it is focused on selecting a leitmotif for places, events or persons, which become the basis for creating tourist products and serves mainly the marketing purposes (Idziak, 2008, Kłoczko-Gajewska 2013). In a broad sense, it is a model for the neo-endogenous development of a local community providing the basis for acquiring, creating and developing the local identity (Dmochowska-Dudek and Tobiasz-Lis 2017).

Geographical Context – the village of Masłomęcz

Masłomęcz is a small but very dispersed village of about 400 inhabitants (100 households), located in Eastern Poland in the Lubelskie Voivodeship, not far from Hrubieszów and only 8 km from the boundary with Ukraine (Figure 1). Current local economic activities are very poorly diversified, and the productive structure is still based mainly on farming, and particularly on the cultivation of wheat and sugar beets. A complex set of political, historical and demographic factors marked the contemporary character of Masłomęcz. The former multicultural society, composed of Ruthenians, Poles and Jews have undergone due to the war and numerous post-war processes, changing its structure. One of the most important among these was the resettlement of the Ukrainians from Poland to the Ukrainian Soviet Socialist Republic in the years 1945-1946 and the “Vistula” Operation in 1947, aimed at resettlement of the Ruthenian population to the western and northern regions of Poland, as well as the settlement of the Polish population, repatriated from the USSR in the years 1944-1948 and later on in the 1950s.



Figure 1. Location of Masłomęcz village

In 1977 archaeologists from the Lublin University of Maria Curie-Skłodowska started excavations in Hrubieszów Valley. Between 1977 and 2002, on one of the farming plots in Masłomęcz, they discovered a complex of Goth settlements and cemeteries from the 2nd-4th centuries. Initially distrustful of “strangers”, the residents of village slowly got used to the presence of archaeologists every summer. Their work, at first a new, unprecedented occurrence, became, as time passed, an element of the annual life cycle of the community, until then dictated only by the natural cycles, farming and family activities.

The Goth Village Association was formally established in 2010, although the local community started to be involved in the reconstruction and promotion of the cultural and historical heritage of the region in 2004, in response to the sense of loss they had after the last season of archaeological excavations in 2002. As a consequence of the idea to “bring archaeology and Goths back” to Masłomęcz, a partnership of the residents, NGOs and authorities was set up in the form of a Local Action Group “Better Tomorrow”. Their initial plan was to use the historical and cultural heritage of Goths to develop tourist attractions and services. In 2006, a wooden hut with a straw roof was constructed on a plot of land purchased by the Hrubieszów municipality, serving as a careful reconstruction in the scale of 1:2. It was a Goth hut from the 3rd-4th centuries. This structure constituted the beginning of the Goth Village, an open-air museum which is continuously developed and aims to present examples of everyday activities of ancient Goths along living history lessons, workshops and fests. Between 2007 and 2009, a few projects were realised, focusing on the historical education of the inhabitants of the village and shaping their skills in arts and crafts typical for ancient Goths. In 2009, “the Goth Squad” was established with support from archaeologists, employees of the regional museum in Hrubieszów. Nowadays, the Squad gathers about 30 persons of various age, who, after a series of trainings with professionals, reconstruct with archaeological accuracy the crafts, everyday life rituals and martial arts of the ancient Goths. This local social initiative has become a new symbol of the region.

In 2009 municipality of Hrubieszów received financial support from the Swiss Contribution Fund for the project “From a vision to modern management of the Gothania region”, whose purpose was to create a tourist brand of the entire region and to stimulate the residents in economic terms. Therefore, the Goth Village was accompanied by the establishment of two agri-tourism farms where, in addition to accommodation and a variety of services (bike and ATV rental, horse riding), one can buy and taste local products.

Methods

To design the study focused on thematisation of rural space as the way towards local development, the preliminary desk research of literature and documents have been conducted. The collection of primary data was conducted in the summer and autumn of 2018. In the beginning, a Focus Group activity was organised and conducted in Masłomęcz to gather community members, local stakeholders and experts and observe interactions between these groups of people, 16 in total. Issues addressed during the focus group activity referred to: 1) first idea of the Goth Village in Masłomęcz and its links to previous actions undertaken by the local community; 2) implementation of the idea of the Goth Village in Masłomęcz; 3) the Goth Village Association gathering local community as a tool for the development of the locality; 4) benefits acquired by the local community from the Goth Village; 5) Individuals and groups of people most intensively involved in the Goth Village; 6) formal

procedures in the course of deployment of such projects and their realization; 7) role of the municipality / county in the support for such projects and their realization; 8) role of the Local Action Groups (LAGs) in the support for the projects; 9) notions of “thematic village”; 10) future developmental priorities, improvements, visions and plans; 11) possibility to look for partners in other places (formation of a network).

Following the focus group interview, 9 in-depth individual interviews were carried out. The interviewees were: members of tourism sector (two women running agritourist farms), the local leader, leaders and members of local NGOs (firemen, Farmers’ Wives Association, Goth Village Association), mayor; town councillor responsible for the tourism sector, director of Regional Museum in Hrubieszów. The interviews were designed to take the form of a conversation guided by the researchers (Kvale and Brinkman 2009). Respondents were encouraged to talk freely on the prepared discussion points. These included questions over the mental mapping of the village surroundings as well as about interviewees’ level of involvement in the Goth Village project and a discussion of perceived strengths and weaknesses of undertaken activities. Interviewees were asked to reveal their role and specific contribution to the establishment of the Goth Village in Masłomęcz and features of their character, competences, skills enabling them to stand up to the challenge of this process. They were also encouraged to talk about characteristics and distinctive features of their local community and main changes over time due to the establishment of the Goth Village in Masłomęcz (social, economic, landscape-related). Interviewees also referred to the lessons, learnt on the basis of their experiences, associated with the work on development of the Goth Village, their overall attitude towards their place of living and plans for the future. All the interviews were recorded and transcribed to become the basis for the qualitative content analysis and inductively interpreted later on with reference to person-process-place framework.

Following the focus group activity and individual interviews, along with a research walk, the photographic documentation was collected. Finally, researchers participated in Archeologic Fest – an annual one-day festival which takes place in the Goth Village open-air museum on the last Sunday of July. This primary data was further supplemented with quantitative and qualitative data from secondary sources, including existing statistical data, to contextualise local-level findings (Census data, local chronicles, newspapers, and municipality internet site).

A broad range of collected data on thematisation of Masłomęcz village allowed to present the process of local development in a *Theory of Change (ToC)* framework. The ToC approach (Blamey and MacKenzie 2012, Connell and Kubuisch 1998) is part of a family of approaches to policy design and evaluation which emphasizes the need to clearly specify the intervention logic which underpins any “action”, in order to facilitate subsequent monitoring of the policy process in relation to a logical chain of cause and effect linkages, and evaluation of the changes achieved against the clearly specified goals. The family of approaches also includes *Realistic Evaluation* (Pawson and Tilley 2001, Pawson *et al* 2005), *Logic Models* (Kaplan and Garrett 2005) and *Theory-Based Evaluation* (Stame 2004).

Theory of Change framework, used in this research, aims to highlight the causal pathway between the “action” (intervention) focused on establishing thematic Village of Goths in Masłomęcz and the ultimate goal of local development of this rural settlement. It also considers how aspects of the wider local and national environment (economic, social, governance, policy etc.) affect the intermediate

outcomes which form the links within the causal pathways. This analysis is known as *mechanism mapping (MM)*.

Results

Baseline Theory of Change

The case study of the active thematic Goth Village in Masłomęcz well illustrates local responses to general challenges of rural areas among which the most important are declining and ageing population, problems with youth retention, limited economic and social opportunities for residents, loss of local services and higher costs of living. Thematisation of rural space of Masłomęcz village is the core process in diversifying local economic base, enhancing the quality of life, and seeking for new functions and roles of this settlement. Rural renewal reflected by multifunctional development, redefining local identity and strong place attachment in the peripherally located area that is economically and socially impoverished, has been outlined as the *long-term goal* of all practices applied in the process of thematisation of rural space in Masłomęcz.

Thematisation of rural space in Masłomęcz as a process leading to local development was possible thanks to parallel activities of:

- local self-government of the Hrubieszów commune which provided Masłomęcz community with a land parcel devoted to the future development of the open-air museum – a tourist attraction presenting cultural heritage of the village connected with the history of ancient Goths, and
- continuing assistance of leaders (archaeologists) who came back to the village after finalizing their archaeological excavations to set opportunities for economic activities related to the Goth Village in Masłomęcz by exploring and developing human and social capital of the village.

These two components of the action can be regarded as the starting points for two causal paths connected with the development of physical space of the village relating to the development of the Goth Village open-air museum - a new central place of the settlement and a tourist site of local and regional scope, setting space for social and economic activities and the growing sense of belonging – both in terms of territorial identity and social trust.

The first of these (on the left of Figure 2) comprises a chain of *intermediate outcomes*, starting from the organisational and financial backing of the Hrubieszów Community in the form of purchasing a land parcel and devoting it for the development of the Goth Village which have led to new employment possibilities, development of local products and services influencing multifunctional development of Masłomęcz. However, this chain of more economically and landscape-related outcomes is also clearly linked with those deriving from leading role of external experts (archaeologists). Innovative exploitation of territorial assets, which, in turn, leads to additional local economic activity and employment results in enhanced demographic sustainability. This set of intermediate outcomes focuses primarily on distributional aspects of spatial justice, because it concerns what may be judged fair access rights to the benefits associated with multifunctional local development of rural area.

The second chain of intermediate outcomes (right hand side of Figure 2) has a stronger procedural element, in that it is about developing human and social capital reflected in growing capabilities of drawing down resources for the benefit of the local community. It is about fair access to local development processes perceived as a pre-condition for long-term development in relation to both, quality of life in Masłomęcz as well as the position and perception of the village in the wider regional and national context.

The linking part of both chains of intermediate outcomes is the Goth Village Association having a specific potential for involving local resources and the whole community into common activities and interests. The Association runs a Goth Village open-air museum, employs staff, engages volunteers, secures funds, carries out educational programmes and becomes highly professional thanks to the engagement of external organisations – the Marie Curie-Skłodowska University of Lublin and Regional Museum in Hrubieszów. Of special significance are, in particular, such undertakings as the development of a Goth Squad uniting residents over common history, interests and activities aimed at popularisation of the historical and cultural heritage of the village.

The causal paths illustrated in Figure 2 only work on the basis of a set of *assumptions (contingencies)* of two types:

- “internal” contingencies which are specific to particular intermediate outcomes, and their links within the causal paths;
- “contextual” contingencies, which are broad underlying assumptions about the geographic, governance, policy, economic and social environment within which the case is found.

The former will be considered in this section, as part of the ToC process whilst the latter are properly considered under the mechanism mapping below. It should be stressed that although internal contingencies are certainly part of the ToC mapping process, mechanism mapping considers the effects of changes in both internal and contextual assumptions.

In the process of interviewing stakeholders there was awareness that some of the internal “contingencies” were factors which facilitated the causal path, whilst others acted as brakes on the process. In the ToC of local development activities undertaken in Masłomęcz village, six internal assumptions may be observed:

A) The basic internal assumption of the local development activities success is the authentic theme (the ancient history of the area) for developing Goth Village open-air museum, understood as a local asset of this particular settlement;

B) The mutual trust of the local community and external actors (archaeologists) enabling to use results of archaeological excavations in the village as the development asset wouldn’t be possible without the existing capability of collaboration in the local community. Leaders were needed here as the trigger to start the process, but the local community was ready to work together;

C) Leaders – in Masłomęcz, archaeologists – were the first factor to form a group and to impart adequate dynamics of implementing new ideas which seems to confirm the assumption that expert external assistance is necessary at key stages, especially by providing professional knowledge of markets and marketing. However, professional experts in Masłomęcz (archaeologists) are not perceived as “external” by the local community. After the excavations carried out for 25 years around the village, they have become “ones of us”. As a consequence, they had and still have a strong mandate to represent local community of Masłomęcz and set ideas for the development of the Goth Village open-air museum.

D) The development of the Goth Village open-air museum in Masłomęcz aims to result in new opportunities for economic activities and employment – however the choice of such activities is inevitably constrained by the assets available and the market context – necessitating some kind of smart specialisation approach.

E) The next “internal” contingency is associated with the two-folded connection between demographic stability/growth as well as multifunctional local development and the final goal of rural renewal in general. This link is contingent upon demographic and economic growth, or at least their sustainability being associated with enhanced well-being.

F) Strategic capacity of the Goth Village Association members in defining, reflecting and pursuing their aims to build up a platform for sociocultural activities in Masłomęcz as well as the learning capacity of the association, including its flexibility and adaptability to react effectively when opportunities arise (for instance, through funding programmes).

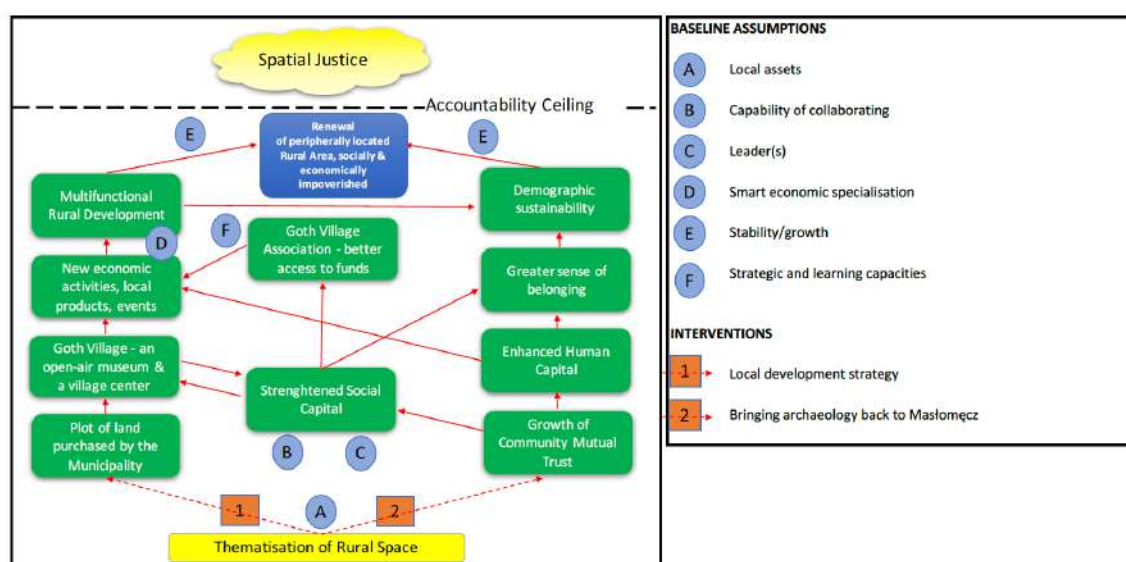


Figure 2. Baseline Theory of Change for the thematisation of rural space in Masłomęcz village, Poland

Baseline Mechanism Mapping

In essence mechanism mapping considers how a ToC map might adjust if the initial set of assumptions (both internal and external) cease to hold good. This might be associated with the intervention being

applied in a different geographic context or it may be the consequence of contextual political and social changes over time (Figure 3).

Regarding *geographical context*, it should be stressed that Masłomęcz is a small rural settlement located in the remote, easternmost part of Poland, with a complicated post-war history and suffering from outmigration, high unemployment and weak economic infrastructure, especially since the political and economic transitions of the 1990s. However, local assets associated with the natural landscape of Hrubieszów Valley and new features of cultural landscape in the Goth Village open-air museum in Masłomęcz provide the local community with opportunities for economic activity (especially tourist infrastructure) which would not be available (or at least not to the same extent) in other parts of rural areas in Lubelskie voivodeship. The second assumption considered under geographical context is that remoteness places constraints on the choice of economic activities and “styles” of doing business. Essentially entrepreneurs in this kind of environment seek ways to survive without the benefits of agglomeration. One response (particularly for those not so much growth orientated) is to develop a strong relationship with a local customer base.

The *policy context* within which activities undertaken by local community in Masłomęcz village is placed exhibits both continuity and uncertainty. Although there are potentially some big changes on the horizon (changes in EU Cohesion Policies, change of the position of Poland from beneficiary to net payer) the key policy contingency would be the continuity of the support to Eastern peripheries of Poland and rural areas and thus, Masłomęcz community by EU and national development programmes and funds.

Among *societal and market context* the demographic shrinking and ageing which characterises the rural parts of Poland was considered as serious constraint for the activities of Thematisation of rural space in Masłomęcz. Nevertheless, there was some anecdotal evidence of a “turnaround”, driven by younger, economically active residents and in-migrants. New opportunities associated with developing a common tourist offer within a wider region of “Gothania” around the Hrubieszów community might be interpreted as a response to two main inhibitors of the action which were: 1) narrow spatial influence due to peripheral location; 2) seasonal character of the Goth Village open-air museum offer. Further backing of cultural and scientific institutions result in unique offer of the Goth Village keeping it authentic and historically correct.

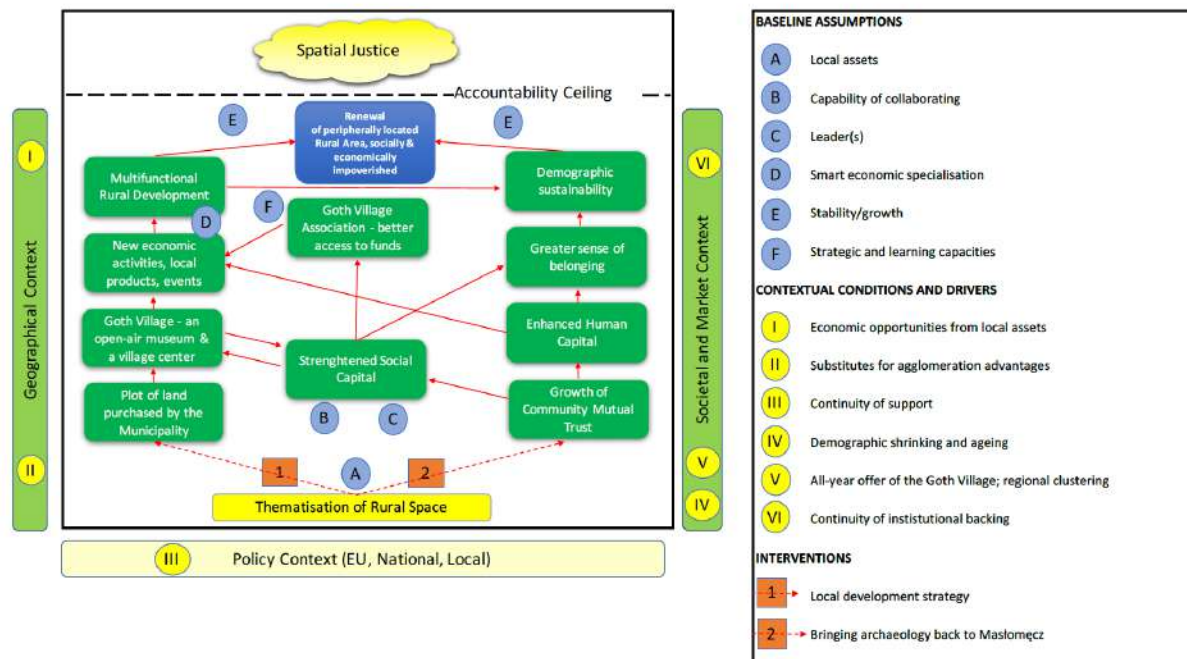


Figure 3. Baseline Mechanism Map for the thematisation of rural space in Masłomęcz village, Poland

Conclusion

Thematisation of rural space of Masłomęcz as presented in the scope of Theory of Change and mechanism mapping enabled identifying promoters and inhibitors of effectiveness in terms of local development in the remote rural areas of Poland. The main promoters influencing the scope and impact of the thematic Goth Village as a tool for local development of Masłomęcz are:

- an authentic theme for developing the thematic village (ancient history of the area);
- mutual trust of the local community and external actors (archaeologists) enabling the use of the results of archaeological excavations in the village as the development asset;
- strategic capacity of the Goth Village Association members in defining, reflecting and pursuing their aims to build up a platform for sociocultural activities in Masłomęcz;
- learning capacity of the association, including its flexibility and adaptability to react effectively when opportunities arise (for instance, through funding programmes).

Apart from these internal factors, which are related to the set-up and management of the association, further supporting factors play a role:

- organisational and conceptual support of the community of Hrubieszów, Regional Museum in Hrubieszów and Lublin University of Marie Curie-Skłodowska,
- positive influence of EU funding programmes on the strategic development of the association into a sociocultural development actor.

Regarding the main inhibitors influencing the scope and impact of the Goth Village we might conclude:

- peripheral location of Masłomęcz having impact on regional scale of the Goth Village open-air museum's influence (only within Lubelskie voivodeship);
- seasonal character of the Goth Village activities – the open-air museum is opened for organised groups (children from schools, kindergartens) and individual visitors between May and October.
- demographic crisis in rural areas (especially in peripheries) hinders generational replacement among the members of the Goth Squad involved in the action of the Goth Village open-air museum.

A Theory of Change framework has been developed for the purpose of this study retrospectively, by reading documents, talking to residents and stakeholders, as well as analysing data. Thus, it might serve as evaluation reflecting what has worked or not in order to understand the past and plan for the future activities towards local development of the village.

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SP28

Friendly spaces and
mobility for ageing

ELDERLY PEDESTRIANS, AGED >65 YEARS, DURING WINTERTIME -ATTITUDES TOWARDS WALKING OUTDOORS, SAFETY EQUIPMENT AND EXPERIENCES OF FALLS. A COMPARISON WITH HEALTHY ADULTS.

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Abstract: Pedestrians slipping and falling is a major safety problem in countries with long winters such as Sweden. According to the Swedish questionnaire-based National Traffic Safety Survey, self-reported accidents involving pedestrians without involvement of any vehicle (single-pedestrian accidents) accounted for roughly half, (1 141 962) of the total number of all road transport single accidents (2 335 017) in 1998-2000. This survey covered 23 030 people aged 1-84. Fall accidents during wintertime accounts for a large portion of all single-pedestrian accidents. An intervention study was performed from February to April among 67 healthy adults, aged 27-67, in northern Sweden, examined the obstacles for walking outdoor during wintertime, attitudes towards safety equipment, their previous experiences of outdoor falls during wintertime and the effect of using anti-slip devices on daily walking journeys and their prevention of slip and fall accidents. A intervention study has been made among elderly people, aged more than 75 years, also in northern Sweden. A questionnaire has been distributed to record their background, health status, attitudes towards different conditions to reduce outdoor walking and their usage of safety equipment. A daily travel diary was distributed during February to April 2009 to record daily walking and experiences of slipping and falling. The results from comparisons of attitudes and previously experiences of outdoor falls among the elderly persons is compared with the results from the pilot study among healthy adults.

Keywords: elderly, pedestrian, winter, slip, fall

Introduction

Pedestrians slipping and falling is a major safety problem in countries with long winters such as Sweden. According to the Swedish questionnaire-based National Traffic Safety Survey, self-reported accidents involving pedestrians without involvement of any vehicle (single-pedestrian accidents) accounted for roughly half, (1 141 962) of the total number of all road transport single accidents (2 335 017) in 1998-2000. This survey covered 23 030 people aged 1-84. Fall accidents during wintertime accounts for a large portion of all single-pedestrian accidents. The frequency of hospital visits due to severe fall injuries is higher during wintertime (about 34,000 people) than during the rest of the year (Berggård and Johansson, 2010; Eriksson and Sörensen, 2015)

Healthy adults experiences of slips and falls

A study, which focused on healthy adults in northern Sweden, examined the effect of using anti-slip devices on daily walking journeys and prevention of slip and falls. The study was limited to 67 respondents in the ages 27–67 years.

The respondents were divided into three groups: an Intervention Group, a Control Group, with similar distribution of gender and age, and a Comparison Group. Four questionnaires were distributed:

- background,
- daily diary of distance walked and occurrence of incidents or accidents reported weekly,
- detailed incident or fall report and
- experiences of using anti-slip devices for those who used these devices during the trial period.

Half of the respondents stated that they had previous experience of using anti-slip devices. In this study, 52% of the respondents used anti-slip devices. Anti-slip devices improve the walking capability during wintertime. The mean daily total walking distance among all of the respondents in this study was similar to the average walking distance according to the Swedish National Travel Survey, which is 2–3km (SIKA Statistics, 2007).

Among subjects using appropriate anti-slip devices, the average daily walking distance was found to be statistically significant longer compared to people not using anti-slip devices.

Respondents aged 45 years and above walked significantly longer distances, in mean daily total walking distance 3.21km compared to 2.48km and when using anti-slip devices 4.19km compared to 1.73km respectively. There are statistical differences between older (45-67 years of age) and younger (27-44 years of age) respondents for both the mean daily total walking distance for all respondents ($df = 1$, $F = 43.277$, $p < 0.05$) and the distance with anti-slip devices ($df = 1$, $F = 44.818$, $p < 0.05$). The elderly walk longer and use anti-slip devices more frequently. This study indicates that an increase in daily walking distance can be made without increasing the risk of slips/falls when using anti-slip devices. The study also indicates that by using appropriate anti-slip devices and having information about when and where to use them, based on their design, people avoid having slips and falls. The respondents experienced in using anti-slip devices in this study will continue to use them and will also recommend others to use anti-slip devices.

Elderly pedestrians, aged >65

In an intervention study among elderly people in Boden Municipality in North of Sweden data from a survey has been analyzed. The municipality distributed anti-slip devices to elderly citizens, aged over 65 years. Questions were asked among the elderly citizens about their ability to move, activity level and the effect of weather conditions on their mobility. Questions were also asked on using safety devices (e.g. bike helmet, safety belts in cars, ...) and number and explanations of falls during winter. The research attempted to analyze different factors that influence activity of elderly during winter conditions. In total the answers from 110 subjects were analyzed.

The structure of the questions were:

- Gender and age
- Walkability, balance and general health level
- Activity level

- Factors affecting walkability (slippery, snow, rain, wind, minus degree)
- Usage of safety devices in all modes of transport (bicycle helmet, anti-slip device, seatbelt, boat life jacket, luminous tag, ...)
- The relative importance of each type of safety devices
- Occurrence and number of fall during wintertime

An overall hypothesis was that age, health and activity level might correlate with occurrence of fall during wintertime. In a first model a regression analysis was performed with the number of fall without anti-slip device as dependent variable and age, walkability and physical activity level.

Examining first model regarding relation between the number of falls without anti-slip device with health and age factors, did not illustrate a high degree of correlation between dependent and independent variables. Among 108 subjects, 33% had experienced fall during that winter. The analysis showed that experience of fall is not an appropriate variable to be explained by age and health variables.

In a second model the attention was drawn toward the activity level. The aim was to analyze if activity level can be explained by factors such as age, balance level and walkability level. This model displays relatively higher significance ($p < 0.05$) compared to the first model.

In a third model, the aim was to test if the relation between age, activity level, and health significantly correlate with the usage of anti-slip devices. The hypothesis was that the use of anti-slip devices is significantly correlated with age group and health conditions. This model reveals weaker results. Therefore age and health do not offer a significant variance in the usage of anti-slip device. Does it suggest that usage of safety devices is independent of health and age.

Besides the three models described above, many other relations were analyzed between health and age of respondents and their usage of safety devices. The results did not show significant correlation between usage of anti-slip devices and age or walking and balance. It seems that using safety devices is an accepted norm among subjects regardless of their health conditions. A conclusion is that occurrence of fall and use of anti-slip device cannot be explained by age, walkability and balance ability with strong significance. On the other hand, the level of physical activity is indicated to correlate with age and walkability.

Discussions

A further step in this research can be to focus on the impact of gender in using safety devices. In this regard, a multi-regression model was conducted to study the impact of gender that did not generate clear interpretable results and hence is not presented in this paper.

There still is a lack of knowledge concerning pedestrians' perceptions of safety aspects related to the use of anti-slip devices during community walking. A case study aimed to explore pedestrians perceptions of walking safety, balance, slipping risk, priority for own use and subjective criteria for a well functioning anti-slip device has been made. Results indicate that both anti-slip properties and balance enabling properties of the device need to be considered for safe community walking. (Gard *et al*, 2018)

Since not everyone is not using anti-slip devices all the time the environment should be adopted to all users. We need to rethink the definition of the concept 'design for all' in the context of all weather conditions. A new integrated and multi-dimensional framework for understanding the accessible built environments for all, in all weather conditions, has to be developed. A framework should be developed by integrating three different disciplines urban design, social and behavioral studies, and the maintenance aspects (Pasupuleti and Berggård, 2014).

Issues of accessibility are more evident in the Nordic countries with long winters and where public spaces, streets and open spaces are covered with snow and ice for several months of the year. Based on preliminary findings, we can conclude that such a framework can be useful to study different environments and how people try to adapt to such changes in weather conditions by using anti-slip devices, kick sledges etc. More importantly, it reveals that the designers should take a good account of site considerations while planning for design for all in all weather conditions.

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Friendly

Old age-related stereotypes, inclusion and the development of ‘age appropriate’ neighbourhoods

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Abstract

The environment in which one lives, i.e. the neighbourhood, can have a strong impact on people's well-being and health. This also applies to older people. The number of older people increases in absolute and relative terms, especially in urban areas, while the lifestyles of older people are becoming more diverse. At the same time studies show that age-appropriate planning of living environments is often influenced by stereotypes. We investigated how 'age-appropriate' living environments are conceived, practiced and lived (based on Lefebvre) and to what extent age-related stereotypes affect these processes. The research methods were interviews and walkthroughs conducted with experts from various planning disciplines as well as with current (aged 70-80) and future (aged 50-60) older people. Furthermore, this article refers to the model “setting-approach”, to discuss the importance of participatory urban and environmental development. The findings show that negative stereotypes predominate. These stereotypes have an impact on the planning processes. In thus, older people are normally excluded from these processes. This has an impact on the quality of the neighbourhood and so this has a potential impact on well-being. For planning-related social work, this means that older people must be involved more in the design of their living environments.

Keywords

neighbourhood, stereotypes, inclusion, participation, setting-approach

Introduction

When we think about inclusive and ‘age appropriate’ living environments and neighbourhoods, three essential aspects are important.

a) In addition to the *Universal Declaration of Human Rights* (United Nations, 1948)¹, we have the *Principles for Older Persons* (United Nations, 1991)² and the concept and program of Age Friendly Cities.³ These documents are all key documents. They emphasise among other things the *participation in social and political issues* and address the *inclusion of people*. Furthermore, the “New Urban Agenda” (United Nations, 2017a) also emphasises participation as an important element of urban development.

b) A second important aspect in the context of age appropriate’ living environments and neighbourhoods is that, according to Henri Lefebvre (1991), the *city and the urban are not places, but social conditions of mutual inspiration and collective action* (see also Vogelpohl, 2015). This means that the people, the communities, the society and the interactions and dynamics between the people as well as between the people and the built are what city and urban is and not (only) the built.

c) The third relevant aspect is determined by two central concerns of social work: the *empowerment of people* and the *reduction of social inequalities* in order to contribute to social justice and to the well-being of all people. These concerns can hardly be considered independently. One focus of social work is on disadvantaged or less powerful people. These target groups often include people with disabilities, as well as children and older people. In these groups, injustices are united and accumulated for various reasons.⁴

Access to and the possibilities of using public spaces in urban contexts, i.e. neighbourhoods with all their offers and infrastructure, are of the greatest importance in connection with social inequality. The question of inclusion and exclusion very quickly arises. The focus must therefore be on the *development of appropriate neighbourhoods*. The central challenge here is how the *development processes* of neighbourhoods can be designed so that both the *result and the processes themselves* are as inclusive and equitable as possible.

Inclusion is a central concept in that it emphasises that all people should be involved, that they must be part of decisions concerning their life and be part of the community. Inclusion is more than a concept; it is an attitude and a human right. However, how can inclusion be achieved? In the context of public space, it can be argued that access to the public space is a prerequisite for inclusion. In other words: if a person does not have an access, but her or he want or need to have it (and here we are essentially talking about physical access), they are excluded. However, it is not only necessary to consider how the public space itself is used, but also the access routes etc. by whom and how. Rather, great attention must be paid to who uses the public space and who does not. One can assume that not all people use the public space in our cities, because the use is too highly thresholded. Reasons for the high threshold can be very individual. Possible examples are: Uncertainty, disorientation, poverty, special needs - physical or mental, the feeling of not having the right to use the public space. Special attention must be paid to

¹ www.un.org/en/universal-declaration-human-rights/

² www.ohchr.org/en/professionalinterest/pages/olderpersons.aspx

³ www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf

⁴ See for further information concerning the principles of Social Work: <https://www.ifsw.org/what-is-social-work/global-definition-of-social-work/>

these aspects. This applies in particular to all people who, for various reasons, are already less integrated in society, i.e. who are "weaker" in this sense.

In the following, one such vulnerable group, older adults, will be described in more detail based on a concrete project. Although older adults have the same rights as adults, they are often stigmatised or even discriminated against because of many stereotypes and prejudices (see for a comprehensive overview Ayalon & Tesch-Römer, 2018).

Neighbourhoods, the setting-approach and stereotypes

There is a clear link between the place and environment of older people and their quality of life and well-being (Petersen & Minnery, 2013). This means that the quality of the living space must not only be high, but also suitable for the people who live and work there. On the other hand Wolf & Mahaffey say (2016, p. 59): "Design and Planning professionals have long been influenced by the belief in physically and spatially deterministic power over people and the environment, a belief that their representations of space become space." (c.f. Buse, Nettleton, Martin, & Twigg, 2016) Based on these statements, the decisive question is how such places and environments are planned, developed and implemented. Even more decisive is who has the power of decision and who is involved in these processes.

In addition, a look at the Ottawa Charter of Health Promotion (World Health Organization, 1986) and the setting approach advocated there, is important when considering the link between the environment and the health or well-being of people. Following the setting approach, health is to be established and maintained in people's everyday lives. A setting is a social context in which people spend time in their everyday lives and which has an influence on their health. This social context is relatively permanent and subjectively conscious of its members. It expresses itself through formal organisation (e.g. company, school, kindergarten), regional situation (e.g. municipality, district, neighbourhood), equal life situation (e.g. pensioners), common values or preferences (e.g. religion, sexual orientation) or through a combination of these characteristics (Rosenbrock & Hartung, 2012, p. 497). People therefore pursue their everyday activities in the settings, are committed and involved. Context-related, organisational and personal factors interact and influence health (c.f. Fabian, Drilling, Niermann, & Schnur, 2017). The setting approach thus makes it clear that in different areas of life and different social systems there are different conditions that influence health and should therefore be taken into account for health-promoting measures (Sterdt & Walter, 2012). The model by Kilian, Geene and Philippi (2004) shows the connections between behavioural and relational orientation as well as participation, but also empowerment in the setting approach (Kooperationsverbund Gesundheitliche Chancengleichheit, 2015, p. 15). The core strategies of the setting approach are the inclusion and participation of all relevant actors, process orientation, the development of integrated concepts and the inclusion of interventions that influence both individual behaviour and structural conditions within the setting (Sterdt & Walter, 2012).

If this is not done, the context conditions will not be (enough) suitable for the people in this setting, in our case the neighbourhood, and thus it has a less good impact on the well-being of the people, or in the worst case even a negative impact.

In the coming years, the number of people aged 60 and over will increase significantly (United Nations, 2015, 2017b). At the same time, older people will become more and more diverse. The lifestyle of people over the age of 65 is changing towards more activity and engagement, especially in sport, access to modern technologies, sexuality, education, fashion, etc. In this age group, new needs and desires will emerge that can draw on potentials, resources, values and lifestyles and competences, time, finances or health (Jopp, Rott, & Oswald, 2008; Santoni et al., 2015).

Stereotypes are «...schemas that we have for people of various kinds» (Gilovich, Keltner, & Nisbett, 2006, p. 18). Due to stereotypes, we tend to judge people on the basis of a particular criterion (or fewer criteria) such as gender, nationality or age, and to attribute characteristics to them (Aronson, Wilson, & Akert, 2014). Such schemes are important in everyday life, but they can also be wrong and lead to wrong judgements about people (Gilovich et al., 2006). Research shows that there are many age-related stereotypes - mostly negative ones (c.f. Australian Human Rights Commission, 2013), e.g. declining competence; less energetic, motivated or creative; less productive; less technologically-savvy; less favourably. There are also positive stereotypes (e.g. more reliable, loyal, stable and dependable), however “These positive images of ageing may not be sufficient to prevent discrimination based on stereotypes.” (Abrams & Swift, 2012, p. 4)

The rising relevance of the neighbourhood

The number of older people without family networks and social support through the family, will increase because of changing family structures, longer life expectancy and differentiated lifestyles (Siebel, 2007). Peer groups other than family-based ones will be of particular importance, while the neighbourhood as a reference framework and as a place of everyday life will provide the social arena for the formation of these peer groups. Despite the increasing relevance of social proximity, the spatial dimension of ageing has not yet been thoroughly addressed by research – except when dealing with a specific architectural project for “housing for the elderly” (eg. Petersen & Minnery, 2013; Peterson & Warburton, 2012). Concepts such as the “age-friendly city” (World Health Organisation, 2007), which support active ageing facilitated through the promotion of the core indicators of health, participation and safety, focus on the city as a whole (c.f. Mouleart & Garon, 2016; c.f. Fabian et al., 2019, accepted).

The production of space

Place and neighbourhood are relevant dimensions for the wellbeing of older people and the opportunity to age in place. Day (2008, p. ii) points out that several different types of environmental inequalities can occur. One is through insufficient access for older people to decision-making processes affecting the local environment (c.f. Walsh, Scharf, & Keating, 2017). According to Lefebvre urban spaces are not places, but social relations that are constituted by the interplay of collective action and reciprocal inspiration (Vogelpohl, 2015). In this context Henri Lefebvre’s theory of *the production of space* (1991) is a key contribution to the relational spatial development perspective. In his urban theory, Lefebvre states that space is a product of the dynamics between everyday practices and perceptions of people (*spatial practice*), cognitive concepts or theories of space (*representations of space*) and the spatially imaginary (*spaces of representation*). The production of space “is composed of three dialectically mutually co-constituting spheres or facets: conceived space, perceived space, and lived space” (Pierce & Martin, 2015, pp. 1282; c.f. Fabian et al., 2019, accepted).

Research question, design and methods

This research project focuses on the question of how 'age-appropriate' living environments are conceived, practiced and lived and to what extent age-related stereotypes impact on these processes.

A case study approach was adopted and an interpretative perspective of lifeworld research was applied for data collection and analysis. The starting points for the two cases (both in Switzerland) were an intergenerational project to promote physical activity and a new city square. For both cases, semi-structured interviews and walkthroughs were conducted with experts as well as with older people. A total of 11 experts in both cases, from the fields of urban planning, landscape architecture, science, product development and social work were interviewed. A total of 10 interviews (usually supplemented with commented walks) were conducted with older people. In addition, two world cafés with older people and two reflexive workshops with older people and planners took place (c.f. Fabian et al., 2019, accepted).

Results

From the point of view of older people

The older people interviewed describe relatively similarly a few central forms of everyday practices in the neighbourhood. A frequent practice is walking in the neighbourhood, which is also associated with sitting down and even reading. Walking and sitting down is sometimes linked with observing changes in the neighbourhood and a form of 'being involved'. This means that older people feel that they are part of life, of society, or of what is going on, they feel to be included. In addition, drinking coffee, eating out, attending appointments and events in the neighbourhood were often mentioned. All these activities generally have an important social function in the sense of encounter and exchange - they express a social practice. Some, while for one person, being able to use public transport to shop elsewhere in the city was more important, mentioned the importance of being able to shop near home. As soon as physical problems limit the use of public transport, the neighbourhood becomes increasingly important. Referring to her walks in the neighbourhood, one interviewee said that she was grateful that service workers took older people out into the fresh air: «And the neighbourhood itself is very important for this. Because taking wheelchairs onto the tram that is nevertheless a big task.» (70+/4) The neighbourhood is often seen as an important place for recreation, allowing walks and outdoor activities, as well as a place for 'being involved', to get out of the immediate surroundings and for social exchange (c.f. Fabian et al., 2019, accepted).

From the point of view of the experts

In the context of 'age-appropriate' planning and development projects, the interviewed experts often describe older people as a homogeneous and fragile group. Although different needs and requirements are attributed to older people with regard to the neighbourhood, these differentiated age images are hardly included in the planning and development of 'age-appropriate' living spaces. As soon as planning and development are involved, this contradiction between one-sided, stereotypical and differentiated age images is resolved in favour of uniform planning. Wheelchair accessibility and barrier free design in particular is considered to be of central importance.

In planning processes, however, older people are not only seen and characterized as people with physical limitations, but sometimes also as people «who are somewhat older, who also tend towards dementia.» This view of older people as a fragile group in turn finds its way into planning-related measures.

It appears that age is often associated with functional limitations. In particular, topics such as balance problems, walking difficulties and health problems are often mentioned in connection with the idea of old age and ageing. These age-related stereotypes in the form of ascribed needs materialise in age-related aspects of planning and the subsequent realisation of construction projects. Here the existence of (age-appropriate) seating is considered as one of the most important planning element for the planning and development of age-appropriate living spaces.

Although in both case studies older people are consistently described as homogeneous and fragile, with exceptions, and rarely as a diverse group, the notion of age usually remains diffuse. The term 'age-appropriate' also remains diffuse. On the one hand, places that have certain planning elements (see above) are described as 'age-appropriate'. On the other hand, characteristics such as wheelchair accessible, obstacle-free, barrier-free, paved, easy to understand, quiet, safe, green planted, shady, etc. are subsumed under 'age-appropriate': «...the almost stricter requirements are the ones we have for handicapped accessible constructions. This has nothing to do with age. There we have strict guidelines, which concern handicapped fairness, and if you keep to these, you are, like, automatically also age-friendly.» (c.f. Fabian et al., 2019, accepted).

Participation

In both cases older people were only marginally included in the development processes. Certain age images or stereotypes of the experts play a central role: «I never had the feeling that they wanted to have a big say in things». This expert also said that if you let too many people have a say, nothing actually comes out in the end...because everyone blocks everyone else.” Another expert said: «One could of course have involved even more older people, but that is of course still difficult, probably to find the right people, who also have the ability - I don't know.» and «I clearly mean, an old person sees it differently, but you also have to have the person who can really bring it to the point». Another expert said: «Yes, we had an event where we presented the project...When you talk to older people, you also have to transmit relatively simple messages, let's say, so that you are understood...and the feedback we received was relatively simple. In that sense we actually got confirmation that we were on the right track.» (c.f. Fabian et al., 2019, accepted).

Conclusions

Results show that there are many age-related stereotypes. Most of them are negative - in that, we classify people purely based on their age and see them e.g. as not very interested in anything, stupid, satisfied with little or indifferent. These stereotypes have a very strong influence on our perceptions, thinking and acting, including planning and design. A second consideration is that although older people are seen as one big group, looking at our society, we see great diversity among older people. This means that older people have different economic opportunities, health resources and challenges, interests and lifestyles and much more. Each individual has different needs and opportunities in many areas, including their living environment and neighbourhood. What we see is a contradiction: On the one hand,

we see the generalized stereotypes - this is a misleading image of old age. On the other hand, we see diversity in old age. This is a more appropriate image. The challenge is how to develop age-appropriate and diverse neighbourhoods with this rather misinformed image of older people.

A finding from the research project is that planners often say that old people do not want to be involved in planning processes or that they have difficulties to express what they want. The consequence is that older people are not asked at all right from the beginning. This excludes older people from having the opportunity to be involved in the planning of their own living environment from the very beginning. Such an attitude actively excludes many older people. In the end, planners do not know what good solutions look like (Fabian et al., 2019, accepted). This exclusion of older people is in itself unacceptable and in the end ageist. In addition, with regard to the setting approach, it is evident that this hardly leads to the development of the best solutions for the older people concerned.

What we have learned so far from our research is that if we want to design our neighbourhoods so that they suit a range of older people, we need to know what needs and opportunities they have. To do so we have to include older people in the planning and design processes. We must acknowledge that they are the experts of their lives, needs and opportunities. We must not only offer them the opportunity to participate, but we should also strive to provide methods and frameworks that they want and can participate in. We have to focus on the persons themselves and not on the problems, deficits or weaknesses associated with young or old age. Finally, participation, or more generally the inclusion of certain population groups, is not only a human right. Participation is also a question of values and attitudes and only lastly a question of methods (c.f. Fabian & Huber, 2019; Fabian et al., 2019, accepted).

Alternatively, as it says in the New Urban Agenda: "Adopt sustainable, people-centred, age- and gender-responsive and integrated approaches to urban and territorial development by implementing policies, strategies, capacity development and actions at all levels, based on fundamental drivers of change,..." (UN, 2017) Whereby also here the choice of the word "age responsive" has to be questioned. An alternative term would be "age sensitive".

Talking about age-appropriate developments, participation is a central concept. Participation includes social and political aspects among other things, and address the inclusion of people (c.f. United Nations, 1948, 1991, 2017a; World Health Organisation, 2007). However, participation goes beyond that. Participation include a theoretical concept, social values and working methods. Central elements are: information, collaboration (co-development, co-creation), taking part in decisions (design, realization) and co-responsibility (c.f. Fabian & Huber, 2019).

Four central recommendations can be noted: First, social work (and others) must advocate for a differentiated look at older people. The focus may not be only on problems and limitations, but above all, on the potentials and resources of older people. Second, training and sensitising of planners and other professionals regarding stereotypes and ageism is needed. Third, the local focus in developing (all) age-appropriate neighbourhoods is crucial. Fourth, research and evaluations with a focus on output and outcome must be done.

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Friendly and accessible public spaces: the Venetian case

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Abstract: The population of Venice is falling drastically and its people are ageing steadily and living a unique existence as regards the town's morphology. Venice has no car traffic and thus urban accessibility for elderly people is neither straightforward nor always safe. The reasons which make it difficult to live in the historic centre are bound up with its specific features: its town framework is made up of 120 islands linked together by bridges, alleyways and *fondamenta* canal side streets frequently free of rails, all of which are accessible primarily on foot as the public ferry service cannot link up all its urban spaces and areas. In the light of this, it is important to enable elderly people to get out into open spaces for both health reasons and in relation to the passage of the seasons as well as for socialising. This research work enquires into the physical barriers in the town which can make moving around its open spaces difficult, the various technical and architectural solutions which have been adopted over the years to improve public transport and urban policies designed for an age-friendly town.

Keywords: age-friendly cities; urban accessibility; Venice; elderly people

Age-friendly and accessible cities: the Venetian case

The United Nations' population scenarios forecast world population growth to over 9 billion by 2050 with an over-60s segment increasingly significantly all around the world, with the exception of Africa. "The number of older persons in the world is projected to be 1.4 billion in 2030 and 2.1 billion in 2050, and could rise to 3.1 billion in 2100. Over the next few decades, a further increase in the population of older persons is almost inevitable" (United Nations New York, 2017). In this context Italy has one of the oldest populations in the world and forecasts for 2065 confirm this trend with a percentage of over-65s which will rise to 32.6%, an increase of 10% over 2015¹. The future holds an ageing population, then, and an ability to cope with this is a must, above all in urban decision making and urban planning terms.

Specifically we must orient ourselves to what the World Health Organisation defines Active Ageing (WHO, 2002) which takes the form of a process in which health, participation and safety opportunities are optimised to improve quality of life for the ageing.

¹ <http://www4.istat.it/it/anziani/popolazione-e-famiglie> (Date of access: 19/05/2019)

The backdrop to this action may be the towns, given that it is in these that half the world's population lives. "More older people are also living in cities. The proportion of the older adult population residing in cities in developed countries matches that of younger age groups at about 80%, and will rise at the same pace" (WHO, 2007).

Age-friendly cities must be the future, then, in which the urban, social and physical space will be designed to foster urban and architectural scale life styles. The essential characteristics of age-friendly cities relate to external spaces and buildings, transport, housing, inclusion, participation in social life, communication, information, health services, public support services and also the potential for employment. In particular, on the subject of the outdoor environment, WHO project consultations highlight that elderly people and those interacting significantly with them focus attention on a vast range of urban landscape and built environment characteristics which contribute to solidarity to elderly people. Recurring themes in cities all around the world are living standards and safety, which take the concrete form of practices such as: a pleasant and clean environment, green spaces, somewhere to rest, age-friendly pavements, accessibility, a secure environment and age-friendly buildings.

The majority of these characteristics might seem specific to Venice, a town whose morphology and life organisation are exceptional, moreover if compared with other cities. Inherently traffic free, Venice's transport is slow and takes place primarily on foot: here people meet in its alleyways and chat in the squares and this favours social contact, nurtures neighbourhood relationships and limits isolation, above all for the elderly and those living alone. The data regarding the resident population in the historic centre of Venice shows the over-65s accounting for 31%² - above the national average - while the number of residents has been drastically dropping over the last ten years. Thus whilst, on one hand, the town centre is depopulating, on the other it is increasingly the elderly who lead their everyday lives in it. Despite its 'positive' urban space characteristics, the lagoon city is, in actual fact, not an easy one for the elderly as there are a great many architectural barriers, and because the absence of pavements and roads with traffic is offset by over 430 bridges linking the 120 islands making up the historic centre (Figure 1). These bridges, built over the centuries and each different from the next by shape and materials used, are an impassable constraint for people with motor disabilities using wheelchairs and also for those whose ability to move around is reduced. Originally built without side barriers at a time when the town's life was changing and, in particular, as the use of horses was diminishing, these are, for the most part, without handrails. Those in stone and brick - the majority - comprise no end hand rail to support people by their very conformation and this makes them challenging both up and down, especially in adverse weather conditions.

² Data from Venice town council dating to 31/12/2018 from sestieri San Marco, Castello, Sant'Elena, Cannaregio, Dorsoduro, San Polo, Santa Croce and Giudecca. Accessible on the following link: <https://www.comune.venezia.it/it/content/classi-det-2018> (Date of access: 19/05/2019)



Figure 1. View of the Venetian *insule* (islands) and their over 430 bridges (highlighted in red).

Venice and the slow mobility paradox, from urban obstacles to action to overcome them

To gain an understanding of the current accessibility situation in Venice the authors carried out research whose objective was to capture the situation in the lagoon and collect information on and describe the great deal of work done on it over the years (Tatano, 2018). This first phase was then followed by a further two, one linked to scientific study³ of the ramps used to solve the bridge accessibility problem and the other to outline certain accessible itinerary hypotheses for people with limited motor capacity. In this third phase, in particular, all the town centre's bridges and differences in pavement level were mapped for the purposes of outlining a knowledge base on Venetian accessibility and understanding how accessible the town really was. Given the complexity and variability of the town's solutions, some routes were totally accessible and others 'elderly person friendly'. Focusing attention on the elderly, then, the situation is relatively positive, although a range of action remains to be done to guarantee independent movement to this segment of the population. In actual fact, even before the 2004 Piano per l'Eliminazione delle Barriere Architettoniche (PEBA) 55% of the bridges were normally equipped with a sort of handrail (iron railings with an easy to grip rail for the elderly at the top), as shown in Figure 2.

³ The research was funded by the European Social Fund and enabled the various types of existing ramps to be assessed scientifically.



Figure 2. Map of Venice's *insule* highlighting (in blue) bridges with handrails.

If, on the other hand, both action to place handrails on walls (Figure 3) and action taken to make bridges accessible to the disabled in wheelchairs (Figure 4) are considered, the percentage of bridges accessible to the elderly rises to 85%.



Figure 3. Map of Venice's *insule* highlighting (in light blue) bridges with added handrails.

The data thus shows that almost all Venice's bridges are 'elderly friendly'. If we consider only fully accessible bridges (Figure 4), however, the percentage drops drastically to 8% and this shows how

much work still remains to be done in the town in the light, furthermore, of the fact that not all elderly people are independent in their movements and that many are obliged to use wheelchairs outside.



Figure 4. Map of Venice's *insule* highlighting (in yellow) bridges with access ramps.

In addition to pedestrian access routes (overland routes) there are water-based routes used by public ferries (very few people have private boats, especially motor boats). Such services do not link up all urban spaces, however, which can be reached on foot for all purposes and in any weather conditions, although this can involve a series of urban 'obstacles' represented, above all, by bridges but also by steps and differences in ground level along them.

Both of these have been made more accessible over the years, equipping boat services and implementing a range of work to ensure access to some bridges and improving the user friendliness of the majority of these.

Over the last twenty years the town council has undertaken a range of work, regarding new ramps and handrails where these were not present, in particular. The rails on Venetian bridges, added over the centuries for the purposes of guaranteeing safety and avoiding people falling into the water, are made of various materials: wood, brick and iron. Brick walls, in contrast with iron railings (Figure 5, left), do not enable people to grip them for support and thus these have been equipped with new handrails (Figure 5, right) to facilitate use both up and down and providing a fundamentally important support⁴. This work increased the percentage of bridges accessible to the elderly by approximately 30%.

⁴ In conjunction with the board of cultural heritage, Venice town council drew up specific guidelines for the positioning of handrails on bridges with brick walls (Comune di Venezia, 2016).



Figure 5. (Left) Example of a bridge with an iron rail. The top of the rail is used as a support by the elderly both up and down the steps as it allows for good grip. (Right) Example of a bridge with a brick wall and added handrails on both sides.

More tangible and complex work - above all architecturally speaking - relates, on the other hand, to the addition of ramps on bridges of various types and gradients, incorporated into the structure of the bridge or added to it to ensure removal if required (Figure 6). In addition to linear 8% gradient ramps, facilitated step ramps have also been used in Venice (Figure 7), an ‘alternative technical solution’ (Comune di Venezia, 2011) in which linear gradients have been replaced by a series of elongated, sloping steps linked by a chamfer or a triangular profile instead of a riser. This type of ramp is less elderly friendly, however, as it does not allow for full step stability, but as these ramps are generally positioned to one side of a pre-existing bridge, people can choose the method they prefer (either ramp or steps).



Figure 6. Ponte delle Sechere, an example of a fully accessible bridge. In this case the bridge has been equipped with both handrail on its brick wall (left) and a facilitated step ramp.



Figure 7. Example of facilitated step made up of two units (gradient 14% - 6%) and a triangular chamfer (gradient about 42%). Average step gradient is 13.4%.

There are also temporary linear ramps put in on some bridges for the Venice marathon which, although they remain in place for much longer than is required for the race itself, are removed for several months.

Lastly, certain small steep gradient ramps were installed on Ponte Contarini in 2017 to facilitate passage with shopping trolleys. This is an experiment designed to help people using trolleys and carts.

These latter are used on a daily basis by the elderly to carry their shopping and avoid carrying heavy bags by hand and also to lean on, as a support (in the same way as a walking frame).

It is not only Venice's bridges, however, which act as barriers and the urban space itself is full of obstacles, such as small differences in height in the various parts of the town or unfenced off canal sides which can lead to people falling into the water, especially the sight impaired and the blind. Since 2017, to cope with the former type of obstacle (generally just a few steps), the town council has been building low gradient ramps (Figure 8) to connect up alleyways, *fondamenta* and squares at different heights. These ramps are being built in brick and covered in trachyte and Istrian stone, like the existing pavement, and only a few of these have handrails.



Figure 8. Ramp with a gradient of 5% to get over a pavement height difference between two alleyways.

The issue of canal side streets with no railings is a more complex one. These rarely have walls, although their traditional design makes for good visibility thanks to the colour contrast between the grey trachyte pavement and the pale coloured Istrian stone edge. Tactile pavements for the visually impaired have been used only in certain parts of the town to highlight dangers (the Piazzale Roma bus terminal and ferry services stops) and gates have been restored at landing quays. Acting on all the town's *fondamenta* and alleyways directly facing onto the water is impossible, as it would radically modify the very nature of Venice.

Old people's homes in the town centre

In this unique and, at the same time, complex urban system, the 2018 data shows that two out of every five elderly people live alone⁵, mainly as a result of the death of a spouse. To enable everyone - including those who are no longer independent - to remain in their home town, the town council generally has to supply home care and provide services to make urban spaces more user friendly. Using open spaces and green areas contributes to the wellbeing of the elderly, maintaining their sense of the seasons and the passage of time and combating isolation and the loss of autonomy and social relations. Keeping elderly people in their own social contexts without isolating them is to be preferred, therefore (Iacomoni, 2009), but it is not always possible as a result of a lack of home care services and opportune home technological solutions. Furthermore, elderly, non-independent people need care and spaces suitable to their physical and illness related needs. Thus when necessary, the elderly tend to be grouped into residential complexes, old people's homes and care homes, with attempts being made to keep people in the nearest building to their home area.

In Venice, too, a range of buildings have been adapted for use by independent and non-independent elderly people and, in some cases, Alzheimer's sufferers. The care homes, old people's homes and communities for elderly people in the town centre include some which are large (such as Residenza San Lorenzo in Castello with 180 beds⁶) and smaller ones (such as the two communities in Dorsoduro which host 4 people each at most). So that elderly people will not live in isolation and alienation, residences for elderly people must enable the latter to keep up their contacts with the outside world and thus be suitably situated in the urban fabric and a direct extension of it. To this end, Residenza Zitelle on Giudecca island⁷ is a virtuous example of incorporation into the urban context: in a project designed to renovate a 1930s building, access to the alleyways was restored and an urban courtyard was added, including spaces open to the whole district (urban vegetable gardens, day centre, meeting room, medical and assistance services, boules court, etc.). The Zitelle *insula* itself (Figure 9) - the site of this building - is linked to the rest of the town by a public ferry service and to the Giudecca's other *insule* via 'elderly friendly' bridges (all the Giudecca's bridges have handrails or accessible ramps). This enables the elderly people in the residence to go out for a walk and avoids them feeling isolated from the rest of the urban context.

⁵ <https://assistentsociali.veneto.it/1191/anziani-soli-nelle-citta-venete-buone-prassi-per-rispondere-allemergenza/> (Date of access: 19/05/2019)

⁶ The residence is owned by IRE, Istituto di Ricovero e di Educazione.

⁷ Ibidem.

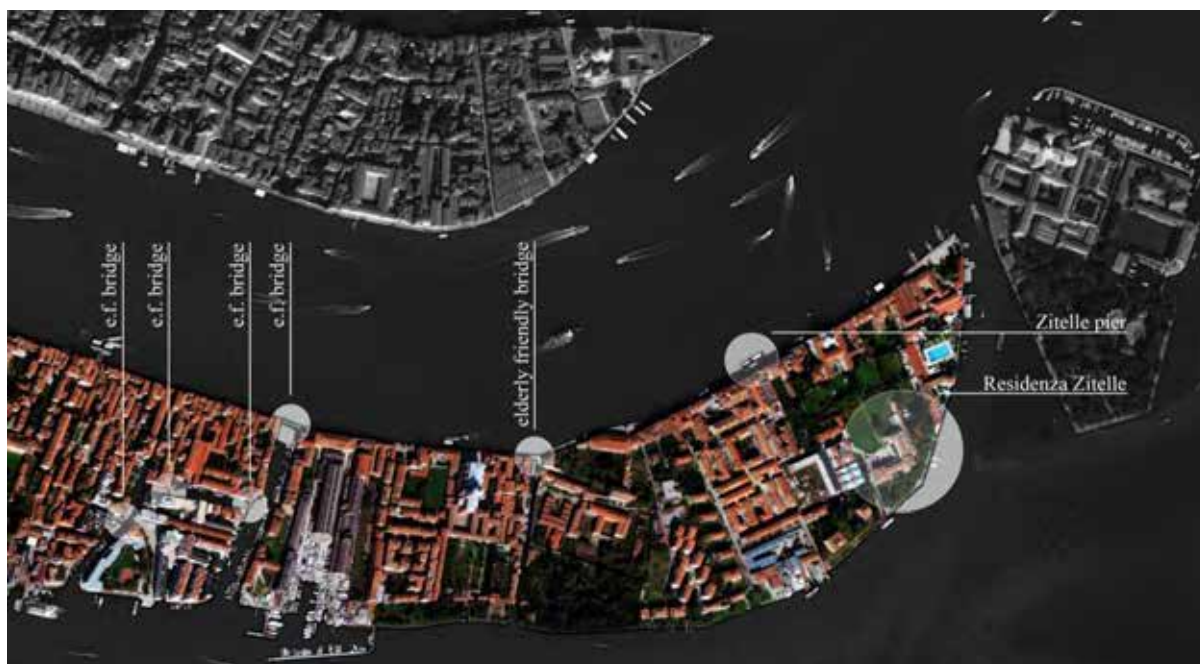


Figura 9. East side of Giudecca: localization of Residenza Zitelle in the urban context. Elderly people of the Residenza can reach the rest of the town from Zitelle pier and they can go around Giudecca using the ‘elderly friendly’ bridges.

Conclusions

Via an analysis of the de facto state of Venice’s accessibility we have seen that, in a town as complex as this from a town planning perspective, it is possible to create an age-friendly itinerary network thanks to the intelligent use of architectural solutions. The example of Venice and the solutions adopted to resolve its various ‘physical barriers’ can be a useful reference point for other towns with important historical heritage. The paradox is that while, on one hand, the town promotes projects designed to foster an increase in its accessible trajectories and thus the user friendliness of its public spaces for people with reduced motor capacities (physical action), on the other hand it has begun to adopt ‘protection’ systems for certain spaces which previously acted as public, meeting and sharing spaces from uncontrolled tourism⁸, closing them off and limiting their use as is now occurring for many small alleyways ending at the canals. And, to an even greater extent, it is closing itself off to protect itself from potential tourism, adding anti-bomb barriers in Piazzale Roma and at the foot of Ponte della Costituzione⁹.

⁸ An example is the recent Regolamento di Polizia e Sicurezza Urbana, approved on 16/05/2019 by the town council, whose 82 articles set out a series of behavioural rules for the town (<https://live.comune.venezia.it/it/approvazione-regolamento-polizia-urbana-venezia-16-maggio-2019>, date of access: 20/05/2019).

⁹ The flower pot barriers at the foot of Ponte della Costituzione, on the traffic access side of Piazzale Roma, were located there in 2011 after a car drove over it as a prank and got as far as Campo San Geremia.

At the same time, the private housing spaces which traditionally extended into the courtyards and alleyways are no longer used as shared spaces as they, too, are 'occupied' by large numbers of tourists: everyday living spaces tend increasingly to be confined to within the four walls of the home while open spaces now under siege from huge scale tourism no longer guarantee co-existence between residents and tourists. 'Physical' accessibility, then, cannot effectively guarantee the creation of an age-friendly town if the town loses its uniqueness and is transformed into a straightforward tourist destination. What is needed is thus no longer solely physical action but governance policies to reactivate these features.

What has been described makes clear that Venice is now facing three conflicting phenomena: a falling resident population in the historic centre, its progressive ageing and a huge surge in mass tourism. As a result of this latter factor, whilst physically accessible to the elderly, the town is actually closing off to them, obstructing the resident population in its use of public spaces and generating a certain aversion to visitors from residents (especially the elderly). For a town to be truly age-friendly, then, co-ordinated initiatives of a physical and managerial nature are required. On one hand urban spaces must be adapted via planning and technological action with accessibility in mind. On the other, public space creation for the community is required, with the latter understood as a physical space but also an activity incubator, especially devoted to the elderly in order to foster active ageing in harmony with local communities and the town.

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MOBI-AGE: Promoting urban mobility in ageing populations

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Abstract: In the current panorama of many cities, difficulties associated with public transportation and with public space, limit the access of the elderly, also creating difficulties for other age groups. One of the objectives of the project is to carry out a review of the literature on mobility and accessibility characteristics of the elderly. Another is to develop a methodology for diagnosis of age friendly spaces, analysing the area and the population affected. The MOBI-AGE project intends to use two case studies, Coimbra and Porto. This article is a first attempt to identify the main characteristics and main indicators of the mobility of the elderly and the quality of the public space, whose optimization can contribute to an accessible city for all.

Keywords: age-friendly cities, elderly urban mobility, accessibility, central historical spaces, public space.

Introduction

Some paradigms related to the mobility of goods and people have been changing, especially since some of the factors that interfere with mobility patterns, such as age, have changed. In fact, the demographic pyramid is changing, the elderly population is increasing and, consequently, mobility patterns have also changed in the last decades. If up to now the quantitative of this (elderly) population could be considered balanced with that of the younger population, it is found that it is expanding worldwide, and in many countries the number of people over 65 exceeds the number of persons under 18 years of age. This population, with some restrictions in terms of personal mobility, does not always have easy access to urban spaces and to components of the transportation system.

The analysis of the aging index, which is shown in the following chart (Figure 1), also shows the strong aging trend of the population of Portugal, with some prominence for the municipalities of Coimbra and Oporto.

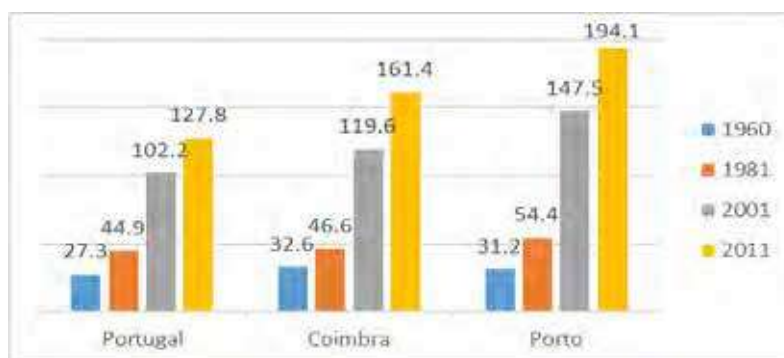


Figure 1- Evolution of the index of aging according to the Census (ratio-%) (Source: PORDATA)

The urban centers concentrate a good part of the population aged in the cities, which generally inhabits the oldest buildings. By definition and in most of these cities, it is in these areas that historical monuments and other factors of tourist attraction are located. Senior tourism is also a consequence of the general aging of the population and has been increasing. This scenario means that urban centers, especially historic centers, are places where more seniors are concentrated in comparison with other areas of the city, whether residents or visitors. In these areas, neither the urban public space nor the transport system are adequately adapted to the access and mobility needs of this age group.

Seniors have specific travel needs that can affect their mode of transportation choices. In order to encourage the maintenance of activity and the adoption of sustainable travel practices during aging, it is crucial to understand what factors influence the mobility of the elderly. In addition, it is necessary to understand which indicators characterize the accessibility of the elderly to the city's public spaces and to the collective transportation system. This article aims to consider these two issues (accessibility and mobility) and develops a framework of factors related to their impact among the elderly.

Thus, the MOBI-AGE project (supported by the FCT-MIT Portugal funding program, referred to in the acknowledgments) aims to develop a literature review focused on the themes of urban aging, healthy aging, active aging and elderly mobility and accessibility. In addition, and through two case studies, one in Coimbra and another in Porto, emphasizes the adequacy of the urban space and the transportation system to the needs of the older population. At this stage and from the literature review, it was possible to identify the main factors that contribute to an accessible city for all or an age-friendly city.

After this introductory chapter, the MOBI-AGE project is presented and, following, a review of the literature on urbanistic barriers in urban areas. In the first place, the factors that characterize the mobility of the elderly are discussed, exploring the relationship between their personal characteristics and their travel patterns, their movement through public transportation, and also the urban design and its impacts on the pedestrian mode. Next, the methodology is presented, namely emphasizing the factors that characterize the accessibility of the elderly to the city public spaces and to the collective transport system are synthesized. It is also characterized the accessibility to the network of transport

and communication infrastructures and the location of activities of interest for the elderly. Then, ways of acting are suggested. Finally, a chapter is presented with some conclusions.

The MOBI-AGE Project

The MOBI-AGE project is an exploratory project whose objectives are to review the literature on the mobility and accessibility of the elderly in the transportation system, the suitability of the urban space at the level of the urban design and infrastructures of paths and the accessibility to the pedestrian paths, both public buildings and access points of the transport system. Using some information from this review, two case studies (selected areas of urban rehabilitation areas) will be analyzed, one in the historical center of Coimbra and another in the historical center of Porto.

These studies aim to identify needs and failures that limit the mobility and accessibility of the elderly population. This process goes beyond cabinet work and also aims to create social innovation by holding participatory and dynamic collaboration sessions with this population, assessing more precisely needs and aspirations. The review of the literature will contribute to the preparation of the queries, to be applied in these case studies.

As a final goal, the project intends to elaborate a methodology for the diagnosis and classification of historical central spaces as to their suitability in terms of mobility and accessibility for the elderly population. This methodology should inform the future development of interactive information platforms for end users of the space, both residents and visitors, that will allow them to find solutions to their travel needs.

Characteristics of Mobility Of The Elderly In The Urban Environment - Literature Review

Introduction

We consider it important to evaluate the impacts of the built environment and transportation systems on the mobility and accessibility of the elderly. During the study, there was a need to differentiate between mobility and accessibility because, since they are different concepts, they require different approaches. Mobility is able to travel without limits, have information about travel options, know how to use them, use them and have the means to pay them [1]. Accessibility is a term that describes the greater or lesser ease with which people access goods and services, facilitated either by well-organized transport systems and that move people efficiently as more activities are achieved by these people, also benefiting from quality of infrastructure [2].

Thus, this literature review began, in the first part, to study the theme of elderly mobility, addressing the relationship between the characteristics of the elderly and their travel choices, followed by a study on the needs and barriers of the elderly population in the use of public transport and, finally, an analysis of the impact of urban design in the pedestrian mode, especially the elderly. In the second part, the theme of the accessibility of the elderly to the urban space was studied, analyzing the favorable and inhibiting characteristics of the transport and communications infrastructure network, access to the public space and the transportation system, also identifying the places of interest for the population.

The characteristics of the elderly and their travel choices

For men and women who fail to drive, alternative means of transportation become a necessity. However, the effective use of alternative transport is relatively low [3]. Therefore, a good understanding of the travel patterns, needs and factors influencing the mobility of the elderly is needed to design an improved access to public transport and, in general, a life of active aging while maintaining economic and social participation, as well as the quality of life.

Depending on the age group, the population has characteristics that may influence their mobility. In order to understand how the elderly move and identify mobility patterns, it was considered important to analyse, in a general way, the relationship between their characteristics and their travel options and the choice of mode of transportation.

People tend to slow down walking with advancing age [4]. The study [4] concluded that while young adults (25-34 years) walk at an estimated velocity of 1.25m/s, the elderly (65 years or more) walk at an estimated velocity of 0.96m / s.

As people get older, they are making fewer and fewer trips, with shorter duration and less distance. This phenomenon is more pronounced in the female population. Characteristics such as being single, having poor health conditions, low educational level or low income are also negatively associated with the mobility of the elderly population.

Women are more dependent on walking, cycling and public transport, while men use the car more often. Possession of a valid driving license is positively related to mobility in general and to the frequency of travel and, of course, the likelihood of traveling by private car. Older, high-income people tend to use less collective transportation.

The elderly in collective transport

Collective transportation can allow autonomous journeys for those who cannot or do not choose to drive. When older adults (60 years of age or older) have inadequate access to the transport system, they tend to experience low levels of physical activity, reduced independence and high health risks [5]. Strengthening the mobility capacity of older people should be seen as an integral part of efforts to promote the overall development of society, especially in the transport sector [6]. From the point of view of social and economic quality of life, public transport services should be increasingly friends with the elderly to ensure that older people can maximize mobility and access to the opportunities they need to access [7]. Next, some of the travel characteristics that are positively related to the use of collective transportation by the elderly are presented.

Also the integration of transport in certain buildings, a subject still under-explored, can allow a varied set of solutions. Buildings can be excellent supports for transport systems, allowing not only the use of the public space by atriums related to the street and urban structure, but also the greater articulation of the pedestrian circulation channels with the other sectors of the transport system, allowing greater comfort (in relation to the type of climate) and accessibility of the pedestrian, in particular of the elderly [8].

An urban space suitable for pedestrians also has a positive connection with the probability of an elderly person making a collective transport trip. Older people prefer to travel by bus due to cheaper travel fares and taxi fares due to greater accessibility. Older people tend to avoid rush hour and prefer to travel during other times of the day. The density of bus stops encourages the population in question to use public transport more frequently [8].

The impact of urban design in pedestrian mode

Pedestrian mode is a critical component of a transportation system. In addition to driving, it is the most popular mode of transport compared to other modes of transport, such as public transport or taxi [9]. Walking is often necessary even when using a car or public transport [10]. Adults aged 65 years and over resort to this mode of transport on a substantial part of their journeys, around 9% [9], and for most of the elderly almost all journeys begin and end by walking [11]. Thus, knowledge about the characteristics of urban design that can facilitate an active lifestyle can allow the development of a system of decision support for public health, land use and transport policies [12].

Older people prefer neighbourhoods with safe and continuous walks, with aesthetic pleasant and several pedestrian paths to make the movement easier and pleasant. The existence of street lighting and the possibility of perceiving that there is little traffic are essential aspects to your sense of security. The presence of slopes and microclimatic conditions (sunlight, ventilation, humidity) influence the travel choices of elderly people who prefer mild temperatures and low humidity to opt for active mobility.

Concerning the sense of security, the elderly feel more motivated to walk if there are other people on the street, whether walking, running or cycling, or the presence of a police or security. As for the time of day, the elderly prefer to go hiking early in the morning. On the contrary, large crowds, people who cause disturbances or individuals to ask for money can be considered obstacles.

The elderly population takes into account the characteristics of the urban environment when deciding to walk and is more likely to do so if the pedestrian path is quiet, clean and maintain. The presence of parks, gardens, trees and shadows, places to rest, eat or use the bathroom, variety of views and activities and accessibility to public transport are also decisive characteristics. In addition, the existence of ramps on sidewalks, as well as the presence of handrails in the presence of stairs or steps, signposted walkways and routes with low pedestrian traffic (one way), are factors that influence the walk of the elderly. In contrast, the existence of abandoned or under construction houses, garbage, inadequate lighting, fallen trees or branches, poorly lit plant walkways with unexpected interruptions forcing individuals to walk on the road with vehicles have been identified as inhibitors of use of the pedestrian mode by the elderly.

In addition to its role in optimizing pedestrian circulation, it is also up to the urban design to promote interfaces (creation and strategic location), adequate modes of transport and accessibility that are complementary to the pedestrian mode, favouring access to public transport in pedestrian areas and location of shelters and stops in a suitable way [8].

The accessibility of the elderly to the urban space

Accessibility is one of the crucial components to be considered in cities that are favorable to the elderly [13]. Accessibility refers to the possibility for citizens to achieve the goods and services they need, as well as all other activities [9].

In order to increase urban accessibility for the elderly, it is fundamental to think of both the infrastructure network (transport and communications) and the location of activities of interest [14]. Intervening in these two elements means improving urban accessibility for all groups, making physical limitations more easily accommodated [15].

Transport and communications infrastructure network

The concept of accessibility is related to the way people achieve the desired activities through transport systems [2], [9]. Systems that are efficient and allow people to reach a greater number of locations per unit of time are viewed positively [9].

The public transport system should be fully accessible to all citizens. Limited access to collective and private transport has often been identified as one of the main factors contributing to the social isolation and economic poverty of certain groups. Older people are often identified as being socially excluded because of the difficulties associated with journeys away from their homes, to access services and facilities, especially for non-car drivers.

Barriers related to the feeling of low personal safety, difficulties in carrying heavy loads, few bus stops, long distances on foot, low population density, poorly designed and/or poorly maintained bus stops, a low ergonomic vehicle design, pedestrian infrastructure in poor condition, difficulty getting on or off the bus, parking cars at bus stops, insufficient time for crossing in traffic lights and crossings in dangerous places, have serious implications for the elderly users in terms of security perception, use and comfort. The elderly population favours, on the contrary, factors such as punctuality and little waiting time, cleanliness, the existence of bathrooms, low travel costs, safe driving and seats available.

Location of activities of interest

Accessibility is also related to user use and satisfaction of public areas [13]. There is thus a need to identify the destinations that are of interest to the elderly, as they have different needs and interests in relation to younger age groups. It has been found that having nearby destinations such as restaurants, libraries, pharmacies, grocery stores, hospitals, banks and various stores, within a range of action easily reachable on foot or by public transport can contribute substantially to the accessibility of the elderly to the public space.

Methodology of Intervention

Summary of indicators to consider

After this review of the literature, it is possible to make a synthesis identifying the main indicators of an inclusive and friendly city of the elderly, while being of benefit to all other age groups. The

distinction between the concepts of mobility and accessibility was fundamental in this process in order to better identify the factors associated with the way the elderly perceive and use public transport and the public space in general. With regard to the mobility of the elderly, we sought to understand the mobility patterns, their movement through collective transportation, identifying barriers and needs in the use of these modes and how to promote the improvement of the transportation system. In the case of accessibility, they assessed their difficulties in accessing the transport system and public places, emphasizing the importance of good urban design in this process.

Barriers associated with pedestrian access to stops and low population density were identified as main barriers to the use of collective transportation. The characteristics of urban space positively related to the use of public transport have to do with well-designed and maintained infrastructures, as well as with high population density and jobs. Other barriers are the long distances to walk, service availability, stocking and waiting times. On the other hand, the high density of collective shuttles, frequency during off-peak periods, clear information on routes and waiting times, cheap travel fares and punctuality are positively related to the use of public transportation. Vehicle-related barriers such as difficulties in carrying heavy loads and entering or leaving the vehicle (lack of ramps) were also identified. Vehicles with access ramps, shelters at the stations and comfortable and available seating, as well as cleaning, are seen as characteristics that attract the elderly to public transportation. Finally, the barriers encountered in relation to personal safety were speed and volume of traffic, insufficient crossing time in traffic lights, crossings in dangerous places, inappropriate behaviour of other passengers, improper parking at bus stops and high crime rate in the neighbourhood. Positive indicators are measures of calm, speed reduction and presence of police or security.

In terms of urban design, many barriers related to the mobility and accessibility of the elderly, such as empty houses and abandoned lots, garbage and pollution, were also identified. In contrast, the characteristics favorable to the elderly are a well-maintained built space, the presence of parks, gardens, trees and shade, places to rest, eat or use the bathroom, a quiet and peaceful environment, buildings or statues of personal significance or historic and clean. We have identified barriers related to the state of the rides, such as trees or fallen branches, walks covered with weeds and / or damaged. The characteristics of the walks positively related to the mobility and the accessibility of the elderly are continuity and good connections to the rest of the network, with ramps, illumination in the crossings, pedestrian paths and adequate pavement, the presence of connections in escalators or elevators to overcome differences of way to allow continuous paths and also the existence of handrails in the presence of stairs or steps. Identifying neighborhood characteristics related to older people's sense of security found barriers such as criminal activity, slow or inadequate police response to crime, inadequate lighting, the presence of windowless walls, connections through parks and large crowds. On the other hand, the public lighting, the presence of police or security, the traffic lights with sufficient passage time and the presence of people were identified as positive aspects. Finally, we found that the lack of access to places of interest was negatively related to the mobility and accessibility of the elderly. Instead, having access to public spaces that integrate older people with younger people, families with children and tourists, parks, public transportation, health facilities, pharmacies, restaurants, libraries, grocery stores, banks and stores were seen as positive features.

Sizing principles

On the basis of the conclusions obtained from this review of the literature, namely the identification of barriers and characteristics that promote active mobility and the accessibility of the elderly to public spaces and the transport system, it was possible to define, from the outset, some design principles that can be useful to propose a first set of actions in favour of a city that is friendly to the elderly, listed with available and applicable legislation.

This process is still under development.

Conclusions

This literature review allowed to identify the main characteristics and possible indicators of suitable cities and spaces for the elderly, to be applied in the case studies. This study was vital to understand the barriers and preferences of the elderly on the use of public transportation and public space in general, as well as identify their perception of accessibility and usability in relation to their interests and needs. In the next phase, we will identify the direct relationship between the identified characteristics and the indicators that we intend to quantify and evaluate, which will be crucial in the next stage of the project, also contributing to the preparation of the form, namely inquiry, to be applied in our studies case - within the selected focus groups.

The definition of these indicators is crucial for our main objective, to contribute to the creation of a diagnostic methodology that will lead to recommendations for the rehabilitation of the historic centers of the cities of Coimbra and Oporto (illustrative of centers with high proportions of elderly, residents or visitors) in areas that are friendly to the elderly. In addition to contributing to the development of a methodology for the diagnosis and classification of historic urban centers - and consequent recommendations for urban design and reformulation of the public transport system - it is hoped that this methodology could constitute a decision support system in the future development of interactive information platforms.

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IS ACTIVE AGEING A REALITY FOR LOCAL POLICIES? A DISCUSSION BASED ON THE PORTUGUESE CONTEXT

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Abstract: It is worldwide acknowledged that the rapidly rising share of older people places a challenge to public policies at different scales. International and national guidelines have been underlying both the need to promote a more active ageing and the importance of creating the necessary means for decision makers and other relevant actors to work together (the governance mechanisms) to implement local active ageing policies. How are local governments and other actors conceptualizing active ageing? What are their priorities? What governance mechanisms are used to implement such policies? These are some of the questions that this paper addresses in the context of a southern European country: Portugal. Mixed methods were used to address the issue at stake. First, a study at the national level was developed by applying questionnaires to local stakeholders in order to map local active ageing policies. Second, a case study approach involving interviews in two NUTS III regions was conducted to understand the governance mechanisms. Findings confirm the 'passive organization type' in which European politico-territorial studies tend to place Portugal, as there are gaps in the way policies are formulated, implemented and evaluated, as well as a lack of coordination at various levels.

Keywords: Active ageing, Local policies, Governance, stakeholders, population ageing

1. Introduction

Population in developed countries is rapidly ageing and an increased number of older people is expected to live longer. Amongst the EU member-states, Portugal is already the fourth most aged country, in which approximately 21% of the population is more than 65 yo (EUROSTAT, 2017). Even though this phenomenon results from several positive societal factors, it also creates many individual and collective challenges. Up until the transition to this century, debates and policies on population ageing envisaged mainly the physical and psychological deterioration of the elderly along with the need to provide a range of services capable of coping with such limitations. This perspective was somewhat linked to Cumming and Henry (1961) disengagement theory, which postulates ageing as something inevitable that results in a decreased interaction between the older person and the respective community.

From the 90s onwards, a new representation of older people gradually emerged (Caldas and Thomaz, 2010), mainly influenced by two aspects. Firstly, ageing as a market segment of millions of people. A new image of the elderly – active, consumer, and participant – captured the attention, not only of marketers but also of decision-makers. Secondly, expectations towards public policies increased as older people became more demanding due mainly to the growth of literacy rates. Accordingly, seniors

began to fight for their economic, social and cultural rights in order to be an active voice in decisions that concern them (Naue and Kroll, 2010; ONU, 2002).

At a public policy level, a more efficient answer to the ageing phenomenon relies on a multi-scale intervention, i.e., involving various public entities at local, regional and central levels – whole of government approach – in close collaboration with other stakeholders – whole of society approach. The challenges posed by this cooperation should be taken into account by policy makers in the elaboration and implementation of policies to promote active ageing.

The World Health Organization (WHO), the Organization for Economic Co-operation and Development (OECD) and the European Commission (EC) concomitantly refer to active ageing as a process not only of individual responsibility but also of collective responsibility, implying productive activities, be they economic or social, without putting aside the physical and mental well-being (José and Teixeira, 2014).

Accordingly, national and EU policies seek to overcome the social imbalances resulting from an ageing society, such as the pension system, social security, and restrictive measures harmful to the interests of retired citizens (Pereira, 2011). However, if we take into account that each place has a specific cultural pattern which influences its political culture and social practices, one may argue for the nuclear importance of the "local level" in the process of designing a plurality of policies in society. Being a crucial element in the central government/society dialogue (Ruivo, 1990), local government and local stakeholders must thus act as key players in fostering active ageing. According to the Age Platform Europe (2011), they are in the best position to meet the needs and challenges facing the older population, as they are at the forefront of capitalising on opportunities for active ageing. These local or even regional actors are linked to education, health, sports, transportation or even employment policies that will emphasize good active ageing practices.

The design and implementation of policies aimed at improving the living conditions of the population depends on the involvement of several actors, be they public or private, such as local governments, non-profit organizations, among others (Bárrios and Fernandes, 2014). From the few studies focused on this subject, it is worth mentioning the works published by Barbosa (2015), which compares Portugal and Sweden with regard to local initiatives focusing on population ageing, and Bárrios (2017), which seeks to identify and analyse policies and political support for ageing, taking into account the characteristics and needs of the older population. It is possible to conclude from these studies that local governments, endowed with skills and resources, play a key role in improving the conditions of older people, since there is, in fact, a role of greater proximity to the citizens, accompanied by a greater capacity to mobilise the remaining local stakeholders.

This paper attempts to contribute to the research developed with respect to local public policies supporting active ageing in the Portuguese context, seeking to answer the following questions: how do local governments and the other local stakeholders conceptualise active ageing? What are the priorities underpinning the promotion of active ageing (e.g., urban design, healthy lifestyles, social and financial support)? How are policies of active ageing designed and implemented and through which governance mechanisms?

2. Methods

In order to answer to the questions above listed, a mixed-methods approach, combining qualitative and quantitative methods and analyses, was applied.

In a first phase, so as to obtain a broad picture of the local policies implemented in Portugal, a self-administered questionnaire was created and sent via an online platform to several key actors working in the following institutions: Local Government (LG); the charity institution of Santa Casa da Misericórdia (SCM); Community Care Units (CCU) and Senior Universities (SU). These actors and institutions were chosen due to their nuclear role in capitalizing opportunities for active ageing, thus being perceived as proxies of the most salient dimensions- social, health and educational- involved in this process.

The goals of this phase were twofold: to understand if the actors were aware of different concepts and notions related to active ageing and to map the ongoing and future initiatives developed within this context, from a multi-level perspective.

The applied questionnaire comprised three sections. In the first one, participants had to identify key concepts of active ageing and respective source of knowledge. In the second one, participants had to rate in a Likert scale (1- highest priority to 5- lowest priority) the degree of priority concerning a set of strategies that the Local Council should adopt to face the challenges posed by an ageing population. In the third section, participants had to identify implemented policies, cooperating entities and, in those cases, the main outcomes.

482 answers were collected, among which 162 were complete and 320 incomplete. In the end, and after a detailed analysis, 153 answers were included: Local Government (n= 96); Community Care Units (n=24); Santa Casa da Misericórdia (n=23) Senior Universities (n= 10), which geographical distribution is presented in Figures 1, 2, 3 and 4.



Figure 1 – Response distribution- Local Government

Figure 2 – Response distribution- Santa Casa da Misericórdia



Figure 3 – Response distribution- Community Care Units Figure 4 – Response distribution- Senior Universities

After the questionnaires' analysis, key actors from Aveiro and Coimbra- the 2 more representative regions in the previous phase- were contacted to explore some additional information through semi-structured interviews. More specifically, we intended to further explore two aspects: (i) the process of elaboration and implementation of active ageing-related policies at a local level and (ii) the ways in which the actors work and interact with local, regional and national entities in this process.

Eight interviews were conducted following a script divided in three sections. The first section focused mainly on the challenges that active ageing may pose to the local power and local policy definition and implementation. In the second part, the goal was to analyse the extent of the horizontal cooperation between the several entities involved, exploring if and how the policies were being coordinated with a wider network of institutions that also promoted active ageing. Finally, and drawing on a multilevel perspective, we intended to explore the inter-connection between policies defined at a local level and other government levels, namely regional, central and European. From the eight interviews conducted, five were with LG actors and three with actors from SCM, one CCU and one SU.

A descriptive analysis with a software (SPSS) was conducted on the data collected through questionnaire whereas the interviews were transcribed and subjected to a content analysis.

3. Results and Discussion

(i) Concepts and perspectives by key-actors

The analysis of the answers to the first section of the questionnaire, where participants had to identify key concepts of active ageing and respective source of knowledge, shows that “active ageing” and “healthy ageing” were the most familiar concepts for more than 90% of the participants. On the other hand, 50% participants from CCU and 43% from SCM did not know the concept “productive ageing”. One could attribute these results to the fact that, in both entities, almost 50% of the participants were

not in high rank coordination positions, hence not being responsible for the organization. Still, an analysis of the answers of the participants which were the heads of SCM and CCU shows that only half were aware of the concept.

A more adequate interpretation is that the actors of these two particular entities of services provision related to Health and Charity deal mostly with older people in more vulnerable positions, thus not recognizing immediately their potential as active members of society. The opposite is true for the actors working at LG and SU, whose familiarity with the concept, may be due to the fact that they are closer to active older people, thus having a more positive view on their potential contribution to society. In what regards the concepts of “healthy cities” and “aged-friendly cities”, the LG actors are the ones showing a higher degree of familiarity with the concept, probably due to their role in elaborating and putting these concepts into practices and policies.

The link between knowledge of a specific concept and proximity to the entities’ reality and actors’ position within the institution is also corroborated by the analysis of the knowledge sources. In what concerns the concept of “productive ageing”, results indicate an association between knowledge of the concept and working in entities that value and envision related practices. As such, SU actors indicate that they were informed of its existence in classes, which is coherent with the entire mission of the entity whereas LG actors refer that the information on the concepts and related actions are transmitted via institution or via European guidelines.

The relatively low percentage of actors from SCM and CCU learned about this concept by themselves, with only 10 % indicating that it was via institution. As for SCM, only 10 % were informed of the concept of “productive ageing” via institution.

In what refers to the perspectives more valued by these entities, it is important to highlight that, for LG actors, the matters concerning public spaces and urban design barriers are perceived as of low priority. This may mean that there are already measures being implemented to tackle this issue and/ or that there is a more urgent concern towards the promotion of individual practices related to healthier lifestyles and leisure activities. On the other hand, there is a major concern from SCM actors regarding public space design. This may be explained by the fact that this entity deals with more dependent older people, which may also influence the high percentage of SCM actors that devalue the contribution of older people to decision-making processes.

For the CCU actors, who also contact with a population with a higher level of dependence, the less valued perspective is also the one concerning the contribution of older people to decision-making processes as opposed to the high priority attributed to the implementation of a good transport system that may prevent social isolation.

Differently, actors from SU, in line with the ones from LG, value less the Public Space design and more the involvement of older people in decision-making processes. These choices reflect, respectively, the type of population that they are used to deal with who tends to be more active on physical and cognitive aspects.

(ii) Implemented initiatives

After mapping the knowledge of concepts and the perspectives held by key actors, the implemented initiatives were identified and analysed in order to have a representation of what is currently undergoing in the Portuguese territory. As shown in Figure 5 below, the majority of the initiatives are elaborated and implemented by LG, unsurprisingly given the specificities of the Portuguese culture and political tradition. Social action is the field with more initiatives, being these related to policies which promote support and benefits, particularly financial ones. Health- related initiatives appear in second place, referring to events that promote health education and sports.

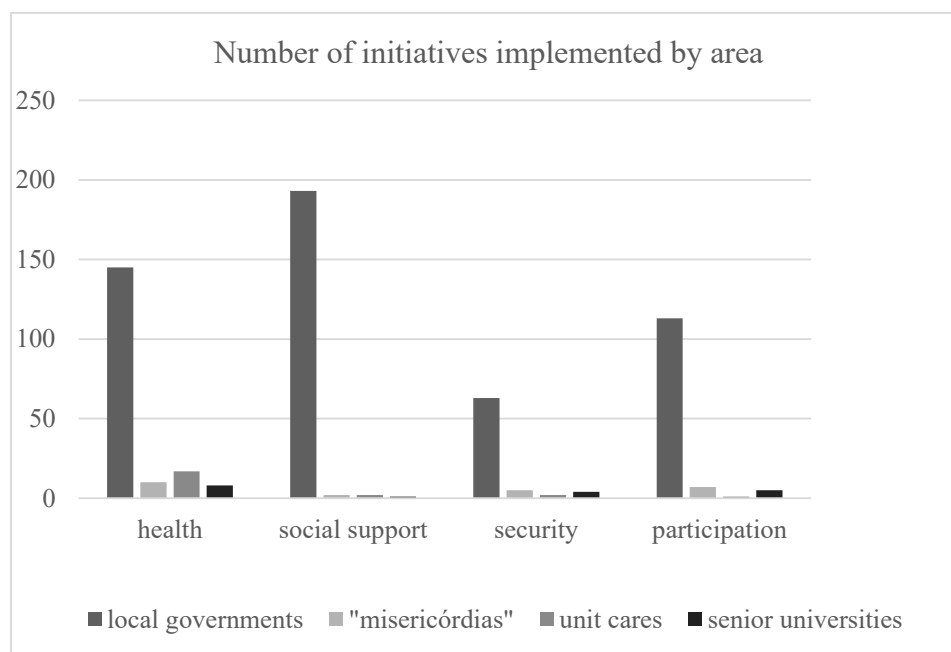


Figure 5 – Absolute Frequencies of implemented initiatives by area

On a related note, it is worth mentioning that, at the local level, many initiatives and policies are elaborated and implemented through a system of networks, as is evidenced by the number of local partnerships. LG (cfr. Figure 6) is the most prolific entity in establishing partnerships, namely through “Rede Social”, which is defined as “a planning and execution device of participatory public policies and an instrument that promotes synergies and a coherent action towards an active social state” (IESE, 2012:7).

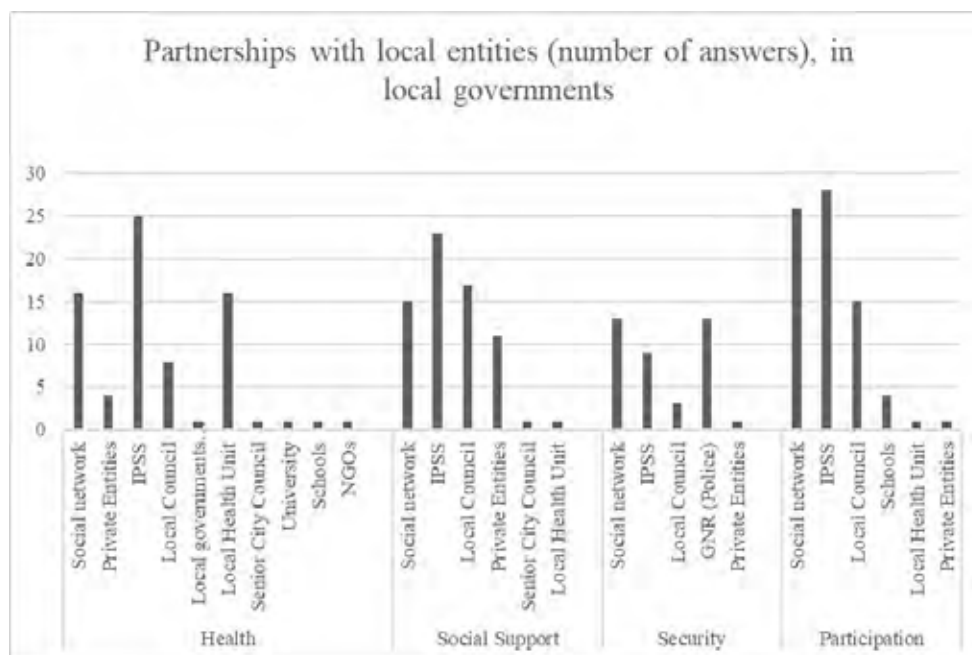


Figure 6 – Absolute Frequencies of Partnerships with local actors and LG

Even though the added value of these networks, their large majority are still at a local level, thus lacking a coordination with national entities, and, what is more, a systematic assessment of the results.

The aspects outlined so far on the process of policy-making and underlying governance mechanisms were corroborated by the data collected through the interviews. A fundamental aspect relates to the perceived positive role played by networks established at a local level, such as “Rede Social” and CLAS (platform of debate, at local level, focused on the participation, representation and collaboration between public organisations and private social initiatives”(Law- Decree no.115/2006, 2006). The work developed by these two networks is viewed by our interviewees as crucial for promoting active ageing practices, particularly due to their ability in motivating local entities to work together for a joint cause. Intermunicipal Communities (IC) and Supra- Council Platforms(SCP), the latter partaking “ Rede Social” are also viewed in a positive way, given their role in optimizing the planning and management of financial and social resources.

However, it should be noticed that most of the interviews were conducted in Aveiro IC which has addressed, in recent years, the optimization of several aspects concerning the process of active ageing. Accordingly, in what refers to the formulation and implementation of policies, LG actors from Aveiro Region are the ones most concerned with consulting the population in order to identify existing problems and define measures that can tackle citizens’ specific needs. This is not the case for other regions in Portugal, where still prevails a weak culture of formulating and implementing local policies for active ageing.

On a related note, one of the most salient problems identified in our study is the lack of an efficient multi-level cooperation. This is particularly true for the relation between local government and intermediary and central instances, especially in what refers to the clear definition of roles and inherent responsibilities. Without specific guidelines on the matter of ageing provided from the central power, there is a disparity between regions, given that most of the initiatives rely on local contextual features, such as demographic and financial aspects.

According to Matos (2013), improvement of multi-level cooperation may result from connecting CLAS and PSC (NUT III), at a council level, to Social Security Institute, at a national level, that, in turn, could respond directly to the central power. This model enables the formal conditions to articulate different levels of power, either between actors as well as policies and instruments.

Only the interviewees from Aveiro Region mention this cooperation, agreeing on the relevant work conducted by the CLAS and PSC. However, the connection between PSC and central government is still perceived as inefficient.

Another important result of the present study refers to the perception held by LG actors on two main gaps: the lack of financial support to develop more initiatives and the insufficient legislation concerning what they can and should do within the context of policy and practices development. Although the interviewees from Aveiro region show a higher level of knowledge of national and European policies on ageing, especially of the ones that were already in course, overall, those are not widely known. What is more, it appears that the organizational structure of LG entities is lacking venues and means to inform their employees on European guidelines and to apply systematically to communitarian initiatives and funding.

4. Conclusions

The definition and implementation of active ageing-related policies requires a broader view on the multidimensional nature of the ageing process. True, political agents are increasingly thinking and debating the pervasive issues of population ageing. However, as argued by Walker and Maltby (2012), even though "active ageing" is widely promoted by the EC, this does not automatically translate into devising and designing policies to be implemented. The results of our study shed some light on some of the strengths and shortcomings of this process as it is perceived by the key actors who partake it.

In what concerns the design of policies and the development of initiatives, one of the most salient issue is the lack of a clear cooperation between levels of power, which is viewed as fundamental to approach some of the challenges posed by an ageing population. This is also a key-element put forth by Ferrão (2015), who posits the importance of multilevel governance to public policy design and implementation while defending that it can only be efficient as much as the needs, priorities and capacities of private and public actors are taken into account.

This consideration is aligned with the view on the importance of consulting the local population on a regular basis so as to have an informed insight into specific concerns, needs and limitations. Another salient theme of our data was the role of networking for more efficient governance mechanisms. This process is perceived as paramount to design and implement active ageing policies and initiatives; as ageing is a concept that encompasses many areas, it is an added value to devise joint (network) measures. Local governance mechanisms play herein a crucial role by enabling a network of partnerships between local entities, ranging from third sector institutions, public and private providers, academic institutions and civil society. On this regard, "Rede Social" is a strong lever to aggregate and get the local agents in constant cooperation. However, the absence of a multilevel view (encompassing the central level) limit the scope of the initiatives, which are mainly focused on the promotion of healthy lifestyles and leisure and occupation activities, as there are no guidelines from the central government that may serve as a guide to local government. As for the intermediate

structures, namely at the level of the IC, the interviewees identified the need for these structures to consolidate their role as places for debate and sharing, for policy implementation, for clarification and, above all, for monitoring what is at stake.

The results obtained with this study allowed a deeper understanding about what is being outlined at the local level regarding active ageing whilst identifying some of the inherent mechanisms of the decision-making policies process. Firstly, it was possible to identify the areas in which the entities were most involved, namely the promotion of healthy lifestyles and occupational and leisure initiatives, with a very strong commitment on the part of local governments in the area of social security and financial benefits. Secondly, it showed the prominence of a culture of decision-making in network, based mostly in the Rede Social. Finally, it corroborated some concerns express by research on governance within the Portuguese context, specifically regarding the lack of guidance from the central administration on these matters, as well as the low interconnection between the different governance levels. In this context, it was possible to observe that an intermediate level of governance may be the key to these issues, with the CIM and the CPS holding the potential to foster debate and common practices among the various municipalities in a region.

On a final note, it is important to mention two main limitations of this study, that may be tackled in further research. The first one refers to the sample size, which was relatively small, hence not allowing a generalization of the conclusions. The other one relates to the importance to combine our approach with (i) a mapping of these policies in the Portuguese territory, in order to understand the different geographical contexts (coastal / inland or rural / urban) and (ii) the extension of the study to other regions of the Portuguese territory so as to explore if these findings are context-dependent or if they reflect a more national-based reality. Finally, it would also be of great value to compare the differences and similarities between the Portuguese context and other European countries, especially in what concerns the degree up to different countries align their policies with European guidelines or lack thereof.

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SP29

Emerging spatialities
and eu policy instruments:
cases and perspectives

Emerging spatialities and EU policy instruments: cases and perspectives

EU urban strategies 2014-2020: exploring the functional area approach

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Abstract: There is a vast literature that has investigated processes of spatial reconfiguration, contributing to the emerging of a "new urban question" that not only reframes traditional urban issues but also challenges our understanding of what are cities today. At the same time, the "European city model" still persists, particularly regarding the institutional role of cities, increasingly considered as relevant policy actors. This "urban paradox" gives new emphasis on the urban regional scale and urgently calls for connecting the two dimensions, both in terms of dynamics on the ground and policy formulation. The paper addresses the topic by focusing on the functional area approach promoted by the EU Regional Policy discourse discussing how it shapes and legitimates new spatial configurations, with implications for urban analysis and policy approaches. The paper is based on the analysis of a database gathering nearly 1000 strategies for Sustainable Urban Development funded by EU in 2014-2020, with a significant number of functional areas. Interestingly, functional areas as a strategic approach do not only apply to metropolitan areas, big cities and FUAs. On the contrary, it has been used for different type of territories, beyond metropolitan areas, and suggests the need for better understanding what kind of spatialities and territorial arrangements they contribute to shape.

Keywords: EU urban policy; sustainable urban development; functional urban areas; strategic planning

Narratives on emerging spatial forms¹

There is a vast literature that has investigated processes of spatial reconfiguration of urban areas in the past 30 years (Sourel and Youn, 2009, Brenner, 2014). Once that the nineteenth century model of city as described by the Chicago School has clearly become outdated, literature has been engaged in finding new narratives and terms able to describe the new spatial forms urbanization was assuming. However, according to Soja (2011) a sort of inertia has prevented contemporary urban scholars from going beyond a traditional division between (dense) urban and (low-density) suburban, and such dualistic model has been reiterated by the majority of them.

¹ Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the following information. The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

On the contrary, what characterises the contemporary urban form is an erosion of the boundary between urban and suburban, with a convergence in the density levels, and the upsurge of an "expansive, polynucleated, densely networked, information-intensive, and increasingly globalized city region" (Soja, 2011, p.7). In such new urban form, it is not possible to distinguish between a centre and a periphery, and on the contrary it is found a "polycentric network of urban agglomerations where relatively high densities are found throughout the urbanized region" (*ibidem*). Even if in the words of Soja it is impossible to generalise, still there are some elements that characterizes regional urbanization:

- Processes of decentralization and recentralization, leading to the emergence of new unstable "inner cities", with new concentration of immigrants which lead to an unprecedented cultural and economic heterogeneity of the population, and growing conflict between domestic and immigrant populations.
- Increasingly dense and demographically as well as economically differentiated suburbs, characterised by new and heterogeneous way of life, more like what the urban used to be. Expulsion of some urban functions in peri-urban context capable of generating new centres.

City-regionalism can be seen as a powerful narrative which spans beyond spatial disciplines as planning or urban studies. The narrative has in fact lead to a spatial turns in economics. According to Soja (2017, p.198) if regions were seen in the past as purely "places where things happens" now they are seen as "powerful driving forces in themselves energizing regional worlds of production, consumption and creativity, while at the same time shaping the globalization of capital, labor and culture".

However, Morgan (2015) warns on the risks of adopting a narrow frame of this narrative, and seeing city-regions purely as vehicles for economic growth. On the contrary a broader perspective on regional urbanization can lead to address city-regions as strategic planning spaces to address sustainable urban development.

Along this line, Soja (2017) recommends on the one side to adopt a critical interpretation on the generative force of regional development. On the other side to recognize the negative effects of regional urbanisation, which implies higher densities and in turn means more strain on public services, worsening of environmental and health conditions, increasing social polarisation and spatial inequalities. What is important to stress, it that all those externalities together cannot be seen nor responded to as a simple extension of the metropolitan model, but must be reframed as a new urban question.

Secchi (2010; 2012) talks also about the new urban question, underling how historically, to a radical change in the structure of economy and society has also corresponded the emergence of an urban question. The present urban question can be defined on the basis of growing urbanization and spatial redistribution of the world's population, and it entails issues of climate change, right to mobility and increasing economic, cultural and spatial polarization. In relation to all these aspects, Secchi underlines the role of space and of spatial relations, and it concludes affirming how spatial capital should be intended as a central independent category for social and economic institutional organization.

Building on the tradition of Italian territorial political economy, Le Galès (2018) argues that contemporary urbanisation process can be explained only in relation to social and political transformation. According to him, it is true that we are witnessing some dramatic changes in the nature of cities but is not possible to generalize trends at global level, neither to identify as unique factor at stake macro-economic forces. In particular, for what concerns European cities, the traditional urban system has been proven stable over time, with some internal differentiations (p.232):

- A certain number of metro regions on the periphery of Europe (southern Europe, Northern England, Eastern Europe) are facing acute difficulties.
- Middle-sized middle-income metro regions are also struggling.
- High-income metro-regions are becoming more distinctive.

In Le Galès view, even if under threat, metro-regions are in a favourable position in respect to states, considering that through urban policy they can foster national economic growth, tackle social problems, face issues of sustainable development or climate change. In the 90's, political dimension was central to the flourishing of European middle-sized metropolises. Strategic projects and planning strategies were collective projects where urban elites sustained the representation of cities as a whole. The point is then to assess the capacity to govern of today's urbanised regions.

Impacts on the statistic definition of a city

As a consequence to the upsurge of new urban forms, the need of finding new statistical definition of what can be considered a city, as well as new ways of classifying urban areas emerged. In the EU, Eurostat launched a legislative initiative called 'Tercet' aimed at integrating the classification of territorial units for statistics based on population thresholds known as NUTS (Regulation (EC) No 1059/2003) with a classification based on territorial typologies which better qualitative defines the nature of territorial areas. In particular, at local level the definition of city (Dijkstra and Poelman, 2012) is based on the method developed by EC and OECD called Degree of Urbanization (DEGURBA). This method is computed using maps of built-up area and population density obtained from satellite images and national censuses. Moreover, it has been adopted the typology of Functional Urban Area (FUA) which identifies densely populated urban areas (cities) and adjacent municipalities with high levels (at least 15% of the employed population) of commuting towards the densely populated centres (commuting zones) (figure 1). At regional level, the typology of metropolitan region is introduced, which refers to one or an aggregation of (NUTS 3) region(s) in which at least 50% of the population live in Functional Urban Areas of at least 250.000 inhabitants.



Figure 1 From left to right: Urban centre, city, commuting zone and functional urban area. Source: REGIO GIS

If NUTS classification mirrors largely the administrative structure of the Member States, the territorial typologies introduced with Tercet regulation are on the contrary purely based on density and on a functional understanding of cities, allowing for individuating urban areas across administrative boundaries.

The importance of Functional Urban Areas can be illustrated by the size of the “spatial mismatch”: substantially a larger number of people live in the functional urban areas of European cities than in the core city (European Commission and UN-HABITAT, 2016, Lavalle *et al.* 2017). In the case of Milan, if the urban centre that corresponds to the municipality of Milan counts with 1,242,123 inhabitants (2011 national census), the City has 3,139,394 inhabitants, and the FUA counts with 4,138,424 inhabitants. That means that the population living

outside the municipal boundaries but gravitating around the Milan FUA is 133% larger than the one living in the core urban area.

In the case of many urban areas across the EU sustainable urban development would need to be coordinated across the whole functional urban area, although, in many cases cooperation between municipalities is weak or not existing at all. This is why the concept of Functional Urban Area beyond its statistical significance started entering the policy discourse in the EU.

New spatialities in the EU urban discourse

Traditionally two separate discourses have been developed within the EU policy frameworks and regulations (Atkinson, 2001). On the one side the *urban policy discourse* which since the early Urban Communications of the '90s has been focused on reversing the internal decay of cities, and in particular on the issue of deprived neighbourhoods. On the other side, *the spatial or territorial policy discourse* which during the same years was carried on by the European Spatial Development Perspective (ESDP) which has its roots in traditional regional development policy and pushed for the achievement of a balanced and polycentric development of European urban areas within a framework of competition and cooperation (Informal Council of Ministers responsible for Spatial Planning, 1999).

The urban discourse was more centred on social cohesion and had as main operational counterparts area-based initiatives (e.g. URBAN Community Initiative) intended as integrated response to the decline of districts within cities. This kind of approach, that is to say integrated, holistic, participated has characterised what has been defined as the EU approach to urban policy, in other words the "Acquis Urbain" (European Commission, 2009). The ESDP on the other side assigned priority to market processes and set the bases for a spatial agenda. Its basic goals were: economic and social cohesion, sustainable development and balanced competitiveness of the European territory (Atkinson, 2001). The ESDP also triggered the first reflections about the relationship between urban and rural areas.

In the first decade of the 2000s these two separate discourses started to converge. In particular, in 2007 the informal Meeting of Ministers responsible for Urban Development and Territorial Cohesion was held in Leipzig, Germany. During the meeting two important documents were approved: the Leipzig Charter, setting common principles and strategies for urban development policy throughout the EU (Informal Meeting of Ministers responsible for Urban Policy, 2007); and the Territorial Agenda, aimed at providing strategic orientations for a polycentric and balanced territorial development in the EU (Informal Meeting of Ministers responsible for Urban Development and Territorial Cohesion, 2007). According to González Medina and Fedeli (2015) the joint launch of the two agendas proved a growing link between the urban and the territorial dimension of EU policies in the framework of the Cohesion Policy. It is in fact in the same years that the EU supported urban actions were mainstreamed in the EU regional policy, in the sense that they stopped being separate Community Initiatives, and started to be part of the Operational Programmes funded through the European Investment and Structural Funds (ESIF). Moreover in 2012, DG REGIO changed his name and became explicitly the Directorate General of the European Commission both for Regional and Urban Policy. This happened in line with the Toledo Declaration of 2010 (Informal Meeting of Ministers of Housing and Urban Development, 2010) which stated that urban development should be integral part of the concept of territorial cohesion (González Medina and Fedeli, 2015).

The converging of the two perspectives influenced the way in which the urban dimension of the EU policy has been conceived, and a growing attention was put to the spatial and territorial development of EU cities and city-regions. The EU urban discourse shifted from being solely linked with the regeneration of neighbourhoods, to

embrace more broadly the objective of *sustainable urban development*; deprived neighbourhoods were inserted into wider territorial frameworks and strategies encouraged crossing administrative boundaries.

The discourse on functional areas has started permeating programmatic documents. The Territorial agenda 2020 (Informal Meeting of Ministers responsible for Spatial Planning and Territorial Development, 2011, p.6) states that "the cooperation and networking of cities could contribute to smart development of city regions at varying scales in the long run. *Cities should, where appropriate look beyond their administrative borders and focus on functional regions*, including their peri-urban neighbourhoods". At the same time, the Urban Agenda for the EU (Informal Meeting of EU Ministers Responsible for Urban Matters, 2016, p. 4): "acknowledges the polycentric structure of Europe and the diversity (social, economic, territorial, cultural and historical) of Urban Areas across the EU. Furthermore, the Urban Agenda for the EU acknowledges the importance of Urban Areas of all sizes and contexts in the further development of the European Union. *A growing number of urban challenges are of a local nature, but require a wider territorial solution (including urban-rural linkages) and cooperation within functional urban areas*. At the same time, urban solutions have the potential to lead to wider territorial benefits. *Urban Authorities therefore need to cooperate within their functional areas and with their surrounding regions, connecting and reinforcing territorial and urban policies*".

Themes with spatial connotation, that were previously discussed strictly in the territorial discourse, entered also the urban one, implying an acknowledgement of the emergence of new spatialities in the EU, of the erosion of the boundaries between urban and rural, of the upsurge of urban areas across administrative boundaries and defined by density and functional relations.

From the operational viewpoint, this turn has been reflected in the 2014-2020 framework for urban policy. During this programming period, mainstreaming was further consolidated and the investment in urban areas through integrated strategies of Sustainable Urban Development (SUD) becomes compulsory (5% of ERDF earmarked for SUD in each Member State). Moreover, special emphasis has been put on the importance of urban-rural linkages and on the functional area approach and new tools has been promoted such as the integrated territorial investment (ITI) to implement strategies on the level of functional urban areas.

This correspondence between political orientation and policy praxis makes even stronger the stress on the functional urban area concept, which is not seen only as a spatial category, but becomes also a strategic one. In 2014-2020 framework in fact, urban areas targeted by SUD are not defined by administrative boundaries, but are defined by strategies themselves (Balducci, 2014). Paraphrasing Morgan (2015) the EU emphasis on functional urban areas seems to legitimate these new spatial configurations as strategic planning spaces to address sustainable urban development.

How this new opportunity has been received by Member States remains to be investigated. In particular, the analysis of SUD strategies addressing functional areas will help to disentangle the implications of this approach in terms of policymaking.

Analysis of SUD strategies addressing functional areas in 2014-2020

In the following three paragraphs an analysis of the Sustainable Urban Development strategies addressing functional areas during the 2014-2020 programming period is discussed. The analysis is the outcome of an ongoing research project called URBADDEV "Support knowledge management of EU measures in Integrated Urban and Territorial development" run by the Joint Research Centre of the European Commission and entrusted by DG REGIO. The project has two main outputs:

- The creation of knowledge base on urban and territorial strategies supported by EU provisions called STRAT-Board.
- The drafting of a Handbook on Sustainable Urban Development strategies.

STRAT-Board is also an online webtool available at <https://urban.jrc.ec.europa.eu/strat-board/>. It visualises almost 1,000 urban and territorial strategies currently implemented across Europe. The strategies can be explored at different geographical levels: European, national and regional. Different aspects of the strategies are presented, such as territorial focus, size of population targeted, thematic focus, funding arrangements, governance structure and implementation mechanism. Data used for STRAT-Board were partially derived by a previous study (EPRC, 2017), and mainly based on a survey addressing Managing Authorities across the 28 Member States, run between February and December 2018.

In addition, the Handbook on Sustainable Urban Development strategies, currently under drafting, is largely based on a mixed methodology which entails a quantitative analysis of STRAT-board data, literature review and a selected number of case studies analysed in respect to methodological challenges tackled during the implementation of strategies.

First of all, the STRAT-Board database provides an overview of the territorial focus of 849 Sustainable Urban Development (SUD) strategies that have been funded by the 2014-2020 Cohesion Policy programming period.

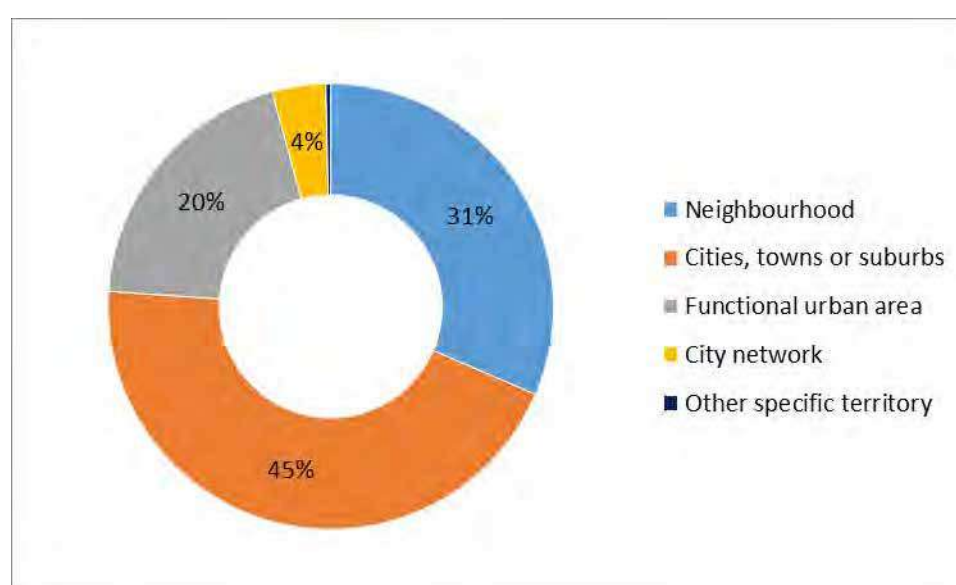


Figure 2 Distribution of strategies per territorial focus (n = 849)

Figure 1 show that the majority of SUD strategies focus on cities (45%), followed by neighbourhoods (31%), functional urban areas or metropolitan areas (20%), a network of cities (4%), and a portion of territory with specific features such as a park, an archaeological zone, or an island (0.4%). In other words even if traditional target areas for EU SUD persist (cities and neighbourhoods), at the same times a growing attention to new spatialities across administrative boundaries can be witnessed, implying the emergence of a functional area approach. Put differently, the functional area approach identifies a space – usually different from administrative boundaries - in which a specific territorial interdependence (or function) occurs, and may need to be governed jointly. Adopting this broad definition of functional area, the joint consideration of the latter three categories of territorial focus², even if smaller in respect to the other two, becomes to be relevant.

² For most analyses that follow, the three latter categories of territorial focus are merged into one called "functional area (multiple municipalities)".

When looking at the territorial focus per Member State (see figure 3), it shows that the functional area approach can be found throughout all macro-regions, with the exception of a few countries. However some differentiations emerge when looking into more details. In some countries like the Czech Republic, Estonia, Croatia, Poland and Slovakia strategies focus exclusively on functional urban areas. In other countries like Austria, Belgium, Greece, France, Italy, Sweden and UK, the focus on functional urban areas is relevant but not exclusive, and coexists with other territorial focuses.



Figure 3 Map of SUD strategies in Europe per territorial focus.

The importance of the functional area approach becomes evident when looking at funding. Overall, the largest share of ESIF funding is invested into functional urban areas, which absorb 51.1% of the total funding (corresponding to 8.3 billion EUR). Cities are the second category absorbing 35.2% of ESIF investment (5.6 billion EUR), while neighbourhoods receive 13.3% of it (2.1 billion EUR).

As figure 4 shows, the majority of the investment in functional areas is in less developed regions, where the share of EU funding is highest (70%). This is interesting because it shows that this "new" type of territorial focus -although applied to a lower number of strategies- is the one receiving most ESIF investment.

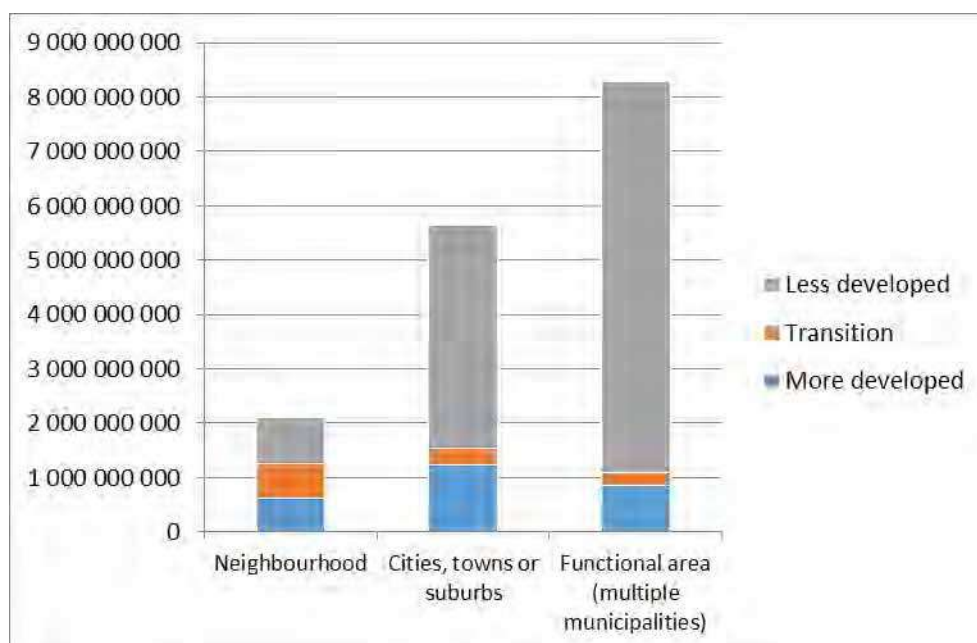


Figure 4 Distribution of ESIF funding per territorial focus and type of region

In fact, strategies with the largest ESIF budgets (more than 100 million EUR) targeting functional areas are exclusively located in less developed regions of EU13 countries (Poland, Czech Republic, Croatia). On the other side, in EU15 countries there are a quite relevant number of strategies addressing functional areas with small ESIF budgets, probably mirroring the size of the population targeted (figure 5). For example in France, 50% of the strategies with a ESIF budget of less than 5 Million EUR address a functional area, while in Italy this is 33%. In fact, in France and Italy, many strategies are targeting functional territories formed by conurbations or networks of small towns with a population of few thousand of inhabitants. In those cases, the functional link is often thematic, such as a common touristic strategy. By pooling resources and establishing inter-municipal cooperation these small towns are able to form a critical mass. This sheds light on the nature of "functional area" category used for SUD policy, and makes clear that the functional area approach can be used for different type of territories, beyond metropolitan areas.

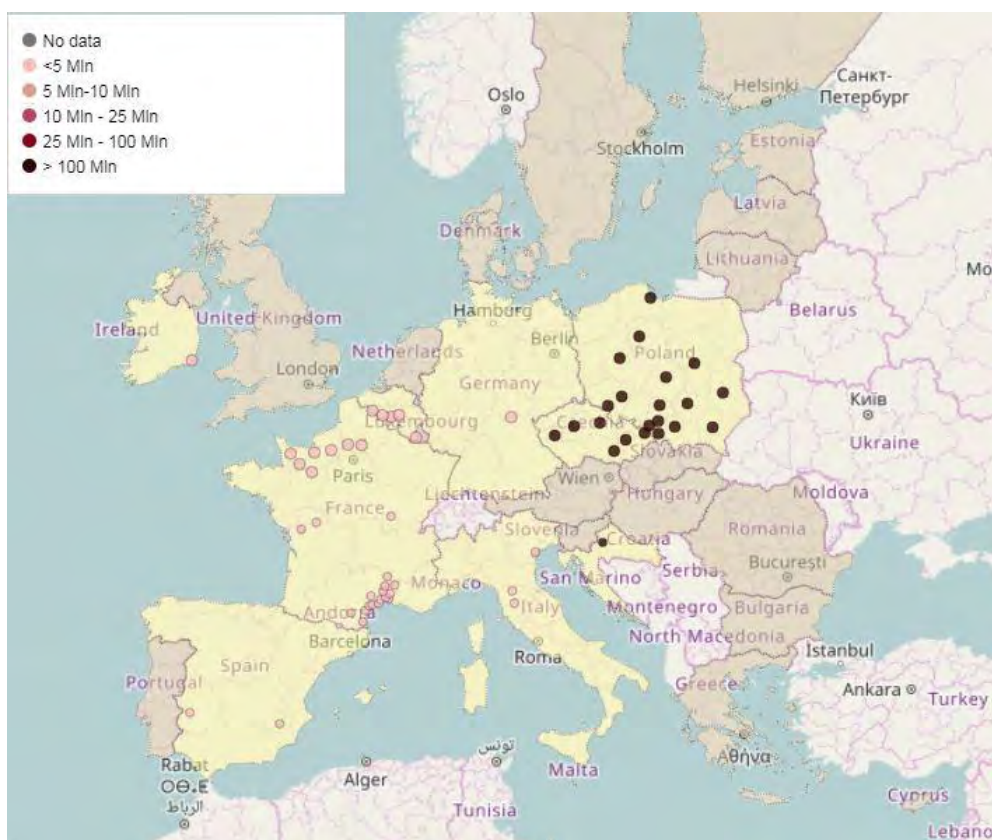


Figure 5 Map of strategies targeting functional urban areas with largest and smallest ESIF contribution

Passing then to analyse the thematic focus of strategies, it is possible to look at the thematic objectives (TO)³ more frequently addressed through the functional area approach. Data shows that strategies targeting functional urban areas address more TO4, that is to say "supporting the shift towards a low-carbon economy in all sectors" while strategies targeting neighbourhoods address largely TO9 "Promoting social inclusion, combating poverty and any discrimination" (respectively 209 and 217 out of 266). Moreover, a focus on transport (TO7) is almost exclusively addressed in functional urban areas.

These thematic priorities are confirmed when looking at key words characterising strategies. In particular the first two key words for functional urban areas are "mobility" (76% of the sample) and "energy" (52%). Quite interestingly even if "spatial planning" is not highly selected, there are other key words concerning spatial issues which are often recurrent, as for example public spaces (43%) and abandoned spaces (39%). Social issues (social inclusion, housing, disadvantaged neighbourhoods) are still important for functional areas but less than

³ In the 2014-2020 programming period, the European Structural and Investment Funds, in particular the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund, will support 11 investment priorities, also known as thematic objectives. At the same time, the first four objectives constitute key priorities for the ERDF, and a significant part of the investment will focus on these areas (between 50% and 80%, depending on the region's level of development). More information can be found [here: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303&from=EN)

in the overall sample of strategies, while "entrepreneurship" and "jobs and skills" are both especially addressed in functional urban areas.

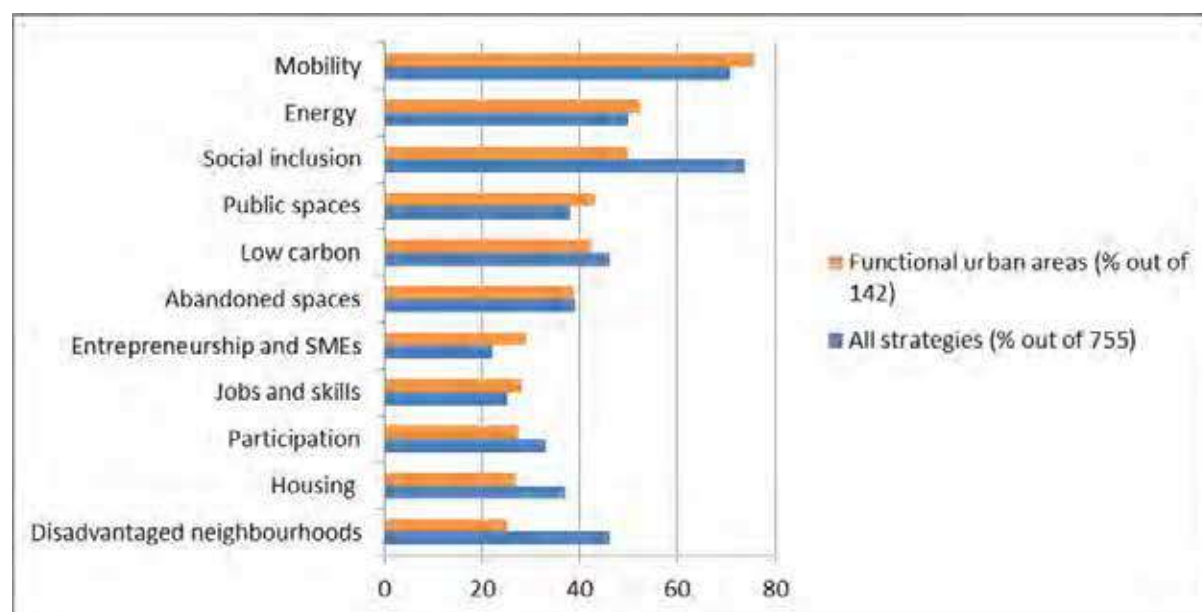


Figure 6 First 11 key words for functional urban areas, with percentage of use for functional urban areas strategies, and for all strategies.

On the other side, it surprises that the key word "urban-rural linkages" has been selected only in the 8% of cases while it would be ideally linked with wider territorial scopes. It is also true that, although supported by EU policy orientations and regulations, it remains a theme difficult to be addressed by urban strategies. Moreover, two important key words characterising the new urban question as emerges in the literature as well as in EU policy documents, that is to say "climate adaptation" and "migration", are hardly ever found across functional urban areas strategies (resp. in the 11% and 0% of cases).

Concluding it seems that the functional area approach is currently used to face more traditional physical or infrastructural issues as well as economic/job related issues. Social themes traditionally associated with core cities/districts, such as social inclusion, housing or deprived neighbourhood are entering also the discourse of functional urban areas to greater or lesser extent. On the other side, most up-to-date themes, which probably require also more innovative solutions, struggle to enter the mainstreamed policy-making.

Challenges in the implementation of the functional area approach

Considering the relative novelty of the functional area approach, it is no surprise that putting it into place can be challenging for bodies designing and implementing SUD strategies. A review of main existing studies (e.g. EPRC, 2017) and resources on current SUD development allows highlighting some of the major challenges of the functional area approach in SUD.

The first challenge when designing a strategy concerns the fact that in many cases the perimeter of the functional area is not given in advance but it is established specifically for the development of the SUD strategy. The establishment of the perimeter should be based on data evidence, but it depends not only on the territorial characteristics of the area, but also on the objective of the strategy, as well as on the relationships among the local actors.

This is why the perimeter of the strategic functional areas in SUD seldom corresponds to the one of the statistical FUAs as defined by OECD/EC methodology. This becomes evident through spatial analysis. When superposing the two type of areas, it emerges that only in half of the cases there is a significant overlap between the two (meaning that more of the 66% of the strategic functional area overlap with the statistical FUA). Almost never the perimeter coincides perfectly, but in the majority of cases (for example in France, Italy, Poland, Czech Republic) the strategic area is smaller than the statistical one. Only in a few cases (in Croatia, Belgium and England) the strategic area is larger than the statistical. Moreover there are many cases (for example in Greece, Spain, Austria and France) where the strategic functional areas do not correspond at all with the statistical FUAs.

Functional areas in SUD can be defined through criteria that are decided at national, regional or local level. Arguably, to ensure optimal strategic planning, when the perimeter is defined at national or regional level (in compliance or not with existing framework) some adaptability is required, to allow better adjusting to local realities.

An example comes from Poland where the territorial scope of SUD strategies is defined on the basis of national guidelines that set socio-economic criteria to delimit urban functional areas around regional capital cities. However, there is some flexibility as the Lublin SUD strategy follows the same criteria but they were revised locally to include other municipalities on the basis of important functional links with the regional capital. Another example is that of the Italian Region of Veneto where the regional Managing Authority has defined five eligible FUAs following an adapted version of the OECD/EC methodology, but then the specific target area for the SUD strategies has been defined at local level with more flexibility⁴.

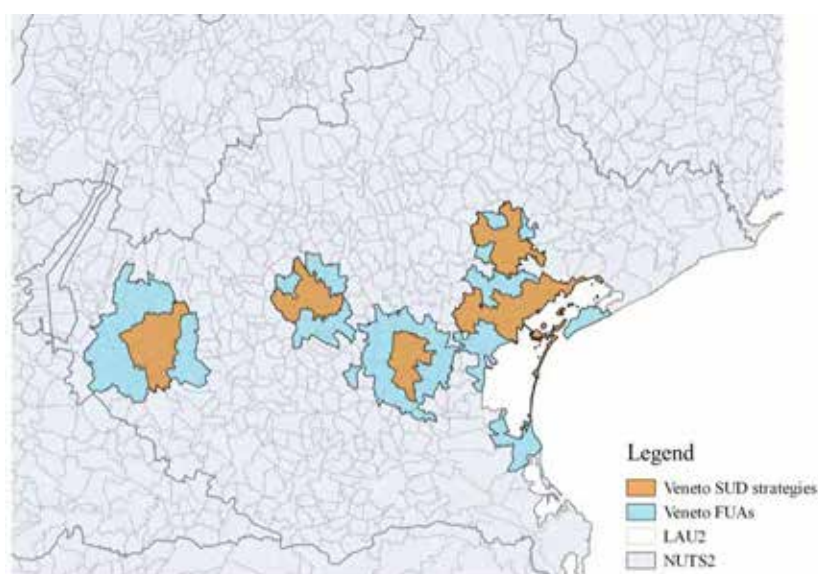


Figure 7 Areas targeted by five strategies in Veneto compared to the FUAs

Key to a successful delineation of boundaries is to have access to data that allows for determining the appropriate indicators and criteria on the basis of which the area will be defined. Especially when the functional area is explicitly or uniquely defined by the strategy, it is difficult to retrieve comparable and homogeneous data

⁴ To these five strategies another one was added which does not target any Veneto's FUA, and it covers the area of Asolano-Castellana-Montebellunese.

across multiple municipalities. Being able to identify the appropriate indicators, it is not only important for what concerns the delineation of the functional area, but it is also extremely relevant in the phase of designing and monitoring the strategy. In order to collect and harmonize data, administrations have established partnerships with local universities and/or research institutes. In Brno, for example, the collaboration with the local university allowed to develop an evidence-based method to delimitate the targeted area. The delimitation was based on analyses of spatial arrangements and the intensity of spatial (functional) relations, using five main indicators: commuting to work; commuting to schools; migrations flows; public transport accessibility; and individual transport accessibility. As a result, the Brno Metropolitan Area (BMA) was defined with a perimeter rather similar to the one established by the OECD-EC definition of FUA. The BMA became a relevant scale for territorial analysis and since 2014 a series of investigation, data collection and production concerned the wider territorial area.

The implementation of the SUD strategy also served as an important trigger for the establishment of inter-municipal cooperation previously lacking. It was a test bed for implementing organizational integration, in the sense of a common coordinated approach of engagement of the stakeholders of the territory based on the partnership principle. The process was not exempt from challenges that could hinder the cooperation (scale imbalances among municipalities, contradictory priorities as emerging from diverse territories, conflicts among decision makers); nonetheless, it seems particularly relevant that the functional area approach has been internalized by other processes, becoming a catalyst for innovative institutional metropolitan cooperation (Feřtřová, 2018).

As the case of Brno highlights, when there is a lack of a common institutional framework, the consensus and cooperation among different public administrations becomes even more crucial, while clearly also more challenging. Territorial integration requires the creation of governance systems that enable policy coherence in spatially and economically homogenous, but politically fragmented, areas. The choice of how to proceed can be different according to the previous experience in terms of territorial cooperation. For example in Poland, central government guidance stipulated two possible models for cooperation: to form an association of municipalities, or to reach formal agreement between municipalities. Some smaller municipalities that have limited experience of working together have opted for formal agreements, but some larger municipalities where there is already experience with similar initiatives have opted for the association model.

Governance arrangements become even more complex when strategies involve actions on multiple scales. In many cases in France, even when the strategy looks at a metropolitan area or at a large agglomeration, often the interventions are targeting neighbourhoods within that area.

In addition, there can be a problem of political legitimation and responsibility with respect to the new territorial dimension, which can be even more substantial in case of power imbalances among the municipalities that constitute the functional area.

In order to promote and support territorial integration, new bodies have emerged in a number of Member States, or existing bodies have taken on new roles. These bodies may facilitate collaboration between different localities, take on responsibilities for management and implementation, or have advisory capacities.

Coherent functional area planning approach requires the establishment of shared governance process that enables dynamic interaction across spatial scales, policy issues, land-use functions, and a wide range of stakeholders.

Conclusions

Cities in Europe have changed. A trend towards regionalisation has involved also European cities, and a new urban question has arisen. Even if the European city model has proven to be quite stable, at the same time the capacity to govern of the new urban configurations cannot be taken for granted.

The EU urban policy discourse seems to have acknowledged the emergence of new spatialities. One of main signal is the emphasis that has been put on the new territorial typology of functional urban areas. Born as a statistical categorisation, the concept has entered also the policy discourse, and today it is used to indicate strategic planning spaces to promote Sustainable Urban Development.

That has been reflected also in the implementation of SUD strategies during the 2014-2020 programming period. The analysis shows, in fact, a growing trend towards developing strategic frameworks for wider territorial areas, across administrative boundaries. At the same time the analysis also shows that in those cases it is not correct to talk about strategies applied to Functional Urban Areas as intended in the statistical definition. The areas targeted by the strategies in the majority of cases does not overlap with FUAs, in some cases they concerns conurbation of small-medium sized towns outside metropolitan regions, in some cases twin cities. It is then more appropriate to talk of a *functional area approach* intended as a space – usually different from administrative boundaries - in which a specific territorial interdependence (or function) occurs, and may need to be governed jointly.

The implications of adopting this new approach to EU supported policy-making are relevant. In particular, it entails the need of establishing new governance systems, across administrative boundaries and scales, triggering cooperation processes among municipalities often in the absence of pre-existing institutional frameworks. To this respect there are various practices across the EU. What seems to be still far to be reached, is the potentiality of using these new strategic planning spaces to tackle the most impellent emerging urban questions. The questions tackled so far are more traditional physical or infrastructural issues as well as economic/job related issues, while most up-to-date themes, which probably require also more innovative solutions, struggle to be considered.

Concluding, the analysis shows that the functional area approach could become a new paradigm for EU supported policy making, even if it is not yet. While the statistical definition is clear, what is intended with the functional area approach in strategic terms is still not commonly shared across the EU. A thicker debate around it should be promoted, acknowledging the variabilities that the discourse could assume in the various countries, and individuating more clearly the pillars characterising such an approach.

Acknowledgements

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How to connect freight logistics, persons mobility, and spatial planning in and between urban regions? Perspectives from different European urban nodes on TEN-T corridors

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Abstract: European urban nodes are vital for the effectiveness of the European core transport network (TEN-T), for passengers and freight transport. Yet, this role also comes with challenges regarding liveability, a battle for space with other functions in densely populated and growing urban nodes. Effective solutions should be designed at the level of the *functional urban area* of freight and logistics which exist at a different spatial scale from a passenger transport perspective, as examples of Vienna and Rotterdam illustrate. Urban nodes that are stimulating multi-modality ambitions and solutions should include freight and logistics. Regional opportunities for transit oriented development (TOD) could be combined with potential freight hubs, logistics oriented development (LOD). Initiatives can be taken within the urban nodes as well as on the corridor between the urban nodes, as is illustrated by several examples (Venlo (NL) and Lauterbourg (FR)) that relieve spatial and transport pressure in Rotterdam respectively Strasbourg. European tools and funding exist that could support urban nodes in dealing with these complex challenges and investment needs, both from transport and regional policy. An analysis of the STRAT-Board database shows that ESI funds are used by the majority of urban nodes for investments in mobility and infrastructure..

Keywords: Integrated planning and governance; TEN-T corridors and urban nodes; freight transport and logistics; functional urban areas

1. Introduction

European urban nodes are vital for the effectiveness of the European core transport network (TEN-T), as they are the origin and/or destination of most long-distance transport flows, for both passengers and freight. They host major multimodal transport hubs, and are crucial regarding the interface of long distance and last-mile delivery. At the same time, urban nodes play a major role in the transition of Europe's transport system as expressed in the European Commission's Transport White Paper (COM, 2011) aiming at limiting transport emissions and improving accessibility and liveability in cities. European urban nodes are the major arenas where public and private parties and society should join forces to cope with several trends and challenges. Stimulating electric mobility and zero emission transport and other innovative technical solutions will not be enough to deal with the challenges described above.

In order to further explore the role and challenges of urban nodes that are part of the TEN-T network, the European Commission launched a call under Horizon 2020. This paper builds on the mid-term results of a project that was set up under this call: the project *Vital Nodes* (<https://vitalnodes.eu>).

Main objectives of the Vital Nodes project are:

- a) Delivering validated recommendations for a more effective and sustainable integration of all 88 urban nodes into the TEN-T corridors focusing on freight and logistics;
- b) Establishing a long-lasting European expert network for safeguarding long-term continuity in knowledge and implementation (Vital Nodes Consortium, 2017). *Vital Nodes* has brought existing networks together and has been working on ensuring long-term engagement and recommendations for research and funding needs as well as input to TEN-T and CEF guidelines (EC 1315, 2013).

Vital Nodes combines bottom-up knowledge and experience through personalised city workshops with data gathering and policy analysis. This has given the project a unique view on the challenges urban nodes face linked to their position in the TEN-T network.

This paper will explore these challenges, deepen two aspects of these challenges – *functional urban area* (FUA) and European instruments – illustrated by two urban nodes cases and conclude with some lessons learned.

2. Trends and challenges of urban nodes

The Vital Nodes project conducted numerous workshops throughout Europe in 2018 and 2019, in which local, regional and national professionals in spatial and transport came together. Several (local) trends and challenges in the field of (freight) transport and logistics have been identified (Linden, van der, and Linssen, 2018):

- Growing urbanization and densification in many European cities and urban regions, e.g. in Vienna, Budapest, Rotterdam and Strasbourg.
- An increasing number of cities is aiming for low-emission transport policies and stimulating sustainable transport modes, expressed in a local or regional sustainable urban mobility plan (SUMP). Inspiring example is Vienna's STEP 2025 (Vienna City Administration, 2014).
- Development of micro and midi hubs for last-mile freight deliveries in urban regions (e.g. in Vienna, Mannheim and Strasbourg).
- Conflicting transport flows between freight and logistics and person transport, mainly on ring roads and river crossings in e.g. Vienna and Mannheim.
- Risk of 'logistics sprawl' by ad-hoc planning of XXL warehouses in urban regions and along corridors.
- Growing demand of flexibility in freight transport and logistics.

Aggregating the above mentioned challenges a few elements come back as crucial for success. First, the awareness that transport and logistics chains are much larger than the administrative border of the city and have very different stakeholders in comparison with passenger transport. Second, at the level of the urban node transport interests often conflict with environmental and spatial planning interests, leading to more and more complicated, expensive and time-consuming decision-making processes. As

a consequence, public actors need a different type of governance at a different scale, looking beyond administrative (city) boundaries. Good examples and funding opportunities exist but could be better exploited.

3. Exploring the *functional urban area*: definitions, urban nodes typology and examples

When focusing on the spatial and network implications for freight flows, stakeholders need to look at a different spatial scale, beyond administrative boundaries: the *functional urban area* (FUA). This is deviating from the *Daily Urban System* (DUS) level, based on labour market and persons transport flows, which is common practice among most urban regions. So far freight and logistics have been quite underexposed among urban and regional planners. Investments in freight logistics are mainly privately driven whereas investments in persons transport (roads, public transport, bicycle routes, etc.) are public. Within urban areas people and freight often share the same road and rail infrastructure, often resulting in bottlenecks e.g. at river crossings and urban ring roads.

Defining the functional urban area is complex. A few examples illustrate this complexity:

3.1 OECD and EC definition

The Organisation for Economic Co-operation and Development (OECD) and the European Commission (EC) have jointly developed a methodology to define *functional urban areas* (FUAs) in a consistent way across countries. Using population density and travel-to-work flows as key information, a FUA consists of a densely inhabited city and of a surrounding area (commuting zone) whose labour market is highly integrated with the city (OECD 2013). The ultimate aim of the OECD-EC approach to FUAs is to create a harmonised definition of cities and their areas of influence for international comparisons as well as for policy analysis on topics related to urban development. According to the OECD “the definition of urban areas in OECD countries uses population density to identify urban cores and travel-to-work flows to identify the hinterlands whose labour market is highly integrated with the cores” (<http://www.oecd.org/cfe/regional-policy/Definition-of-Functional-Urban-Areas-for-the-OECD-metropolitan-database.pdf>).

3.2 Outside Europe

Further exploration of the FUA outside Europe – for example the case of Ecuador – can be found in: http://www.ub.edu/irea/working_papers/2017/201705.pdf. Concluding: There is a large diversity of names for such urban areas (Metropolitan areas, functional regions, urban zones, conurbations, urban regions, large urban areas, metropolis, etc.) which illustrates the complexity of the phenomenon.

The Florida Department of Administration states as the core: “Functional Classification is the assignment of roadways into systems according to the character of service they provide in relation to the total roadway network” (<https://www.fdot.gov/statistics/hwysys/cubfc.shtm>).

3.3 Definition in TEN-T guidelines

Urban Nodes are a constitutive element of the Trans-European Transport Network (TEN-T) and foster the integration of the network into urban circumstances like spatial structure, economy and regional development.

According to regulation 1315/2013 of the EU, article 3 (p), "urban node means an **urban area** where the transport infrastructure of the trans-European transport network, such as ports including passenger terminals, airports, railway stations, logistic platforms and freight terminals located in and around an urban area, is connected with other parts of that infrastructure and with the infrastructure for regional and local traffic" (EC 1315, 2013).

3.4 Typology of urban nodes

Vital Nodes has formulated a typology to identify and to cluster challenges and potential solutions in dialogue with urban nodes more effectively and efficiently. This typology helps to define the function of an area for TEN-T (and vice versa: how does TEN-T influence the functional area?).

Criteria have been described as follows:

- Cross border function. In case of a cross border node, is it multi-modal or uni-modal?
- Sea port: In case of a sea port node, is it a gateway or a regional hub?
- Inland function. In case of an inland node, is it a small or a big node (threshold is 1 million inhabitants or more)?
- Relation of the node (logistics FUA) and the Corridor: Urban (inbound focused on local consumption) versus Transit (outbound focused on production and transit of goods).
- Is the urban node located in a developed or in a cohesion region?
- Is the urban node centric or poly-centric? In other words, does the node serve multiple urban areas or only one urban area?

3.5 Examples of Rotterdam and Vienna

To illustrate the way how this typology could work out in practice, two examples will be discussed: Rotterdam and Vienna. Table 1 shows the different characteristics of these urban nodes in their functionality of an urban node. Rotterdam as a gateway sea port mainly dealing with outbound-oriented production and transit to the hinterland. Vienna as a big (more than 1 million inhabitants in the metropolitan area) multi-modal inland and cross-border node.

Table 1: Urban nodes typology, examples of Rotterdam and Vienna. Source: Poppeliers *et al.* 2018

	Cross – border: multi or unimodal	Sea: Gateway / regional hub	inland: size: small / big (1 mln inhabitants or more)	Relation of the node (logistics FUA) and the Corridor: inbound / consumption versus outbound / production and transit	Developed or cohesion region	Centric or poly centric
Vienna	Multi-modal		Inland, big	Inbound/consumption	Developed	Centric
Rotterdam		Gateway		Outbound/production and transit	Developed	Polycentric

The (indicative) functional areas for the urban nodes Rotterdam and Vienna illustrate the potential emerging spatiality when focusing on a freight and logistics perspective.

Example Rotterdam



Figure 1: the indicative functional urban area of Rotterdam

The functional urban area of Rotterdam (NL) extends along the multi-modal corridor towards the German Rhein/Ruhr area, passing smaller towns and cities (figure 1). Venlo, on the Dutch-German

border, is one of these towns playing an important function for the corridor. Venlo's inland tri-modal terminal (along the river Meuse, railway and highway) functions as an inland terminal for Rotterdam, thereby having a place in the functional area from a freight perspective. From a point of view from network and spatial dimensions the location of freight / distribution centers influences the impact in a functional area. Therefore the regional authorities (within the functional area) as well as the TEN-T (EC and national authority) all have a role and responsibility in realizing objectives including sustainability and energy transition, liveability (safety, noise, clean air), accessibility and connectivity. A sustainable logistics plan on the level of a functional area should include objectives and governance models to realize those objectives.

Example Vienna



Figure 2: the indicative functional urban area of Vienna

Example of a centric, inland and inbound-oriented urban node is the Austrian capital Vienna. At this moment the city has approximately 1.75 million inhabitants and in the coming years Vienna's population is growing fast, with 40,000 inhabitants per year. The number of inhabitants is expected to increase to 2 million citizens in 2030, while the metropolitan region is expected to be home and workplace for over 3 million people (Vienna City Administration, 2014). Vienna's functional urban area extends to the Slovakian capital of Bratislava, 60 km to the east (figure 2).

On basis of both examples we can conclude that both poly-centric and monocentric urban regions are dealing with growing population, urbanization and increasing transport flows of persons and freight/logistics, resulting in a real challenge of space. There is need for mixed land uses and attention for socio-economic relations to maintain a liveable city. This relates to both central city and peri-urban areas, urging for multi-level governance and integrated planning at the level of both DUS (persons transport) and FUA (freight flows). There is need for a combination of TEN-T related goals and SUMP objectives, as promoted by the Commission in the 2013 Urban Mobility Package (UMP). These joint goals open the perspective for forward-looking practices and integrated approaches, which both enhance transport solutions and stimulate synergies with other urban functions (Balázs *et al.*,

2016). Regarding the complexity of the challenges, there is no ‘silver bullet’ (CEDR *et al.*, 2018; Broesi *et al.*, 2018).

3.6 Towards logistics oriented development

Urban regions that are stimulating multi-modality ambitions and solutions should include freight and logistics. Too often SUMP’s are limited to passenger transport solutions, so this scope should be widened to include freight solutions beyond the last-mile as well. Regional opportunities for transit oriented development (TOD) could be combined with potential freight hubs, logistic oriented development (LOD). This regional strategy will only work when municipalities are not mutually competing and when stakeholders do not only focus on the local (city) level, but include the regional (DUS) and corridor (FUA) levels as well. E.g. by researching and monitoring the impact of freight transport flows in the urban node by developments on the corridor and by developing and deploying integrated measures on corridor level and local/regional level.

The Rastatt tunnel accident in August 2017 illustrated the need for widening the scope of the TEN-T corridor and emphasizing the joint FUA of Strasbourg (FR) and Mannheim (DE). Lowering of railway tracks during tunnel construction works led to closing down all passengers and freight railway traffic between Karlsruhe (DE) and Basel (CH) for almost two months (Interregional Alliance for the Rhine-Alpine Corridor, 2018). Investing in upgrading an alternative railroad on the (French) west bank of the Rhine will contribute to overall network resilience on the broader Rhine Alpine corridor.

Besides, these investments could relieve the city of Strasbourg from bottlenecks and allow liveability improvement solutions as diverting the A35 highway, now situated in the central city. After this diversion the current urban highway will be downgraded and integrated into the urban fabric. Besides the *Port Autonome de Strasbourg* opened a new tri-modal container terminal near the town of Lauterbourg on the river Rhine, 60 kilometers north of Strasbourg, last year. This terminal will relieve the city of Strasbourg from many freight trucks that no longer have to cross the city. Zooming in and out from city level to FUA level helps to identify (potential) solutions for urban bottlenecks at the wider scale of the TEN-T corridor including the comprehensive network, not only ‘on’ TEN-T core corridors and within urban nodes. Strasbourg is a good example of an inspiring multi-level and multi-actor approach in a dynamic cross-border region. In several other urban nodes (potential) bottlenecks occur at road and railway river bridges where local, regional and international transport for passengers and freight transport meet. For example in Vienna, Budapest, Mannheim and Hamburg. In case of renovation or renewal of these river crossings – an enormous challenge in the coming decades – specific attention must be paid to a broader regional approach on the impact of bridge closures and the impact on transport, also in socio-economic terms.

Initiatives between urban nodes, elsewhere on the multi-modal corridor are at least as much important as investments within the core urban nodes. Especially in poly-nuclear urban regions as the Randstad, Flanders, Rhein/Ruhr and Rhein/Neckar regions initiatives may take place outside the ‘official’ core urban nodes. Investments in inland terminals and tri-modal terminals can be found in Venlo, Nijmegen and Duisburg, all on the Rhine Alpine corridor but in between the official urban nodes of Rotterdam, Antwerp, Düsseldorf and Cologne.

4. Potential European tools

In this complex world of urban and regional development (housing, working, leisure and liveability), multimodal infrastructure and multi-level governance there is no ‘silver bullet’ by means of a ‘one size fits all solution’. Neither will existing European instruments (funding and non-funding) be fully equipped to stimulate a better relation between urban nodes and the TEN-T network, between urban nodes and their wider FUA. However, several tools and programmes exist that can be used by urban nodes to fund projects and improve their policy towards dealing with being an urban node on the TEN-T network.

In table 2 several European tools that already could be used have been summarized. Besides a funding programme specifically designed for infrastructure investments (Connecting Europe Facility (CEF)) and knowledge exchange programmes for European cities as CIVITAS to support better mobility planning several other European instruments exist within the policy field of regional development that could play a role in tackling the interrelated challenges the urban nodes face. These instruments are rarely mentioned in European transport policy documents at first sight.

Table 2: Overview of (potential) instruments for urban nodes

Connecting Europe Facility (CEF)	The Connecting Europe Facility (CEF) for Transport is the funding instrument to realize European transport infrastructure policy. It aims at supporting investments in building new transport infrastructure in Europe or rehabilitating and upgrading the existing one. CEF Transport focuses on cross-border projects and projects aiming at removing bottlenecks or bridging missing links in various sections of the Core Network and on the Comprehensive Network (http://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/site/maps_upload/tent_modes/EU_A0Landscape2019_freight.png), as well as for horizontal priorities such as traffic management systems.
Cohesion Fund	The Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90% of the EU average. It aims to reduce economic and social disparities and to promote sustainable development. Infrastructure and green infrastructure can be financed by this fund.
European Regional Development Fund (ERDF)	The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions. The ERDF focuses its investments on several key priority areas. The four main priorities are Innovation and research, The digital agenda, Support for small and medium-sized enterprises (SMEs), The low-carbon economy. Investments in sustainable urban mobility fall into this fourth topic. In this fund 5% should be spent on sustainable urban development.

Sustainable urban mobility plan (SUMP)	A SUMP is a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles.
Integrated Territorial Investments (ITI)	This tool has been created by the Common Provisions Regulations to facilitate cities (and other authorities) to combine different European funding programmes (e.g. ERDF and Cohesion fund) to implement one integrated strategy. Often this is used to implement an Integrated Sustainable Urban Development Strategy.
Urbact network	A European Programme, funded by the EDRF, that brings cities together in action networks. Through joint projects and exchanges they learn from each other and find the best way forward to implement Integrated sustainable urban development.
Urban Innovative actions (UIA)	A European programme that funds highly innovative urban projects which would be too risky for regular ERDF funding.
Urban Development Network (UDN)	A network led by the Commission to exchange knowledge with and between European cities about the use of European funds for the implementation of <i>Integrated sustainable urban development (ISUD)</i> strategies.
TAIEX-REGIO PEER 2 PEER	TAIEX-REGIO PEER 2 PEER is designed to share expertise between bodies that manage funding under the European Regional Development Fund (ERDF) and the Cohesion Fund. It helps public officials involved in the management of these funds to exchange knowledge, good practice and practical solutions to concrete problems thus improving their administrative capacity and ensuring better results for the EU investments.

This overview does not pretend to be complete but gives an idea of the possibilities for urban nodes to use European (funding) instruments for addressing their particular challenges. For a selection of these funding opportunities and instruments we have used available databases to check whether urban nodes already make use of these possibilities. We have used the STRAT-Board database (EC, 2019) to check which of the 88 urban nodes that have an integrated sustainable urban development strategy use *European Structural and Investment Funds* (ESIF) funding for transport related investments. STRAT-Board lists all sub-regional ESIF funded strategies in Europe, although the detail of information per strategy can vary. It typically includes the territorial focus of the strategy, the population covered, the funds used, the total ESIF contribution, the thematic objectives included and the type of implementation mechanism (priority axis, *Integrated Territorial Investments* (ITI) or programme). Investments in infrastructure were to be programmed under thematic objective 7, while investments in

urban mobility were part of thematic object 4: low-carbon economy. If an urban node has a strategy which uses investments from either thematic objective 4 or thematic objective 7, or both, we have considered that the strategy includes investments in transport. Even though this might be a slight overestimation since investments in thematic objective 4 not necessarily include investments in urban mobility.

The findings are that 65 of the 88 urban nodes have an *Integrated sustainable urban development* (ISUD) strategy. 58 of these strategies include investments in transport. Almost all of these 58 urban nodes invest in urban mobility, except two. These two, both in the Czech Republic, only invest in infrastructure. Nine urban nodes both include urban mobility and infrastructure investments. With the exception of Naples, they are all situated in the Eastern Member States. Some urban nodes that only received funding for urban mobility were nevertheless part of a larger programme that did include investments in infrastructure. Here, we touch again on the issue of functional territories. Speaking of which, 23 urban nodes designed their strategies at FUA level, 18 at city level, 14 at neighborhood level and 3 as city-network. Concerning the implementation mechanism chosen, more than half (36) of the urban nodes which invest in urban mobility and transport use ITI, 16 use a priority axis and 5 are part of a dedicated operational programme. In addition to regular ERDF funding, urban nodes could also apply for Urban Innovative Actions in the field of mobility. Of the 88 urban nodes only Toulouse was one of the winners of the UIA call on sustainable mobility.

To get an indication whether urban nodes use European programmes to exchange knowledge on mobility and infrastructure we checked the Urbact website for participants in the Urbact networks on urban mobility and transport. Twelve out of the 88 urban nodes have participated in such networks.

Even though discussions on transport and mobility are often framed around the use of CEF funding or the implementation of a SUMP, when we look at available data, three-quarters of the urban nodes also have an ISUD strategy in place for which they receive European regional funding. And the vast majority of these nodes invest in sustainable urban mobility and/or infrastructure. Mixed sources of funding is a reality for urban nodes that should be better taken into account in the policy discourse at European level and could be further facilitated.

5. Conclusions

Freight and logistics are the ‘new kid on the block’ for urban regions’ challenge on how to coordinate spatial and transport planning. This means additional complexity to urban development, regional planning practice and multimodal corridor development. Ignoring this complexity may result in a longer-lasting lack of linkages between urban nodes and the TEN-T network. Until now, most European initiatives concerning integrating professionals in spatial planning and mobility planning focused on passenger transport and last-mile freight delivery at local and metropolitan level (*daily urban system*). A focus on the *daily urban system* does not fully match with current relations and transport flows in freight and logistics. Outcomes of the Vital Nodes project show that – from a freight and logistics point of view – the *functional urban area* of several urban nodes extends the commuter hinterland thereby connecting neighboring urban nodes (Strasbourg-Mannheim, Vienna-Bratislava) or reaching out to important non-urban nodes, such as Venlo for the urban node Rotterdam.

Attention for the corridor from a spatial point of view has been very limited so far and stakeholders from different silos – corridor development, freight/logistics, and spatial/urban planning – do rarely meet nor speak a common language. Bringing in the freight and logistics perspective on urban and regional development – as has been done in the Vital Nodes project – has made clear the *functional urban area* is a new emerging spatiality that needs to be further explored.

A careful mix of interventions – regarding network, spatial and institutional dimensions, keeping in mind the typology of the urban node – seems to be the way forward to strengthen the relation between the urban node (local and regional level) and the TEN-T corridor level. Regarding the use of European funding instruments, many urban nodes already use regional funding for mobility and infrastructure investments as part of an integrated urban development strategy. More than a quarter of the urban nodes have designed their ISUD strategies at FUA level. Further exchanging experiences about coordinated planning approaches across Europe is indispensable to mutually achieve added value for an efficient and sustainable transport system and vital urban regions.

That's why we should rethink our planning and elaborate on an integrated approach that connects the worlds of infrastructure, mobility, freight and logistics with the world of urban and regional spatial development. An approach in which there is attention for 'soft' measures and innovations, addressing the multiplicity of the challenges by integrating different spatial scales, sectors, modalities and stakeholders. Multi-level governance is key.

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Session 17. Emerging spatialities and eu policy instruments: cases and perspectives

The *Pla de Barris*: a remarkable case of place-sensitive territorial policy

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Abstract: Spatial injustices are rapidly growing and, in the wake of the so called “revenge of places that don’t matter”, there is urgent need for better territorial policies. Ranging on a wide variety of contexts, territorial policies should implement strategies that are not only place-based, but also coherent, effective and place-sensitive. Aim of the paper is to give a contribution to the debate, shedding light on one lesser-known yet remarkable case of territorial policy for social cohesion. The *Pla de Barris*, Plan of the districts of the Catalan Region implemented between 2004 and 2010, is here investigated. The research followed two main methodologies: on one side, quantitative socio-spatial analysis; on the other side the tools of policy analysis to investigate its implementation. It shows that the measure was efficient and effective in targeting spatial injustices thanks to integrated place-sensitive implementation mechanisms. A fairly balanced combination of centralized analytical apparatus, multi-level governance and involvement of the local administrations explains its success in addressing spatial injustices. There is much to learn from this experience, since this approach can make the difference in providing a coherent framework in which to develop place-sensitive interventions in deeply variable local contexts, that is the crucial point for the endurance of European Union.

Keywords: Urban regeneration; Urban governance; place-sensitive territorial policies; cohesion policies.

Introduction

Territorial inequalities are increasing all over Europe. As shown clearly by Rodriguez-Pose (2018), the more dynamic regions of Europe are leaving behind the less dynamic ones: places that ‘don’t matter’, where there is very little possibility of economic development and where a revenge going on through the ballot box. In the last decade, all over Europe, lower economic performances have turned out into anti-establishment vote, expressing the voice of big parts of the society that feel an increasing distance from where the development concentrates and consequently where the decisions are taken. These communities that don’t matter can be described as ‘peripheries’, indicating a distance from the ‘centre’ that is not only geographical but multi-dimensional (Petrillo, 2013).

In this sense, Regional Studies describe that peripheries exist on a European scale (e.g. the South and East of Europe) but also on national scale (e.g. the South of Italy, all Spain except Catalonia and Castilla, most of France except Paris, etc.). Parallely, Urban Studies focus on peripheries that exist on a metropolitan and urban scale, often referring to the district level. More recently, the importance of peripheries inside the scale of a

region has been acknowledged, for example with the notion of ‘inner areas’ (Barca, 2013) that also became an operative framework of the Italian government.

In this panorama, cohesion policies (not only European) act on different scales and with different mechanisms for targeting inequalities. On a national level, in Italy the territorial cohesion has been promoted through the investments of *Cassa del Mezzogiorno* that, stressing particularly on infrastructures as means to recover the gap between South and North, had often the effect of wasting resources and consume the trust of the people. Since the 1980s, following the importance given to the urban dimension of inequalities, cohesion policies integrated operational frameworks that targeted the cities and the regeneration of the city centres (e.g. Urban, Urban II, etc.) and of some peripheral parts considered more vulnerable, like *Programmi di Recupero Urbano* (PRU).

These regeneration programs aimed at concentrating resources where the vulnerability is concentrated, using the space as a factor that assures more efficiency and effectiveness to the measures activated. Nevertheless, these programs had a weakness: they stressed a lot on the physical restoration of the built environment, often forgetting the urban and social fabric and therefore failing in addressing the multiple dimensions of inequalities. Nowadays, in the wake of the ‘revenge of places that don’t matter’, all the levels of administration call for more efficient and effective ways to invest in the territorial cohesion, particularly regarding the response that those policies can have on the territories (Nello and Gomà, 2018).

Barcelona: a city with strong traditions of Urban Planning

The history of the urban development of Barcelona is very peculiar and is due to an accumulation of trends and events that had no comparable in Europe. During the dictatorship of Franco, the urban development was led by the interests of major real estate companies and developers that pushed for a ‘developmentist’ model. This, together with the lack of democracy and social policies, resulted in evident social and spatial segregation, and consequently to strong social mobilisation. After the death of Franco in 1975 and with the economic recession, the city - together with the entire Spain - required a deep institutional and economic restoration. From the point of view of urban development, the transition from industrial to tertiary economy followed an approach that changed completely from the ‘developmentist’ one and was described as ‘qualitative’, because it tended to target specific areas of the city with projects of requalification of the public spaces instead of savage urban development. Moreover, in the 1980s a season of big investment in the social services was inaugurated.

At the same time, as the city was nominated for the 1992 Olympic Games, a big change was on the run. From the ‘qualitative’ approach that had dominated after the dictatorship, the so called ‘Barcelona Model’ was being settled. This season was dominated by a strong, top-down, strategic planning approach that aimed at an urban development on the global city scale through big interventions: the Olympic facilities, the new downtown areas and new infrastructures – such as the famous *Ronda*, the new city Beltway. If in the previous phases the planning was led by different public bodies, the ‘Barcelona Model’ was heavily based on public-private partnerships in the form of mixed-capital companies with considerable autonomy. Thanks to this, and to the relatively good level of consensus around the measures, the transition of Barcelona from a mainly industrial city towards an important global city was rapidly accelerated.

This ‘new developmentism’ relied a lot on the attraction of capitals and on the interest and collaboration of the economic elites, but also on a completely new idea of administration. New management techniques were adopted by the Public Sector: the figure of the ‘local manager’ was appointed executive control on the administration; mixed-capital companies were created to manage autonomously special urban functions and processes; privatisation and externalisation of activities; spending review and tax reduction. The ‘Barcelona Model’ demonstrated many cracks in the ten years that followed the Olympic Games, such as the failure of the 2004 Universal Cultures’ Forum, and was highly criticized and opposed (Delgado, 2007). At the beginning of

the 2000s, Barcelona had reached a very high status in the European global cities, but it was still affected by social and spatial segregation.

A new generation of planning? The *Pla de Barris de la Generalitat*

Following this period in which Barcelona had grown a lot in terms of economic indicators but also in inequalities, a new approach was released. In 2004 the Parliament of the *Generalitat de Catalunya* [Region of Catalonia] approved the *Llei de Barris* [Law of the Districts], also known as *Pla de Barris* [Plan of the Districts] with the aim of “promoting projects of rehabilitation of those districts where major urban deficiencies are accumulated and where, as a consequence, the population that need more social attention is concentrated” (Nello, 2012) on the scale of the whole region (Figure 1).

The Law 2/2004, for the improvement of districts, villages and urban areas requiring special attention, of June 10th 2004. The norm was the first legislative text carried out and promoted by the government presided over by Pasqual Maragall. In fact, the draft bill was made public on 19 January 2004, by order of the Minister of Territorial Policy and Public Works, Joaquim Nadal, only three weeks after the new government had taken office (Nello, 2003: 25–28).



Figure 1. Map of the interventions that were funded by the Law 2/2004, between 2004 and 2010 . Source: Nello O. (2012), *Ordenar el territorio, La experinecia de Barcelona y Cataluña*. Elaboration by the author.

As visible in Table 1, the *Llei de Barris* financed between 2004 and 2010 projects in 141 districts, where more than one million people lived (at that time, the 13% of the total population of Catalonia), with a very important investment of 1.330 million Euros, of which: 693 million from European FEDER funds obtained by the Catalan Region; 513,2 million from the involved municipalities. It is based on the creation of a fund for the promotion of the ‘programme for districts and urban areas that require special attention’, provided with budgetary resources

from the government of the *Generalitat*, attached to the Ministry of Town and Country Planning and Public Works.

Number of calls	7
Number of districts	141
Total population in the 141 districts	1.005.214
Total funding	1.330 mln Euro
Funding from the <i>Generalitat</i>	693 mln Euro
Other funding (municipalities, privates, etc.)	513,2 mln Euro

Table 1. Some numbers of the Plan of the Districts. Source: Generalitat de Catalunya. Departament de Política Territorial i Obres Públiques [Department of Territorial Policies and Public Works].

Even if in some ways the Plan of the Districts represents a typical area-based program, a series of characteristics distinguishes this program from the mainstream of the various generations of neighbourhood programs of intervention that were released in Europe and makes it represent a very important step in the Catalan planning history (Scarnato, 2015).

Multi-level governance and inter-administrative cooperation

First of all, a big role was played by the Catalan regional government, that decided not to focus on single urban areas but to maintain the whole regional territory as a scale of intervention. Indeed, the planners acknowledged that segregation is originated also at a big scale, due to the real estate market. As explained by Oriol Nello: « due to the process of metropolitanization [sic] and the growing integration of the territory, the housing market in which the citizens and the economic operators make their decisions is not longer [sic] local, but rather has a much wider scope. Thus, segregation not only appears between districts in the same town but also – and usually, at first, between districts in the same urban area and even throughout the whole of the region» (Nello, 2009). It is here acknowledged that only from the regional scale it would be possible to distribute the necessary resources in an equal way for the districts and municipals that require interventions and services to face the concentration of vulnerability and which, due to the concentration itself, face great difficulties in providing them.

At the same time, in the mind of the planners, proximity to the field of action is essential for the success of urban policies. Their execution by higher institutional bodies (as in the French case), in the mind of the planner, could entail errors of appreciation and action which may lead to failure. The role of the *Generalitat* is therefore to promote, select and evaluate the projects, whilst the responsibility of the execution of the project lays completely on the town council concerned. In other words, the town council is the body responsible for the design and execution of the programme, having direct knowledge of problems and potential of each district, while the *Generalitat* maintained a role of mere funder and supporter, renouncing to be the protagonist. The Plan of the Districts, relying strongly on the potential of local government, fully applies the principle of subsidiarity.

The inter-administrative cooperation was considered of mayor importance and the law was designed in a way in which not only execution of the projects but also the selection process itself is conducted in cooperation. The law established an organism that is responsible for the selection and assignment of the resources: the Commission for the Administration of the Funds for the Promotion of the Districts and Urban Areas that require special attention. It is composed of 30 members, equally of representatives of the different Ministries of the *Generalitat* and municipal entities (Federation of Municipals of Catalonia and the Catalan Association of Municipals), as well as professionals of the Architects and Technical Architects professional bodies. This marked the beginning of a new era in the relationship between the *Generalitat* and local governments.

In conclusion, through the instrument of the competition the Region aimed at building a multi-level governance model. On one side, the leading role of the regional authority guarantees the coherence of the projects with the aim of social cohesion, the multi-institutional “tuning”, certain funding availability and territorial equity in the access to the funding. On the other side, the protagonist role of the municipality in promoting the project guarantees knowledge of the local situation and correspondence with the specific problems; the requirement of conspicuous co-funding ensures the “determination” of the municipality in effectively implementing the proposal.

The localisation of the interventions and resources

The plan aimed at reducing inequalities targeting specific neighbourhoods – *barrios* [districts], representing a precise administrative division of the territory that is nationwide recognized – that fall on the ‘areas of special attention’. A municipality could apply for one or more districts, making one or more applications. The application, in order to be successful, must target a district that belongs to the ‘areas of special attention’. This measure is to assure that resources go where there is actual need of it.

Anyway, there is to say, there is not a general overview of the Catalan districts that fall in the ‘areas of special attention’. The districts where to intervene are proposed by the municipalities and then examined by the same commission that is in charge of the evaluation of the projects. From an operational point of view, the Law of the Districts works in a way that is inspired to by the European programme URBAN. The proposed districts are examined by the commission through a set of quantitative parameters, as in Table 2, with a scale established by the regulations of the Law of Districts. In order to be considered an ‘area of special attention’, a district must obtain a minimum amount of points from all of the indicators in the scale. Then, a score is awarded adding the points given to the project and, based on the resulting score, the resources available in each call are distributed among the participating municipalities.

Criteria (defined by the Law 2/2004)	Shortfalls in works, facilities and services	Demographic problems	Presence of economic, social and environmental problems	Social and urban deficits and problems of local development
Objective statistical indicators (defined by the regulation of the Law of the District)	Insufficient level of conservation of buildings	Density of population	Number of people that receive assistance and non- contributory pensions	Lack of public transport
	Buildings without running water or water disposal systems	Decrease and accelerated population growth	High level of unemployment	Lack of parking spaces
	Buildings of four or more floors without a lift, designated mainly to housing	Dependent population	Lack of green areas	Low economic activity
		High percentage of immigration	Low level of education	Percentage of the population at risk of social exclusion

Table 2. The criteria and indicators individuated by the Law 2/2004 and its regulation to verify that the district of application is in the ‘areas of special attention’. Source: Nello O. (2009), *The Law of Districts. A collective commitment to social cohesion*, Generalitat de Catalunya. Elaboration by the author.

The reason for this is to assure that the targeted district is among those that actually deserve it, avoiding that resources go to places that are in a relatively good condition but where certain municipalities would like to intervene with very good projects. However, the notable aspect is that the selection is not only based on statistical evidence of the urban and social deficits of the district. Indeed, the planners thought that establishing and publishing a ranking of those districts which find themselves affected by segregation would cause the stigmatisation of those in worse conditions and, therefore, further worsen the conditions of vulnerability of the district. Therefore, they elaborated an evaluation method that took into consideration the strength of the proposal on the side of the project.

‘A plan for projects, not for problems’

As said, the analysis of the proposed context with 16 statistic parameters is done to indagate the effective state of need of the proposed district and avoid a competition based merely on the efficacy of the projects, while the evaluation of the project means to push the focus from vulnerability to planning, trying to avoid possible effects of stigmatization.

Therefore, after the initial analysis of the districts with objective indicators, there is a second stage of evaluation based on the projects presented by the municipalities. The evaluation is done through four criteria: the level of comprehensiveness of the proposed proposal; its general coherence; the level of economic commitment of the town council; the parallel execution of complementary actions. Those two evaluation criteria have the same weight in the score, aiming to generate a combined evaluation method (as in Figure 2).

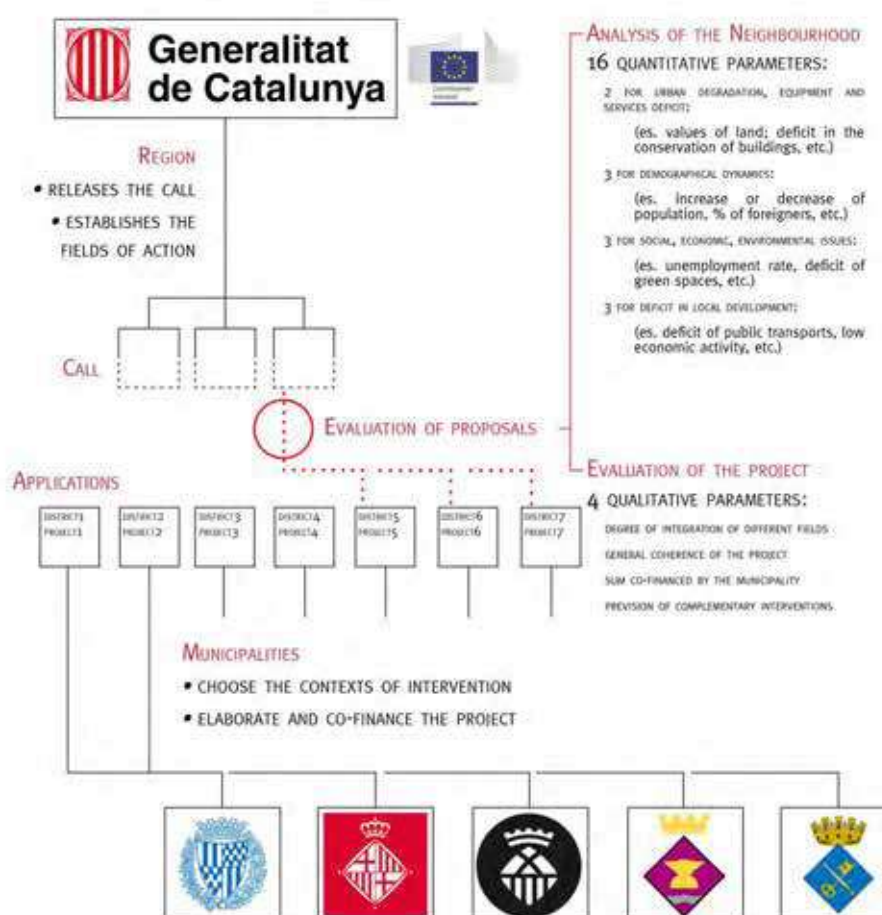


Figure 2. The governance scheme and the evaluation criteria established by the regulation of the Law 2/2004. Source: Nello O. (2009), *The Law of Districts. A collective commitment to social cohesion, Generalitat de Catalunya. Elaboration by the author.*

One of the main factors for the evaluation of the process is the degree of integration of the actions included in the proposal, assumed as a fundamental device to assure the success of the project on the district. The Law establishes 8 different fields where the projects of the municipalities should intervene in the same project, for each district. The fields regard mainly 3 areas: urban design and equipment; improvement of energy, environmental and communication infrastructures; social actions that support the population. Looking at Table 3 it is possible to see that, even though the far largest part of the funding were dedicated to strictly physical interventions like public spaces, green areas, installations for collective use and accessibility (with about 2/3 of the budget), an important role has been played by the involvement of the population through social programmes (with 1/10 of the budget) and with the refurbishment of the common elements of private building (another 1/10).

Improvement of the public space and provision of green areas (paving of streets, planting of trees, lighting, creation of gardens)	44,24%
Refurbishment of the common elements of buildings (facades, drainpipes, lifts, roofing)	9,96%
Provision of installations for collective use (civic centres, centres for the elderly)	21,83%
Incorporation of communication technologies (wiring of building, establishing of wi-fi areas)	1,28%
Introduction and improvement of energy and environmental infrastructures (collection of residues, putting rubbish containers underground, establishment of recycling centres, promotion of renewable energies, water saving mechanisms)	4,74%
Promotion of gender equality in the use of urban spaces and installations (premises for women's associations, specific training activities, interventions for the improvement of women's safety);	2,13%
Development of programmes that entail social, town planning and economic improvement of the districts (actions for the support of collectives that are facing social exclusion, training programmes, dynamise commerce)	9,39%
Improvement of access and removal of architectural barriers (widening of pavement, building of ramps, putting in escalators, elimination of obstacles).	6,26%

Table 3. Fields of intervention required by the law with examples, and the weight that each field had on the fundings. Source: Generalitat de Catalunya. Departament de Política Territorial i Obres Públiques [Department of Territorial Policies and Public Works].

In addition, the law required that the applications of the municipalities should consider two collateral actions that aim at strengthening the plan:

- the creation of complementary programmes by the different Ministries of the Generalitat;
- the constitution of comprehensive follow-up mechanisms.

Regarding the first action, the complementary actions established by the Ministries of the *Generalitat* in the districts included in the programme have been of great importance. The program 'Jobs in the Districts', created by the Ministry of Employment, has led to the establishing of 81 agreements in 92 districts included under the law in order to set up training and school-work transition programmes, with a total investment of 30 million euros. Similarly: the Ministry of Health has carried out studies on public health and health care in the districts participating in the programme; the Ministry of the Environment and Housing has established specific lines of aid in the refurbishment of common elements of buildings for the 37 districts of the programme; the Ministry of the Home Affairs, Institutional Relations and Participation has contributed to the financing of the process of citizen participation in a special way in a further 14; the *Incasòl* (Catalan Land Institute) has signed agreements in order to carry out urban remodelling actions (especially the replacement of obsolete housing with new housing) in 24 districts of the programme, with an investment of about 200 Million Euros. In the effort to cover all of the substantial aspects of the life of all of the areas of intervention

The Evaluation and Follow-up Committees (one per district) include the mayor of the municipality, representatives of different areas of the town council (directly involved in the management of the district), representatives of seven ministries of the *Generalitat*: Town and Country Planning and Public Works, Environment and Housing, Governance, Social Action, Economy and Finance, Health and Employment, as well

as a representation of the Delegation of the Government in each territory. These Committees are configured to bring together all of the services of the *Generalitat* and the Municipality that are concerned with the district. The Committees are held approximately once a year per district and are not meant to substitute the daily action of the administrations, but to maintain a coordination on the action on every district and to create the basis for integrated and transversal action.

Conclusions

In conclusion, this analysis shows how this plan has represented a very important step and pioneering application of some of the precepts of the place-sensitive approach. Of course, the place-based approach with the space as a means to understand the vulnerability of the society, and the neighbourhood as a unit of investigation of the territory and of concrete intervention. But also: the importance posed on the project and its strongly integrated character; the fact that the proposal (both of the neighbourhood and of the project) has to come from the local administration, with a pro-active role of the municipality; the devices to assure the communication and coordination among different levels (vertical) and sectors (horizontal) of governance and the implementation and follow-up of the actions.

Even if, it has been admitted, the process of adaptation of the administrations to act in a more area based and less sectorial manner (in the districts of special attention and in many other fields) required a long process of adaptation, it was a very important turning point in the innovation of the governance of this kinds of plans of intervention. Concerning Barcelona, that has had a very central role (approximately one tenth of the interventions of the Law fell on the Metropolitan Area), in comparison with what had happened before in the history of the physical transformation of the city of Barcelona, a shift was made from the top-down, architecturally hard and punctual intervention of the era 1979-2004, to a softer, more integrated and co-designed intervention that has a dimension of plan. This was very important, in the wake of the huge protests and critiques that previous plans (e.g. the one related to the Culture Forum 2004) had faced.

Not all the aspects of the plan have been investigated in this paper, even though some of them are very important and would require further investigation. The first regards the housing market: even if the Law of the Districts did not include any direct measure in that field, it was very clear in the mind of the planners that bettering the conditions of those neighbourhoods, especially those that are in the city centres, would increase the value of the land and the housing prices, with possible effects of residential exclusion or expulsion. For this reason, a combined plan was designed with the *Pla d'Habitatge 2004-2010* [Housing Plan 2004-2010] that was assigned the role of avoiding speculation effects, providing measures that promoted the social role of housing. Since the value of the lands has actually increased after the interventions of the Law of the Districts, it would be very important to examine whether the Housing Plan was able to contrast possible negative effects on the side of housing.

Considering possible replications of such a pioneering experience presents some complications related to the specificity of this case. It is important to underline that the Law of the Districts was made possible in very peculiar conditions: in a national administrative system, that of Spain, that leaves heavy financial autonomy to the regional level; in the richest and more economically advanced region of Spain; after the accumulation of many experiences in urban regeneration; in a relatively stable political situation and before the financial crisis of 2007-08. Nowadays, it would be very hard to imagine such an alignment. Nevertheless, it brings a quantity of lessons that were learnt and that could be adapted to other cases and situations, wherever there are 'geographies of discontent', in order to give concrete answers to the questions posed by the 'places that don't matter'.

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SP30

Facing migrants exclusionary
urban policies

Landing

How practices of temporary hospitality challenge urban spaces and policies

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Abstract: Within the broad issue of migration, the paper discusses the conditions of intersection between the short temporality of the phenomenon and the longer temporality of urban spaces and policies. Along the migrant trajectory, the work particularly focuses on migrants' *landing*, or *first arrival*. The research therefore addresses migrant populations who have a "temporary" perspective in their use of the territory and who cannot access certain urban services and opportunities. The paper considers the case of Milan and assuming the background of existing policies, the work draws on a qualitative observation of Milanese first reception, with specific attention to hospitality "practices", broadly defined as unexpected uses of space, non-institutional actions, and unplanned answers by the Municipality. The observation unveils a general incapacity to structurally deal with the temporariness of migrants' condition, often resulting in "exceptional" reception spaces and emergency-based policies; on the other hand, some actors and practices seem to provide a deeper understanding of certain conditions, suggesting new points of view on first reception issues and highlighting alternative paths. The work argues the urgency of a renewed and more complex definition of the temporary condition of migrant populations, and the relevance of existing practices as a starting point for discussion.

Keywords: migration; landing; first reception; Milan

Introduction

The paper draws on an ongoing PhD research, carried out in the course of Urban Planning Design and Policy at Politecnico di Milano (Italy), that investigates the interaction between migrant populations, territories of arrival and urban policy, with a particular focus on the dimension of first arrival, or *landing*.¹ Assuming as a background this work, the following paper aims at investigating its initial hypothesis.

¹ The term *landing* is used to refer to the first moment of arrival on a territory (*primo arrivo e prima accoglienza* in Italian), and to differentiate it from the following settlement processes.

The PhD work starts from a broad consideration of how socio-economic changes, spaces and institutions develop at different speeds and how this challenges a lot the ordinary forms of urban governance and planning, which often resist to such changes rather than triggering or supporting them (Balducci, 2019).² The research assumes as a fieldwork that of recent migration flows around the Mediterranean Sea and specifically focuses on the phase of migrants' landing, intended as a first moment of arrival in a territory, and on hospitality experiences, intended as the reactions of the city, in its different dimensions, to such phenomenon. Landing of migrants is understood as a complex dimension of encounter between the short temporality of arriving populations and the longer one of the urban environment. Many, and well-known, stories of hospitality reveal the incapacity of city's spaces and institutions to support the presence of migrants, but some experiences represent inverse reactions, able to support the changes brought about by arriving populations. The PhD research therefore questions under which conditions the latter experiences are possible and what they may tell to urban and territorial governance.

Within such framework, the present contribution more deeply discusses the reason why the dimension of landing is chosen, arguing that landing may be regarded as a relevant point of observation, not only to investigate the field of migration studies and hospitality, but also to open up the debate on broader governance and planning issues.

The paper is organized as follows: a first section introduces the literature background on migration and urban studies, pointing out the need to better define the debate on migrants' first arrival as an independent topic; it follows a tentative definition of *landing* from a theoretical and empirical perspective, with reference to some experiences of hospitality in Milan and Europe; the fourth section aims at investigating how the developed observations may challenge some current categories of urban planning and governance, beyond the field of first arrival and reception; finally, some preliminary conclusions are drawn.

Urban studies, migration and landing

State of the art

Whilst the theme of migration and the city has old roots, in the last years its relevance for European and Mediterranean countries has clearly increased (Saunders, 2012); researches have addressed it through diverse fields, among them sociology, anthropology, economics, law and urban studies.

Literature dealing with the relation between migration and the territory identifies two parallel dimensions: on the one hand, global networks, flows and national policies, and on the other, a rather *local* scale, where municipalities, inhabitants and local policies *react*, developing everyday experiences of hospitality. The crucial dimension to understand tools and processes of territorialization appears to be the local one, which looks both at the dynamics occurring in city

² The work is still on-going and was shortly presented in a seminar at Politecnico di Milano, in January 2019.

districts and in smaller towns (Balbo, ed., 2015; Caponio, 2006). Urban studies have further built a rich framework around the territorial dimension of migration, focusing on immigrants and populations who are settling - or already settled - in urban areas. Within this long-term perspective, literature describes the processes of territorialization of immigrants (Tosi, 1998; Lanzani and Vitali, 2003; Blockland and Savage, 2008) and discusses the tools of urban policies towards the multiethnic city (Crosta, 2010; Lo Piccolo, 2013; Briata, 2014).

In a different way, the will to focus on the temporary dimension of landing implies to assume the mentioned studies as a background, and to shift the gaze from the notion of *im*-migrants to that of migrants, who interact with the territory in a clear perspective of mobility (Tarrius, 1993). The theme of landing, regarded as a temporary condition that migrants undergo before settling down, raises diverse questions: the French anthropologist Agier started the ‘Babels Research Program’, revolving around the concept of the city as a border and investigating “what migrants do to the city and what cities do to migrants” (Agier, 2016). More recently, the issue of first arrival has been addressed within studies of social policies related to first reception systems. But, while different research fields (anthropology, sociology, law) on migration start addressing this temporary dimension, urban studies still struggle in considering it as a subject by itself, so that the territorialization processes and tools of first landing still remain a rather unexplored field. The transitory nature of migrants makes more evident the reason of this gap: urban studies and policy are asked to deal with populations who are not - yet - territorialized and settled, but already using intensively urban spaces.

The outlined framework underlines the lack, in the discipline of urban studies, of a structured debate on the dimension of migrant’s first arrival and of a deep investigation on its implications for urban planning. Nevertheless, the nature of the recent migratory flows, the structural character of such phenomenon and its impacts on urban territories, are only some of the reasons why it seems urgent to investigate landing as an independent and relevant topic.

Looking for a definition

Methodological notes

The work presented explores the term *landing* both from a theoretical perspective and through references to empirical cases. The first part aims at exploring the notion of landing, it clarifies some risks and limits of its use and it finally outlines a possible definition to work with. Subsequently, the paper more directly addresses existing experiences of migrants’ first arrival and reception, so to build a more concrete framework of reference. In this case, the work is mainly drawn from a qualitative research developed within a Master Thesis in Architecture (Bovo and Lippi, 2017) on Milanese first reception system, that collects and maps the main reception centers, through official data and interviews, field visits and direct observations; some further references are made to experiences collected through interviews and recent literature on the theme.

The contribution thus reports specific case studies and it is part of a research which will probably include a field work, nevertheless the presented paper is mainly the result of an attempt to build up a theoretical approach and to set the framework for further research activities.

Landing as a point of observation

Defining a theoretical framework

The choice to assume the perspective of landing poses some questions on its possible implications and requires therefore a better definition of what is meant by *landing* and by assuming this dimension as a point of observation.

The term refers to the moment of first arrival in a certain territory, the use of the word *land-ing*, aims at explicitly addressing the act of reaching land and start interacting with it, before having a clear perspective of future plans and uses. Such notion therefore refers to a limited timeframe which may vary according to the contexts, it addresses populations that start building a relation with lands and territories that start being used by them. As regards the timeframe, it is interesting to notice that migration is defined as a movement (or a series of movements) from a country of usual residence to a different country, for a period of *at least one year*, i.e. 12 months of permanence out of the land of origin, in one or more different places³. Although such definition is very general, the question arises how may be addressed those people who live in a foreign land (for less than or) before a whole year passes by. Landing populations instead may be defined as those groups observed in the moment of arrival and orientation, before settlement in a certain territory; with or without a long-term perspective of permanence, they approach land with some initial *competences of use* of the territory, personal networks or knowledge of the place, and they start building a temporary relation with space. A third consideration refers to the landing territories, which may be easily defined as all those places where people arrive, this raises the question how much such territories are - already - usable and able to support the presence of populations who are present but not settled. The relation between landing migrants and the territory may therefore be defined as a *temporary* one, since it refers to an initial moment when migrants don't have a perspective of permanence. Nevertheless, whereas each

³ Eurostat: "As stated in Article 2.1(a), (b), (c) of Regulation 862/2007, immigrants who have been residing (or who are expected to reside) in the territory of an EU Member State for a period of at least 12 months are enumerated, as are emigrants living abroad for more than 12 months. Therefore, data collected by Eurostat concern migration for a period of 12 months or longer : migrants therefore include people who have migrated for a period of one year or more as well as persons who have migrated on a permanent basis" available at <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/1275.pdf>. United Nations Department of Economic and Social Affairs: "While there is no formal legal definition of an international migrant, most experts agree that an international migrant is someone who changes his or her country of usual residence, irrespective of the reason for migration or legal status. Generally, a distinction is made between short-term or temporary migration, covering movements with a duration between three and 12 months, and long-term or permanent migration, referring to a change of country of residence for a duration of one year or more" available at <https://refugeesmigrants.un.org/definitions>.

individual may relate to space in a temporary perspective, the presence of such populations are for cities more and more structural, as La Cecla writes, migrants are special inhabitants, “dwellers with an individual impermanence and a collective permanence” (La Cecla, 1999).

When talking about landing it is also necessary to take distance from understanding it as a predetermined condition of precariousness and rather define it as a field of observation of trajectories which may differ a lot among them. Although sharing the moment of arrival, people indeed may experience very different conditions: among the migrants recently landed in Europe, some had networks and economic resources to rely on in the arrival country which limited their precariousness soon after arrival, some entered the reception system, some did not, some others after many years are still living in very precarious conditions (Tosi, 2018). Thus, landing may refer to an analytical framework, but cannot be linked to a fixed condition of precariousness, which may not only, and not necessarily, depend on the migratory seniority.

In conclusion, from a theoretical perspective, landing is here regarded as an analytical lens which addresses the relation between temporary populations and the space and aims at investigating how such relation is built, particularly questioning what kind of *capital(s) of use* people shall have to use the territory and how the latter can support their presence.

Landing practices

Observing populations, spaces, services and actors

Within the outlined theoretical approach, the following paragraph explores the term of landing with reference to some existing practices⁴. The cases are mainly drawn from the Milanese reality of first arrival and reception, between 2015 and 2016⁵, and from some other European experiences reported in literature; the observations mainly addresses the theme of migrants as landing populations and the reaction of the city in terms of space, services and actors involved.

The interviews to migrants and social workers around the system of first reception reveal a very diversified mosaic of situations, nevertheless some shared needs may be outlined. Within the first days of arrival, migrants seek very basic services, such as a night shelter, medical and legal assistance, nutrition and acquisition of certain information; the essential nature of such demands makes it easily sharable by a wide target. Even if still deeply uncertain of the possibility to settle in the city, migrants often express some further, and complementary, needs, regarding education and information, recreational activities, worship, food's and clothes' purchase and transport; the consideration of the

⁴ The term *practice* is here used in a broad way, to give account of the variety of the cases and experiences reported.

⁵ The city of Milan around 2015 underwent a dramatic change since it rapidly turned from a transit to a destination place. In the years before 2015, less than 1% of the migrants transiting would ask for asylum and spend more than a week in the city; in 2015 this changed and most of the people reaching the city started also asking for asylum there.

complementary needs clearly outlines the complexity of migrants' presence, in a phase which is instead often concerned as merely and continuously "of emergency". It also emerges that in the relation with the territory such needs encounter often strong constraints both in terms of time and space, due to a range of different reasons. The temporal limit is evident in the figure itself of the asylum seeker, a condition which juridically forces the person to undergo a period of wait before getting a status recognized and, in some way, prevents the chance to assume a long-time perspective of permanence. Strong time restrictions are also often imposed by the reception system itself, many facilities indeed have strict opening and closing times, requiring hosts to enter and exit the center according to given timetables. The relation with the urban environment in terms of spaces also presents quite evident limitations. Initially the use of urban spaces is constrained simply because people are new to the city and need orientation to places and services. Often underestimated by institutional reception, this need was broadly addressed in Milan by smaller associations who, especially around 2015, provided a lot of orientation services to support a very first degree of usability of the city for migrants arriving in Milan Central Station. The NPO CambioPasso realized a project of signage in different languages to lead migrants from the Station to information points; similarly, operators of different associations grouped together to provide a *mobile hub* service with the aim to orient newly arrived people to "move throughout the urban tissue, rather than only to first reception facilities" (Spada and Valentino, 2018). The spatial limitation is also linked to the reception centers, which result often very isolated from the rest of the territory; in some cases the isolation is due to a physical distance to urban and central areas, in some others to the lack of any connection to the surroundings because of the concentration of all services within the reception centers, and in most cases the access to such structures is very much controlled. In regards to the spatial constraints in the use of the city, it is interesting to underline the importance for migrants of some *not-mediated* (immediate) urban spaces, as green areas, open sport fields, public libraries and shopping malls, which for their nature overcome the spatial limitations in the use of the city. Thus, the temporary nature of migrants' relation to space leads to certain temporal and spatial constraints; in this sense it seems significant to understand better how this relation is built and how the city opposes to, or supports, the presence of landing populations.

The reaction of the city is here explored starting from the measures put in place by the institutions, in terms of first reception facilities, and they are considered within three main dimensions, the spaces, the services and the actors. As regards the firsts, the system of Milanese first reception between 2015 and 2016 provided 18 facilities scattered within the city, which were supposed to host migrants waiting for their status to be recognized. The spaces were of five typologies: former barracks, disused schools, reception facilities, big-sized structures and small-sized spaces normally devoted to other services; they would host from 50 to 500 people and the space was organized in the attempt to fit the new function to the existing structure, in case of large amount of people sport halls or common spaces were also arranged as dormitories, in some cases tents were placed in the outdoor courts. Especially in big structures, which were the majority, the rigidity of the space was clearly opposing to the flexibility and temporality of the hosts' presence, in other words, far from being a plural kind of space (Crosta, 2010), the reception facilities work as fixed boxes to adapt to. These experiences show how the planned spaces of reception are conceived as merely temporary and precarious solutions, and struggle in dealing with populations who may be individually temporary but represent a collective structural presence. Still within the spatial dimension, the case of the French city of Grande-Synthe suggests an alternative approach, recently discussed by some authors (Agier *et al.*, 2018). At the

entrance of the border city, migrants willing to pass the border to England occupied a tent settlement and reached in the winter of 2015 the amount of 5000 presences; in March 2016, the mayor of the town, opposed by the National government, chose to invest together with some associations in the construction of a humanitarian camp, bettering off as possible the conditions of the previous “jungle”. By doing so, the mayor showed to have recognized and accepted the temporal nature of the settlement, but also imagined for it a project of a rather permanent kind. These are just few examples of spatial answer to reception, but they already reveal some issues that the temporary nature of landing populations poses, and they challenge the more conventional understanding of reception spaces.

The second dimension considered is that of the services and is again addressed starting from the Milanese case. Institutions managing first reception facilities are required to provide basic services, such as dormitories and canteens, and in some cases also legal or medical assistance, language courses or clothes delivery; being conceived as a temporary stage, the system of first reception indeed has much lower management requirements than the ones of the so-called second reception. In most cases the services provided are all delivered within the reception center, so that the host ends up sleeping, eating, following language courses and getting clothes in the same structure, accessing services exclusively targeting migrants; when the reception center only offers a night recovery migrants are forced to use other available facilities as public showers, canteens or daily centers. Such system presents advantages in terms of management and space organization, but it also prevents migrants to start using the urban environment in an autonomous way, it reduces the chances for them to start building a personal social capital out of the center and strongly limits the opportunities of encounter and interaction between local residents and migrants. The question arises whether reception services should all be so concentrated and polarized within the reception facilities, and if reception measures should be addressing in such exclusionary way landing populations and not also other inhabitants of the city. A different reality is that of some services that often play an interesting role, probably mostly unexpected; it is the case of public libraries, which rather belong to more ordinary services of the city but also meet some of those complementary needs of landing migrants, who spend time in these places to access the internet, read or watch movies in their own languages, or learn Italian; public libraries thus are spaces of compresence of ordinary and reception services. With a similar aim, the NPO CambioPasso built a small experimental project of clothes’ delivery within existing second-hand shops in the neighbourhood around the reception facility, so that while getting their clothes, asylum seekers could also start getting in touch with other community of reference, out of the reception center. The latter examples suggest the opportunity to think of more integrated services able to trigger interactions between existing reception activities and other ordinary urban services.

A third aspect worth considering is that of the actors involved in the management and within the planned system of first reception. In Italy the Prefectures and the Municipalities are in charge of the public first reception facilities and through public call they outsource the management to third sector institutions; there are further associations who play a relevant role in the reception, even if not directly involved in the institutional system. What is interesting, and not only characterizing the Milanese case, is that on the side of the mentioned organizations, there are not-formalized figures who played a crucial role in the support of landing migrants. In Milan the clearest example is that of the Eritrean and Ethiopian community of the neighbourhood of Porta Venezia; between 2013 and 2015 resident immigrants provided help and accommodation to a large number of migrants coming from Northern

Africa and arriving at Milan Central Station (Naga, 2016). More recently, some Milanese associations are working on a project to enhance and recognize the crucial role that existing foreign communities might have in supporting the presence of landing migrants in the city. These cases challenge the notion of the actors of reception and the way current policy defines them.

The different experiences showcase some of the well-known obstacles in dealing with temporary migrants populations, but also some of the alternative answers that the city is already giving to better support them; such practices are here divided into the three dimension of spaces, services and actors, but it is worth underlining how much the three are linked to each other and how each of them rises shared issues. Whereas the mentioned cases obviously build a very partial picture of the huge reality of first arrival and reception, in some way they also reveal the specificity of the landing dimension and the importance of considering it as able to challenge some conventional answers currently given to the presence of temporary migrants.

Beyond reception

Reflecting on the challenges for urban planning and policy

The given definition of landing and the observation of the mentioned experiences certainly raise issues on migrants' arrival and reception but may also open up the discussion on themes that more broadly tackle the city and are here introduced as still open questions.

The understanding of migrants as complex temporary populations and with a constrained relation to the city - in space and time-, recalls the presence of other temporary populations already inhabiting certain urban territories. Although undergoing very different conditions, tourists, students, workers, the relatives of hospitalized people (Pasqui, 2008) are other temporary populations who more and more are establishing a structural presence in the contemporary city and who also build a limited relation with the urban environment. Such consideration does not aim at comparing the conditions of these people, but rather at triggering a broader discussion on how the city does and should answer to these temporary and structural populations.

Secondly, the spatial dimension of reception introduces the design theme of the relation between temporary and permanent. As seen, the structures of reception may be defined as "extraterritorial" spaces, that oppose a sort of physical inertia to the quickly changing needs of landing migrants; thus, as seen, the spatial project seems to be incapable to provide a structured answer to temporary populations. On the other hand, there are experiences which try to work within a more elastic notion of temporary and permanent, as a way to effectively respond to landing migrants' presence; these cases underline the need for a broader definition of permanent and temporary. In this sense it is interesting to recall the recent project of Mehrotra on Ephemeral Urbanism, by looking through very different cases of temporary settlements, Mehrotra argues that the arising distinction between permanent and temporary should not be conceived as a binary but should rather activate a broader understanding of permanence. In this sense, one of the clearest example refers to the Hindu festivity of Kumbh Mela, which every three years gathers millions of people - in 2007 they were 16 million - for only 45 days; here what makes such temporary settlement successful is the fact of being

organized, in terms of management and space, as if it were permanent, i.e. by following rules very similar to those of long-term settlements (Mehrotra, 2016).

Some similar considerations may be carried out when considering the dimension of services: whereas most of those addressing landing populations are spatially concentrated and strictly targeted, the cases of public libraries and second-hand shops represent examples of reception services distributed on the territory and integrated to more ordinary facilities. This introduces two main topics, currently debated in literature: the first regards the possibility to conceive integrated spaces of services as open to a wide (and unexpected) target, in particular it is questioned the extremely specialized nature of certain services, as the traditional social services that often end up resulting exclusionary themselves. Secondly, it is raised the issue of the access threshold of many public facilities especially for non-conventional city inhabitants. The case of newly arrived migrants highlights the different degree of recognition required to access a wide range of services, from the zero degree of public showers, to the documents asked to enter sanitary and social structures, to the higher requirements needed to access services like housing. Also in this case the lens of landing triggers questions that seem to go beyond the dimension of migrants' arrival and hospitality.

The fourth theme is that of the actors, in particular underling the presence and relevance of non-formalized actors in the management of reception. As seen, some local associations recognized their role, but the question is whether also institutions would be capable of recognizing it and, in general, enhancing the value of unplanned and unpredictable figures. Such latent capacity of reacting to changes is well described by Lanzara as a *negative capacity*, i.e. the ability of certain people to provide an effective answer to unexpected needs and thus playing the role of *informal* institutions in changing context (Lanzara, 1993). In order to be able to leave some space to the negative capacity of certain actors, policies should probably accept to have, at times, a *looser* attitude, open to possible latent resources, especially when facing unclear and undefined phenomena. Also the notion of policies' *looseness* may be encountered in some current literature on urban governance and public action.

The mentioned issues remain clearly open questions, nevertheless it is meaningful that they are raised starting from the discussion on landing and that they are themes which go beyond the dimension of migrants' arrival and reception. This reveals the relevance of landing as a field of observation on dynamics that more and more structurally are challenging the contemporary city.

Conclusive remarks

Starting from the above arguments some preliminary conclusive remarks may be outlined. The dimension of landing should be conceived as a mere analytical lens to look through, without implying any predetermined definition of arrival as a fixed and unique condition of precariousness among migrants. Assuming such perspective, landing practices not only reveal relevant issues in the debate on migrants' arrival and reception but are also representative for the discussion on broader topics in the field of urban studies. Thus, in order to address the issue of landing in a broad and elastic way, it seems reasonable to work in an in-between space, which chooses as study field that of migration but

also “keep an eye” on other languages, references and tools, which may in some cases provide clearer definitions of shared problems and critical nodes.

To conclude with a representative image of the concept of landing as presented in the paper, going back to its origin might be of use. In the nautical world indeed there is a type of sailing chart, the pilot book, used specifically by sailors in the moment of landing; such tool is representative for two reasons, on the one hand, because the pilot book specifically addresses sailors who are approaching land, on the other since it provides them with useful information on how to successfully make use of the unknown coast, turning it more readable and ready to use. Similarly, the research argues the need for urban studies to recognize and address the dimension of landing populations and to question the current usability of cities, in order to investigate how this challenges some categories of urban planning and policy.

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Urban inclusion of refugees and vulnerable migrants in Portugal

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Abstract: I will focus on my on-going post-doctoral research *INSEhRE 21. Socio-spatial and housing inclusion of refugees in contemporary Europe: Lessons from the African diaspora in Portugal* (2017-2023). The purpose is to situate the investigation and to discuss its further developments and alignments from a critical and operational standpoint. I will present my theoretical approach based on the key-concepts of ‘the production of space’ and ‘the right to the city’, ‘governmentality’ and ‘multicultural tolerance’. Also, I will refer to the main policies, practices and paradoxes of today’s Portuguese context concerning urban inclusion and cultural inheritances in general and, in particular, for refugees and/or vulnerable migrants moving to the Lisbon Metropolitan Area. Moreover, I will mention the government’s trend of sending these refugees to rural areas and small/medium-size cities, whilst pointing out the crucial role of digital networks in preserving social bonds and building citizenship. As for grass-roots initiatives, I will present the project *Refugi.Arte em Marvila*, boosted by the architectural Cooperative Working with the 99%, and the projects *Orquídea Silvestre* and *Tayybeh*, both spearheaded by the Association Family of Refugees, with different levels of action and effects. I will conclude with a short cross-checked theoretical-empirical analysis.

Keywords: INSEhRE 21; *Refugi.Arte em Marvila*; *Orquídea Silvestre*; *Tayybeh*.

Introduction

My paper cross-checks and analyses the information gathered for my individual post-doctoral research project entitled *INSEhRE 21. Socio-spatial and housing inclusion of refugees in contemporary Europe: Lessons from the African diaspora in Portugal*, during about the first two years of scientific activity, bearing in mind that the project was launched in early 2017 and is estimated to be concluded in 2023 (Viegas, 2016). Against this backdrop, the article focuses on the major political trends and dynamics currently formulated around the subject of socio-spatial and housing inclusion, including of refugees and vulnerable migrants, in Portugal, particularly in the Lisbon Metropolitan Area, all the while confronting dominant approaches with three initiatives boosted by organisations of the civil society (hopefully!) countering exclusionary processes. My purpose here is two-fold: (1) to situate the on-going investigation; and, (2) to discuss its future steps and to determine some indispensable adjustments from a reflexive, critical and operative point of view.

For this initial phase of my research I adopted an exploratory and qualitative methodological approach, based on an interdisciplinary, although architectural-rooted, bibliographical review, theoretical and of empirical studies. Also based on fieldwork, including direct observations in particular neighbourhoods of the Lisbon Metropolitan Area and semi-structured interviews to privileged actors: grass-root communities, representatives of the state and immigrants from the Middle East and Africa. Furthermore, I participated in a myriad of national and international initiatives debating and informing of the urban and access to housing situation in Portugal and Europe, and in activities related to refugees, forced migrations and border regimes. Moreover, I started the production of an iconographic roadmap consisting of photographs and maps. For presenting my preliminary achievements I structured this article as follows: (1) the first section dedicated to (re)examining today's major policies, paradigms and contradictions concerning (a) urban and housing issues, (b) cultural inheritances (and material heritages) and (c) the socio-spatial inclusion of refugees and vulnerable migrants in the Lisbon Metropolitan Area. At the same time pointing de-concentration strategies to rural areas and small/medium-size cities of Portugal, with digital social networks playing a determinant function in the building of (a complete form of) citizenship; and, (2) a second section referring to the grass-root projects *Refugi.Arte em Marvila*, *Orquídea Silvestre* and *Tayybeh*, these initiatives emphasising both structural difficulties and small and/or local scale opportunities and accomplishments.

Framework

I will now present the theoretical and empirical framework of the research project *INSEhRE 21. Socio-spatial and housing inclusion of refugees in contemporary Europe: Lessons from the African diaspora in Portugal*. Lefebvre's ([1968] 2009; [1974] 2000) well-known publications of 'the production of space' and 'the right to the city' structure my thoughts specially regarding spatial practices and their materialisations, and the building of (a complete form of) citizenship, as collectively they contextualise and differentiate the production of spaces of representation, i.e. commodifiable, with exchange value, from the production of representational spaces, i.e. with use value. At the same time, these two concepts underline ideas of (over)power, control and discrimination, as illuminated by Foucault ([1977/1978] 2008) and Žižek's (1997) words of 'governmentality' and 'multicultural tolerance', since they point to paradoxical processes of acceptance-rejection and of 'racism with distance'. Together, these notions provide a critical conceptual lens for the analysis of socio-spatial inclusion in general terms and for refugees in particular, as they help deconstructing assorted aspects of the question all the while suggesting specific levels and types of action. I presented a draft of this theoretical-methodological essay – *Spaces of Inclusion in Contemporary Europe* –, at the Association of European Schools of Planning (AESOP) Annual Congress' 17 (Viegas, 2017a).

It is, thus, with this analytical tools that I started looking at the problem of the socio-spatial and housing inclusion of refugees in contemporary Europe, specifically in Portugal, also having as reference the reception of migrants moving from Portuguese-speaking African countries since the emancipation of Guinea (1973), and Angola, Mozambique, São Tomé e Príncipe and Cape Vert (1975). This two-fold orientation favours a deeper analysis of the subjects here under scrutiny – access to space and housing, benefits of urbanisation and the building of (a complete form of) citizenship –, bearing in mind issues (once again) linked to relations of power, such as those accompanying post-colonial and economic matters, discrimination practices, and its physical

expression and consequences. In effect, by adopting a historical-geographical view I provide a privileged starting point for the analysis of the current narratives, policies and practices of the Portuguese government regarding the urban inclusion of refugees in light of the state's principal responses to the urban and housing inclusion of other populations in need, for example African migrants and their descendants, over approximately the last forty years. My article for the Journal *Espaços Vividos, Espaços Construídos (EVEC)* (Viegas, 2018a) opens the discussion around this connection while creating an elementary referential of analysis concerning refugee camps and targeted housing *versus* self/co-produced and rationalised spaces, also launching an investigation bridge to what recently became the New Generation of Housing Policies' political goal and conjectures.

Specifically regarding refugees, the so called 2015 migrants crisis and with it, the European Relocation and/or Resettlement Programmes, introduced new dynamics and challenges to the Portuguese government and the non-state system, this including central and/or local structures activated for the reception and integration of the newcomers. From the Lisbon City Hall to the Plataforma de Acolhimento de Refugiados (PAR) and/or several religious congregations (Serviço Jesuíta aos Refugiados, etc.), numerous were the actors involved in the uncontrolled process of receiving these refugees in a country structurally unprepared for this task, even if the official narratives were, as they still are, of extraordinary openness and support for the cause and persons. Hence, the results of this operation depend(ed) of the room of manoeuvre, capacity of action and primary intentions of those involved in the process, such as technicians, civil society, church members, etc. Also from the limited capacity of response of the Foreigners and Borders Service (SEF). At the same time, the High Commissioner for Migrations (ACM) assumed its important institutional role with enthusiastic support for the integration of refugees and new assistance structures were created, e.g. the Support Centre for the Integration of Refugees (NAIR). What is more, former refugees residing in Portugal created grass-roots associations adopting an exemplary role of care leaders, specifically in the Lisbon Metropolitan Area that received the majority of refugees: according to an interview with a technician (9th April 2019), the Temporary Reception Centre for Refugees (CATR) of the municipality of Lisbon received close to 250 individuals since 2016, out of a total of 1,520 refugees coming with the European Relocation Programme (ACM, 2017:6); In its turn, the Refugee Reception Centre (CAR) of Bobadela, located in a periphery of Lisbon, managed by the Portuguese Refugee Council (CPR), oversaw more than 500 spontaneous asylum seekers in January 2019. Here the infrastructure is saturated and, at the same time, many migrants face extraordinary difficulties as are not legally eligible for obtaining the refugee status (Poulet, 2019).

Urban inclusion

Concerning urban and housing inclusion in general and, in particular, for refugees and vulnerable migrants moving to the Lisbon Metropolitan Area, I will shortly refer to the primary policies, practices and paradoxes of today's Portuguese context as follows: (1) starting with a bird's-eye view on the main exclusionary paradigms, namely the urban renewal processes, some resettlements and forced evictions of those inhabiting in other's property; (2) moving to the topic of cultural inheritances and the building of an ideal(ised) urban society and space, while cross-checking this subject with those of housing struggles; (3) finishing with the government's present-day trend of sending the refugees to rural areas and small/medium-size cities, while stressing the role of digital

networks in preserving family and/or social bonds and building citizenship. In this context, I will firstly refer to the access to adequate housing by middle-income and low-income populations of different cultural and/or ethnic backgrounds, taking into account the transformation of the urban society in progress. Secondly, I will speak of the normative narratives sustaining the contemporary western world's common perception of cultural heritage(s) and material inheritances, all the while supporting the forging of an ideal(ised) urban society and space. Finally, I will refer to the dynamic urban-rural whilst emphasising the attractive features of the benefits of urbanisation, even under difficult conditions.

Exclusionary paradigms in Portugal, particularly in the Lisbon Metropolitan Area, such as urban renewal operations, resettlements and forced evictions, tend to be followed by resistance performances and/or the counter-actions of those denouncing and fighting against dominant interventions and their fierce effects. The dynamics are tangled demanding for an operative and emphatic line of action based on strong political responses that are, on the one hand, capable of analysing the major tendencies of the actual forces in charge, all the while anticipating new neoliberal-driven outcomes and, on the other hand, strong enough to listen and include the revindications of those in need. Currently, in Portugal, the Socialist Government in power is rehearsing a New Generation of Housing Policies, with different programmes, purposes and beneficiaries. At the same time, the parliament discusses versions for a New Housing Law, all proposed by left-wing parties. It is, in fact, an extraordinary political moment regarding housing issues in Portugal. Nonetheless, despite all inclusive narratives and ideological intentions, great paradoxical exclusionary movements tend to consolidate since they reproduce a myriad of socio-spatial inequalities intrinsic to the prevailing neo-liberal system. Yet, both the reading of the main examples and contradictions, and the recent political actions attached, are important to frame the refugee's urban and housing current and awaited status, for being aware of common problems and possible solutions, as recently explored in the article called *Access to housing by all and for all? Paradigms and paradoxes of the Portuguese actuality* (Viegas, 2019a in press).

Cultural inheritances (and material heritages) are also important entrances for conceptualising refugees' conditions, as they provide us with a broader perception of the western world's common self-representations, social and spatial. In fact, these inheritances tend to stress the production of political spaces for the building of 'strategic-oriented' new legacies all the while neglecting or rejecting the production of social spaces based on everyday life practices, these general occurring according to particular necessities, cultures and/or habits. Even (or especially) if these routines support ground-breaking narratives of unique heritage(s) (Viegas, 2019b). Given this worldwide tendency and the very specific Portuguese political moment concerning the access to adequate housing, I question: (1) Which plan is Portugal adopting for the transformation of its ideal urban society and space, and for this matter, how is the country responding to the 2015-onwards (very much) complex European migration issues? Moreover, (2) what spaces are being forged for the deprived communities, particularly in the Lisbon Metropolitan Area? And, (3) what characteristics differ refugees from other migrants and/or social groups in need? As far as I understood (Viegas, 2018b), we are witnessing controversial dynamics as, in general terms, the official narratives of inclusion and openness do not counterbalance the dominant exclusionary logics. What is more, political messages on the subject of refugees do not focus on housing issues as a primary choice albeit, paradoxically, they emphasise the role of the migrants as users-consumers in major urban centres, such as Lisbon.

Small/medium-size cities and rural areas became the principal alternative for distributing and receiving these refugees and numerous were the actors involved in the processes of having the migrants around the country. Yet, difficulties regarding this strategy were manifest, namely the isolation amongst family members, including parents, siblings and/or adult sons, and related communities – much of this partially filled by the use of social networks on digital platforms by closed groups –, lack of opportunities and great dependency of the host institutions and their technicians, including regarding jobs and housing opportunities. Some were supplied for the same entity, as will remain for a long time. In its turn, in Lisbon, access to housing problems amongst refugees are now emerging or becoming visible, particularly after the conclusion of the initial 18 months of institutional and financial support, as guaranteed by the European programmes. These occur because many refugees have problems with learning the Portuguese, something considered by them as the ‘key’ of integration. Accordingly, employment opportunities amongst the formal sectors are very limited, and with short earnings. Due to cultural and/or religious aspects, many women do not usually work outside home, hence the families that depend on the mens’ income now have to adapt. Complexifying these situations are the neo-liberal market-driven urban tendencies and their urban paradigms of the city renewal, rehousing and forced evictions, by all means interfering in refugees’ daily lives, some also being targeted with racism and/or xenophobia. Given all these difficulties half of these refugees illegally left the country, some going to the northern European countries, as Germany, while others returned to their original at war and/or devastated African or Middle-East countries.

Grass-root initiatives

Regarding the initiatives boosted by organisations of the civil society (hopefully, not surely) countering exclusionary urban policies, I will concisely present three case studies as they were explored in my field work: (1) the project *Refugi.Arte em Marvila*, supported by the architectural Cooperative Working with the 99%, an art-based inclusive shelter for refugees, economic migrants and low-income residents planned for a municipal under-used heritage facility in Marvila (Lisbon), the Marquês de Abrantes Palace; and the projects (2) *Orquídea Silvestre*, and (3) *Tayybeh* both promoted by the Association Family of Refugees, started by Syrian refugees in Portugal. The first project is an ecovillage and a multicultural community space to be built in the country side of Portugal. The second project is an entrepreneurship that seeks to promote inclusion through the celebration of Syrian cuisine in eastern Lisbon. Collectively, these three case studies provide an overview of the dynamics created around the building of innovative (re)settlements by (and for) refugees and migrants, in the capital and in rural areas, as together they sustain the importance of forging ground-breaking approaches based on, and promoting, a complete form of socio-spatial emancipation. They also stress the great value of civil society, e.g. the local people, refugees or migrants, in promoting inclusionary processes.

Refugi.Arte em Marvila, was conceived in 2017, so as to help with the revitalisation of the low income Marvila Street and surrounding areas, namely the housing neighbourhoods and the disused industrial areas near the river, through the rehabilitation of the Marquês de Abrantes Palace, as marked in Figure 1. It was also thought to empower local communities, vulnerable migrants and refugees, all the while promoting spaces of encounter between these actors as a strategy for curbing down segregationist and/or xenophobic tendencies. The long term presence of the Cooperative Working with the 99% in Marvila Street for two participatory experiences in the neighbourhood

(2014-2017), co-financed through the Municipal Programme for Neighbourhoods and Priority Intervention Zones (BipZip), enabled the building of trust with local residents. Together with a multidisciplinary team they actively participated in and appropriated the shaping of this art-based inclusive shelter-to-be. However, despite the recent international recognition of the project by the International Centre for Migration Policy Development (ICMPD), United cities and Local Governments (UCLG) and UN-Habitat, under the scope of the Mediterranean City to City Project (MC2CM), as reported by Cabannes *et al.* (2018), it has not been launched. On the one hand, the funding request for the implementation of this project (Viegas, 2017b) was denied by the municipality. On the other hand, the City Council prepared a master project for the district with European funding, overlapping local interests and intentions.



Figure 1. Marvila Street and surrounding areas (Viegas, 2017).

Orquídea Silvestre, was launched in mid-2018, and is an ecovillage and a multicultural community space(-to-be) built in the country side of Portugal. The original location was a 134 hectares rural land situated in Aljustrel called Morgado, as marked in Figure 2. Currently the project is considering another placement in Crato, at the barragem das Nascentes, in a close dialogue with the festival Waking Life. The Association Family of Refugees wants to promote inclusion for refugees and migrants, whilst repopulating and revitalising the interior of Alentejo, at the same time communicating and interacting with local people. The first phase of the project concerns the pioneering stage and includes finding access to sustainable infrastructures (e.g. energy and water supply, Syrian vernacular housing – earthen domes, etc.) and food self-sufficiency for 5 persons (refugees and activists) through the use of local resources and the engagement in everyday life activities. The second phase of the project, extended to accommodate 12 persons, considers the diversification and amplification of rural routines aiming at the economic sustainability. The last phase, for 24 persons, targets new forms of entrepreneurship such as ecotourism. The success and timings of this project depends on the capacity of action and the room of manoeuvre of the

Association Family of Refugees taking into account legal and funding difficulties, among others, as well as the involvement of potential partners, such as government agencies, private institutions, etc.

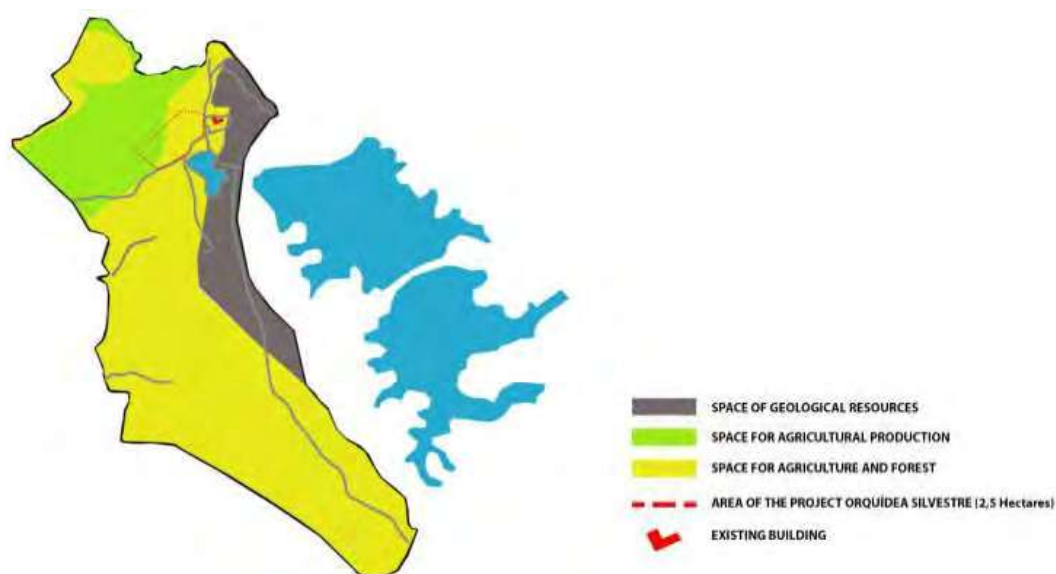


Figure 2. Morgado in Aljustrel, unscaled (Viegas and Velasco, 2018).

Tayybeh was launched in 2017, first as a catering service and later (in early 2019) evolving to a restaurant. The name is Syrian and means both delicious and kind. The project began as a start-up aiming to support Syrian refugee women to create (self-)employment opportunities and, at the same time, to present the Syrian cuisine and culture to the Portuguese society (Figure 3). During the first and second phases of the process, Ramia Abdalghani, with her husband Alaa Ghunim, invested personal time, material and financial resources to develop this entrepreneurship, also to assure the continuity of the project independently of the lack of institutional support and funds. As a caterer, *Tayybeh* served numerous events, some cultural and academy related. Presently the restaurant is established in Moscavide, a consolidated medium and/or low-income housing neighbourhood in eastern Lisbon, bordering the highly expensive urban area Parque das Nações, with its workers and inhabitants. The restaurant was mostly decorated through exchanging services with other start-ups identified online. Take away and oriental cooking school are additional services provided or in preparation. Albeit these refugees' many personal difficulties, *Tayybeh* is functioning being a fine example of emancipation associated to strong dynamics of socio-spatial inclusion trough food, with its recent large media coverage being important for its success along with the quality of the service (Viegas 2019c).



Figure 3. Alaa, Ramia and their co-workers at the restaurant *Tayybeh* (Viegas, 2019).

Analysis and future steps

The article situates the project *INSEhRE 21. Socio-spatial and housing inclusion of refugees in contemporary Europe: Lessons from the African diaspora in Portugal* as I identify the dominant narratives and the production of political spaces associated to the access to urban space and/or housing for, and by, several sociocultural and economic strata. Future steps of the study must necessarily focus on a more profound exploration and analysis of the refugees' contemporary conditions. Besides, from another point of view, I emphasise the participation of civil society regarding the refugees' problems through the presentation of three case-studies of emancipatory practices or efforts. Those must be accompanied and others should be identified. These cases will contribute to interpret the Portuguese 'urban question', bearing in mind both political and grass-roots approaches, also discussing operational aspects. Given this framework, emancipation *versus* dependency patterns amongst these migrants are crucial dimensions concerning the right to the city, since the access to urban benefits (housing, employment, health, etc.) is not, *per se*, the path for the co-building of (a complete form of) citizenship. Here, the role of digital networks could be further explored taking into account the denoted urban-rural dynamics. These could be examined as particularities of the system, since each group of actors and geography have specific routines, to contrast with activities in the Lisbon Metropolitan Area.

From a much more specific point of view, case studies as the project *Refugi.Arte em Marvila* contribute to a broader perception of the role of architects, with other technicians, as privileged mediators between local actors and the political arena, taking into account different strategies – top-down and bottom up – for achieving the same goal, *i.e.* socio-spatial and housing inclusion of refugees in the Lisbon Metropolitan Area. Also, *Refugi.Arte em Marvila* underlines polarised understandings of the use of cultural heritages under the political umbrella of inclusion. As for *Tayybeh*, since it is located in a particular eastern part of Lisbon, it may provide relevant information regarding the socio-spatial and cultural dynamics built around the initiative, as well as inform about small scale interventions penetrating the society. In its turn, the project *Orquídea Silvestre* follows the strategy of the Portuguese government regarding the repopulation of small/medium-size cities and rural areas, even if these decentralisation trends do not follow global movements for the large cities. This case study could be exemplary for analysing the reception of self-empowered refugees and vulnerable migrants in specific rural areas, also for comprehending the difficulties attached and the ways to overpass them. The construction of rural housing – e.g. earthen domes of the Syrian-type –, different from the Portuguese, and the building of infrastructures are also of interest for the project *INSEhRE 21*.

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SP31

Learning loops in the public realm. Enabling social learning in communities to tackle the challenges of cities in transition

Transposition of Advocacy Experience as Triple-Loop Social Learning in Albania: Fighting HPPs in Protected Areas from the Vjosa River Basin to the Canyons of Osumi

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Abstract: This paper traces the learning experiences of communities, living near protected areas, taking to the Administrative Court, in view of a lack of environmental crime law that would render these cases penal procedures, government decisions awarding the right to build hydropower plants to several national and international companies. We focus on the first four such administrative lawsuits in Albania, arguing against the construction of HPPs in the protected areas of the Vjosa river basin, the Valbona Valley National Park, the Seta river, and the Canyons of Osumi, from 2016 to 2018. Based on Brown et al.'s definition of triple-learning loops as a process transformative of decision-making paradigms and of the learning process itself (2015, pg. 1685), we demonstrate how the fight to protect national parks, biomonuments and dependent livelihoods, accompanied by social media campaigns and protests, have informed practices of participatory social learning (Brown 2015, 1686). We break down the dynamics of the multi-level and multi-agency approaches of these claims, to denote and explain the role of multiple social actors opposing the lack of compliance with environmental legislation on protected areas. We, ultimately, argue that the switch in feedback loops has acted as a catalyst for sustained behavioural change, and rendered possible the transposition of advocacy practices across different communities.

Keywords: triple learning loops; protected areas; environmental law; adaptability; Albania

Introduction

Since 2008, one of the main priorities of the Albanian government has been the exploitation of water resources in the country. First and foremost, the idea for the exploitation of water resources in Albania is based on the wrong conviction that given how the per capita water use in the country is among the highest in Europe this resource is endurable and associated benefits are permanent. Thus, the Albanian government focused on the massive development of hydropower plants (HPPs) of different sizes and types. These efforts however, have been accompanied by an indiscriminate action to exploit all water resources, independently of their ecological and biological values and approved permits for HPP constructions have been awarded independently of their social and environmental impacts. This way “[t]o date there are around 500 hydropower plants in Albania that are either operative, under construction, or planned. Of these, 105 are located in protected areas. Such power plants have had a significant impact on local biodiversity (Gjoka, 2018).” The lack of transparency that surrounded the processes of concessions the government made to private, foreign and in-country companies contributed to a widely chaotic misinformation process that made for a powerless citizen. At present, 95% of

Albania's electrical consumption needs are covered by production from hydro sources (Ministry of Infrastructure).

However, the implementation of such policies is not backed up by any significant, or meaningful study, on water resources in Albania and any proof that the production capacities of existing and proposed HPPs would eventually outweigh the permanent destruction of the natural ecosystems where they were built or are planned (Revista Monitor, 2013). The case is even more so when it comes to HPPs built in protected areas (PA). More to this point, several environmental NGOs and activists in Albania and elsewhere argued against these measures. The various privately-owned HPPs have brought about significant alterations to the Albanian landscape. The most prominent biologists in Albania saw themselves improvising as activists and arguing in favor of protecting the flora and fauna (Miho 2015a; Miho 2015b; Miho 2015c).

More specifically, just to briefly reference the average drop in annual rainfalls, the Albanian Institute of Statistics (INSTAT) reports, net domestic production of electricity decreased by 36.6% in 2017, with "public hydro plants decreas[ing production] by 42.7% and independent and concessionaire power producers decreased [production] by 21.3%" (INSTAT). The contrary was true a year later, to be fair. According to the same data gathering and interpretation process, in 2018, a good year given the rise in 89% gross domestic production of electricity, "public hydro plants contributed 68.4%, while independent hydropower plants realized 31.6% of the net domestic electricity production" (INSTAT).

As studies on the impact of HPPs, small and medium, that have sprung everywhere are beginning to be carried out either by Albanian biologists and scientists, or international bodies concerned with the environment it is obvious that the abovementioned premise does not hold true. While Albania might have a high water resource per capita in general, the relatively low and fluctuating productivity of HPPs when compared to their environmental impact does not always justify their presence.

Furthermore, the indiscriminate construction of HPPs has forever altered the landscape of the livelihoods of the communities that reside near them. While often advertised as one of the last unexploited European gems, local eco-tourism has suffered, especially in the case of touristic initiatives relying on the Valbona river PA, as we will show later on in this paper.

The current government came into power in 2013 with the promise they would halt the ferocious HPP development, but this did not prove to be the case and personal and corruptive interests have since often prevailed. Then again, the Albanian government is paying lip service to European integration strategies aiming at supporting and developing sustainable tourism, increasing environmental quality and contributing to 'blue growth', such as the EU Strategy for the Adriatic and Ionian Region (EUSAIR).

The situation escalated to the point that an assessment study, titled 'Identification of water related conflicts linked to hydropower project in Albania' (Qendro, 2017) carried out as a joint effort of several main environmentally focused think tanks and NGOs operating in Albania in 2017 showed the dire consequences of the clashes between communities threatened by the construction of HPPs and state authorities. More specifically, between 2012 and 2016, 34 people were arrested, among whom protesting the Cernaleva HPP three women and one minor, while six casualties were recorded overall.

Meanwhile, the negative impact of HPPs on ecosystems and the communities left without water became the subject of several journalist denouncements both at home and abroad. Among the most outrageous examples, the Rapuni 1 and 2 projects built in the Shebenik-Jablenica national park registered the desertification of much of the protected area and failed local mini businesses relying on water mills (Qendro, 2017).

Community Organization and Knowledge Transfer

This section of the paper traces the learning experiences of communities, living near protected areas, taking to Administrative Court, in view of a lack of environmental crime law that would render these cases penal procedures, government decisions awarding the right to build hydropower plants to several national and international companies. We focus on the first four such administrative lawsuits in Albania, arguing against the construction of HPPs in protected areas and more precisely those of Poçëm in the Vjosa river basin, the Valbona Valley National Park, the Seta river in the Dibër Municipality, and in the Canyons of Osumi, from 2016 to 2018. We demonstrate how the fight to protect national parks, biomonuments and dependent livelihoods, accompanied by social media campaigns and protests, have informed practices of participatory social learning (Brown et al. 2015, 1686).

The most sensational case of an HPP being built on a river while highly disrupting its ecosystem was that of the HPP planned in Poçëm, in the Vjosa river, one of the few existing wild rivers in Europe. The plans for Poçëm made the round of the news and of the European community of environmentalists, whom organized and staged several protests in Tirana, in front of governmental buildings. What gave protesters a leg up in this fight was the successful association of Vjosa with the ‘Blue Heart of Europe’ area of which the river is part, tracing the beginning of the river as the Aoos in Greece and making casual references to the mythologies the latter is tied to. Biologists, nature conservationists and both traditional and social media jumped on the branding. Although within national parks from Slovenia to Greece a total of 1,003 HPPs were estimated to exist in 2018, while 188 were being built and 2,798 were planned (Morris, 2018), the argument that the dam in Poçëm would forever alter the landscape of Vjosa caught up. Poçëm’s case altered the landscape of protests organized by small and poor communities, which often were paid fleeting attention by traditional media, but never received any support from outside civil society organizations (CSOs) and/or environmental actors. The community protest in Poçëm benefitted from visual materials and strategic protest tools, such as people chaining themselves to block nearby national roads (Koha Jonë, 2016). Another peculiarity of the protests in favour of the preservation of the Vjosa River was the public stance against the governmental decision on the part of five Mayors, belonging to the Përmet, Tepelenë, Memaliaj, Mallakastër and Selenicë Municipalities, who argued against the Environmental Impact Assessment that informed such decision, in February 2017 (BIRN, 2017).

Thus, Poçëm marked the first instance of a community, 37 individuals supported by three national NGOs, taking the state to court, and more precisely sued the now former Ministry of Energy and Industry, the now former Ministry of Environment and the National Environmental Agency, over the approval of an HPP permit. The sensationalism had turned into excitement and hope and the materialization of the protest into a court case, the first of its kind. CSOs felt more compelled and secure enough to speak up and insisted on the government’s obligations to several international agreements, such as the Bern Convention (ecoalbania, 2018). On 2 may 2017, via Decision no. 1813 (ecoalbania, 2017), the Administrative Court of First Instance of Tirana found the approval of the HPP permit on Poçëm to be invalid and stated that the expenses incurred by the plaintiff were to be covered by the indicted parties. More precisely, the decision of the Court stated that the developer did not fulfill his duty, and did not inform the general public on the public hearing, according to conditions specified in point 6 of DCM no. 247, date 30.04.2014, ‘On the definition of rules, requirements for informing procedures and the involvement of the general public in environmental decision-making processes’. The latter states that the developer must notify and inform the public via audiovisual media channels, printed local and national media, given the national character of the HPP project, the placement of informative tables at the place where the project is to be developed, and making available material concerning the public hearing at the offices of the Local Government Unit (ecoalbania, 2017).

Although the victory of the community impeding the construction of an HPP in Poçëm was historical and ground-breaking, the practice of building HPPs in protected areas did not stop there. Another, more sensationalist, case was that of the HPP permits approved on the Valbona river.

“In January 2016, local people in Valbona Valley National Park learned of the plans to build as many as 14 hydropower plants along 30km of Valbona River, 8 of them wholly within the National Park. The procedure and content of the projects’ environmental impact assessments demonstrate non-transparent decision making, disregard for local communities’ well-being and indifference towards high conservation value ecosystems, including a complete disregard of the fact that the development is occurring in a protected area” (Toka, 2018).

Here the Valbona community benefitted from a relatively long, taking into account the history of the nation, and stable operations of eco-tourism. The Valbona community had been attracting tourists from all over the world as one of two most popular mountain destination, together with Theth, and had been advertised internationally by big international actors acting in the country, such as The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Albania, which supported the development of the Peaks of the Balkans trail. Needless to say, the Valbona community protests made use of the momentum built by the protests still occurring with regard to the Poçëm HPP and representatives of the cultural community in Albania, who had supported the electoral campaign of the ruling party or the Prime Minister himself given his role in the cultural promotion of the country abroad, voiced their stance against the HPPs. A series of events and actions were organized by different stakeholders, among which the most popular proved to be two concerts: one organized in Valbona, which attracted Albanians from all over the country and from Kosovo as well, and another one in Tirana in the city center. Protest supporting the conservation of the Valbona River were also held in New York. The concerts were played by internationally renowned figures. The events were accompanied by some ongoing fund-raising that goes toward the legal battle.

The court case regarding Valbona proved to be a harsher battle, accompanied by some outrageous court standings. First and foremost, the suing community, the Valbona community, at a certain time was not even recognized as a lawful representative of the region by the Administrative Court of First Instance of Tirana. The first lawsuit “was thrown out by the court after 14 hearings and 5 months,” as the Court stating that the government makes decision with the best interest of the citizen in mind. The plaintiff argued that their rights to free speech and “right to information, involvement in decision making and judicial recourse in development decisions with environmental impacts,” (Toka, 2018) deriving from the Aarhus Convention of which Albania is a signatory, were not respected. The case is still being processed, while the construction company, or the HPP company, is sporadically working on the project, excavating and permanently altering the environment. Conversely, the developer Gener-2 and their subsidiary company Dragobia Energy have taken to court one of the main organizers of the protest over damages on their image. The Toka NGO, as the leader of the lawsuits and any other organization against the HPPs in Valbona, nevertheless states that the experience so far has been overall a positive one. “The battle so far has been notable in helping to change the national perception of protected areas and National Parks, from distrusted, ‘mysterious’ zones created by the government to limit the rights of inhabitants to national treasures belonging to the people” (Toka, 2018).

In 2015, the National Territorial Council, part of the National Territorial Planning Agency, released a permit for the construction of four HPPs onto the Seta River, to the HydroSeta Power company. Given how the area is protected by Albanian law, and more precisely via Decision of the Council of Ministers no. 676, date 20.12.2002, “On the provision of protected natural areas” and Law no. 112/2012 “On the integrated management of water resources”, inhabitants of the area brought their claim to court asking for the partial annulment of the concession contract concerning the construction of the last HPP, SETA 4. The inhabitants claimed that this particular HPP would impact two, out of four, canyons which are within the protected area. While the inhabitants of the area argued that the deviation of the water resources would impact PAs and decimate the trout population, the representative of the former Ministry of Infrastructure and Energy argued that given how the HPP would not be built on PAs or biomonuments the plaintiff’s claim had no grounds. The inhabitants of Çidhën faced the state in court since 27 July 2017 and during 17 months they participated in a total of 20 judicial sessions. In August 2017 the police prosecuted 20 inhabitants that tried to block construction

in the area. In December 2018, the Administrative Court of First Instance definitely dismissed the plaintiff's claims and although the case was presided by a judge, "the decision was taken by a majority of votes" (Curri, 2018).

Nevertheless, a last case arguing for the protection of PAs, was still won by a community taking on the role of the plaintiff. A concession to the HEC Bigas and Veleshnje company, to build two HPPs in the Bigas watershed, in the Canyons of the Osumi River was kept secret for years, from 2013 to 2018 to be precise, until the case was uncovered by one of the top media channels in the country. Following the highly unpopular news, and how the Canyons of Osumi have become one of the main touristic attractions in the country, highly advertised via celebrities and high-level politicians, and hence a meaningful generator of revenues for the areas, adjacent communities, touristic operators and the general public started protesting the decision both in the streets and online. In a very successful first, the construction permit given to the developer was found to be irregular by the Ministry of Tourism and Environment and the Ministry of Infrastructure and Energy (MIE). More precisely, the MIE announced on 15.02.2018 that the administrative act concerning this case's Environmental Impact Assessment was null. Ultimately, the developer would sue the government on the rescission of the permit to no avail.

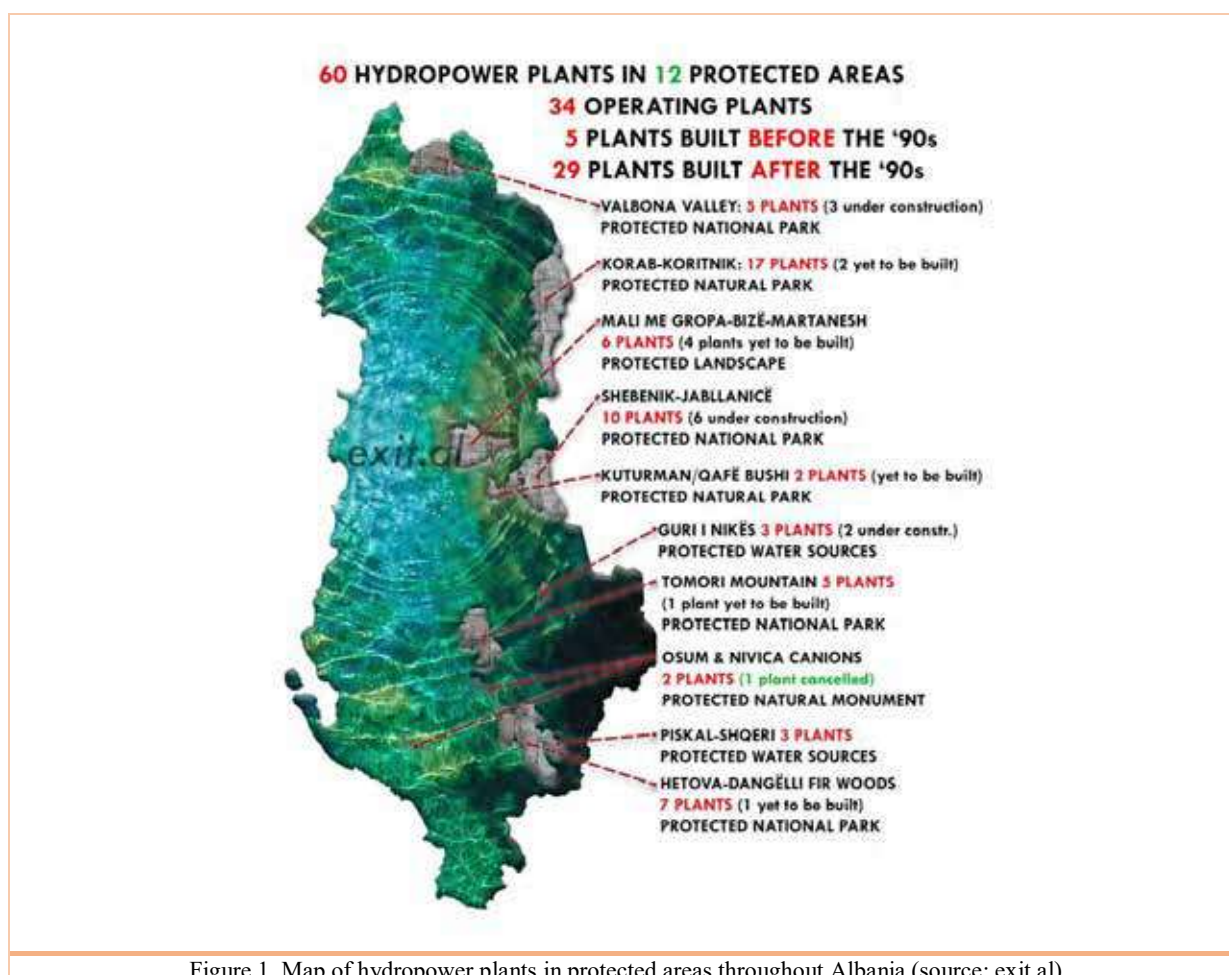


Figure 1. Map of hydropower plants in protected areas throughout Albania (source: exit.al)

A successful series of community protests was that of the inhabitants of Zagoria. The Albanian branch of the Dutch giant, Shell, had signed another silent contract with the National Agency of Natural Resources, representing the former Ministry of Energy and Industry, to drill in four different blocks in Albania via DCM 350, date 12.6.2018, "On the approval of the contract dividing production on the research, development and production of hydrocarbons in the soil, in Albania, Block 4, between the Ministry of Infrastructure and Energy, represented by the National Agency for Natural Resources and Shell Upstream Albania B.V.". When the Dutch

company announced community hearings, as per Law no. 10281, date 20.05.2010, “On concessions”, protests ensured. The popularity of the region, deriving not just from its touristic destination status but from the fact that one of the most popular bottled waters comes from Zagoria and is named after the region, social media followed up with online petitions and denouncing the nature of the arrangement. Ultimately, unable to conduct public hearings with the communities and overwhelmed by the pressure coming from public opinion, Shell Upstream Albania declared it was giving up its search for oil in Zagoria.

Indeed, the transformation of the overall situation regarding translated into such pressure for the next Minister of Infrastructure and Energy, after the restructuring of the Ministry and the government even more widely, that in February 2019 she declared that she would freeze works on the two HPPs that were to be built in Gramsh, near the Holta Canyon, another very popular tourist spot (Spasić, 2019). The declaration did come after protests were organized by inhabitants of Gramsh and villages near the Holta Canyon. In a first, the Minister also stated that she would investigate 182 licenses issued to build a total of 440 HPPs (Spasić, 2019), and backed her statement with the fact that the damages these SHPPs would cause outweigh the economic gain they generate (Spasić, 2019).

What had occurred at a national level, thanks to social media, traditional media and journalists that were willing to challenge the status quo of silent deals, agreed upon away from the public eye, was participatory social learning which had translated these actions into “knowledge exchange, adaptive management and local leadership, together with recognition of informal or tacit knowledge systems that extend beyond conventional scientific knowledge (Nazarea 2006 in Brown 2015, 1686).” Participatory social learning allows for “[p]luralistic approaches to knowledge development can provide an important enabler for engagement of civil society in sustainability planning if they can incorporate longer time horizons, adaptability and feedbacks, integrated approaches, and systems thinking (Burch et al. 2014 in Brown 2015, 1686).”

As Löf explains in his paper, *Exploring Adaptability Through Learning Layers and Learning Loops*, the need of small communities, that depend on water resources and rely on protected areas statuses in various locales throughout Albania to sustain their livelihoods, to adapt and react against a situation always in their disfavor led to various learning loops (2010). Social learning with relation to environmental protection and conservation has also been the subject of relatively recent studies (e.g. Keen and Mahanty 2006; Maarleveld and Dabgbégnon 1999; Pahl-Wostl et al. 2008; Stagl 2007; Wals 2007 in Löf 2010, pg. 534).

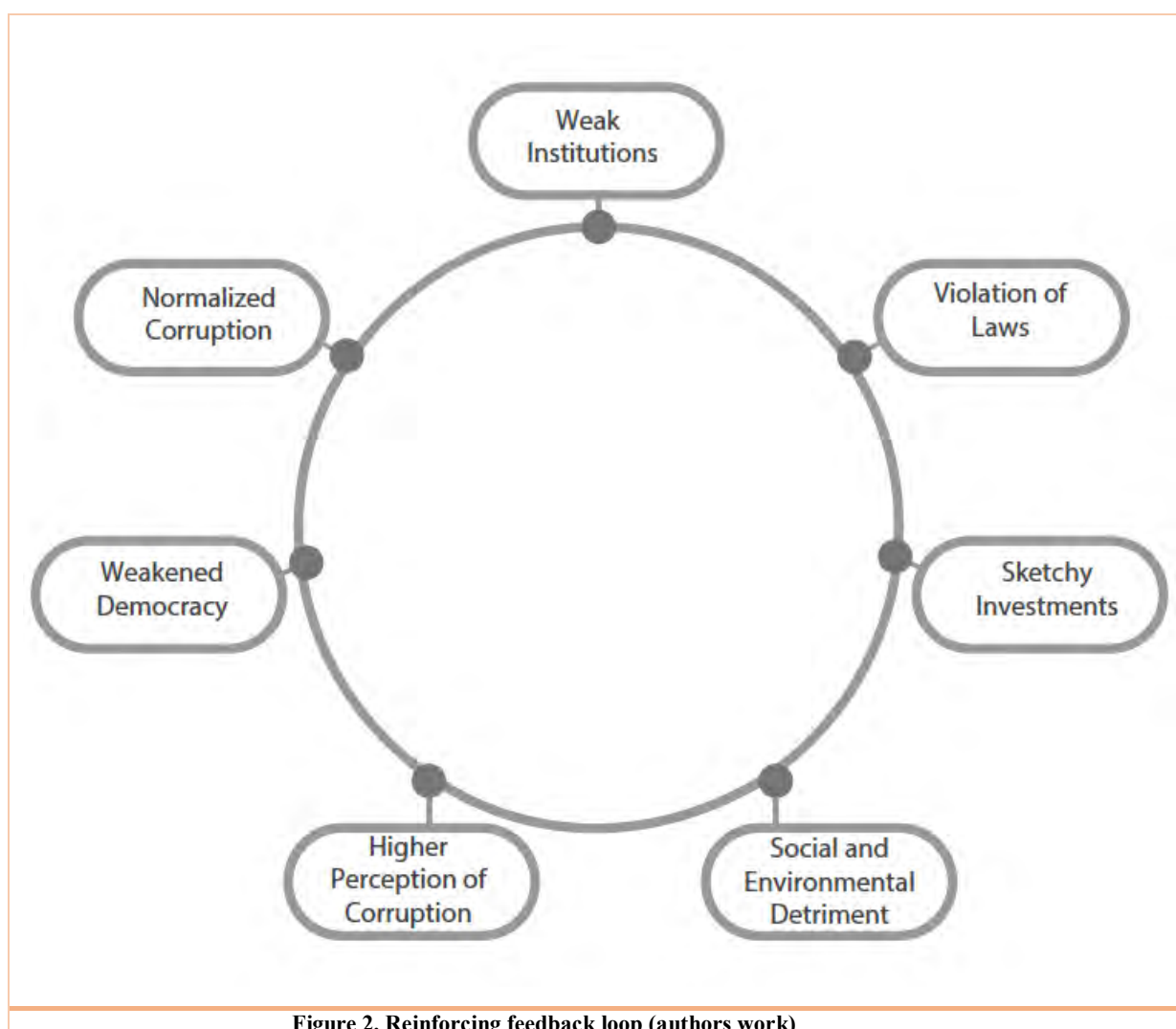
“Social learning has for instance been applied to denote individual learning in a social context; learning by social aggregates (Stagl 2007); or synonymously with participatory processes, co-management and collaborative governance (Mostert et al. 2007). The latter conceptualization emphasises that multiple-loop (group-layer) learning does not come automatically but requires deliberate and strategic efforts. (Löf 2010, pg. 534).”

Transformation of Feedback and New Learning Loops

Based on Brown et al.’s definition of triple-learning loops as a process transformative of decision-making paradigms and of the learning process itself (2015, pg. 1685), we demonstrate how the fight to protect national parks, biomonuments and dependent livelihoods, accompanied by social media campaigns and protests, have informed practices of participatory social learning (Brown 2015, 1686). We, further, argue that these communities have been able to turn a self-reinforcing feedback loop, one where economic laws undermine national and international environmental legislation contributing to the mismanagement of national natural resources for over a decade, to a balancing one, where implementation of environmental legislation is equated to higher community awareness and organization. Employing Löf’s distinction of governance versus government and governing (2010, pg. 534), we break down the dynamics of the multi-level and multi-agency

approaches of these claims, to denote and explain the role of multiple social actors opposing the lack of compliance with environmental legislation on protected areas.

For years, and more precisely since the communist regime in Albania, HPPs were built in PAs altering the livelihoods of the communities living near them and making use of protected resources. Caught in a negative feedback loop where corruption weakened democracy and left no space for governance, Albanian citizens kept quiet. Switching to a double-learning loop would have meant that the citizens in the communities of Osum, Vjosa, Seta and Valbona would have had to put up with the at least one of the elements represented in the loop diagram in Figure 2, - ultimately, an impossible task if they wanted to achieve social and environmental justice.



In the previous section of the paper, we have shown how communities, together with other key actors, were able to switch to a balancing loop (Drutman, 2015), in which corruptive practices of economic legislation were countered by pro-active communities arguing in favour of the rightful application of national environmental legislation, thus, bringing the democratic system in Albania to a new stable system.

To better support the claim of this paper, that is to say that the learning loops in Albania represent a case of triple-loop learning rather than a double-loop one, it is worth shortly focusing on the distinction between the two.

As Petersen points out, landscape conservation has usually made use of single-loop learning processes, where problem solving was directed by the desired achievement, with new strategies being continually envisioned and

implemented after initial failures (2014, pg. 784). Nevertheless, this kind of learning loop only led extremely low successful percentages, and it led to even less operational changes (Petersen 2014, pg. 784). In other respects, double-loop learning requires the identification, development and integration of new behavioral changes, “as informed by the new values and frames, into group norms and relationships so that it becomes the new normal (Putnam 2014).” While Brown et al. provide the best definition of a triple-loop learning process:

“Triple-loop learning takes actors beyond pre-existing structures by challenging existing decision paradigms and the contexts which frame the decision-making process, including underlying principles and norms (Maarleveld and Dabgbegnon 1999; Pahl-Wostl 2009). Full triple-loop learning may therefore be conceptualised as learning about the learning process itself and how this process can be further enhanced to tackle new challenges and opportunities (Brown et al. 2015, 1686).”

In short, the differences between the different learning loops that have wanted to specify in this paper, with regards to the events that have taken place in Albania following the approval of HPPs in nationally protected parks, is also presented by Löf, in his publication with the *Environmental Education Research* journal:

“*Single-loop* learning refers to ad hoc or routine learning, simply responding to errors by making smaller adjustments. *Double-loop* learning refers to actively trying to change protocols and organisational norms in response to detected errors (Argyris and Schön 1978). *Triple-loop* learning entails fundamental change of the entire mental model the governance or management process is based on (Keen and Mahanty 2006 in Löf 2010, pg. 533, authors’ emphases).”

In this paper, we, ultimately, argue that the switch in feedback loops has acted as a catalyst for sustained behavioural change, and made possible the transposition of advocacy practices across different communities in Albania. We have focused on these learning loops as they challenge the status quo and disrupt the correlation between poverty, inequality and environmental degradation. Most importantly, we hope this paper serves as a reminder that environmental and social justice are deeply interwoven and that changes with regards to adaptability and governance call for:

“[b]alancing short term needs with longer-term requirements for sustainability while managing multiple uses, accounting for legacy issues, and integrating the dynamic and complex relationships between human and nature through space and time requires a more complex and integrative approach than is normally used in biodiversity conservation and natural resource management (Thiault et al. 2017, pg. 448).”

We also aimed to show in this paper, that the approach toward the protection of national parks and connected livelihoods employed “[m]ulti-modal (direct, deliberative), multi-level (local, urban, national) and multi-user (policy, [activist], research) learning loops (JPI Urban Europe)”, not only as the Looper project distinguishes in general, but also as has become general knowledge when dealing with conservation efforts and/or water management (Petersen 2014, pg. 782; Balazs 2014, pg. 99).

Conclusions

HPPs, be them small or medium, in a time of technological acceleration most often cannot catch up with their own temporalities, - the multiple timelines that include needs for approvals, public hearings feasibility studies, and the upkeep - and the social and political worlds, - often small and already having achieved self-sustainability, just like the ones we have presented in this paper, - where they would be of relevance are already obsolete. The role of the technical/engineering expert becomes irrelevant and the role of the nature conservationist takes crucial importance. The false image these failed megaprojects projected as a necessary

modernity were not only met by a knowledgeable public, but one that was willing to learn and do more. At a time of a new climatic regime, the vision of relying for energy production on the exploitation and alteration of small and medium HPPs proves unsustainable. Drawing from UNFCCC data, rainfall in Albania is expected to decrease by approximately 14.37% by 2080 and by more than 18% by 2100, while becoming more unpredictable throughout the year (Gjoka, Hoxha and Bashmili, 2018, 107-8). The overview of the exploitation of water resources in Albania, as a top-down process regulated by central government deepening financial strains for local communities, presents us with what Bruno Latour hypothesizes, “the explosion of inequalities and the denial of climate change are one and the same phenomenon (2018, p. 1-2).”

This paper is instrumental in the way it gives out an accurate account of the learning loops through which communities around Albania, living near protected areas and living off of them, passed in an organic manner with on-the-spot organization, guided by the principle of law. The social learning lesson we draw from the above cases is that it is precisely the triple-loop learning that which makes for long-term structural change (Balazs 2014, pg. 100). Furthermore, it is imperative to demonstrate, as this paper does, that these communities shook things up and completely transformed the feedback loop that the news and top-down development approaches dictated daily via the news. These communities were successful in gaining national and international visibility and went from marginalized groups to efficient governing bodies. They transformed a negative feedback loop, one where corruptive practices weakened democracy and public institutions, into a positive feedback loop, one in which governance and adaptability determine the fate of communities and the environment, and the kind of development they seek. The first four cases of citizens taking the state to court over nature conservation marked the forming of a new public, proactive, international, collaborative, engaged and engaging, and a shift from passive to active citizenry. A culture about water, biodiversity, the protection and conservation of ecosystems as values to be upheld not as commodities to be fought upon, and about the support and promotion that remote populations, which perform this kind of work, deserve was set. “[S]ocial learning provides a link between procedural and distributive justice; to the extent that it changes water management institutions (Balazs 2014, pg. 99).”

What this paper ultimately demonstrates is that communities are willing and able to contribute to effective governance even in a developing and problematic context such as that of Albania. However, what is lacking in the latter is the use of online platforms and other traditional methods, such as traditional community planning and design workshops, to effectuate policies. These tools were, however, only employed to resist top-down, environmentally exploitative policies. To conclude, we would very briefly state that the current state of development and planning policies should shift focus from ‘sustainability’ to inclusive development, which “focus[es] on social wellbeing and protecting the ecosystem services of nature through redefining political priorities, especially in the context of the Anthropocene (Pouw and Gupta, 2016, 104).”

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Learning loops in the public realm. Enabling social learning in communities to tackle the challenges of cities in transition.

A participatory approach to Societal Cost Benefit Analysis (SCBA) as a way to start the debate on transforming residential subdivisions

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Abstract: Residential subdivisions remain the preferred living environment for the majority of the people living in Flanders. But, this mode of living comes at a high societal cost. These costs are paid by society as a whole, whereas the advantages are only experienced by the residents (De Decker, 2011). In Flanders, there is an ongoing debate on how to reduce these costs since the sixties (Anselin, 1967; Braem, 1967; Strauven, 1980). In spite of this debate, the subdivision of open land continues at a rate of 6 ha each day (De Decker *et al.*, 2010). Our hypothesis is that a societal cost-benefit analysis (SCBA) could benefit a more informed debate. A SCBA analyses the costs and benefits of (spatial) scenarios (ECORYS, 2008, p. 15) and relies on heuristics to translate these costs and benefits, in a transparent way, to a number of (monetary) values. As such a SCBA allows to include perspectives from multiple sectors (e.g. planning, ecology, heritage, mobility) and supports a strategic debate among policy makers. The conducting of a comprehensive SCBA is a complex process. We particularly propose to use SCBA as a dynamic and participatory instrument, that evolves along with the debate. As such, it would no longer only be a decision-support tool for policy makers, but also a capacity building tool that helps participants to reflect over the impact of their current (spatial) behavior and over how to reduce the societal cost of this behavior. In the paper, we will discuss how the participatory SCBA supports the definition of values, the composition of the value framework and the construction of the publics.

Keywords: participatory societal cost benefit analysis; dynamic instrument; value framework; constructing publics

Introduction

Residential subdivisions are the preferred living environment for the majority of inhabitants of Flanders for reasons of privacy, presence of green and overall quietness (studiedienst Vlaamse Regering, 2016). But, this low-density and uniform mode of living comes at a high cost, because it is causing inefficient services, congestion, low biodiversity, car-dependency, social isolation... (Johnson, 2001; Holden, 2004; Vestergaard, 2006; De Decker *et al.*, 2010). These costs are paid by society as a whole, whereas the advantages are only experienced by the residents (De Decker, 2011). Already since the sixties there have been a public debate that discusses the societal costs of low-density subdivisions, in particular the (negative) impact of increasing spatial dispersion (Anselin, 1967, Braem, 1967, Strauven, 1980).

Recently this debate has been gaining renewed attention in Flanders, triggered by the approval of the Spatial Policy Plan for Flanders (white paper) in November 2016. The plan sets a clear ambition to reduce the costs of dispersed urbanization as it claims a ‘net-development-stop’ by 2040 (Ruimte Vlaanderen, 2016). From that moment onwards, the net amount of built surface can no longer increase. A new residential subdivision can only be developed if one of equal size is removed.

In spite of this renewed attention, the subdivision of open land continues at a rate of 6 hectares per day in Flanders (De Decker *et al.*, 2010). With each new subdivision, the costs for society increase (Vermeiren *et al.*, 2019). The task of designers and policy makers to initiate this debate with inhabitants of residential subdivisions is difficult and sensitive because people like their way of living. The hypothesis of this research is that this can take place in a more constructive and informed way (ECORYS, 2008). One way to do this would be to make the costs and benefits of alternative modes of deploying explicit. Therefore, we propose to introduce a so-called ‘participatory Societal Cost Benefit Analysis (participatory SCBA).

In this paper we will first describe the methodology of the participatory SCBA, then sketch the context of the cases in which we will test this method and finally discuss how the participatory SCBA supports the definition of values, the composition of a value framework and the construction of the publics; three conditions to make the debate on the future of residential subdivisions more constructive and informed.

Methodology

The aim of the research is to develop an operational framework that will support the use of a participatory SCBA to come to a constructive and informed debate among actors involved in residential subdivisions (residents, local policy makers, local organizations) on the societal costs of their mode of living and possible tradeoffs between individual and collective costs and benefits. The development of such operational framework requires an iterative process that invites both researchers and residential actors to test tools and approaches and to reflect over experiments and findings. The proposal is therefor to adopt the method of action research (Wicks and Reason, 2009). More specifically, the proposal is to develop the operational framework in two cases: an urbanized neighborhood in the city of Hasselt and a residential subdivision in the municipality of Diepenbeek. The process in the case in Diepenbeek has not been started, therefor we will only discuss the case in Hasselt.

Participatory SCBA

A societal cost benefit analysis (SCBA) is a method to analyze the societal costs and the societal benefits of (spatial) scenarios (ECORYS, 2008, p. 15). It relies on heuristics to translate these costs and benefits, in a transparent way, to a limited number of (monetary) values. As such a SCBA allows including perspectives from multiple sectors (e.g. planning, ecology, heritage, mobility) and supports a strategic debate among policy makers on, for instance, retrofitting strategies.

Conducting a comprehensive SCBA is a complex process. The estimation of the costs and benefits of a scenario implies an insight in the impact of this scenario on the spatial behavior of all relevant actors, today and in the years to come. Practice has demonstrated that “the quantification of only a part of the impact of a scenario can already provide additional insight for policy making. Even the mere adoption of the mode of thinking of an SCBA can already contribute to the success of projects in the social domain” (ECORYS, 2008, p. 13)

Scholars therefore propose to use SCBA as a dynamic instrument which evolves along with the debate (ECORYS, 2008). The more data are available, the more nuanced the estimations will be, and the more interesting the SCBA becomes as a decision support tool. Interpreted as such, conducting an SCBA is, in fact, a collective learning process (Albrechts, 2004) during which all the involved actors incrementally explore and agree upon how to quantify the impact of spatial scenarios. The learning potential of this process increases from the moment that not

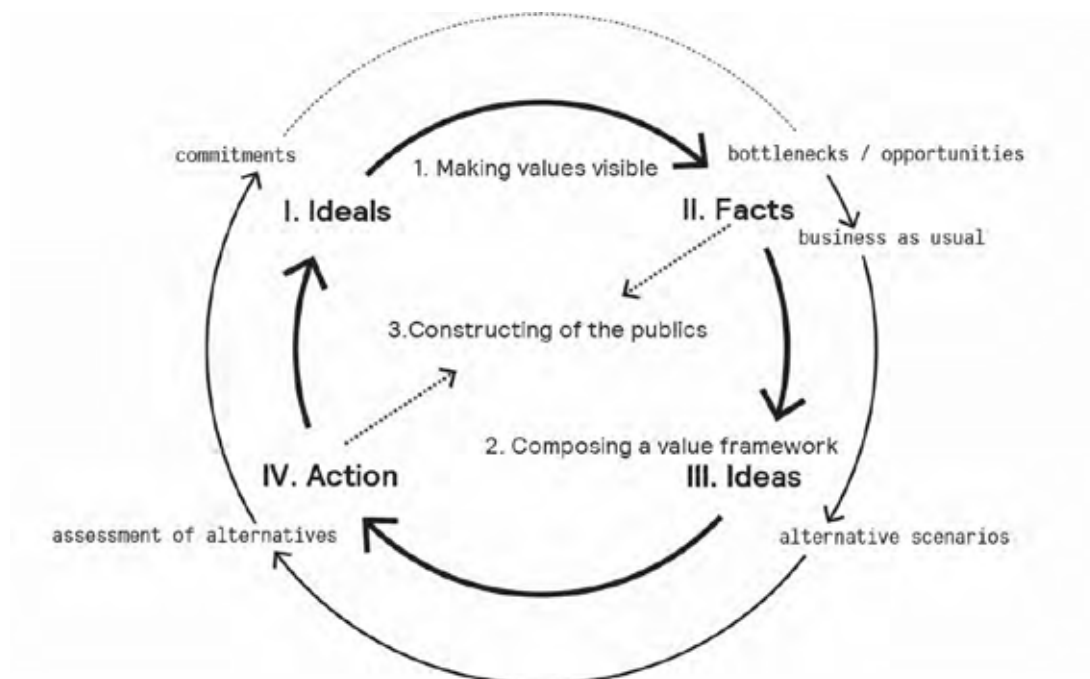
only policy makers, but also developers, residents, non-profit organizations... are invited to participate. In the words of Horelli (2002) this would turn an SCBA into an ‘enabling tool’ that supports ‘communicative transactions’ between all actors involved in a spatial transformation process.

There are examples of research where local stakeholders are consulted in the process of a monetary assessment with the aim to implement local knowledge in order to develop alternatives that are more adapted to the local context and have higher chances to be accepted by the local community (Carolus *et al.*, 2018, Sager, 1979). In this research, however, the aim is not only to add the participative or deliberative aspect in to the assessment in order to make better informed decisions (Carnoye and Lopes, 2015), but to implement the assessment aspect in the participatory process to make the debate on societal costs and benefits of dispersed modes of dwelling more articulated in order to give form to a more constructive and informed debate.

Our hypothesis is that a participatory SCBA can make the debate more constructive and informed in three ways:

1. *Making values visible*: In the first stage of the participatory SCBA, the ideals, the participants are asked to define “what should be”. When the participants formulate an answer to this question, it will reveal their values. (Brown and Lambert, 2013). Values and ideals are closely related: when people express what their ideal neighborhood should look like, they say what they value (safety, green, accessibility ...). These values will be used as a framework to assess the cost and benefits of the alternative scenarios during the process. The debate on the societal costs of residential subdivisions often stops on confused communication. We use the same words but we give it another interpretation, for instance, sustainability: for one person it means a well-insulated house, while for others it means to live close by public transportation. SCBA can help to make these values more concrete by translating them in measurable indicators and let people talk the same language.
2. *Composing a value framework*: a second reason for the roughness of the debate, is the mixture of highly individual and universal arguments. SCBA can help to prioritize the arguments and by doing so, defining a value framework: a hierarchy of values. This is an essential condition for the process of tradeoffs between individual and collective values. In the participatory process is the SCBA used to make the implicit process of defining a value framework explicit in an early stage of the research by bringing the definition of the values in the debate. Not only for the participants, but also for the action researcher who is as much a part as the process as the participants are. As researchers, we are all subject to social mindsets (by our own knowledge and how we act upon it) in which the framework is defined (Swann, 2002) and we have to be clear about the values that inform our everyday practices and our research stance (McNiff, 2017).
3. *Constructing of the publics*: The public is a concept from the pragmatist Dewey and is defined by him as “the public consists of all those who are affected by the indirect consequences of transactions to such an extent that it is deemed necessary to have those consequences systematically cared for” (Dewey, 1954). Publics originate in response to issues related to the specific context in which they are experienced and multiple publics can come from a single issue (DiSalvo, 2009). In the stage of the ‘Facts’, the participants define the bottlenecks and opportunities of the neighborhood and thus define which issues there are at stake. When one alternative scenario is tested in a real place in the neighborhood, this will also have an effect on the daily life of people who were not involved in the process yet and new publics will be constructed.

Defined in this way, a participatory SCBA is no longer only a decision support tool for policy makers, but also a capacity-building tool that helps participants to reflect on the impact of their current (spatial) behavior and how to reduce the societal cost of this behavior. Applied to residential subdivisions, to conduct a participatory SCBA would imply to initiate a process during which a diversity of actors, linked to a particular residential subdivision, collectively assesses alternative futures for this subdivision.



By going through this process of collective learning, the stakeholders will gain insight in the societal impact of their dispersed mode of living and take action on this situation in order to come to a social spatial change through spatial interventions (DiSalvo, 2009).

Context



Figure 2: situation cases in Belgium

The research will take place in two cases studies both situated in the eastern part of Belgium, in the province of Limburg (Figure 2). The context of the cases is different in order to test the possibility of transformation strategies on multiple levels: from the level of the subdivision to the level of the region. The later would allow us to examine the potential trade-offs between municipalities in decision-making on where and how to build or to remove built space. In this paper, we focus on the level of the subdivision and more specific the Heilig-Hartwijk in Hasselt.

Case Heilig-Hartwijk in Hasselt

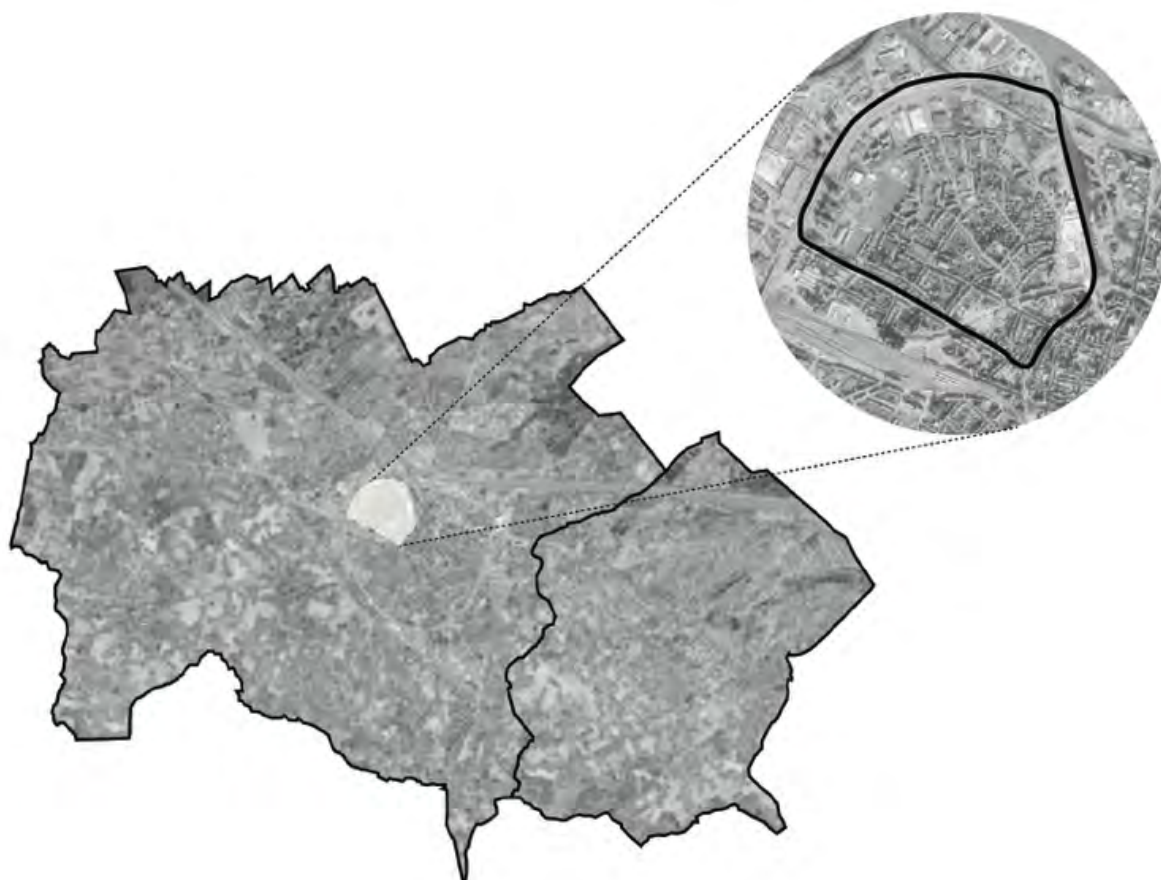


Figure 3: location Heilig-Hartwijk

The Heilig-Hartwijk is located close to the city center of a Hasselt, the capital of the province of Limburg (Figure 3). The neighborhood is surrounded by a railway station in the south, a larger ring road in the west and north part and a former industrial site (in transformation to a residential area) and a smaller ring road in the east part. The morphology of the neighborhood is diverse: detached-houses, row houses, apartment blocks... and services that go beyond the scope of the neighborhood (three schools, a mosque, a church, a sports center, SME's ...). The process of the Heilig-Hartwijk is part of a bigger project "Werken aan Wijken" (Dutch for Building on Neighborhoods) and is formalized in a contract between the Hasselt University and the city of Hasselt to conduct participatory processes in three different neighborhoods. The aim is to organize a collective learning process during which the policy makers, the city administration, key stakeholders, the developers, designers and inhabitants together learn how to coop with the tensions between societal and individual agendas. In this neighborhood we particularly work on the tension between the ambition of the city to densify this neighborhood (located close to a public transport hub) and the fear of the residents that this densification will reduce the livability of their neighborhood caused by increased car traffic and reduced open space.

Before the participatory process was started, there were already two groups of citizens active in the neighborhood: "*Achter het Lijmfabriek*" (Dutch for "behind the glue factory") and the group we named "*The Parents*". *Achter Het Lijmfabriek* originated in a reaction to the difficult communication with the city. They want the city to guarantee the livability of their neighborhood, until then they will fight against every new urban project in their neighborhood. Their strategy is formal: they organize public debates, submit appeals, ask formal questions about projects... Their main values are safety, mobility (in specific car accessibility) and authenticity. Although they were only recently established (end of 2017), they already have a large number of followers of mainly older inhabitants who have lived in the neighborhood for quite some time and have seen 'their' neighborhood change at a high speed.

The Parents are formed by the parent committees of the schools in the neighborhood and the neighborhood committee of one specific street. They are not all parents of young children, but their normative framework is defined by the place of the children within the neighborhood: they are concerned about sustainability, quality of life, safety... They have consciously chosen to live close to the city center because it aligns with their values. The future transformation that they see, depends more on the global tendency towards a sustainable lifestyle in a livable city and depends less on the ideology to conserve the existing characteristics of the neighborhood. They are organized in a more informal way.

Besides these two groups of citizens, there are also the groups we named "*The Church*", "*The Lost Souls*", the politicians and the experts. The Church is a diverse group of people who still attend the mass, the people that live in the direct surroundings and the ones that are interested in thinking about a new function for it (as the church will be available soon due to the decrease of people attending the mass). They have a shared concern: keep the church as a meeting place for the neighborhood. Finding a new function for the church is part of the participatory process, but follows its own methodology and plays a smaller role in this research. The Lost Souls are the ones that are not represented (yet) in the participatory process: the future inhabitants, the visitors, the ones that do not have the time or need to participate ... The politicians are the alderman and the mayor of the city. The experts are the people that define the process by content and approach: the city administration of several departments (mobility, spatial planning, communication, culture...), the researchers and the design team.

Discussion

The research is still in an early stage: we are half way the process. However, it is possible to describe to what extend our participatory SCBA, as defined in our operational framework, may support to make values visible, to compose a value framework and to construct publics.

Making values visible

The participants reveal their values in the first stage of the participatory SCBA when they express what their ideal neighborhood should look like. This process of defining values continues the second stage, when we collect the facts because their values define which facts the participants want to talk about and which fact they do not want to talk about. The interaction between expressing the ideal neighborhood in the first stage and collecting the facts in the second stage results in a more precise definition of their values.

Already from the start, the process in the Heilig-Hartwijk was value-driven as the representatives of 'Achter Het Lijmfabriek' were very explicit about their values. By dividing the participants in different groups, we tried to let all the participants look at the neighborhood from different perspectives (visitors, children, inhabitant ...) in order to let them bring their own values to the table and define what a livable neighborhood means to them. The different values were defined in general terms and therefore did not lead to tensions between the different groups of participants. When the process continued, it became clear that the participants do have a different interpretation of the same generic values: some participants value green space because the current green space disappears as the neighborhood is becoming denser (and they are against it) while others value green space because it improves the livability of the neighborhood. We also observed that, after every meeting, participants narrowed down their arguments to one central value in order to make their case: they only talk about the livability of the neighborhood in terms of "how easy can I park my car in front of my house?". The SCBA helped, each time, to re-introduce alternative values and open up the process again.

Composing a value framework

In the third stage of the process, the Ideas, will the participants define alternative scenarios for the transformation of their neighborhood. The next step is to choose which alternative scenario will be used for the test set-up, in the Action stage. In order to make this choice, they have to take all their values in consideration and prioritize them, thus composing a value framework.

In the Heilig-Hartwijk it was difficult to prioritize the values because some groups will only talk about one value. And they only use the value framework (or in some cases only one value) for the assessment. The participants did not take it one step further and used it to make tradeoffs between benefits and costs. Although we tried to do this exercise, the participants only define alternatives that apply the costs to the ones that are not (yet) involved in the process without any tradeoff beneficiary for the community. They want, for instance, to ban unwanted traffic out their neighborhood by literally let them pay when they still drive through the neighborhood and it is less prior to them if a new or bigger public space is implemented in the alternative scenario.

Constructing publics

The constructing of publics is related to the stage of the Facts, when the different groups define the bottlenecks and opportunities or the issues that are present in the neighborhood. But also in the Action stage, when we will create a test setup of the chosen alternative scenario for at least one month in an actual location in the neighborhood and intervene in the daily life of the participants but also, and even more important, in that of The Lost Souls.

Achter Het Lijmfabriek is a public that was already formed before the participation process, in reaction to the difficult communication with the local policy. The Parents share a same value framework; however, they are still in the process of constructing a public. The participatory SCBA can help The Parents to define their public by making their value framework explicit and in doing so, increase their impact in the process.

As researcher we try to facilitate the creation of these alliances. That is why, for instance, we will try to elicit the different value frameworks of Achter Het Lijmfabriek, The Parents but also The Lost Souls, during the test setup. When the issue is identified and articulated, it can help the public to be formed (DiSalvo, 2009). By doing so, the

participatory SCBA is used to facilitate the constructing of different publics. The researcher as facilitator of the constructing of a public is essential to emphasize: we can only facilitate a public by an action, the action of the formation of a public is a task of its own (DiSalvo, 2009).

When the different publics use their value framework to assess the test setup and define which cost and benefits are for whom, it establishes how they and the other publics are affected (Sager, 1979) which can trigger the discussion on tradeoffs and take the debate to the level of the societal costs and benefits.

Conclusion

We started from the hypothesis that a participatory SCBA could benefit a more constructive and informed debate on societal costs of a dispersed modes of living in three ways: making values visible, composing a value framework and constructing publics. We have developed an operational framework for the participatory SCBA that departs from the principle of collective learning for transformational change (Brown and Lambert, 2013) and tested this framework it in the Heilig-Hartwijk in Hasselt.

These are the findings of this first test:

1. Making values visible: we used a collective approach to define the values of the participants in the first stage (Ideals) of the process. The Participatory SCBA indeed helps to define the values, but at the same time makes clear that the interpretation of the values can change throughout the process: they can become vaguer, the meaning can change... People are not trained to elicit their values and apparently do not have a clear image of their ideal living environment and thus this will require some help (of designers).
2. Composing a value framework: The participatory SCBA enables to make the different value frameworks explicit already in the beginning of the process but the participants of the Heilig-Hartwijk case did not use it to make tradeoffs up till now. We observed that after every meeting participants narrow down their arguments to one central value in order to make their case. The participatory SCBA helps to re-introduce alternative values and open up the process again.
3. Constructing publics: the participatory SCBA facilitates the construction of different publics in two ways: it helps existing publics to become more organized to increase their voice in the participatory process and it can lead to the formation of new publics if the consequences are experienced in a concrete action. These are '*light publics*': they exist during the action but disappear afterwards (Soenen, 2006)

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Full paper for AESOP conference 2019

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Evidence-based urban developmental: beyond the urban anecdotes

The need of going beyond anecdotal knowledge in urban planning

Building a sustainable city is a complex task. Planners regularly become trapped in the tension between broad international or national aims for sustainable development and local, negotiated, agreements on what a professional is being asked to deliver. That's because professional behavior and decision-making are based on service to clients or citizens, with only a very general sense of responsibility for economic and social impact on a wider scale. On top of that, the established development- and construction industries with their traditional professional territories and divisions of labor also limit more holistic ways of working with sustainable urban development (Cooper and Symes 2009).

In the contemporary debate, transdisciplinary approaches (Harris et al 2010), new ways of co-production of knowledge (Polk 2015), often with the framework of multi stakeholder partnerships that involves universities as well as municipalities and private companies (Trencher et al. 2013; Trencher et al. 2014), preferably organized as urban living labs (Marvin et al. 2018) are presented as ways out from such traps. However, transdisciplinary co-productions of knowledge also visualize the disparity between theoretical research-based knowledge about sustainable urban development, often combined with normative visions (see Bradley and Hedrén 2014) versus experiential practice-based knowledge, emerging from the daily work with these issues as a planner or an urban developer.

The complex and wicked global problems related to sustainable urban development we face today, is the best argument for the need of transdisciplinary co-production. Nevertheless, it also demonstrates how different forms of knowledge can become one of the biggest obstacles to solving those challenges. On a theoretical and conceptual level, we all agree what ought to be done, but an informant at a Swedish planning department said: *"This will not help me tomorrow, when I'm back at my office to must deliver a detailed development plan..."*. Back at the offices, planners much serve clients, citizens and politicians, with other priorities and perspectives, and they will again be trapped into conflicts.

In this paper, we present an attempt to support the urban planner and his colleagues, in the daily struggle with challenges of translating and transforming e.g. the global Agenda 2030 goals, into the messy reality of building, and re-building, planning and re-planning cities. Instead of establishing those conflicts between long-term visions versus short time deliverables, as a sign of neo-liberal planning discourses (Taşan-Kok and Baeten 2011), we would like to offer suggestions of how such conflicts could be managed. This approach of evidence urban development will help professional planners, real-estate developers and other urban professionals to better navigate through this "messy reality" of sustainable urban

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development. By systematically combining four forms of evidence - professional, organizational, scientific and stakeholder evidence - we think that professional practitioners could better navigate the stormy waters of sustainable urban development.

How to combine different – and conflicting – forms of evidence

In this paper thus, we present an approach – evidence-based urban development – with the attempt to support all who daily struggle with the challenge of translating ideas, goals and visions to transform contemporary cities into more sustainable versions.

Evidence-based urban planning should be understood as a systematic way of working with co-production of knowledge, questioning the modernistic idea that scientific knowledge is “better” and more true than other kinds of knowledge, and at the same time avoiding the relativistic pitfall of “every opinion is as good as another”. Some knowledge or perspectives are better, and stronger, than others. However, instead of proposing that professional planners should rely more on research, or that researchers must work closer to practice, or that citizens' voices must be stronger, we will argue that research, professional experiences, organizations and stakeholders each produce different kinds of “true” evidences. The task is to combine various forms of evidence in a way where they support each other instead of coming into conflict. That done, we will have a better ground for making professional decisions with the aim of supporting a more sustainable urban development.

How to make better use of available knowledge

Evidence-based urban planning was formulated as a response to assignment from a real-estate company in Gothenburg, which involves both of us. The real-estate company owns a large housing stock in two socio-economic vulnerable areas in Gothenburg, the second largest city in Sweden. The areas were dominated by large-scale rental houses. The unemployment rate was high in the area, and because of that, there was a high rate of low-income households. From time to time, gang-violence and other forms of crime affected both areas. On the other hand, the building blocks were surrounded by green spaces, parks, and recreation areas, which created nice environments, and most of the residents liked to live in the area. When we started the project, we faced a complex web of anecdotes about the means and ends of urban development, narratives and prejudice about certain areas in the city (the poor ones with many immigrants), socio-economic statistics, demands from the real-estate companies, worries from the tenants and others living in the neighbourhood and so forth. To cut a long story short: we faced just about everything that makes sustainable urban planning a wicked problem.

To find a way forward, we needed a systematic approach to acknowledge the wickedness of the situation. We needed a systematic way to acknowledge all perspectives but avoid grading them as “better” or “weaker”, and avoid the dichotomy between research versus practice-based knowledge. We also look for a better way to handle stakeholder participation, and make sure that opinions from those who lived and worked in the area were treated as knowledge with high relevance for the planning process, instead of being reduced to opinions. We developed evidence-based planning as the answer to those challenges. Our inspiration was the concept of evidence-based management (Barends and Rousseau 2018), which is an approach to professional decision making, which also could be understood as a

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process of making judgements for actions. Barends and Rousseau argued that this could be done in ways that produced better foundations for decisions, judgments and actions, if we worked more systematic with knowledge acquisition.

At first, practical (and often messy) issues must be translated into answerable questions. Then we need to systematic search for four kinds of evidence: scientific, professional, organizational and stakeholder evidence. By using the somehow complicated concept “evidence”, we would like to emphasize that we are not talking about perspectives, or opinions but different kinds of knowledge that each. However, all those different forms of evidence must be critically judge in relation trustworthiness and relevance for answering the questions. Different forms of evidence must also be weight and pulling together (Barends and Rousseau 2018). This could be understood a process where professionals make they apply a frame to a field of experience. This frame enables them to highlight certain features of the situation, including certain worries that as symptomatic and relevant for a specific situation/problem. At the same time, they must ignore, or select out, certain other features and worries of the situation, as noisy and irrelevant. In the end, professionals bind together the salient features of the situation, including the relevant worries, into a pattern which is coherent and graspable (Schön 1983).

The outcomes from these process – the evidences – must then be applied and incorporated into decisions-making processes, which always are tangled and embedded in organizational structures and practices, like job instructions, decision procedures, chain of commands, budgeting and routines for accounting and measuring results. All these create different forms of path-dependency, which influence the incorporations of evidence into decision-making processes (Barends and Rousseau 2018). Professional descension-making always take place within a certain community of practice, which affects how evidence could be applied (Lave and Wenger 1991; Wenger 1998). Among the members of a community of practice, there are always a variation of understating of the work and what to do. Different ways of understanding the same kind of work – like urban planning – exists side by side within organizations which also affects how individuals consider and use different forms of evidence (Sandberg 2000).

To conclude, we do not apprehend evidence as something that could be applied straightforward on professional practices to improve them. Evidence is the total sum of all knowledge, both focal as well as tacit, both individual as organizational, both professional as well as lay knowledge, that could help us make better outcomes of professional work. What will be regarded as evidence depends on how we translate practical issues into questions that could be answered. *How* we understand something also affects which questions we formulate, which means that we always risk being trapped into our own understandings. To overcome this, being one of the main goals with evidence-based practice, we must constantly evaluate the outcome of our decisions. Learning is the core of all evidence-based practice, but learning is dependent on a systematic approach to problems. Evidence- based planning offer such systematic approach. In the next part, we will illustrate how to work systematically through the four forms of evidence: organizational, professional, scientific and stakeholder.

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Organizational evidence: how to make better use of organizational knowledge

Organizations produce lots of data and knowledge. Another source of data is from both the members in an organization as well as the users or clients. It could be both 'hard' numbers and statistics, as well as 'soft' data such as perceptions of organizational norms and cultures. When we talk about organizational evidence, we will highlight that knowledge about urban development always are tied to one (or several) organizational context. We will use figure 1 as an illustration.

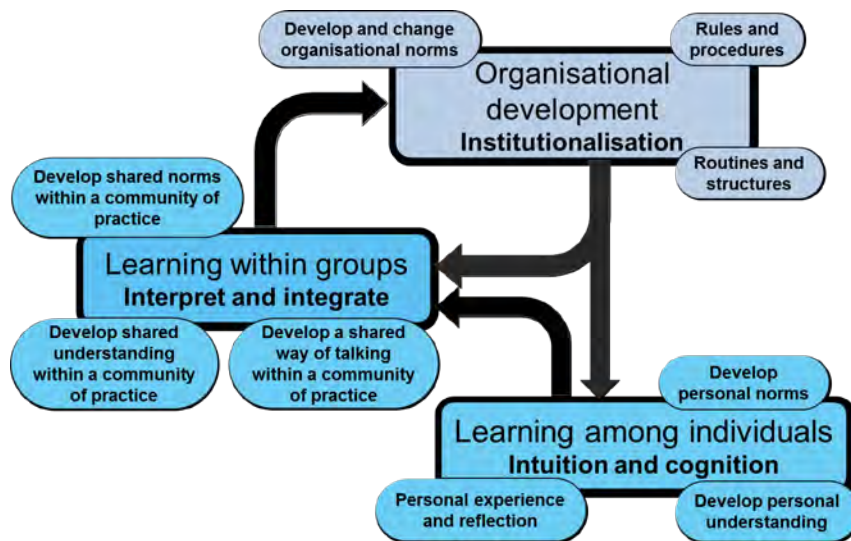


Figure 1: three levels of learning. After Crossan, Lane and White, 1990

Crossan, Lane and White (1990) claimed that an organization contains three different forms of learning

When we worked with organizational evidence with the real-estate company owning a great number of publicly-owned flats in the outskirts of Gothenburg city, we systematically tried to translate practical issues and problems – into answerable questions. One method was 'walkshops'. We walked around with representative from all organizations involved in the management of the area where the housing company's stock were situated. This visualised lots of interactions between the private company and the public partners. One was the management of public areas, like green space, bike lanes and parking lots. The ownership of public areas was divided between the municipality and the real-estate company, and consequently, the attendance differ. Those who lived in the area did not know where the borders were. They just saw how some public areas were managed in a different way compared to others, which was a long standing source of complaint from the tenants. As a first step in the developmental work, representatives from the real-estate company and the municipality walk around the area and developed a joint agreement about attendance.

At first, this seems like a very trivial thing to talk about. However, this walk and the discussion revealed lots of organizational evidence that explained why things were as they were.

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Administrative borders were in fact knowledge borders between the private company and the municipality. The development of a joint agreement for maintenance of public spaces triggered a process of collaborative learning. If we return to figure 1 above, this collaborative learning takes place on group level, and manifests as shared understanding (about how to maintain public spaces in the same way) and development of shared norms (in this case, what was a preferred level of attendance of green space, bike lanes and so on). However, as the figure illustrates, if the learning only takes places on the second or first level, and not affect changes on the organizational level, developmental processes will probably slow down. The concept of organizational evidence will highlight that organizational structures could effectively block a learning process. If we return to figure 1, this example illustrates a process when learning take place on all three levels. The individual, who had learned a certain way of managing the area, depend on which origination they belong to. Through the 'walkshops' they developed shared knowledge, and shared norms around how the area could be managed. This resulted in new routines for out-door management – learning on the organizational level.

The governance of knowledge production in intra-organizational collaboration is dependent on good network governance. At the same time, knowledge and information is one of the tools for carry out network governance. Intra-organizational collaboration that led to an increased capability among those organizations who collaborate are dependent on learning on all three levels (see figure 1). Nevertheless, power structures could hamper those learning processes. Here, we would like to differ between three forms of power. The first one: open power is the when an actor openly exert power. In this case, it could be if one of the parts decide not to listen, which obviously hamper processes of learning. Hidden power manifests through actors capability to exclude perspectives and ways of acting. Hidden power could be subtle ways of affect processes of naming and framing, with the aim to exclude or ignore aspects of a problem in favour to other. This is close to the concept of governmentality, which describes processes where the power is hidden in our own understanding of what is "normal". (Dean 2010).

In urban planning, those three forms of power manifests in several ways in processes of naming and framing, where some ways to understand a problem – and select solutions – become excluded. Sometimes by referring to regulations, without questioning the regulation. Other times through more subtle forms of governmentality, for example when we fail to questioned the modernistic idea that people who live in a city of course own a car and therefore must have access to parking lots. When we talk about organizational evidence, we will highlight – and at the same time put into question – the fact that organizational structures, norms, routines etc (illustrated in the third level in figure 1) always affects which knowledge are relevant for a certain organization. If we strive for an urban development based on knowledge, we must take into consideration that organizational structures affect the use of knowledge. Of course, we could criticize this. However, ignoring it mean that we also ignore structures that limits the use of knowledge, to then become surprised when some knowledge become ignored by actors in an urban planning process.

Professional evidence: how to make better use of professional experience

In his studies of how professionals handle complex working tasks, Donald Schön argued that town planning as a profession differ from other professions in that respect that a planner

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never could rely only on previous experiences but must always be prepared to handle unique challenges (Schön 1983). A town planner could, as best, develop some rules of thumbs, or a set-up of strategies that could be applied onto a new planning project. According to Schön, professional problem solving is also based on judgements, and therefore, problem settings could be judgements about problem situations that also contains prescriptions of desirable directions for action. Based on a broad range of case studies on how professionals work, Schön understood professional problem solving as a process of naming and framing.

In the introduction, we describe professional competence in urban planning as an ability to “tame” wicked problems to make them enough well-defined to become possible to solve. Hoppe’s (2011) distinction between structured, moderately structured, and unstructured (or wicked) problems could help us to formulate more nuanced approaches to wicked problems (see figure 2)

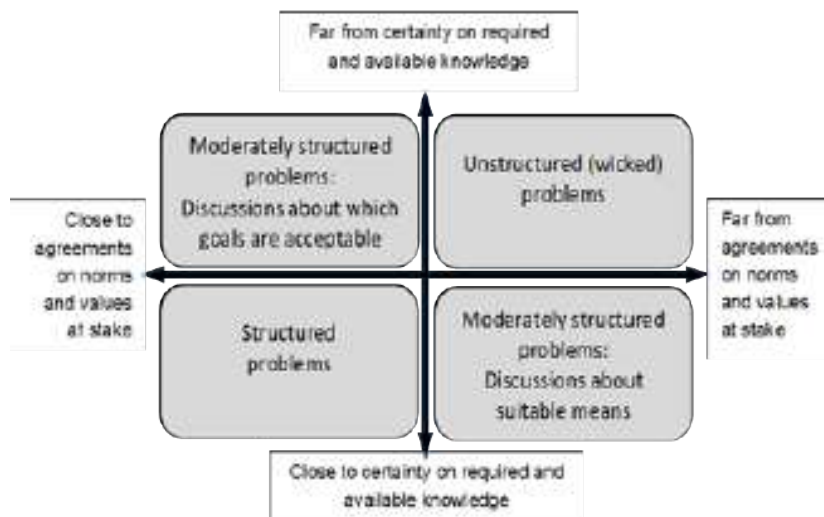


Figure 2 – Four types of problem structures (after Hoppe 2011, p. 73)

Often, the organizational every day practices dominates of what Argyris and Schön (1978) once labelled as single-loop learning. Ellström (2001) use the concept adaptive learning, for describing a situation where there is an agreement of the ends and means for a working task, how it should be done and what results should be archived. Transferred to urban planning, adaptive learning take places were a newcomer to a municipal planning department is told how a certain planning process should be done and which outcomes are preferred. The opposite, double-loop learning (Argyris & Schön 1978) or creative learning (Ellerström 2001) implies an open situation where means, ends and methods are questioned. Sustainable urban development needs (lot of) double loop and creative learning, not at least because of the fact that a waste majority of unsustainable urban development is the results of established practices, where professionals serves clients in the same way as they always do (Cooper and Symes 2009; Brown et al 2010; Polk 2015). Learning must therefore take place on several levels within an organization to accomplish long-lasting changes.

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If we connect the model in figure 2 with the distinction between the two basic forms of professional learning: single-loop/adaptive versus double-loop/developmental learning, following picture emerge if we have a structured problem, task, methods and results are given, according to Ellströms definitions. On the other hand, wicked problems could be the source for creative learning and innovations. If we return to Donald Schöns description of professional problem solving as a process of naming and framing, another picture emerges if innovations are dependent on the ability to develop new ways of naming and framing, then a first step may be to make structured problems more wicked by adding on new perspectives and uncertainties. If we have structured problems too hard, by ignoring to many aspects of a wicked problems, then we may hindrance the ability to innovate. Naming and framing – and professional problem-solving – could be understood as a movement between open and closing processes of naming and framing. Opening a problem means that we add on new perspectives – and may risk that a structured problem become less structured. By closing a process of naming and farming, we ignore one or several parts of a problem, which make less wicked and more structured, and then easier to solve in an efficient way.

Professionals seldom act in a such structured way, because practice are messy and unstructured. To a large extend, professionals relay on previous experience and rule-of-thumbs. Even if Schön argued that urban planners (at least in his case) found it harder to rely on established practices – planning, as every practice, become routine. With professional evidence, we include all this tacit, embodied, practice based, situated knowledge, we use, more or less deliberately, to carry out our work. If we return to figure 1, professional evidence grows at the first and second level, among individuals and groups. Professional evidence could come into conflict with organizational evidence, e.g. when personal and tacit knowledge are ignored by the organization. But, as both Argyris and Schön and Ellström illustrated with the concept of single-loop learning/adaptive learning – professional habits and tacit knowledge could be a hindrance for learning. Professional evidence – “what works” could be either an asset or a hindrance in processes of urban development. Professional evidence, as well as organizational evidence, sometimes need to be challenged.

In the work with the real-estate company, professional evidence always emerged in discussion about what could be done or not. Professional evidence are often presented as anecdotes or stories, told we the more and less open purpose to presents a truth. In other case, professional evidence was used as a way of challenge and problematize how things were done and organised. Frequently, professional evidence emerged more and less accidental in conversations. Because of its tacit character professional evidence are not regularly expressed and talked about, because of it is not considered as evidence. We tried to come around this through interview with key person both on managerial level as well among janitors, gardeners, service staff and others. Based on this, we gain a rich material with different perspectives on what out to be done. With other words; we gain a broad variety of ways of naming and framing how the real-estate company should carry out the work in this specific neighbourhood, based on previous professional experience on what works.

Scientific evidence: how to make better use of scientific knowledge

The main source of scientific evidence is literature, like textbooks, course materials, reports or articles published din academic journals. To reach scientific evidence, one must first access

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and learn to understand and decode academic papers. Scientific texts have high demands of clarity. Scientific clarity is reached with specific uses of concepts and words and references to previous research and relevant theories. However, the demands of scientific clarity often result in texts that people outside of academia find hard to read, understand and apply. Scientific clarity often ends up in practical obscurities, which is why research often become hard to apply “straight off the bat”.

One reason to this (which is often neglected) is that scientific problem-formulation is also a process of naming and framing. However, scientific ways of naming and framing problems regularly create boundaries between research-based knowledge versus other forms of knowledge (or in this case “evidence”). Knowledge boundaries between scientific evidence versus organizational and professional evidence is well-known. Transdisciplinary research (Brown et al 2010) or different forms of co-production (Polk 2015) often organize in Living Labs (Marvin et al 2018) are often seen as the best way to overcome this divide. However, those discussions also tend to forget (or ignore) that scientific evidence is the product of day-to-day work among practitioners – named “researchers” – who work in specific organizational and professional contexts – named “university departments”, “research centres”, and so on. (Latour & Woolgar 1986). Doing research is a professional practice among other practices, like doing urban planning.

Another reason that naming and framing of scientific problems differs processes of naming is because scientist must consider previous research, established concepts and theories and last, but not least, on-going debates within a certain research fields, when they formulate a problem. Besides being a member of a local community of practice, researchers also belongs to epistemic communities, which unites by shared ontological, methodological and epistemological perspectives on a phenomena or question, like conditions for sustainable urban development. Because of the boundaries between scientific versus practice based knowledge, which steam from different conditions of how to name and frame problems, just simply apply scientific knowledge may not help professional planners in their daily practice. For research knowledge to be spread and have an impact, researchers find allies outside the university in the form of knowledge brokers, who support the translations of scientific knowledge into professional practice (Callon 1984). However, research knowledge must be translated to find ways to overcome boundaries between scientific evidence versus professional evidence.

Despite those borders, several studies have shown that professionals from other fields often use scientific evidence as a way of making better professional decisions (Weiss 1980; Lundgren and Sundqvist 2000; Rickinson 2005). However, they use scientific evidence in an ad-hoc manner, based on current needs and situations. In general, scientific evidence seem to be used in four ways (Nutley et al. 2007), which is illustrated in figure 3.

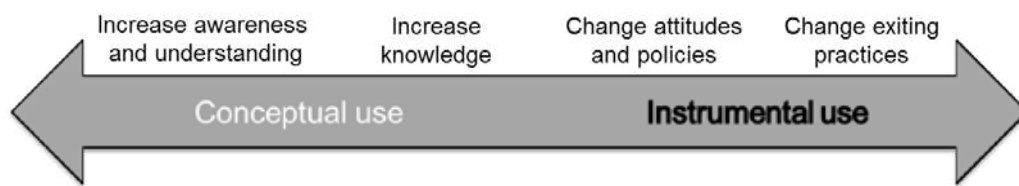
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Figure 3 – Four ways of using scientific evidence (after Nutley et al, 2007 p. 51)

If we return to figure 2 above, we could assume that scientific evidence is used in a more instrumental way if a professional practitioner faces a structured problem. An instrumental use may probably occur, as a result of a single-loop/adaptive learning situation, were the problem is well named and framed. On the other hand, conceptual use of scientific knowledge could be a way of turning a well-structured problem into a more wicked one, which in turn could open for double-loop/creative learning.

In the work with the real-estate company, we begin using scientific knowledge in a conceptual way. There is a broad and varied range of literature about socio economic deprived neighbourhood, which we could draw some conclusions from, together with contemporary research about urban planning. However, we struggled to find research that were relevant for this specific area, so we had to design our own studies, and used our own capability as researcher to develop scientific evidence relevant for this specific developmental process. In this case we used UN Habitats five principles for sustainable neighbourhood planning (UN Habitat 2014) when we design our own pilot-studies and validating the results. Usually, it is not common that people with a PhD-degree work as planners. If that is the case, there is often not time or resources for them to conduct their own research in relation to a planning process. The common situation is that professionals must make their own judgement about the relevance and truthfulness of scientific evidence in relation to their own practice.

Studies of how professionals used scientific facts (Weiss 1980; Lundgren and Sundqvist 2000; Rickinson 2005) showed that professionals prefer scientific evidence that are aligned with how they already name and frame different tasks. In other words, scientific evidence that support professional and organizational evidence seem to have a better chance of being used and referred to. On the opposite, scientific evidence that come into conflict with established practices – i.e. with professional evidence – are seldom used. This point to the main argument for using scientific evidence, i.e as a way of challenging both professional and organizational knowledge. However, as Callon (1984) stated, research need to find its allies to be spread and used. Therefore, scientific evidence much finds ways of connecting with professional as well as organizational evidence, in order to become useful. Here, it is important to be aware of why we bring in scientific evidence in a developmental process. Are we striving for conceptual or instrumental use of scientific evidence? Are we looking for supporting the solution of a well-defined (tamed) problem, or would we like to open for new perspectives and make things more complicated with the intention to pay the way for more creative and innovative learning?

Above, we described evidence-based urban planning could be understood as a systematic way of “opening” problems, by adding-on evidences with the aim to visualize the complexity

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of a planning problem. If we return to figure 2, scientific fact could be used as a way of challenging knowledge, and make a structured problem more wicked, and at the same time open for creative and double-loop learning. But we also argue that planning problem must be “closed”, through processes of naming and framing. One way is actively ignoring aspects of wicked problems in order to tame them and make them possible to handle in professional situation, in relations to clients (Cooper and Symes 2009). This process of opening and closing could be moments back and forth along the arrow in figure 3. Structured problems could be opened (and become more wicked) using scientific facts in a more conceptual way. Using scientific problems in a conceptual way also opens for processes of creative learning. In reverse, if we want to use scientific problems in an instrumental way, we need a structured and well-defined problem. Those kinds of problems emerge from a process of naming and framing, which ignores aspects as noisy and irrelevant. According to Barends and Rousseau (2018), this is how practical issues are translated into answerable questions. Scientific evidence could be used as a tool for those translations, by highlighting what is relevant. In the work with the real-estate company, we used the UN Habitats (2014) five principles for neighbourhood planning for highlighting what the company should focus on, if they want to develop their housing stock into more sustainable ones. We also used the five principles as guides when we construct our own studies for gathering scientific evidence that could support the real-estate companies own decision making process. We also used the five principles as challenge established ideas among employees from the company about neighbourhood development. This example illustrates that scientific evidence could be used both in a conceptual as well as instrumental ways.

Stakeholder evidence: how to make better use of the user’s perspective

According to Barends and Rousseau (2018) stakeholders are different actors who, in the context of this chapter and book, are influenced or affected by a change in an urban environment of some kind. Stakeholder evidence is about understanding what is perceived as important from an everyday-life perspective, for inhabitants, associations or companies: what values are there, how is a place perceived, what are the local networks that make society work?

Previously, we discussed how urban organization has shifted *from government to governance*, i.e. from clear hierarchical governance based on well-defined political goals and with outlined and predictable roles to a more network-based and market-driven way of producing or developing city districts. The Danish organizational and public sector researchers Boch Waldorff, Söderkvist Kristensen & Vind Ebbesen (2014) argues that it is not *only* so that society is governed by the scratch of new public management, where everything is to be procured at the lowest price and where citizens are made into customers who will “trade” welfare services (see also Tahvilzadeh 2015). More traditional and bureaucratic governance models are in play at the same time and, in line with the governance ideals, another kind of logic has been merged into the game - “new public governance”. By the occurrence of the model presented in this chapter, we argue that urban dialogues are levelled with other necessary knowledges for urban development processes.

Through the dialogue we can question and reflect on basic assumptions for *how it is* in the world, in society, a city district. In or case, there are many ready-made ideas and descriptions,

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“black poetry” if you will (Ristilampi 1994). Beyond the urban anecdotes: what is covered in the news about suburbia is not exactly the complete picture. A good dialogue will instead produce stakeholder evidence, stories about the everyday life lived in a place. A dialogue emerges in several steps. If we use a metaphor, you can talk about the “evolution” of dialogue, in which the first step is about creating a “melting pot”, in which we try to make each other aware of the different perspectives and approaches we are sporting. In the next step, we must challenge each other's performances. Here, we need both to defend and question our own and others' views. It goes without saying that this is a process that creates uncertainty and instability. Being challenged and questionable can often be perceived as unpleasant. Here different types of evidence are placed against each other. Here, one must strive for both dare to stand for their own experience and knowledge while being open to questioning them. It's no easy process. Such dialogue requires a safe environment and it takes time. It also requires endurance of those who participate. Here, a “broker” can fill an important function by being the one who keeps the process together (Gustafsson, Norström and Fioretos 2015).

In order to move forward, the group must begin to search for a new common understanding. Since a dialogue in itself is a meeting of different competencies regarding urban life – the everyday-life perspective, the professional perspective(s), various political perspectives etc. – a contextual framework is needed. A linguistic common ground, where different forms of metaphors can fill an important function. This allows you to reach the final stage of the process: a new common performance. Group members share a common partial silent understanding. An example could be a project group that brings together different stakeholders and where time is spent on the joint dialogue. If the dialogue succeeds in getting through all the steps and achieving a new common understanding, you have also developed a new common knowledge.

The common knowledge has emerged by helping the different participants translate their own experiences and professional skills in such a way that others understand it. In the model we've discussed and argued for in this chapter, stakeholder evidence is *equally important* as any of the other evidences. Urban dialogues can be discussed from several different standpoints, methodological and political, but for us it is inevitable. To work evidence-based with urban development is to *always* do a dialogue, regardless of scope and style. Without the knowledge from local inhabitants, business and associations, you simply won't get the full knowledge circle.

In the work with the real-estate company, we conducted two workshops, one in each district, as open houses where inhabitants and others could drop by to answer a semi-structured questionnaire alongside the assignment to pinpoint the spatial experiences of the districts in question. Around 90 participants attended per workshop and the key messages concerned housing – apartment size and standard as well as form of tenure – and lack of general services in and maintenance for the public places.

Conclusions and ways forward

So, let us return to the workshop. Would the scene be different if the participants had worked more evidence-based? In one way no, because there would still be conflicts and tensions

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between how the participants would talk and approached the issue for the workshop: how to build sustainable cities. However, if the participants had worked more evidence-based, that had open acknowledge the different perspectives, and worked them through. At first, they should organise at least four workshops, one around each evidence, were they should use different forms of evidence for opening and closing questions.

The four forms of evidence should be treated as outcomes of knowledge from four different kinds of practices: professional practices, research as a practice, organizational practices, and living experience as a practice, here referred to as stakeholder evidence. Those outcomes would be used to translating practical issues and problems into answerable questions. Of course, depending on which evidence we use, the questions would be different as well as the proposed answers. Naming and framing a specific urban developmental process from a stakeholder perspective will result in different questions compare to naming and framing the same process from a professional perspective. Of course, there will be conflicts and tensions between those different questions, and our approach of evidence urban planning will not solve the tensions. However, by acknowledge them, we think that we could make better decisions in urban planning, were we are aware of what we win and maybe lose.

Urban development is a wicked problem. Adding on dimensions of sustainability make it even more wicked. Urban planners are squished between the wickedness of sustainable urban planning and demands from construction companies, politicians, citizens and so on to plan and construct cities in a way that are economic viable and results in neighbourhoods that are both social and ecological sustainable. That is a very complex professional task, least to say. However, we seldom talk and acknowledge its complexity as something we had to live with. In the contemporary urban debate, there is a tendency to relay on one form of evidence, like scientific evidence that refer to dominating discourses as a way of explaining failures in urban development (Tasan-Kok and Beaten 2011) and see the development of new planning discourses as necessary (Rydin 2013). Transdisciplinary approaches to urban development, (Harris et al 2010), Co-production (Polk 2015) and different forms of experimental urban planning and experimental governance (Marvin et al 2018) are proposed as a way forward. At the same time, results from urban research may not help those professionals who find themselves trapped between conflicting demands (Cooper and Symes 2009).

We will see evidence-based urban planning first and foremost as way of organising a systematic conversation which acknowledge the fact that sustainable urban planning must rely on different and conflicting form of knowledge. Instead of being content with that “it is complex”, we would like to offer a systematic way of navigating over the stormy water of sustainable urban development.

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AESOP 2019 - Special Session:

Learning loops in the public realm. Enabling social learning in communities to tackle the challenges of cities in transition

Co-creation a way of supporting development of neighbourhood-level transport innovations

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Abstract: Co-creation is a much discussed concept in the fields of urban planning, architecture, urban design and many more. In the HORIZON 2020 project SUNRISE, co-creation is the key concept to develop, implement, assess and facilitate learning about new ways to address common mobility challenges at the neighbourhood level. Towards this aim, six SUNRISE cities (Bremen, Budapest, Jerusalem, Malmö, Southend on Sea, Thessaloniki) foster co-creation processes with the explicit mandate to implement innovative solutions for and with their residents, and other stakeholders. The SUNRISE action neighbourhoods combine a blend of proven online and face-to-face co-creation methods, tools and techniques to bring together citizens, policy-makers and other stakeholders to learn from each other and to address urban challenges in neighbourhoods in transitions. This contribution gives an overview of various methods for co-identification and co-development of sustainable mobility solutions at the neighbourhood level, and discusses the advantages and disadvantages of online and offline tools.

Keywords: co-creation; participation; mobility solutions; online and offline participation methods

Introduction

Today's urban challenges are complex: population growth, climate change, new technologies and many more create new challenges for urban development. The development of solutions requires integrative and holistic approaches. Participation, empowerment and social learning make it possible to integrate the needs and requirements of local stakeholders into urban planning and are often seen as a good lever to solve urban challenges.

Citizens and urban policy makers are experimenting with new collaborative approaches like co-creation to tackle persistent urban issues, such as climate change adaptation, quality of life, and urban inequalities. In search for more effective action plans, citizens, public institutions, private sector, and knowledge institutions are increasingly teaming up in formal and informal networks (Puerari 2018:1). Participation is an essential component of co-creation. In the HORIZON 2020 project SUNRISE,

participation is one of the key aspects to co-develop, co-implement, co-assess and facilitate learning about new ways to address common mobility challenges at the neighbourhood level. Towards this aim, six SUNRISE cities (Bremen, Budapest, Jerusalem, Malmö, Southend on Sea, Thessaloniki) foster co-creative participation processes with the explicit mandate to implement innovative solutions for and with their residents, and other stakeholders.. The SUNRISE action neighbourhoods combine a blend of proven online and face-to-face participation techniques to bring together citizens, stakeholders and policy-makers to learn from each other and to address urban challenges in neighbourhoods and cities in transitions.

This contribution gives an overview of various participation methods for co-identification and co-development of sustainable mobility solutions at the neighbourhood level, and discusses the advantages and disadvantages of online and offline participation tools. Main questions are: How can these tools enhance the co-creation processes? To what extent can these tools help people, communities and policy-makers to 'learn' about the problems or to develop solutions on the neighbourhood level?

Co-Creation

People and their cities are engaging in new ways. In some cities, anyone with a smart phone can report graffiti or a pothole directly to the right city department. Others participate in change labs that engage people from problem definition all the way to finding solutions. All of these activities are part of a process called co-creation (Leading Cities 2014:1). Originally conceived as a business strategy for identifying new forms of customer engagement, co-creation is currently used in several sectors, such as marketing, public service management, design, innovation, urban and regional planning (Lund 2017: 32). Given this diversity of application contexts, it is therefore perhaps not surprising that the concept does not have one clear definition.

In the field of urban development/ urban planning, the research group Leading Cities (2014: 3) comprehensively defined co-creation as “the active flow of information and ideas among five sectors of society: government, academia, business, non-profits and citizens (...) which allows for participation, engagement, and empowerment in, developing policy, creating programs, improving services, and tackling systemic change with each dimension of society represented from the beginning.

The combination of the following two definitions from the literature describes SUNRISE’s notion of co-creation:

- Co-creation refers to a process that brings together different parties, e.g. a company and a group of customers, to jointly produce a mutually valued outcome (Prahalad & Ramaswamy, 2004).
- In a co-creation approach, heterogeneous actors collaborate to produce knowledge, instruments, technology, artefacts, policy, know-how, etc. (JPI Urban Europe 2016: 52).

Participation – The Basis of Co-Creation

The central aspects of “co-creation” – the term for creating something together as a team – are therefore idea generation and cooperation. In order to develop new solutions in accordance with urban challenges, the co-creation approach focuses on the cooperation of transdisciplinary actors who jointly address challenges in a "process of creation" (Dübner et al. 2018: 142).

Participation is an essential component of co-creation and a much-discussed concept in the field of urban planning, urban design and other fields. For government leaders, agencies and developers, public participation allows them to collect and provide information about community needs, identify attitudes and opinions, generate new ideas, allow for smoother implementation, and build constituency support. However, for citizens and community organizations, co-creation can offer opportunities to gain representation and be heard, exercise political rights and influence policy decisions (Leading Cities 2014: 4). Participation is also a big challenge because it requires an actor to yield some of its power to another actor. Often this transfer is from the city administration to residents or other interested actors. The shift of power and the subsequent renegotiations of power relations are a core ingredient of every participation process. All persons in key positions in a participation process need to be aware of the shift of power and its ramifications (Arnstein 1969: 216).

The extent of opportunities for and rights of participation in a particular process of co-development and co-decision depends on several factors. On the one hand, the degree to which the interests of citizens can be taken into account depends on the type of process involved (formal or informal), and from the willingness of decision-makers in politics, the administration and business (the urban stakeholders). On the other hand, the chosen method also determines largely the level of influence of citizens' or stakeholders' interests.

Against this background, the influence of citizens in and through participation processes can be distinguished in three steps: information, consultation and decision-influencing (simplified distinction according to Arnstein 1969; Arbter et al. 2007: 9):

- **Information:** Informative methods ensure that stakeholders and interested actors are informed about a project and its likely effects; informative methods offer little scope of influencing the decisions taken. Public meetings aimed exclusively at informing, and providing opportunities to inspect official documents, are examples of this approach.
- **Consultation:** Consultative methods provide stakeholders and interested actors with an opportunity to comment on suggestions plans or decisions, and to table their ideas, which are to be taken into account at the decision stage. Suitable for co-design processes, consultative methods need openness to differing views and alternatives. Suggestions and advice to be taken into account by local decision-makers are the outcome of such methods.
- **Co-decision:** The furthest reaching form of participation methods are joint decisions in order to find an agreed solution. This is the level all participation activities in SUNRISE were striving for. Here stakeholders and interested actors have the opportunity to influence a decision, a project and the details of its implementation. Such methods require the integration of persons from politics, administration, and other stakeholders in the process. The scope

ranges from cooperatively developing suggestions all the way to the participants having extensive powers to decide.

In SUNRISE, we strive for the third step, decision-influencing, or co-decision to meet the expectations of a co-creation process with stakeholder and resident involvement. Information, however, must accompany all participation processes in their entire duration for reasons of transparency, visibility and to keep interested stakeholders involved.

Methods and Tools for Co-Creation

There is a wide range of different kinds of participation tools, methods and technologies in the practice in different countries and cultural contexts. Depending on the goals of the participation process and the groups to be integrated, different methods are suitable for co-creation on the neighbourhood-level. In order to achieve different objectives and address several target groups it is useful to apply a mix of methods. A good mix consists of different, complementary methods that further the goal of co-learning, co-creation and commitment building.

The best applicable method of a particular participation process depends on many factors, including the objectives, the target groups, the personnel, financial and time resources as well as the embedding in the political-administrative system (Senatsverwaltung Berlin 2011: 92 & 160).

Differences among participatory processes result from the number of participants and from the regulation of access. In principle, a process may be aimed to the general public, and thus to all interested actors, to reach as many people as possible. A process may, however, also refer to a selection of representatives of different interest groups or to all those directly affected by a particular topic or the subject-matter of the participatory procedure. For the selection of the method, the following questions are relevant (Nanz & Fritsche 2012: 25):

- Is the number of participants limited by any given factors?
- Are there special hard-to-reach groups that need to be integrated in a specific way?
- Are specific methods particularly suitable for those certain parts of groups?

The SUNRISE mission is to develop, implement, assess and facilitate co-learning about new, collaborative ways to address common urban mobility challenges at the neighbourhood level. Towards this aim, the SUNRISE action neighbourhoods combine a blend of proven online and face-to-face participation methods, tools and techniques (e.g. citizen advisory committee, dialogue centre tool, field trips, focus groups, message board, mobile stand, opinion survey, public meeting etc.) to bring together citizens, stakeholders and policy-makers to learn from each other and create new mobility solutions.

Online Methods and Tools for Co-Development Mobility Solutions

In the face of the trend towards digitization, the consensus that successful urban solutions shall collectively be conceived and developed as a societal task is becoming increasingly present (Sørensen & Torfing, 2016). As we cannot elude the digitization of our built surroundings and everyday lives, we can make use of technology in a way that cities become more liveable for the individual and address overarching goals such as sustainability and resilience. In addition to a variety of conventional and innovative participation methods, digital tools create options for integrating local actors into decision-making and implementation processes relevant to urban development (Dübner et al. 2018:141).

Online tools have the potential to include some target groups that might be hard to approach with offline methods that are place-bound or take an amount of time. For such groups, online tools are suitable, as they may participate from home or via mobile phones. However, not all target groups have access to internet at home or on their mobile phones, or prefer to participate face-to-face. Furthermore, online literacy of target groups varies greatly: online tools may be difficult to understand for people who do not regularly work with them. A further problem is that many online tools, like crowdsourcing of ideas or mapping tools, have the disadvantage that we do not know exactly who participated and require a continuous moderation of the online platform to sort out meaningful contribution (Franta et al. 2017: 46).

In SUNRISE, mainly city-specific SUNRISE websites were used as an online tool for stakeholder information and involvement. The city-specific websites in SUNRISE are used as virtual information centres, where all information publication material is made available. Furthermore, a web-based mapping forum was implemented into the website, which allows collecting mobility-related issues, needs and ideas. The objective of this forum was the collection of geo-referenced problems, needs and ideas, which are subsequently rated by users. The following core functionalities were implemented:

- Submit ideas: Users are able to submit new innovative ideas for public transport;
- View ideas: All users are able to view ideas;
- Rate ideas: Users are able to rate existing ideas;
- Comment ideas: Users are able to comment on and discuss existing ideas.

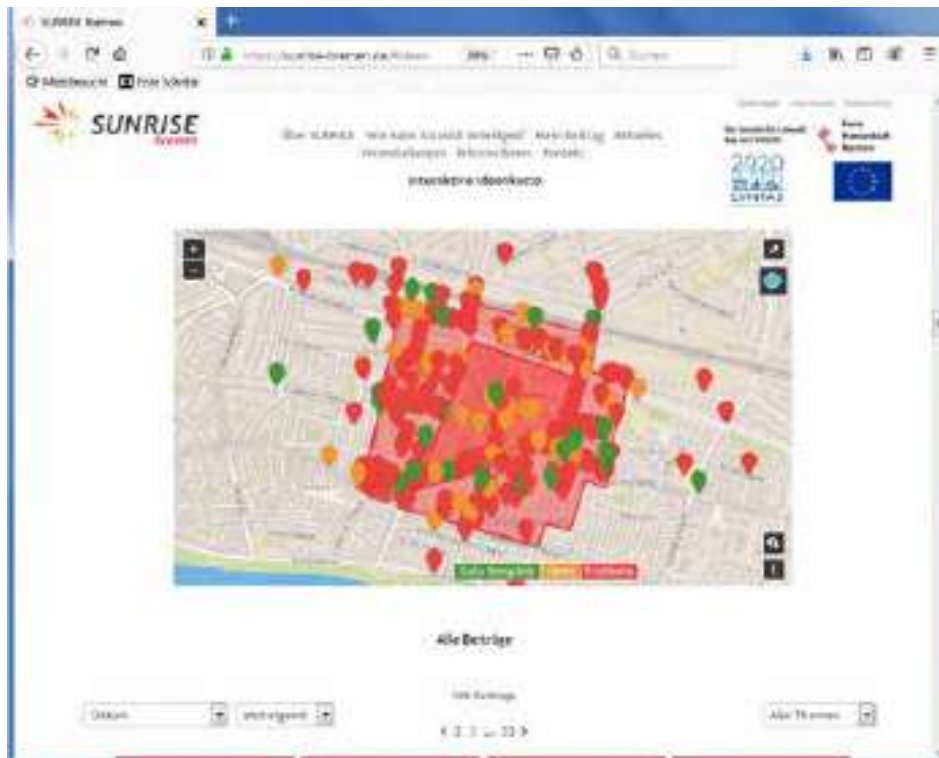


Figure 1: Website-based mapping tool Bremen (www.sunrise-bremen.de)

The online mapping tool offers the following advantages for the co-development of mobility solutions:

- Many people can share their needs and ideas:
- The functionalities of rating and commenting the ideas enable collaboration, learning and (further) development of ideas;
- A process of developing mobility solutions is possible because the tool has been permanently implemented on the homepage.

Disadvantages for the co-development of mobility solutions of online mapping tools are:

- Only people with high web-affinity are reached; some (often senior) people do not use the internet;
- It is not possible to trace who the participants are or to ensure that different stakeholders participate.

Offline Methods and Tools for Co-Development Mobility Solutions

Co-creation does not take place in a vacuum, but always occurs within socio-spatial contexts. Spaces and places are the relevant conditions that facilitate the interaction and access between actors that bring innovative ideas and resources and are also catalysts of interactive learning and innovation. Creating the physical (and mental) spaces for learning and experimenting is a necessary condition for fundamental change. Spaces and places facilitate visionary collaborations for making and learning together through co-creation practices. They enable collaborating actors to systematically and deliberately explore solutions across sectorial boundaries. Moreover, they constitute interventions within socio-spatial contexts themselves (Puerari et al. 2018:6). Spaces and places of co-creation are found to affect their socio-spatial environment, e.g., by providing meeting places, creating visibility for local sustainability issues, or by becoming “vehicles for innovation in urban planning processes” (Scholl et al. 2016: 89) .

For this reason, the SUNRISE cities also use a wide range of different kinds of offline participations methods for co-identification and co-planning of sustainable mobility solutions in the neighbourhood. On the one hand the cities used methods like mobile stands, opinion surveys, public meetings etc., aimed at the general public, and thus to all interested actors, to reach as many people as possible.



Figure 2: Mobile Stand in Törökör (Budapest)

The participation methods aimed at the general public offer the following advantages for the co-development of mobility solutions:

- Many people can share their needs and ideas;
- It is clear who the participants are and it can be ensured that different stakeholders participate;

- Depending on the method, tools and techniques, collaboration is also possible;

Possible disadvantages for the co-development of mobility solutions of offline methods for the general public are:

- Due to the mostly temporary nature of methods, the possibilities of a process for developing mobility solutions and learning from each other are limited.

On the other hand, the SUNRISE cities also use participatory methods for co-creation referring to a selection of representatives of different interest groups or to those directly affected by a particular topic (e.g. citizen advisory committee, workshops, focus groups, field trips for blind people etc.).



Figure 3: Workshop with councillor members in Southend-on-Sea

The participation methods referring to a selection of representatives of different interest groups offer the following advantages for the co-development of mobility solutions:

- Due to the small number of participants, intensive cooperation is possible;
- If the method is used repeatedly, a process of developing mobility solutions and learning from each other is possible.

Possible disadvantages for the co-development of mobility solutions of the offline methods for specific groups or stakeholders are:

- Due to the limited number of participants, not all stakeholders may be involved.

Conclusion

Co-creation is a new form of urban planning with the municipality, private organizations and individual citizens. In the literature Co-creation benefits are associated with improving processes of idea generation, decision-making and promoting co-operation and creativity. In addition, co-creation positively impacts on improving users' satisfaction and building trust or loyalty over the long-term. Especially when urban planning ideas are co-developed and tested already in the early stages, the projects are more likely to proceed smoothly, in a good spirit and are not in danger of being delayed or halted as a result of political or social resistance. There is also a possibility of minimizing economic risks as there is no need to make costly changes afterwards, if it is noticed that something went wrong in the planning stage (Oksman et al. 2014: 189)

Participation is a central aspect of co-creation, but every participation method, tool or technique is socially selective. No participation process attracts all people in the same way. This leads to certain social groups being over- or under-represented in the processes, depending on the format, the invitation policy, the setting and the structure. For those reasons, digital participation alone does not work: Only physical meetings enable dynamic face-to-face discussions and therefore, community building and networking.

Online tools have the potential to include some target groups that might be hard to approach with offline methods that are place-bound or take an amount of time. For such groups, online tools are suitable, as they may participate from home or via mobile phones. Moreover, during offline events further participatory tools and settings can reach target groups which are excluded from online discussions. Thus, what has been a crowd-sourced online need to be discussed offline and vice versa in a continuous process. All in all, online and offline dialogue should coexist in co-creation processes.

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Learning through co-creation: how to solve urban problems with citizens

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Abstract: The public realm is a place where urban stakeholders interact and come into conflict. The aim of this paper is to present the LOOPER participatory co-creation methodology and platform developed in the Learning Loops in the Public Realm (LOOPER) project to demonstrate ‘learning loops’ i.e. new ways of decision-making which bring together citizens, stakeholders and policy-makers to iteratively learn how to address urban challenges. The methodology and platform are demonstrated in three Living Labs with different spatial, cultural and thematic contexts. The main issues being solved are traffic and mobility in Brussels; traffic and green space in Manchester; and air and noise pollution in Verona. The paper will discuss the overall approach and methodology developed in the LOOPER project to support finding solutions to urban problems in a participatory co-creation process, and its broader implications for living lab approaches to urban transformation. Some interim findings emerge in the context of three main social science strands: social learning and collective intelligence; local government and participatory co-governance; and the co-design/co-production process in the urban environment. Work in progress from the LOOPER Living Labs demonstrates these wider themes in the light of front-line experience.

Keywords: co-creation; traffic safety; air pollution

Introduction

The public realm is a place where urban stakeholders interact and come into conflict. Urban areas are coming under increased pressure caused by urbanisation that results in increased competition for the limited available space. Well-developed mobility systems are especially important for urban areas to function. Nevertheless, mobility often has negative external effects such as congestion, injuries and fatalities, greenhouse gas emissions, and noise and air pollution. In recent years, urban and mobility planners have therefore moved towards sustainable urban mobility instead of trying to satisfy the ever-increasing demand for road traffic.

Stakeholder involvement is a key aspect of sustainable mobility as it can reveal new values and knowledge, increases support for the outcome, and facilitates implementation (Banister, 2008; Larson and Lach, 2008). However, involving stakeholders in transport planning is far from straightforward as it challenges the often-used expert-led and top-down model (Booth and Richardson, 2001). Nevertheless, as urban problems are becoming more complex and citizens more vocal, policy-makers are turning towards new governance approaches like co-creation to involve citizens and stakeholders in finding solutions to urban problems (Puerari et al., 2018).

Co-creation is an umbrella term for a wide range of participatory and open-design processes that have been widely used in urban planning and design. In co-creation, stakeholders are often frequently involved throughout a planning process and are given influence in the decision-making process (Sarzynski, 2015). Co-creation in urban planning has rarely been applied, therefore we have little knowledge about the benefits of such approach to transport planning and the tools that can facilitate such a participatory approach. LOOPER adopts the broad model of the urban living lab as an approach that enables solutions to be co-produced and explicitly learnt from in specific places (Evans and Karvonen, 2011).

Methodology

Planning and implementation to improve public space can be enhanced through co-creation. In the three LOOPER Living Labs in Brussels, Manchester, and Verona, co-creation has been used in the full planning cycle. A loop starts with collective debate on topical issues, then frames the problem and collects data. The platform visualizes the data and enables the co-design and evaluation of solutions. The selected solutions are then implemented, and the results are monitored with a second loop learning from the first. The LOOPER prototype platform integrates online and offline tools to facilitate learning in each stage of the co-creation process.

The LOOPER methodology is illustrated in Figure 1 The LOOPER methodology. Each Living Lab will go through a full co-creation process twice during the duration of the LOOPER project.

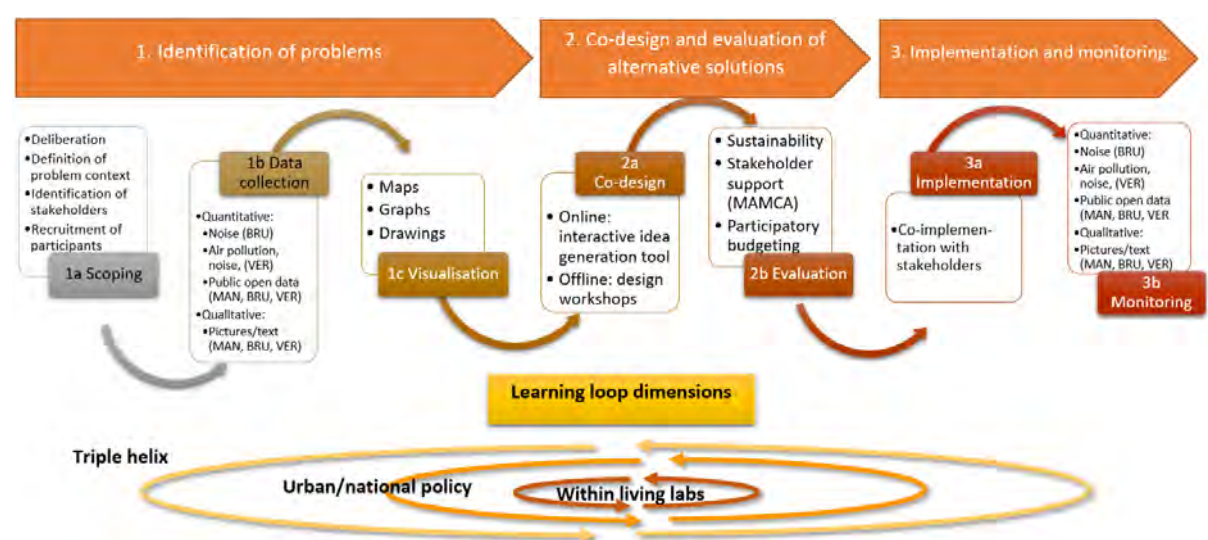


Figure 1 The LOOPER methodology

The main stages of the LOOPER methodology are as follows:

1. **Identification of problems and opportunities:** The aim is to identify the problems of a local community through a three-step process. This stage can be framed positively, referring to opportunities rather than problems:

- 1a. **Scoping:** The affected communities and the context of the problems will be identified. The problems are framed in a way to enable the tangible aspects to be identified through data.
- 1b. **Data collection:** Data to identify the scope, location and type of problems is collected with the participation of stakeholders via participatory sensing, via public databases and through face-to-face discussions.
- 1c. **Visualisation:** Visualisations of collected data are published on the LOOPER online platform and discussed at local workshops.
2. **Co-design and evaluation of alternative solutions:** The aim of this stage is to assess the problems identified in the previous stage, co-design and evaluate solutions, and select the solution(s) that will be implemented.
 - 2a. **Co-design:** Participants engage in qualitative and interactive online and face-to-face deliberation activities to propose solutions. Participants co-create alternative scenarios, explore new synergies in design or policy and define pathways for action.
 - 2b. **Evaluation:** After the co-design stage a more standardized method like a multi-criteria analysis is used to appraise the sustainability of alternatives and the Multi-Actor Multi-Criteria Analysis (MAMCA) is applied to identify stakeholders' preferences.
3. **Implementation and monitoring:** Based on the results of Stage 2, stakeholders implement a range of solutions and monitor their efficiency, using the same or comparable data used for the problem definition (Stage 1).
 - 3a. **Implementation** in the living labs involves citizens and stakeholders through their voluntary contribution.
 - 3b. **Monitoring:** Monitoring the impact of co-designed solutions uses the same set of tools as in Stage 1. This may involve participants through participatory sensing and open data or through other qualitative means of appraisal like reconducting interviews.

Theoretical context

Behind the LOOPER is a theoretical framework which combines three strands of social science:

- Social Learning theory, systems cybernetics and a 'collective local intelligence'
- Local government and democratic public participation
- Civic co-design and co-production in the public realm

This section is a brief review of these themes: there follows an interim review of the LOOPER experience (in progress at the time of writing).

Social learning & collective intelligence

Organizational learning theory is at the centre of the LOOPER concept and framework (Argyris and Schon, 1995). This applied the concept of reflexive feedback to organizations and institutions. It also reflects parallel ideas from second-order cybernetics and 'critical systems heuristics' (Churchman, 1996). Starting from a traditional view of learning as 'gathering facts', organization studies began to look at a 'Mode 2' 'double-loop'

type of learning. Mode 2 brings up not only information for direct problem-solving, but wider contextual knowledge and deeper values and goals as well.

The learning agenda has also expanded from the learning of information ('know-what'), towards learning active skills ('know-how'), social/emotional/networking intelligence ('know-who'), and cultural or ethical intelligence ('know-why'). This applies to individuals in the education system, but also to organizations and institutions, and increasingly to communities or social networks. This then applies to the LOOPER objective of '*learning loops in the public realm*':

- Learning of '**what**': Is there informational or technical content (which might be provided or signposted)?
- Learning of '**how**': Are there skills or techniques (with training or capacity building)?
- Learning of '**who**': Can policymakers / professionals learn how the community works: and can the community learn how policy works? The community can learn to self-organize, build capacity, mobilize action; the policy system can learn to innovate and adapt. Is there mutual learning between them?
- Learning of '**why**': policymakers may need to learn that mobilizing grass-roots activity can empower the community and lead toward a more harmonious society.

Social or collective intelligence is then the logical result of social learning. There is no single version or definition, but a practical starting point is with Gardner's 'multiple intelligences' (Gardner, 1983). In many walks of life, it is accepted that 'intelligence' is much more than technical problem-solving. 'Emotional intelligence' is now essential in business and management; cultural intelligence is vital in media and creative arts; ethical intelligence helps to manage business risks. The combination of all these is framed with the 'synergetics' framework for mapping the *collective urban intelligence* (Miles and Ravetz, 2016; Ravetz, 2017).

Organization change and learning is at the centre of the LOOPER concept, and this also calls on 'systems cybernetics' concepts of reflexive feedback to organizations and institutions. In practical terms this refers to a policy cycle which learns from experience, makes effective decisions, and evaluates the feedback and improves and adapts.

The challenge here is that large organizations, public or private or civic, are continuously asked to 'learn' and 'innovate'. However, in a large organization there are many layers. Training is delivered on specific items such as procurement or equal opportunities, but for the organization structure itself it is not easy to identify the more distributed type of learning, and the typical reality is one of barriers, gaps, inertia, 'workshop fatigue', and resistance to change and innovation. Most large organizations would already have some kind of management or monitoring system for learning, innovation, service improvement, and/or productivity and cost saving. Some of these methods are focused on citizen and community participation, and social innovation/cohesion/enterprise, e.g. 'Social Return on Investment'.

Government, citizen Participation and co-governance

Drawing from theories of democratic public participation (Ravetz, 1999), a cognitive or knowledge-based system of governance incorporates cybernetic feedback cycles of information and influence. In a complex society, decision structures tend to centralize and institutionalize, removing the 'decision point' from the 'impact point' for many sets of stakeholders. The result is often less effective and less equitable decisions, particularly where redistributive effects are concerned. Hence a stronger information feedback cycle will tend to

enable more effective and equitable decisions, with direct communication flows between stakeholders, project teams, programme managers and policy-makers.

Such participation processes can be seen in successive stages, as in the well-known ‘ladder of participation’ (Arnstein, 1969) which charts a range from ‘manipulation’, where information is rationed for specific purposes, to ‘consultation’, ‘dialogue’ and ‘legitimation’, where information is shared and used to form collaborative agendas. In ‘delegation’ and ‘citizen power’, not only information and control of agendas, but economic resources are transferred and devolved.

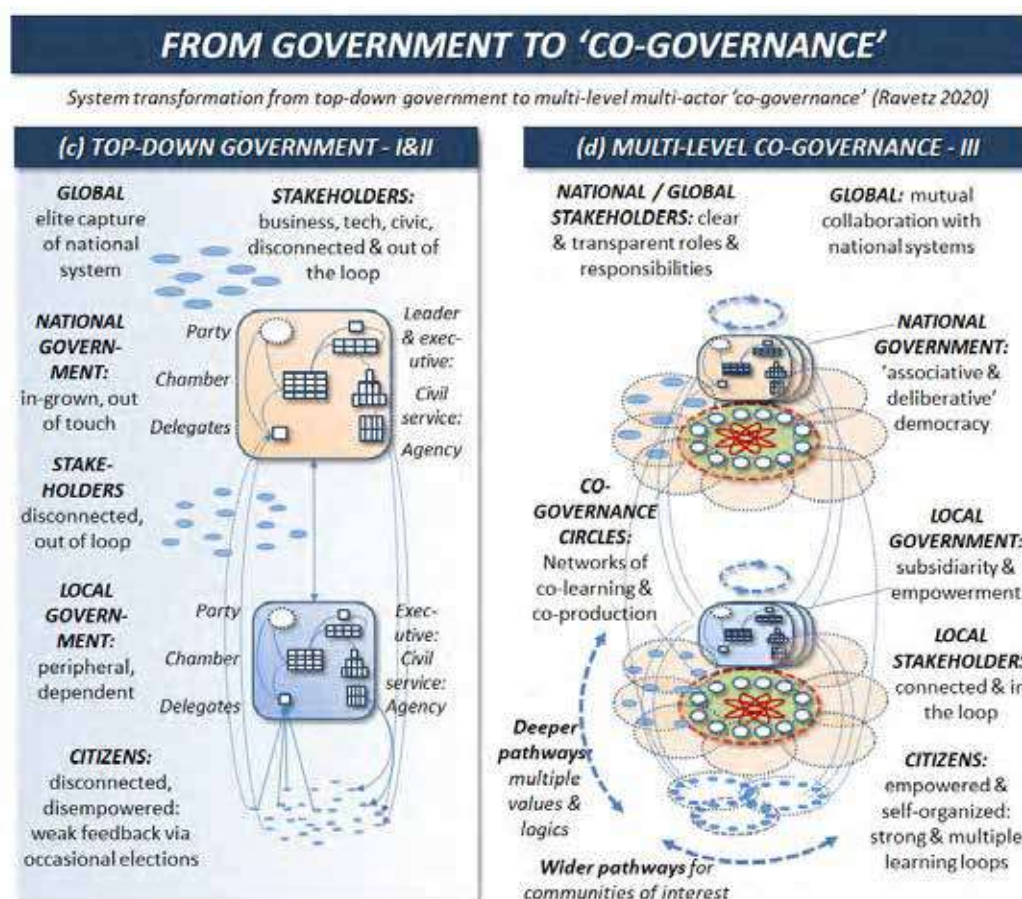


Figure 2 From government to 'co-governance'

From this cybernetic view of participation, a government of representative democracy in fixed units seems quite unsuited to these complex, overlapping, multi-layered dynamics. Moreover, the internal structures of decision-making also seem quite archaic. The diagram at Figure 2 shows, on the left a **(C)**, a typical parliamentary democracy (e.g. UK), with the local government as a smaller replica of the national level.

There are strong reasons for a complex series of checks and balances, but the overall system configuration shows a lack of feedback channels, with inefficiencies piling up, ingrown and self-serving institutions, and a 'democratic deficit' or lack of engagement with stakeholders. As a result, the needs of cities and neighbourhoods go unmet, resources are wasted, and citizens are alienated. Moreover, results on the ground include urban sprawl, car dependency, rising inequality and destruction of local assets.

Alternative thinking starts with the principle of the round table and its cognitive system properties, of collaboration, co-learning, and co-production. A round table configuration allows formal government units to sit alongside other stakeholders, both formal and informal, as sketched on the right at **(D)**. Overall there is potential

for a more responsive structure with higher levels of *collective political intelligence* – a roundtable or circle of so-called ‘co-governance’, i.e. collaborative and co-produced modes of decision-making.

The model shown above is a hybrid partnership based on networking and collaborative relations, not to replace formal decision-making structures but to enhance them. It works best with multi-level inter-connections, horizontally or vertically between the formal units of cities or districts, to allow for problems and opportunities which do not fit in formal units. The central circle can have any number of special interest or project circles attached, all linked by a common platform for information sharing, co-learning and co-production. It promotes ‘associational’ or ‘deliberative’ forms of democracy, which looks for the balance of formal and informal interests, where citizens, neighbourhoods or whole cities can be empowered and self-organized.

Living Labs

The three LOOPER Living Labs have different spatial, cultural and thematic contexts. The Brussels LOOPER Living Lab is situated in Helmet, a neighbourhood with many traffic safety problems within the municipality of Schaerbeek in the north of the Brussels Capital Region. Its location was selected after consulting local and regional governments as well as NGOs in the area. The living lab was set up in February 2018 and will run until June 2020. The lab is run by the Mobility, Logistics and Automotive Technology Research Centre (MOBI) at the Vrije Universiteit Brussel and BRAL, a Brussels citizen NGO.

The Manchester LOOPER Living Lab is situated in the Brunswick neighbourhood, a former social housing estate close to the city centre that is undergoing regeneration. The neighbourhood has a diverse population and is bordered by major roads on three sides. The Manchester Living Lab explores five interconnected issues: air quality, traffic safety, security, community spaces and greening. The University of Manchester is the coordinator of the Living Lab but works in cooperation with the social housing organisation S4B.

The Verona LOOPER Living Lab is located in the south of the city of Verona. The borders of Verona South are delimited by train tracks, roads, and a river. Air pollution in the area is a problem as it exceeds limit values imposed by EU laws. This problem is partly caused by the city’s location in the Po Valley but is exacerbated by the emissions of old heating plants as well as mobility related emissions. The Verona LOOPER Living Lab officially started in December of 2017. The lab is run by IUAV University of Venice with the cooperation of environmental NGO Legambiente and the City of Verona.

Results problem identification

The scoping of problems to be addressed in the LOOPER Living Labs was done together with local stakeholders and citizens. Living Lab organisers used their knowledge of the area but also had meetings with stakeholders such as local authorities and schools. Emphasis was put on engaging residents in the project and suggest ideas for the Living Lab. This was done via workshops, neighbourhood events, local newspapers, and posters and leaflets. These outreach events resulted in the selection of traffic safety, greening and traffic calming, and air quality as the topic of respectively the Brussels, Manchester, and Verona LOOPER Living Lab.

Each Living Lab developed a plan to collect data on the identified problem. The Labs had an online geotagging application developed by IUAV at their disposal through which residents could identify places in the neighbourhood that they found especially good or bad regarding the identified problem (see Figure 3). In Brussels, residents collected data on traffic speed and traffic volumes. The Manchester Living Lab collected data with residents on air quality using mobile Airbeam sensors and data from the fixed government air quality sensing station. Primary data was also collected on existing green infrastructure in target intervention areas using observation and geographic information systems (GIS) mapping. Resident preferences and notes on the local area were collected using the online geotagging application and, where residents were either unable or unwilling to use the app, through offline consultation using maps and photos that were then uploaded to the

online platform. In Verona, residents collected data on air pollution by using mobile (low-cost) and fixed (official body) sensors as well as data on noise pollution using stationary noise boxes built with a smartphone, an app and a calibrated microphone. Furthermore, in Verona qualitative data about perception and appreciation of urban spaces were collected using the online geotagging application.

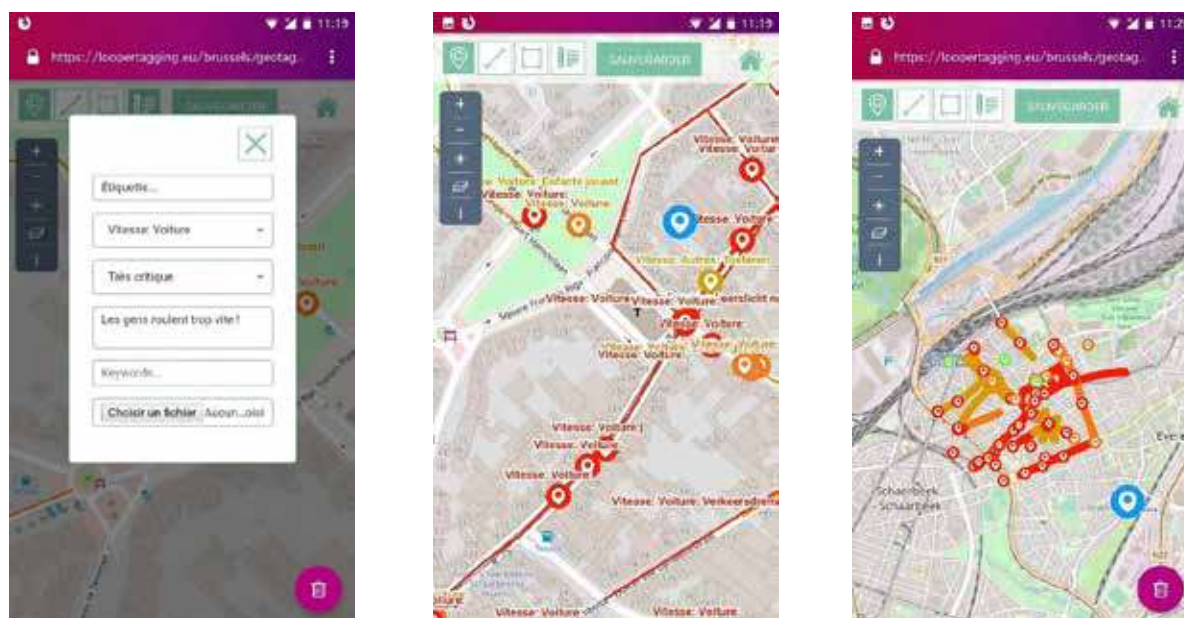


Figure 3 Screenshots of the LOOPER geotagging application

The collected data was visualised on each respective local LOOPER platforms, which is a website in the local languages used as a communication channel towards citizens as well as providing a data collection, visualisation and idea generation platform for the whole co-creation process. In Brussels, the platform showed the results of the speed measurements and traffic counts. The collected data showed that one in three cars go over the speed limit of 30 km/h and that majority of road users were either on foot or in a car. In Manchester, air quality was visualised to show the concentrations along main roads and around a local primary school. In Verona, the collected air quality data was displayed on the LOOPER platform (see Figure 4).

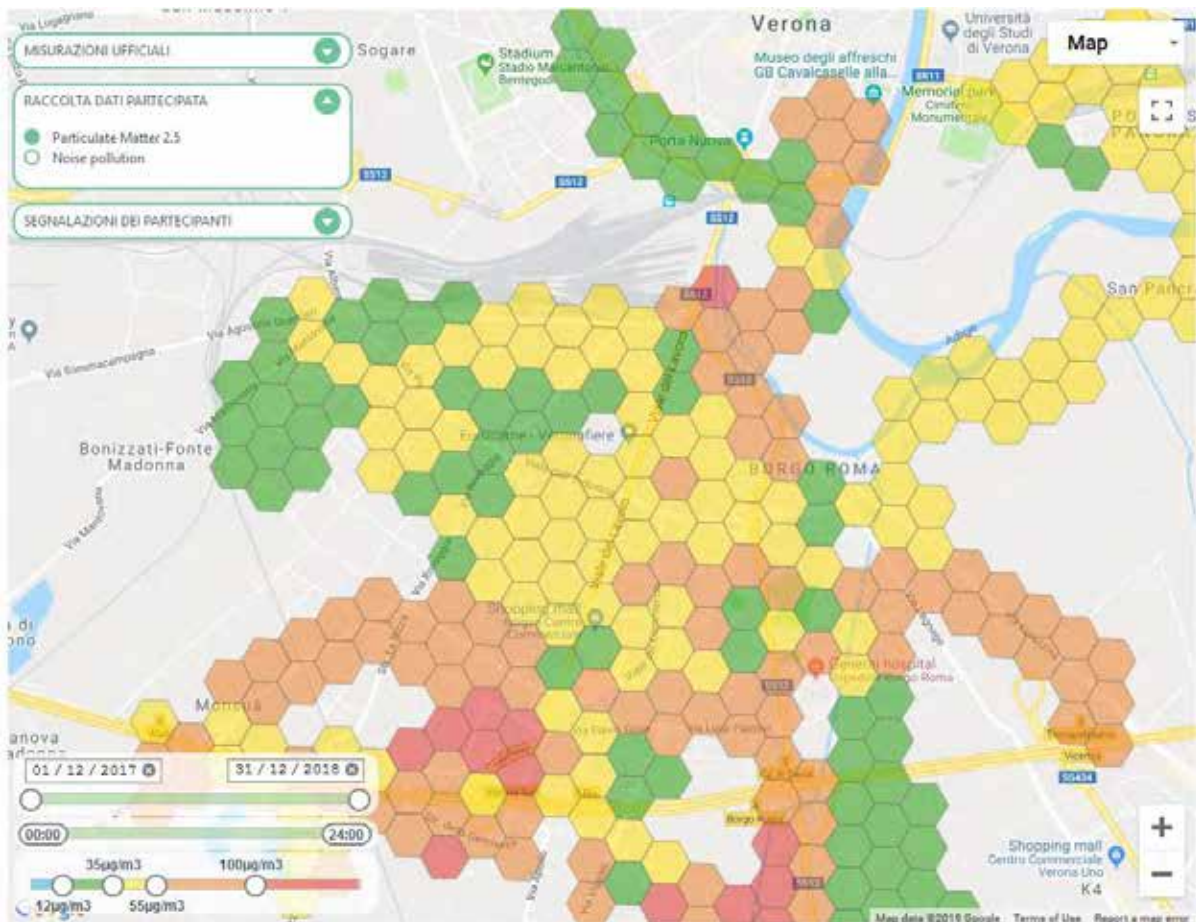


Figure 4 Data visualisation of air pollution in Verona on the LOOPER platform

In Verona, both qualitative and quantitative data were collected and displayed on the LOOPER platform. Figure 4 shows crowdsensed particulate matter (PM) 2.5 data, collected with mobile low-cost devices. The data from Verona showed that the spread of PM2.5 was almost homogeneous across a larger area, and mitigation solutions were needed across the whole Verona South area.

The data in Figure 4 shows how data collected throughout a one-year period give a homogeneous picture of the PM typical distribution. However, variations and peaks of particulate matter levels can only be seen on larger scales. This low difference of values inside on a regional scale can also be found when considering data collected in a shorter period of time. Figure 5 shows that even when considering the period with the highest levels of air pollution in Verona (a ten-day frame between January and February 2018), the collected data show no differences within close-by areas. Nevertheless, this campaign demonstrated that in some periods of the year, air pollution levels in the city are quite high and that some mitigation solutions and policies are needed.

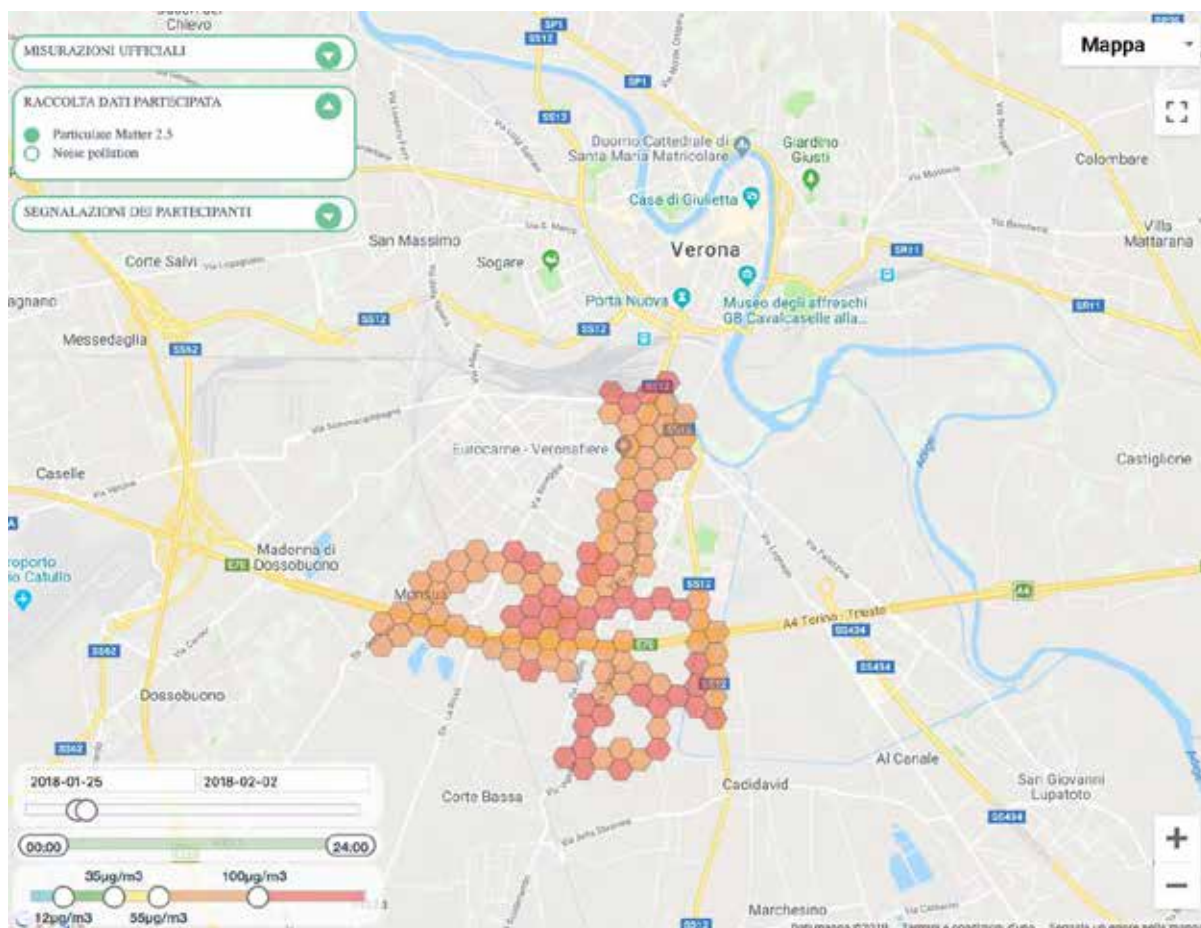


Figure 5 Data visualisation of period with highest levels of air pollution in Verona

Participants also collected data on noise pollution. Noise boxes positioned around Verona Sud showed that noise levels were close to or just over legal limits. This helped raise awareness on diseases caused by high noise levels which usually are considered as less important compared to air pollution.

Results co-design and implementation of alternative solutions

Each LOOPER Living Lab held workshops with residents and stakeholders to present and explain the collected data and to start the second stage of the LOOPER co-creation methodology: the co-design and evaluation of alternative solutions. Using their local knowledge, residents could submit solutions to the problem identified in the previous stage via the local LOOPER platforms where an idea generation tool was set up as well as through face-to-face co-design workshops (see Figure 6).

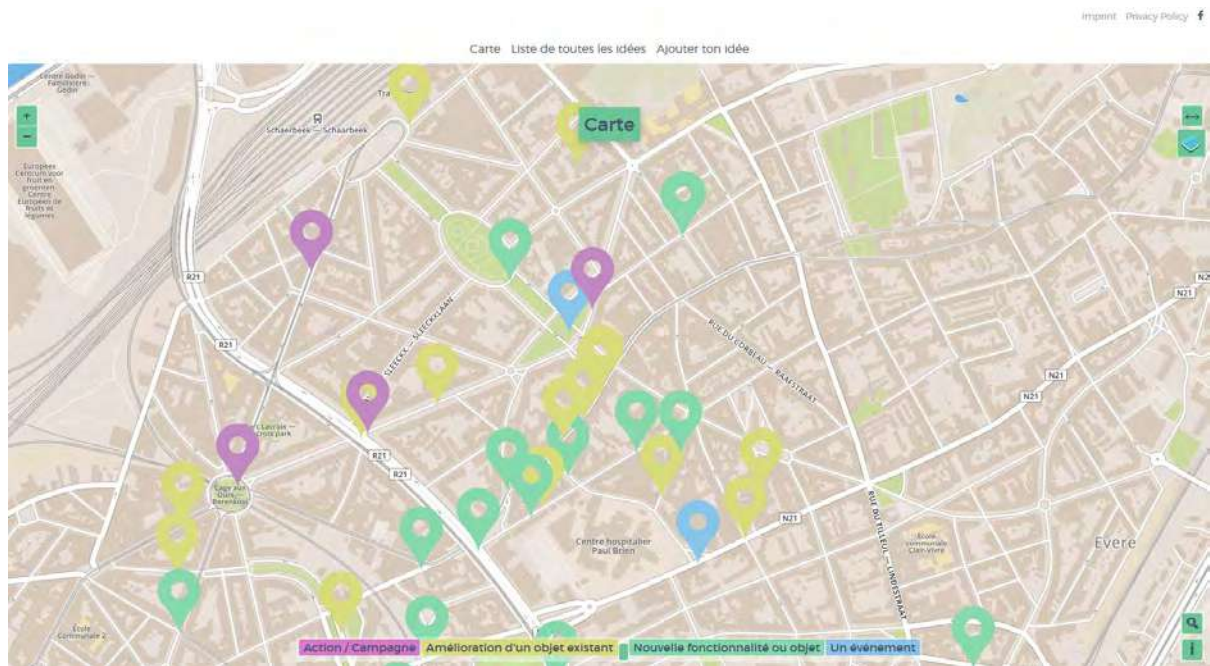


Figure 6 Location of possible solutions submitted by residents to the Brussels LOOPER platform

In the Brussels Living Lab, 43 ideas/solutions were suggested by residents. The co-designed solutions included changes in the infrastructure, awareness campaigns, and stricter enforcement of traffic laws. In the first co-design workshop, residents discussed, merged and rewrote ideas submitted via the platform and then decided on their five favourite solutions. Then, the impact of the proposed options on sustainability (MCA) and their stakeholder support (MAMCA) was evaluated. The sustainability MCA showed that none of the co-designed solutions would have a negative impact on the sustainability of the neighbourhood. Moreover, the MAMCA showed that none of the stakeholders (municipality; public transport operator; regional ministry of mobility; local cycling association; citizens) would be negatively impacted by the co-designed solutions. Residents then decided during a second co-design workshop that the solution to be implemented would be an awareness campaign for the presence of children in the streets.

In the Manchester LOOPER Living Lab, 36 ideas/solutions were proposed by residents, focusing on two specific roads and two neighbourhood wide issues (green spaces and street spaces). Overall, solutions responded to a desire to enhance the appearance and experience of the neighbourhood. On Brunswick Street three sets of ideas were proposed to address the problems of speeding traffic, lack of greenery and lack of connectivity / poor wayfinding. Specific proposals included 20mph speed limit plus a range of horizontal and perceptual traffic calming features, adding trees, shrubs and planters onto the pavement and other public spaces, adding hanging baskets and/or ivy screens and hedges in front of houses and other private spaces, and extending design elements from Brunswick Park and signposting entry into the Park from Brunswick. Wadeson Rd runs to Medlock Primary School and ideas included turning Wadeson Rd into a School Street (meaning closing down the road to non-essential residential traffic during school entry and collection). This included park and stride with neighbouring shop car parks, whereby parents could park nearby and walk the final part of the journey. Turning Wadeson Rd into a painted street and mitigating air pollution inside the schoolyard by planting hedges around school were also suggested. In terms of wider neighbourhood greening, suggestions focused on adding elements to make existing greenspace more interesting, such as wildflower meadows, woodlands, benches, play equipment, community activities, and green belt / active transport routes. There were also proposals to create citizen-led small green spaces: creating orchards with fruit trees and grapevines managed by neighbours. Finally, there were proposals to improve street spaces across the neighbourhood. These included improved

signage, connecting with design elements in the new Brunswick Park, adding benches and campaigning to prevent staff and students from the neighbouring University of Manchester to park in the neighbourhood. The MAMCA workshop was very effective in enabling the key stakeholders to rank ideas in terms of feasibility, cost and impact. This led to a desire to focus on Brunswick St, which was seen to be the most problematic element of the neighbourhood and thus the element that would produce the greatest benefits from targeted improvements. There is considerable interest in whether greening and general public realm enhancements could create a perceptual traffic calming effect. Treatments around the school were seen too complex due to existing initiatives focusing specifically on schools and air quality, while neighbourhood wide treatments were seen to be rather too diffuse to generate significant impact in a project of this scale.

In Verona, 34 ideas/solutions were proposed by residents. These possible mitigation solutions included: street closures to create calm and less noisy aggregation spaces; implementation of 30km/h zones to make neighbourhood spaces more quiet and secure; street closure during enter/exit school hours to allow children to reach school on their own; implementation of cycle lanes to have a more homogeneous network to boost the use of bicycles and to connect existing greenspaces; implementation of trees and greenings around the area of Verona Sud to make spaces more appealing and less polluted; introduction of green noise barriers on the main highway sides as it cuts through the area dividing it. The MAMCA was supported by a preliminary selection of sustainable solutions with policymakers and council employees that participated at Living Lab meetings, and the sustainability of the proposed options was evaluated while ideas were proposed. Indeed, the MAMCA was done considering the various stakeholders, and results showed that the proposed ideas could be implemented with no negative impact on stakeholders. After the MAMCA, three ideas were implemented as they had the highest, and most consistent, evaluation score for each stakeholder. The three ideas that have been implemented, and are being monitored as this paper is written, are: street closures in one part of the neighbourhood as a pilot case to propose it around the rest of the of the area; crosswalk islands near schools to be re-proposed in other school areas; and street closures at entry/exit hours to have safer spaces for children.

Results of implementation and monitoring

The last stage of the LOOPER co-creation methodology includes the implementation of (a) co-designed solution(s) (see Figure 7) and the monitoring of their impacts. Due to differences in timing between the LOOPER Living Labs, so far only the Verona Living Lab has implemented some of the proposed solutions (i.e. street closure, crossing islands for pedestrians), and started to monitor the effect of the co-design process (while writing this paper the data collected during the monitoring campaign are still to be analysed). To monitor the co-design process, the monitoring campaign is taking place using the same monitors positioned in the same locations from the 2018 campaign. This is done in order to have data as much comparable as possible, with the aim of having stronger results to support the whole process and do what is best to transform the situation.

In Brussels, an awareness campaign using temporary road paintings made by children will be implemented in June 2019. Speed measurements will be done before and after the implementation to see whether the solution has had an impact on the speed of cars.

In Manchester, a set of interventions focusing on Brunswick Street will be implemented between June and July 2019, with traffic speeds, resident perceptions and preferences, and car drivers' perceptions and preferences being monitored to assess the effectiveness of the overall treatment of the street and satisfaction with each specific intervention.



Figure 7 Examples of a to be implemented co-designed idea in Brussels and of an implemented idea in Verona

Discussion and conclusion

The LOOPER living labs have applied and investigated a number of aspects of co-creation that can be useful for other co-creation initiatives. The application and usefulness of online and offline tools, the combination of co-creation with analytical evaluation methods such as the MCA and the MAMCA, and the role of co-creation in social learning are the three most important aspects being explored.

Co-design is usually facilitated by a professional, who might choose a certain approach, and within that various methods or tools to spark creativity and keep a process of reiterative questioning, refining, reflection going. Scenario or prototypes can be built and reviewed. While co-design as an approach asserts users to be capable experts of their own experiences, they must still be supported through tools that allow them to express themselves (Voorberg et al., 2015). In LOOPER we have used a combination of offline and online tools. One of the learnings from the living labs is that online tools should have a low entry threshold in terms of previous knowledge of similar tools and in terms of access (e.g. need to register). Moreover, online participation tools can but do not always replace offline participation. A combination of online and offline participation is therefore necessary to involve as many people as possible.

In Brussels, the online idea generation tool was used by more citizens than the LOOPER geotagging tool, most likely because no account creation was necessary for the online idea generation tool and submitting an idea was a rather straightforward exercise. However, in Manchester the online idea generation tool was not used by citizens. It is unclear whether this is because of disinterest in the project or because the citizens lack digital skills to use the tool. No direct discussion between citizens, however, took place online in the three Living Labs. Whereas lively discussions about traffic safety and air quality took place during physical meetings, this was not the case online. Citizens used the online idea generation tool to submit ideas and view ideas of others but did not use the commenting function.

In addition to the online tools, we organised face-to-face meetings with citizens. These meetings served as a way to present the project to citizens, to get a debate started between citizens about the problems that the living lab would address, and to get citizens involved in finding solutions for the problems identified in the living lab. Moreover, these physical meetings allowed for the participation of those that were not able or did not wish to participate online. In Brussels, 25 people submitted ideas and 8 residents came to the two co-design workshops. In Manchester, more than 40 residents were engaged, primarily through meetings with 10 community

organisations and participation in 11 community events. In Verona, 33 ideas were submitted via the platform and around 50 residents came in total to the three co-design workshops.

In Brussels and Verona, most participants were already engaged in the topic of the Living Labs and had a relatively high educational background. In Manchester, resident engagement took place through existing community groups that showed considerable enthusiasm for the goals of the project to respond to citizen concerns and improve the local area. The Living Lab coordinators also visited citizens as part of the neighbourhood liaison role performed by partner organisation S4B in order to get input on what the problems are in the neighbourhood and how they could be solved. There was less appetite from residents to be involved in monitoring, as they felt they already knew there were problems that required attention, and less enthusiasm to engage with digital technology. This may have reflected the demographic and socio-economic make-up of the area and raises questions concerning the most effective ways to engage hard to reach groups with digital technology.

Another novelty of our approach is the integration of multi-criteria analysis and the multi-actor multi-criteria analysis with co-creation. While co-creation is a loosely structured, bottom-up method, MCA and MAMCA are very structured and can be perceived as complicated. Nevertheless, the potential added value of using MCA and MAMCA for evaluation is to show to what extent the co-designed ideas are sustainable taking into account 16 criteria of economic, social and environmental sustainability (Keseru et al., 2016); and to determine to what extent they would be supported by a wider range of stakeholders (e.g. public transport operator, police, municipality) beyond the citizens' group. This is a vital precondition for effective upscaling, as the solutions that are tested in the living labs must be feasible and practicable if they are to be adopted more widely by other organisations, places or policy makers. As Voytenko et al. (2016, p. 49) argue, "the degree to which ULLs [urban living labs] are able to stimulate broader changes beyond their institutional and spatial boundaries is directly related to the exact composition and structure of ULL partnerships, which determines which actors are included and the collective rules of experimentation." The LOOPER approach ensures that the stakeholders responsible for upscaling solutions are involved in the design and operationalisation of the living labs and their solutions.

The MAMCA and the MCA was only carried out fully in Brussels, as the method was perceived as time-consuming and requiring a lot of stakeholder input in the other living labs. That said, the process of engaging stakeholders through a value mapping process in advance of the MAMCA workshop proved to be exceptionally effective in ensuring stakeholder participation. In the second loop we will investigate how the burden on the analyst and the stakeholders can be alleviated. The role of the second learning loop will also be critical in determining how effectively local evidence concerning solutions is translated into more general insights (Hodson et al., Forthcoming).

The results in the LOOPER Living Labs show that reality is messy and unpredictable. The learning loop cycle may go around several times, especially at the co-design stage (Voorberg et al., 2015). The search for funding or the political process could be at the centre of the picture, more than any co-design options: a road safety/traffic congestion problem may be controversial, where different groups (e.g. residents / businesses) have different views and look for different data to support them. The design of traffic calming is quite technical and expensive, and the engineers might need time to learn how to do community participation and co-design. When the official approval is given for funding and traffic management, there may be 3-4 design stages, from sketch to outline to detail, each needing participation, from both a core group and a wider community, which is costly to organize. Meanwhile there are social innovations which might be quicker and cheaper, working in parallel, but where the effects are difficult to monitor. However, even if funding is difficult and little is achieved on the ground, there may be a positive effect on community capacity building.

A further issue is that of systemic scale and hierarchy. For instance, the problem of traffic pollution and noise can be framed at different levels, and the problem/response learning loops may be co-created at different levels, each with different interaction opportunities between policy, professionals and the community. All this should not suggest the problems are so complex and controversial, that nothing can be done. It does suggest a role for creative social entrepreneurs/community planners or mentors, who can bring together the different groups, navigate through uncertainty, coordinate the right level of technical/scientific evidence, and help in the co-creation of useful responses.

This paper is drawn from a project at mid-point, so any conclusions are very preliminary and subject to further feedback. We can summarise the main experiences and their implications for other Urban Living Labs so far:

- Practical interventions in the LOOPER Living Labs need to be fitted or ‘embedded’ around the realities of urban planning development, which is often very complex, slow-moving and in many cases controversial with different sections of the community, and/or the local government. With hindsight, the Living Labs could start on two parallel consultations, both with the community and policy-makers.
- Following that, issues of power and organizational dynamics cannot be ignored in a technically enhanced urban monitoring and policy development: i.e. the technology can enhance the political participation process, not to replace it.
- Citizen monitoring should include for both sides of the digital / non-digital divide, and it may be that non-digital offline methods are more effective, if the conditions for ‘embedding’ can be met.
- Evaluation methods need to be fitted to the reality of community and organization working, where the dynamics of projects are often messy, contingent, complex and unpredictable.

All these are themes for further debate and practice, in the evolving interface of policy participation, digital or non-digital learning loops, and the overall potential for ‘*collective local intelligence*’. The findings presented in this paper will be used to further improve the second co-creation loop in the LOOPER Living Labs.

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Participatory sensing within co-creation: improving the transformation of the urban environment. The Verona case inside the LOOPER project.

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Abstract: This paper illustrates methods, technologies and tools used and developed to support a co-creation method for the transformation of the urban environment, developed and tested in the framework of the Verona case from the LOOPER project. The LOOPER project (Learning Loops in the Public Realm), is an European Research Project co-funded under the JPI Urban Europe program. Other two cities are involved: Brussels, working on traffic related issues; Manchester, working on quality of spaces. Co-creation brings together participatory sensing, co-design and other activities to activate a participatory process. The LOOPER co-creation methodology, in the way it is applied at the Verona case study, is therefore based on working with the stakeholders since the first steps of the project, meaning that participatory sensing is grounded on the scoping and monitoring of urban issues done by citizens, enabling them to gain better result thanks to the knowledges obtained in the beginning. To support this process different technologies are used: passive sensors for NO₂; noise boxes; PM2.5 portable sensors; user-friendly visualisation dashboard to collect and visualise data. These methods and technologies have been used to improve co-creation to ideate and design urban transformation facing some issues in the city of Verona Sud.

Keywords: Co-creation, Co-design, Participatory sensing, Learning Loop

Introduction

The transformation of the urban environment is a complex process that involves many stakeholders, different topics and many personal or institutional interests. The consequences of this complexity are the slowing down of the transformation process and the rising of conflicts and frictions between citizens and public administration. But another aspect that influence on the scant implementation of urban transformation is the intricate and farraginous cluster of norms and regulatory plans supposed to facilitate and coordinate the management of the city development, but on the contrary, because of their top-down approach, they entrap many potential small and local urban transformation in the name of a unitary and coordinate approach at urban problems.

There is therefore the necessity of new strategies and approaches at urban problems to stimulate and facilitate the ideation and then the implementation of urban transformations to improve the quality of targeted and local urban places (e.g. a street, a small neighbourhood) through a sort of a bottom-up approach in terms of planning scale: the transformation of single urban places can contribute in the development and transformation of the whole city. On the other hand, to avoid conflicts but moreover to adopt adequate and well-chosen solutions, there is also the necessity of plan these transformations through a co-creation process based itself on a bottom-up approach. It is not a simple task and some conditions are necessities. “The fundamental precondition for the implementation of a bottom-up approach is the existence of a ‘bottom level’, which for urban planning corresponds to the existence of a community that has certain needs, problems and expectations, that are different from other communities, and is also willing to participate in planning procedures in order to influence them” (Pissourios, 2014). Another condition is the necessity to involve in the bottom-up process also city institutions with the role of evaluating feasibility of solutions in order to avoid difficulties “in translating a bottom-up procedure of urban intervention into legislation” (Pissourios, 2014).

In this theoretical context, the LOOPER project was ideated with the aim of developing and testing a reliable and adaptive strategy based on the double bottom-up approach, supported by an innovative multi-step co-creation process to improve the transformation of the urban environment. LOOPER (Learning Loops in the Public Realm) is a project co-founded under the JPI Urban Europe program and it works with three pilot cases, to be compared and evaluated, located in Belgium (Brussel), United Kingdom (Manchester) and Italy (Verona). The partners involved are: Vrije Universiteit Brussel, BRAL Citizens association of Brussel; University of Manchester; S4B (Brunswick Regeneration PFI); Click and Links; University Iuav of Venice; Comune di Verona; Legambiente Verona. In this paper the Italian case is used to better explain how the participatory sensing within the co-creation process can improve the transformation of the urban environment.

As abovementioned the Italian application is located in Verona, in North Italy, and more specifically in the area of Verona Sud (Figure 1), that is divided from the historical part of the city by the Adige river and the former freight yard, configuring it as a completely distinguishable and separated area of the city. Its development started at the end of the XIX century, with the completion of the first neighbourhood in the early twentieth century. Up to 1949 the industry grew in the area, occupying the central part of it, and the Z.A.I. (Industrial Agricultural Zone) was established.

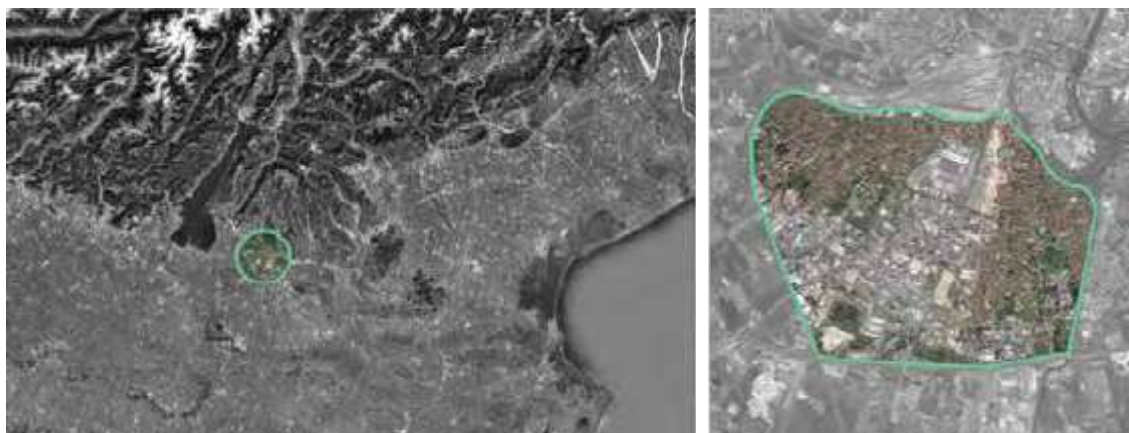


Figure 1 - Verona location in North-East part of Italy and Verona Sud borders

The main issues that influence this area are air quality and noise pollution, mainly caused by heavy traffic, industries, old buildings' heating plants. The presence of this kind of issues lead to the creation of multiple neighbourhood and citizens associations which are interested in solving these problems. The strong willingness of the groups in protesting resulted in a conflictual relationship with policymakers and the public administration of the city (Condotta *et al.*, 2017). In this framework the LOOPER project applies its co-creation methodology to

solve the conflicts raised between the parties in order to find new shared mitigation solution to improve the urban environment.

LOOPER multi-step co-creation process

The LOOPER co-creation is a multi-step process based on a bottom-up approach. To create the condition of having a consistent and prepared “bottom level” - and therefore get a successful co-creation process – the strategy is to apply the methodology of the Learning Loop within Urban Living Labs (ULLs).

The Learning Loop (or single/double-loop learning) concept was firstly developed by Argyris and Schön (1995). Single-loop learning is an organisational learning process, meaning that people, organisation or groups modify their behaviour and actions according to how reached outcomes differ from the expected outcomes. The single-loop learning is therefor based on the idea that people change their actions, or behaviours, to avoid mistakes. The implemented version of the single-loop learning is the double-loop learning, which expands the idea of the single-loop by having people to correct not only their actions, but also the underlying causes - i.e. organisational norms, policies - behind the problematic action.

In LOOPER a double-loop learning is used as participants, and stakeholders, are called to consider not only about their actions, but also the framework in which they are working. As this leads to a deeper understanding of the pattern in which they are working, it also allows a better decision-making process within every operation. Double-loop learning also introduces organisational learning in the framework: participants and stakeholders are called to examine the underlying assumptions behind the actions to learn from possible incorrect methods.

Another important concept within the project is that of Urban Living Lab, an evolution of the Living Lab concept that is a user-centered open-innovation ecosystem (Von Hippel, 1986; Chesbrough, 2003; Almirall and Wareham, 2011) which integrates research and innovation processes (Bilgram *et al.*, 2008) within a public-private-people partnership (Pallot, 2010).

The implementation of the learning loop and ULL concepts within the co-creation process takes place by filling three sequential planning stages which are conducted inside ULLs (Figure 2): 1. Identification of problems; 2. Co-design and evaluation of alternative solutions; 3. Implementation and monitoring. After finishing the three-stage process another loop starts by going back at the identification of problems; this triggers a “learning loop” as during the second loop stakeholders already have acquired knowledge and information as a base for it.

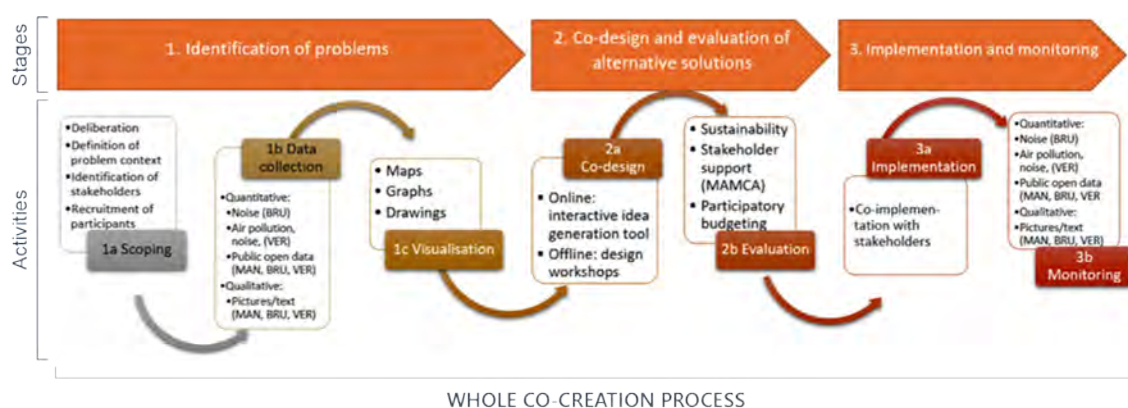


Figure 2 - LOOPER co-creation process

The learning side of the co-creation process

In the framework of the multi-step co-creation process, the LOOPER method activates a three “learning stages” process inside ULLs, each of which takes place during every learning loop (Figure 3).

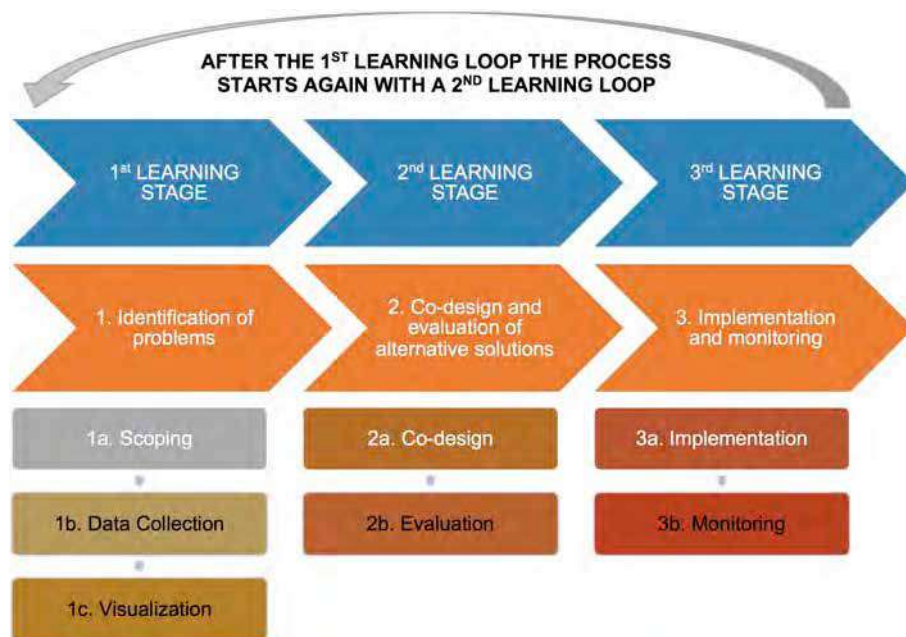


Figure 3 - Learning stages inside the framework of the LOOPER co-creation process

Each learning stage can be matched to one of the co-creation process' stages, which will be better explained later on. The first learning stage is meant to create awareness about urban issues and about the status of the problems through some consciousness activities. This first type of learning starts by focusing on the scoping of issues, done during the ULL meetings which are organized together with all stakeholders. During these meetings participants start to learn what others perceive as issues, which matters are real or perceived, and which of the issues are most relevant. The learning later moves toward applying what was learnt previously to organize the data collection activity which uses a crowd-sourcing approach. As soon as the data collection is completed, the visualization adds other skills and knowledge to the learning as participants are called to analyse the data they collected by using the online interactive geo-platform that shows every collected data with a user-friendly approach.

The second learning stage covers the activities of co-design of possible urban mitigation solutions and the evaluation of which are worth to be implemented. During the co-design activity participants are asked to propose possible solutions to solve urban issues. This co-design activity is done by having within the participants both citizens and policymakers, this allows to have an open dialogue on which proposed solutions are feasible, effective and sustainable. Moving forward to the evaluation, each of the solutions considered to be feasible, effective and sustainable by participants are assessed by using the MAMCA (Multi-Actor Multi-Criteria Analysis).

The third learning stage seeks to implement the selected solutions into the urban environment, with a second data collection to monitor if there are any effects after the implementation. During this stage participants - both citizens and policymakers - assess the results of their activities and, in this way, they increase their knowledge and awareness on possible transformation and mitigation measure to approach urban issues. At the end of this stage another loop begins, allowing to have even more learning as it starts from a more advanced knowledge base.

Furthermore, the co-creation process based on the ULLs and the learning loop methodology, which is applied in the framework of the LOOPER project, does not only aim at giving knowledge to participants, it also has the intent, or pedagogical ambition, of transforming the most common negative feelings of anger and protest, which usually citizens have towards policymakers, into positive energies of proposition and participation. This is a very important point of the process as usually these negative feeling stem from a low knowledge which citizens have when talking about urban issues, leading to a form of inertia when improvement measures are applied by public administrations.

The “participatory sensing”

The learning side of the co-creation process, that we have described in the previous paragraph, play therefore a relevant role in creating the necessary conditions for implementing an effective bottom-up approach. Another strategy to enhance the bottom-up approach is to embrace a “participatory sensing” approach within the first stage of the learning loop; this is what we have done while applying the LOOPER method at the Verona experience.

The participatory sensing concept can therefore be found in the whole first stage of the co-creation process as it is a collective way of gathering knowledge while perceiving and interpreting the urban space that surrounds the community itself. The process gets called “participatory sensing” (Figure 4) and aims to *collectively involve* (participatory) the community in *observing, measuring and interpreting* (sensing) the urban criticalities and the data collected to reach the design of possible ideas to transform the urban environment. From the scheme in Figure 4 it is possible to see how – under the umbrella of participatory sensing – the sum of the activities of the first stage of the project actually built the “bottom level” which is necessary to have a well-functioning bottom-up approach. Indeed, it is possible to reach good, and useful, results with a bottom-up approach only if citizens are given the tools to empower themselves.

To give a more complete explanation we can say that each of the activities done during the first stage give some knowledge which allows to develop participatory sensing within a community, that later on improves the co-creation process. During the scoping of issues activity citizens are able to collectively interpret and create a framework in which to work, and this collective choosing allows a feeling of involvement without which it would not be possible to trigger a bottom-up approach. During the monitoring activity the participatory sensing gets empowered as citizens are called to collectively monitor what they previously decided to scope, and this is the first active on the ground work that they are called to make. During this activity the participatory sensing reaches its peak. Moving towards the visualisation, citizens are called to interpret the data they collected about the issue they chose.

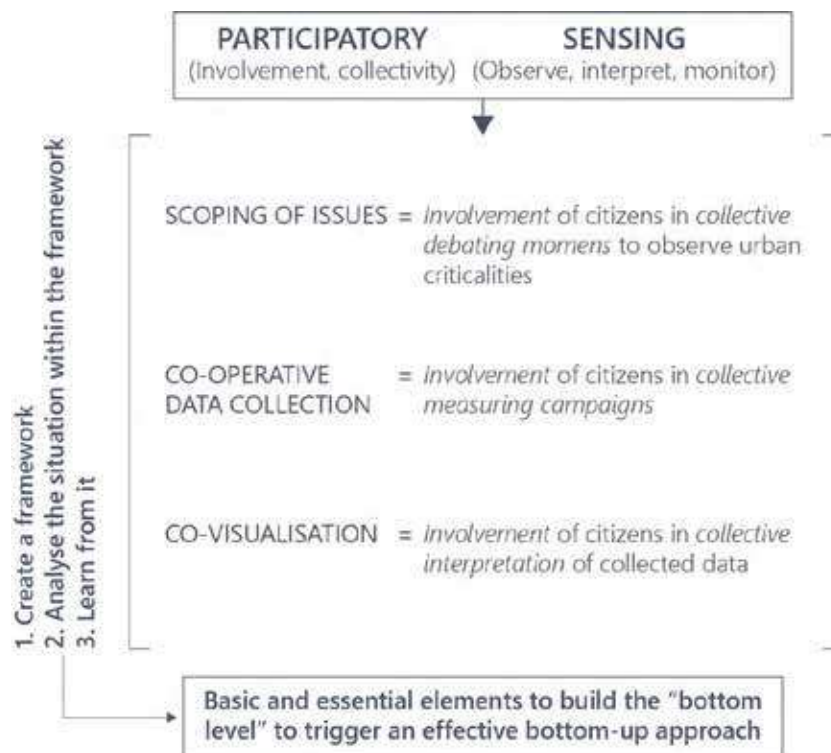


Figure 4 - Participatory Sensing concept applied at the first stage of the LOOPER process

First Stage of the LOOPER co-creation process: identification of problems.

As we here will focus on the participatory sensing and how it can improve the transformation of the urban environment, it is necessary to deeper explain the first learning loop experience of the LOOPER project and how it has hence been applied and customized at the Verona case. The loop started in November 2017 and will end in September 2019, going throughout the stages of 1. Identification of problems, 2. Co-design and evaluation of alternative solutions and 3. Implementing and monitoring. The general aim of the first stage was to identify, in practical detail, the problems of a local community through a three-step process. But within these activities the word “problem” started to include the idea of “opportunities”, and possible pathways to go forward.

The scoping activity - which means the setting of the framework of issues for the pilot case - took place between November 2017 and February 2018. Throughout this activity period, it was possible to determine which where the urban issues to be considered. During the scoping activity (Figure 5), following the broad priorities of the whole Lab setup, the focus was onto particular interventions which could solve problems - or gather opportunities - of specific interest to the community. Particular attention was given to the possible causes and effects. The problems found were later framed in order to allow the collection of data to quantify/qualify the issues chosen to be addressed: air quality and noise pollution.



Figure 5 - ULL scoping activity

Going through the problem scoping activity, a co-operative data collection planning started as it was based on the idea of a participatory sensing activity. As the problems and opportunities were selected, the data to be used as indicator of the selected urban issues were identified with the help of participants. Participants – but above all, citizens – were trained on the various aspects related to the measuring of data related to a specific issue and decided the locations on where to position the sensors available within the framework of the project (Figure 6). It was, in fact, chosen with participants where to position the sensors and when to undertake the monitoring campaign for the data collection. The sensors available for the data collection were both official ones - i.e. mobile stations – provided by the Environmental Prevention and Protection Agency of the Veneto Region (ARPAV) which is the official body in charge of the measurements, to gather more accurate data to be used as control group, and low-cost ones - i.e. noise boxes, AirBeam for PM2.5, Air Monitor for NO2, geotagging tool for qualitative data – for the crowdsourcing activity (Figure 7).

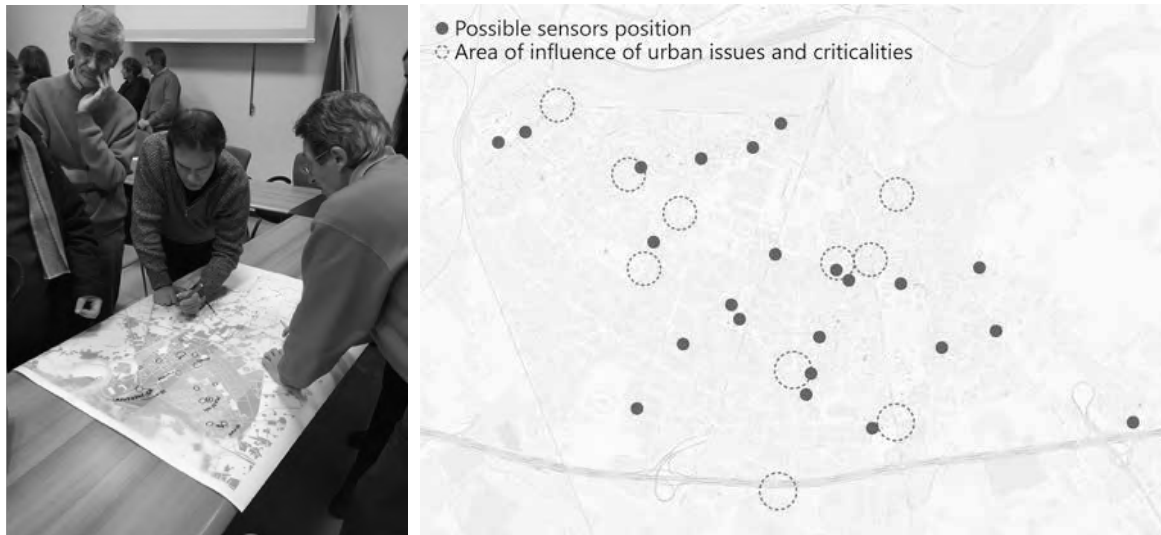


Figure 6 - ULL scoping activity and sensor position



Figure 7 - Noise box, Air Monitor and AirBeam

Considering the crucial importance of where and when the monitoring campaign would take place, the Verona ULL dedicated three meetings in this decisional process and this was done by also thinking at the second monitoring campaign and not only to the first one, and both citizens and policymakers participated and collaborated with the aim of finding a solution which could suit the needs and wills of every stakeholder participating in the project. In Figure 6 it is possible to see the locations chosen by participants where to position some sensors, from places chosen within participant houses or public buildings, and where these possible positions overlapped with the criticalities found before.

After the process of scoping of urban matters, and of questioning on where to position sensors, it was evaluated which places were suitable to position the mobile stations given by ARPAV, and which locations could be used to position the low-cost passive sensors for air pollution. During this activity participants were helped by giving them the tools which were necessary to choose wisely, i.e. knowledge about the issues found during the scoping, competences on sensors and on laws that regulate air and noise monitoring, expertise of council-employees on the feasible space to position mobile stations. The first monitoring campaign took place between February 2018 and April 2018.

Subsequently, the visualisation of the data collected - which was between June 2018 and September 2018 - was made possible by using web-GIS tools, together with other media supports such as audio, image or video. The results of the first cooperative data collection campaign can be found at verona.looperproject.eu/visualizzazione/.

The results of the visualisation activity are publicly shared information which were discussed within the ULL by local stakeholders and that were analysed in terms of thresholds, targets, priorities, opportunities. To better clarify, air quality data were matched to official risk categories. Social data such as greenspaces were to be prioritised for action. An assessment/evaluation process decided e.g. which problems to work on, by who, with what resources, in which timescale, in which location.

Tools to support the participatory sensing

As the whole co-operative data collection activity is one of the most important activities to reach a complete participatory sensing process here the tools used are explained in detail.

The tools used between February 2018 and April 2018 were:

- Mobile stations from ARPAV (official body in charge of controlling the environmental situation in Italy) which could collect data of: NO; NO₂; NO_x; PM10.
- Passive sensors from ARPAV which could collect NO₂ data from a wider range of places as these are low-cost sensors which need no electricity.
- Noise boxes made up from a low-cost Android smartphone, the OpeNoise app from ARPA Piemonte, a waterproof box and a microphone to be assembled.
- NO₂ low cost sensors made with an Arduino board to which a set of other components, including the actual NO₂ sensor, need to be embedded.
- PM2.5 low cost sensors which work with a light scattering method with a continuous data collection to find out people exposition to the pollutant.
- A geotagging web app to collect qualitative data about traffic, urban green spaces and any other issue and/or good practice to be found in the area.

The final result was that of a complementary set of tools which gave a more complete understanding of the situation of the project area. This more complete view also helped in realigning the perception that participants had with the actual situation of the spaces they live in. The two main tools which helped in overtaking this discrepancy were the AirBeam - which monitored the PM2.5 - and the noise boxes - which monitored sound levels in dB(A) - as these are the most untrusted data among those collected by the official body.

The AirBeam is a tool which can be used to get instantaneous data of the exposure of a person to PM2.5, it has been developed by HabitatMap which is a non-profit environmental health justice organization whose goal is to raise awareness about the impact the environment has on human health. The big difference between an AirBeam device and an official device relays in how data are collected, indeed the AirBeam measure PM2.5 using a light scattering method; air is sucked in a sensing chamber wherein a LED bulb scatters off particles in the airstream, is registered by a detector and converted into a measurement that estimates the number of the particles in the air (Figure 8).

This device is a crowdsensing one as it works via Bluetooth and sends data to the AirCasting Android app, developed by HabitatMap, every second. The app then maps and graphs the data in real time on the smartphone. At the end of each measuring session all of the collected data are sent to the AirCasting server and there gets crowdsourced with data collected from all the other devices to create a map showing where PM2.5 concentrations are highest and lowest. The device can be considered as a low-cost one as the price is of \$ 249,00 for a single device, this though excludes the cost of an android smartphone with internet connection which is a mandatory requirement for it to function. If the smartphone needs to be bought, it is still possible to keep the total price of the sensor under € 350,00.

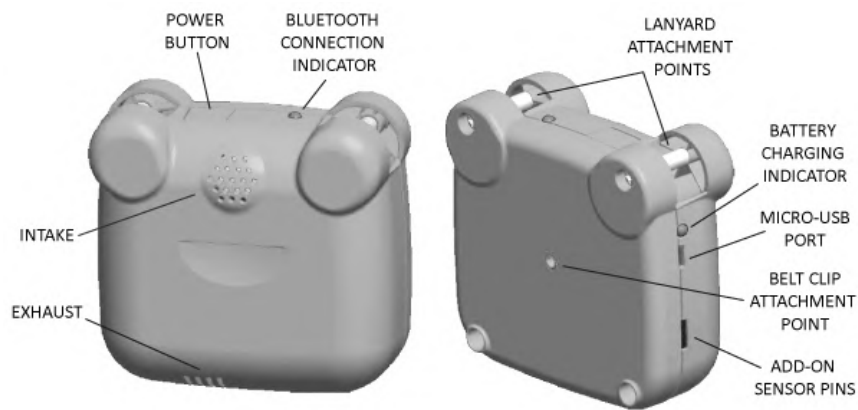


Figure 8 - Air Beam tool

The other tool mainly used for the participatory sensing was the noise box. The noise box sensors are sound level meter apparatus provided by an android smartphone, a lavalier microphone and a waterproof enclosure (Figure 9). These are used to collect a data every 10 minutes, but the time laps period can be modified by the user. As the device is calibrated with an official class 1 level meter it is possible to compare the data collected by it with the official ones. To compare the data is it necessary to work on the raw data to obtain the weekly day and night data, as required by law.

The sound level meter software used for the Sound Level Meter apparatus is the OpeNoise Android app developed by Arpa Piemonte. The App allows the user to store the A weighted equivalent level in a .txt file. In the .txt file is it also possible to store the third octave band log. In the settings, it is possible to calibrate the microphone and to change the time step of the logging in a range which goes from one second to one hour. As per the AirBeam sensor, an Android smartphone is mandatory and the price of the apparatus depends on the type of hardware chosen but it can be less than € 150,00.



Figure 9 - Noise Box kit

Interactive map for data co-visualisation

To enable the co-visualisation, the visualisation tool needs to be as user-friendly as possible. For this reason the number of different subjects to whom the information is addressed has led to the design of a simplified interface strongly oriented to reduce cognitive overload. To do so a first classification of collected data and information to be displayed was done by distinguishing institutional (high-accuracy datasets) from those collected in a participatory way (high temporal and spatial resolution but medium-low accuracy). This first aspect determined the structure of the layer panel in four different sections: institutional/official data, participatory sensing, stakeholders feedback and report, public databases (in Figure 10 only three sections are shown as data from public

databases are to be uploaded as the paper is written). Again to avoid cognitive overload, layers are shown one at a time; map controls only include the base layer selection (natural or road map) and the zoom level; click event fires the details info-box but double-click is not provided; mouse-over event (only non-touch devices) shows the label of the map feature. As for the type of collected data, there are three specific cases: vector georeferenced data (points, lines or areas) mostly collected with a mobile-friendly geo-tagging tool; data series related to static monitoring points ("measuring spot") coming from continuous measurement campaigns carried out using static sensors; GPS point tracks with scattered measurement campaigns carried out with mobile sensors and data loggers.

Vector georeferenced data are qualitative data with a quantitative field that is the level of relative importance (rating) of the phenomenon reported using a 5-classes scale; therefore we chosen a graphical representation with a rating-based colour ramp (from green to red to cases ranging from optimal to the most critical). The data series collected with static sensors are instead related to the location of the measuring box; for those points, users can view firstly the campaigns list and then, with a second click, look at the details of the specific campaign (Figure 11). Lastly, GPS tracks with measurements are the only data that must be treated as whole area coverage, therefore the visualization technique is based on a hexagonal mesh made in 4 different size levels, from 25m to 250m and a dynamic calculation of average values carried out per single cell (Figure 10, Figure 13). In any case the complexity does not affect user interface that provides intuitive and effective 4-dimensional (x, y, time, value) browsing functions (see the widget at the bottom left of Figure 10).

As for the interaction design, the features of quantitative data collected with low-cost sensors in participatory mode required the insertion of a special panel to allow user to choose the thresholds and defining custom intervals between optimal and critical situations; in this way it was possible to show both accurate official data and less accurate data relating to the same phenomenon avoiding direct quantitative ratio of measures that cannot be properly compared due to the different sensing systems.

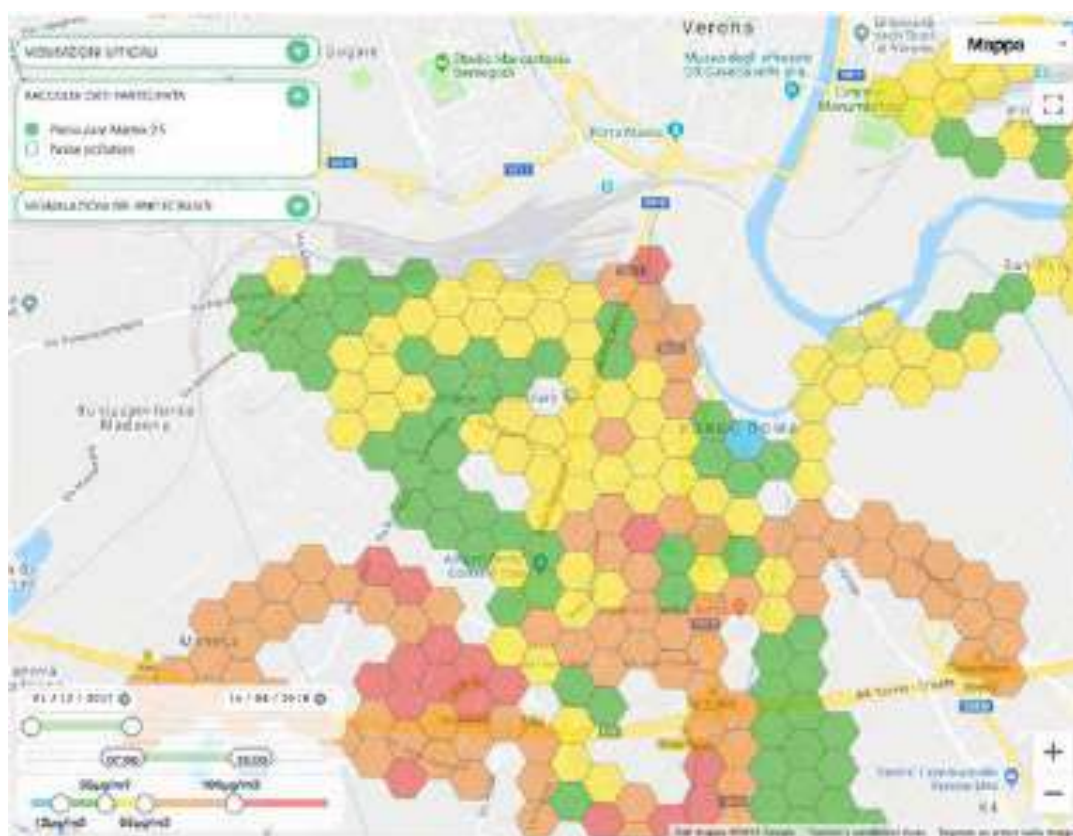


Figure 10 - Co-visualisation platform screenshot

Participatory sensing improvements in co-creation

To comprehend how the participatory sensing actually improved the co-creation process, it is necessary to understand how citizens were empowered by the co-operative data collection. It allowed them to better “sense” urban issues and to have the right tools to interpret (sense) official data.

Comparison of official data and participatory sensing data

The distrust that citizens feel towards policymakers and official bodies when talking about environment, is mostly raised by the lack of knowledge they have about both the tools used to collect data and the way these sensors work. Because of this it is of extreme importance to use participatory sensing when applying a co-creation bottom-up approach.

When talking about PM2.5 and PM10 data analysis the first thing to keep in mind is that data collected with official bodies sensors consist on the weighting of a tampon which was exposed for 24 hours to a certain volume of air controlled by using a pump, meaning that a single data in a specific position is given for each day. This means that a single data will be given for each day of the campaign (Figure 11). The way in which these data are then approached, from a law perspective, is of counting how many days are over the daily limit value of $50 \mu\text{g}/\text{m}^3$ during the year – if it is more than 35 days there are sanctions - and if the annual limit of $40 \mu\text{g}/\text{m}^3$ has been exceeded – again if this is the case there are sanctions.

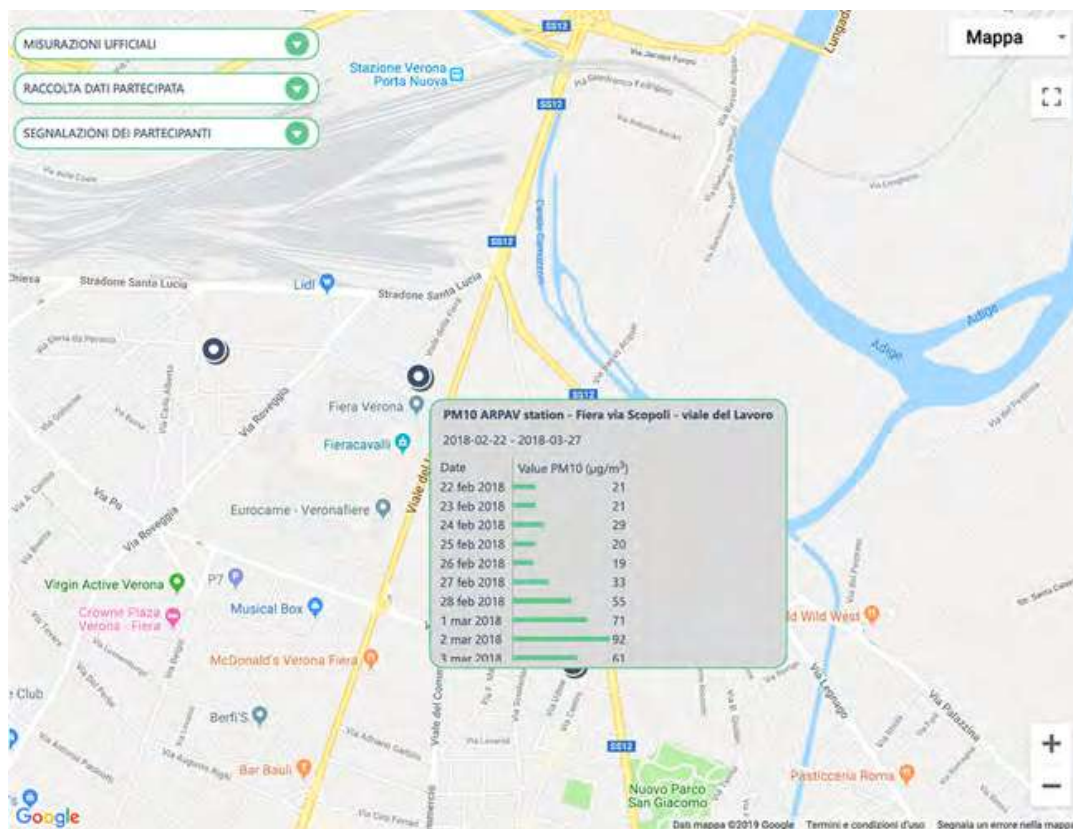


Figure 11 - Visualisation of static monitoring point

AirBeam data, on the other hand, are rather different as the sensor is meant to show the instantaneous exposure to PM that the person is facing, meaning that multiple data are collected within a one second timeframe and the method with which are collected is that of the light scattering.

The data then are not comparable with the ones obtained with the official sensors, even if the AirBeam is positioned in a specific spot for 24 hours, as the collection method is different. The main problem with the data collection done with the light scattering method is that high levels of humidity (>80%) have a negative impact on the accuracy of the sensor. Therefore, the AirBeam sensor has the main purpose of showing, mostly on a larger scale, the PM levels to which people are exposed during the day (Figure 13), rather than functioning as control group for official sensors.

For the participatory sensing, anyhow, the AirBeam was an important tool to raise awareness and trust when talking about official data. This because one of the reasons of distrust that citizens had towards ARPAV was because they thought that the fixed stations for PM were positioned away from the most polluted parts of the city. To overcome this misunderstanding, it was shown to citizens how homogeneous was the spread of PM on a large scale by showing them the daily data of all the fixed stations in the area of Verona. The graph in Figure 12 shows that there are small variations between ARPAV fixed stations, and that the changes in peaks and lows are due mainly to atmospheric conditions - i.e. rain, low pressure - within the day, and not to their position.

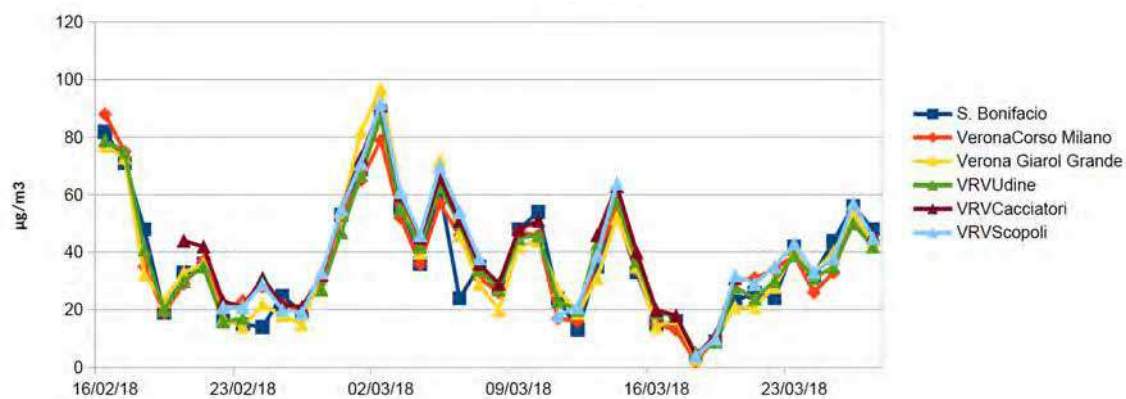


Figure 12 - Measurements of PM10 with ARPAV fixed stations

Citizens wanted to use the data collected with the AirBeams to refute this concept. After they were called to visualise the complex of the data, they found that changes could be found only on larger scales, and that variations happened in an homogeneous way as higher values could not be found close to the lowest ones (Figure 13).

As the comparison of data was done between official and participatory sensing data, it was possible to start to overcome the distrust that citizens usually have towards policymakers in order to strengthen the bottom-up process and the co-creation method.

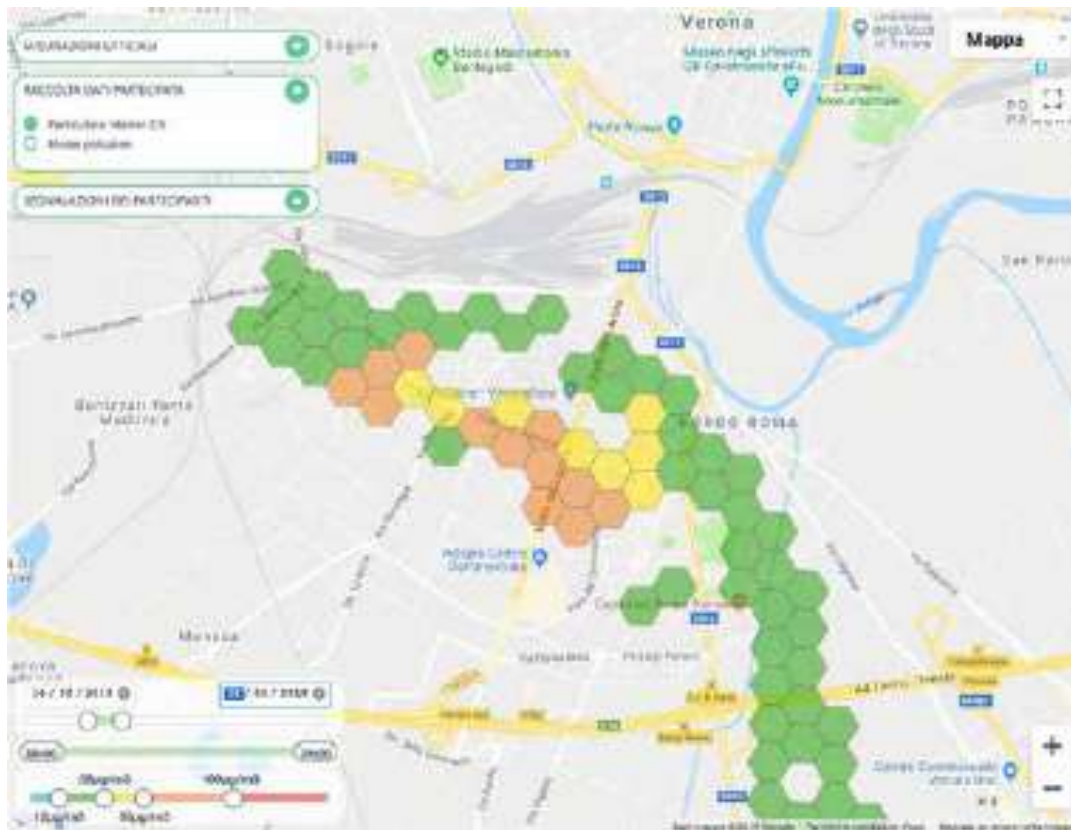


Figure 13 - Measurements of PM2.5 with AirBeam

During ULL meetings, moreover, it was found that urban noise pollution is a less recognized issue by citizen compared to other air pollutants, such as PM10, as cause of the increased risk of running into serious diseases. Furthermore, it was not recognised that a constant background of high noise drastically lowers life quality. Indeed, the World Health organization considers noise pollution as a one of the causes of “annoyance, effects on sleep, cardiovascular and metabolic effects, adverse birth outcomes, cognitive impairment, mental health, quality of life and well-being, hearing impairment and tinnitus and any other relevant health outcome”. (World Health Organization, 2018)

The use of low-cost sensors for noise measurement has made possible to obtain both an extended picture of the noise levels distributed in the territory and to train citizens on the importance of noise monitoring and the need to accurately position sensors in such a way to obtain the most accurate results (Ruggeri *et al.*, 2018). Within the meetings of the working groups, the noise from vehicular traffic was identified as the main responsible for urban noise pollution. Later on, sensors were positioned close-by to critical infrastructures nodes which could be compared with Class IV area, which limits are 65 dB (A) in the daytime period (6:00 AM to 10:00 PM) and 55 dB (A) for the night period. These law values should be detected with a sound meter level placed near a façade facing the street with a microphone placed one meter from it, and the data collection should last at least one week, as it must consider the daily variations of urban traffic.

Noise boxes were used to monitor different locations distributed within the pilot area (Figure 14). The graph in Figure 15 shows the results of the survey of a typical week distinguished by day and night period, in comparison with law limits. The use of low-cost sensors, though, is not meant to quantitatively define noise levels, but is needed to identify criticalities to be investigated more accurately, i.e. by using class 1 instruments, and to raise awareness towards the possible dangers which are now less considered.

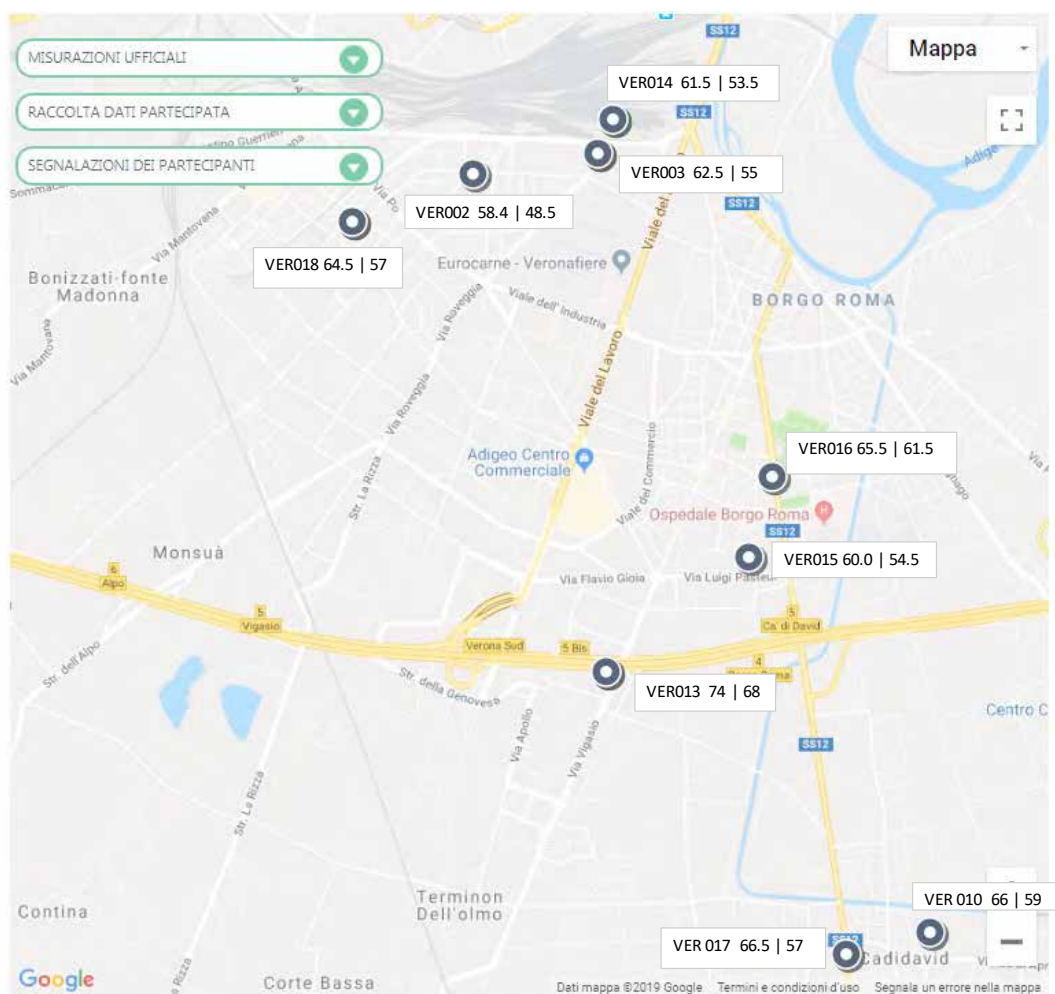


Figure 14 - Noise boxes locations and measurements

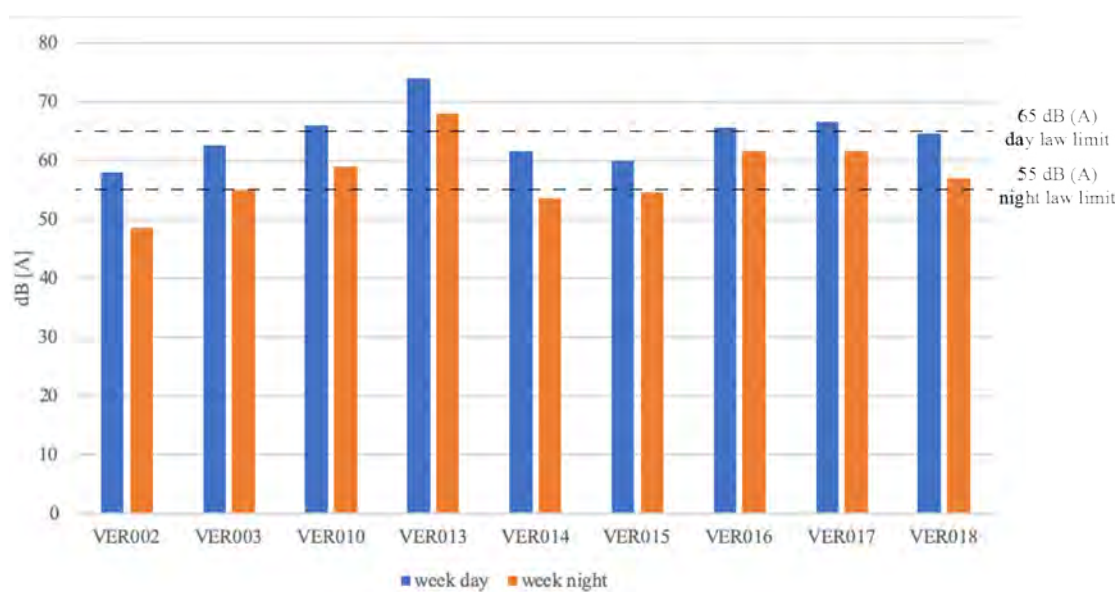


Figure 15 - Weekly noise day and night data compared with law limits

Second Stage of the LOOPER co-creation process: Co-design and evaluation of alternative solutions.

The co-design activity took place in October 2018, after an initial moment of visualisation of data with participants and policymakers (co-visualization). This activity was focused on how to respond to the problems investigated, and how to take advantage from the opportunities detected. This second stage involves co-design and evaluation of which options to implement. The main issue with the co-design activity was the creation of an iterative loop, i.e. from concept, to sketch, to outline, to detail as each of these need some form of participation and cooperation between experts, citizens, public stakeholders and policymakers.

During the co-design activity participants were engaged in qualitative and interactive online and face-to-face deliberation activities to propose a range of solutions. When going practical, co-design turned also be an iterative process as it went down many cycles to pass from concept to detail. It also involved a preliminary contrast between the community and experts/policymakers, that then turned to be an empowering dialogue between the parties. The activities which took place during this stage included the ideation of possible mitigation solutions, the designing of the ideas and understanding how to make their ideas real. During the ideation activity participants were called to generate creative divergent visions, ideas, synergies and possibilities. After this activity they moved to the design activity during which the iterative process started to move from a vision to a concept, then to an outline. During this activity the relationship between experts (researchers and policymakers) and community became very important. The last activity of this second stage was that of understanding how to transform in feasible solutions what was proposed until that point.

The process of collection of possible solutions took place both online, with the help of a co-design tool that could be found on the website (Figure 16), and offline, during the workshops. During the offline activity (face-to-face meetings) participants included not only citizens, but also policymakers and council-employees, and this create an even more interesting moment of sharing and discussing to propose better mitigation, but feasible, solutions as experts from the City Council were participating. Ideas produced offline have also been integrated on the online tool, which was used both as a way of proposing ideas for people who could not participate at meetings, and as a storage of possible solutions to keep participants informed.

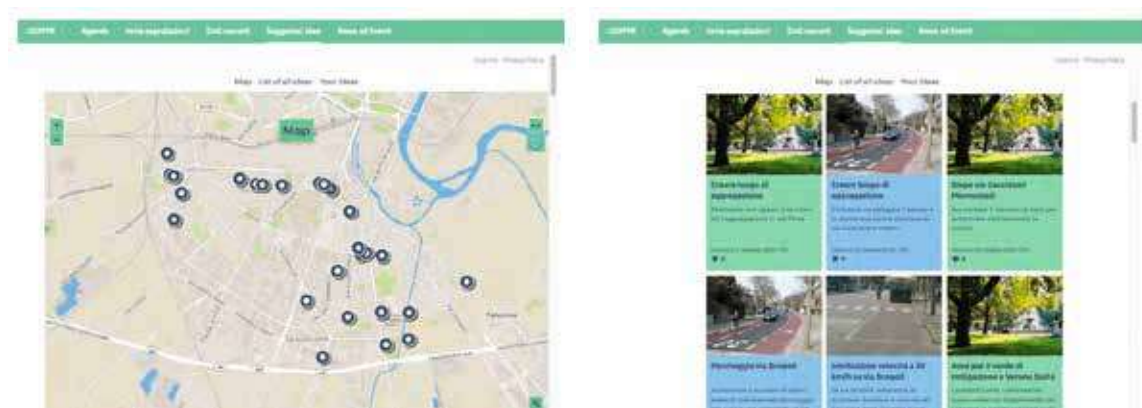


Figure 16 - Screenshot of the co-design tool on the website

In the evaluation of options phase then, the positives/negatives (costs/benefits) aspect of each solution were compared in order to prioritize the list of solutions proposed. One of the most important criteria which were considered was the cost/funding or feasibility, this because when working with a real environment it has to be taken into account if the solution can actually be implemented in a certain place, and if there is enough founding to implement and maintain it.

After the evaluation of the possible proposed ideas, the MAMCA, Multi-Criteria Multi-Actor Analysis (Macharis *et al.*, 2010), was applied in order to gather confirmation on the chosen ideas to be implemented. As the area of

the Verona Sud is quite wide and the proposed ideas where to be implemented in different location, it was needed to group and generalise the ideas to be able to apply the MAMCA. This was because the MAMCA method evaluates, and compares, different solutions among which to choose the one to implement in a specific location. As the MAMCA is a multi-actor analysis the different group of stakeholder who were taken into account are citizens, Legambiente (an NGO which is active in environment related issues) and the City Council. All of these stakeholders where the ones who actively participated until this point in the process. The ending result of the MAMCA was then that of confirming that the ideas chosen for the implementation during the last face-to-face meeting with the stakeholders, where the most feasible ones to implement.

Third stage of the Looper co-creation process: Implementation and monitoring.

This last stage started in December 2018 and is still going on. It includes the implementation of the best options - produced inside ULLs during the co-design activity - and the monitoring feedback of the results/effects obtained by the implementation of these solutions in the real context.

In the area of Verona Sud the implementation activity is seeing some physical actions on the ground, as the mitigation solutions asked by participants were: 30km/h areas around schools with streets closure at entering/exit school hours; closure of some streets to create a gathering space for residents; positioning of a crosswalk islands to allow a more secure environment in front of a primary school (Figure 17). As the implementation actually had a first part - December 2018 to January 2019 – of organisation, the solutions were officially implemented from February 2019. This allows to have the solutions in place during the second co-operative data collection campaign in order to monitor if there are any changes in comparison with the situation monitored in the same period the previous year.



Figure 17 - Positioned crosswalk island

The monitoring and feedback activity done during this third stage has the aim to check what results, impacts, outputs and outcomes can be obtained after the implementation of the chosen solutions. To do so, where possible, the impact of the implemented co-designed solutions is monitored with the same set of tools as in the first stage and with the input of stakeholders through participatory sensing and open data. As the data collection campaign is taking place as we are writing this paper, data will be later analysed to be uploaded on the online platform for further discussion with participants. These information will then go towards feedback for the next round of problem scoping and co-design. Further activities will then include: monitoring of the ‘before & after’ results; evaluation of the implications, e.g. did the co-design work, can it be improved; feedback into the next round, and/or the policy system.

Conclusions

In the paper we have emphasized the importance of bottom-up approaches to improve the implementation and effectiveness of urban transformation introducing also two levels of bottom-up approaches. The first level refers to stakeholders involved in the process, including therefore also citizens and local communities in the decision making. The second is related to the methodology of implementation of the urban transformation that, in this approach, is done by the sum of small-scale local transformation to generate an overall city improvement.

On the other hand, we have also argued that to support this double bottom-up process is essential the existence of the “bottom level”. This means the existence both of a group of stakeholders prepared and fit for the co-creation activities and also the identification in the city of the places suitable for that purposes. The participatory sensing method that we presented in the paper, understood both as “involvement” and “interpretation”, is a strategy to create the “bottom levels” required. The Looper project provided the occasion and the scientific environment to develop and experiment this theory but also to test the tools adopted in the project to activate the participatory sensing.

The pilot study of Verona produced on one hand promising results in the first (problem identification) and second (co-design) stages of the co-creation process; however, on the other hand, picked out some difficulties in the third stage in relation to implementation of measures produced in the co-design activities. In fact, although the direct involvement and participation of the City administration that supported the initiative and endorses the project goals, we run into difficulties in putting into action the ideas produced during the co-design activities. The issues found during the third stage were expected by researchers, this due to the difficulties for city administrations to allocate new budget in a short period of time and to the norms and regulations that limit the possibilities of rapidly execute – even temporarily – any innovative and/or alternative solution.

Despite the practical issues from the third stage, it can be seen how the co-creation process experienced within LOOPER was proven reliable to enhance a double bottom-up approach which allows stakeholders to open a more efficient round table to scope issues which are closer to citizens, and to propose possible solutions, to be discussed with policymakers, to improve the transformation of the urban environment.

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SP32

Planning and biodiversity

Soil ecosystem services assessment to support land use planning - applications in Italy and a reflection for the future

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Abstract: The ecosystem services assessment (ESA) has an increasing visibility and more recently soil-related ecosystem services are under attention. Loss of agriculture and natural soil due to land consumption is one of the main causes of degradation of soil and loss of ecosystem functions. Decisions upon land use and cover at local scale are the arena to effectively foster soil ecosystem services provision. While there is some coherence in global and national ESA, the experience in land use planning is still fragmented. The discussion moves from the experience of national ESA in Italy, measuring variations in eleven soil-related ecosystem services (carbon storage and sequestration, habitat quality, crop production, timber production, pollination, hydrological cycle regulation, fresh water availability, water purification, erosion protection, microclimate regulation, particulate and ozone removal) related to 2012-2017 land consumption changes. The aim is to highlight the barriers and opportunities for integration in land use planning, and to provide critical suggestions around the potential role of ecosystem service knowledge at different levels. Results point out potentials of the ESA in representation of soil functions, together with methodological and procedural uncertainty that makes ESA potentially prone to improper uses and misleading results, in the absence of a common framework for application.

Keywords: land consumption, soil functions, ecosystem services, land use planning

Introduction

The attention towards the land consumption issue has increased in the last decade, particularly at European level with the Thematic Strategy for Soil Protection (European Commission, 2006; European Commission, 2011). Loss of agriculture and natural soil due to land consumption is recognized as one of the main causes of degradation of soil and loss of ecosystem functions. The Roadmap to a Resource Efficient Europe (COM (2011) 571) proposes, by 2020, EU policies to consider their impacts on land use, with the aim to achieve 'no net land take' by 2050. European Commission has prepared the 'Guidelines on best practice to limit, mitigate or compensate soil sealing' (SWD(2012) 101 final/2) and in 2013 the publication 'Hard surfaces, hidden costs- Searching for alternatives to land take and soil sealing' as well.

Those documents, underlying the relevance of the environmental problem, recognized the urbanisation and the conversion of land for development as a major threat in Europe, together with the hidden economic dimension and the explicit connection with soil ecosystem vital functions, from providing the basis for farmland and forests, and our food, textile and timber production, to filtering water, reducing the frequency and risk of flooding and drought, supporting biodiversity, and helping to regulate the local and global climate.

In Italy, soil suffered artificialization and degradation phenomena at unsustainable rates, with soil consumption continuously increasing despite scientific, media and legislative attention. The relevance of land consumption in Italy, made it one of the main challenges for spatial planning and land management to achieve a more efficient, sustainable and durable use of natural resources. In the last years, land consumption increased without a direct correlation to demographic growth (Indovina, 2009), mainly driven by demand for industrial, commercial infrastructures and transportation (ISPRA, 2018).

Decisions upon land use and cover are the arena to address land consumption limitation, thus the local scale is the proper one to effectively foster soil ecosystem services provision. In this context the ESA is a challenge to be undertaken by planners (De Groot *et al.* 2010), who has too long ignored to consider the benefits that the natural environment provides to human well-being. The question is what analytical framework can be usefully applied for this purpose. There are different ways to evaluate the dimensions of ES, in terms stocks of resources, potential or actual dimension of functions, potential or actual fluxes of services or benefits. The choice of the classification system to be adopted depends on the purpose, i. e. if the ecosystem services analysis focus on ecological systems or socio-economic ones (La Notte *et al.* 2017). The evaluation of the “benefits that people obtain from ecosystem” (MEA, 2005) can be used by the public administration as an incentive to limit land consumption and urban sprawl. It must be pointed out that the monetary evaluation of ecosystem services has the main risk of underestimating the natural resource values and can generate a trade based on compensation, with evident unequal effects on people and inefficient protection of the environment.

Since 2016, ISPRA produces the evaluation of the biophysical and economic loss of the main ecosystem services resulting from the increase in land consumption. In this vision, the economic evaluation is proposed at the national level to reveal the importance of those functions to humans. The purpose of evaluation should be to associate a value to the soil as a resource – with a unit of measure easily comprehensible by everyone – in order to motivate the public opinion to avoid its uncontrolled urbanization. This approach is necessarily different from the one devoted to assessing benefits in the national economic accounts, to be compared to other forms of capital and services, that follows more socio-economic purposes.

The objective of protecting soil functions in spatial planning make it necessary, from our point of view, to prioritize biophysical based approaches, in order to assure a close connection to soil functions in the evaluation of related services and benefits. More, there is a need for criteria of evaluation homogeneous within territories, to ensure a balance between local needs and practices and the protection of soil functions, also addressing trade-off between different services. There is also a need to identify priority services, as the regulating ones, often on the background of economic evaluations because of the difficulties in assessment of non-market values and in modelling of complex biophysical functions. In conclusion, the ESA in land use planning non necessarily includes the economic evaluation but must include a biophysical assessment of soil functions at the proper scale, that can be different between services evaluated.

Soil-related ecosystem services and assessment approaches

The Ecosystem Services Assessment (ESA) was created to encourage the consideration of the value of nature in decision-making and policy-making processes, and, consequently, can highlight the soil value and support planning towards more conscious and balanced choices. Nevertheless, although there is a growing interest on the institutions side, remains a lack of shared reference both in methodologies and in practical application of the ESA, particularly as far as territorial and urban planning are concerned.

Costanza *et al.* (1997) defines ecosystem services (ES) as the *benefits human population derive, directly or indirectly, from ecosystem functions*, estimating the economic value of 17 ES for 16 biomes. Considering an ecosystem as a dynamic complex of organisms, communities and the abiotic environment, interacting as a functional unit the Millenium Ecosystem Assessment (MEA) describes *the benefits people obtain from ecosystems* as ES, classified in four different groups, such as provision, regulation, cultural and support (MEA, 2005, TEEB - Kumar, 2010).

In recent years, these categories have been substantially modified both by the European Environment Agency, within the International Classification of Ecosystem Services reached the 5th version (CICES V5.1 - Haines-Young and Potschin, 2018), both from the TEEB (De Groot *et al.* 2010). In the CICES the ESs are defined as the contributions that ecosystems bring to human well-being and distinct from the goods and benefits that people subsequently draw from them. It is thus useful to

clarify between ecological phenomena (functions), their direct and indirect contribution to human well-being (services) and the welfare gains they generate (benefits).

In particular CICES, as TEEB classification, does not include supporting services, identified as habitat category not as services, which is necessary to highlight the importance of ecosystems as habitat providers for biodiversity but includes the category of regulating and maintenance services (La Notte *et al.* 2017, EU Commission, 2014).

The European Commission established a program on Mapping and Assessment of Ecosystems and their Services – MAES in response to Biodiversity Strategy by 2020 (see Target 2, Action 5). This specific action aims to provide a knowledge base on ecosystems and their services in Europe. A coherent analytical framework as well as common typologies of ecosystems for mapping and a typology of ES for accounting have been developed.

The fifth technical report (MAES, 2018) provides an integrated analytical framework and set of indicators for mapping and assessing the condition of ecosystems in the EU. A specific report on Soil ecosystems, as an output of the Pilot working group within MAES, to which ISPRA contributed, has been published by Deltares in March 2018 in support of the implementation of the EU Soil Thematic Strategy (Van der Meulen and Maring, 2018).

Recently, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services has developed an analysis on the health status of biodiversity and the services that ecosystems offer (IPBES, 2019), in terms of Nature's Contributing to People, largely consistent with CICES V5.1 and with the importance of the basic functions of ecosystems at different scales.

National ESA for Italy

The evaluation of the biophysical and economic loss of the main ecosystem services resulting from the increase in land consumption is produced by ISPRA each year, since 2016. The experience of national assessment of ES variations related to 2012-2017 land consumption changes in Italy (ISPRA, 2018), is associated to eleven soil-related ES selected from the vast series of services associated to soil functions by international classification (Dominati *et al.* 2010, Van der Meulen *et al.* 2018).

In this national application ES are analysed with the specific aim to highlight the effects, in both biophysical and economic terms, of land consumption occurred in Italy in the period considered, offering an opportunity to evaluate the effects of landscape transformation. This evaluation, based on available data at the national level, must be integrated for further advance with information on soil functions, agricultural actual practices, data from forestry inventory, climate and water balances at river basin level, etc.

Table 1: Soil ecosystem services considered in the ESA for Italy

Regulation and maintenance	carbon storage and sequestration
	habitat quality
	pollination
	hydrological cycle regulation
	water purification
	erosion control
	microclimate regulation
	particulate and ozone removal
Provisioning	crop production
	timber production
	freshwater availability

For the development of analytical framework, results of experiences carried out by projects at different scales were considered, such as LIFE SAM4CP, SOILCONSWEB, LIFE MGN, SOS4LIFE, together with a constant comparison on

methodologies with the scientific community, as the one launched for the 2018 edition of the Report on land consumption, which involved 7 Italian universities and research centers (University of Urbino, University of Molise, University of Rome Sapienza, University of Padua, Federico II University of Naples, CNR Florence, CREA of Arezzo) and 2 regional agencies for environmental protection (Puglia and Veneto) in addition to ISPRA.

In this work we define land consumption as the replacement of a non-artificial land cover to an artificial land cover, both permanent and non-permanent. The study of each ES is based on the national land consumption map for Italy for the two reference years 2012 and 2017 with a very high resolution (10m spatial resolution). Maps are developed by ISPRA by photointerpretation of very high-resolution images and semiautomatic classification of high-resolution remote sensing images RapidEye, Sentinel-1 and Sentinel-2, and are appropriate to detect land consumption, both for the urban densification and for the sprawling phenomena, from national to local level.

Results in terms of biophysical dimension are described in following paragraph, together with some methodological element useful to understand the potential use of results in planning processes. Full methodology is available in the annex to 2018 edition of the Report on land consumption, territorial dynamics and ecosystem services (Assennato *et al.* 2018).

Results in terms of economic loss produced by soil consumption between 2012 and 2017 in Italy is calculated for each service flow, with a reference to a minimum and maximum value, in order to take account of the uncertainties. Variations in regulating and maintenance ES provision, that represent most of the losses, are shown in Table 2. It must be pointed out that this evaluation includes only a part of services provided by soil, thus the “hidden costs” (European Commission, 2013) can be much higher than those represented.

Table 2: Variation in the flow of regulating and maintenance ecosystem services due to the soil consumption between 2012 and 2017 in Italy. Source: ISPRA processing

Regulation & Maintenance Ecosystem Services	Minimum value of service loss[€/year]	Maximum value of service loss[€/year]
Carbon sequestration	102.056	538.898
Pollination	4.109.804	5.487.373
Regulation of local climate/temperature	2.251.732	9.006.928
Removal of particulate and ozone	950.980	2.938.569
Water flow regulation	1.535.630.715	1.789.521.660
Control of erosion	10.521.848	112.385.949
Water purification	226.033	60.297.780
Total	1.553.793.168	1.980.177.157

Carbon storage and sequestration

This service contributes to climate regulation at global level and plays a key role in climate change mitigation and adaptation. Intergovernmental Panel on Climate Change (IPCC) identifies five main carbon pools: living biomass, as above ground biomass (stem, stump, branches etc.) and below ground biomass (roots), dead organic matter, as dead wood (non-living biomass not contained in the litter) and litter (non-living biomass with a small diameter) and soil organic matter, which includes organic carbon in mineral and organic soils up to 30 cm. Degradated or sealed soil are not able to store carbon, which is emitted in the atmosphere.

The Carbon Storage and Sequestration model adopted provides a map that links land use/land cover codifications with the sum of the carbon values of those five natural pools. Reference values for living biomass for the forest land use categories are obtained from the biomass volumes (stock and growing) charts published by the Italian Forest Inventory (“*Inventario Nazionale delle Foreste e dei Serbatoi Forestali di Carbonio*” - INFC) and other sources related to living biomass in permanent crops (Canaveira *et al.* 2018), and calculated through coefficients derived from scientific literature (IPCC, 2006). The soil carbon pool is assessed using the new Soil Organic Carbon map produced as an Italian contribution to the Global

Soil Partnership/FAO Initiative (CREA, 2018), with resolution of 1 Km. Some values (continuous urban fabric, port areas, dumpsites and building sites) were forced to zero.

Figure 1: Variation in the flow of regulating and maintenance ecosystem services due to the soil consumption between 2012 and 2017 in Italy. Carbon storage (t/ha) Source: ISPRA processing



Pollination

Crop and wild plants productivity rely on pollination. Over the past few decades, pollinator insects have declined in Europe, both in abundance and diversity, and their decline has raised much attention because animal pollination is essential for wild plant communities. The main drivers of the decline include land-use changes which cause habitat fragmentation, pollution (due to pesticides), loss of biodiversity and increasing of alien species, pathogens and climate change (Martin *et al.* 2019). The assessment of the spatial distribution of pollination services has become a policy priority in Europe with the EU biodiversity strategy (EC, 2011). In this study 50 pollinator species were considered, and input data was determined through a bibliographic research. Output data are two indexes (0-1) which represent the pollinator potential presence and their ability to reach croplands.

Habitat quality

A primary goal of conservation is biodiversity protection, including the range of genes, species, populations, habitats, and ecosystems. The habitat quality service considers biodiversity as the base of the production of ecosystem services. It considers the provision of different essential habitats for the life of any species and the preservation of biodiversity. It represents one of the main reference values in the evaluation of the ecosystem state of soils. For the evaluation the Habitat Quality model of InVEST suite of models (Integrated Valuation of Ecosystem Services and Trade-offs, Natural Capital Project) (AA. VV. 2015) was used. This model considers the ability of the habitat to sustain animal and plant life forms; the impact of threats on different habitats; the sensitivity of each individual habitat to be influenced by different types of threats and distance of the habitats from its sources of alteration. Biophysical results are represented in form of an indicator (0-1) of habitat quality for each pixel.

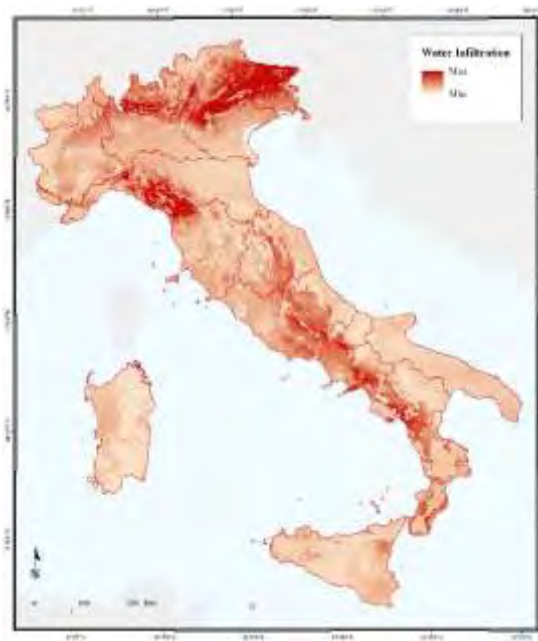
Figure 2: Variation in the flow of regulating and maintenance ecosystem services due to the soil consumption between 2012 and 2017 in Italy. Habitat quality (adim). Source: ISPRA processing



Hydrological cycle management

The infiltration of water in soil is one of the main elements of the regulation of hydrological cycle, in terms of surface runoff regulation, and is directly affected by soil consumption. This study is based on an evaluation of water balance related to different scenarios of land use and land cover, in order to evaluate the consequences due to land consumption (Assennato *et al.* 2018). In the figure 3 the values from maximum to minimum variation in water infiltration between 2012 and 2018 is illustrated.

Figure 3: Variation in the flow of regulating and maintenance ecosystem services due to the soil consumption between 2012 and 2017 in Italy. Hydrological cycle management (adim). Source: ISPRA processing



The water budget components at monthly temporal scale for the whole national territory is calculated by an automatic GIS-based procedure named BIGBANG version 1.0, produced by ISPRA (Braca and Ducci, 2017), working on a 1km grid, using precipitation and temperature data mediated for the period considered (2012-2017) and information on the soil's hydraulic and geological characteristics and the different scenario on land cover and use obtained from ISPRA 20 m resolution grid map of soil consumption (ISPRA, 2018).

Erosion control

The magnitude of erosion depends on many factors, including different land use/land cover conditions. The variation of the retention capacity through the comparison between the steady state of land use/cover and soil properties and a different scenario, can be considered as an indicator of the ecosystem service change in biophysical terms. The SDR "*Sediment Delivery Ratio*" InVEST model (AA.VV.,2015) represents the avoided soil loss, expressed in tons/hectar, by the current land use compared to bare soil, weighted by the SDR factor. The figure 3 shows the geographical distribution erosion control loss in terms of sediment retention in tons/ha.

Figure 3: Variation in the flow of regulating and maintenance ecosystem services due to the soil consumption between 2012 and 2017 in Italy. Erosion control (t/ha) Source: ISPRA processing



Microclimate

The expansion of artificial areas influences the energy exchange process between the earth and the atmosphere, having significant effects on local climate in urban areas. The urban heat island phenomenon increases the need for summer cooling (Lai X. *et al.* 2018) and results in a higher energy request. Urbanization can cause a temperature increment between 1 and 3 °C. It can be estimated An average increasing of 0,6 °C of temperature in urban area every 20 ha of more urbanization, 0,9 °C in summer can be estimated, leading to an increasing of 0.04 °C produced by the increasing in urban density estimated in 0,081 ha/km²..

Water purification

Ecosystems such as forests and wetlands contribute considerably to improving the quality of water resources. Vegetation and soil can absorb and therefore remove pollutants and water nutrients and reduce their speed in order to regulate their infiltration into the soil (Elmqvist *et al.* 2010). Water infiltrated in soil undergoes a process of "purification" through biochemical processes carried out from the mineral part of the soil, and even more from its biological components. The purifying capacity is function of soil properties (cationic exchange capacity, organic matter, the reaction (pH) and its depth) and is linked to climate, management practices, and inputs of nutrient and pollutant load in water. This service is evaluated using purification capacity information (selected layers from JRC map of soil properties for Italy) as indicator (0-1) of service provided by soil.

Particulate and ozone removal

Currently, exposure to air pollutants is the main environmental risk factor in Europe (EEA, 2014), thus the improvement of air quality has an important role among the ecosystem regulatory services (Manes *et al.* 2012). In this context, the highest number of deaths is estimated for Italy premature from atmospheric pollutants (8,440; EEA, 2015). The estimation is carried out using the pollutant removal level for each ecosystem following classification for Italian territory (Blasi *et al.* 2016; Capotorti *et al.* 2015). Pollutant removal estimation is obtained from a 10 Italian metropolitan areas research (Manes *et al.* 2016) which evaluate concentrations of PM₁₀ and O₃ through the AMS-MINNI model on air quality (Mircea *et al.* 2014).

An overview of potentials and limits of the ESA from experiences at local level

Loss of agriculture and natural soil due to land consumption is driven the most by decisions upon land use and cover at local scale. Thus, spatial planning is the arena to effectively foster soil ecosystem services provision. The practical application at the local scale of ESA in planning is still fragmented and only few cases provide an operative application in planning tool. The existing experience of ESA in Italy was analysed based on a comparative analysis of local scale application of ESA within projects LIFE SAM4CP, SOILCONSWEB, LIFE MGN, SOS4LIFE and the most recent SOIL4Life, together with other experiences analysed within the development of the national analytical framework. This comparison points out potentials and limits of the ESA and offering a contribution towards an effective application of this innovative and powerful evaluation methodology. Considerations come from experience of planning in different contexts (Municipalities of Bruino, Chieri, None Settimo Torinese from LIFE SAM4CP, San Lazzaro di Savena and Forli from SOS4life, Rome from SAM4CP and SOIL4life, Romano di Lombardia).

For the purpose of limiting land consumption, local land use planning is the final tool to address. The difficulty comes from the need to consider the actual biophysical land cover instead of the land use destinations. A second difficulty is how to address excessive and unrealized forecasts of land consumption or unworkable compensation. In some of the experiences analysed the evaluation of ES was referred to land use destinations. In this condition the actual reduction of ES produced by land consumption is masked by reduction of transformations for the future, as compared to the present prevision of plan, or balanced by only potential improvements of the environmental conditions, obtaining a virtual, not effective balance in ecosystem services provision.

The scale of application is also a matter. In the available experiences different ESA methodologies were used on different "evaluation objects", from the national level to the scale of the single transformation intervention (a few dozen square meters). The great flexibility of the instrument allows a multiscale application, but it should be verified at different levels for appropriate inputs and proper use of results. It must be emphasized that the ESA at local level loses much of its effectiveness if it does not find an adequate regional reference, in terms of availability of data and references for the selection of ESs. At the scale of single transformation ESA should be limited to a qualitative assessment linked to the eventual quantification on a higher scale, because of the little significance to draw conclusions on biophysical balances carried out on an excessively reduced scale. This is particularly valid for some services, i.e. the Habitat Quality Service or Pollination, for which the minimum dimensions must be comparable to the biophysical "distances" considered in the analysis. More in general regulatory services, such as hydrological cycle management, sediment retention and filtration of contaminants, must be referred to hydrological basin or sub-basin scale.

Experiences of ESA in Strategic environmental assessment (SEA) procedures are still very limited. High complex application as ESA rarely is practicable in local planning, without methodological reference and data at higher scale. From experience analysed emerged that ESA clashes with the Italian practice of proceeding with non-general variants of the urban planning instruments, which in most cases limit the environmental assessment to the variant areas only, making not effective with the evaluation of effects i.e. on ecological networks or the protection from hydrogeological risk. Moreover, partial revision lead in most cases to the absence of an effective participation in SEA, not foreseen by the norm for small transformations. As evidenced by the case of Romano di Lombardia, in which the participation was cared of particularly, ESA results was of great interest for the citizen, who were able to use scientific results to build their positions on transformation priorities.

It must be said that, as in many public-decision contests, there is still an under-representation of soil natural values, functions and ecosystem services. Among the institutional actors obligatorily foreseen by the planning conference, with the exception of environmental agencies and some "lucky" regional cases, these issues are not well represented. The development of planning support tools will help to tackle this problem, providing sets of indicators (as the one produced by ISPRA) or tools for the direct evaluation on selected areas, such as the one developed by the LIFE project SAM4CP (Simulsoil & Playsoil). A guideline for the evaluation of the soil component in the SEA process, to be more inclusive of the quality of the soils and the ecosystem services offered by them, is currently under study by SNPA (National environmental protection agencies network)..

Some methodological barriers emerged from the experience. Majority of biophysical methods are quite complex and there is a need for information and support to professionals and local administrations for their correct use. The given flexibility of open tools with direct access to data and the possibility of using local values, represents a further vulnerability of the results, which the user is not always able to evaluate. There are some criticalities also on the analytical side. The multi-criteria analysis with the identification of synthetic “multi-service” indexes must be further discussed. It represents an opportunity, in terms of communicative strength, however it represents a risk of inconsistency of the results as well as of loss of information on individual services. As emerged from some of the cases analysed, the multiservice index mask trade-offs and negative effects on “critical services” with benefits on other less strategic services (such as in some cases the services from agricultural land in comparison with those from urban green). Furthermore, the use of normalization parameters makes this type of representations not comparable (in space and time) and not useful for scenario analysis.

Another criticality comes from the identification of usage thresholds for ecosystem, that is a very sensitive topic under debate. In some of the analysed cases, thresholds applied to multi service index have been used to exclude a part of the project/plan from the evaluation and, consequently, excluding mitigation and compensation too. In those cases, the mechanism lead to an underestimation the effects whose extent cannot be known. It is therefore essential to identify the different services and related biophysical indicators coherently, to be analysed and compared separately to verify the consistency of the conclusions. The selection of which SEs to consider and how to treat the tradeoffs between the different services should not be left to the individual local experience but should always complement the local participatory choice with an adequate indication from a higher level. It is always better to consider all the possible SEs initially, only after the analysis, if possible, exclude those that are not pertinent (Cortinovis and Geneletti, 2017). In this choice, a major attention must be paid to “urban ecosystem services”, because the proposed application of new technological solutions (eg vertical woods or green roofs or drainage systems) must be verifies in terms of its ecological effectiveness.

Money or not money? The economic evaluation is one of the most critical issues in ESA. The introduction of economic terms risks to open to a possible exchange market of non-renewable natural resources (Pileri et al 2018 in ISPRA 2018). With a view to strong sustainability, we must consider ESA as a tool to make the intrinsic value of the resources that benefit human beings even more evident, tangible and clear, considering the economic parameters only as indicators for scenario comparison, not for exchanges. There are several technical questions in economic ESA, related to market vs social costs, to the evaluation of actual or potential flow, or stocks of resources, and to the evaluation of offer and demand of services. The evaluation of actual services is not always useful for the planning purpose, potential services would be more appropriate to compare different scenarios. For the purpose of planning, the choice of economic value to be consider is critical. The evaluation via a direct expression of the local population, is not always able to adequately represent the need for protection of collective or global interest on natural resources. The effort of translation into money is critical for its natural outcome of translation in economic compensation. Compensation means the restitution elsewhere of the destroyed environmental values without therefore resulting in a modification of the impacts of the transformative project. It has long been perceived as the canonical “way out” of environmental negotiation, however in practice it turned into the main element of the negotiation. In this condition, the use of economic value from ESA can be a complete misusing of results. The value of the actual service flow is not representative of the entire value of the resource and should not be used as a measure of a compensation. For a correct determination, it would be necessary to evaluate the amount of stock of consumed resources, but this is far from present evaluations capabilities.

The need for a common framework for application.

This first comparison allows to observe that ESA is an effective reading tool, able to integrate the different topics involved in territorial transformation analysis and, more, it is scalable at the different levels. It is also able to represent and summarize the values of soil and naturalness, and the costs associated with their loss, in a language suitable for discussion within planning processes and for the public. However, it remains a still “young” tool, whose applications can vary a lot in terms of methodology, scale and subject of investigation, and in terms of final use.

The complexity of this tool is thus related to the methodological, procedural, regulatory and political side. In the absence of a more solid methodological and procedural reference to be used in the decision-making process, its application is potentially subject to improper uses or misleading of results.

Having as a target the zero net consumption of land, it must be underlined that the sole inclusion of ESA, even in the presence of a common methodological reference, cannot be enough to protect Italian soil from further aggression without an upstream, quantifiable and not circumvented, limitation of consumption.

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Spatial Planning in view of new challenges: Land take and some evidence from Greece

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Abstract: The growing interest in natural resources and ecosystem services has led to increasing attention to land as a natural resource. Land degradation has been included among the key environmental degradation problems all over the planet and land take is a key causal factor. Sustainable land management is required in order that land degradation be controlled. The role of spatial planning in sustainable land management has been accentuated, due to its close relationship with land use change and rapid urbanization. From the viewpoint of sustainable development, a turning point for land gaining significant importance on a global scale has been the Rio+20 Summit, 2012, in which the aim for a “land-degradation neutral world” was expressed, leading to efforts towards the minimization of land degradation. In the context of the EU environmental policy, land take and soil protection have been highlighted from the viewpoint of ecosystem services and the strategies for conservation of biodiversity. The case of Greece is interesting in this regard, since spatial planning is influenced by the EU context while at the same time patterns of territorial organization in the country are characterized by increasing land take. Based on the above, this paper examines the way land take becomes apparent as an environmental concern as well as a spatial planning task. It also focuses on the case of Greece and examines how spatial planning is capable of addressing relevant challenges and utilizing the EU policies' framework. It endeavours to highlight challenges emerging not only to addressing land-related issues but also to transforming the approach of spatial planning towards land resilience.

Keywords land degradation, land take, Greek spatial planning, ecosystem services

Introduction

Spatial planning is closely related to land management, since it is on a territorial basis that it endeavours to organize human activities, with land use plans being the most important planning instruments at the local level. Spatial planning addresses land-related issues in a normative way through land use regulation, or in a strategic way through the setting of policy objectives for territorial development. The relationship between spatial planning and the environment influences the content of spatial planning and, in particular, the way it addresses land-related issues. This relationship has led to increasing environmental concerns in the context of spatial planning including the recognition of land as a natural resource. Since the 1990s, the sustainable development agenda has posed significant challenges for spatial planning. Among these, land-related issues have a key role in promoting

environmental protection and socio-economic development. This is, for instance, the case with policy objectives set by the European Spatial Development Perspective document (EC, 1999) for the protection of environmentally sensitive areas as well as for soil protection. The sustainability agenda has highlighted various land-related challenges faced by spatial planning, as for example the problem of urban sprawl that led to the adoption of alternative policy options such as the compact city model as well as land recycling practices that seek to reduce land take. Recently, the importance of land in relation to spatial planning has been emphasized in the risk management framework, in particular in the context of climate-related risks, as for instance is the case with the risk of flooding that led to the adoption of measures aimed at reducing soil sealing such as green infrastructure.'

The growing interest in land as a natural resource in the context of the ecosystem services approach highlights the relationship between land and spatial planning and even more so the potentialities of spatial planning for tackling land degradation. The aim for a "land-degradation neutral world" was expressed in the UN Rio+20 Summit in 2012, involving two key policy directions: sustainable management of land in order that degradation be slowed down, and increasing the restoration rate of degraded land so that the two trends can converge for the minimization of land degradation (Barbut and Alexander, 2016). "Life on land" constitutes one out of 17 Sustainable Development Goals (SDGs) of the "Sustainable Development Agenda 2030" adopted by UN member states in 2015. This is the SDG 15 "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss" (UNDESA, 2019).

Awareness of land degradation is becoming evident at the European level, with land occupying a significant position in environmental issues addressed by the EU environmental policy. Since the mid-2000s, land and soil have been addressed not only by the EU statistical and monitoring systems but also by EU policy agendas, above all the sustainable development strategy, which provides useful tools for addressing land take. The EU has adopted the objective of promoting a "land degradation neutral world" in the context of sustainable development decided upon in the RIO+ Summit (Official Journal of the European Communities, 2013). The 7th Environment Action Programme places emphasis on natural capital and highlights the importance of land as a resource. It stresses that "the degradation, fragmentation and unsustainable use of land in the Union is jeopardising the provision of several key ecosystem services". Among others, it recommends that "Environmental considerations including water protection and biodiversity conservation should be integrated into planning decisions relating to land use, so that they are made more sustainable, with a view to making progress towards the objective of 'no net land take', by 2050" (Official Journal of the European Communities, 2013, p. 180). This is important especially for countries like Greece, in which land-related issues have started to be recognized.

In seeking to explore contemporary challenges spatial planning is faced with, this paper focuses on those which are land-related, and land take in particular. The second part following this introduction examines the issue of land take and briefly presents the relevant EU framework. In the third part, the paper refers to the case of Greece and seeks to identify options for addressing land take that derive from the EU policy context. Concluding remarks highlight the significance of land take as a parameter of land degradation as well as the relevant role of spatial planning.

Land degradation, land take and spatial planning

Land degradation has become one of the most worrying issues regarding the environment (Oliveira, Tobias and Hersperger, 2018). It is considered “one of the major forms of environmental degradation all over the world” having an adverse impact on ecosystems’ capacities to provide goods and services (Smiraglia *et al.*, 2014). Land degradation has negative impacts on human and ecological systems (Stavi and Lal, 2014). Various causes such as climate variability, soil quality, and land management are involved in the complex process of land degradation (Smiraglia *et al.*, 2014). This process includes “soil degradation and the capacity of land areas to support water resources, biodiversity and primary productivity” (EUROSTAT, 2018). The fact that land is a finite resource (Sonderegger *et al.*, 2017, p. 9) combined with the fact that fertile soils are not a renewable natural resource triggers this process. Land degradation, which usually appears in the form of land take, land fragmentation, and soil sealing, severely affects ecosystems and threatens ecosystem services (BIO by Deloitte, 2014). Land use and land cover changes are key drivers of land degradation. In this respect, the role of urbanization seems to be crucial, despite the fact that urban areas occupy a relatively low percentage of the earth’s surface, as it “affects land change elsewhere through the transformation of urban-rural linkages” (Lambin *et al.*, 2001, p. 265).

Land take describes both the process and the result of land use and land cover change, which is largely caused by the processes of urbanization. According to the European Environment Agency (EEA, 2019) land take “looks at the change in the amount of agricultural, forest and other semi-natural and natural land taken by urban and other artificial land development. It includes areas sealed by construction and urban infrastructure, as well as urban green areas, and sport and leisure facilities”.

Following Boschetti (2016, pp. 51-55), land-related challenges faced by land management and spatial planning go beyond mere land management rules, regulations and techniques, and concern not only land take that is linked to the urbanization process but all land transformations, including also “undeveloped lands (agricultural, green, open lands)”. For instance, as Rojo *et al.* (2014) note, despite the potentialities of peri-urban agrarian ecosystems in relation to ecosystem services, they have been rather neglected by spatial planning.

As regards the policies capable of addressing land degradation, it can be argued that the various sectoral policies that address land-related issues such as those for agriculture, forests, and transportation lack a holistic approach. Therefore, sustainable land management is needed so as to address land degradation in an integrated manner (Barbut and Alexander, 2016). Efforts to achieve land protection and restoration should focus on addressing land use and land cover change, which mainly concerns spatial planning (Oliveira, Tobias and Hersperger, 2018).

Despite the fact that such an approach has not been widely implemented or is yet at an initial stage, it is being promoted by various policy contexts. For EU member states in particular, several EU policy frameworks, strategic guidelines and statistical and monitoring systems promote actions and measures towards combating land degradation. Since 2006, the “Thematic Strategy for Soil Protection” (CEC, 2006) has stressed land-related issues and acknowledged the fact that “there is little public awareness of the importance of soil protection”. In 2011, the “Roadmap to a Resource Efficient Europe” (EC, 2011) which is orientated towards a green economy in the context of the “Europe 2020” strategy, noted that “more than 1,000 km² are subject to 'land take' every year for housing, industry, roads or

recreational purposes. About half of this surface is actually 'sealed'." Land and soil constitute one out of seven issues addressed in the chapter "Natural Capital and Ecosystem Services" of this Roadmap and are included in the vision set for 2050 which among others provides that "All resources are sustainably managed, from raw materials to energy, water, air, land and soil." One out of the eighteen milestones adopted by this Roadmap refers to land and soil: "By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050; soil erosion is reduced and the soil organic matter increased, with remedial work on contaminated sites well underway" (EC, 2011).

Table 1. Interlinks between sectors and resources (Land and Soil), and EU policy Initiatives

SECTOR / POLICY	LAND	SOILS
Energy	Reduce land take for biofuels	Prevent soil damage by SO ₂ and NO _x emissions
	Optimize energy infrastructure	Mitigate soil impacts of new infrastructure / Energy solutions
		Preserve peatlands
Food	Optimize land use to reconcile with other uses	Reverse soil loss
	Use taken fertile land for agriculture	Restore organic matter content in soils
	Reduce land take (e.g. via optimal animal protein intake)	Prevent soil damage by SO ₂ and NO _x emissions
		Avoid pollution from fertilizers and pesticides
Buildings	Avoid additional land take (e.g. for urban sprawl)	Avoid urban sprawl on fertile soil
	Remediate contaminated sites	Minimize soil sealing
Mobility	Minimize impacts of transport infrastructure on land fragmentation	Minimize impacts of transport infrastructure on land sealing
EU policy initiatives	Communication on land use (2014)	Guidelines on best practice to limit, mitigate or compensate soil sealing
	Communication on LULUCF in the EU climate change commitments (2011) ¹	

Direct relationship with spatial planning

Source: EC, 2011 (Annex: Resource efficiency – the interlinks between sectors and resources, and EU policy initiatives, p. 24) (own elaboration)

¹ An EU Regulation on the integration of land use, land use change and forestry (LULUCF) into the EU's 2030 climate and energy framework was adopted on May 2018. (See: Official Journal of the European Union, 2018).

Promoting strategic objectives and meeting commitments to land and soil protection is not always an easy task. Constraints derive from already established practices that implement EU policies, such as those for grey infrastructure. At the same time, synergies can be found between sectoral policies and land protection as seen in Table 1 above.

Several Community policies such as those on agriculture, regional development, transport and research address issues related to soil (CEC, 2006). In practice, soil protection is promoted by EU funding instruments such as those of cohesion policy. A case in point is the investment priority “Protecting and restoring biodiversity and soil and promoting ecosystem services, including through Natura 2000, and green infrastructure” which is promoted by the European Regional Development Fund within the thematic objective “(6) Preserving and protecting the environment and promoting resource efficiency” (EC, 2015).

Land as a natural resource is being addressed in the framework of the environmental policy of the EU. Despite the fact that a Europe-wide spatial planning policy does not exist, the EU framework significantly influences spatial planning of member states in terms of planning regulations and guidelines, which is above all the case with the 2001 Directive on Strategic Environmental Assessment (SEA). As Treville (2011, p. 6) argues, SEA “has the potential to be an effective tool for preserving land consumption”. Moreover, land-related issues are addressed through the development of scientific tools and research including the monitoring, mapping and developing of statistics as well as through conceptual elaboration and empirical investigation (see, for example, EUROSTAT, 2018, JRC, 2015). This is the case with the indicators for monitoring the UN SDGs and, in particular, the SDG 15 “Life on land” that is based on three sub-themes: “ecosystem status”, “land degradation”, and “biodiversity”. This is also the case regarding the CORINE Land Cover inventory for the monitoring of land cover all over Europe. Parallel frameworks such as the 2007 INSPIRE Directive on access and interoperability of spatial data, the 2007 Directive on the assessment and management of flood risks, and the 2011 Strategy for Biodiversity promote land-related issues. Thus, it can be assumed several tools for addressing land take can be utilized, as in the case of Greece that is presented below.

Land take and spatial planning in Greece

Land cover by artificial surfaces in Greece was 3.4% of total land surface in 2015 and 2.9% in 2009, which corresponds to an increase of 17.3% (4.4 and 4.1 for EU aggregate, respectively), while the capital region of Attiki shows the greater percentage of land cover by artificial surfaces (20.5 and 20.6 respectively for the same years) (Thoidou, 2017a, EUROSTAT, 2017). Among the various land cover categories, agricultural land has been mostly affected by land take in the period 2006-2012. The same is true for the EU28 average as well as for the average of the 39 countries for which the European Environment Agency provides land cover data (EEA39). However, the pattern of the relative contribution of land cover categories for uptake by urban and other artificial land development in Greece is quite different, as seen in Table 2 below.

As regards the contribution of the various types of human activities to the total annual land take in the country, the highest figure is for construction at 37.3% of the total, above the EU28 and the EEA39 averages. Land take by transport and infrastructures is also above the EU28 and the EEA39 averages, while land take by housing, services and recreation, as well as land take by industrial and commercial

sites are below the EU28 and the EEA39 averages. Land take by mines, quarries and dump sites is similar to the two averages, as seen in Table 3 below.

Table 2. Relative contribution of land-cover categories to uptake by urban and other artificial land development % (land take/year 2006 – 2012)

Land-cover category / Country	Arable Land & Permanent Crops	Pastures & Mixed agricultural areas	Forests and transitional woodland	Natural grassland, heathland, sclerophyllous vegetation	Open space with little or no vegetation	Wetlands	Water bodies	Total land take
Greece	33.5	30.8	7.3	27.3	0.3	0.0	0.7	100.0
EU 28	51.9	25.9	14.4	6.0	0.3	0.6	0.9	100.0
EEA39	46.2	26.7	16.3	7.2	2.1	0.6	0.9	100.0

Source: EEA 2017b (own elaboration)

Table 3. Annual land take by several types of human activity % (land take/year 2006-2012)

Types of human activity / Country	Land uptake by housing, services and recreation	Land uptake by industrial and commercial sites	Land uptake by transport and infrastructures	Land uptake by mines, quarries and dump sites	Land uptake by construction	Total
Greece	11.6	17.9	11.2	21.9	37.3	100.0
EU28	32.5	19.1	6.8	24.0	17.6	100.0
EEA39	18.7	22.1	6.4	21.0	31.9	100.0

Source EEA 2017a (own elaboration)

It seems that land take in Greece is caused by various activities that fall within the competence of different policies. It is essential to mention that soil is protected under environmental law as well as in the context of various sectoral policies albeit not without difficulties (Charalabidou, 2017). In their report on the best practices for limiting soil sealing or mitigating its effects, Prokop *et al.* (2011) noticed that detailed information about measures aiming to reduce land take and soil sealing was not available for Greece.

As already stressed, the role of spatial planning is crucial for addressing both, the causes and impacts of land take. Widespread unauthorized land development has led to the urbanization of large areas without prior planning as well as to the continuous expansion of out-of-plan areas dealt with by ad hoc legislation (EC, 2000, pp. 21-22, Thoidou, 2017a).

On a strategic level, in 2017 the Greek Government endorsed eight national priorities to promote the incorporation of the 2030 Agenda and into the national framework. As referred to in the “Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development” (General Secretariat of the Government, 2014), the main national priority linked to the so-called environmental SDGs (11 “Sustainable cities and communities” and 15 “Life on land”) is “the protection and sustainable management of natural capital as a base for social prosperity and transition to a low-carbon economy.” In relation to SDG 11, and more particularly in the context of the provision made for “Inclusive, safe, resilient and sustainable cities”, urbanization is considered a driving force for land use change. In the same context, the following sustainability challenges are stressed: “the extension of urban activities beyond designated urban zones, the building and housing construction in certain cases without prior adequate planning and building permits especially in coastal areas as well as the need to increase communal and green spaces in city centres.” Among the priorities and measures selected, the following can be mentioned with regard to spatial planning: the already established “spatial planning framework system [...] setting the strategic guidelines for compact cities”, the combat of “unauthorized construction and uncontrolled urban sprawl”, and the “completion of the National Cadastre to cover the whole land territory of the country by 2020” (General Secretariat of the Government, 2014, pp. 62-63).

Quite recently, concerns regarding land-related issues have been expressed by the strategic plans at the metropolitan level. Worth noting is the emphasis placed by the new Strategic Spatial Plan for the metropolitan area of Athens–Attiki on the conservation of biodiversity, the protection of fertile agricultural land, combating urban sprawl and promoting the compact city model (Greek Government Gazette, 2014a). The contribution of this strategic plan is crucial not only for setting the overall context at the metropolitan level, but also for enforcing the implementation of new directions and measures by means of the detailed land use plans, which is not always easy to achieve through specialized instruments.

The European framework has seriously influenced the content and rationale of spatial planning in Greece, above all through the principles of sustainable development, which have been incorporated into the legislation and rhetoric of urban and regional planning. Moreover, the EU cohesion policy mainstreams environmental objectives into projects and programmes financed by Structural Funds (see among others Thoidou, 2017b). The implementation of the INSPIRE Directive has supported the prominence given to land-related concerns.

As Ludlow *et al.* (2013) note for the case of Greece, spatial data and methods have been taken into account by spatial plans in recent years while the utilization of digital platforms such as the one for electronic urban planning is expected to support the planning process. They argue that, despite the pressures to prioritize economic criteria due to the economic crisis, the pursuit of sustainable development remained important for spatial planning in Greece. The new “Special Inspectorate for Building and Energy” is considered a good practice since among others “it uses satellite photos of different periods to identify urban sprawl and land take, and penalizes illegal acts.” Soil quality and appropriateness of ground conditions are examined by the geological studies carried out in the context of land use plans (Ludlow *et al.*, 2013).

Evidence regarding the role of spatial planning in various environmental issues can be drawn from specific frameworks such as the National Strategy for Biodiversity (Greek Government Gazette, 2014b), as well as the report on the State of the Environment (EC, 2017).

In the document on the National Strategy for biodiversity, the growing urbanization and housing development, the development of industrial and tourist uses as well as land use change that affects natural systems, are all evaluated against the pressures placed on the species of flora and fauna of Greece. In this context it is concluded that urban sprawl and housing development together with uncontrolled urbanization which is triggered by the still allowed out-of-plan building and the accompanying infrastructural projects cause intense artificialization of land. Among others, from the viewpoint of spatial planning, delays and shortcomings in the revision of the spatial planning legislative context are considered to be among the key drivers of the loss of biodiversity, not to mention the non-application of existing legislative rules. This is, for instance, the case of the above-mentioned widespread unplanned land development. Consequently, several of the general targets set by the National Strategy for Biodiversity in Greece identify among others specific targets, which are directly related to spatial planning, as seen in Table 4 below.

Table 4. National Biodiversity Strategy in Greece: General and specific targets related to spatial planning

General Targets (selection)	Specific Targets (selection)
2. Conservation of national natural capital and ecosystem restoration	2.2 Restoration of important species and habitat types
3. Organization and operation of a National System of Protected Areas Protected Areas and enhancement of benefits from their management	3.3 Design, and possible integration, of ecological corridors of special designation status and their effective management
5. Enhancing the synergies among the main sectoral policies for the conservation of biodiversity	5.1 Effective integration of biodiversity conservation at all levels of spatial planning
6. Conservation of landscape diversity	6.1 Completion of integration of conservation landscape diversity policy into all sectoral policies. 6.2 Maintaining landscape diversity both inside and outside of protected areas. 6.3 Conservation of unique landscapes.
13. Appreciation of ecosystem services and the promotion of the value of Greek biodiversity	13.3 Promotion, establishment and maintenance of natural green infrastructure

Source: Ministry of Environment, Energy & Climate Change, 2014 (Table D1: Summary table of the general and specific targets of the National Biodiversity Strategy, pp. 92-97) (own elaboration)

Worth noting is that this strategy recommends the update and implementation of the National Action Plan against Desertification which was drafted in 2001 in the context of the relevant UN Convention. In the same direction, the report on the State of the Environment in Greece refers to shortcomings in sustainable land management as well as its coordination with sectoral policies. The

causes for biodiversity loss, it is noted, can be found in the way various policies such as those for agriculture, fisheries, forests, and tourism are applied, as well as in the prevailing consumption patterns (EC, 2017). In terms of funding, the above-mentioned investment priority on protecting and restoring biodiversity and soil is promoted by the Operational Programme on the Environment in the context of the EU cohesion policy 2014-2020 for Greece. However, it mostly addresses issues that concern protected areas, without making reference to spatial planning.

Concluding remarks

The increasing interest in land as a natural resource has accentuated the importance of land take as a process that causes land degradation and as a policy target that seeks to control this problem. This interest has also accentuated the role of spatial planning and has raised new challenges which highlight not only the need for detailed planning tools in the context of regulatory land use planning, but also for a renewed way of thinking in spatial planning that is a matter of both regulatory and strategic spatial planning.

It seems that the role of spatial planning in the conservation of biodiversity and more particularly in land and soil protection has started to be recognized in Greece, especially within the context of the implementation of EU policies. Even though the various strategies and reports do not proceed with detailed recommendations about new planning objectives, methods and practices, concerns for land degradation have started to appear in relevant rhetoric and practice. This might be a challenge and a driver for transformation of the rational of spatial planning itself towards a land-resilient approach

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SP34

Spatial tensions:
urban microgeographies
for changing cities

*Motionless Movement: The Brazilian urban crisis
from the creation of the Ministry of Cities to the great
protests of 2013*

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Abstract: This article aims to investigate the period between the creation of the Ministry of Cities in 2003 and the great protests of June 2013 in Brazil. It looks for the connections between the greatest set of riots in the recent history of the country and the accentuation of the urban crisis, with special focus on the role (potential and real) of public policies in the transformation of cities. My main hypotheses are that, despite the economic growth and poverty reduction that took place in the period, some of the historical urban problems were accentuated; that the urban reform agenda built for years by popular movements, culminating in the creation of the Ministry of Cities, could, if implemented, have dealt with the structural problems of Brazilian cities; and that this mismatch between project and achievement contributed in a relevant way to bubble up the cauldron that exploded in June 2013.

Keywords: Brazilian cities; urban mobility; housing; urban policies.

Introduction

For thunder to form, we need clouds in the sky. In addition to water droplets, storm clouds carry inside them ice crystals, which bump into each other as the air turbulently moves around. The movement and the friction create an electrical field that turns the cloud into a large battery. The high voltage ionizes the air in the surroundings and forms the path of plasma that carries the electric discharge to the ground. None of this is possible if the sky is blue.

When the big rallies of June 2013 broke out in Brazil, a lot of people saw lightning in blue skies. Using the parameters offered by hegemonic social meteorology, they would ask: if the economy was doing just fine, if there was full employment, if poverty had been reduced considerably in the previous decade, if the political class was reasonably well evaluated in polls, if our international image took off – then why suddenly millions of people in fury paralyzed hundreds of cities in just a few days?

Still in the midst of the thunderstorm, literary and social critic Roberto Schwarcz (2013) summed up this mismatch: “In two weeks, the country that was believed to be working, that had knocked out inflation, included the excluded, put an end to extreme poverty, and become an international example was replaced by another country, a very worse one, in which public transport, education and health are a disaster and in which the political class is a shame, not to mention corruption. Which of the two versions is correct?”

Some would say that the sky hadn't been that blue. People that were part of the social movements that helped organize the protests as well as independent analysts on the left came to demonstrate that Brazilian

society was quite mobilized; that the number of strikes had reached record highs in 2012; that many protests against high bus fares had taken place and been successful in previous years; that the social inclusion of the previous decade had disregarded key aspects such as urban displacement, pollution, quality of life, public spaces; that it was increasingly evident that World Cup spending would not contribute to healing the social and urban woes of the country.

In short, according to such analysts there was already plenty of raining and thundering here and there, and only those insulated in bureaucratic offices would not see it. One month after the marches, a collection of articles published in the book *Rebel Cities* (Maricato *et al.* 2013) sought to demonstrate what were the elements which, in their interaction, transformed the streets of Brazilian cities into explosive batteries: deteriorating urban life, exorbitant fares and precarious urban transport services, the resilience of poor public health and education, the eviction of thousands of people from their homes, rent inflation etc.

Also in the heat of June, philosopher Marcos Nobre (2013a) published his *Shock of Democracy: reasons for the upheaval*, in which he demonstrates how the mass rallies marked the end of a political pact which, for good or for worse, had organized Brazilian society during the New Republic, the democratic period that began with the end of the military dictatorship in the late 1980s. For the author, “the protests show that the functioning of the [political] system is in disarray with the streets. Society attained a degree of pluralism of positions and political trends that is not reflected in the shapeless mass of political parties.” Another philosopher, Paulo Arantes (2013), recalled the centrality of public transport fares for contemporary life in Brazil, stating that “through the tenuous thread of the fare the entire system is challenged – from the displacement of the labour force towards places of exploitation to the violence of the segregated city that marches towards ecological collapse”.

These and other analyses offered relevant interpretations of the social crisis that the country was experiencing, and some of them will be taken up later in this article, but it is possible to say that nobody had predicted protests of such magnitude. As stated by Marcelo Freixo (2013), a left-wing politician who had counted on a great social mobilization around his candidacy for the municipality of Rio de Janeiro in the previous year, “not even the most optimistic militants could have expected to see so many people in the streets and such desire for change in the air”. As the sociologist Leo Lynce (2013) put it, “we were all, without exception, taken by surprise, including those who called the protests”.

It was evident that Brazilian society had become organized on many fronts, and movements such as Movimento Passe Livre (MPL) and the Popular Committees against the World Cup Impacts (COPACs) pointed to an increase in protests, but still it remains difficult to explain how some scattered clouds suddenly became one of the biggest storms the country had ever experienced. Most experts classified the protests as “spontaneous” in news coverage, opinion articles, academic essays, books and documentaries. But as British sociologist Colin Barker (2014) puts it, when analysts use the term “spontaneous” to define a social manifestation, what they usually mean is that they do not quite know what is happening.

This article seeks to address the relationship between the intensification of the Brazilian urban crisis during the country’s period of greatest economic prosperity and the protests of June 2013, which ended up closing such period. It also seeks to propose the hypothesis that the hegemonic tools used to measure social life, which emphatically concentrate on the economy, account to an analytical myopia that suppresses concrete and urgent problems linked to urban issues such as mobility, public services, housing and the quality of public spaces – in short, the whole agenda of what is commonly called “right to the city” – which, sooner or later, have to emerge in some way.

Economy x Urbanity

In a recent article, former Minister of Education (in charge from 2005 to 2012), former mayor of São Paulo (in charge from 2013 to 2016) and the Workers' Party presidential candidate in the elections of 2018, Fernando Haddad (2017), asked the following question: “How to explain the explosion of discontent that took place in June 2013, expressed in the largest wave of protests since the democratic transition? Unemployment was still low; inflation, although under pressure, was at a bearable level and still below wage increases; public services continued to expand, and so did the rights provided for in the Constitution”.

The questions posed by Haddad four years after the demonstrations still point to thunderstorms in blue skies – or at least in skies with very few clouds. The country was undergoing a transition, ending a cycle of economic growth with poverty reduction to enter, from the middle of 2014 onwards, one of the biggest economic recessions in its history.

There are several ways of narrating this transition, and they depend on to the point from which to stand in the political spectrum. For political scientist André Singer (2018), for instance, Dilma Rousseff's first government (from 2011 to 2014) made progressive economic choices that confronted the marked rentism of Brazilian society. Such choices aimed at favouring the productive matrix. Rousseff was, however, betrayed by the industrial bourgeoisie, became unable to sustain the main pillar (low interest rates) of her plan and saw her “new economic matrix” die before reaping its fruits. According to economist Monica de Bolle (2016), inversely, the Federal Government made a series of maladaptive actions. It sought to reduce interest rates and devalue the exchange in a biased manner, increasingly using public resources to (i) induce private investments, through tax exemption (ii) control inflation, by holding back public utility charges. Not only did the plan fail, it also caused great fiscal deterioration.

A more nuanced version of the story is told by economist Laura Carvalho (2018), who uses the image of a waltz in order to analyse the Brazilian economy in the 21st century: one step to the front, one step to the side, one step back. The step forward would have been given in the second term of Lula's government (from 2007 to 2010), when the country took advantage of the favourable international context of high commodity prices to increase public investment and credit, boosting the economy and generating what Carvalho called “milagrinho brasileiro”, “Brazil's little miracle” – a reference to the so-called “Brazilian Miracle” of the military dictatorship, when the country's GDP grew on average 10% per year between 1968 and 1973 .

In the 2007-2010 “milagrinho”, the GDP grew at an average annual rate of 4.5%, inflation at 4.7%, public investment at 27.1%, and total investment at 9.1% (CARVALHO, 2018). For Carvalho, what made this virtuous path collapse was mainly the change in the nature of public spending: while during Lula's second term public investments preponderated, Rousseff's administration reduced investments to the extent that it amplified tax exemptions for businesses. The leading role was shifted towards private investment, which however narrowed – not because entrepreneurs staged a boycott, as proposed by Singer (2018), but because of a lack of demand and stock accumulation in companies. Without the previous inductive investments and with indebted households, the economy stagnated: one step to the side. The step back, in the author's view, would have been given with the fiscal adjustment that came in 2015, which in fact was unable to save the country from one of its largest economic recessions.

In spite of the differences in perspective between the authors mentioned, there is something in common between them: the idea that things were going well and then got distorted by a change of course. In any case, Haddad is right when he argues that in 2013 the country still had full employment and inflation was at a “bearable level” and below wage adjustments. GDP grew on average 2.3% between 2011 and 2014, and annual inflation was at 6.2% (CARVALHO, 2018). Such economic indicators would not fare badly in most places, let alone for a period that followed the 2008 economic crisis and a major economic downturn in countries such as Italy, Spain and Greece.

The question remains: if the economic indicators were still satisfactory and yet the country witnessed one of its largest strings of protests, are we not looking for the wrong indicators? What would happen if we were to add to the analytical history of the period indicators that rarely appear in public debate, but which tell a lot about the life of a predominantly urban society, such as time spent in traffic; the cost of public transport fares; health problems caused by air pollution; deaths and health problems generated by traffic accidents; the quality of public spaces and housing? Would the sky remain blue?

A brief history of urban politics in Brazil

To answer that question, we will briefly review the formation of Brazilian cities. Along with the industrialization that intensified in the middle of the 20th century, Brazil experienced an intense phenomenon of urbanization. According to data from IBGE, the Brazilian Institute of Geography and Statistics, the country saw its urban population increase almost sevenfold in 40 years, from about 12 million people (which represented 31.24% of the total population) in 1940 to more than 81 million people (67.59% of the total population) in 1980.

This great urban growth occurred within a specific process of peripheral capitalism, well dissected by sociologist Francisco de Oliveira (2013). For the author, the modernization of Brazil did not happen *despite* the maintenance of backward sectors, but *in dependence* on them. In the case of cities, the formation of new so-called “informal neighbourhoods” – which occupied idle land in the urban fringes, had self-construction as a predominant building method, and lacked services and public infrastructure – was the main form of growth absorption and served well the scheme of capital accumulation, since the costs of housing and public services did not need to be included in wages and taxes.

The great precariousness of urban peripheries was only to start being remedied with the resumption of democracy in the mid-1980s. Essential items such as pavement, water and electricity supply services were finally almost universalised in recent years. Still, most of the territory in Brazilian cities is still flooded with problems, ranging from poverty to lack of public spaces, from exacerbated violence to extreme urban immobility.

As the military dictatorship agonized, the Urban Reform Movement grew, bringing together popular and professional segments to propose an agenda of social and spatial justice for Brazilian cities (ROLNIK, 2018). The Urban Reform Movement was very active in the process of drafting the new Constitution in 1988, and managed to include two articles related to policies for cities in the letter. These articles were then regulated through an Act, known as the City Statute, promulgated in 2001. The Statute was to be seen as an international reference for progressive normative frameworks, establishing advanced instruments that aimed at the reduction of socio-spatial inequality and the improvement of the quality of life in Brazilian cities. When the coalition led by the Workers' Party won the elections in 2002, the Movement had yet another victory: the creation of the Ministry of Cities. The appointed minister was Olívio Dutra, who had been the mayor of Porto Alegre when the city implemented its well-known participatory budget, and he brought with him leading experts in the struggle for urban reform.

It is worth recalling the level of chaos and inequality in Brazilian cities at the beginning of the 21st century, a result of decades of authoritarianism and neglect. Such a context is well described by Erminia Maricato (2005), a professor at the University of São Paulo who was then appointed Executive Secretary of the Ministry of Cities: "Chaos in collective transport; the decay of public regulation; growth of favelas at levels unheard of; lack of housing alternatives [...]; pollution of rivers, streams, lakes and beaches for lack of sanitation; civil war numbers in deaths related to drug traffic; environmentally fragile areas destroyed by the illegal occupation of riversides, hills, dunes, mangroves and water sources".

In this context, the Ministry of Cities came to "occupy an institutional void that is inexplicable for a massively urbanized country which has had in the past 50 years one of the largest urbanization rates in the world" (MARICATO, 2005). It came with a promise to heal historical ills in Brazilian cities and to promote social and spatial justice, supported by a progressive normative framework – the City Statute – and structured by a broad participatory process, organized in periodical Cities Conferences that branched into states and counties.

The promise, however, was not fulfilled. On the contrary, as Maricato pointed out in an article written some years later, "life in Brazilian cities has worsened a lot in the last years of the past decade" (MARICATO, 2013). The indicators that I propose to analyse would confirm such an assertion: increased time in traffic, costly bus fares, traffic accidents, air pollution, etc. How did this happen? How could a promise that seemed about to be fulfilled become its reverse?

The Ministry of Cities was led by Olívio Dutra and the team linked to the Urban Reform Movement only until 2005, when the Lula administration faced a political crisis and traded the control of the Ministry with a conservative party (ironically named Progressive Party), led by politicians who made their careers during the military dictatorship. It is thus possible to say that the urban agenda never really became a central agenda of the Workers' Party government. Even during the short period in which historical figures of the Urban Reform struggle had a say in the Ministry of Cities, little got off the paper. That period, it must be said, coincided with the fiscal austerity policies of the first Lula administration, and federal government investments shrunk 4,5% per year on average at the time (CARVALHO, 2018). Even if there were good ideas, they got little investment.

Starting in 2006, the federal government's economic policy changed, with a strong emphasis on public investment and a "developmentalist drive" (MARICATO, 2014). As soon as public funds began to flow, policies such as the housing program Minha Casa Minha Vida (MCMV) or the infrastructural Growth Acceleration Program (PAC), in addition to tax exemptions for automobiles, were implemented with a large volume of resources. They shared, however, almost nothing with the directives and regulatory frameworks achieved in previous decades. As Maricato (2014) put it, "we see a paradox. When the Brazilian state finally resumed investment in housing, sanitation and, to a lesser extent, urban transport [...] living conditions worsen radically." In this article I discuss two elements of this paradox: housing and urban mobility.

Housing

It seems to be a consensus amongst urbanists that the MCMV program, which emerged in 2009 in response to the global crisis of 2008, was a policy intended to fight the economic recession, but not the housing deficit. Still according to Maricato (2014), the launch of MCMV in March 2009 mostly ignored the guidelines of the National Housing Plan, which had been developed by the same government. The logic of the program encouraged developers to build in the urban fringes, producing new neighbourhoods devoid of urbanity (ROLNIK, 2018). As can be appreciated in an extensive survey on the theme (WHITAKER, 2012), entire neighbourhoods emerged on the edges of cities, generating stigma, monotonous landscapes, and segregated territories: devoid of transportation, basic social services and commerce.

As the MCMV imposed a "planned socio-spatial segregation", a term coined by the architect André Luiz Prado (2017) in a study on housing estates on urban edges, it also had a major impact on escalating rents and real estate prices. It is pointed out by Ana Paula Ribeiro, Guilherme Boulos and Natalia Szermeta (2014), that although the MCMV reached the goal of building more than one million houses in 2009 and 2010, the housing deficit grew by astonishing 1, 5 million units in the same period. In a later review, Raquel Rolnik (2018) points out that "the MCMV has built more than 4 million housing units in seven years, but has

produced little effect on reducing housing needs. Research shows that the housing deficit has grown over the same period: from 5.8 million to 6.2 million units".

According to the authors, such a contradiction resulted from a lack of regulation combined with the excessive incentives given to construction companies, which were providing for a market with huge credit facility whilst receiving subsidized loans from the National Development Bank (BNDES). These companies started to acquire more and more land and thus to control urban growth streams, speculating whenever possible and inflating property prices across entire regions. From 2008 to 2013, rents in São Paulo rose 195%. "Thus grew the housing deficit, shaped by an explosion in the cost of rents, even in the urban peripheries" (BOULOS *et al.*, 2014).

As pointed out by Maricato (2013), "the heart of the urban reform agenda, the land reform, was neglected." This is true, and it is curious that this and other issues have continued to occupy the debates in the Cities Conferences – participatory spaces created by the first team of the Ministry of Cities. It seems that the participatory processes, which had a historical momentum in the governments of the Workers Party, had different degrees of incidence in the policies actually carried out. Larger programs with voluminous resources, such as MCMV and PAC, "ran outside" the participatory guidelines, along with other "armoured areas", as Anna Luiza Salles and Rosângela Dias (2013) pointed out.

Public policy researcher Sônia Fleury (2013) perceived a very direct relationship between such a "mobilizing yet at the same time centralising" model and the dissatisfaction revealed in the rallies of June 2013: "We created a democratic mechanism in 1988 that allowed society to have a very deliberative and participatory form of control over the State. And we kept activating it all the time – there have never been as many conferences in Brazilian history as during the Lula years. At the same time, however, the real power of decision was very far from such participatory spaces, and that gap kept growing. The organisation of the mega-events disclosed [...] how the decision-making process and the definition of [...] where the resources would go happened between the government and businessmen. This contradiction had to surface at some point. "

Urban mobility

Another policy designed to battle economic recession was the tax relief for cars, called "IPI Zero", as of 2009. The Brazilian car fleet had grown almost 50% from 2000 to 2008 – an increase of about 10 million units in nine years. Large and medium-sized cities were filled with cars, and air pollution and noise, accidents, and slow traffic intensified. With IPI Zero, between 2009 and 2012 another 10 million cars and 6 million motorcycles were registered. Deaths in traffic jumped from 28,995 in 2000 to 44,812 in 2012, according to data from the Ministry of Health.

Health problems and deaths caused by air pollution also burgeoned. According to a study published by the Health and Sustainability Institute (SALDIVA *et al.*, 2017), coordinated by USP professor Paulo Saldiva, the total number of deaths caused by air pollution in São Paulo (11,200 in 2015) is higher than the number of deaths caused by traffic accidents (7,867), breast cancer (3,620), or AIDS (2,922).

According to the study, inhaling the air of the city of São Paulo for two hours is tantamount to smoking a cigarette. Diseases such as arrhythmia, heart attack and stroke represent 80% of the effects of air pollution, which is also a proven cause of lung and bladder cancers and is linked to half the cases of pneumonia in children. According to estimates by Saldiva (2012), a 10% reduction in air pollution in São Paulo could avoid the death of more than 100,000 people in 20 years and save around R\$20 billion in health treatment costs.

Collective transportation was strongly impacted by a car-oriented policy. The exponential growth in the number of automobiles and motorcycles meant that many users gave up public transport – which increased traffic

sluggishness. Compensation however was made not with an improvement of the service (attractive fares, fleet improvement, exclusive corridors), but with disproportionate fare increases and precariousness. From January 2000 to December 2012, inflation rose 125%, but bus fares in the main Brazilian cities increased in average 192% (RIBEIRO *et al.* 2013).

Correspondingly, the average travelling time in collective transport also increased. In Belo Horizonte, the sixth largest city in the country, the average time spent in bus travels went from 42 minutes in 2002 to 62 minutes in 2012 (COSTA, 2012). Such an increase is a result of slower traffic, but also of a reduction in supply – a common adjustment made by bus operators in order to keep their profit margins even with fewer users –, a situation that is more critical in peripheral neighbourhoods, where the supply has never been sufficient to begin with.

The result is a vicious cycle explained in a chart drawn up by engineers and economists at IPEA, the Institute of Applied Economic Research (Ribeiro *et al.* 2013). Such cycle is based on both the lack of investments in urban public transport and the incentives for the use of automobiles – which take the form of tax exemptions or road building and works. This leads to a reduced demand for collective transportation and the migration to individual motorized modes; which results in an economic and financial imbalance in public transport systems; which, in turn, is compensated by precarious supply and raising fares – feeding back the cycle.

These problems could have been faced with policies such as the ones proposed in the 2004 National Urban Development Plan as the basis for the 2005 Cities Conference. The document endorsed a regulatory reform in urban collective transport, aiming at "the adoption of transparent rules and the accurate assignment of responsibilities between public and private agents" (DUTRA *et al.*, 2004). The proposed regulation would structure municipal concessions, and aimed to "include in the contracts tools for efficiency control as well as for the participation of users in the evaluation of services." The creation of a consistent source of subsidy for urban public transport and of an industrial policy for the sector would also be proposed later in 2014 by a group of activists and technicians which included one of the members of Olívio Dutra's former team, economist João Luiz da Silva Dias (DIAS *et all.* 2014).

Without policies aimed at regulation, subsidy and incentive, collective transport followed its spiral of precariousness and overprice. Within a structure of land immobility, this path stretches towards the unbearable, as described by Bruno Cava (2013): "There are millions of vehicles crowded with resigned people and lost looks in the dead-time of daily transportation. We sit or stand, in any case compressed into the mass of similarly tormented mates. We wake up early to face this *via-crucis* and at the end of the day we just want it to end soon and to get home and take a shower so that we can start it all over again the next day. "

Even though public works based on individual motor transport did not enter the official discourse, the guidelines established by the Cities Conferences or the priorities defined by the National Urban Mobility Law, they were heavily present in Brazilian cities in recent decades. Such works were carried out with municipal, state and federal funding. They found their way into programs such as the Growth Acceleration Program (PAC) for Mobility, which would often include works that privileged individual transport within large-scale projects such as the BRTs (Bus Rapid Transit: exclusive bus corridors with prepayment stations). An exhaustive study of the impact of road works on aggravating the crisis of urban mobility in Brazilian cities remains to be done. However, decades of research, especially in North America and Europe, have shown that increasing the supply of space for cars does not result in improved traffic, as new roads tend to saturate in less than ten years (DURANTON and TURNER, 2010).

While they do not improve traffic, viaducts, trenches and highways work very well to create urban scars, degrading pedestrian life and entire neighbourhoods, as Jane Jacobs (2009) has already pointed out in her studies of American cities in the 1950s. There is a heavy burden of violence and authoritarianism in such works, which is well demonstrated by psychoanalyst Tales Ab'Saber (2015) in an analysis of the construction of

the “Minhocão” elevated highway in São Paulo: “Minhocão and the entire road complex that came along with it brought about an urban and mental catastrophe, with grim social effects, a ferocious cultural degradation and the overall imposition of a poorer life. It constituted a veritable conservative device, with profound biopolitical implications over the life in the city to come. A total spectacle, inside out. Only a real dictatorship could have built something like that. It is the living document of the real force of authoritarian desire. ”

For the author, “only a real dictatorship could have built something like that”, but the great works of engineering – from elevated highways to hydroelectric plants –, seem to have smoothly transited from the imaginary of the military dictatorship to that of Brazilian democratic governments. It should be remembered, for instance, that the series of viaducts built in Belo Horizonte, justified in the context of the implementation of a BRT system and the World Cup, was financed by the Mobility PAC program – against the principles of “prioritizing collective transport over individual transport” provided for in regulatory frameworks that were conquered with great struggle. The works dislodged slums, split neighbourhoods, cut hundreds of trees, and made pedestrian life more barren (ANDRÉS, 2016).

At the rallies of June 2013, Luiz Felipe Aniceto de Almeida, a 22-year-old attendant, and Douglas Henrique de Oliveira, a 21-year-old student, lost their lives in one of such viaducts, in the northern part of the city. They were fleeing police shots and bombs and fell from the structure, which “did not provide for pedestrians,” as the construction engineer would later argue.

When, during the 2014 World Cup, just a few kilometres ahead one of the recently built viaducts collapsed, killing two people and injuring twenty-three (*a total spectacle, inside out*), our long history of aberration and violence only showed a more public face. What we saw on television was the product that perhaps best symbolized the enormous gap between the decades-long desires, constructions and efforts to implement urban policies that would promote social and environmental justice, and the conciliatory and regressive *realpolitik* in which the heirs of the dictatorship and hungry contractors dictate urban transformations: the debris of tons of concrete and steel, overpaid and, what is more, evidently useless, since a year after the disaster the traffic in that spot proved not to differ from other parts of the highway where the viaducts still stood (ANDRÉS, 2016).

Conclusion

The urban issues summarized here are only the tip of an iceberg of problems and impacts of economic activities that are not taken into the accounts of hegemonic indicators. The economy may continue to grow, we may control inflation and reach full employment, but life will be worse if that comes with an increase of time lost in traffic, accidents that kill lives, health problems originating from air pollution, rent pressure etc. If people are removed from their homes to give space to dubious infrastructural works, if cities lose trees and public spaces, if the grey of the highways degrades pedestrian life, if urban displacement becomes increasingly unviable, are better wages and full employment enough?

By posing questions along these lines, a number of economists have started to question the hegemonic methods and indicators used by Economics. This is not a trivial matter: the economy occupies a significant place in public debate, functioning at the same time as both the compass and rudder of governments. As early as the 1930s, none other than John Maynard Keynes (1961) considered that “the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else”.

The economist Kate Raworth (2017) soundly recalls that “economics is the mother tongue of public policy, the language of public life, and the mindset that shapes society”. She argues that relevant changes in the economics approach are necessary if we are to seek a future with less inequality and the preservation of environmental

conditions on the planet. The author suggests that "GDP is a cuckoo in the economic nest", in reference to birds that lay their eggs to be hatched in the nests of others. She argues that GDP, the main metric in economics, was not created alongside with the discipline, but was introduced less than 100 years ago, occupying a space that was open due to the absence of concrete, measurable targets.

Not a few economists have criticized the use of GDP as the predominant metric for measuring progress. A report signed by Amartya Sen, Joseph Stiglitz and Jean Paul Fitoussi (2009) proposed a "shift emphasis from measuring economic production to measuring people's well-being ". Economist Ladislau Dowbor (2019) argues that "GDP measures the flow of money, not the attainment of ends." The classic example is that natural disasters and airplane crashes increase GDP, as they generate demand for environmental cleaning services, insurance activation, etc.

Raworth (2017) wrote an entire book on changes in the economics approach. Her main point would be to replace GDP, a linear and simplifying metric, with a donut – a graph in which two rings make up a space of action in which to 1) provide for the universalization of access to goods and resources and 2) guarantee the preservation of living conditions on the planet. "Below the inner ring – the social foundation – lie critical human deprivations such as hunger and illiteracy. Beyond the outer ring – the ecological ceiling – lies critical planetary degradation such as climate change and biodiversity loss. Between those two rings is the Donut itself, the space in which we can meet the needs of all within the means of the planet. "

A design of the donut proposed by the author that addressed elements related to city life could provide us with much more accurate indicators of social life. If it were for instance to be applied to the period of greatest economic and social development in the country's recent history, which Laura Carvalho (2018) called "the little miracle", we would probably realize that the miracle was not that miraculous. We would have a graph in which the thunderous growth of deaths due to traffic accidents and air pollution, time lost in traffic, and the worsening quality of urban life would become evident. We would also see the environmental impacts caused by a certain ideal of development that marked that same period, such as emissions growth and water contamination.

An exercise like this is yet to be done and is meant to be a step in my ongoing research. In any case, simply envisioning an alternative form of visual measurement of economic and social progress allows us to return to the debate at the beginning of this article. Had there been a graphical system of indicators that took into consideration the elements discussed above, would the analysts of June 2013 still see thunders in a blue sky? Or would they see the storm clouds, heavy and dense from the accumulation of the massive energy of years of urban and environmental pressure?

Marcos Nobre (2013b) identifies the period of Brazilian democratization as a period marked by clashes with a conservative political system of locks and brakes that aims to immobilize social transformation and the penetration of democratic and progressive forces. The presence of such a system engendered a social and political dynamic in the past decades that he describes as "*immobility in motion*".

Conversely, it would be possible to understand the dynamics of Brazilian cities in the period here discussed as a *motionless movement*. The very large public employment of resources and the substantive growth of access to goods had effects that reduced or even nullified possible emancipatory and life improving results. Huge real estate investment resulted in an escalation of the housing deficit; the boom of the liberating dream of automobiles resulted in increased transit time; the unprecedented intensification of participatory instances had no real impact on decision-making; hosting the World Cup only left a burden of more urban inequality and elitist stadiums.

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Fear and segregation: anxiety beyond the gated communities. The Costa Rican case.

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Abstract: Fear of crime is a constant concern in Latin America. In Costa Rica, those feeling seems to be changing the urbanisation patterns; giving way to gated communities. However, those developments might be increasing feelings of exclusion and anxiety instead of reducing crime. In the last 25 years, the gated communities have been rising; as a result, the traditional neighbourhoods have to coexist with these new developments. This paper aims to explore the effects of gated communities in the distribution of fear in their peripheries, mainly those regarding tensions between outside – inside. The research is taking place within the Greater Metropolitan Area of Costa Rica. Eight open neighbourhoods were selected, using the poverty indicator basic unfulfilled needs (NBI). In each case was carried out a walking interview with some members of the community; those walks were tracked with a GPS and recorded. Additionally, there were focus groups, observations and interviews. Some preliminary results suggest significant residential segregation between the neighbourhoods and the gated communities. It seems the fortification is more than a physical barrier; there is no room for sharing, which causes misconceptions and fears towards other people.

Keywords: Fear of crime, gated communities, Costa Rica, residential segregation.

Introduction

Safety is an important concern in most of the Latin American people. This region holds the highest rates of homicides worldwide (Chioda, 2016). Also, the fear discourse has been part of the political rhetoric from the 1990s, fuelling people anxiety even more (Huhn, 2017). As a result, more than 61% of Latin Americans agree to the increase the repressive measures such as zero-tolerance policies (Latinobarometro, 2016). Those punitive practices have been imported mainly from the United States. However, many countries also have reproduced from that country the model of gated communities, considered for many people a sort of ‘shelters’ against criminality.

Although high inequality has characterised Latin America, most of the countries started a reduction in their figures at the beginning of the century. However, Costa Rica has shown the opposite trend; this country moved from being one of the most equitable towards ranges similar to the average. In 2016 the Gini coefficient was 0.521, without any significant change since 2011 (Programa Estado de la Nacion, 2017).

Central America is also one of the most violent areas in the world; however, it is not homogeneous in their figures, then countries such as Costa Rica, Panamá and Nicaragua have lower rates of homicides than the rest. The overall victimisation rate in Costa Rica has diminished from 2008 (INEC, 2015); however, gated communities have been proliferating because they are seen for many people as security providers. This trend has started to fragment the city, physically and socially, creating isolated places

into the urban fabric. As a result, paradoxically, those developments might be increasing the fears towards their peripheries in turn.

This paper is part of an ongoing PhD research, which explores the distribution of fear outside of gated communities within the Great Metropolitan Area of Costa Rica. This work is focused on the possible tensions produced by gated communities over the surrounding neighbourhoods. The data were collected mainly through walking interviews and focus groups, in eight neighbourhoods beside gated communities. The initial findings suggest a deep residential segregation and exclusion feelings in most of the cases. The results also suggest that pre-existing fears are fuelled by the isolated landscape and the uncertainty about who lives behind those walls.

Fear of crime beyond the walls

Fear of crime has profound impacts on quality of life. Those emotions might affect social cohesion and experience in the city. This feeling is defined by Ferraro and LaGrange (1987, p.72) as ‘a negative emotional reaction to crime or the symbols associated with crime’. However, fear of crime is a complex phenomenon, which involves different dimensions and factors such as incomes level, gender, education, race, age and attach to the neighbourhood (Gray et al. 2011). In this regard, the built environment might have a significant role in the perception of fear.

Some authors have suggested the manipulation of physical space to prevent crime. Newman (1973) through his concept Defensive Spaces, points out that buildings’ configuration and urban design can help to surveillance, as well as community control is the only efficient tool for assuring safety in neighbourhoods. According to his view, the community becomes a guardian encouraging territoriality feelings. Besides, the Situation Prevention Thesis (Clarke, 1983; Crawford, 1998) supports the idea of reducing the opportunities for crime through informal community vigilance, the introduction of barriers, use of Closed-circuit television (CCTV), as well as any physical alteration. In both cases, the presence of strangers is avoided; the neighbourhood is under community control.

On the other hand, those territorial controls seem to affect the permeability of the city. Minton (2009) holds the idea that the ‘Defensive Spaces’ are the reason why gated communities and cul de sac have been spread along the United States and Britain since 1970. She argues that those measures make strangers be seen as a source of danger. In like manner, Sennett (2018) claims that edges are tense rather than friendly places of exchange, he mentions that turning walls in membranes allows the interchange inside-outside, stimulating ‘neighbours who mix casually’ (p. 223); for instance, buying food. This measure makes contact less confrontational; it could be the first step to debunk misconceptions about ‘the others’.

The tension between the absence or presence of unfamiliar people affects the dynamism of the city. Jacobs (1961) highlights the importance of bringing different type of people altogether. Actually, she points out that a successful city is that in which a person feels safe among strangers. Furthermore, Sennett (2018) points out that preconceptions towards strangers just because ‘they are incomprehensibly strange’ degrades the ethical character of the city’ (p.126). He holds that the experience of living in a diverse group has the power of reducing the feeling of insecurity and frustration because there is no clear image of who is the enemy.

Barriers of differentiation

Latin America cities have imported the concept of gated communities from anglo-saxon countries. Those residential developments arise in the United States in the early 1980s (Blakely and Snyder, 1997), later in Latin American cities during the 1990s (Castells, 1999). Although the United States has had an important role spreading those developments, gated communities have expanded rapidly in urbanising countries, 'they were simply part of the surreal economic and spatial transformation that engulfed so many countries in the last two decades of the 20th century' (Webster et al. 2002). This growth could be explained as an answer to social conflict and violence in cities; however, these developments also reflect new lifestyles emerging under the globalisation process (Coy and Pöhler, 2002). Under this perspective, the developers of gated communities' see themselves as providing both security and social familiarity' (Blakely and Snyder, 1997). However, Blakely and Snyder (1997) argue that those fences represent more than physical barriers, they are a reflection of tensions between particular aspirations based on fear and defence of privileges, with the principles of community responsibility.

Criminality causes concern among most of the Latin American people, around 88% express any fear about being a victim of delinquency, in Costa Rica, this figure is 86% (Corporación Latinobarometro, 2016). Consequently, demands for 'iron fist' to address this issue seems to be deeply attached to Latin America culture. In this regard, Costa Rica occupies the second place in Latin America with the highest percentage of people claiming for this measure, while the average is 61%, in Costa Rica reaches the 78% (Corporación Latinobarometro, 2016). Against this background, populism punitive seems to be used in the political discourse, exacerbating the fear of crime (Huhn, 2017). According to Huhn (2017) in Central America, those elements intensify each other, fuelling pre-existing fears and hence, justifying more repressive measures. The fear discourse in Costa Rica might be included in political rhetoric since the 1990s and reproduced by some media (Fonseca and Sandoval, 2006; Huhn, 2012). The spread of fear has also changed the urbanisation patterns, raising the number of gated communities within the country.

Gated Communities in Costa Rica

Costa Rica has had a significant increase in the number of gated communities. In that country, most of those developments have been created under the condominium scheme, an ownership system which has individual dwellings or units within a shared land with common areas. From 1990 to 2017, the rise of the built area under this category increases from 5,2% to 25,2% (Programa Estado de la Nación, 2018). Although this figure does not mean that all those developments are walled, it is an important sign of the current trend. A report from the United Nations Development Programme (UNDP) in Costa Rica highlights that the widespread of unsafety feelings have altered people behaviour 'They live in a condominium rather than open spaces, put razor wire around what was once an open garden.' (PNUD-Costa Rica, 2005, p. 4). Carrion (2008) mentions that in Latin America safety policies in residential areas have increased the barriers of differentiation; paradoxically, rising the segregation and creating exclusion spaces. This situation is also present in the Latin America suburbs, where poor and rich are next to each other but separated by a wall (Roitman and Phelps, 2011). In Costa Rica, due to a green belt around the Greater Metropolitan Area (GMA), the gated communities seem to be mostly concentrated in the urban region; nevertheless, there are also cases of gated communities in rural areas. Pujol et al. (2011) suggest that within GMA, those places where gated communities are located, the social segregation has climbed steadily. In Costa Rica, the planning system has different rules for open residential developments and gated communities. Historically the open neighbourhoods have

transferred to the local government land for public parks and streets; on the contrary, most local governments allow to gated communities to keep the entire property for themselves. This situation seems to provoke a reduction in the number of public spaces per inhabitant; therefore, the decline of areas for sharing within the city. With this in mind, the traditional open neighbourhoods have to coexist with the new gated communities daily. Those neighbourhoods are very diverse; they may be either low or high incomes. Many authors have suggested an association between fear of crime and income inequalities (Franklin et al. 2008; Wilkinson and Pickett, 2009; Vieno et al. 2013), where those areas more unequal reveal a higher level of anxiety.

Methods

The research is based on eight study cases; they are neighbourhoods beside gated communities. Those cases are located within the GMA of Costa Rica. This area concentrates more than half of the country's population, despite it is just 3,83% of the Costa Rican territory (OUGAM, 2018).

The neighbourhoods were also selected according to their unfulfilled needs, called by the National Institute of Statistics and Census (INEC) as *Necesidades Básica Insatisfechas* (NBI). The NBI is a tool to measure poverty, which was gotten from the Costa Rica census data from 2011. It is based on four needs: housing, educational level, health and access to goods and services. When a dwelling holds the four NBI, it means that it has the highest level of poverty. The eight cases have different levels of unfulfilled needs, from communities without any NBI (0 NBI) to neighbourhoods with the highest level of poverty (4 NBI). Those places were chosen using Geographic Information Systems (GIS) with the census cartography; the first random selection was polished with aerial images and then reassessed in the field.

The data collection was made from June to December 2018; the following techniques were used:

- Walking interviews
- Focus Group with adults and teenagers
- In depth-Interviews
- Observations

In each neighbourhood was carried out a walking interview with some members of the community, according to with the method suggested by Evans and Jones (2011), those walks were tracked with a Global Positioning System (GPS) and synchronised with an audio recorder. It was carried out also one focus group per each study case. Additionally, there were observations in each neighbourhood and some complementary in depth-interviews. These initial findings are based mainly on the walking interviews and focus groups.

Initial Findings

Residential segregation

Most of the participants mentioned that they did not know people from the gated community. However, those from the communities with high incomes indicated to have met them at some point. In seven of the eight cases, there was no connection between the gated community's residents and the community organisation, the only exception was the wealthiest neighbourhood, where people from the gated community were part of the community board. This overall residential segregation was also expressed by the teenagers, who despite having an extensive network of friendships beyond their neighbourhood, they did not have friends within the gated communities nearby.

Walls and preconceptions

As a result of residential segregation, people created their own concept about people from the gated community. Those ideas also fuel anxiety and tensions; there is a general feeling that those people do not care about the community because maybe they belong to another town. The level of incomes of those people also causes concern among neighbours; for instance, many participants think they are wealthy people, which is an issue for their neighbourhoods because those developments might function as a magnet for criminality, therefore, it could affect the safety of the surrounding communities. Other people believe that maybe they are involved in illegal business; hence their neighbourhoods are under threat, mainly their young people who are vulnerable and easy to recruit. On the other hand, those communities where the neighbours at least have met somebody from the gated community they assume they are just working people from middle to upper middle class. In this regard, beyond the physical barriers between neighbourhoods and gated communities, those prejudgments might be increasing some pre-existing fears.

Overwhelming growth, involuntary enclosure.

As has been noted, gated communities in Costa Rica are expanding quickly. Within GMA they are embedded into the urban fabric, next to established neighbourhoods. In those cases where the growth is notorious, the neighbours expressed their overwhelming towards this situation. To illustrate this point, those neighbourhoods surrounded by at least four gated communities larger than one hectare, manifested to feel 'wrapped' by those developments. This sort of involuntary enclosure seems to rise the exclusion feelings and fuel resentments. That frustration obeys mainly to the sensation that their community has been taken by strangers who live in their own fortifications. In the absence of spaces for sharing and mixing, as Sennett (2018) refers, the anxiety towards strangers is even more significant.

The edges

The edges between gated communities and neighbourhoods were mostly walls. The only exception was the wealthiest neighbourhood, in that case, the perimeter was permeable but keeping the restrictions of access. In most cases, those walls were associated to feelings of fear; they were described as isolated places, therefore, a convenient area for crimes such as muggings, drugs traffic, abductions, sexual abuses, among others. Due to the gated communities nearby were larger than nine hectares -in six of the cases, many neighbours were forced to walk along their edges to take the bus; actually, many bus stops were located just next to the wall. This situation provoked them a considerable anxiety, especially during the night.

Planning issues

A common complaint was the lack of contribution from gated communities to the neighbouring areas. Especially regarding the supply of public spaces such as parks and streets. In addition, they pointed out how the significant surface covered by those developments makes difficult the communication among neighbourhoods. Pujol et al. (2011) have mentioned how those gated communities have risen the drawbacks in the Costa Rican road system, which also has affected the traffic congestion. In general, those neighbourhoods where the amount of gated communities is growing faster, there is a discontent towards the local government's controls and regulations.

Final thoughts

The tensions from the outside to inside seems to be fuelled by feelings of exclusion. The residential segregation has provoked fears towards the unknown; people from gated communities are seen as

strangers who belongs to somewhere else. However, those differences seem not being present in the wealthiest community, where the gated community's edges were soft, and people from there were involved in communal issues. In this case, apparently, the levels of trust in both directions worked differently than the rest.

The local governments in Costa Rica have not reacted quickly to control the size, edges and configuration of gated communities, as well as an eventual supply of public spaces. As a result, there are 'islands' of dwellings embedded into the city, without any permeability towards the rest of the urban fabric.

The spread of gated communities in Latin America has been varied; this work aims to contribute to give more views to that discussion, mainly from Central America, which is also diverse. This work also seeks to offer another angle of observing the fear, from the other side of the wall.

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Lofts districts in Milan. Overlapping tensions between uses and regulations. Instruments for urban and architectural design

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Abstract: The topic of conversion of industrial buildings and compounds into lofts got very little attention in the Italian case, represented mainly by the city of Milan. The gray areas of national and local regulations allowed the unplanned emergence of entire multi-functional enclosed districts within the city, built from the ruins of former industrial plants. Due to the inherent flexibility of industrial buildings, with spaces that can be divided horizontally and vertically in modules which can be joined and split, lofts allow for the coexistence of diverse uses. Officially listed as workshops, these units host housing, commerce, small manufacturing, one next to the other or even in the same unit. Lofts developments may represent a case of overlapping tensions, of uses and practices and at the same time a possible way to use architectural and urban design to address several issues about the contemporary city, as the flexibility of uses and urban manufacturing. The contribution aims first to quantify the phenomenon in the city of Milan through a map of loft developments and then present one of the most critical cases, showing the tensions produced in these environments between the different uses, formal and informal, legal and illegal.

Keywords: loft, industrial heritage, reuse, flexibility

Introduction

In this paper, I will cover a somewhat ignored piece of knowledge in the chapter of the transformation of former industrial areas in Milan. The conversion of industrial buildings and compounds into lofts has been widely studied in foreign countries, starting with Zukin's seminal work "Loft Living" in 1982, until the more recent "City as Loft" of Baum and Christiansee (2013). In Italy though, even in Milan, where the loft phenomenon is quite huge, the topic has been usually moved to the background, just mentioned and rarely deepened.

In the first part, I will provide a brief international background to the topic of loft conversions. In the second, the phenomenon of loft conversions in Milan will be set in the general process of post-industrial transformation of the city. Then the loftscape of Milan will be described and analyzed. The current situation of loft developments in Milan will be depicted and quantified. A paragraph on methodology in this section will explain how data were found and processed. Finally, a significant loft compound in Milan will be studied. According to the purpose of the session the paper is presented in, the focus will be on the tensions between the many paradoxes of lofts (Zukin in Vv.Aa., 1990) and all the tensions that these paradoxes engender both at an architectural and urban scale.

The emergence of the loft phenomenon

What we can consider as the ancestors of the lofts are already found in Paris at the turn of the 19th Century, where young and not affluent artists started to rent the upper floors of buildings. Artists found appropriate for their purpose what was an uncomfortable location for most people. The interior space was normally distributed on two floors, the upper one, with skylights which let plenty of natural light getting inside, was used as a studio and the lower one usually as a bedroom.

However, it is in New York City where loft lifestyle as we intend it was born and spread in the second half of the 20th Century. First artists started to rent abandoned spaces in industrial buildings for cheap, in a period when industries already started to move outside of Lower Manhattan to more convenient locations for logistic and land prices. Those artists started a new way of living: in huge open spaces, displaying materials and features that until then were not associated with residential habits. The space of their lofts was able to combine home and work, public and private, a workshop and a gallery, remarking the difference in the notions of house and home (Nicolin in Vv.Aa., 1990).

The appropriation of these spaces for purposes other than industrial production meant the construction of new significances also for all the objects related to industry and production and the activities previously hosted in those buildings, a domestication of the industrial beauty (Polazzi, 2007). This appropriation of industrial spaces and change of values was possible because the original use was terminated, since "only people who do not know the steam and sweat of a real factory can find industrial space romantic or interesting" (Zukin in Vv.Aa., 1990, p. 21).

The conversions started a conflict between artists and the municipality of New York since all the occupations were illegal. The first measure was taken in 1964: the City Planning Commission rezoned some sections of SoHo allowing only artists to work and live there, officially recognizing the value of art production for the collectivity and the City (Celant in Vv.Aa., 1990 and Sussman, 2017).

After the first colonization by artists, this new way of living began to be fashionable and started soon to attract also nonartists and got the attention of the real estate market which immediately made of the loft a commercial product, thus starting processes of progressive gentrification of the affected areas. The appeal to a broader public was possible thanks mainly to two changes occurred in the Sixties. The first is an opening of the public administration to a limited change in the zoning regulation and the possibility to make legal living in such spaces, with the aforementioned 1964 rezoning. The second one is the emergence of new habits of consumption of the middle class, open to new different and more articulated models of living (Polazzi, 2002). Affluent people, not related to the world of arts, started to be eager to buy or rent industrial spaces to turn into their homes, and contemporarily landlords began to raise rents, which became not affordable for the same artists who benefitted from low prices at first. In 1982 the Loft Law, for protection of loft tenants, was promulgated by the State of New York. In most cases gentrification meant the end of urban manufacture and mixed uses, even contradicting the basic features of the first lofts developments such as the promotion of mixed-use and the benefit of the transformation of abandoned areas. Indeed public funding directed to this last one gets substantially lost in the moment this transformation favours a more affluent part of the population.

Lofts started then to expand in Northern America and western Europe, finding their ideal setting in cities with two characteristics: a certain amount of old industrial abandoned buildings and a lively cultural environment (Zukin, 1982).

The transformation of industrial areas in Milan

In the 1970s of the 20th Century, the profound reorganization of the industry also hit Italy and its leading industrial city, Milan. Relocation of industries in the outskirts of the city or even farther happened simultaneously with the processes of tertiarization and suburbanization leading to a progressive expulsion of functions as housing and industry from more central areas.

Within this economic context, the 1980 City Plan tries to contain tertiarization and to retain industries in the city boundaries, not allowing modifications to the zoning regulation. The impossibility of governing economic and societal dynamics happening at a broader scale with an urban regulation freezing the land uses resulted in the 7 million square meters of abandoned industrial areas (Figure 1) the city of Milan had to deal with in the next years and, to some extent, still now (Mocarelli, 2011).



Figure 1. Abandoned industrial areas (marked in black) in the City of Milan at the beginning of 2000s. DiAP, Politecnico di Milano (Morandi 2001).

When it became clear that it was impossible to retain the industry in the city with the purple spots¹ (Secchi, 1984) the first attempts to direct the transformation of the areas were set up by the city in 1988, starting thus a season of large scale urban projects, known as Plans of Urban Recovery (PRU) and Integrated Intervention Plans (PII).

At the same time, at the end of the 1980s, the word loft started to enter in the common language and to become fashionable, with the first conversions of relatively small industrial buildings in central areas of the city or in the Navigli (the canals of Milan) district by people involved professionally in the world of the fashion industry and design, willing to import the American loft lifestyle.

¹ In Italian urban planning purple has usually been the colour identifying industrial areas. In his famous piece of 1984, Italian architect and urban planner Bernardo Secchi reflects on a change in the situation, stating that is not possible anymore to think to retain industries just fixating those purple spots, *macchie viola* in the original Italian, on paper in the City Plans.

Loftscape of Milan

Every city has a different and peculiar loft landscape, an effective expression I will contract to loftscape, a product of the very characteristics of the land market and built environment of the same city (Podmore, 2002).

In the collective imaginary lofts are located in an industrial heritage context (Janetti in Ufficio Studio Gabetti, 2010). However, this is just the more familiar image of the loft we have. The real situation is much more complicated. The term loft can define two kinds of different products, and we can find these categories both in the real estate market and in everyday use:

- 1) Lofts by regulation. The first type is a loft defined on a regulatory point of view. Although there is not, at least in Italy, any law or even somewhat legal definition of a loft, this category represents the regulatory status of what is typically called loft. Indeed the word loft usually indicates any unit not officially registered as housing but used as such, or for mixed activities. There is then a difference between the official (regulatory) function of the unit, function certified at the cadastre and in the official urban planning documents, and its actual daily use. The most common case is the registration as a C/3, cadastre code for a workshop;
- 2) Lofts by morphology. The second meaning refers instead only to a morphological or typological issue. Often, indeed, a unit officially registered as a house may be defined as a loft due to its architectural characteristics, as its being a nonpartitioned open space, with a free internal layout, or for the presence of huge skylights or windows, and more generally its industrial-like look.

There are then lofts defined as such only by the first or only by the second category and others, most of them, which are included in both. After specifying the possible meanings of the term loft, we can analyze the loftscape of the city of Milan, which is composed of two main categories of conversions of former buildings and units into lofts:

- micro transformation: conversions of single units of modest dimension, mainly former warehouses or workshops part of other buildings, primarily residential, scattered all around the city in the inner courtyards of the old fabric and the 19th-century city;
- large-medium transformations: conversions of entire former industrial buildings or compounds that stopped their monofunctional activity and production and turned into lofts villages.

Microtransformations are very difficult to map and to count, due to their very nature. The phenomenon is vast and widespread all around the city, but no official data are available neither it seems to be possible to map it effectively. Within this category, we find two main products defined as lofts:

1. Standard apartments renovated with loft-like features like being open space or duplex. They are lofts only by morphology, in the real estate market language;

2. Reuse with mixed or mainly residential use, with or without change of use, of shops at the street level, offices, workshops, and garages, mainly in the inner courtyards of the buildings, attic spaces and also basements. All of these conversions present peculiar architectural features which make them lofts by morphology. If a change of land use did not occur, then they are lofts also by regulation.

Medium-large transformations are the ones we will deal with now on in this writing and could be subdivided into three categories:

3. Reuse of buildings and areas on a gradual and progressive basis through actions of subtraction, addition, and modification of the existing (lofts by regulation and by morphology);
4. Demolition of the old industrial buildings and new construction of residential buildings recalling the industrial morphology of the previous ones or, if that was not significant, inventing a new industrial-like look (lofts by morphology);
5. Demolition of the old industrial buildings and new construction of buildings completely different by morphology that could be registered as commercial units without any change of land use (lofts by regulation) or as residential units after a change of land use but with architectural characteristics of lofts as mezzanines and big windows. (lofts by morphology).

As we can see, loft is a word that can define multiple situations, from a living, legal, morphological, or typological point of view. It is a word as flexible as the product it describes. What it becomes clear is also the normalization of the loft product (Multiplicity Lab, 2007), which became another among various real estate market proposals.

Lofts compounds in Milan are many and compose quite a heterogeneous loftscape. Medium-large transformations amount to 86 areas varying in the number of units between 5 and 500 and in surface area between 1.100 and 85.000 square meters for a total of approximately 700.000 square meters. Most of them, and this is a distinctive trait of Milanese loftscape compared for instance to the New York one, develops mainly horizontally rather than vertically. Ackermann (1991) subdivides industrial buildings into two types: multiple floors and big sheds. The first includes, as the same name says, buildings characterized by a vertical subdivision into multiple floors. They are very common in Manhattan, where industries did not have space to expand horizontally, and early technological developments allowed for vertical growth. These buildings are readily convertible into "common" city residential or commercial buildings, with one or more dwelling for each floor. The conversion is usually a matter of internal redistribution and the creation of spaces. The second ones instead, taking their name from the typical industrial roofs, develops horizontally, reaching a limited height, generally of just one floor (considering that the height of a floor for industrial use is significant, often exceeding ten meters). These kinds of industrial facilities, when converted to other uses resemble more a village than a building. A little town within the city, with row units, internal open-air streets, the outcome of a process of subtraction, cut and addition of volumes.

Furthermore, as we can see in Figure 2 another unique characteristic of the Milanese loftscape is that most of the most significant converted areas are not in very central locations but peripheral areas of the city. Milan is quite compact as a city and distances are not so huge. The adjective peripheral here

defines what is outside the very city center, recognizable as the Zone 1, delimited by the circle of the former Spanish Walls. Industrial areas developed outside the historical center and when conversions started these locations were not central and not regarded as fashionable. One for all, the Navigli area of via Tortona, which also due to the loft conversions is nowadays an active and vibrant part of the city, devoted to the industry of fashion and design. In any case, the centrality of location does not seem to count as a plus for the appeal of conversions in Milan, which instead involved half peripheral and even very peripheral locations, not so well linked by public transit with the center of the city. The loftscape of Milan is indeed characterized by significant peripheral developments. The limited size of the city should be, of course, taken into account when making these considerations.

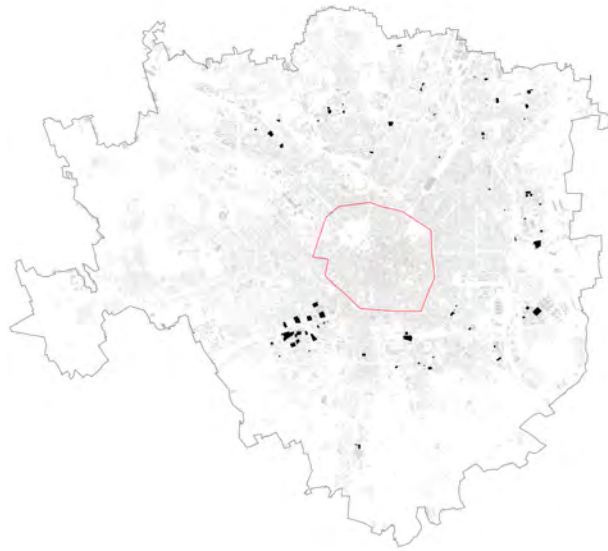


Figure 2. Lofts compounds (marked in black) in the City of Milan in 2018, with city center in red perimeter. Elaboration of the author.

The creative environment, instead, did play a major role in importing the loft-living style and spread the loft culture around the city. The very beginning of the phenomenon, as mentioned before, started in the Navigli area thanks to a few pioneers linked to the world of fashion. With the expansion in the last decades of the reputation of Milan as a world fashion and design capital, these two sectors kept gaining importance in the economy of the city. Some of the districts renowned for the heavy presence of creative industry-related activities are also the ones with a massive presence of lofts: such as the aforementioned Navigli, or Lambrate or Mecenate.

Tucidide 56

The loft complex Tucidide56 (via Tucidide 56 the address of the building complex) stands where once was the productive site of Richard-Ginori, famous pottery producer where the renowned architect Giò Ponti used to work as art director. It is located in the eastern outskirts of the city, beyond the railway belt, in an area where the urban fabric remained quite compact and still the separation between the city and the agricultural land is perceivable.

Tucidide56 is the second biggest loft development per surface with 57.000 square meters and the one with most units, over 500, a proper urban village, with streets (Figure 3), common spaces and services. The factory, built during the first decades of the 20th Century, was characterized by some art-deco architectural elements and ornaments.



Figure 3. A street inside Tucidide56 area, result of the operation of subtraction and cut of a former warehouse.

The compound is very peculiar due to its size but also for the composition of the property of the area. The development started in the early 2000s as a sale operation. The units were sold to privates by the new landlord of the whole area, who bought it from a prominent and controversial real estate company. The landlord was in charge of the facades and the common spaces while the interiors were delivered not finished so that buyers could personalize them. Year after year a certain number of units was put on the market until the economic crisis of the second half of the 2000s. With the crisis, the redevelopment operation changed from sales to rent, which became more profitable at that time. The landlord and developer became then also the manager of the complex, building, renting, and managing the newly constructed units.

Lofts for rent are very different from lofts for sale (Hemnett and Whitelegg, 2007). The lofts made for the specific purpose of being rented are oriented toward ultimately another market than the ones for sale. They can be smaller, and the quality of the finish can be rougher and cheaper, with no personalization from the developer, which aims to extract the maximum rent at the minimum cost. This issue also reflects on more mediocre environmental performances of the buildings.

Nowadays in the area, there are over 550 units, of which around 200 properties of private citizens and the rest property of the developing company that rents them. Land use was changed in most of the privately owned lofts, mainly used as family homes. Some of them have been put on the temporary rent market. They usually are quite spacious and with outer spaces, gardens or terraces, with double heights and all the features that characterize lofts in the common imaginary.

The units for rent are over 350, and still growing in number as long there are other old hangars to be transformed. The average surface is of 76 square meters, far from what is the typical image of a huge loft space and a lot of them are even mini-lofts of 30 square meters. All of them are listed in the building registry as commercial units, but they host a permanent population of an average of 1,2 persons per unit.

The 55% of the lofts are used only as housing, 30% as house-studio and 15% for office or deposit. The population is evenly divided between males and females, 60% of the inhabitants are singles, and 20% are foreigners. The 82% of the holders of the rental contract own a VAT number, which makes them autonomous workers or entrepreneurs. The 28% of the occupants work in creative professions,

intending as such jobs in visual production, communication, design, show-business as photographers, designers, architects, musicians, dancers, artists of many kinds, and so on.

The peculiar and heterogeneous mix of inhabitants and activities gave life to a lively environment. Of course there are condo-living like issues and problems, but there is also a community spirit, with social events, a dedicated social media page, and it fosters continuous contacts among different people involved in the world of arts or small manufacture, giving the opportunity for easily starting collaborations.

Lofts as a place of conflict

As we saw, illegality played a major role in the history of lofts. The whole story began thanks to a few rule breakers willing to pay the price of relative discomfort for having other advantages, as cheaper rents for bigger spaces in central locations on the island of Manhattan. When they became too many to be ignored, public administration had to intervene, some way even endorsing them, recognizing their role and the importance of art production in the economy of the City (Sussman, 2017). The biggest change lofts brought along was about land use. They forced the city of New York to revise the zoning regulation; they brought back a way of living that was typical of cities in the past (living and working spaces together, mixed). Separation of functions and zoning, heavily promoted by the Modern Movement, had their right reasons in hygiene: due to the very unhealthy conditions of cities back then a strict separation of functions was a necessary and effective way to avoid or diminish sanitary risks.

Lofts are the place of multiple conflicts. The word conflict, recalling the Latin etymology and use, which acceptance is both collision and encounter, divergence and medley. Conflicts both at an architectural and at an urban scale, regarding little things of the daily life of inhabitants and concerning crucial issues related to the functioning of the city, urban planning, regulation, and taxation. There is a conflict between their legal situation which is different from the actual daily use; a gap between what is *de jure* and what is *de facto*. The conflict between living and working, and among various kinds of activities one next to the other. The conflict between public and private, mixed in the same space, inside each unit, and inside the whole compound, canceling any form of zoning.

Furthermore, local and national regulations on urban planning and taxation produce different types of conflict in each different city. Again, loftscape is different from one city to another, not only according to the local cultural environment and economy but also to local regulations.

In Milan, but what follows could be generalized in the case of Italy, for instance, building lofts has been a way to avoid and bypass a series of prohibitions and limitations, introducing residential functions where it was not allowed. This is possible thanks to the grey areas of the law, especially about the place of residence a person is allowed to declare. It is possible indeed to declare the place of residence in a non-residential unit, as long as this is suitable for a living. Suitability consists in having a furnished kitchen, bathroom, and bedroom, the basic requirements controlled by the inspector, who does not check the land use or cadastre registration code of the unit, but only the fact that the applicant is living there. This situation engenders two main issues.

The first one is about the relation with the city. Many people live and are allowed to live and use the public services of the surroundings, services for which they or the developer never paid and contributed to build or create if any change of land use was done. In this way, lofts' inhabitants use city public services in a parasitic way (Pareglio and Vitillo 2013). Furthermore in this way the developer achieved to accumulate most of the urban rent, more than it would have been able to if he paid a land use change, leaving the public administration to more costs to sustain and less income.

Then there is also a second issue related to taxation. People living and using commercial units as housing are subjected to commercial taxation and pay for commercial utilities, but they can put this costs into the VAT subject that officially use the unit, which in this way result as an asset useful for the business of the VAT subject, being thus deductible from taxes. In this way, although there is not real tax evasion, a sort of tax avoidance occurs, and an implicit pact is established between developers and users, both gaining and taking advantage of this blurry situation.

However, on the other side, lofts compounds brought quite an innovation in the city. They responded to a demand which was not met by traditional forms of living providing new typologies and managed to create art-professionals friendly environments. Indeed they got much appreciation in the real estate market. The most diverse activities live one next to the other. There is the web designer with the bedroom on the mezzanine and the studio/living room downstairs, on the ground floor. The neighbor is a young couple of professional, only sleeping there while working in the center of the city. Next to them an artisanal pastamakers laboratory. On the second floor instead, there is a group of four university students, a small independent recording firm and a musician. Structural flexibility of the modules allows for merging and splitting the units according to the needs (Figure 5).

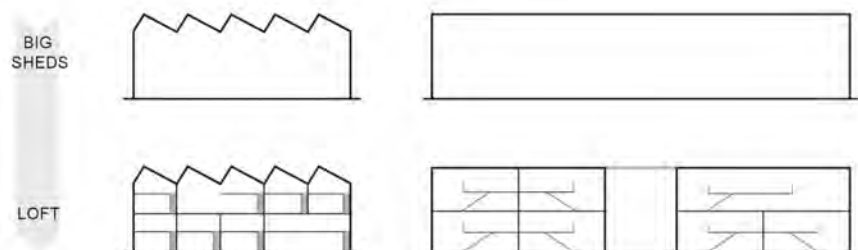


Figure 4. Scheme of a big shed industrial building transformation into lofts

They have been innovative also for construction management. The old buildings, especially of course in extended areas, have been transformed gradually, but in the meanwhile, they have been started to be inhabited. People were living there already during the construction, basically in a worksite. A flexible schedule of construction allows minimizig the risks connected to sale or rent market and prevent a failure of the operation.

Additionally, in many cases, they preserved the minor industrial heritage that would have been otherwise lost. In this case, preservation was not regulated by any law or institutional body since buildings were not officially protected and may have been torn down as well, but the general industrial look and their feature were an integral part of the product that was going to be sold, representing its main competitive advantage. Preservation then coexists with the needs of real estate development, with some interesting outcomes.

The paradox of lofts is more evident when looking at lofts compounds next to PRU or PII areas (Figure 6). The first ones, despite standing on, or beyond, the border between legal and illegal, created a vibrant and vital urban context, in the form of urban villages, recovering abandoned buildings and allowing for some innovation in the way of living and working of people, responding to existing needs otherwise unheard.



Figure 5. Aerial view of Distillerie lofts compound and PRU Pompeo Leoni. Elaboration of the author on Google Maps image.

On the other hand, PRU and PII are often made of speculative buildings, and although they officially comply with regulations they did not provide any innovation and in many cases, they also did not provide either for enough public services, or for quality space or even mixed functions (Doni, 2008). Opposed to loft compounds, the failure risk was higher in this kind of developments, and traces of this issue are still unsolved in the city, for instance in the Porta Vittoria development.

City as loft?

The loft, or better, the concept it embodies, may be seen as a symbol of flexibility, until the point of imagining it as a primary architectural and urban planning tool for the entire city (Baum and Christiansee 2013). Lofts indeed anticipated many issues we are facing in the last years, and they managed to be a successful market product thanks to their overall flexibility of uses and layouts, matching with the need of a changing and more flexible society.

Zoning is being progressively abandoned, and land use change is becoming easier. Are we going toward a city where every function may be put everywhere, and all of them can coexist in a very limited or nearby space, as already happening in lofts? Is this the end of land use regulation? Is this a way to foster a possible return of manufacture to the city centers? From these points of view reflecting on lofts make us think about the future of the city more in general.

Yet there are some issues to be considered. One is about how landlords and developers will get away with capturing all the urban rent in case of a total liberalization of land use change. The other is about taxation, to be solved at State level, on the different levels of taxation according to the use. Another issue is about the quality of the land remediation that nowadays can be made different according to the planned land use.

Lofts may be considered as the first outposts of a contemporary way of living and making our cities, but they are still an issue to deal with. Near past and current policies have gradually reduced zoning

and liberalized land use changes, going toward an acceptance of the loft model. In other cases, such in New York City, a specific body, the Loft Board, has been created to deal with the topic but also in this case it seems like laws and regulations just come ex-post to regulate what already exists and has already been done.

Methodology

The content of this paper is based on an extensive literature review of the loft phenomenon on international sources cited in the references. The Italian part of the literature is mainly about the conversion of the industrial areas in Milan, where a few paragraphs about lofts can be found. A GIS database of the loftscape of Milan has been developed with data coming from several different sources. First of all from personal knowledge of loft compounds, afterward through a real estate websites survey for rent and sale of lofts, allowing to discover other converted areas. Further additions of areas came through the comparison of maps identifying former industrial areas with actual Google Earth tools, to see what kind of transformation occurred in these areas. Eventually, all the recognized areas have been checked through the Agenzia delle Entrate website (State Revenue Agency) in order to find out the number of single units declared to exist in the area and their category of registration at the cadastre, whether productive or residential or others. This operation allowed to find out if areas are composed of lofts by law or lofts by morphology. A final check through on-site surveys when possible or at least a google street-view analysis has been made for all the areas.

The work here presented achieves to map in detail the loftscape of Milan for the first time, although of course there is the possibility of some developments missing and it should be constantly updated in the future. The database set up provides a sound base of knowledge for any further consideration and thought on the topic.

In regard of the compound Tucidide56 the analysis is partly qualitative, coming from direct observation of the place over a long period and hugely quantitative with data coming from a census I conducted in the area on behalf of the landlord.

Conclusions

In this paper, the topic of conversion of former industrial areas into lofts in the city of Milan has been presented and developed. The topic has been contextualized into the more general phenomenon of conversions, giving a historical background going back to the very beginning of the phenomenon in New York City in the 1960s and then to the industrial transformation of Milan.

Within the frame of the transformation of the industrial areas of Milan, a process already much studied, lofts conversions always found a very little space in the debate, although this paper shows that it is not at all a marginal phenomenon and it deserves at least the same attention that has been given to in other cities.

After a better definition and description of the loftscape of Milan in all its variations, I proceeded with mapping and quantifying the phenomenon of lofts compounds in the city, showing how widespread and diverse it is.

The general description of the phenomenon in Milan is followed by a presentation of a case study of one of the largest converted areas, Tucidide56. The case of Tucidide56 allowed for a better

understanding and explaining of peculiar dynamics occurring in this kind of developments and the problems and opportunities arising from them, which are discussed in the following chapter about conflicts and tensions. In this chapter, lofts and especially lofts compounds are presented as a place of conflict, intending this word both as divergence and encounter. The problems and issues arising in lofts compounds are discussed. Also, the benefits, mainly about the innovations in living and working that this model engendered, are considered. Lofts are a possible useful urban and architectural design tool for the city that changes, thanks to their overall flexibility. In any case, they are a good cause for reflection about the contemporary meaning of land use and the organization of space on the architectural and urban scale.

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Design experimentation in a context of cultural division: the case of Ahmedabad

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Abstract: The essay “Design experimentation in a context of cultural division” aims at investigating the context of social segregation visible in the city of Ahmedabad (capital of Gujarat, India), caused by the violent strife between Muslim and Hindu communities culminated in the riots of 2002. Social segregation within a city requires a reflection on possible places where design solutions could help in creating meeting spaces. The article tries to understand the reasons for these social frictions, wondering whether urban space has changed as a result of these tensions by answering the need for privacy of the two communities. After studying three areas in different border conditions between Muslims and Hindus, the study identifies in the ‘disputed areas’ places suitable to investigate social and architectural strategies. The work suggests a strategic solution with the aim to transform the contact points from barriers to spaces of relationship between the two communities. Starting from the fragile relationships and issues in the areas of intervention, this project firstly tries to meet the basic needs of the population with an infrastructural proposal. In a second communitarian layer, it suggests to foster the exchange of craft traditions through the construction of meeting spaces such as workshops and cultural centers.

Keywords: religious conflict, disputed borders, meeting spaces

The cultural background: Ahmedabad and the reasons for a disputed territory.

The concept of *border*, as well as the processes and issues related to the political and social divisions of cities, represents an increasingly central theme in the contemporary debate. We live in places that change rapidly, mutate in the form of urban fabric and in the uses that the inhabitants make of public spaces (Zanini, 1997). In particular, some developing country show how processes and forms of integration between different cultures and traditions undermine the paradigms of urban space. The story tells of many *divided cities* (disputed) in which the separation has assumed an emblematic role in the lives of the inhabitants and in the forms of construction (or destruction) of the urban contexts (Calame, Charlesworth, 2012). This text is about a city, Ahmedabad, located in the heart of India, in the state of Gujarat, and latent tensions (Cerruti, et al, 2017), which marked its identity and urban tissue. Faces, at the same time, a decisive question for the urban project: How architecture can intervene in disputed places, in areas marked by tensions linked to religious beliefs and to the different established ethnicities and traditions that often collide?

The journey to discover the Indian Territory and, in particular the context of Ahmedabad, commenced at CEPT University¹; thanks to some exchanges between teachers and students over the last few years, research and project exercises have been carried out to reflect on the conditions of these places and on the answers that architecture can and must provide.

The critical reflection on the nature of the border in the heart of the traditional city of Ahmedabad was born downstream of a research conducted by the author² on the opposition and tensions generated by the coexistence of Hindu and Muslim communities in the city. A complex coexistence, marked by violent riots and tensions, is still readable today in the construction process and in the architectural language of the city (Naipaul, 1978). In particular, the objective of the research is to seize the link between the uses of the urban space and the architectural expressions connected to it. It is an innovative look that no longer puts the conflict in the center of the architecture project but defines and proposes places of sharing, such as flexible pavilions and cultural spaces, devoted to welcome and foster cultural, social and human integration of the involved communities. The innovative challenge of this work focuses on two fundamental aspects: on one side, the profound knowledge of the Indian context, through a precise detection of the reasons that have fueled the conflict and the clash over the years; on the other side, the possibility of using the architectural project as an operative *site-specific* intervention tool. Through punctual projects and flexible organization are proposed fluid spaces, able to adapt to the needs of different cults, traditions and customs. The designed pavilions constitute *simple* spatial devices, from the point of view of materials and involved architectonic forms, but strategically *complex* because they are hosting specific activities, mixing Hindu and Muslim traditions to construct spaces where to rebuilt community relations. The described scenario can be considered an emblematic case study for the definition of a methodology of intervention “sensitive to the territory”, in particular in developing countries, marked by rapid social and urban changes, where the space, abandoning the common rules of the project, is transformed in a flexible design tool, capable to adapt its form to different wishes and able to respect the cyclicity of the time and uses.

Ahmedabad: A politically emblematic city

The city of Ahmedabad appears emblematic for the cyclical tensions that have been generated by the opposition of the Muslim and Hindu communities. From its origins this capital attracted communities of different backgrounds, fascinated by the commercial importance of Ahmedabad within important merchant routes. The possible tensions, which could arise from the contrasts of different cultures, were mitigated by a flexible administrative structure that ensured the individual communities of traders and craftsmen to define their own internal rules, having to respect a few collective norms (Doshi, 2003). The governmental structure of Ahmedabad delineated on an urban scale a federal system within which the different cultures could take part.³

The economic and cultural blossoming of the city coincided with the Mughal Dominion (1573-1758), which went into crisis due to a series of famines and attacks, flowing into the Marathas domain,

¹The context of Ahmedabad is particularly prolific for urban studies because of the location of the CEPT School of Architecture founded in 1962 by B. V. Doshi (graduated Pritzker Prize 2018), center of Excellence in teaching and training of architects and urban planners.

² The present contribution originates from the research work carried out by the author in the master thesis entitled: "Sewing Ahmedabad's Wounds: Design experimentation in a Context of cultural Division", Supervisor: Prof. Giulia Setti (Politecnico di Milano), Co-Supervisor: Prof. Sachin Soni (CEPT University). The thesis discussed in July 2018 describes and interprets the religious and political divisions present in the context of Ahmedabad, both through a historical reconstruction of the main events that have marked its identity, and through a project experimentation that will be summarized below.

³ This administrative system was defined only during the Moghul domain, in which Ahmedabad reached its maximum splendor. It was only during this period that the Hindu community was able to enter the city, gaining an important role at the commercial level.

opening up to an uncertain period characterized by continual looting and crises ⁴ (Yagnik, Sheth, 2011). From 1817, under British rule, Ahmedabad developed a thriving industrial production focused on cotton processing. If in major centres, such as Delhi and Mumbai, this economy was promoted by the British rule, in Ahmedabad the industry was born by investments of wealthy local Indian families, highlighting the independence of individual communities from the central power⁵ (Tripathi, Mehta, 1978).

The independence from the English domain, that enjoyed the entrepreneurs, defined a fertile ground for the first independence movements. Gandhi, who arrived in Ahmedabad in 1915, tried to unify the Indian population against colonial rule, putting in direct relationship entrepreneurial families and working families. The first steps of the nationalist movement focused on some policies aimed at improving the housing and educational conditions of workers' families (Bremar, Shah, 2004).

These initiatives proved successful even after the independence of 1947. The bloody conflicts, following the formation of Pakistan, had much more content outcomes in Ahmedabad, thanks to policies in favor of lower classes mitigating tensions. In the years following independence, the Nehru government focused its policies on the industrialization of the country with the aim to create a modern nation free from the caste divisions of the society (Torri, 2007). With the death of Nehru (1964), many of the secular and socialist ideals of the Congress came into crisis by reaffirming the political role of religious divisions, which were further highlighted by the failure of the government's social policies⁶. The lack of funds for the new non-specialised working masses and the failure of the industries led to the flowing of the majority of workers into the informal market. The breakup of social policies and the rise in unemployment also led to the complete breakdown of the integration processes presented up to that time. Social policies, in fact, ensured a systematic entry into the world of work, allowing a gradual transition from the communitarian original condition to the identification in their working class (Bremar, 2002). In the informal economy, the original community became the only social factor guaranteeing the possibility of employment and, therefore, of livelihood (Weiner, 1978). The socio-economic context led to the decline of secular Nehru's thought, opening up to Hindu nationalism. The Muslim community became the scapegoat, believed to be guilty of the economic and social crisis. This led to the facing of Muslim and Hindu communities in the riots of 1969, 1985, 1992 and, in the most bloody of 2002 (Spodek, 2011).

During these conflicts in Ahmedabad there was a complete crystallization of the social panorama that saw the gradual disappearance of areas in which there was a strong cultural mix, growing up more and more monocultural quarters. If Ahmedabad, in the years following independence, had an urban fabric divided into macro-areas in which resided social classes with different beliefs, following the conclusion of the conflicts, the city was divided sharply into two parts: on one side, the Muslim city consists of four small ghetto towns (Juhapura, Shah Alam, Ramol and Vatva), on the other a large portion of urban fabric is inhabited with a Hindu majority (Mahadevia, Desai, Vyas, 2014).

Types of border in the urban fabric of Ahmedabad

The research carried out in this fragmented and conflictual context focused on the nature of urban forms, to understand whether they reflected the condition of "divided identity" like the ones of Ahmedabad.

In the urban tissue of Ahmedabad, three border areas between Muslim and Hindu communities were chosen to represent emblematic conditions that were different and capable of constituting useful

⁴The passage from the Moghul domain to that Marathas coincided with the transformation of the urban planning. If up to the Moghul domain the Ahmedabad plant was planned according to large radial axes that allowed a rational expansion of the city, during Marathas domination the urban structure underwent an informal drift, leading to an unregulated thickening of the fortified nucleus.

⁵ The Division of labor in the industries followed the social structure, where the different tasks were organized according to the caste of provenance; in addition, the organisation of work did not follow Western taylorization but defined non-competitive rules encouraging individual industries to cooperate.

⁶The return to community ideals was due to the many failures of policies promoted by the Nehru government, such as the failure to eliminate illiteracy or the failure in the redistribution of agricultural and industrial wealth, still in the hands of noble families who were part of the conservative fringe of Congress.

samples to investigate the structure of the conflict along the border. It should be pointed out that the border is not always determined in a physical way, but it often appears more like a mental construction of the inhabitants. These points of passage mark a state of danger that leads inhabitants to avoid boundaries, abandoning these spaces. It is important to understand the nature of the boundary and its identity, based not only on the physical structure of these remarkable points, but also on the use that the inhabitants make of these places and their social composition (Jaffrelot, Gayer, 2012). The three areas chosen for the design experimentation are represented by different characters: one is placed within the new expansion areas on the west of Ahmedabad, a second within the industrial areas and a third within the historical walled nucleus (the so-called Old City).



Figure. 1 Shrinand Nagar Road: A contested border in the areas of new urban sprawl, Ahmedabad. Image by Giovanni Gualdrini.

Among the newly expanding areas, Shrinand Nagar Road was chosen, a road along which there is a clear passage from the Muslim ghetto, the district of Juhapura, to a district – Vejalpur – with predominant Hindu dominance. Juhapura accommodates about 240,000 Muslims, representing about three quarters of the total population of Islamic origin of Ahmedabad⁷. Because of this social conformation this neighborhood has grown as an autonomous city itself (Desai, 2008). The boundaries of these two quarters clearly show a stark division not only by a religious point of view but, above all, present a different economic status of the inhabitants.

These conditions appear clearly in the different residential typologies, in fact, the area with a richer Hindu majority, has high walls of enclosure to protect the gated communities, whilst the Muslim quarter has a more informal structure and recovers traditional forms by placing commercial activities on the front to safeguard the residential areas behind them. (Figure. 1)

The second focus is on the industrial area east to the railway line that has been the scene of the bloodiest riots between the two communities, as inhabited by a heterogeneous working population who has been severely affected by the failure of the cotton mills (Das, Agarwal, Joshi, 2003). This area was chosen to study a neighborhood between Saragpur Bridge and Anil Sarch Road presenting a *Hindu enclave* within a Muslim quarter. The Hindu community strongly shows the need to protect itself from the other through a high enclosure wall and relates to the rest of the city through a single entrance. In correspondence to the main entrance, and along the road axis, there are mainly butcher's shops and commercial activities belonging to the Muslim community. The Hindu community, which traditionally does not consume meat, avoids going along this path preferring alternative routes. (Figure. 2)

⁷ The total population of Ahmedabad is around 7 million inhabitants. (Office of the Registrar General & Census Commissioner, India, Census 2011)



Figure. 2 Saragpur Bridge and Anil Sarch Road: A boundary in industrial areas, Ahmedabad. Image by Giovanni Gualdrini.

The historical nucleus of Ahmedabad: a sedimented system of cultural cohesion

It seemed fundamental, to understand the reasons of separation and conflict, to start from the heart of the Old City of Ahmedabad, specifically from the study of a road axis, Dariyapur Rd, in the fortified historical nucleus. Here in addition to the characters described in the previous two cases, the transition point between the two communities is controlled by a police station. The district of Dariyapur was chosen as the key place of the research and design experimentation because, since the times of independence, it was one of the areas mostly affected by the riots, housing Hindu and Muslim communities both employed in cotton Mills (Varshney, 2002). (Figure 3)

In addition to these aspects, Ahmedabad's historical nucleus, unlike the other areas of the city, is emblematic as it encompasses urban forms and settlement strategies that are useful for two different communities to coexist. The high density⁸ and heterogeneous population have led to the definition of a complex settlement organization that can show different urban layouts taken in more recent urban extensions.

The original structure of the walled nucleus of the city was organized according to a radial road system useful for the gradual settlement of new communities.

The structure of the urban tissue followed a clear hierarchical order passing from wide streets to increasingly narrow roads, where there were placed separate activities. This simple criterion has been instrumental in setting up a heterogeneous population.

From market areas there was access to residential areas showing a gradual transition between public spaces and private areas. Looking at the distribution of the commercial and religious activities of the two communities within the district of Dariyapur, it is possible to catch a clear separation of the two groups and different modalities of aggregation of the corresponding public spaces. If the collective areas in the Muslim quarter orbit around the mosque, the Hindu communities, differently, clearly divide the intercommunity meeting places (the markets) from those belonging to the individual communities. Unlike the mosque, the Hindu temple is closely linked to the inhabitants of the single *enclave* (Jain, 1975), not constituting an institutional collective center⁹.

⁸ Within the historical nucleus one reaches a population density of 800 inhabitants per square hectare. (Ministry of Foreign Affairs. Ministry of Urban Development and Indian French Embassy, 2001)

⁹ Inside, the mosque hosts more complex functions, such as Koranic schools, and plays an important role at the urban scale.



Fig. 3 The Dariyapur Road police station: a controlled border, Ahmedabad. Image by Giovanni Gualdrini.

On the contrary, the main mosque stands in the middle of the Muslim ward at the intersection of the road axes. The *enclaves* of the individual Muslim communities, unlike the Hindu settlements, do not have a mosque inside and are distributed along the axes without defining a clear distinction between residential and commercial areas¹⁰.

Analyzing the individual neighborhoods (Hindu and Muslim) it is visible how the places of worship are able to build the urban form of the settlement. (Figure 4)

Studying the structure of the road network there is a different organization of the two neighborhoods: the wards with a Hindu dominance usually have the main route placed along the perimeter of the settlement, while, on the contrary, areas with Muslim majority gravitate around a center connected with radial axes to the outer perimeter. This organization is further underlined by the different positioning of the commercial areas. If the perimeter of Hindu settlements was further marked by the presence of commercial activities, differently Muslim quarters have shops in the central area and near the entrances. Hindu settlements then concentrate the public activities along the perimeter protecting within the *enclaves* the single communities (Raman, 2012).

The visible differences in the Muslim and Hindu quarters are motivated by the historical-political development of the city. Muslim wards originally formed a self-standing area belonging to prominent personalities of which the sultan was surrounded. These areas, called *Puras*, constituted independent settlements, presenting an orthogonal urban organization according to two central axes, at which intersection were placed institutional buildings as mosques and noble palaces. The Hindu community settled, within the walled nucleus of Ahmedabad, only during the Mughal domination. Because of the constant tensions with the Islamic community (Theodore, 1866), Hindu neighborhoods were structured according to more introvert systems trying to protect the residential areas.

Enclaves belonging to individual communities, called *Pol* in *Gujarati*, constitute the basic element of the urban structure. The organization of these residential units appears common in both the Muslim and Hindu communities showing the same joints. The *Pol* has a dense perimeter defined by blind facades or commercial activities. Within it, the road network follows a hierarchical order by gradually giving access to more intimate places. Through a sequence of interior spaces to the pole, it is possible to access the temple and the common square, called *Chowk*, around which the community life orbits.

¹⁰ The different locations of commercial establishments within the neighbourhood can be justified by the activities traditionally linked to the different communities; the Muslim ones were specialised in handicraft activities, which allowed a mixed use of the neighborhood where the shop was often associated with the dwelling. On the contrary, the Hindu communities were specialized in the sale and for this reason they preferred a clearest separation between store and dwelling.

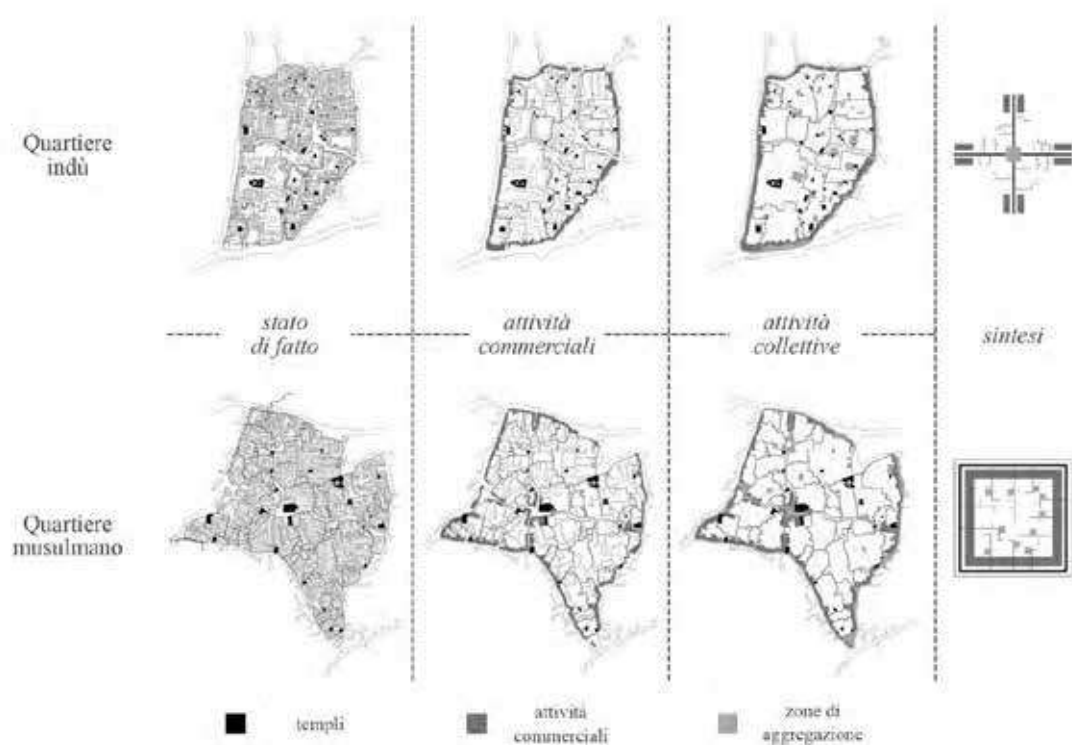


Figure. 4 differences in the structure of the Muslim and Hindu quarters. Image by Giovanni Gualdrini.

The structure of the border: the example of Dariyapur Road

Observing the crossing point present on *Dariyapur Road*, the activities are repeated on both road fronts; the points for *rickshaw's* drivers are at a short distance on both sides of the border and drivers follow specific routes to avoid crossing areas belonging to the other religious community.

An interesting feature in the border of *Dariyapur Road* is the specialization of the two communities in separate activities. In Ahmedabad, as in other Indian contexts, it is common to find ways in which same goods are produced and sold. This condition shows the specialization of the communities in the same profession (Davis, 2006). The Hindu community of *Dariyapur* owns most of the shops and laboratories specializing in the sale and production of drums such as *Dhol* and *Tabla*, percussion instruments used in both Muslim and Hindu religious processions. On the other hand in the Muslim ward there is a strong specialization in weaving and sewing of fabrics and clothes. Until 90s, *Daryapur* constituted an important production center for *Khol* and *Chindi*. These fabrics, produced from the waste of cotton mills, represented a cheap product, also accessible by poor classes.

The present specialization allows to define a channel within which the two communities manage to interact. In fact, the Community division of labour allows Hindu groups to frequent the Muslim quarter to buy colorful fabrics and prints, crafts in which the Islamic communities are specialized. In turn, the Muslim communities go to the Hindu quarters to buy drums to be used during the religious anniversaries (Jain, 2011).

In addition to these relationships of pure commercial interdependence, the growing process of urbanization that the Indian metropolises are experiencing contributes to the creation of new places in which communities of different origins and religions interact. Public transport stops and some infrastructures, such as drinking water delivery points, become a meeting point for communities, constituting fundamental urban nodes (Krishna, et al 2014).

Experimental strategies in Cultural division contexts: A flexible approach

The design in disputed areas underlines a basic question: what design tools can operate in a context of such strong social segregation as that represented in Indian society? The different types of relationships in the area under study have been chosen as key elements on which to define a possible project strategy capable to lead to the integration between the two communities.

Five areas located at different points along the border have been identified along the *Dariyapur* Road. In the Muslim area, east of the police station, which defines its margin, lies the Islamic elementary School of *Daryapur* characterized by a large void and a courtyard now used as a playground. The other four areas consist in residual spaces, urban vacuums, of small dimensions, mainly occupied by buildings in a state of ruin. Thanks to the presence of these empty spaces, which are inserted on both sides of the boundary, the project proposes a unitary system, able to establish reciprocal relations between these places through the presence of activities of support to the school and the population of the two communities.

The project promotes and studies the possibility to define places of encounter and sharing capable of intercepting collective interests, favoring the creation of a dialogue and integration process. The research proposes an approach defined in different strategic levels with the aim to define a sequence of relation spaces similar to those observed and described in Ahmedabad. The design strategy work on different layers like an infrastructural level and another more connected with the local community activities. This last one, in turn, is divided in different temporal phases to better interact with the different users of the place. (Figure 5)

From an infrastructural point of view, the project develops a system able to offer essential water resources for the daily life of the two communities. With the aim of responding to the arid climate and the difficulty to access public drinkable water¹¹, the five pavilions include the function to filter and make the rain water drinkable¹². The project ideally recovers the traditional place of the *Puyau* 'Water hall'¹³ (*parab* in Gujarati), imagining a system that makes drinkable water usable in the two pavilions adjacent to the border in order to define a new collective centrality.

On the basis of the commercial and functional relationships, caused by the division of work by the caste of belonging, the pavilions welcome open craft laboratories in which they will be taught and promoted activities typical of both Islamic and Hindus community, defining new cultural exchange points.

The design scenario foresees that the new introduced facilities interact with the elementary School of *Daryapur*, offering laboratorial spaces linked to the context and to the different needs of the children. In particular, in the Muslim ward, the proposed pavilion hosts a workshop for music activities, while in the Hindu dominance area are located dyeing laboratories and fabrics weaving. Inside the pavilion, which stands as the terminal of the system in the Hindu ward, is designed a Theatre as main space of relation for the communities. The proposed theatrical activity wants to resume the idea behind the places created in the industrial quarters during the Gandhian independence riots, which sought to unify the entire working population without distinction of creed or caste.

(Self Employed Woman Association)¹⁴ which played an essential role in offering professional alternatives based on crafts to workers affected by the crisis of industrial production (Bhatt, 2006).

The program foreseen in the project combines different activities adapting to the needs of the inhabitants that are changing during the day: the school laboratories, linked to the handicraft, are

¹¹Only 30% of the population has direct access, from home, to sources of drinking water, while the rest of the inhabitants often have to cover, on foot, distances higher than the kilometer for the water supply (Office of the Registrar General & Census Commissioner, India, Census 2011).

¹² The infrastructural character of the pavilions is evident in the recycling of meteoric waters. This system was taken over by the project of the Mass Design Group for the Gheskio Coleric Centre (<https://massdesigngroup.org/work/design/gheskio-cholera-treatment-center>).

¹³ The ' *Puyau* water hall ', *parab* in Gujarati, were sources of drinking water built by traders to offer refreshment to travellers. The same fountains had an important value in the city and were built in memory of the ancestors of the family.

¹⁴ One of the few associations that tried to define common lines between the different communities was the Self Employed Association Women Association (SEWA). This group formed by the detachment of some members from the Textile Labour Association (TLA), focused its efforts on improving women's working conditions.

The SEWA brought together communities of different religions and castes, such as the Muslim and Hindu, trying to provide tools to the different communities to be more palatable in the world of work. These initiatives indirectly created the pretext for bringing about inter-community relations.

transformed into places of vocational training, while the pavilions, like the Theatre and the musical one, become studio classrooms and neighborhood libraries.

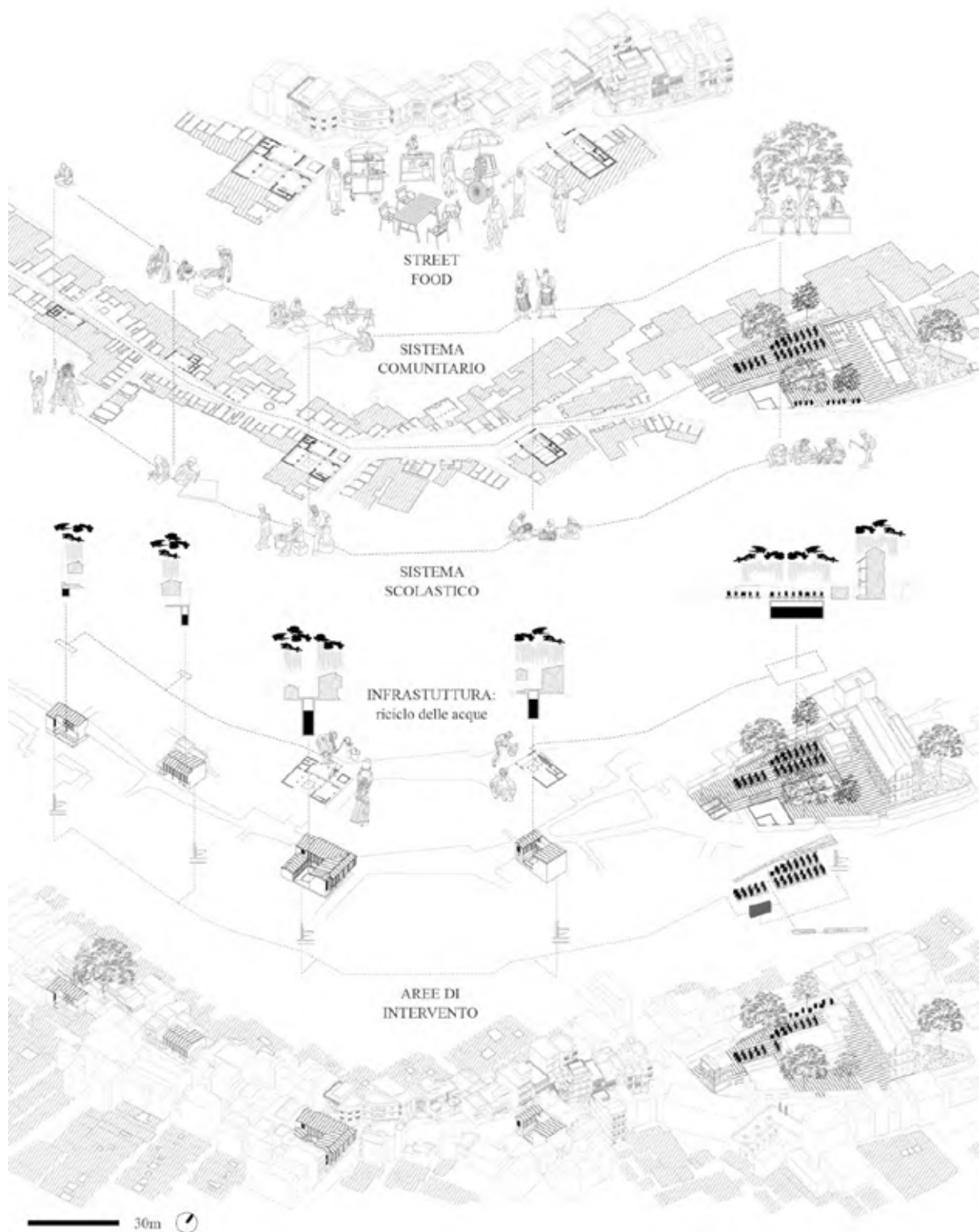


Figure. 5 Social strategies and architectural choices to transform the disputed boundaries into meeting places. Image by Giovanni Gualdrini.

The stratification of several activities within a single architectural and urban space, as envisaged in this design experimentation, is a typical characteristic of traditional Indian public spaces changing their scopes during the day. For these reasons the project works on different temporal phases: at different times, correspond different activities and uses.

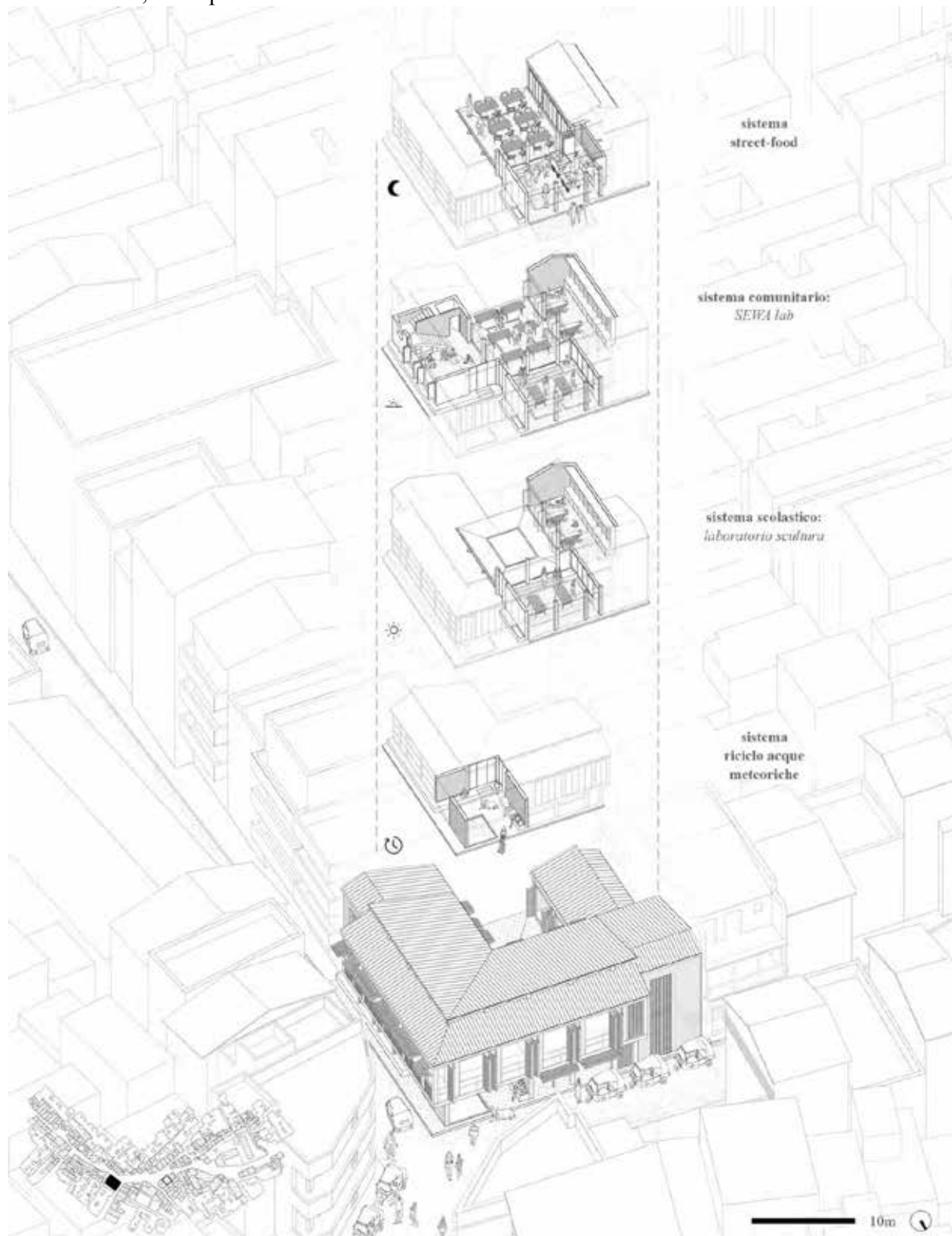


Figure. 6 Design scenarios: The Weaving pavilion and its transformations during the course of the day. Image by Giovanni Gualdrini.

When the elementary school close the project enters in the living of its function, the pavilions are open to the whole community offering spaces for the vocational and cultural training. The introduction of training spaces is inspired by the Gandhian Association SEWA.

As a matter of fact, observing *Maneck Chowk* during the course of the day, the commercial and religious heart of the historical nucleus of Ahmedabad, are visible several changes of use over a single day. During the early hours of the morning this space is a place of pasture and foraging of the sacred cows of the city. With the passing of the day, business activities gradually open and the central area welcomes parking spaces. The clearest and fascinating change takes place during the evening hours: on the fronts bordering of the square there are restaurants that transform the central area into an open-air restaurant in the mode of a street-food. Overuse is a fundamental feature of the Indian public space, managing to intercept the most diverse categories of users. Similarly to *Maneck Chowk*, the pavilions designed along the *Dariyapur* border open on the street front, welcoming informal dining spaces, to define places of sharing for the two communities.

Starting from the boundary and the relations present in the Territory: functional flexibility and transformation of the architectural structure

The continuous change of activity within the pavilions corresponds to a transformation of the planimetric organization, made possible thanks to the use of mobile panels. The flexibility of public (and private) space has been revived by traditional merchant houses, called *haveli*, which have an internal organization capable of adapting to different functions.

The traditional houses are articulated around a central patio, called *Chowk* (which can be traced back to the idea of a common patio), which overlook 'functional' spaces such as the kitchen, the votive chapel and the water room. Depending on the needs, the main domestic activities can expand within the *chowk*, which can become a place of prayer, a dining room or a reception space (Ray, 2008).

The project of the five pavilions incorporates this solution, articulating the ground floor in a central patio around which are overlooking the main spaces that can expand their activities in the same *chowk* or in the street space, virtual extension of domestic Indian public space. (Figure 6)

The extension on the road extremes the concept of flexibility presented in the traditional house, in fact, the traditional central patio, in fact, divides the house into two blocks presenting a more private and a more public area adjacent to the road, consisting of a portico called *otla*. The adjoining domestic spaces to this portico are places of representation, filter spaces to better protect the innermost parts of the house. As has emerged in the description of the structure of the city, the urban fabric, to better accommodate populations of different origins, determines net transitions defining areas clearly belonging to the individual communities.

The dwelling, placed in a semi-public context, is the only element in antithesis compared to this unwritten rule by defining a labile transition with the road where the public and domestic space merge. The structure of the pavilions incorporates the relationship between the atrium and the public space, presenting a threshold-diaphragm adjacent to the road able to completely transform the relationship between the patio itself and the exterior. Thanks to this device the pavilion can open completely to the community guaranteeing a complete use of the inner court. (Figure 7)

The project strategies described in this text are the result of a thorough research on the territory of Ahmedabad, aimed at understanding the wounds and imbalances that led to the conflict between the Muslim and Hindu communities (Howe, 2011). A careful study of the conflict must include in itself both the general causes that have led at national level to the escalation of tensions, and the local motivations that have moved the individual city communities. Only through the knowledge of these factors the project can be addressed to such a divided context, giving up the ambition to immediately resolve a problem, but opening up to a process destined to take time and breath.

The design proposal – albeit partially utopian – wishes to indicate a possible vision of the architectural project which is able to emphasize the need to operate for minute interventions in the disputed places of the city of Ahmedabad. If in large Asian metropolises we often see extensive and impose urban interventions, which cause the displacement of many inhabitants (Desai, 2011), the proposed intervention strategy shows how punctual interventions on the territory are the most careful way towards the birth of an interreligious identity, by grabbing how a pavilion or the construction of a simple infrastructure can give a new birth to forgotten places.



Figure. 7 Design scenarios: The Weaving pavilion, the diaphragm and the different architectural relations with the street front. Image by Giovanni Gualdrini.

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Resisting gentrification. Socio-spatial dynamics of three work places in Brussels.

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Abstract: An association working around the production of a biannual parade. A polyvalent organisation operating at the crossroads of culture and economy. A cooperative for entrepreneurs and precarious workers. The three of them being situated in some of the poorest neighbourhoods of Brussels and implying the renovation of former productive sheds. Their contribution looks crucial to bring back work in the city and in those areas that have been mostly affected by the deindustrialization processes started by the end of the 60s. While in the long term they may engender a gentrification process, the three of them are aware of this risk. Despite not defining themselves as social operators, they nevertheless could allow to resist it, by embedding in the local urban fabric, reshaping and renewing urbanity, although in very different ways and as part of very different strategies, in the case here observed mostly centred on redefining the relationship between work and life. Based on a research-by-design exercise, the paper will explore under which conditions new forms of working, a new approach to productivity and the related spatial dynamics could counterbalance potential gentrifying effects related to the improvement of problematic parts of the city.

Keywords: work-and-life, gentrification, governance, urban ecosystems

Introduction

The contents of this paper are based on the exercise of design developed in occasion of the workshop *Designing Brussels Ecosystems*, organised by Metrolab Brussels¹. The workshop explored the concept of urban ecosystem, looking at the condition of the Brussels Capital Region (BCR) through four lenses: agriculture, density, work and circularity. Together with other participants, we have been involved in the group dealing with topic of work². Three case studies were proposed, supposedly juxtaposed to the concept of third places. Purpose of the

¹ Metrolab Brussels is a transdisciplinary and inter-university laboratory for applied and critical urban research, funded by the Brussels Capital Region through the ERDF program 2014-2020. The workshop was held between the 28th of January and the 8th of February 2019. The results and reflections of the workshop will be published by Metrolab by the end 2019.

² We deem that exercise meaningful in relation to the topic of the urban tensions dealt with in the occasion of this special session. It is rather a beginning of potential future researches on how a new approach to the life-work balance and productivity can affect contemporary urban ecosystems and the related tensions. Given the short amount of time we had, it was not possible to enlarge our theoretical understanding of the themes; in that sense, the contents of this paper would need further inquiries. We rather used design as an envisioning practice, researching on the local socio-spatial potentials and prospecting how the tension between processes

two weeks was to explore the related urban ecosystems, in either descriptive or designerly terms. Three examples of urban renovation concerning different vacant spaces of production, transformed –at different stages- by three different actors: Recyclart, an organisation assembling cultural and creative production with work based insertion programs; Zinneke, a centre of artistic production, operating at the scale of the city; Smart LaVallée, a cooperative having the mission to support on many different levels the small scale entrepreneurial activities, free-lance and other precarious working conditions.

Being situated in different spots along the post-industrial corridor of Brussels, where the concentrations of poverty, unemployment and of the youngest and immigrant individuals coincide, these cases have the potential to engender gentrification processes. On the other hand, the kind of urban ecologies possibly generated by these initiatives could in fact contribute to resist gentrification, under specific conditions that the design exercise allowed to explore in projective terms. How could a project of renovation improve the living conditions of a neighbourhood, at the same time resisting gentrification and the collateral expulsion and privatisation processes? This paper would like to reflect on this sort of tension, thus further elaborating on the design-based scenarios developed in occasion of the workshop. A tension ultimately solvable –we argue- at the level of governance and ownership approach of the concerned assets, in relation to which design is called to play a crucial role.

We will first describe the three cases into detail. For each of them we identified a core concept, which seem to be coherently at work both at a spatial and at an operational level. But how do they actually relate to the concept of third places? To question that framework, in relation to the workshop purposes and starting assumptions, will allow to critically seize their pertinence as case studies and their *modus operandi*, thus identifying the aspects around which to intervene as designers. Moving from the architectural to the urban scale, in all the three cases the leading actors are aware of their spatial and urban impact of the activities they organise. In one case, Zinneke, they have an explicit agenda concerning the neighbourhood where the building is situated, and that agenda concerns in fact the very governance and use of the building. In other words, Zinneke seems interested in what we could describe as an ecosystemic approach to the organisation of their environment and their activities, which goes beyond the walls of the building and involves the larger ecology in which they embed. It is by referring to this case that our group decided to develop a design proposal, given the clarity and pertinence of their approach in relation to the workshop purposes. By analysing the local potentials -morphology, existing programs and actors, vacancies, unexplored synergies and other local and non-local potentials-, we imagined how temporary uses and long-term strategies could result in a lively urban environment, sustained by the engagement of the local communities around a different approach to work and productivity, from the individual to the collective level.

The thesis we suggest here, further elaborating on the results of our designerly explorations, is that these urban renovations interventions could in fact represent an occasion to resist gentrification only when triggering the appropriation by the locals and recognizing their role in their way of functioning. In this perspective, the morphology of the building and surrounding neighbourhood would have to serve the interweaving of the pre-existent and the new, the community based and the regional scales, the vacant and the occupied, the individual and the collective. In the cases here observed, possibly happening because of a different approach to the work-life balance, performed in between the individual and the collective. This would also mean the implementation of a different approach to the use of resources -in this case vacant plots and buildings and pre-existing local initiatives- based on patterns of exchange, coexistence and collaboration, care and responsibility. Not necessarily without conflicts. If one of the consequences of the dispossession of the city and the expulsions provoked by increasing privatisations is the loss of urbanity (Sassen, 2015), the urban ecosystems designed during the Metrolab workshop allow to imagine how urbanity could be in fact recreated and reclaimed: on the

of improvement and expulsion could be dealt with. So in fact, the paper brings a research by design-based contribution to the theme of the Special Session.

grounds of a community based approach to work and productivity, reinventing the individual within the collective realm.

A magnet, a bubble, a project of doors.

The three initiatives described in the following lines are expression of a different approach to work and work conditions, experimenting around emancipation, the expression of the self and new forms of protection. The spaces they shape reflect and make possible those attitudes.

Recyclart is a polyvalent centre, assembling cultural and artistic production, an atelier for the production of wood and metal artefacts called Fabrik and a restaurant. The cultural centre was established in 1997, by occupying the railway station La Chappelle, one of the secondary railway stations of Brussels, rarely used. For twenty years the site has hosted a variety of cultural programs and artistic projects, developed in collaboration with the Region. As a result, this neglected part of the city could enjoy a vibrant atmosphere, which contributed to keep under control episodes of criminality, while offering some form of support to fragile individuals relying on the solidarity and sympathy of the artists and organisers. As explained during the visit of the site, today the whole area surrounding the railways shows the signs of gentrification and the land values have risen. Not far from La Chappelle Station, Bar Recyclart is a restaurant where fragile and problematic individuals –because of their income, life path, education, health issues, etc- have the chance to take part to programs of work based insertion. Work, in other words as the first step towards their emancipation. Similar programs are also hosted at Fabrik, another initiative of Recyclart. Situated not very far from the station and the restaurant, people there can learn how to craft metal and wood, realising commissioned objects or their own creations. After more than twenty years of successful artistic and cultural production, at the beginning of 2018, SNCB and Infrabel, the companies responsible for the functioning and the management of the station, announce Recyclart will have to quit the place, for safety issues related to the renovation works of La Chappelle. After the mobilisation of civil society and the intervention of a few politicians, a new site has been identified in the municipality of Molenbeek, big enough to concentrate the different parts of the Recyclart program: a former typography in Rue de Manchester, composed by a few buildings disposed around a courtyard. Both the morphology of the building and the new location will redefine the conditions of accessibility, both in terms of space and of public. The capacity of Recyclart to work as a magnet, by attracting people from any part of the city, will be tested in the new location: a centre of artistic production and emancipation operating in a municipality severely affected by the end of the industrial productivity, for many reasons stigmatised.



Figure 1. The new site of Recyclart, in the dense urban fabric of Molenbeek.

The establishment of LaVallée as a co-working space in Brussels has been possible thanks to the initiative of Smart, one of the biggest cooperatives in Europe providing not only a co-working space, but also training programs, juridical, and financial assistance to entrepreneurs of the creative industry. While maintaining friendly relationships with the neighbourhood, LaVallée is introvert, working as a bubble of protection but also encounter and exchange, offering spaces and an the possibility of an alternative welfare to flexible and precarious workers, otherwise often working in isolation. The building occupied by LaVallée is a former industrial laundry whose spaces are distributed around two main courtyards. Different kinds of spaces foster daily interactions and encounter: the kitchen, relaxing sofas for a coffee and a break, courtyards, terraces. The atmospheres are often domestic, mixed with different kinds of working spaces: from the small individual rooms to the larger co-working spaces. All of them customised and appropriated according to the needs of the designers and artists. Other bigger spaces are used to organise events, by the workers of LaVallée as well as by external users. Among others, the European Union, their delegates and politicians often enjoying the rawness of post-industrial, non-formal spaces. The assemblage of different publics and situations triggers the emergence of collaborations and allows to share not only the costs, but also the expertise.



Figure 2. Space and spatial appropriations at LaVallée.

Zinneke asbl is an organisation working mostly around the artistic production of the biennial Zinneke Parade, established in 2000, as part of the initiatives organised for Brussels as European Capital of Culture. In addition to that however Zinneke hosts other projects, such as *Atelier Metal*, for the training of those interested in the realisation of metal artefacts, especially large scale objects. Or *Matos*, for the recollection and the recycling of waste materials. Zinneke is an initiative celebrating solidarity and cultural diversity and triggers the use of the public space for the expression of collective and individual selves. The Parade is made of more or less twenty performances, interpreting a main theme and realised by artists and creatives in collaboration with local actors. Each performance is called *zinnode*. The activities and practices leading to the realisation of the *zinnodes* are realised occupying the spaces available in the concerned neighbourhoods and involving the local actors. In this way, different parts of the city are re-activated though all the whole process of realisation. After a long time of nomadism, during which Zinneke occupied different available buildings in the city, the organisation finally managed to occupy a former imprimerie in the Masui neighbourhood, in Schaerbeek, in the framework of a

FEDER³ project. At present Zinneke has the project to transform the imprimerie in a polyvalent space, hosting not only the activities related to the production of the Parade and the mentioned other initiatives, but also any kind of event or regular program organised by any other actor in the neighbourhood or in the Region. The transformation of the building is conceived as a pilot project under many respects: the renovation should make possible the reuse and recycling of existing materials and structures, possibly in collaboration with other initiatives in the city, while respecting the existing structures. But most importantly, the re-organisation of the spaces should on the one hand increase the accessibility of the building, allowing other actors in the neighbourhood to use it; related to that, on the other hand, it should make possible the coexistence of different practices, with their compatible and incompatible aspects. The articulation of the needs of different actors within the same building is a matter of rhythms and choreographies, in time and space and requires what at Zinneke has been defined as a project of doors.

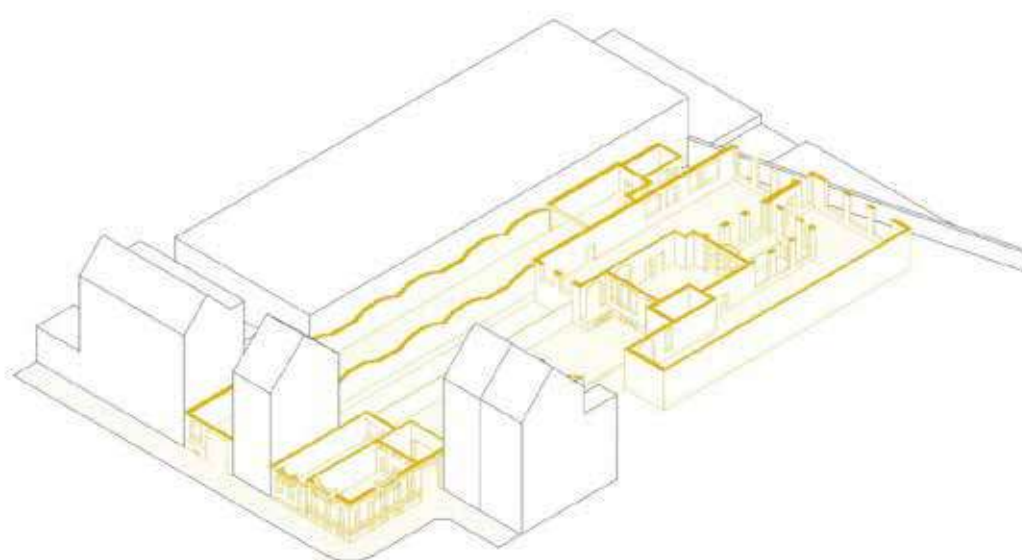


Figure 3. Section of the former imprimerie, where Zinneke is located.

Individuals, beyond individualism: emancipatory approaches to work.

Concerning our group, purpose of the workshop was to question the notion of third place in relation to work dynamics. Taking advantage of the reflexive opportunity of this paper, we believe it would be first necessary to frame the meaningfulness of the proposed cases. How do the three cases position themselves in a global city such as Brussels? What do they represent in relation to the work market characterised by a polarisation of highly skilled and low skilled? The three situations here considered at present do not represent neither classic, nor prevailing work domains. Nevertheless, they could indeed have the potential to address a variety of individuals, from the highly educated or strongly experienced, ready to take the risk of an entrepreneurial condition. To the low skilled or fragile individuals, to which the opportunities of a manual job or service related position could look more appealing to increase their capacities and start new work paths. Though at this moment these initiatives may be still marginal, they indeed represent an innovative approach to work, not very far from that in

³ Fonds européen de développement régional

fact presented at the design biennale of Saint Etienne, in 2017, *Working Promesse – Les Mutations du travail*. What was showcased was the possibility for individuals to reclaim themselves through their work activities, thus moving from a condition of dispossession of the self (Castel & Haroche, 2001) and hyper-fragmentation of their work capacities –the atomisation of work (Berardi, 2004) – to a condition where they reclaim authorship and try to conquer back their capacities of doing, meaningfully. The mentality of the do-it-by –yourself, as a result of the insufficiency of what is being provided –by both publicly and privately organised services, welfare and administrations- but also as an occasion of empowerment and joyful experiencing of life and leisure⁴. At the same time, increasingly often the re-appropriation of the self happens through the collaboration and cooperation with others. Group works, platforms, cooperatives, different forms of co-working promote encounter and collaboration as ways of overcoming isolation and learning from other people experiences. This is for example part of the mission of Smart, as an organisation looking to promote alternative structures of welfare⁵, but also interested in offering the spaces and the situations required for such encounters, for the building of solidarity networks. And this brings us to discuss the spatial conditions supporting such reconceptualization of work, as something we were supposed to directly address in the framework of the Metrolab workshop.

While the workshop proposed to question the notion of third places, the three cases rather suggest a reflection on the work-life balance, *potentially* related to the concept of third places, evoking the relational conditions of third places, but not fully coinciding with them. Third places have been defined in fact as those places where we do not either live, nor work, but where we rather can have leisure activities, make new acquaintances, where conversation and verbal and non-verbal exchanges are a main activity (Oldenburg, 1989). Examples of third places are churches and universities, restaurants, bars and coffee- shops, community centres, barbers, malls and markets, among many others. What may be confusing is the fact that indeed third places are increasingly being used to perform work activities –as shown in Saint Etienne- and they could indeed serve the increasing need for flexibility of people’s daily schedules, as well as the need for networking and inspiration, in some cases. Blurring the distinction between leisure time and work time, as many scholars pointed out in terms of labour exploitation, affecting in particular the workers of the cultural sector and creative industries. While this issue cannot be properly treated in the space of this paper, we simply point out the difficulty to fully recognise the three cases identified by the workshop as examples of third places. Especially when observed under the lens of the people who work there –not the clients or the occasional visitors. Recyclart is indeed also a restaurant and a cultural centre, but not for the employees hired as part of work based insertion programs: the way they perform their work in such a place is not very different than in other restaurant. Similarly, for the individuals crafting metal and wood objects at Fabrik, the space in which they work is an atelier, quite traditionally organised, where they are supposed to go every day, for a given number of hours, to perform what can still be recognised as work, not leisure, though leaving space to their creativity and interpretation.

On the other hand, what emerged as a common element in the three case is an emancipatory approach to work, though realised in different ways. Specifically, we observed a common attention to the work-life balance, not necessarily meant in term of rhythm, between the working hours and the time for the private life. Rather meant as redefinition of what work could mean in the life strategy of an individual –as a person and later collectively: in terms of self-expression, of emancipation, of claiming back opportunities and the capacity to contribute to the making of the world. In other words: not work as opposed to life, rather work as life.

And indeed such an approach could lead to the emergence of a third dimension: in between more mono-oriented, traditional working and living environments, in between the need for sheer productivity and the need

⁴ However, that is not always the case and a difference should be stressed between the engagement and urgency for gardening and the efforts made to claim back a housing unit or a squatting initiative.

⁵ Before the establishment of the welfare state regimes, cooperatives allowed workers to build solidarities and to organise primordial forms of welfare.

for the re-appropriation of the self. In between the competitiveness of the market and the need of self-expression. In the case of LaVallée for example, the appropriation of the space and of the work environment is somehow paramount and facilities, the supports and spaces are provided on purpose in a neutral condition, so that the new users could create their ideal setting. At Zinneke, artists and creatives have the possibility to reinterpret and recycle materials, while combining competences and ideas. Similarly, in the case of Fabrik, where in addition to what asked by the clients –mostly small-scale productions, which leave a lot of space to interpretation-, workers are invited to experiment new creations. At LaVallée and Zinneke a sense of a domestic environment often characterizes these working spaces: recreated by the very concerned individuals, looking for a comfortable atmosphere, fostering cooperation and exchange, allowing to reach the state of mind that leads to new ideas and innovations. Which is why a couple of sofas are just behind a cluster of desks and spaces are sometimes left unstructured, not furnished. Only basic supports are being provided, to use Habraken's words (Habraken, 1972). Something similar will probably happen in the new venue of Fabrik, big enough to combine the cultural and artistic production with the work trainings and insertion programs, and the restaurant. The courtyard promises hybridisations and exchanges, mixing users and activities, visitors and inhabitants, potentially from any corner of Brussels.

At the core of our case studies, overall, we observed some kind of emancipatory understanding of work, meant as an activity, which could and should lead to a re-appropriation of the self. In that direction, the spatial conditions realised inside the building promote individual creativity, but also exchange and collaboration, thus empowering the concerned individuals, allowing to learn from each other experiences or simply to build some sense of solidarity and mutualisation of resources. A way of resisting post-fordist processes of fragmentation. Necessarily such an approach has implications which cannot be contained within the walls of the building where is experimented.

While the emergence of a third form of spatiality -not for leisure but indeed allowing the interweaving of work-oriented and domestic atmospheres- can be easily observed in the interiors of the buildings, part of it seems to be manifested also exteriorly, though the distinction between interior and exterior is arguable in these cases. When looking at the urban impact, the spatial-urban attitude of each of the cases seems to be a continuation of the same philosophy expressed in the interiors. So the protective approach of Smart LaVallée, as a cooperative, is somehow mirrored in a spatial attitude that while being aware of the context where it operates, does not look to proactively fuel any relationship with it. "We have occasional relations with our neighbourhoods. At the same time we are not social workers, our mission is not to improve the neighbourhood. But we are open and welcoming and we do our best to maintain good relationships"⁶. In the case of Recyclart, both the cultural centre and the atelier of Fabrik have an impact in the surrounding neighbourhoods, more or less evident. The cultural centre -especially during the years of the most successful activities- engendered a lively atmosphere, making possible to keep under control the marginalisation and the stigmatisation of an otherwise isolated part of the city. Fabrik, on the other hand, is a well-known place for the realisation of few pieces or small-scale artefacts, fulfilling the most diverse and specific needs and local inhabitants maintain a friendly relation with the workers. What will happen once the new venue in Molenbeek will be conquered and transformed is an open question: though a certain level of interaction with the local inhabitants is foreseen as part of their grounding strategy. Finally, in the case of Zinneke, the governance of the building is supposed to be a neighbourhood affair, though not in the closest future. But the way the building is being reorganised and reconceived goes in the direction of allowing the appropriation by the local community. It would be a forced statement to say the three initiatives intentionally invest on the ecological continuity of the interiors towards the exteriors. As previously mentioned, it is rather a matter of attitude, of actors, aware of their impact, having different degrees of intentionality and willingness to interact with the surroundings. And the nature of their activities necessarily

⁶ From the conversation with one of the managers which accompanied us during the visit at LaVallée.

results in more or less extrovert patterns. In the case of LaVallée exchanges with the surroundings are occasional and supportive, but not essential to the functioning of the platform. In the case of Recyclart, they are the by-product of their activities, especially the cultural production. Zinneke is perhaps the only case to which such a statement could indeed apply and the continuity between the interior of the building and its surroundings is a relevant part of their medium-long term vision. The clarity of intentions and the spatial implications of their plans made their case more promising to the eyes of a group of architects and designers investigating their work re-interpretation and the related urban ecosystems.

While the spatial pattern of post-fordism is about fragmentation –of time and space- and delocalisation leading to individualism, isolation, *désaffiliation*, as Castel defined it (Castel & Haroche, 2001), what would be the spatial implications of an approach to work and productivity based on exchange and collaboration? Which kind of city could support or would derive from such a different approach to productivity, centred on the re-appropriation of the self, on the empowerment of the individual, beyond individualisms? How would neighbourhoods transform? And in particular, at the moment of shifting our views from the architectural scale to the surrounding neighbourhoods, as previously mentioned it was unavoidable to think about the risk of gentrification processes that the development of these initiatives could trigger. Happening in some of the poorest neighbourhoods of the city⁷, it is plausible to think that, as a result of a renewed productive ecosystem, land values could also rise, especially when considering that the surrounding neighbourhoods are already showcasing episodes of gentrification. Land values along the canal are in fact already increasing and a growing number of investors is being attracted by that area, after the way has been paved in the past years by the public administration policies and projects meant to improve the living conditions and indeed attract investments (Dessouroux et al., 2016) A risk especially tangible when considering that the core business of Recyclart and Zinneke is about arts and cultural production. And LaVallée is at the very least making room to creative businesses, potentially more attractive to well educated, middle class individuals with the capacities and the resources to stand some margin of entrepreneurial risk. While this could be in the future the prevailing direction in order to have an occupation –for anybody, independently from education and social status- it is clear the improvements directly and indirectly generated in those neighbourhoods will provoke the rise of land value. Instead of avoiding the improvements and investments, how to make sure the value being produced could be kept in the hands of the concerned communities?

A project of doors.

Also in consideration of the short amount of time, our group decided to focus on the spatial and ecological implications of one of the cases: the project of doors of Zinneke. Rather than simply describing existing dynamics, we opted for a design exercise as a means to imagine which kind of ecosystem could be generated by a different approach to work, productivity and -in particular in the case of Zinneke- the use of resources. It allowed to show how existing potentials and resources could be reinvented within an ecosystemic approach and how space could play an important role –among other things- in establishing an empowering governance for the concerned communities.

The project of doors described by the members of Zinneke was defined as such to stress the relevance of doors as devices allowing the coexistence within the same building and at the same time of activities implying very different needs, in terms of safety, self-expression of the involved individuals, logistics, scale, externalities and more. Within a similar perspective, the door is a device allowing to deal with the compatibilities and

⁷ Data can be verified at <http://monitoringdesquartiers.brussels/>. Number of scholars and researches have shown the concentration of poverty and the socio spatial segregation characterising the central neighbourhoods of the BCR. In particular, since the 80s, the work of Christian Kesteloot (Kesteloot, 1986, 1998; Kesteloot & Loopmans, 2009; Wayens et al., 2010)

incompatibilities of activities. To merge or to divide spaces, to regulate accessibility and to have the control on safety or privacy issues. To create gradients and atmospheres, to transform spaces intervening on their porosity and flexibility, according to changing needs and desires. In these terms, a project of doors would allow different activities not simply to coexist, but also to establish collaborations, while respecting each-other's boundaries and different needs. More ambitiously, it would also make possible the appropriation of the building by local and non-local actors, who could enjoy the use and the access to the building without interfering with the need for privacy or safety of other departments. The aspiration of Zinneke however, goes beyond use and accessibility: an effective project of doors should also imply a shared governance, which also means a shared responsibility and shared care. Appropriation and accessibility would hence imply the responsabilisation and the engagement of the concerned users, which should hence acquire the capacities to do so. A project of doors would thus become the occasion for individuals and collectives to increase their awareness and expertise concerning the governance of their resources, thus empowering them and ideally creating the conditions to recognise their contribution to the liveability of a place. And their power to decide about it.

While the project of doors the people of Zinneke describe is supposed to concern primarily the former *imprimerie*, at the moment of addressing the impact of Zinneke initiative at the neighbourhood level and within an ecosystemic perspective, we intuitively started to explore the possibility that the project of doors could in fact concern the whole neighbourhood. What if the concept could be extended to the whole neighbourhood, as a continuation of the work environment created within the building walls? What if the idea of a shared governance could be enlarged to other buildings, vacant plots and other assets in the neighbourhood? This would imply local actors to gradually appropriate not only the former *imprimerie*, but in fact the whole neighbourhood. Empowering them by means of increasing their expertise and capacities to govern them, thus ideally allowing to resist processes of expulsion and privatisation potentially deriving from gentrification. As previously mentioned: the idea would be not to avoid the improvement of living conditions in a given neighbourhood, rather to enable the local actors on the one hand to take part to the realisation of those improvements, on the other hand, beyond participation, to appropriate and have a voice in the governance of those improvements. As Henry George (George, 1883) and Ebenezer Howard (Howard, 1902) pointed out in the past, the problem with privatisation and speculation is the appropriation by very few individuals of the values and the assets produced by a whole community.

The building of Zinneke is situated in a somehow mixed neighbourhood, belonging to a fine grain piece of city, in between the monumental dimensions of the *projet Manhattan*⁸ to the south and, to the north, the more recent sheds of a productive area which begins right on the back of Zinneke's courtyard. A few blocks away, to the north-west, the Senne Canal hosts industrial and logistic activities. To the east, the railway lines heading to the station of Bruxelles Nord. Outside of the *imprimerie*, Place Masui is mostly occupied by cars and their circulation. The old urban fabric mixes residential units, shops, bars and a certain number of car repair activities, occasionally perceived as invasive. Vacancy is relevant and concerns both buildings and small plots. Not far from Zinneke, the final segment of a linear park, *Parc de la Senne*, is being realised. The park partially follows the trajectory of the vaulted river and for this reason is delimited by the back walls of former productive buildings, as well as the backyards of recent residential buildings, some vacant land and the bigger, the non-accessible perimeters of productive and commercial sheds. In similar conditions, the challenge is to engender a lively environment, avoiding the risk of a nicely paved corridor.

⁸ The *Projet Manhattan* was conceived and partially realised between the 60s and the 70s. It was supposed to provide office and related facilities to the companies and institutions increasingly investing in the Brussels agglomeration as global city. The big glossy towers, the large sidewalks, the functionalistic approach would have provided the allure of a modern business district. The project is infamously known for having been realised thanks to the eviction of thousands of inhabitants, most of whom were never relocated (Clerfayt, Houtart, Rigaux, & Al., 1975).

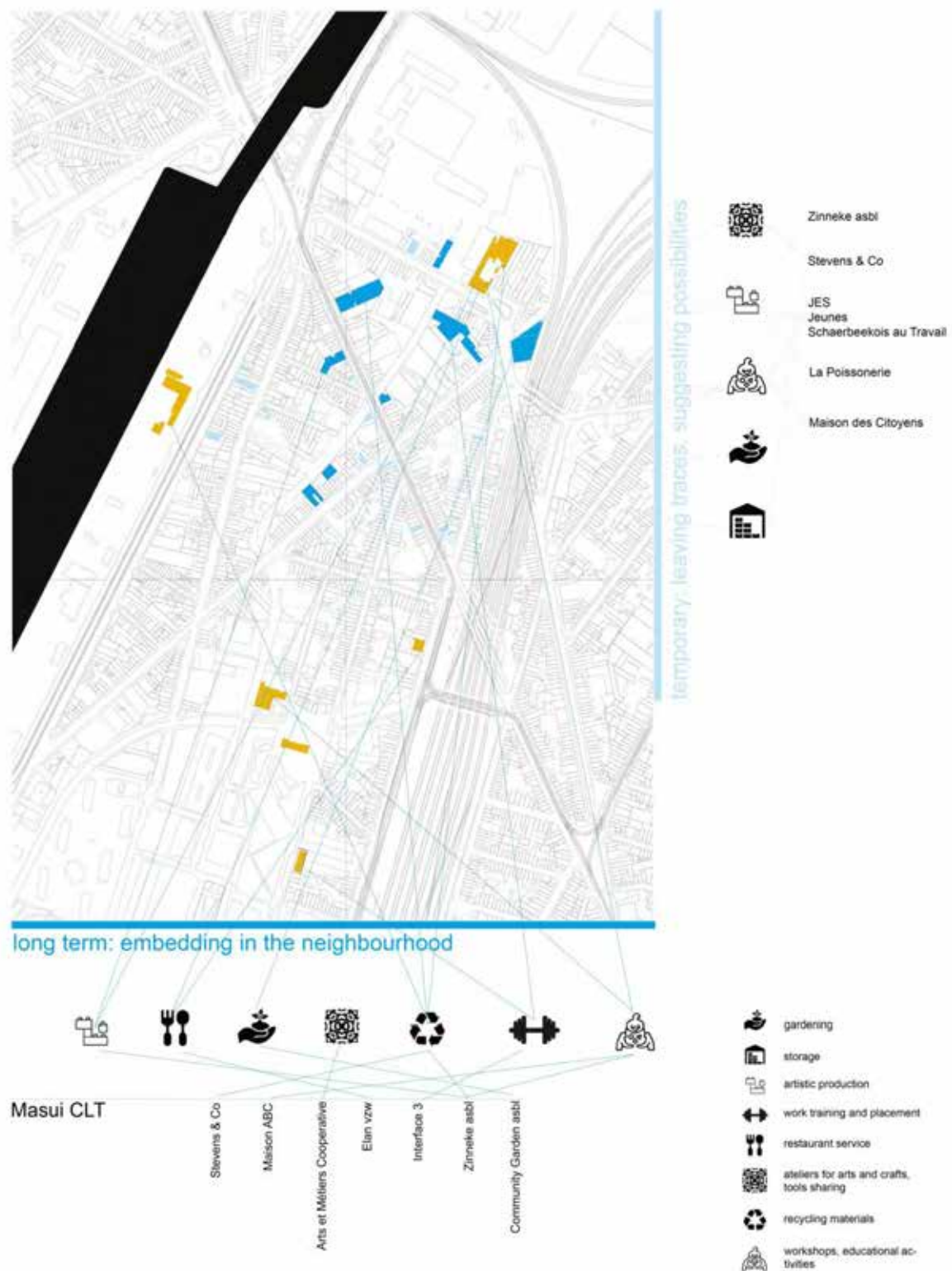


Figure 4. A project of doors. The configuration of short term and long term occupations in the area of Masui, leading to a neighbourhood governance.

The design exercise allowed to imagine which kind of ecosystem could respond to a work approach based on collaboration and sharing, of rights, but also responsibilities, centred on rebalancing work and life, of individuals and collectives, as embryonically experimented within the walls of the *imprimerie*. We explored how existing actors and spatial potentials could support the emergence of such an ecosystem. We tried to suggest in which way space could be reshaped and reprogrammed –at an urban and at an architectural level– thus allowing the coexistence and hybridisation of different activities, as a whole making possible a sustainable governance of resources, in this case meant as the socio-spatial assets of the whole neighbourhood.

Referring to the *modus operandi* at Zinneke, we identified three actions that we used as programs for specific parts of the neighbourhood, based on the mapping of their socio-spatial possibilities. To negotiate, to perform, to invade: these the three actions, three examples of a longer lists of patterns and attitudes we identified, emerging in the Zinneke environment. To negotiate time and space, for example, given the limitations of the built space and the compatibilities and incompatibilities of different activities: to negotiate is about building exchange and encounter. To perform is about the expression of the self –individual or collective–, the making, the experimentation on the existing resources, implying the capacity to risk, to innovate, to take the time to do so and inventing the required, *ad-hoc* collaborations. To invade, sometimes disturbing, out of necessity, provoking conflict but also encounter, of different activities and different users; it is about the need for more space, but also the hybridisation and the production of unavoidable externalities, such as noises, pollution. Each of the three actions worked as instructions at the origin of three different narratives that we tested in different parts of the city, exploring what a project of doors could do in each of them, in consideration of the provided occasions and potentials. We explored negotiation along *Parc de la Senne*, imagining how an alternative market could be organised involving local ateliers and community kitchen gardens, not only to sell their products and provide their services, but also to trigger the implication and the interest of the local inhabitants for the neighbourhood activities and the concerned spaces. The act of performing has been interpreted in the space of Place Masui, imagining how artistic events could bring new life to the square, working across the walls of the *imprimerie*, redefining the transition from one to the other, allowing local inhabitants to appropriate the public and the collective dimensions thus engendered. Finally, the canal banks are invaded by unusual activities such as promenades and festive events thus allowing the locals to appropriate this part of the city, opening to the potential collaborations and work insertion programs for example involving the existent metal recycling factory and the activities of Zinneke.

Through these narratives, the urban ecosystem of a whole neighbourhood is reshaped. At the core, a different system of values concerning work and the environment that could support it, centred on the empowerment of the individual as part of a community endeavour. Individuals in fact –meant as people or initiatives– are encouraged to experiment because immersed in a collaborative ecosystem, which could provide support and ideas. The work life balance is hence reconceived starting from the very definition of work and its meaning in relation to an individual's life and path of emancipation, beyond sheer productivity. The collateral aspect of the implementation of such an approach to work and the related ecosystem is a shared governance of resources and assets that are supposed to serve the concerned actors and users in different ways. For that reason, they need to be preserved, so that their activities and their living environment could also continue to exist in the long term. In other words, to re-appropriate the self through the doing, by contributing to the making of the world necessarily implies to have access and to govern the required resources: transforming the self implies the transformation of the world. This would imply the re-appropriation of neighbourhoods otherwise neglected or privatised, under the pretext of fuelling and supporting community centred forms of productivity.

Operatively, we imagined a combination of temporary uses and long term strategies and purposes. This would allow to combine permanent and non-permanent programs; people and collectives will thus have the chance to gradually become familiar with existing resources and to transform them while remaining open to the needs of the neighbourhood and adapting where necessary. In other words, it could engender a more resilient ecosystem, without losing the opportunity to determine some priorities and guiding directions.

Among others for example, a long-term goal could be the establishment of a neighbourhood based Community Land Trust (CLT), with the purpose of resisting gentrification and sustaining an aware and capable governance of resources, because based on the concrete needs and the competencies of the concerned communities. While their implication in the improvement of their living environment should be sufficient to recognise their right to stay and to govern the resources and assets they contribute to produce and valorise -literally and symbolically- with their daily activities, in fact this is not always the case. Processes of financialisation of the city and privatisation –as previously mentioned- simply concentrate such value in the hands of few investors and result in the expulsion of those who cannot afford the rising living costs of their neighbourhood. In the long term, our scenario suggested an empowering form of governance would have to recognise the role and the implication of the concerned communities, as in the case of the ecosystem we imagined, designed around their spatial and. The model of Community Land Trust currently being experimented in Brussels (Lenna, 2019) –though for the moment concerning only the residential function- would allow to retain the plus value generated by potential improvements at the advantage of the whole community.

Conclusion

As a result of such an emancipatory approach to work, conceived *as* life, centred on the individuals and their capacities of doing and exploring resources, overcoming fragmentation and alienation, on the one hand the living conditions of a neighbourhood would improve. On the other hand, the concerned communities –local and non-local, occasional users and inhabitants, administrative actors- would be empowered, on the base of their competences and capacity to govern the local resources: the resources they need for their life strategies. The model of the CLT here suggested is just one among many other possible models allowing to recognise the power to decide of those communities, thus retaining the value collectively produced.

The role of design, meant as a process of co-creation, is fundamental for the emergence of such an ecosystem at least on two interconnected levels: for the design of the systems and for the design of the spaces. On a strategic level, it would allow the involved actors to become aware of the resources and to imagine how to synergize them at best, which programs to enact, both temporarily and in the long term, adapting through the time, contributing to the resilience of the city. Concerning spaces, the challenge is the realisation of the conditions fostering encounter, exchange and collaboration, the coexistence of compatible and incompatible activities. Design in other words, would be fundamental for the establishing a horizontal form of governance, necessarily based on the appreciation of the environmental complexity that a new balance between life and work demands. From the architectural to the urban scale, allowing the individual to meet and to expand into the collective dimension, while expressing the self and his capacity to contribute to the making of the world. At the conclusion of our design exercise, we realised that the concept of a project of doors could possibly be applied also to the other two cases, the door being meant as a device allowing a certain flexibility, easily adaptable to the specificities of other neighbourhoods. The project of doors could hence be read rather as an approach: a concept about the need for porosity and the possibility to regulate it, for the coexistence of uses and the flexibility of spaces; for the intersection of scales and actors. An approach looking at the city as an environment where work and life intersect by definition engendering urbanity, inherently capable of resisting to the forms of existential alienation and dispossession of the city currently being enacted.

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17. Spatial tensions: urban microgeographies for changing cities

Urban Crisis Storytelling: idioms and forms of city's equilibrium integrating the uncertainty

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Abstract: I will present two years of experience as a PhD researcher on the thesis “European city: Fundamentals and images of its Crisis”. I made an anthology of narrations accompanying projects “for”, “against”, “between” crisis. How do these tells make urban government frameworks pass from the paradigm of “finality” to the paradigm of “intentionality”? Mixing functional rationality (biological sciences) and intentional rationality (social sciences), Urban Studies create the condition to reshape equilibrium. From the consciousness that the total outcome doesn't satisfy everyone's interest, negative externalities are something to be controlled. Like Odysseus binds himself to not hear the Mermaids, reducing the field of action, we reduce the unpredictability. The problem of operationalization of the concept of crisis reveals the contraposition of two genealogies of thoughts; the one considered dominant and the other in objection. If we give the attribute of “feminine” to the genealogy of thought in opposition, we find some important concepts: empathy, contradiction, anachronism, otherness, cosmogony. Recognising the historical genealogies of this thought I want discuss the lexicon of the tension between patriarchal language and a feminine way of access to reality. How does the triad work/efficacy/example change? May this manage European city in order to integrate the uncertainty?

Keywords: crisis; feminine; European city; storytelling

Introduction Starting from the call of this Session I will discuss three main themes: the concept of crisis, intended as discontinuity transformation; the storytelling potential of the discipline of Urban Studies; the concept on gender, in a double sense of literary genre and in a biological/cultural sense. I will put the emphasis on some misguided words expressing transformation, to propose tension problem roots. Is it true that cities does never stop to change? From what distance we look at the urban? I propose the perspective of ‘micro’ not as a dimensional topic but as something to do with emancipation. These reflections I propose are inspired by my PhD activities (still in progress) for nearly two years. For my research project “European city: Fundamentals and images of its Crisis” I am carrying on an anthology of narratives about the presumed aspects of “urban crisis” at the beginning of this century. My review of discourses on the presumed urban crisis as a complex construct (not yet well framed in in Europe) leads to consider vocabularies showing their mutual conflict. How can these rhetoric and speeches define the two horizons separating something *before* and something *after*? My work has both an historical/geographical value and an anachronistic approach (in a positive sense). Effective verb *krino* (from the ancient greek “to separate”, “to decide”) is that part of the human experience that sets out the fundamental issue of something we could say as: *While a human being is transforming his world human being is transforming himself*. I will discuss this one-to-one condition to propose a concept of ‘tension’ and to wonder

about its geographical and economic scalability. Is micro-geography a good point of observation for changing cities? Is this a dimensional size?

Is it enough European? Starting from the rhetoric of the crisis, the purpose of my PhD dissertation would be to point out some aspects of the relationship between project and community, between civilisation and measure of the space, between the idea of city and practices. At the beginning of my research project the majority of my interlocutors observed that:

- European city doesn't exist!
- 'Urban crisis' hasn't been univocally defined in European geographical context

Unlike in other contexts (for example in America Latina, as a political crisis; or in North America, as recession) the association between 'urban' and 'crisis' has many different declinations (economic crisis, resources crisis, refugees crisis) often well mixed in a general 'crisis of values'. This general feeling is a good starting point to examine the cultural devices of transformation. So I took different 'urban' projects (simply meaning for 'urban' ones assuming the pre-existence of the city as a matter) and look at the corresponding storytelling (involving one of the various concepts of crisis), plotted by different narrators. My Questions is: With what extent are the narratives of the crisis functional to the reformulation of the practices and of the frame of government actions? And so: In which cases did the narration allow to configure a change and when, instead, was it misleading?

I could have chose to do a transoceanic comparison or to focalise on a casa study (as Rome, Barcelona or Madrid) or to chose and compare different sensitive contexts (such as Cipro, or post-Brexit Ireland, or Athens). But what I am doing is to conduct small case studies with a mixed method and heterogeneity of the sources (photography, spaces, interviews, kinds of spaces). This investigation of different discourses uses historical reconstructions, with references to Carlo Ginzburg and Alessandro Portelli; biographies of cases, in the manner of Arturo Lanzani and Pierluigi Crosta. This may appear like an heuristic method but I have been naturally been brought to the hypothesis that the essence of European city is mainly a device of translation (Leciejewicz, 2000), indeed the world 'crisis' arises when an intentional action is transforming something, understanding the rules of the living.

In European *forma mentis* a presumed equilibrium of urban coexistence is always built through *an effort of translation: from a culture to another, from a city to another*. European modern culture was born in the literary entourages and the Myth of Europa is migrant and tells of a rapture.



Figure 1 Palazzo Farnese, Caprarola (Italy), Sala del Mappamondo o delle Carte Geografiche and Figure 2 Antonio Carracci, *Il ratto di Europa* [credits, M. Pietropaoli].

If “European city” or “European culture” don’t exist, what is shaping urban relationships are plural “European cities and European cultures”. Right in in this proliferation of the use of the lemma ‘crisis’ I see a reaction to the dogma of identity, mainly underlying a patriarchal thought. This must be considered not a weakness, not a ‘crisis of values’, but an impulse to define the authenticity of timeless values put into practice in the democratic coexistence. Is the project of democratic city (and has it always been) a project of redemption for human being? Does the lexicon of crisis make arises an ‘objection thought’? How this words are opposing or collaborating or weave a complementarity with the ‘dominant thought’? Does this emerging vocabulary belong to a feminine genealogy of thought?

The feminine as a culture of emancipation through project What I propose with this paper is to give the attribute of ‘feminine’ to the genealogy of thought in opposition to the dogma of ‘unique identity’. It points out some important concepts: empathy, contradiction, anachronism, otherness, cosmopolitanism; and the capacity to lead this transformation one-to-one between giving form to the world and the knowledge of being. ‘Feminine’ attribution is intended as *feminine way to access to reality* and not only as cause for women’s right (Buttarelli, 2017). This is not a way to reclaim the separation of gender identity but to “unravel” it; it is necessary to deconstruct the narrow gender affiliation built in the context of socio-political, historical creations (Villani, 2018). The Reclaim and Rebranding feminism is the so-called Third wave of feminism. I consider this reclaim activism one of the references of my research. I will not dwell on these aspects of gender activism because I don’t want to give the Gender Study tag to my investigation.

My contribution concerns mainly the theoretical part of my research work with a multidisciplinary approach. I will discuss some idioms. I believe that this perspective could offer some coordinates to draw an idea of ‘tension’ able to rediscover a design culture integrating conflicts, contradictions, uncertainty. In the following paragraphs I will claim a systematisation of this approach coming to the definition of three spatial tensions:

1. **Part One: The possibility of becoming-woman or the concept of *work*** about the “becoming-body” of the city as a “becoming-woman” of the city;
2. **Part Two: The possibility of making space or the concept of *efficacy*** about the concept of authority is changes in a society drawing its storytelling on a dimension of permanent crisis;
3. **Part Three: The possibility of becoming-urban or the concept of *example*** about how an emerging lexicon is refunding Urban Studies not only in the performativity of the vocabulary but radically conditioning the possibility of urban narratives (in politics, policies, practices fields) as a literary genre.

I will use humanistic fields’ tools (semiotics, philosophy, anthropology) to sustain my arguments. The starting and final point is the concept of ‘tension’ as opportunity for urban planning and design practices (as invitation by the curators of this Session of Aesop 2019). The question underlying these themes is that urban government frameworks are wondering how to integrate the paradigm of “finality” with the paradigm of “intentionality”.

Over recent years, Roman Departments of Architecture has been marked by the presence of distinguished philosophers, invited to introduce Academic Years; to give a direction to research priorities, to provoke a questioning of design categories. Giorgio Agamben has celebrated with *Costruire abitare* speech the inauguration of PhD Courses (7th of December 2018, Sapienza University, Rome) and Carlo Olmo gave a *lectio magistralis* with the title *Segmenti e bastoncini* (14th of December 2018, Roma Tre University, Rome) and another for a cycle of open lessons about Europe, *L’Europa vista dai tetti del Birkbeck College* (March 2019, Roma Tre University). In Italy this presence is not new, since Massimo Cacciari has been the catalyst for several disciplinary and political debates, with a multi-media relevance. This quest for a philosophical assumptions of the relationship between “standard and form” (Olmo, in the second conference) shows a permanent conflict. The “common destiny” expressed by the syntagm ‘public space’ is in crisis (Olmo, 2018). This can be the latent tension informing all the other tensions.

In the next paragraph I will discuss the problematic pact between *mots et choses* bringing it to the view of the possible integration of a genealogy of thought properly feminine within a large *corpus* of morphologies of human living structures. The way these structures consolidated their trajectory can be assumed as a predominantly patriarchal way of

access to reality. Annarosa Buttarelli (2017) emphasizes the presence of two big mechanisms of repression: the civil war (in the wake of Nicole Loraux and Marija Gimbutas), the sexual contract (in the wake of Carole Pateman). I propose, with Buttarelli, this double and interconnected substratum as a generative matrix to be freed up from a masculine empowerment:

- the unconscious repression of the origins of democracy, buried deep in a lasting subjection
- the freedom from a monosex and chained history

And I add a third critical issue:

- European City as a thematic field in which an emerging feminine vocabulary expresses thoughts liberating the patriarchal matrix.

Agamben offered a reflection of the sense of *arché*, reclaiming this attitude to investigate this root. Olmo (2018) invokes the distinction between the use of “visual tools and narratives as a support for instrumentalized governance functions” and “the impartiality that this function should practice and conserve”. The “definition of the democratic form of the contemporary city” (id.) is passing from the report about the present possibility of a feminine government authority; not only in by woman or for woman.

Part One: the possibility of becoming-woman or the concept of *work* Last year I wondered how to recognize in the additive culture of ‘zoning’ some interesting trace of *transition* culture (Pietropaoli, 2018). I tried to show “how urbanism, mediating between a geography of the supply and a geography of the demand, organises a discourse on diversity which can help the individual story-telling to escape from the single frequency of the *Égal*.” (id.). I proposed to see in urban government thought some intuitions of Deleuzian coordinates with a decolonising attitude (id.).

“Negotiation of an urban fact cannot fall in a dichotomous dimension (be/not be): the challenge is to construct discourses on the future of the urban, that are able to contain the minute stories of the becoming-minor; that make order, rarefying.” (id.)

I adopted from Deleuzian categories both the concepts of becoming-minor and rarefaction. While a “general theory of urban facts”, in Aldo Rossi’s *L’architettura della città* (2011), is a way to express the permanent essence of the ‘immobile stage’. Aldo Rossi wants to affirm “the values of architecture in the city’s study” (id.). Collective and private elements are confused in the city, “small beings looking for their accommodation, a small environment suitable for the general environment” (id.). Paraphrasing Rossi, architecture as an inherent fact of civilisation is a permanent stage of a theatre; it is necessary to:

- create a favourable environment for life
- express an esthetical intentionality
- make readable the stratification of memory and self-awareness of the city itself.

While Aldo Rossi shows that the “the city grows on itself” (id.), he trusts on the possibility of the universality and readability of architecture. He calls on a particular attention in the study of permanences. I think that this milestone signs a misunderstanding yet operational, leading the way for the concept of ‘assemblage’.

In the current time, some discourses use the word ‘assemblage’ trying to challenge the determinism of zoning approach, Sixties season of urban standards openly had declared the trust on urban fact as a dispositive of socio-cultural articulation, providing norms for society. Federica Giardini (2017) proposes a review of the massive success of this English acquisition of the French word *agencement*, pointing out that “this notion is both a point of precipitation of the transformations of the politician and an indication of a return of the materialistic approach” (id.). In Italian *agencement*/assemblage is translated as *concatenamento*, giving the accent on this figure of continuous chain (Deleuze and Guattari, 2017). Giardini shows that the “spatiality of the chain” gives relevance to the question of the “unforeseen

development” (Giardini, 2017). She grabs the point of the problem of the “provisional composition of strengths” (id.). For urban planning the problem today is the knowledge of the dynamics, more than the mastery of balanced forms. We are back to the concept of tension. If we immerse further in Deleuze and Guattari’s *milles plateaux* (2017), we find in the *Traité de nomadologie : la machine de guerre* (chapter 12) the figure of the “transhumant”: “to follow the flow of matter is wandering, roaming”. And they evoke the figure of the artisan as a *phylum macchinico*, “who is determined to follow a material flow” that “cannot only be followed” (ibidem). This transhumant figures are made of concentric circles, different from the practice of nomadism and itinerancy. Therefore the material has its own life (flowing) and to follow its dynamism means is a sort of encirclement.

European Urban scholar is accustomed to esteem the figure of the flaneur as positive way of re-mapping the world, while participating to life. I want to stress the aspect that this non-finalisation of the wandering is a typical ‘feminine’ attribution. In the same way it’s a woman attribute the accent on the non-action, in opposition to an active way. Man acts, builds, and transforms, interrupts the infinity of the woman experience of the continuous (of which he has no experience).

This value of inactivity in ‘space realm’ has his own correspondence in ‘time realm’; the aesthetics of the *ephemeral*. If the non-permanence in space has the value of making a free presence exist, non-permanence in time has the power of dissolve the traces of an action shaping the world. In the first figure the perception of the subject is moving and the scene is immobile. You can trace a map of this experience. In the second the thought is able to shape reality only for a meanwhile. A female lightness of the action is less ambitious and permanent but has a form, a tension, and a trajectory. What’s the problem? And why we need a reclaim of feminine way to reality? I see to forms of these concepts of equivocal appropriation by patriarchal *forma mentis*:

- mapping is a properly colonial action (Anderson, , attributed to the feminine/post-colonial experience of the suspension of the judgement)
- the figure of transhumant has a cyclical (as in woman experience) and circular way but the risk is to confuse it with a vicious cycle.

I come back to ‘permanence’ concept of Aldo Rossi, to reveal the misunderstanding I anticipated. The problem of an unforeseen development for Giardini (2017), in search of a renunciation of permanence, lead European design culture fall into a dichotomous opposition. To follow the stream of material and impermanence of this material is free. But according to my opinion these categories can be re-appropriated by an effort of re-configuration that see in ‘assemblage’ just a more casual way of zoning.

Giardini (id.) points out that the ‘assemblage’ weakens the effectiveness of the vertical playset approach; in the “spatiality of the chain” (id.) geographical scales are not Chinese boxes. Inter-connections are not only vertical, as in Actor Network Theory. The problematic effect of this ‘non vertical’ feature is that words linked to the culture of *agencement* are flatted to a one-dimensional aspect. And what’s the paradox? Without a vertical reference, territorial scale becomes a generic scale. So these adjectives, associated to design devices, give to project an inability to recognize its efficacy. Process/procedural, relationship/relational, participation/participated. Here are some evidences of how the tension of reality is frozen in a presumed horizontal playset. Horizontal has the generic value of a non-territorial-scale tag, good intentions often unsuccessful, a false friend of emancipation. These may be forms of “salvage capital” (Tsing, 2015) which appropriates itself of emerging awareness born in the local frictions. Often this “salvage capital” re-uses positive expertise to conquer again the freedom of local cultures. Tsing also claims that is not possible to scale-up any adjectives and frame of sense.

The problem of reshaping a world full of layers and objects is not new. “The basis of the current concept of city is the idea that it does not therefore fulfil the physical representation of a rigorous concept, but rather it’s the effect of the sum of countless historical experiences, of an inexhaustible process of shaping, involving, more or less directly, all the citizens, with their daily behaviour” (de Seta, 2010). As well as Rossi, de Seta conceives the city as a big artifact. What happens if the typological configuration is not a standard for project *efficacy*? De Seta (id.) points out the classical

difference between *civitas* (the complex of people shaping their living together with architectures and rules) and *urbs* (the physical construction, as a result of the way of living). These are often categories conceived as in opposition. Nothing newer than the opposition between Antigone and Creonte. What can be radically new (or radically reconquered) is considering the multiple physicality of the city as an activator of a multiple subjectivity. The problem of multiple points of view has been taken on with thought of *plurality*, by de-colonisation thought. Considering that another way of being is always possible in a feminine scenery. While cosmogony observes and accepts, cosmopolitan culture collects and juxtaposes differences (Buttarelli, 2017). Patterns, imagination, narrative, expectations compose a lexicon for a project that can observe but also tags used by politics and policies for a unique identity. Cosmopolitan government just accepts and recomposes differences without continuing the observation.

Another form of “salvage capital” can be the people-for-people paradigm: just a mutual appropriation through an instrumental knowledge and acceptance of the difference of the Other (Pietropaoli, 2018). “What is the work of genius if it is not the work he produces?” is the question posed by Massimo Carboni (2017) in *Il genio è senza opera*. The title is taken by an ancient Chinese expression. I take the three words “work, efficacy and example” from his essay. Carboni starts questioning about how in art the performativity of life became more important than the subjectivity of the kantian *genius* expressing an idea (id.). I will treat the problem of efficacy and example – closely related topics – in the next paragraphs. Now I want to end this paragraph with an accent on the becoming-body. The effectiveness of urban narratives outlines an idea of city no longer as the sum of decisions, but as becoming a woman, understood as becoming-body (Pietropaoli, 2018). Becoming-woman gives to the materiality of reality the character of a fold (Deleuze), of a push toward the multiplicity. This plural presence of objects is to be intended as a ‘work’ that is the result of Deleuzian practices of emancipation. I am proposing that the impartiality to which Olmo referred must be intended as a discourse on the urban body, different from the organic and medical metaphors of functionalism. This becoming-body is a field of a cosmogony of which dynamics are tensions to be read. This becoming-body could substitute the category of work.

Part Two: The possibility of making space or the concept of efficacy This dynamics reveals hidden theories of urban government based on the integration between masculine and feminine genealogies of thought. The index of this passage is the proliferation of the word crisis instead of the word equilibrium. What is breaking the wall of order? Stories. In this part of my essay I want to discuss about the possibility of histories and stories to exist; this touches the classical opposition of *logos* vs. city of stone. One of the questions underlying the use of the concept of tension is: does *logos* gives an order or get out of order? There’s a beautiful scene of the documentary about Donna Haraway (Terranova, 2016) where she’s playing with her dog (Figure 3). It’s a serious play, because they are making a contest for dog and masters of dogs, of those with obstacles. The sequence shows how the intimate understanding between these two creatures is made by experience and exercise. They have some common rules, a pact, and a common way of living. I see in this attitude to dispose bodies to a common discipline something important about tension. They feel empathy. They keep attention on gestures.

The importance of the exercise of gesture is something not so trendy in the current urban design composition. In a world overloaded with signs we are often embarrassed by giving an unique gesture to the use of an object. Narratives on ‘spontaneous’ and ‘informal’ are very successful. As happened in the case of impermanence, these are two adjectives taken from feminine realm but are exploited by patriarchal *forma mentis*. The culture of the ‘residual’, the basis of the concept of regeneration, starts from the recognition of a missing gesture. There are no gestures using a building, a park, a... Whatever object in the city. This generality of the concept reminds us what I still told about non-territorial-scale. These objects can be not only abandoned but also misutilised. The consubstantial presence of these objects ‘within’ the city reveals the unavoidable coexistence of life and death in urban becoming-body. But urban ‘death’ doesn’t coincides with a lack, a void, an organic decomposition. Architectural organism sometimes are still void (as a square space) or are made by a complex texture of organic and, often, inorganic materials. So the lack is an absence of intention or the presumed inefficacy of the intention using that part of the urban body.

In *Karman*, Giorgio Agamben (2017) treats the topic of gesture, starting from the origins of the concepts of cause, fault, will. “The laborious grafting of the concept of will on that of power” (Agamben, 2017) is fulfilled in Christian theology, with philosophers Agostino and Anselmo. The verbs “I can”, “I want”, “I must” are void of significance and “Possibility contingency, necessity” are articulation of the ontological thinkability (ibidem). Agamben shows how the ancient man has power and the “Christian man is a wanting being”. Proper of the ancient word is also the difference between *skopos* and *telos* (purpose and finality), with a preference on finality. Because “the *skopos* doesn’t depend from us but from the destiny” (id.).



Figure 3 Donna Haraway and her dog, photogram from the movie by Terranova, F., 2016, *Donna Haraway: Story Telling for Earthly Survival* [1h 30m].

I think that this tension between purpose and not-finalisation is some other material for the misunderstanding path I am proposing. This accent of ‘something lacking’ and the way Donna Haraway performs the efficacy of her relationship with her dog offers an image to a kind of social contract more based on ‘community’ realm than in ‘society’ one. In the documentary Haraway calls this relationship “a lifetime commitment”. This is not a question of metric-scale; society doesn’t contain community as something smaller. Efficacy gesture is something to cultivate between relationship and purposes. Efficiency is different from efficacy (Buttarelli, 2017). The efficiency is a different paradigm that prefers *telos* than *scopos* and common destiny is taken for granted. Instead if we choose efficacy, common destiny is something to conquer from time to time.

It reminds Cristina Bianchetti’s expression in *Tensioni urbane* (Cerruti But, Kërçuku, Setti, Vassallo, 2017, p.140): “pragmatic attitude that does not surrender to general theories”. Nevertheless this approach of urbanism in the same book is defined as ‘weak’ by Paola Viganò (chapter *Verso un’idea di Urbanistica debole*). This is the problem of considering opposition thought as something weaker (because proper of women), by convention. The strength of efficacy can be shown by considering philosophical and grammatical problems as a scenery to be integrated in case studies. The strength of efficacy can be reclaimed by women to be offered to everybody. This brings us to the final paragraph. Two sexes: the one strong, the other weak. An human being: primarily bad.

Part Three: The possibility of becoming-urban or the concept of *example* I will end my argumentation with a reflection about responsibility of Urban Studies scholars. A recent work by Patrizia Gabellini has the title of *Le mutazioni dell’urbanistica. Principi, tecniche, competenze* (2018). She reviews a large number of words, as an emerging field of urban government actions. Assuming any alternative way of thinking as an opposite ‘weaker’ thought is something very insidious. This lexical emancipation has no sense if the narratives on crisis and mutation assume this dominant-man-thought as a reference for human action. Marcel Gauchet (2018) denounces the end of male domination: “To women the gift of life” and to men the posses of society. Based on the possibility of tradition of values, men power takes the the family domain as the “basic cell on which the common existence was based” (id.). According to Gauchet, the dissolution of family gives a new assessment to society, made of individuals. This is the end of the male domination: the paternalism in matter of exercise of the authority has become a scarecrow (id.). In the second paragraph about efficacy, I still discussed the passage from society to community topics. The relevant step of Gauchet argumentation is a consideration about the dimension of the public sphere; he shows how this sphere had its cognitive

fundamental in the “results of science”, because that kind of objectivity was “conceived for the public release” (id.). According to Gauchet “the public has taken the place of the male” and the “city-soldier [...] takes charge of the fate of his homeland” (id.). We can find some indicators of this “public safety” individual battle in big narratives of current ‘crisis’ in their ecological approach as Anthropocene, Collapsology, Degrowth. The system of reference is planet Earth, for different reasons.

I will treat the largest narrative on species common destiny: Anthropocene. In these narratives is more or less implicit (it depends on the speaker) that the specie’s (disregarding the relevance of this concept) behaviours are called into question. It is also emphasised the human ability to make damages. The Earth as a figure of Nature is something currently familiar but is something recent (Virno, 2015). Scenarios of stories are flattened on the curved sphere of the planet. This is a sort of end of “time disarticulation of the space-time hinges of history” (Danowski, Viveiros de Castro, 2017). The rhetoric of the ‘loss’/‘lack’ invest the World. But with inverted perspective: please, human being, stop acting. This kind of rationality has the model of Odysseus that stops with the ropes his instinct to reach the singing Mermaids (Elster, 2005). To know to be weak (id.) is to recognize the need for an imperfect rationality. Elster retains absurd that people can choose apathy to protect themselves from manipulation but this stabilizing effect of “stratagems to force oneself” is a typical disposition for European cultures.

If we look at the project reacting to these sings of Mermaids (by technology and exploitation) we find Martin Prominski Andscapes. “By using the term ‘andscape’, a dualistic, divisive understanding of nature and culture becomes impossible – instead, the focus is on the dynamic relations between humans, animals, plants, stones, water, and all other elements in the world” (Prominski, 2014). This effort of integration is voiced in Prominski’s landscape architecture projects (Figure 4). He proposes the effect of the design intention not in the final form but in the capacity to let interact vegetal and animal living with men urban traces. Athropocene is Prominski’s framework of reference. Instead of the result of a less governed aesthetics, I find in this action of design a strong reclaim of control. These are beautiful and successful places, integrating an attentive consideration of resources and of uses. “And” is a more feminine conjunction than “or” (Buttarelli, 2017) but at the end these are interactive spaces wants to be recognised as something additive. This is a step to admit multiplicity in the lexicon of project. No more nature vs. human but nature and human. They don’t exclude each other but they don’t add a quality to the dialogue. Is this a branding concept? I don’t want too bold in this consideration and I consider important this response from the perspective of landscape to the perspective of Earth. Is the Prominski’s concept of ‘entanglement’ a way to give peace to a tension? Is it a good sign of change without a stronger awareness of the deep root of this culture in feminine way of thought? The difference from Gilles Clément’s Third Landscape and Planetary Garden is the idea to concentrate not on Clement’s possible points of observations of something transforming but on the effect of an integration of the dualistic world. What Earth crisis perspective reveals is that, another time again, is grammatical and more feminine the key of a new narrative of project integrating uncertainty.



Figure 4 Martin Prominski’s projects [source <http://www.irishlandscapeinstitute.com/2016/04/29/andscapes-ili-may-lecture-by-martin-prominski/>]

“The tale must be rehearsed – and we may amuse ourselves imagining how these must have been, often, acrimonious, or at least in dispute. Whose version of events is going to be committed to memory by the Memories?” (Doris Lessing, *The Cleft*). In this wonderful and terrific book, Doris Lessing tells the story of two populations, one completely masculine and the other completely feminine. This meeting between two species provokes a strong conflict. The translation of the title in *Una comunità perduta*, in Italian version, expresses the problem of common uses and behaviours. Both the sexes have a beasts’ common attitude. The rhetoric of Wilderness, as a movement not totally well framed in landscape architecture, is a step posing the access to the radical wild (of course) nature of living beings. But isn’t city more wild (in the sense of uncontrollable) than vegetable life sometimes? Isn’t this reclaim of wild life a way to escape and deny to the vibrant – non perfectly rational – results of urban co-existence? Gilles Clément invoked to learn to take care of the Garden with the capacity of observation, to let life express. Prominski proposes an accent on co-existence of non-drawable and designed. Well, this is still a Garden more than a unknown Forest. But in both the figures there’s a promise of abundance and future. I want to propose as a final suggestion another fairy figure: the Wood. Into the Wood the tales have place; actors choose a direction or another, they lost and find. Urban Studies scholar opens the experiment to an investigation which gives to the community the posture of doubt, of standing at the crossroads of the insidious path of the narrative wood (Eco, 1994). “The fundamental rule for dealing with a narrative text is that the reader accepts, tacitly, a fictional pact” (id.). The space of the Wood is made of possible crossroads and the protagonist of this path can choose only if he has some traces of orientation and disorientation. According to Eco this pact of said and not said constructs the expectation in the reader. Expectation is the only important thing because it makes to the reader an adventure to the limit between choice and destiny. I use this metaphor of Wood to propose this place of grammatical agreement as a rich relationship to be cultivated: with readers of Urban Studies and with people living their life in Urban dimension. The awareness of being part of a common story and history is a challenge for us as good writers. The moral claim to engage ourselves while we see the transformation of the city must be reached with this discovery of other ways of access to reality.

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SP36

Acsp-aesop special session:
learning from arnstein's ladder:
from citizen participation to
public engagement

ACSP-AESOP SPECIAL SESSION

Learning from Arnstein's ladder: From citizen participation to
public engagement

Engaging Non-Citizens in an Age of Uncertainty:
Lessons from Immigrant-Serving Nonprofits in
Los Angeles County

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Abstract:

Problem, research strategy, and findings: Arnstein's (1969) ladder has informed how planners redistribute power among constituents and increase citizen participation. Since the late 1960s, the non-citizen population has increased in the U.S. This demographic shift has affected planning and community engagement because many immigrants experience disparate access to public goods and services more so than native-born residents. Non-citizens are also particularly vulnerable to shifting political landscapes due to citizenship status. I use 29 interviews with immigrant-serving nonprofits to identify unique challenges to serve non-citizen clients after the 2016 election. Immigrant nonprofit experiences are informative because they may be the first and only organization to provide non-citizens with services and resources in times of uncertainty. The interviews inform how planners can improve non-citizen engagement practices and redistribute political power. Interviewees highlight how non-citizens experience barriers to public services and spaces due to fear of deportation and abrupt changes in their citizenship status. As a result, non-citizens are selective in how and where they engage. Thus, they connect to informal and formal spaces that may exist beyond their neighborhoods. These experiences also increase non-citizen dependency on nonprofits. As planners improve immigrant incorporation through these considerations, they can improve how they balance power, constituent representation, and meeting residents' needs.

Keywords: immigrants; nonprofits; participatory planning; civic engagement

Introduction

Arnstein's (1969) ladder of citizen participation arose after the U.S. Civil Rights movement. Community-based grassroots organizations formed around this time to increase low-income resident public participation (de Graauw, 2016; Espiritu, 1992; Smith & Lipsky, 1993). The government also passed policies to increase and/or mandate participation through Community Action Programs and Model Cities programs to address poverty, urban renewal, social services, community development, and participation for the "have-nots" (Arnstein, 1969; Gittell, 1983).

Since then, the ladder has been used to conceptualize participation and the redistribution of power in planning processes (Grengs, 2002). Planners are still grappling with how to engage and increase participation among "the have-nots" who have become increasingly diverse in language, nationality, racial/ethnic composition, and citizenship/nativity status. Planners also manage conflicts in working with a changing public (Qadeer, 1997; Spain, 1993), particularly in the age of immigration.

After the 1965 Immigration Act, immigrants and migrants have steadily grown in numbers. Between 1970 and 2010, immigrants comprised 5% and 13% of the U.S. population, respectively (Frey, 2002; Singer, 2013). Before 1965, most immigrants arrived from Europe, Mexico, the Caribbean, and Central and South America; afterward, a majority migrated from Latin America and Asia (Tienda & Sanchez, 2013). A major reason for this shift is because the 1965 Immigration Act removed racially motivated national origin restrictions that limited immigration from Asian countries (Hing, 1993). Thus, between 1980 and 2018, Asian Americans grew from 2% to 6% of the population, and two-thirds were born outside of the U.S. (Frey, 2018; Gibson & Jung, 2005). During the same period, the Latino population increased from 6% to 18%, and one-third were foreign-born (Frey, 2018; Gibson & Jung, 2005). The 1965 Immigration Act was also the first time that refugees became a permanent migrant admissions category (U.S. Citizens and Immigration Services, 2019).

Several policies after 1965 also changed the composition of non-citizens, including the Immigration Reform and Control Act of 1986, the Immigration Act of 1990, and the Homeland Security Act (Hing, 1993; Singer, 2013). The abrupt termination of the Bracero Program, which brought guest workers from Mexico between 1942 and 1964, also increased the number of undocumented immigrants (Tienda & Sanchez, 2013). These policies aligned immigration priorities with national security and law enforcement and created new statuses, designations, programs, and visas. Now, immigrants include refugees, asylees, Deferred Action for Childhood Arrival (DACA), Temporary Protected Status (TPS), legal permanent residents or green card holders, unaccompanied children, H-1B visa holders, and undocumented residents. The Pew Center estimates that a quarter of immigrants are undocumented (Lopez et al., 2018). These groups interact with government agencies differently by their status, networks, legal rights, and language needs (Allen & Slotterback, 2017; Frasure-Yokley, 2015; Kim et al., 2017; Nicholls & Uitermark, 2016). Unless noted, hereon after I will use "non-citizen" to refer to people of multiple statuses and governmental designations who are not citizens by birth or naturalization.

The relationship between planners and non-citizens are also affected by unstable political contexts. The year following the November 2016 presidential election offers an example of changing immigration policies and incompatibility between local, state, and federal laws (McDaniel et al.,

2019; see also the following for summaries of policies: American Bar Association, 2018; American Civil Liberties Union of Washington, n.d.; Ballotpedia, n.d.; Mueller, 2018). For example, Los Angeles enacted sanctuary city laws, which limits cooperation with immigration enforcement agents and has led to conflicts with the federal government (Dola, 2018; Luna, 2018). In these moments of confusion and swift decisions, planners will experience additional challenges to engage with non-citizens.

The government has also shifted the responsibility of services to nonprofits (Alexander, 1999; Kisanne, 2010; Smith & Lipsky, 1993; Swack, 2006). These organizations first formed to address immigrant social needs and link immigrants to government agencies (Cordero-Guzman, 2005; Hung, 2007). Nonprofits have since increased their role in immigrant community development and in creating inclusive planning practices (de Graauw, 2016; Kondo, 2012; Sirianni, 2007; Vitiello, 2009). Nonprofits are also oftentimes the first and only organization to provide immigrant social services in times of uncertainty (Lee et al., 2018). Thus, immigrant nonprofits can offer lessons for how planners work with non-citizens in shifting political landscapes. These considerations are important because non-citizens support economic and neighborhood development, but also pose demands on public services, including schools and hospitals (Fishman, 2005; Kim et al., 2017; Vitiello, 2009). Planners are also asked to recognize “a special need to plan for the needs of the disadvantaged” by the American Institute of Certified Planners (2016) to meet short- and long-term community needs.

I examine how immigrant-serving nonprofits were affected in their ability to serve non-citizens after the 2016 election to inform how planners can engage with these communities. In uncertain political and policy contexts, non-citizens were challenging to serve because of their fear of deportation and/or changes in their citizenship status. Thus, these groups were fearful of using public services or public spaces. Non-citizens were also selective in how they engage with spaces because they may not use their right to assembly and fear of immigration services. As an alternative, non-citizens were more comfortable with nonprofits, religious institutions, transnational associations, and using social media to connect for services. Immigrant nonprofits also met important government gaps in services because they can offer specialized services. The findings offer three recommendations for planners, including how to spend concerted time to build trust with non-citizens, using alternative spaces to ensure non-citizen safety, and developing partnerships with nonprofits to support immigrant services and immigrant-friendly policies.

In the following, I describe how planners have or have not successfully engaged with non-citizens. I then highlight how immigrant-serving nonprofits have served an important role to increase non-citizen engagement and representation in planning. After, I summarize the method and the three findings and recommendations to increase immigrant engagement in planning practice.

Planners and Non-Citizen Engagement

Studies have documented when planners minimally engage with non-citizens. For example, planners oftentimes do not specify immigrant integration goals, even in jurisdictions with large foreign-born populations (Kim et al., 2017). In addition to a dearth of formal engagement plans, Vitiello (2009) argues that planners have been ambivalent or dismissive of immigrant needs by using rational planning, which claims to be “culturally neutral” (p. 246). Planners then assume a technical position

rather than political role (Grengs, 2002; Lauria & Long, 2017), which discourages them from tailoring engagement methods.

Yet, planners perpetuate unequal immigrant representation through these “neutral” practices and inadvertently address the needs of long-term white native-born residents.¹ Lung-Amam (2017) documented tensions in Fremont, California between older white residents and new middle- and high-income Asian immigrant homeowners over single-family housing regulations. The participation process favored retired white residents who had the time, resources, and knowledge of formalized planning processes. These residents understood public meeting formats, frequently met with planning staff, and researched ongoing applications for building permits. In contrast, immigrants had trouble understanding and speaking English, were not informed about meetings because notifications were only posted in English or circulated only to previous attendees, and/or could not attend meetings due to conflicting work schedules. After, planners passed zoning that favored white residents and insisted the process did not discriminate against immigrants. Harwood (2005) similarly outlined Orange County, California land use conflict cases. Planners claimed to represent all groups, but *de facto* supported long-term white residents when they did not translate information, left out racial/ethnic and immigrant composition data in reports, and chose to only include crime statistics for immigrant-tailored land use requests. Planners also maintained that race/ethnicity did not affect their decisions because these methods were widely accepted community engagement practices (Harwood, 2005).

Over time, some planners have sought to improve immigrant engagement. Allen and Slotterback (2017) describe how planners gathered Somali refugee feedback by working with Somali-serving nonprofits, translating outreach materials, and holding public meetings in the evening. Yet, planners did not meet their participation goals because they were unaware of or ignored religious, group, and cultural considerations, including Muslim holidays, gender dynamics, and high illiteracy rates. Non-citizens experience additional barriers to public agencies due to their citizenship status, which impacts access to employment, economic development, and housing (Kim et al., 2017). Further, increasing diversity forces planners to assess their own biases and cultural frameworks as they work through community nuances (Harwood, 2005; Umemoto, 2001).

Nonprofits and Non-Citizen Engagement

Immigrant nonprofits have increasingly bridged the gap between non-citizens and the government for several reasons. Government entities may not be equipped to work with diverse immigrant groups, which have numerous cultural, linguistic, and socioeconomic needs (Lee et al., 2017; Vitiello & Acolin, 2017; Wilson, 2012). In contrast, immigrant nonprofits provide important culturally- and linguistically-tailored services (Hung, 2007; Roth et al., 2015). Consequently, immigrants and native-born residents have different institutional support networks. Immigrants who are not fluent in English and/or migrate from non-European countries may rely more on group-specific nonprofits while native-born residents can rely more on formal government agencies (Hung, 2007; Vitiello & Acolin, 2017). Furthermore, nonprofits have expanded their role in immigrant communities as the U.S. restructured and passed social service responsibilities to nonprofits (Alexander, 2000). The 1996 Personal Responsibility and Work Opportunity Act particularly affected human service nonprofits because non-naturalized citizens were no longer eligible for welfare benefits, which increased the need for nonprofits to serve these groups (Trudeau, 2008).

Immigrant nonprofits have also expanded their functions and how they intervene for non-citizens. Historically, they focused on addressing immigrants' integration needs and preserving cultural identity (Hung, 2007; Kondo, 2012). Gradually, immigrant nonprofits began to push for political representation and redistribution of resources through advocacy or equity planning (Davidoff, 1965; de Graauw, 2016; Kondo, 2012; Krumholz & Forester, 1990). For example, immigrant nonprofits have asserted immigrant voices in district and community land use and development review processes by using staff technical and organizational skills to inform and engage these constituencies (Espiritu, 1992; Hum, 2010; Ito & Pastor, 2018; Sarmiento & Sims, 2015). Nonprofits also support immigrants in formalized ways, such as speaking on behalf of clients at public meetings (Zapata, 2009), holding positions on planning boards (Sandoval, 2018), and organizing for immigrant-friendly development contracts (Gonzalez et al., 2012). These organizations provide alternative spaces of engagement beyond public meetings or planning boards, such as community meetings to gather resident opinions (Hum, 2010) and rallies or other political actions to challenge planners and policymakers (Sandoval, 2018; Sarmiento & Sims, 2015).

While these organizations may improve non-citizen representation in the planning process, they simultaneously complicate planning processes. Immigrant nonprofits have their own realm of political actors and disparate power dynamics (Bryson et al., 2012). Similarly, planners need to be conscientious of a nonprofit's target audiences to avoid inadvertently prioritizing one immigrant population over another (Allen & Slotterback, 2017). Furthermore, political power and public engagement are complicated in jurisdictions with a "super diversity," or areas with large-scale migration and its resulting diversity in race/ethnicity, national origin, citizenship status, and socioeconomic status (Nicholls & Uitermark, 2016).

Immigrant nonprofits are key stakeholders and institutions that increase non-citizen engagement. However, what happens to non-citizen engagement when political climates shift against non-citizens? This study seeks to understand the challenges that immigrant nonprofits encountered after the 2016 presidential election with their non-citizen clients.

Evaluating Nonprofit Relationships to Non-Citizens

This study draws from 29 semi-structured interviews with executive directors or program staff of immigrant-serving nonprofit organizations with 501(c)(3) status. Semi-structured interviews were conducted with 26 different organizations in Los Angeles County between July and December 2017. For three of the organizations, I conducted two interviews because they had programs from multiple sectors—for instance, health and legal services.

Interviewees were recruited in several ways. First, I used Guidestar.org, a nonprofit database that is searchable by geography, key words, and National Taxonomy of Exempt Entities (NTEE) codes to identify nonprofits in the target area.ⁱⁱ Among more than 12,000 nonprofits in the county, about 230 nonprofits were identified using the key word "immigrant." Of these 230 nonprofits, 48 had the NTEE designation of "ethnic/immigrant services." Additional online searches in newspapers were conducted to identify nonprofits that were active in immigration rights issues during 2016. Using these criteria, 68 organizations were contacted for an interview. Staff members who worked with

immigrant-related services were invited to participate; the executive director was contacted for smaller nonprofits. Other participants were recruited through snowball and convenience sampling.

Participants were asked about changes to client needs and immigrant engagement strategies after November 2016. Staff also described how they work with local, state, and federal governments and public agencies. Interviews were used because they provide insights into staff perceptions of client issues and trends across organizations (Strauss & Corbin, 1998). Interviews lasted from 45 to 60 minutes and were audio recorded. Full transcriptions were analyzed using Dedoose.com, a qualitative coding website. I developed a coding dictionary through an iterative inductive process—interviews were reviewed to develop proposed themes, and parent and child codes were edited after analyzing additional transcripts (Strauss & Corbin, 1998). Two graduate students validated the coding. Nonprofit names are kept anonymous to protect confidentiality.

Table 1 displays summary characteristics of interviewed nonprofits. On average, the organizations were granted 501(c)(3) status in the late 1980s, and nearly half of the organizations had about \$1 million to less than \$5 million in revenue. More than half also had fewer than 50 employees. Nonprofits differed in focus and intervention, ranging from advocacy groups to human service providers, legal services, mental health services, housing, and refugee issues; however, most provide more than one service. Twelve nonprofits focused on Latinos, ten targeted Asian Americans and Pacific Islanders, two worked with Muslims, and four organizations served immigrants or refugees with no specific racial/ethnic group focus; two nonprofits served Latinos, Asian Americans, and Pacific Islanders. The majority of nonprofits offered services in Spanish, and some offered Asian or Middle Eastern languages.

Table 1. Characteristics of Interviewed Nonprofits, FY 2016

Year 501(c)(3) Status Established	Number
Before 1980	5
1980 to 1989	3
1990 to 1999	15
After 2000	3
Revenue	
Less than \$500k	5
\$500k to Less than \$1 Million	3
\$1 Million to Less than \$5 Million	12
\$5 Million to Less than \$15 Million	4
More than \$15 Million	2
Employees	
Less than 15	9
16 to 49	7
50 to 150	8
More than 500	2
Primary Activities *	
Civil Rights, Advocacy	9
Community, Neighborhood Development	6
Health Center/Community Clinic, Health Support Services	4
Legal Services	4
Youth Development	4
Human Services	3
Public Housing/Housing Development, Management	3
International Migration, Refugee Issues	2
Mental Health	2
Target Population	
Latinos**	12
Asian Americans and Pacific Islanders**	10
Muslim	2
Immigrants, Non-Specified	5
Non-English Languages Serviced	
Spanish	21
Korean	4
Arabic	3
Farsi	3
Khmer	3
Tagalog	3
Thai	3
Armenian	2
Cantonese	2
Japanese	2
Mandarin	2
Vietnamese	2
Type of Organization***	
Social/Legal Services	18

Grassroots Organizing	5
Advocacy	3

Source: Guidestar.org and online searches. Notes: Nonprofit Internal Revenue Service forms report revenue rather than budget, which can be used to assess size of organizations. *Based on NTEE code. The total does not sum to 26 because organizations may have multiple activities. **Some of these organizations serve both racial groups. ***Nonprofits organized by primary function, but some organizations provide multiple functions.

Los Angeles has had a consistent flow of immigrants since World War II (Singer, 2013), which has led to a robust network of immigrant nonprofits. About 17% of Los Angeles County was foreign-born in 2016 according to the American Community Survey—about 67% of Asian Americans and 39% of Latinos were immigrants. About 1 million undocumented immigrants are estimated to live in the Los Angeles metropolitan area, which is second to New York City (Passel & Cohn, 2017). Los Angeles is estimated to have nearly a third of Latino and Asian nonprofits of the 10 largest metropolitan areas (Hung, 2007).

Sampling may contribute to bias in the results. As with most nonprobability samples, respondents elected to participate and may have stronger opinions than those who did not participate in the study. Furthermore, potential participants may also differ from interviewees if they did not have the capacity to be interviewed for the study, which suggests interviewees may work in more established nonprofits. Second, there are no set guidelines for sample size needed in qualitative studies. However, data collection ended at the 29 interviews because preliminary analysis reached the point of saturation, or when no additional themes arose (Saunders et al., 2017). Further, immigrant-related politics changed nearly weekly or monthly during the 6 months of data collection. To address the goal of capturing nonprofit experiences immediately following significant political changes, the data collection period was limited to capture nonprofits reacting to the same political climate. Still, the findings provide in-depth insights about challenges of working with non-citizens in tumultuous political contexts and how planners can improve non-citizen participation.

Three Considerations for Non-Citizen Engagement

Non-citizens experience disparate access to traditional forms of engagement. For example, those without citizenship or legal status typically cannot serve as public officials, vote in an election, and/or are ineligible for some public benefits.ⁱⁱⁱ Nonprofit interviewees highlight how non-citizens experience additional barriers to public services and spaces for a few reasons. First, fear and safety concerns affected non-citizens because of increased cases of detention, arrests, and hate crimes after the 2016 election (Torbaty, 2017; Williams, 2018). Second, non-citizens interact with spaces of engagement differently than native-born residents related to these fears. Third, these considerations increase non-citizens dependency on nonprofits. (Table 2 summarizes the findings.) The following includes quotations from staff members, which were edited only for clarification.

Table 2. Summary of Findings and Recommendations

Non-Citizen Engagement Consideration	Recommendation for Planners
<p>1. Increased fear and safety, depending on citizenship status</p> <ul style="list-style-type: none"> • Uncertainty about how policy changes will affect various immigration statuses • Opting out of or being selective in what types of public benefits they use because of fear of deportation, losing benefits, or penalties 	<p>1. Spend more time with immigrants to build trust</p> <ul style="list-style-type: none"> • Invest in frequent outreach efforts • Offer small incentives • Be proactive in ensuring immigrant safety • Prioritize multiple forms of translation
<p>2. Different spaces for non-citizen engagement (local, state, national, transnational)</p> <ul style="list-style-type: none"> • Limited access to public institutions, public spaces, and right to assembly out of fear of immigration services • Comfort with nonprofits, religious institutions, transnational associations, and social media • Connections beyond the neighborhood, including other countries due to deportations 	<p>2. Use alternative spaces for immigrant engagement</p> <ul style="list-style-type: none"> • Ensure safety at existing public institutions • Incorporate small group or individual participation methods • Push for policies that decouple public institutions from immigration services • Hold community forums in anticipation of or in response to policy changes
<p>3. Dependent on immigrant nonprofits</p> <ul style="list-style-type: none"> • Nonprofits tailor approaches to service group • Government gaps in service • Nonprofits identify policies disproportionately affecting non-citizens 	<p>3. Develop partnerships with nonprofits</p> <ul style="list-style-type: none"> • Establish partnerships with the public, private, and nonprofit sector • Generate funding sources that support nonprofit immigrant services • Collaborate with nonprofits to create immigrant-friendly policies

1. Fear and Safety Concerns

Nonprofits reported that non-citizens of varying immigration statuses had concerns about their safety, changes in immigration status, and deportations. With anti-immigrant rhetoric, members were also

afraid that their legal rights could be taken away. Families were left to make critical decisions about whether they should access public services they are entitled to use.

Interviewees explained how clients were concerned for their family's safety in this context. A participant described how non-citizens were targeted for participating in public events: "[A DACA activist] spoke at a press conference, and then the next day, she was detained... and her mom first was picked up for collateral where ICE [Immigration and Customs Enforcement] was collaborating with the sheriffs." This fear extends to clients who are undocumented: "You have these rights as an immigrant. However, if you have an outstanding deportation order, a criminal conviction, a common name, or someone in your apartment had one of these things, you might be at risk." There are other incidents that ICE agents arrest people who live or work nearby raids who are suspected to be undocumented even though the raid was targeting other individuals (Burnett, 2017; Jacobs, 2018; Sanchez, 2017; Sheets, 2017).

Clients also experienced an increase in hate crimes and discrimination. One staff noted, "Hate crimes reported to us rose significantly in the month following the election, more reports than we'd gotten last year, and this is when hate crimes are underreported." Another interviewee observed, "What is more concerning for our members is the old-school white supremacy that happened through the election...with increases in discrimination and being told to go home when you're getting gas."

Additionally, non-citizen clients were apprehensive that the government would suddenly end their immigration program, which would change their immigrant status and legal rights. A staff member shared how clients approached their organization the day after the election:

There was a lot of tears, a lot of worry, if people are on temporary protection status, or a family member who's awaiting asylum, what's gonna happen? My sister is undocumented, what will happen to her? We were meeting the next morning and at 9 o'clock, people had already gotten calls and messages from their family members and were feeling worried, afraid.

Another interviewee was surprised how "even green card holders were calling us, asking if they can be taken away or if they can travel because people are living in fear of their status." These fears are exacerbated for refugees from a country that persecuted its people: "Our community history and trauma just make them untrusting of the government." Consequently, non-citizens of all statuses were afraid of changes to their programs and whether they would be at risk of deportation.

This distress limited non-citizen access to public resources. Low-income clients were selective in what kinds of assistance they applied for and used because of concerns that the government will track them. A staff member explained: "Clients will receive services from us, but they don't want to apply for food stamps or Medi-Cal because they're worried that the government will deport them." Similarly, a participant noticed, "Clients are hesitant in applying for government services because they feel it would draw attention to them, and they might get penalized." Non-citizen concerns were also elevated due to shifting and unpredictable federal regulations about public programs (Shear & Baumgaertner, 2018). An interviewee used the example of public charges: "The leaked memo about

public charge... didn't become official policy but had a dramatic impact. Our community members weren't applying for public benefits lest they be considered a public charge and not get to stay."

These described fears limit non-citizen access to other services that are assumed to be accessible. A prominent example was public schools. A staff highlighted how students were afraid of attending school: "We're working with school-based children, maybe their parents are not documented, so they don't know if they come home from school one day that their parents might not be there." Alternatively, students opted out of school because of uncertainties around their immigration status. An interviewee explained: "When I was at [High School], staff mentioned that chronic absenteeism has gone up because students, they're new immigrants, they'd rather not go to school." Another staff shared parents' perspectives about deportation: "Parents drop their kid to school and they are worried, should I take my kid?"

2. Non-Citizen Spaces of Engagement

Similar to public resources, non-citizens make decisions about being visible in spaces of engagement based on perceived risk. Thus, non-citizens may not exercise their right to assembly because of their concerns around fear and safety. A staff describes client concerns:

We didn't think much of public press conferences, protests, or rallies because [in Los Angeles] it's a low-risk activity, but that changed after Trump was inaugurated and ICE targeted undocumented activists. All of a sudden organizing became very high risk, and not normal ... We have to be realistic that for a lot of our members it's more than just fear, it's a really intense, dramatic, material consequence if something does happen.

However, this fear of public rallies depends on citizenship status. For example, one interviewee noted how in their campaign for immigrant workers' rights, "Undocumented members won't participate, but those who came out have papers or are citizens." A staff shared another example of clients changing the scale of engagement: "We haven't had as much success in overt forms of organizing, like taking a busload of clients to Sacramento [for lobbying], but we have clients testify at meetings or hearings." These examples show how non-citizens have differential comfort to freedom of speech and assembly than native-born residents in precarious contexts.

Moreover, the neighborhood has been an important geographic unit for the community reinvestment movement (Dreier, 2003) and neighborhood revitalization programs (Martin & Pentel, 2002). Yet, non-citizens may practice democracy or engage with entities beyond their immediate neighborhood, including nonprofits, religious institutions, transnational associations, and social media (Sandoval, 2013; Sarmiento & Beard, 2013; Veronis, 2013). For example, a staff member described their monthly immigration clinics: "We do not have a physical space but we establish relationships with churches to create semi-permanent locations for our immigration consultations." Another interviewee similar shared, "We go out and do advocacy workshops at mosques."

Nonprofits also engage with international agencies and organizations to serve clients who migrated from countries that have agreements with the U.S. to receive deportees. One interviewee described how "few TPS people are going to return to their nation of origin because the situation is worse than

what they're facing here." Many of these individuals are ineligible to apply for permanent residency, and some of these clients sought to cross the Canadian border. To provide cautious information, the nonprofit worked with the Canadian Consulate "to clarify what is the process if someone decides to cross the border into Canada fleeing the unfriendly immigrant policies of the current administration." Other organizations with clients from countries designated for TPS also collaborated with transnational nonprofits to be informed of and influence international agreements.

Non-citizens also used social media to work with immigrant nonprofits across national borders. A participant described how a deported client contacted their organization through Facebook because "his family was left behind, and he wanted help for them to follow him to [home country]. We helped him and used [this incident] to educate our community about when you are arrested and deported." Immigrant nonprofits then use these informal spaces online to further assist their clients.

Finally, when more public spaces were inaccessible, some nonprofits encouraged clients to meet in private spaces. One nonprofit had members meet at home "instead of our membership meetings" to "find different ways for people to resist, like I'm going to your house and you're inviting two neighbors and do an informal Know Your Rights [workshop]." These organizations understand how to use spaces that feel safe for non-citizens that take place in formal institutions—such as places of worship or nonprofits—and informal spaces. These organizations also consider how clients are affected by national and international policies beyond neighborhood borders.

3. Dependence on Immigrant Nonprofits

Non-citizens are dependent on immigrant nonprofits for several reasons. First, the government may not provide services for this group. As a result, nonprofits have developed and/or are mandated to offer specialized services. Furthermore, non-citizens rely on nonprofits because of language barriers, distrust of the government, and fear due to citizenship status. As previously described, nonprofits understand these challenges when assisting clients, and many nonprofits served clients beyond their city or county who do not have alternate resources (see also DeVita & de Leon, 2012). They also identify ways that non-citizen clients are disproportionately impacted by government policies, which affect client willingness to engage politically.

Immigrant nonprofits serve important functions for non-citizens because of their tailored approach, which bridges gaps in governmental services. One critical gap is in-language services for non-citizens. Kondo (2012) described how government agencies might not prioritize translation services for non-English residents, by not placing translators at the front of a meeting and not leaving enough time for translation of speakers during meetings. Similarly, an interviewee explained: "There is a gap in services because they don't have [our language] speakers on staff, so those who used to receive services no longer receive help." Eventually, this organization became a government subcontractor to help with translation in these services.

Nonprofits also mediate in more serious cases when government agencies do not provide translators. A case with Southeast Asian workers illustrates this point. A nonprofit was alerted that a restaurant was raided by "the Board of Equalization [BOE] for tax evasion so the owners are criminals." However, the staff discovered that "workers were handcuffed, and they [BOE] brought in sheriffs,

though we know the workers are being exploited and they're not a threat.” However, BOE did not “take measures to bring people in that speak their own language to explain what’s going on, so [the workers] were scared out of their minds.” The organization then stepped in to clarify that the workers were not involved in the crime.

Government agencies and programs also may not reach out to non-citizens to inform them of their rights. One nonprofit staff “noticed that people were not using their benefits and were hesitant to go show up at clinics because they heard there was an [ICE] agent that went into the hospital.” She then detailed their follow-up process:

So we enroll somebody, then at 30 days we confirming they got in, and then at 6 months that they used their benefits. At 6 months, people were saying no, I haven’t used my benefits, so we’d say, let me help you make an appointment.

This example illustrates how immigrant nonprofits specialize their non-citizen services when government agencies fail to educate non-citizens about their legal rights and benefits.

Furthermore, immigrant nonprofits have a deep understanding of their clients’ needs and how they are disproportionately affected by policies. An interviewee explained how their members struggle with naturalization requirements:

We have a population that was not able to learn English and don’t qualify for the English or Civics Test waiver for naturalization, and now we’re trying to figure out how they’ll pass [naturalization] exams ...the English and Civics waivers are for seniors and you have your green card for 20 years. But since our community is newer, they don’t have their green cards for that long and a lot of our seniors have difficulty learning English.

This nonprofit understand the special needs of their senior clients and roadblocks for members who seek to become citizens.

This issue also extends to intersections of the immigration and criminal justice systems. Nonprofits found ways that minor infractions would escalate clients’ risk of deportation. One participant described the situation of her refugee clients from Southeast Asia, who arrived at a young age:

Our clients grew up in high poverty, crime areas here, have criminal records [from] when they were younger, served their sentence, did their time, and then they were re-integrated into the community, and now have families, full time jobs. But because of this past record, they’re on a deportation list.

Some of these crimes were minor, such as breaking a window as a teenager. Yet, the way the criminal system charged these clients, there are at high risk of deportation. A different nonprofit described their work on street vending, which was considered an infraction in Los Angeles municipal code. When clients did not show up to court “because there was a new fear with the anti-immigrant rhetoric and executive order on fast-tracking deportations,” their infractions turned into misdemeanors and “could put them on the list to be deported.” In collaboration with others, this nonprofit successfully decriminalized this municipal code.

Three Recommendations for Non-Citizen Engagement

Immigrant nonprofits utilize several strategies for planners to build trust with non-citizens and increase public participation. The following describes three tactics (see Table 2 for a summary).

1. Spend Concerted Time to Build Trust

Non-citizens are not an efficient group for planners to engage with for several reasons. First, some non-citizens require significant outreach efforts before they may attend their first meeting. However, this absence does not equate to these groups not needing services. An interviewee detailed how the organization engages with their hard-to-reach population:

There are nuances into outreaching and educating our members before they are even open to receive services. We provide some initial, tangible resources to our members before they're even open to receiving other services and it's all about building trust and relationship.

An example resource is enrolling potential clients in Low Income Energy Assistance, which can decrease utility bills. After a client sees this benefit," we get our foot in the door and then we can have more conversations about their other needs." Planners can offer some small incentives for public participation meetings to build trust. Kondo (2012) also described how an immigrant nonprofit offered families a \$25 gift card for Target as an incentive to attend meetings.

Nonprofits also recognize they need to be proactive to maintain trust with non-citizen clients, particularly those who are concerned about deportation or their immigration status changing. For instance, a participant spent extra time to communicate to clients: "our first priority is to protect their confidentiality, and that we don't cooperate with immigration services looking for information about client immigration status." These messages retain clients who "want to drop out of treatment because they think, if I move, I might be harder to find [for ICE]." Another interviewee described how "we sent letters to our families just letting them know that this is a safe organization and we're here to support them."

These efforts may include more translation efforts for non-citizens who do not speak English comfortably. A staff member described their tactics with schools: "We'll work harder to outreach at schools because immigration [ICE] is going to the schools. We'll hold hands with the school and hire more Spanish-speaking staff to work with families because the language would increase trust." Planning departments may already work with translators or hire staff who can speak another language. However, an interviewee demonstrates how planners can implement multiple forms of translation:

Many immigrant members never had formal education in this country... there are no materials in their language to know about these issues so someone is bilingual, they'll write a kind of memo, and then makes a presentation, these are the key issues, key player in how things happen. We also do some spontaneous translations.

This example shows how planners can create brief written translations, prepared oral translated remarks at the start of a meeting, and additional translations as needed throughout the meeting. By doing so, planners would prioritize translation before, the start of, and throughout meetings. These efforts also signal to non-English speaking non-citizens that planners understand that language issues are about “meaningful access” rather than simple interpretation (Wilson, 2012).

2. Use Alternative Spaces of Engagement for Non-Citizens

Planners can use other spaces to engage non-citizens, and/or using creativity in community events. As previously described, immigrant nonprofits work to engage non-citizens in nonprofits, religious institutions, transnational associations, and informal spaces. Also, planners can push for formal policies that ensure non-citizen safety.

Nonprofits use multiple spaces for constituent participation (Hum, 2010; Sarmiento & Sims, 2015). One organization member further explained their approach:

We committed to do regular town halls here so that members had access to us and could ask questions. We had our first one the same weekend as the first iteration of the Muslim ban, and we’re trying to be ahead of the curve though things are constantly changing.

Interviewees did not indicate a preferred type of space, but rather a multipronged approach and the importance of holding meetings in anticipation of major policy changes. For instance, a nonprofit held community meetings on important dates with government agencies: “The day of the election, we had to have a forum to talk to our immigrant families about their rights.” Another nonprofit also held Know Your Rights workshops with the mayoral office immediately upon anticipation of major policy changes: “When the decision [to end DACA] happened, the Mayor’s office called us and we said, okay let’s do DACA workshops.”

These meetings were accessible to non-citizens because a trusted immigrant nonprofit organized it at a non-government venue. These strategies are similar to Hum’s (2010) example of nonprofits holding community events at a foundation rather than community board meetings that are otherwise inaccessible to immigrants. Additionally, planners need to understand the timing of meetings. They can schedule forums and workshops in anticipation of major changes, which will help assure non-citizens that planners are looking out for their interests and well-being.

When public buildings are used, planners can push for measures to ensure that non-citizens are not concerned about their immigration status when participating. Los Angeles nonprofits worked with policymakers to decouple public institutions from immigration services. After, in October 2017, California legislation passed A.B. 699 (2017), which prohibits schools from collecting immigration status information of students and their families.

Alternatively, some non-citizens may hesitate to attend public meetings because of their concerns around safety and citizenship status. Consequently, an interviewee explained how “we work more on the 1-on-1 because even when we do an action or event inspired and led by the community, most of them don’t come out.” Planners may also need to incorporate individual and/or small group

participation along with posting information on social media with nonprofits or other community institutions.

3. Partner with Nonprofits

Planners also can collaborate with the nonprofit sector to involve non-citizens in governmental processes because these institutions dedicate significant resources to build trust with this population. As previously described, nonprofits are important intermediaries with planners and government agencies. These relationships will prevent planners from “parachuting” into non-citizen communities to gather community knowledge without developing lasting mutual connections.

These partnerships can encompass the public, private, and nonprofit sector to generate new funding and foster policy buy-in (Ashley, 2014; Smith & Lipsky, 1993). An organization describes one such example: “Private philanthropy, the county, and the city provided funding for nonprofits to provide legal services around deportation defense. It took 6, 7 months of advocacy with [our Coalition] and engaging our elected officials.” This partnership created more than half a million dollars in funds. The interviewee continues to describe the benefits with public partnerships because they can share clients’ issues with government agencies “to inform policies and what elected officials need to do now, not in 6 months.”

These collaborations can lead to immigrant-friendly policies (de Graauw, 2016; Wilson, 2012). An interviewee described how a state senator approached this organization “with the California Religious Freedom Act. It’s not something that we brought up with him, so we’ve seen senators and city council putting forth motions, and resolutions.” Through continued relationships, this elected official was proactive in passing pro-immigrant measures, which helps immigrants feel safe regardless of religious affiliation.

Planners can redistribute power and increase immigrant engagement through similar partnerships. Interviewed nonprofits have established networks to help a broader group of clients, such as connecting with other organizations that specialize in indigenous or uncommon languages. These collaborations would benefit planners who may not have the resources to develop tailored engagement.

An “Imagined Future” with Non-Citizens

The findings summarize how planners can redistribute power and build trust to improve non-citizen engagement, particularly in rapidly changing political contexts. I offer several insights about non-citizens’ needs, including increased concerns about fear and safety, restricted access to resources and spaces, and dependency on nonprofits. These findings provide planners with methods to strengthen ties to immigrant communities, including spending time to build trust, using alternative engagement, and partnering with nonprofits.

Planners should understand how issues disparately affect non-citizens by immigration status and context. Groups that are at risk of deportation may experience the highest levels of concern—this group includes undocumented individuals, legal permanent residents, and refugees from countries with repatriation agreements with the United States. Low-income non-citizens will be concerned

about loss of benefits, while non-citizens of all socioeconomic statuses may be confused about their legal rights. Non-citizens who are not fluent in English will require more in-language assistance. Planners may also need to spend more time to build trust with refugees and other migrants who arrived from countries with oppressive governments.

It is important to acknowledge other constraints that will affect planners. Some planners or planning departments may not be equipped to design specialized interventions due to time and resources. When planners cannot implement the first two recommendations, they can focus on supporting immigrant nonprofits, which provide organizing skills and socioeconomic and political infrastructure in immigrant communities (Hung, 2007; Sandoval, 2018; Sarmiento & Sims, 2015).

Planners are also limited by their jurisdictions and political context. First, they may be constrained by state and city policies. Planners in sanctuary cities have more protections to assist non-citizens than planners in jurisdictions with anti-immigrant policies meant to exclude immigrants (Gilbert, 2009). Regardless, all planners can inform constituencies of their legal rights, regardless of status. Second, elected officials and planners may experience tension because of their different objectives. Elected officials aim to win elections and represent their voting constituents; planners aim to reflect the larger public's interests, but are constrained by elected officials (Beckman, 1964; Harwood, 2005). Consequently, planners are embedded in the politics of the planning commission, elected officials, and other government agencies, which may disagree with planners' recommendations (Harwood, 2005).

These considerations can help planners cope with uncertainty from changing demographics and political contexts (Christensen, 1985; Frey, 2002). As Spain (1993) described, "The issue facing planners is how to facilitate the transition from the imagined past to the imagined future" (p. 157). This transition includes shifting planning engagement of long-time residents ("the imagined past") to include new non-citizens ("the imagined future"). These incremental practices will not resolve the broken immigration system. Immigration reform is a long process, and any reforms will likely result in multiple immigration statuses. Still, planners can be unwavering in using inclusive practices to increase non-citizen participation and/or representation as the country undergoes waves of federal backlash and support for immigrants.

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ⁱ About 4% of non-Hispanic whites were foreign-born according to the 2017 5-year American Community Survey. The following cases use the category “white” to describe non-Hispanic whites. However, there is evidence that some Latinos may identify or mark the category “white” (see Golash-Boza & Darity, Jr. [2008] and Tafoya [2004]).

ⁱⁱ The Internal Revenue Service categorizes nonprofits by the NTEE system (Guidestar, 2019). Categories include health care; environment; civil rights, social action & advocacy; community improvement & capacity building; employment; and human services. NTEE categories that specify immigrants are subcategories under human services (P84) and minority civil rights (R22). Many immigrant-serving nonprofits are then categorized based on other functions, such as housing, health care, human services, or education. Nonprofits can also be categorized by multiple NTEE categories. Many nonprofits in Los Angeles also service immigrants because their service area or target geography has a large foreign-born population.

ⁱⁱⁱ There are some unique cases where non-citizens can be appointed to planning boards.

Learning from Arnstein's Ladder:
From Citizen Participation to Public Engagement

Citizen Participation in Transitional Society:
An Evolution of Participatory Planning in Serbia

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Abstract: Arnstein's seminal article influenced both the scholars and practitioners to explore the ways of citizen engagement against the public administration and politicians. To illustrate this, I present the case study of Serbia through four phases of its planning history. After the Second World War, the top-down spatial planning for social good was controlled by the elite multidisciplinary technocratic decisions. Citizens were just *informed* about the possibilities for public insight and debate. The state decentralization of the 1970s, influenced the shift of planning from the state focused allocation to the community responsive planning, based on *delegated power* of the civil sector in *partnership* with representatives of local politics. In the 1990s, when the development process was almost exclusively driven by private investment greenlighted by the national government, the citizen participation was not even *manipulated* – it did not exist, neither in planning legislation, nor in planning practice. Today, Serbia faces the privatization of state land and resources, while experts try to find their own place in an arena of manifold interests, making the citizens able to exercise only 'de jure' public *consultation*. The need for substantial citizens involvement is indisputable, however, the step towards its implementation follows the democratic development of Serbia.

Keywords: Sherry Arnstein, public engagement, transitional society, Serbia

Introduction

Arnstein used the metaphor of a ladder to describe examples of citizen participation that projected the cutting-edge progress upward – from securing political rights to obtaining economic justice. People would obtain greater influence for the places they live in by using types of participation with greater access to political authority. Organized civil disobedience and nonviolent protests proved useful in stopping bad redevelopment and highway projects. However, poor people were not integrated into political positions of influence; some other planning approaches (e.g. advocacy or equity planning) dealt with such efforts (Davidoff, 1965; Krumholz *et al.*, 1975). Moreover, global financial crisis of the 1970s affected the shift towards neoliberal governance promoting competition. This designated the crisis for citizen participation, too. The neoliberals weakened the legitimacy and coherence of the state as an instrument for enhancing citizen sovereignty, while increasing divisions that enable elites to lobby for favorable financial benefits. However, the social democracy in the United States (US) called

for citizen participation again – in planning theory this resulted in ‘communicative-argumentative turn’ (Forester, 1989) and, therefore, the resurgence of Arnstein’s approach.

Why should we use Arnstein’s seminal article for the analysis of the Serbian spatial planning that is quite different to the briefly reviewed US context? Due to its universal nature, the ‘ladder’ here serves as a tool for elucidating the “gradations of citizen participation” (Arnstein, 1969: 217). Exploring citizen participation in the challenging case of Serbia means discovering a variety of nuances of public involvement – from passive observers to controllers of urban development. Moreover, the Serbian case clearly illustrates that participation cannot be taken for granted – it must be won over and over again. What is the impact of participation or who has the right to decide? Answering this question helps elucidate participatory planning in both socialist Yugoslavia and ‘proto-democratic’ Serbia. More precisely, this chapter seeks to identify the extent and contextual dependence of participation in the decision-making processes observed through various periods of Serbian planning history.

The chapter is structured as follows. I start with an overview of participatory planning in Serbia in relation to the more general social system covering both the socialist and post-socialist period. This is followed by a distinctive example of how contemporary planning practice responds to citizens’ demands for transparent and inclusive planning. In the discussion part, two specific periods of Serbian planning history are presented: authoritarian regime of the 1970s and 1980s when the public interest was the main system value and instruments for public involvement were advanced, in contrast to contemporary pluralistic society that overrides the voice of powerless citizens. The chapter concludes with basic operational recommendations for improving the participatory planning approach in a highly challenging society.

Citizen participation in Serbian spatial planning

Serbia has undergone tremendous changes in its political, economic and, thus, planning system. As the societal context within which the planning system is embedded provides the framework for the citizens to express and materialize their own interests (by taking part in creating certain policies and implementing particular instruments), the next section briefly describes the extent and nature of citizen participation in spatial planning decision-making in Serbia. Four periods of Serbian planning history, following the main transformation of Yugoslavia (Figure 1) since the Second World War, are identified: 1) integrated planning (1945–1974), 2) participatory planning (1974–1989), 3) centralized planning (1989–2000), and 4) market-led planning (2000–present).

Integrated planning (1945–1974)

The end of the Second World War was a great turning point in Serbian history: in economic terms, the poorly developed agrarian economy was replaced by a centralized planned economy (Zukin, 1975; Liotta, 2001; Perić and Miljuš, 2017), while in political terms, after a short phase of communism (1945–1950), Yugoslavia started ‘experimenting’ with a new brand of socialism accompanied by decentralization, opening to the (state-controlled) market-economy, loans programs with international organizations, and self-management, i.e. societal ownership over productive resources and management of public enterprises by their employees (Ramet, 1995). Following this logic, self-governed interest-driven local communities started to emerge as the main player at the local decision-making level shortly after 1953 (Veselinović, 2017).

Urban planning also experienced great transformation in less than two decades: from a tool to support socio-economic development (Dawson, 1987), across physical planning (i.e. land-use and zoning) introduced in 1957, to integrated and comprehensive planning based on interdisciplinarity among all relevant sectors when dealing with spatial issues (Nedović-Budić and Cavrić, 2006). Looking through the lens of public participation in plan making, even the first postwar planning law (of 1949) prescribed the procedure of public insight into the draft version of a plan, while the laws from 1960s and 1970s considered citizen participation as societal support and

plan verification (Zukin, 1975). However, such planning legislation did not generate real participatory planning practice; rather, participation in planning was raised by the activities of local community on the issues of local interest (Fisher, 1962; Veselinović, 2017).

Figure 1: Territorial transformation of Yugoslavia over time: Socialist Federal Republic of Yugoslavia, 1945–1989 (top), Federal Republic of Yugoslavia/State Union of Serbia and Montenegro, 1992–2006 (middle), Republic of Serbia, 2008–present (bottom)



Source: Own interpretation

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Participatory planning (1974–1989)

The Constitution from 1974 prescribed further territorial decentralization of the federal state, more developed mechanisms for citizen participation, and support for the self-management system (Lydall, 1989). This mixed-economy continued to reinforce an arena for including actors other than public sector ones in spatial planning activities (Nedović-Budić and Cavrić, 2006). The decentralized system of decision-making was applied to social, economic and spatial planning and policy, and shared by the federal, republic, and local authorities and individual enterprises (Dawson, 1987).

Previously initiated efforts to integrate physical planning into the socio-economic planning system caused the shift in planning as exclusively expert-driven activity: planning legislation (1974) identified local communities as the crucial planning and implementation bodies, and public discussion on the draft plan appeared a regular practice (Čolić, 2009; Maričić *et al.*, 2018). In 1985 the law was updated to improve the coordination and integration of plans and policies, introducing the instrument of expert debate not only on the final, but also on the first draft of a plan (Vujošević and Nedović-Budić, 2006). However, although planning and socio-economic policy usually move together, they have different pace. Influenced by global economic crisis, by the late 1970s Yugoslavia struggled economically (hyperinflation, debt, trade imbalance) and faced internal political tensions and the need to eliminate self-management by 1990 (Mencinger, 1991). In contrast to this, planning still followed the trajectory of decentralization until the mid-1990s (Vujošević, 2003).

Centralized planning (1989–2000)

The fall of the Berlin Wall had substantial social and economic consequences on Europe, however Yugoslavia additionally suffered from the disintegration of its territory, accompanied by civil wars and nationalistic tendencies in all the newly formed states. As a result, Yugoslavia was politically re-centralized (Ramet, 1995), the economic system’s change towards market-based economy was slow due to the absence of institutional capacity (Liotta, 2001), and the authoritarian political regime brought political, social, and, thus, spatial degradation (Zurnić, 2019).

In the 1990s, the national government, i.e. the Ministry of Construction, took over the role of the key actor in spatial planning decision-making (Nedović-Budić and Cavić, 2006). Corruption, non-transparent decision-making procedures, and unregulated economic measures influenced close relationship between the highest government level and the private investors (Zeković *et al.*, 2015; Vujošević *et al.*, 2012; Vujović and Petrović, 2007; Zurnić, 2019). Such symbiosis neglected social goals and greatly endangered citizen participation. Decentralization in planning domain (as prescribed by the law from 1995) was an illusion: master urban plans prepared by local authorities' had symbolic purpose as the central political power directly influenced planning practice at any territorial level (Vujošević and Nedović-Budić, 2006).

Market-led planning (2000–present)

In late 2000, Serbia created a democratically elected government for the first time after more than half a century thus designating the start of a pluralist political culture and a re-decentralization of power. Nevertheless, the absence of appropriate measures, institutional capacity, and political reforms when embracing a market-driven economy constitutes 'a messy and uneven process' (Cope, 2015). Another pillar of a neoliberal system is also challenged in the Serbian society still considered a 'proto-democracy' (Vujošević, 2010). Consequently, spatial planning instruments are ineffective and citizen involvement is low (Maričić *et al.*, 2018).

Three crucial laws clearly illustrate the weak position of spatial planning in the transitional social and political context of Serbia. The planning law from 2003 cancelled the expert debate and even abolished the possibility of informing the public about the beginning of the procedure of public insight, therefore only the debate among the members of the plan approval commission remained (Čolić, 2009). In 2004, the law on privatization made it possible for private consortia to buy the state (social) enterprises, while the new planning law (2009) converted (building and land) use-right into the ownership-right (Perić and Miljuš, 2017). Although the public opinion finds the legal support in the modified planning law from 2014 – 'early public insight' allows citizens to express their opinion on certain urban issues in an early phase of plan making – public voices are not heard enough, citizens are mainly passive recipients of information, and civil sector is usually omitted from the urban decision-making process (Perić and Maruna, 2012; Maruna and Čolić, 2017). Only grassroots movements appear to act as a public interest advocate (Grubbauer and Čamprag, 2019).

Methodology

The previous historical analysis of societal context (socio-political and economic system) and planning system served to identify the position of citizen participation in a planning process through various periods. The following sections elucidate the extent and dynamics of public engagement.

First, I conduct in-depth qualitative case study of the Belgrade Waterfront (BW) project as a paradigmatic example of the current urban development in Serbia. Briefly: 1) I screen the laws, plans, strategies, regulations, and contracts to describe critical relationships between the private developers' incentives and the public sector's responses to them, 2) using the discourse analysis of the media announcements provided by the civil sector organizations between 2012 (i.e. since first advertising on the BW project in the media) and 2017 (in order to keep a proper distance to the present moment), I identify the main narrative among citizenry and their critical remarks to the steps taken in both preparation and implementation of the BW project, and 3) using the content analysis of scholarly articles on the current urban development in Serbia, in addition to previous, I critically assess the professional position towards citizen engagement in public issues with considerable spatial impact.

Second, I draw a comparison based on the Arnstein's seven 'gradations of citizen participation' between two periods of Serbian planning history: the period of the 1970s and 1980s glorifying citizen participation in planning, and the contemporary phase neglecting public involvement. However, as the periods are interpreted considering

also the societal context and not only the formal planning procedures, I derive conclusions on deeper patterns and impact of citizen participation that diminish the initially perceivable contrast between the two periods.

Case study: the Belgrade Waterfront project

Most of the countries and cities of the post-socialist Central and Eastern Europe (CEE) faced the social, political, economic and cultural transformation in the last decade of the 20th century. More precisely, limited role of planners, neoliberal transition, post-socialist transformation, shift to the western model of democratic decision-making, orientation of the legislation towards legitimization of illegal developments, etc. all set the course for a dynamic socio-spatial restructuring in CEE (Stanilov, 2007; Tasan-Kok, 2004; Tsenkova and Nedović-Budić, 2006; Hirt, 2005; Doytchinov *et al.*, 2015). The ex-Yugoslav republics, today all independent states, followed the same transitional pattern, delayed for a decade though.

Before elucidating the current controversies around the BW project, a brief history of the site development is shown (Kovačević, 2014; Perić, 2016; Perić and Hoch, 2017). The idea to create the new urban center of Belgrade on the right bank of the Sava River, at the bottom of the so-called Sava Amphitheater, was embedded in the first master plan of Belgrade of 1923. As it was recognized as a site of regional and even national importance in all the following Belgrade master plans, its potential was explored through a number of studies and urban design competitions organized during the 1970s and 1980s, in the golden era of Yugoslav urban planning and design. The most famous are: the project Sava Amphitheater (designed by Miloš Perović in 1975), and the study Town on Water (*Varoš na vodi*), by the Urban Planning Institute of Belgrade in 1990, important for they included both banks of the Sava River in order to reset Belgrade's urban history and place some public buildings (opera, museums), which Belgrade still lacks today. Even during the 1990s in time of great political crisis, economic sanctions and poverty, the project Europolis (1995) was developed for the area of the Sava Amphitheater, as a capital project of the authoritarian political regime. In the next twenty years, the area continued to deteriorate, and, thus, became one of the largest brownfield areas in the Belgrade central zone covered by old railway tracks and dilapidated housing. The BW project was for the first time announced as the flagship project during the 2012 political campaign of the then largest opposition party, which won the elections with a great majority of the vote. The cornerstone for its future development was set in September 2015, designating a grand political project financed by Eagle Hills, a United Arab Emirates (UAE) investor, with considerable subsidies provided by Serbian government.

The controversial BW project, covering almost 90-hectares close to the confluence of two rivers and the historical core of the city of Belgrade (Figure 2), is currently seen as paradigmatic in the public and real estate domains in Serbia. For the political structures, it is a 'best practice' example of urban development. But professionals claim it as a drastic usurpation of both the formal planning procedures and professional expertise, while citizens have been constantly struggling for more transparency and active involvement in the decision-making process. In sum, the BW project depicts the absence of: 1) accountability in decision-making, 2) monitoring and control systems, and 3) mechanisms for evaluating social, economic, and environmental impacts (Zeković *et al.*, 2018). These aspects speak clearly for insufficient participation of the general public in a project of 'national importance'.

Briefly put, national level politicians (led by ex-prime minister, now (2019) the president of Serbia) made strategic decisions in respect to the BW project, hence, avoiding any kind of a public debate with a range of interested parties. Only the Urban Planning Institute (UPI), the urban planning office of the City of Belgrade, was involved in the process of plan making, due to its tight relationship with the political regime (Orlović Lovren *et al.*, 2016; Perić, 2016). Three distinctive irregularities, serving as a base for creating the plan of the BW area and its further implementation, illustrate inferior professional position and the citizens' response towards both the planners and decision-makers.

Figure 2: The model of the Belgrade Waterfront project



Source: www.belgradewaterfront.com

First, in the regular spatial planning practice, the project elaboration follows the rules and parameters given in the plan. However, in the case of the BW, the international architectural office (SOM Architects) prepared the preliminary design project (without prior consultation with the professional organizations or with the citizens of Belgrade) to serve as a base for its elaboration into the urban plan by the UPI, as a necessary instrument for the future construction on site (Kovačević, 2014). This plan for the BW is in its nature totally different from the rest of the official Master Plan of Belgrade 2021 and, therefore, it was added *ex post* into it in the form of the amendments (Zeković *et al.*, 2018).

As an immediate response, the civil sector through its own initiative, ‘Don’t let Belgrade d(r)own!’ (*Ne da(vi)mo Beograd!*), raised its voice formulating objections to the proposed amendments (Čukić *et al.*, 2015). With a help of another collective, the Ministry of Space (*Ministarstvo prostora*), the citizens of Belgrade together with young experts discussed changes to the plan and filed over 3,000 complaints to proposed changes. The procedure of public insight that followed gathered over 200 people as well as representatives of the city authorities and professional institutions (Čukić *et al.*, 2015). Although the session lasted for more than six hours, all of the complaints were rejected, or only superficially taken into consideration and the Amendments to the Master Plan of Belgrade (OG CB 70/2014) were verified in September 2014. The citizens received a valuable lesson: existing democratic participatory tools proved to be only a simulation without any real effective power (Čukić and Perić, 2019).

Another irregularity of the plan for the BW area is its legal nature. Namely, the Master Plan of Belgrade, as the highest-tier urban plan, cannot be immediately implemented, but only through regulatory plans. This includes the rounds of public debates and approvals. Considering that such a procedure is extremely time consuming, in June 2014, a month before the ‘masterplan’ for the BW area was prepared, the Government made an official decision on creating the special spatial plan (Kovačević, 2014). Namely, the Plan for the Area of Specific Use is, according

to the planning law (OG RS 121/2012), created only 1) for non-urban areas of particular importance (i.e. mining and coal seams, flooding areas, natural resorts, etc.), and 2) in accordance to the higher-tier plans (i.e. regional or national spatial plans). Oddly, none of these conditions were fulfilled in respect to the BW area.

The civil sector (the Ministry of Space), acting again as the safeguard of the public interest in spatial planning decision-making, organized public debates among the prominent national experts in various domains (sociology, economy, public administration, spatial planning, etc.), with the final aim of addressing the decision-makers. However, these gatherings under the title “What is hidden beneath the surface of the ‘Belgrade Waterfront’”, running in October 2014 in parallel with the procedure of spatial plan making (Čukić *et al.*, 2015), gained the popularity among the general public. The ruling political structures, however, stayed ‘deaf’ to the citizens’ calls, thus, demonstrating an elementary ignorance of democratic decision-making (Čukić and Perić, 2019).

The culmination of public actions against the new Plan for the Area of Specific Use happened in November 2014 when the activists of the ‘Don’t let Belgrade d(r)own’ initiative (now officially formed into a NGO and much more numerable) opted for a different tactics to interrupt the process of legitimizing the BW project (Public debate, 2014). In addition to the regularly and officially sent complaints on the new spatial plan, in the performance called “Operation lifebelt” the activists used creative energy to ban the plan approval (Figure 3). Contrary to their expectations, and despite the noise, the interruption did not occur. Instead, the members of the planning commission continued their work, complaints were again rejected, and the session was deemed successful. The spatial plan for the BW was adopted in January 2015 (OG RS 7/2015) without any form of public debate on its quality (Čukić and Perić, 2019).

Figure 3: Performance “Operation lifebelt” during the public debate on the Spatial Plan for BW on November 5, 2014



Source: Kamerades (<https://nedavimobeograd.wordpress.com/page/17/>)

The third peculiarity refers to the *Lex Specialis* – Act on Establishing the Public Interest and Special Procedures of Expropriation and the Issuance of Building Permit for the Project Belgrade Waterfront, proposed for adoption

in April 2015. In its essence, it is not obvious how the highly commercial BW project can preserve or be in the public interest. If the public interest is even prescribed by law, it is not clear how this works in practice as specific regulations on how to implement the law do not exist (Zeković *et al.*, 2018).

The activists of the 'Don't let Belgrade d(r)own' warned of the core shortcoming of the law – it is not about the choice between the dilapidated private houses, on the one hand, and city growth through the BW project on the other. It is about expropriation for an exclusively commercial project that fulfills the needs of a private investor only. The public interest and the state itself are sidelined (Lex Specialis, 2015). In spite of the public complaints, the law was adopted (OG RS 34/2015), designating the start of the official construction on the BW area, which happened a half year later.

Finally, a detail that clearly explains the political power demonstrated towards the citizens is the demolition of the private property located within the boundary of the BW project. More precisely, during the night of April 26, 2016, the dilapidated building stock (though still used for living) was totally torn down. Communal officers were not reachable that night, so the affected citizens felt totally helpless (Whose city?, 2016). Citizens' protests were held regularly in 2016 and 2017 (Figure 4). The court case is still not resolved.

Figure 4: Protest walk organized by 'Don't let Belgrade d(r)own' on June 25, 2016



Source: Dušan Rajić (<https://nedavimobeograd.wordpress.com/page/12/>)

Discussion: from citizen power to tokenism?

Citizen participation is not a new instrument in Serbian planning practice. However, it was exercised to various extent in different phases of Serbian planning history due to a shift in societal, political, and economic circumstances. Participatory planning reached its peak in the 1970s and 1980s under the socialist regime, while it currently suffers despite a democratic political system. At first sight, this is a paradox. Nevertheless, highly decentralized socialism of Yugoslavia allowed for participatory activities, though limited with the dominant ideology and politics. Today, legislation guarantees the involvement of citizens in planning issues, too, though in the context of a pluralist democracy. However, as the Serbian society is deemed to be 'proto-democratic' (Vujošević, 2010), there are no instruments for the operationalization of citizens' demands, turning them into wishful thinking instead of a reaction to political decisions. The influence of politics on citizen engagement in spatial planning decision-making is inevitable. The basic characteristics of citizen participation in two mentioned phases of Serbian planning – observed through the lens of Arnstein's 'ladder' – are briefly indicated below.

Participatory planning

In addition to other (mainly economic) instruments of decentralized socialism, e.g. small artisan groups operated their private firms, workers' community managed the public industry sector (Ramet, 1995), participatory planning was mainly practiced at the local level. The municipalities were considered socio-political communities, with the power of decision-making in any public action on its territory (Fisher, 1962). This has a direct consequence on the nature of planning process – the procedure of public insight enabled the citizens to discuss, debate, and submit remarks and comments to a plan's proposal. Such a bottom-up participatory approach involving various types of individuals and groups, as well as the general public, sometimes even over-loaded the process of preparation, approval, and implementation of planning decisions (Čolić, 2009; Maričić *et al.*, 2018). Nevertheless, it should be stressed that hierarchical political structures controlled all kinds of associations and organizations, be these professional or civil sector (Liotta, 2001). Hardly any decision could have been made without the previous consent of the local and central governments (Nedović-Budić *et al.*, 2012).

Bearing strong political influence on the nature and impact of citizen participation in mind, two 'ladder' types can be assigned to Yugoslav participatory planning of the 1970s and 1980s. Both of them are characterized with the following: 1) spatial and environmental *information* was readily accessible for public scrutiny in the regional and local planning arena (Nedović-Budić and Cavrić, 2006); and 2) the legislation gave the citizens not only a right, but made them also obliged to participate in the planning process (Maričić *et al.*, 2018) – citizens acted as *consultants* and *advisors* to the expert committees and thus decision-makers. In the first 'ladder' type, the citizens' visions, amendments, and proposals are in line with the dominant ideology and a broader societal interest. Hence, they became *partners* in the planning process, though the space for bargaining and negotiation was missing as both parties – citizens and decision-makers – strive for the fulfillment of the same (public) interest. In such a process, the *delegation of power* was strongly practiced as the local politicians were the ones to transfer the outcomes of local participatory process to the higher governmental levels. Another type of 'ladder' excludes the degrees of citizen power. Briefly, informed citizens entered the participatory planning process, their proposals were recognized, but there was no obligation for the planners to change the plan under discussion. As citizens had a legal obligation to provide the feedback on a planning proposal, such *de jure* participation served only to legitimize the proposed development solutions (Maričić *et al.*, 2018).

In a nutshell, do the previous lines describe pseudo-participation? It was not that obvious in the socialist regime, exempted from the plurality of interests. Namely, achieving the public interest was one of the main goals of socialist spatial and urban planning (Zukin, 1975; Vujošević and Nedović-Budić, 2006), thus overlapping with the beliefs, visions and norms of citizens. Finally, all actors involved had a high level of responsibility and skill in doing their specific tasks under given circumstances, thus jointly contributing to spatial development (Nedović-Budić and Cavrić, 2006; Perić and Miljuš, 2017).

Market-led planning

In 2000, the Serbian democratic government established the decentralization of power and administrative structure as a social and political priority (Vujošević, 2003). However, the share of responsibilities in the spatial planning domain in Serbia from national to local level is not really decentralized: as for the cities in inner Serbia, the spatial development is controlled by the planning committees whose members are also the members of the ruling political party (only in 10 out of 170 municipalities in Serbia the local authority is composed of politicians outside the ruling coalition). In the case of Belgrade's major spatial activities, the relevant ministries steer the spatial development (Zeković *et al.*, 2018). The only partners for the national government are private (foreign) investors. In an absence of regulatory instruments necessary for protecting transparency, limiting corruption, and preserving the national interests, both expert advice and strategic public deliberations are diminished (Maruna, 2015). In sum, citizens do not have enough will to take part in decision-making on spatial and urban development as they have little trust in their institutions' response (Maričić *et al.*, 2018).

Using Arnstein's metaphor, citizens in Serbia are today *manipulated*, as: there is no political will to introduce instruments for meaningful participation, while the notion of the public interest is lost (Maričić *et al.*, 2018); clientelism and paternalism dominate the planning practice (Vujošević *et al.*, 2012); and, civilian initiatives and associations are seen as relicts of the self-management system, one with a highly negative connotation among Serbian politicians (Vujović and Petrović, 2007). On the other hand, planners are also not in favor of citizen participation as they cannot find an appropriate position for themselves. Stretched between the political will, which they depend on as public officials, and private sector's demands that revolve around profit at the expense of any other benefit (e.g. public interest, quality of the proposal, environmental impact, feasibility prospects, etc.), experts have little understanding and patience for citizen activities. The recently introduced legal instrument of 'early public insight' (OG RS 145/2014) does not secure public participation. This participatory mechanism is not promoted enough among the general public, and the guidelines for its implementation are not well clarified. Hence, citizens' interest for the spatial and urban development issues is rather low (Čukić and Perić, 2019). Such an absence of citizen engagement in the planning process is actually an example of *de jure* public consultation. Citizens are not equal participants in the planning debate – while protecting their legal rights, they are mostly seen as an obstruction and a threat to the proposed planning solution supported by powerful interests. It is the superiors' vision that has to be materialized while participation only serves to provide legitimacy for the planning procedure (Maričić *et al.*, 2018).

In comparison to the period of participatory planning, when citizen participation was on the level of *pseudo-citizen power*, in the current market-led planning it is even worse – participation is considered a *pseudo-tokenism*. Briefly, the dominant political party manifests power in an almost one-party political system together with foreign investors capable of achieving their own private interest due to ad hoc spatial planning procedures. Such a symbiosis makes the experts unable to fight for their own position, while citizen participation is intentionally kept as the lowest priority.

In conclusion

It seems that Serbia has never escaped out of this political vicious circle. The authoritarian regime provided advanced instruments for citizen participation to be exercised within the framework of the dominant ideology of the communist party. The current 'proto-democratic' system has no official limits for citizens – they are free to express their own opinion, but this is where the story ends. How can we strengthen citizen participation in a society that neglects citizen's rights?

As a first step, experts and citizens should understand and respect each other. Experiential knowledge of civil sector and professional skills based on instrumental rationality should be exchanged for the benefit of creating planning solutions that meet the interests of the majority – not only for the minor powerholders, as it is the case

today. Feedback between the public officials and citizenry gives insight into ideas, suggestions and remarks, and affects the creation of trust and mutual respect (Čukić and Perić, 2019). This civil-public synergy is essential for the transparency of the planning process – the process guided by the public-sector experts, with the civil sector as a control element, finally designating a shift towards the collaborative planning approach still declaratively promoted in Serbian planning policies (Lazarević Bajec, 2009; Perić and Miljuš, 2017).

Another recommendation is to strengthen the role of local authorities in cooperation with the civil sector (Čukić and Perić, 2019). The local level is a natural ‘place’ for collaboration with the civil sector: municipal representatives are aware of various groups, identities, and public amenities within the local borders. First, legal frameworks and strategic guidelines should support citizens’ initiatives in local development. In addition, financial institutional capacity including various means and resources secures public participation. Local strengthening, however, demands the independence of the local institutions in the hierarchical process of top-down decision-making in Serbia. This coincides with the legally prescribed process of administrative and political decentralization, which needs substantial improvement in order to enable effective public engagement (Zeković *et al.*, 2018).

After almost twenty years on a path towards representative democracy, the impact of citizen participation on the outcome of the spatial planning decision-making process is still low. Citizens usually show no interest to engage in public issues. Once interested, experts do not treat citizens’ input as a valid argument for the public discussion. The lack of professional support toward citizenry is a sign of the weak planners’ position in a highly controlled society, embodied in individual political figures. Therefore, a political monopoly over urban development must be avoided, which at the same time needs the differentiation of political from professional and administrative positions. As a result, citizens would be able to climb to the highest rung of the ladder – to be in control of spatial governance. Such civil-public partnerships are dependent upon a democratic social context, organized civil society, and a capacity to advocate the public interest. Thus, changes in planning instruments and governance mechanisms towards the implementation of civil sector practices in spatial policies depend on political, professional, and social will, as well as a readiness to change the decision-making system. Only when Serbia paves the way towards its democratic development, will public input be truly incorporated in the planning process.

However, the absence of the institutional framework and a lack of expert will to support citizen activities is not the only reason for an insufficient public involvement. As shown in the case of the BW project, a setting with weak institutions, inconsistent policies, and non-transparent procedures is a fertile ground for a wide range of manipulations that appear once international private investors enter the arena of spatial planning decision-making. In particular, urban megaprojects are seen as a tool for both the generation of extra-profit for private sector actors and an increase in corruption among the high-level public authorities (Grubbauer and Čamprag, 2019; Zeković *et al.*, 2018). Consequently, such a relationship has negative effects in spatial and social terms. Namely, gentrification, minimizing public space, and loss of local identity enabled through a large-scale unitary project, strongly 1) jeopardizes low-income and marginalized groups and, 2) diminishes the extent of public participation (Maričić *et al.*, 2018).

Urban megaprojects, as clear manifestations of neoliberalism, affect the decision-making process not only in transitional countries, but also in developed societies. Some lessons drawn from other CEE countries can help improve the citizen participation in Serbian planning practice (Cope, 2015; Stanilov, 2007; Hirt, 2005; Grubbauer and Čamprag, 2019). First, there is a clear need for a critical assessment of the discourse used in promoting such megaprojects. The nationalist and populist language, e.g. project of national priority, project than strengthens nationhood and national greatness, usually hides the political patronage and offers room for corruption, favoring local political elites and, thus, diminishing other social actors. Second, planners should be motivated to create innovative planning procedures (both formal and informal) for meaningful inclusion of various groups of stakeholders. Finally, the key concept is legitimacy, as it elucidates the definition of public interest through regulatory mechanisms. Therefore, the questioning of the official discourse centered on definitions and claims to

public interest is the first step, which should be followed by deconstructions of the regulatory order to analyze on which jurisdictional level, with what means, and with what purpose the public interest is defined.

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SP37

Smart cities and regions
informing the energy
transition

The notion of sociotechnical system in the planning process of a Smart Region

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Abstract: Energy transition is a long-term change process of the energy system of regions and cities towards smart and low carbon features. From a technological point of view, energy system is an integrated system including several sources, technologies, and products for energy production, distribution, and consumption. From a social point of view, local population's choices and actions determine the time and the features of energy transition at regional and local scales. Energy system is not only technology matter. Sociotechnical and territorial approaches underline the importance of interactions between energy, society, and space.

Based on these interactions, this research delineates an analytical framework and an applied definition of sociotechnical system for place-based contexts, with the aim to promote recommendations towards Smart Regions.

Starting from the definition of the important concept in the social sciences of sociotechnical system, this research proposes an applied definition of sociotechnical concept in space-based contexts. This applied definition can shape and change the socio-energy system that is another important concept in social sciences, meaning the world that 'one wants to create for the future' (Miller et al. 2015).

Keywords: social science; sociotechnical system; territory; South Tyrol

Introduction

Energy transition is a long-term change process of the energy systems of regions and cities towards smart and low carbon features. From a technological point of view, energy system is an integrated system including several sources, technologies, and products for energy production, distribution, and consumption (Balest 2018). However, energy system is not only technology matter (Miller et al. 2015). From a social point of view, local population's choices and actions determine the time and the features of energy transition at regional and local scales. Sociotechnical and territorial approaches underline the importance of interactions between energy, society, and space (e.g. Sovacool and Hess 2017, Osti 2010, Geels 2007). Based on these interactions, this research delineates an analytical framework and an applied definition of sociotechnical system for place-based contexts.

The sociotechnical approaches are more and more important in explaining the energy transition and its elements (i.e., from Geels and Schot 2007). Sociotechnical system is a complex system that includes society, technologies and the relationships among them. An energy system is a sociotechnical

system which shapes and gets shaped by different dynamics of natural, technological, economic, legislative, social and cultural dimensions of the territory (Balest et al. 2019b). The sociotechnical system exists in different territorial contexts (e.g. municipalities, regions, etc.) including their spatial, technological, and social aspects. Indeed, sociotechnical systems provides societal functions and are the result of co-evolving of mix of technologies, infrastructures, supply chains, regulations, cultural meanings, user practices, markets, and other elements. Geels et al. 2017 (p. 471) recognize that energy transition is a "multi-dimensional process, with complex interactions between techno-economic, business, social, political, and cultural dimensions".

In the interaction among technical-technological elements and social groups, this research underlines how local populations are embedded in territories at several local scales and how local population's choices are influenced by the territorial context that is not only made by technological and social systems, but it also includes natural, cultural, economic, and legislative systems (Figure 1). *Viceversa*, the choices of local populations shape the territorial systems. This framework is the basis of the analysis included in this research and it is an interpretation of the sociotechnical regime presented by Geels and Schot (2007).

The regime can be destabilized by both sociotechnical landscape (the context at a higher scale, such as national ones) and niche-innovations (innovations that are not spread yet), and different regimes will differently answer to them. For this reason and for analysing the long process of transition to a new regime that includes innovations and new landscapes (Geels et al. 2017), it is important to have a clear picture on the actual features of the territory. It is also important to spread knowledge for citizens and public administrations on how local features and civil society can contribute to energy transition.

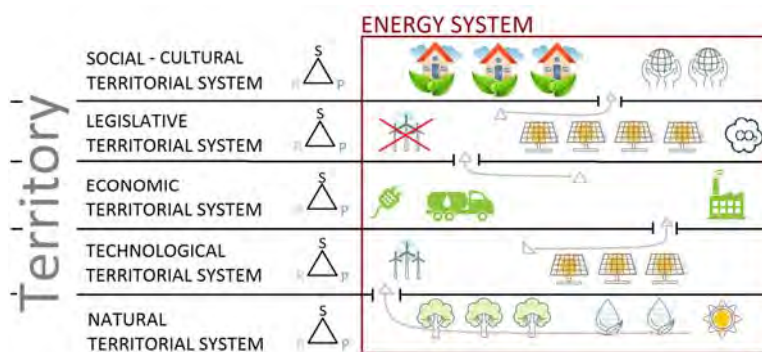


Figure 1 – Framework for analysing territory. Source: (Balest et al. 2018)

How can the sociotechnical system concept be applied into research? Which are the characteristics of a territory that have an influence on the local populations' choices in terms of renewable energy and energy transition? How do these characteristics vary along the local territories within a region? Does the actual energy governance consider the characteristics of the territories?

A Smart Region is a geographical and administrative area that is able to change towards low carbon emission features, using the local resources and promoting effective relationships

among the actors of civil society. The findings of this research support the increase of competences and know-how of public administrations for achieving the energy transition goals in their regional and local territories. The analysis of the territory based on the interaction among society, energy, and space creates knowledge for developing Smart Regions.

In an ideal Smart Region, public administrations collaborate one another when their territories share features, resources and needs. Collaborative actions mean to save and share resources (i.e., funding, human capital and knowledge). In the scarcity of resources for municipalities (at least in Italy), common plans or, at least, strategies can help for a more effective transition.

Common plans and strategies are realistic if the territories share resources, needs, and features (European Commission 2008). For this reason, the identification of the sociotechnical systems, their features and the existing collaborations in the energy governance is relevant for promoting effective energy actions and Smart Regions.

The sociotechnical system description, analysis and recommendations can address the socio-energy system (Miller et al. 2015) that is another important concept in social sciences. Trying to include social and political dimensions of the energy systems beyond the technological ones, this research works in the direction of socio-energy system concept. This research proposes some “practices and techniques through which potential energy futures are envisioned, modeled, analyzed and evaluated” (Miller et al. 2015, p. 36). The socio-energy system is a matter of design and coherence with the preferences of local populations and administrations.

Methodology

In order to answer the questions in the previous section, this research uses a methodology based on several methods and steps.

First, this research identifies the most relevant aspects of territory that can have an influence on the acceleration of the energy transition, using systematic literature review method (Balest et al. 2018). Based on the analysis of these aspects, the findings propose a definition of energy system as a sociotechnical system within a territorial context (Balest et al. 2019b).

Second, the definition is operatized and applied to a case study: the municipalities of Autonomous Province of South Tyrol. South Tyrol is a region placed on Northern-East Italy. The choice of variables (Table 1) and a cluster analysis defined homogenous groups of municipalities, defined as sociotechnical systems (Balest et al. 2019b).

Third, a social network analysis is applied to define and analyze the structure of the energy governance that includes public administrations and public utilities in the energy sector (Balest et al. 2019a). In this case, a Bayesian Exponential Random Graph Model (BERGM) is applied (Caimo & Friel 2011) in order to model the energy governance network and to understand the network configurations that promote the existence of the actual governance. For having more detail on the methodology, please refer to Balest et al. (2019a).

Dimension	Specific dimensions
Socio-demographic	Population size, household size, population age, strangers, variation of inhabitants, density
Quality of life and household wealth	Services access, quality of life
Socio-economic	Income, economic development, energy focus, tourism
Cultural	Environmental attitudes
Governance and political	Political participation, civic participation, political address
Geographical and infrastructural	Dimensions of territory, elevation, natural parks, land cover, transport infrastructures
Renewable energy	Hot water production from RE, heating produced by RE sources, electricity produced by RE sources, people activity in increase RE share
Climate	Avalanche and flooding phenomena

Table 1 – The table includes the dimensions that describe sociotechnical system in the place-based context of South Tyrol. Source: Balest et al. 2019).

The crossing of the analysis and findings of the three steps of the research define new and important results in terms of sociotechnical system research. This crossing activity capitalizes the findings of three researches creating a basic scientific knowledge of the territory. This scientific knowledge can be integrated with the local ones promoted by people and public administrations that live and manage the territory. The findings are the basis for the creation of socio-energy system, addressing the futures of energy transition.

Results and discussion

The futures of energy transitions are several for the South Tyrol region and they are given by eight different sociotechnical systems. The provincial administration and planner can use the findings of this research for being aware of the differences and specificities of its local territories. This way to look at the territory promotes effective actions for the territories and their contribution to the energy transition, deepening the list of resources available in the territory for the energy transition.

This research defines eight patterns of territories defined as sociotechnical systems in South Tyrol (Figure 2). Each sociotechnical system could have its own path and speed of energy transition. In particular, energy planners and decision-makers should differently act in the patterns of territory for promoting quicker achievements of energy transition targets.

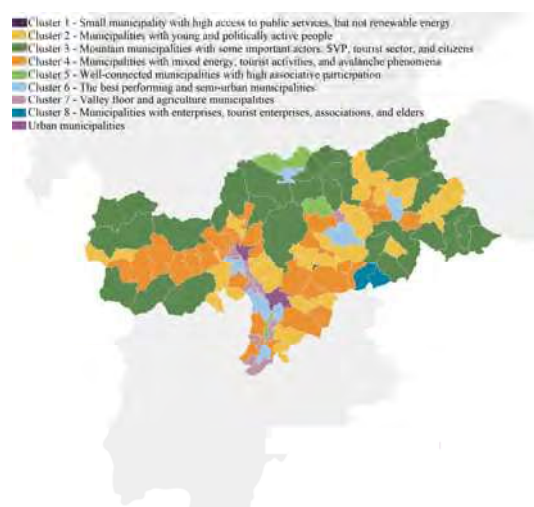


Figure 2 – The map shows the eight patterns of territory in South Tyrol, defined as sociotechnical systems. Source: elaboration of Amy Segata.

For example, cluster 2 (Figure 2 and Figure 3) includes 34 little inhabited municipalities, with high percentage of youths and related higher average of household components. Political participation is high in these municipalities, considering the number of voters in the last local elections and Südtiroler Volkspartei political party is prevalent. These municipalities have, in average, experience in biogas sector for the energy production and high number of people is producing renewable energy or is linked to local thermal energy distribution plants. In this clusters, several resources can be addressed to promote the energy transition. For example, two resources of the sociotechnical system are youths and politically active people (Paravantis et al. 2018). Other two resources or actors, in this case useful for increase and spread awareness on energy topics, are the local associations (Rogers et al. 2012).

The recommendations for the municipalities of cluster 2 are to organize *ad hoc* education activities starting from the primary school and promote a discussion with SVP to increase its public and political commitment to achieve energy transition. SVP can be included in energy planning process emphasizing its role in public commitment, while youths and families could be involved through *ad hoc* activities starting from the primary schools and the actual high people involvement in producing and consuming local energy. This people involvement can be strengthen, for example, promoting and sharing a community RE project based on a collective decision.

These recommendations are considerations not based on the knowledge between cause-effect relationships, but they are fundamental to permit research and findings to be used by public administrations. Based on the findings, public authorities can also be aware on the other municipalities that share the recommendations, resources, and needs, with the aim to promote new and useful collaborations. These collaborations can permit the achievement of resource savings and transition targets.

The listed social and territorial resources can support the effectiveness of energy actions, plans and, consequently, the energy transition. These findings represent a structured knowledge on the territory that goes beyond the local knowledge and that could be integrated with the local knowledge. When more municipalities, sharing resources and having some pioneers in renewable energy production, already collaborate, the use of the recognized resources is easier. A Smart Region exists when public administrations and the main civil society actors recognize the local resources, also in terms of relationships for the energy system planning and management.

Crossing the results of the three steps analysis, this research shows that the potential collaborations among municipalities belonging to the same cluster (i.e., cluster No. 2 of Figure 3) are much more than the actual ones. If municipalities within the same sociotechnical system share resources and features that can support a common planning of the energy system, more relationships among municipalities should exist. However, analysing the actual energy governance, made by relationships among municipalities in the energy sector, the collaborations among municipalities do not consider the specificities of the different territorial patterns in South Tyrol and the collaborations are fewer than the potential ones.

Today, even in the case that municipalities collaborate, they collaborate if spatially closed and not based on similar needs and resources and the findings of this analysis can address new effective collaborations among territories towards the energy transition¹.

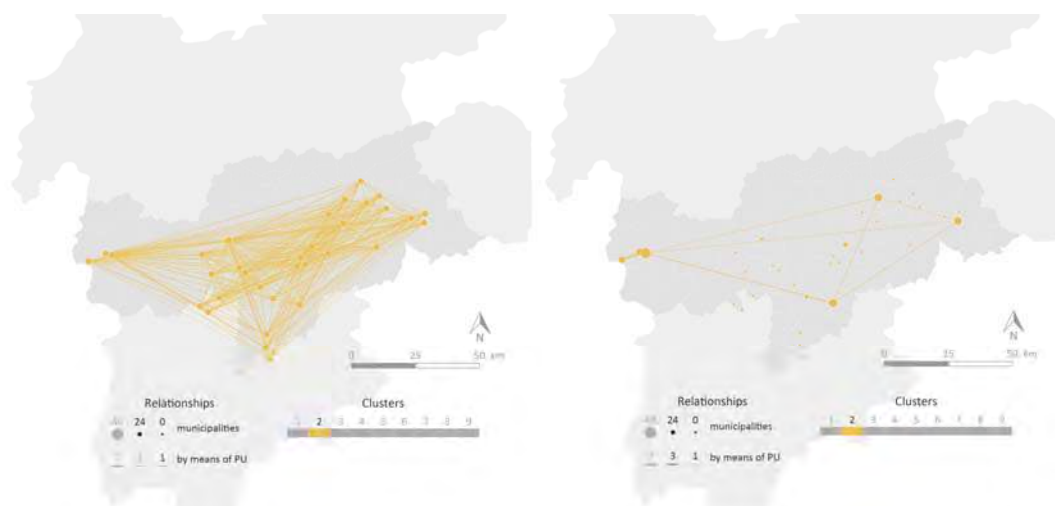


Figure 3 – The map on the left shows the potential collaborations among municipalities of the same cluster, while the map on the right shows the actual collaborations among municipalities belonging to cluster 2, by means of public utilities. Source: elaboration of Amy Segata.

The model for the analysis of energy governance, the BERGM, explains that, according to the considered variables and network configurations, no new relationships should exist (Balest et al. 2019a). For this reason, it seems unlikely that today or in short future the relationships among

¹ For further results of the governance analysis, please refer to Balest et al. (2019a).

municipalities that belong to the same sociotechnical system can be created. Qualitative studies could define important aspects and variables for addressing energy transitions and new collaborations among municipalities that this research has not considered yet.

The relationships among municipalities in the energy sector in South Tyrol are few today and they do not consider the resources available in the territory. With the definition of sociotechnical patterns, public administrations can strengthen the contribution of their territories to the energy transition and they can promote new relationships in the energy sector, based on similar needs, preferences, and available resources.

Conclusions

This research defines an analytical and applied framework for the definition of sociotechnical systems within a region. The framework is applied to a case study: South Tyrol (IT). The application defines eight sociotechnical system within the case study and in which the municipalities are included. Municipalities included in the same sociotechnical system have high potential to collaborate for the energy system planning and management. Indeed, they share resources and specificities.

However, many potential collaborations do not actually exist today in South Tyrol among municipalities that have common resources. Further studies should in-depth and qualitatively investigate the reasons of the existence or absence of these collaborations, promoting a support information for public administrations. Furthermore, the knowledge on the specificities of the eight sociotechnical system is a tool for the promotion of new relationships in the same sociotechnical system for energy transition.

The findings of this research support the creation and development of Smart Regions that are able to decrease the carbon emissions, based on interventions of public administrations. The used framework and the related results are not exhaustive, while further analysis on the social, political, and cultural processes (Geels 2017) and on the social practices (Shove 2018) must be done for having a wider picture on the potential energy transitions of territories. The energy transitions vary along space and they need decades to be happen. This research is an attempt to define analytical and applied framework that is important for supporting public administrations in energy planning for transition. Further research should promote other concepts for the development of Smart Regions such as energy citizenship. The developed methodology and the created knowledge can be replicated in other case studies.

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Spatial-based scenario analysis for the smart energy transition

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Abstract: Scenario analysis is a particularly interesting tool for the smart energy transition of cities and regions. It allows understanding the possible futures of an energy system with and without the implementation of strategic actions and under different conditions. The presented study deals with the development of alternative scenarios for the energy system of Valle d'Aosta region (Italy) and is aimed at suggesting sustainable pathways for its energy transition. In particular, the strategic actions want to foster the exploitation of Shallow Geothermal Energy (SGE), a renewable source still not exploited adequately in spite of its great potential to increase the energy efficiency in buildings. Two driving forces establish the base for the scenario development. They are: 1) using SGE for supplying the space heating demand of residential buildings, replacing some fossil fuels; 2) refurbishing part of the residential building stock for decreasing its thermal demand. Different combinations of these two drivers shape the developed scenarios, which are then analysed through some indicators. All the data processing is done following a spatially explicit approach. This GIS-based scenario analysis can support the decision-makers during the planning process allowing them to analyse from various viewpoints the alternative scenarios and to prioritise the different energy measures.

Keywords: energy transition; scenario analysis; GIS-based approach

Introduction

The energy transition regards the decarbonisation of energy systems and entails a significant change in the role of different primary fuels and energy technologies. It is widely recognised that ageing of existing energy systems, climate change, energy security, and depletion of conventional fossil fuels

are already modifying traditional patterns and scales of energy supply, distribution, and consumption (Bridge *et al.*, 2013).

In order to support decision-makers upon the energy transition, several tools have been developed. These methods range from the analysis of the current situation of the energy system and the estimation of the present energy demand to the generation of different scenarios at various spatial scales (Nabielek *et al.*, 2018). Scenarios may be particularly interesting tools for analysis in the energy field since they can be used to understand the possible futures of an energy system with and without the implementation of strategic actions and under different conditions (Geneletti, 2012). In this case, the strategic decisions may concern the expansion of specific energy technologies and the combination between various efficiency measures for the building stock. The presented study deals with the development of alternative scenarios for the energy system of Valle d'Aosta region (NW of Italy) and is aimed at suggesting sustainable pathways for its energy transition towards a *Smart Energy Region*. In particular, the strategic actions want to foster the exploitation of Shallow Geothermal Energy (SGE) and the energy refurbishment measures that can increase the energy efficiency in residential buildings.

Shallow geothermal energy is regarded as an environmentally friendly, renewable and sustainable energy (Hähnlein *et al.*, 2013). It represents an attractive alternative to fossil fuels, especially for the heating and cooling of buildings, and it also has competitive advantage in relation to other renewable sources, such as biomass (Zambelli *et al.*, 2018), because of its very limited impact in terms of air pollution. Despite, its diffusion is still marginal; the main reason is the high installation cost of the plant (geothermal heat pump – HP) and the drilling work. The growth of the use of SGE is also limited by complicated and fragmented legislation and by the scarce knowledge on the possible applications of this energy source (Casasso *et al.*, 2017). Hence, it is necessary to increase and spread the awareness of its advantages among policy and decision-makers providing insight and information on how to include SGE source into energy strategies and plans. In addition, in European households the use of energy for heating and domestic hot water (DHW) account for almost 80% of the total final energy consumption (European Commission, n.d.). Therefore, it is impossible to imagine a sustainable energy transition without paying attention to the built environment. The paper presents a spatially-explicit approach to the scenario analysis that, taking advantage of a GIS (Geographic Information System) environment, can support the decision-makers during the planning process allowing them to analyse from various viewpoints the energy scenarios and to localise where is better to address the different energy measures.

Data and method

The construction of scenarios for the energy system of the Valle d'Aosta region was aimed at suggesting sustainable pathways for the energy transition of the case study toward a *Smart Energy Region*. All the features considered in the construction of these scenarios were outputs of previous analyses developed within an EU-funded project under the Interreg Alpine Space programme

(GRETA – Near Surface Geothermal Resources in the Territory of the Alpine Space¹) and within a PhD thesis (Valentina D’Alonzo – Doctoral School in Civil, Environmental and Mechanical Engineering of the University of Trento).

These previous performed analyses are listed as follows:

- spatial evaluation of the space heating demand of the residential buildings;
- spatial analysis of the financial feasibility for the use of SGE to cover the estimated heating demand;
- exclusion of buildings that fell in areas where environmental interferences and hazards for the installation of SGE systems were detected²;
- comparison among the objectives of the Regional Energy and Environmental Plan (REEP) of Valle d’Aosta, on one side, and of the Regional Spatial and Landscape Plan (RSLP), on the other side, to highlight conflicts or need to improve the connection with new objectives;
- formulation of more energy-driven objectives.

Starting from the basis of the abovementioned previous analysis, two driving forces were established for the scenario development. They are: 1) using SGE for supplying the space heating demand of residential buildings, replacing as much as possible the fossil fuels; 2) refurbishing part of the residential building stock for decreasing its thermal demand. Different combinations of these two drivers shaped the developed scenarios, which are represented in Figure 1.

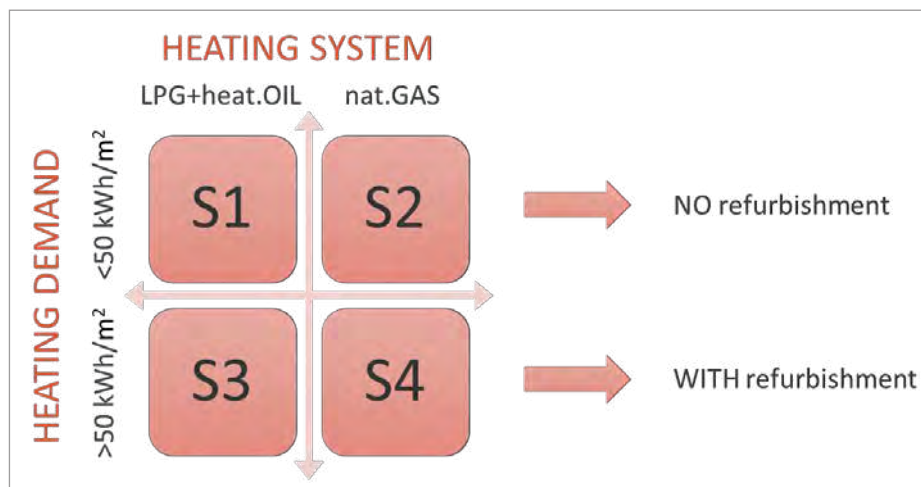


Figure 1: Schema about the developed four scenarios for the case study of Valle d’Aosta region.

In the first two scenarios (S1 and S2), it was imagined that SGE will supply the space heating demand of part of the residential building stock, replacing some fossil fuels but without applying any renovation measures. The buildings considered in these scenarios have a value of estimated space heating demand smaller than 50 kWh/m² per year and are located in census tracts where LPG, heating oil and natural gas are used as fuels for the primary heating system.

¹ <http://www.alpine-space.eu/projects/greta/en/home>

² <http://greta.eurac.edu/maps>

For the second section of scenarios (S3 and S4), the residential building stock was supposed to be partially refurbished for decreasing its total thermal demand. At the same time, SGE systems were imagined to be installed in the renovated buildings in place of fossil fuel plants. In this case, the developed scenarios involve the buildings with a value of estimated space heating demand greater than 50 kWh/m² per year. It is noteworthy that the buildings considered in these two refurbishment scenarios are equivalent to more than one-quarter of the entire analysed building stock (around 27%).

In the scenarios S2 and S4, the combination of a geothermal HP with PV panels and subsidies was considered because this is the only combination in which SGE would be economically convenient compared to the natural gas option. Furthermore, in these two scenarios the geothermal HP is deemed to be used as the primary heating system and the natural gas boiler as the secondary one, to cover the peaks, as the infrastructure for natural gas would remain active even if the heating system changed.

The scenarios were then analysed and compared through the following indicators:

1. Heated surface of buildings involved [m²];
2. Greenhouse gas (GHG) emissions saved [tCO₂-eq];
3. Costs of replacement of heating system with HP [M€];
4. Cost of energy renovation of buildings [M€];
5. Electrical consumption for HP utilisation [MWh].

The GHG emissions saved due to the partial replacement of fossil fuels with SGE were calculated by using IPCC emission factors (Joint Research Centre, 2017) for the different energy sources. In particular, the difference was calculated between the emissions of fossil fuel plants (LPG/heating oil, natural gas) and the emissions of the imagined electrical geothermal HP installed to cover the same space heating demand of the buildings.

Mean values for the energy efficiency of the heating systems were taken from the Italian Inter-ministerial Decree 26/06/2015 on the national energy certification of buildings (Ministero dello Sviluppo Economico, 2015) to convert the space heating demand of each building in energy consumption and then in GHG emissions. The total emissions in Valle d'Aosta in 2010 were taken from REEP and considered as the starting point for the calculation of the saved emissions.

The capital and operative costs were estimated in the spatial financial analysis within the GRETA project. Inside the capital costs, the investment for geothermal HP and the drilling works were considered. The capital cost estimation took into account also a 40% increase of the estimated costs for excavation and HP to overcome the high variability of the analysed cases. Inside the operative costs, the cost of electricity and maintenance of the system were instead considered.

The data on energy renovation costs of the selected buildings (in €/m²) were taken from the outputs of the iNSPiRE project³. iNSPiRE was a 4-year EU-funded project whose main objective was to tackle the problem of high energy consumption in the building sector by producing systemic renovation packages that can be applied to residential and tertiary buildings. The renovation packages developed

³ <http://inspirefp7.eu/>

by the project aim to reduce the primary energy consumption of a building to lower than 50 kWh/m² year.

The increase in electricity consumption due to the installation of geothermal HP was evaluated within the GRETA project, as well as the geothermal HP costs. Also in this case, the total electricity consumption in the Region in 2010 was taken from the Regional Energy and Environmental Plan and considered as the starting point.

Results and discussion

From the scenarios comparison, the third scenario (S3) came out to be the most impactful with respect to all the indicators considered: residential heated surface involved, GHG emissions saved, but also increase of electricity consumption and total costs (energy renovation and/or heating system replacement), see Figure 2. The buildings considered in this scenario are those built between 1946 and 1980, with a value of space heating demand greater than 50 kWh/m² per year, where LPG and heating oil are used as primary fuels. With these characteristics, they represent a relevant part of the entire analysed building stock (around 21%). Overall, the first two scenarios, which consider the buildings with lower space heating demand, do not have a significant effect on the status quo. While, the second two scenarios are more impactful, mainly because they involve energy renovation measures for several buildings.

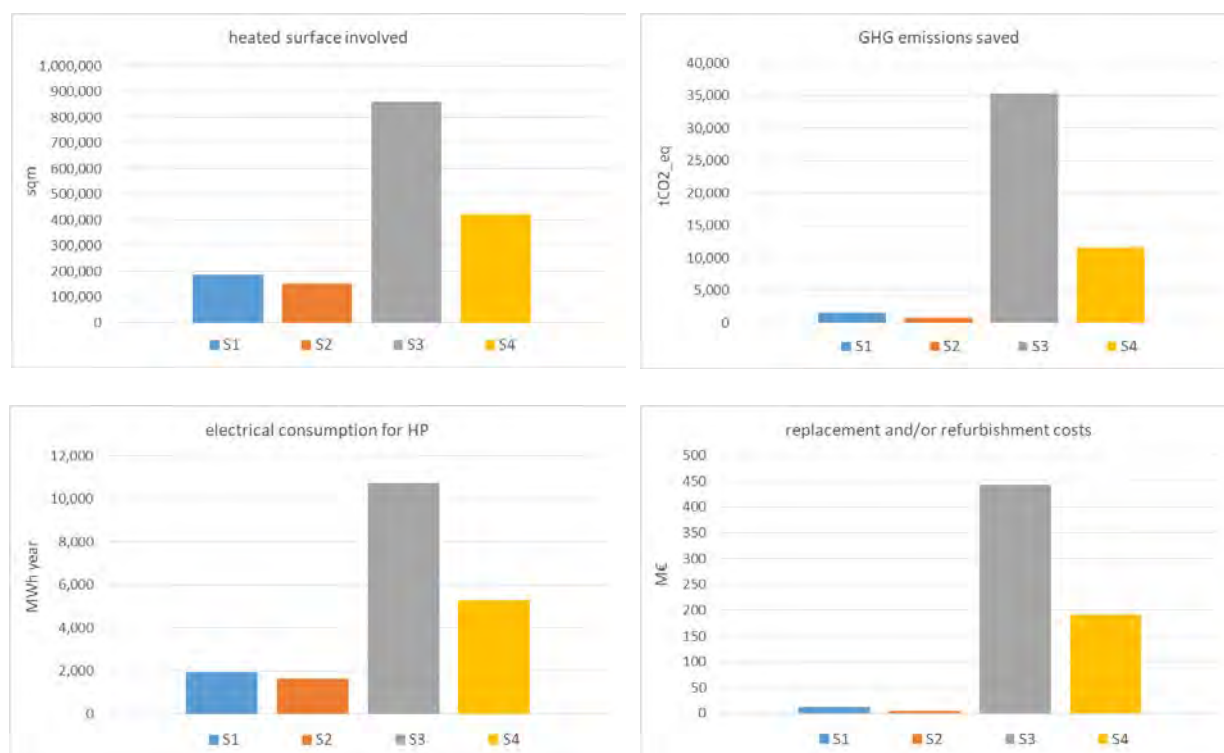


Figure 2: Comparison among the four scenarios developed for the energy system of Valle d'Aosta.

Concerning the saving of GHG emissions and the increase of electricity consumption, one has to bear in mind that the Valle d'Aosta region is already 100% renewable for the electricity production thanks

to the hydropower source. Therefore, an increase in the electrical energy use inside the Region would have “negative” effects on the national CO₂ balance but not in the regional context. On the contrary, the Region would use more a local energy source instead of buying fossil fuels from outside (LPG, heating oil and natural gas). In this way, the overall sustainability of Valle d’Aosta would increase in terms of energy self-sufficiency.

Concerning the total required costs and the possible related subsidies, the results underlined the importance of the provision of subsidies for the financial convenience of interventions like the installation of geothermal plants and the energy refurbishment of residential buildings. Also the outputs of the financial analysis performed within the GRETA project, underlined that the real discriminant factor on the costs for the installation of geothermal HPs is constituted by the application of subsidies. Thanks to the spatial-based approach adopted, it is also possible to localise the buildings where the ratio between GHG emissions saved and total costs (kgCO₂/€) is higher, in order to intervene with policies and/or subsidies for the replacement of heating systems and the energy renovation of buildings earlier on these buildings and thus have the strongest impact on the reduction of GHG emissions.

This method on the scenario development inherited all the limitations of the previous steps (as listed in the previous section), as the starting points are the estimation of the space heating demand of the buildings and the spatial financial feasibility of SGE potential for covering this demand. In addition, this work would represent an example of how this kind of analysis can support the decision-making process when an energy plan/strategy should be updated or developed. The choice of the criteria to be used in the evaluation of scenarios should be better done by the local stakeholders and/or decision-makers. Another aspect worthy to be explored is the analysis of the different measures proposed on the basis of their effectiveness in promoting a sustainable energy transition.

Conclusion

From this study, the energy renovation of the residential building sector is confirmed to represent a great opportunity for reaching the energy saving targets and the reduction of greenhouse gas emissions, in Valle d’Aosta as well as in Italy given the same national building periods. Therefore, the replacement of fossil fuels with RES for the heating systems should be combined with interventions aimed at decreasing the space heating demand of the residential building stock. In this way, we will be able to foster a sustainable energy transition (at regional, national and European scale).

The integration of Shallow Geothermal Energy in the energy planning of cities and regions can, from its side, contribute to the increase of energy efficiency and utilisation of renewable sources in the heating systems, with the consequent reduction of GHG emissions due to thermal energy consumption of the building stock. The development and analysis of scenarios are particularly interesting tools in the energy field since they can be used to understand the possible futures of an energy system with and without the implementation of strategic actions, like the expansion of specific energy technologies and the combination of different efficiency measures for the building stock.

The spatially explicit method presented in this paper can help during the decision-making process allowing to analyse from various viewpoints the different alternatives and also to localise where is

better to address the energy measures and thus prioritise the interventions aimed at increasing the energy efficiency and reducing the GHG emissions from energy consumption. Future developments of this method are foreseen to be: a) diversifying the refurbishment interventions for different kind of buildings (dividing them according to relevant criteria) and/or defining an annual renewal rate for both the replacement of heating systems and the energy renovation of buildings; b) performing a cluster analysis for gathering together similar municipalities and then develop different scenarios for each cluster; c) performing a spatial multi-criteria evaluation of the scenarios (Pohekar and Ramachandran, 2004) involving the local stakeholders in the weighting system of the considered variables.

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Special Session 25 “Smart cities and regions informing the energy transition”

The Energy Justice Tool Suite: an interdisciplinary and comprehensive method for energy transition territorialization

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Abstract: Within a French context of Energy Transition, the “Energy Justice Tool Suite” project aims at designing, experimenting and optimizing what we call an interdisciplinary and a comprehensive “tool suite” dedicated to energy justice. At the urban, technical and socio-economic levels, the idea is to design a “tool suite” to characterize, assess, evaluate and co-construct an inclusive energy and socio-territorial justice - with the actors of these territories. This research is based on an interdisciplinary approach, combining engineering sciences with social and spatial sciences, in order to co-construct an inclusive territorialization of energy transition, leading to energy justice. For this purpose, the “Energy Justice Tool Suite” project aims at designing, not buildings archetypes, but multiscale energy complex systems archetypes: physical phenomena to design the energy poverty assessment model at the block scale, and human behaviour, within an empowering perspective, through the animation of learning workshops. This experiment will be conducted on two fields of observation: Grenoble-Alpes Métropole and the region of Compiègne, to establish a transect of energy poverty situations. The “Energy Justice Tool Suite” project also aims at designing, experimenting and optimizing a transversal tool to aid decision making and a tool to aid consultation making for energy and socio-territorial multiscale justice.

Keywords: energy transition, energy poverty, energy justice, decision support tool

Introduction

In the French context of the energy transition, fuel poverty demonstrates the existence of deadlocks and impasses, linked to the implementation of the transition, through territorialized public policies, but also linked to the non-adherence of the users or prescribers concerned. Indeed, the fight against fuel poverty involves multifactorial responses between different actors: households, owners, energy suppliers, public actors, specifiers and professionals in the field of thermal building renovation. Often these tensions are posed in a compartmentalized way: either through technology, public action or participation, and in a normative way by neglecting the constraints of past energy and economic choices (incentives to change without understanding how it came to be). At the urban, technical and socio-economic levels, one of the

challenges is to design with the actors of these territories a "set of tools" to characterize, evaluate and co-construct a more effective fight against fuel poverty, with the objective of energy transition.

Our research is based on an interdisciplinary approach, combining space sciences, social sciences and engineering sciences, in order to co-construct an inclusive territorialisation of the energy transition, which will bring about energy justice. We are working on two areas of observation and experimentation: Grenoble-Alpes Métropole and the region of Compiègne, France.

This article aims to present the French context of the territorialisation of energy action, the scientific, technical and socio-economic challenges of the fight against fuel poverty linked to housing, the methodology that the project team wishes to set up and test on two complementary fields of study. The objective of this article is to submit to scientific discussion a methodology for characterizing, writing, evaluating and co-constructing an inclusive energy and socio-territorial justice - with the actors of these territories, through the creation of tools to support the energy transition.

The territorialisation of energy action in the French context

The French energy sector has long been organised around a dominant player, EDF (électricité de France) and centralised production based on nuclear energy. However, this configuration is the result of a historical process that ignores the long-standing presence of cooperative forms in this sector (Artis *et al.* 2017). These characteristics have marked the energy market in France: energy pricing is highly regulated by the public actor; access to energy has long been inexpensive due to subsidised nuclear production. Nevertheless, since then, the landscape has changed somewhat; it has even changed incredibly and become more complicated as part of the construction of the European market. Indeed, the European construction has led to a transformation of the organisation of the energy sector. Today, the energy sector is composed of competitive activities (e.g. customer supply) and regulated activities (transmission and distribution of energy), which has also transformed the price of energy for the consumer. Although the production of a quasi-public service persists in the sense that there is an obligation to provide and connect to public infrastructure, the competitive tendering process has transformed the competitive logic of the players, by developing specific offers (in particular for green offers).

Today, the new configuration of the energy landscape is radically different from the old one. It is characterized by:

- - the multiplicity of actors: public companies, private companies, production and/or distribution cooperatives, management companies, village power plants under various statuses, investors, local authorities, private individuals and producers... and, of course, always the States and Europe; with local and national actors;
- - the multiplicity of possible technical solutions, and in particular the development of renewable energy production;
- - the complexity of the socio-political regulation to be put in place, from national regulatory authorities to the conciliation of projects in the same municipality (with or without municipal control), and not forgetting to reduce fuel poverty (in the North and South), or even areas where there is no connection or supply (in the South) (Artis, 2017).

As a result, several points of tension that were erased in administered energy regulation in the post-war years are emerging. These points of tension are related to the multiscale entanglement of decision-making

locations, competitive logics between operators and the injunction to a cleaner and more sober energy. These tensions are reflected in the implementation of macroeconomic policies at the territorial level.

Following the Kyoto Protocol, France has committed itself to reduce its greenhouse gas emissions by a factor of 4 (MEDDE, 2013). To meet this commitment, the French government has put in place legislative and regulatory measures to ensure that all local and regional authorities take action to reduce greenhouse gas emissions (Chanard, 2011, Chanard *et al.* 2011). This territorialization of energy action (Bertrand and Rocher, 2011, Chanard, 2011, Godinot, 2011, Theys and Vidalenc, 2011, Bertrand and Richard, 2014, Durand *et al.*, 2015, Poupeau, 2016) must be based on quantified objectives (Godinot, 2011) and global territorial action at three levels of public intervention: the exemplarity of its heritage and services, public policies and awareness (Chanard *et al.*, 2011); as well as scenarios for energy transition in cities, linking actors, regulations and technologies (Debizet and Dupuy, 2015).

However, at the local level, to fight against this fuel poverty (Guyet, 2015), which would affect nearly 6 millions people in France (ONPE, 2017), we observe that territorial public action is facing difficulties in setting up:

- - because of the difficulty of working on the real energy efficiency of urban forms at the scale of a city - and not just a building (Maïza, 2007, Arantes *et al.*, 2016),
- - and because of the difficulty of reporting on fuel poverty, on a small scale, through indicators and criteria (Devaliere and Teissier, 2014, Charlier *et al.*, 2015, Thomson *et al.*, 2017).

Fuel poverty and its interdisciplinary modelling

Through its socio-economic and ecological challenges, the issue of fuel poverty is now an important element of the social question because it brings together residential and individual (Fijalkow, 2013, Deffobis, 2015), biographical and social forms of vulnerability with issues of access to resources and the distribution of wealth and sustainable development (Griggs *et al.*, 2017), reinforced by a need for "ecological empowerment" in the territories. All these challenges involve the public authorities and institutions in charge of implementing the public policies planned in this regard. It requires their decompartmentalization and permanent monitoring, necessary for their readjustment over time.

In a way, we can think that the question of fuel poverty and its counterpart in energy justice (Guyet, 2015) are today a perfect expression of the challenges that will structure the future of our societies because it already questions the forms of governance at the territorial level, the role of institutional actors, companies prescribing solutions, and ordinary citizen-users (Heffron and McCauley, 2017 Jenkins *et al.*, 2016). Responding in an equitable and inclusive manner (Clément and Valegeas, 2017) to the challenge of fuel poverty, "for a just transition" (Lavelle, 2015) becomes a major focus of tomorrow's policies at both global and local levels. These new policies must integrate social issues into decision-making, planning and implementation practices (in the sense of technicality), and be accompanied by the large-scale social pedagogies needed to activate the collaborative capital of users - and in particular users identified as "vulnerable" (Lees, 2014, Lees, 2016).

Beyond this obvious vulnerability, fuel poverty remains difficult to quantify, on a small scale, by indicators and criteria (Devaliere and Teissier, 2014, Charlier *et al.*, 2015, Thomson *et al.*, 2017) - and consequently, to support (Guyet, 2015).

The thermal quality of a building and the low income of its occupants are two of the three interrelated factors that lead to a household's fuel poverty (Devalière, 2007, Réseau RAPPEL, 2011, Charlier *et al.*, 2015). Indeed, excessive energy consumption, linked to poor housing insulation, will be all the more harmful if the people concerned have modest incomes. In some cases, poor housing insulation therefore increases the risk of fuel poverty. On the other hand, the thermal renovation of buildings, by reducing the energy consumption of residents, while maintaining - or even increasing - the quality of the "energy services" they receive, is an effective means of combating climate change (Dubois, 2007). It is therefore important to target as a priority geographical areas with homogeneous areas of high energy loss, as well as a high percentage of vulnerable people (Devaliere, 2008, Henriot and Molines, 2016, Molines and Henriot, 2017a, Molines and Henriot, 2017b, Molines and Henriot, 2019). It will also be necessary to set up appropriate awareness and information campaigns targeting all the actors concerned (inhabitants, owners, landlords, craftsmen, etc.). Indeed, improving the energy efficiency of built stock leads to the implementation of new practices, new materials and new financial aid that must be supported in order to make them more efficient and limit their drift.

On the other hand, as they do not themselves own the properties to be rehabilitated, local authorities have a heavy task of raising awareness and consulting with all stakeholders: inhabitants, donors, craftsmen (Bertrand and Rocher, 2011, Chanard, 2011, Godinot, 2011, Theys and Vidalenc, 2011, Poupeau, 2013, Bertrand and Richard, 2014). In this consultation work, it should be noted that serious games have proven their effectiveness in concerted projects (Poplin, 2011). Serious games are also found in urban programming projects (Molines *et al.*, 2018) and in projects to raise awareness of the energy transition (e.g. "islands of the future", "SIMU renov" or "Electricity 2050").

The modelling of energy losses offers concrete quantitative support to assist cities in their decision-making (Caputo *et al.*, 2013). It is generally carried out at two different scales: the building scale on the one hand, and the neighbourhood or city scale on the other.

Building scale modelling is a well-developed field in the scientific literature and many calculation methods and tools are available: TRNSYS (Beckman *et al.*, 1994), Energyplus (Crawley *et al.*, 2001), Pleiades-Comfie (Peuportier *et al.*, 1990). It is based on physical, empirical or statistical data (or a combination of all three) (Wate and Coors, 2015, Magyari *et al.*, 2016). On the contrary, simulations of energy estimation at the city or neighbourhood level represent an emerging field of research, such as Citysim (Robinson *et al.*, 2009). At this scale, energy modelling is done in two different ways. The first, called top-down, uses macroeconomic data (energy prices, geography, social data, etc.) and statistical data to make future energy forecasts. The second, the bottom-up approach, models groups of buildings with similar technical and geometric characteristics (Kavgic *et al.*, 2010, Nielsen *et al.*, 2013). These models require the construction of geometric and non-geometric data. The most commonly used data models are construction information models (BIMs), used for individual construction simulations, and geographic information systems, generally based on 3D technology (GIS), which are suitable for assessing larger territories have become an essential tool for improving dynamic energy modelling capabilities (Bahu *et al.*, 2013, Wate and Coors, 2015, Nowacka *et al.*, 2018). Some models combine building scale energy modelling with urban modelling (Thomas *et al.*, 2014, Martins *et al.*, 2017, Wang *et al.*, 2017, Osterbring *et al.*, 2018).

Similarly, non-geometric data can be retrieved in two ways. Data can be collected, in real time, from sensors. This is the optimal solution but it is expensive and cannot be implemented over a large area. The other solution consists in developing a typology of the different urban forms present on the territory. We speak of building archetypes (Sousa Monteiro *et al.*, 2015, Ali *et al.*, 2018). It is the most commonly used solution in urban-scale energy modelling. However, these databases generally focus on national archetypes and do not integrate the building types characteristic of each region (Ali *et al.*, 2018).

Our case studies: Grenoble and Compiègne: areas of observation of fuel poverty and areas of experimentation with energy justice

These questions are developed on complementary grounds by their degree of urbanity and according to a transect: from the district in a large urban metropolis in Grenoble, to a medium-sized city grouping together urban, peri-urban and rural territories, within the région of Compiègne.

a) The case of Grenoble

The Grenoble area is often seen as a "laboratory", to use the expression used by Ambrosino and Novarina (2015). Even if the authors question this appellation, they retrace the specificities of the Grenoble territorial matrix around several structuring specificities for the territory.

- The first specificity concerns the role and place of the university actor, and in particular the science park. After the Second World War, several research infrastructures accompanied the technological transformation of the ecosystem by strengthening links with universities and companies (Ambrosino and Novarina, 2015). These actions mark the territory on two levels: on the one hand, the importance of innovation and the reference frame for innovation, which are deeply rooted in the logic of companies, academics and public authorities, and on the other hand, the interpersonal links between the academic and political worlds, given that several mayors of the City are engineers from this technopole.

- The second specificity concerns the public actor. In this field, Grenoble is often perceived as the laboratory of local democracy with the actions carried out by Mayor Dubedout and the municipal action group (GAM) which "seeks to develop citizen participation through the establishment of a privileged link with the "neighbourhood unions" (Joly and Parent, 1988, Novarina, 1993, Ambrosino and Novarina, 2015). Although the real weight of this management was limited, it had the particular consequence of forging strong links between political power and associations, in a semantic of co-management or instrumentalization according to historical periods and of building strong public actors on the social question, through the Communal Centre for Social Action (CCAS), then the houses of the inhabitants, establishments managed by the City. Today these two forces are still very active: on the one hand, the town council of the city centre has been supported by citizen networks and on the other hand, the CCAS of Grenoble is an essential actor in the social question. Thus, this specificity has the consequence that the territory is used to self-organizing by groups of citizens, that militant and political associative networks have a strong territorial network, and that the co-management or implementation of public policy is often participatory and bilateral.

- The third specificity is linked to urban planning and the various major urban projects (e.g. Villeneuve in 1968 or more recently the eco-neighbourhoods). These urban projects have the particularity of placing inhabitant participation at the heart of the approach (Ambrosino and Novarina, 2015). Today they are marked by the search for quality of life around the environmental issue and the vision of a post-carbon city (energy and mobility).

These specificities have marked the territorialization of energy in Grenoble with an international university expertise in this field (eco-sesa) together with public actors involved in this theme. In terms of combating fuel poverty, the city of Grenoble and its stakeholders have distinguished themselves early on, as evidenced by the Mur|Mur1 thermal insulation campaign, launched between 2010 and 2014, while the Mur|Mur2 campaign (2016-2020) is now underway, and the number of urban projects marked by the energy issue is increasing.

- The district of *Bonne* | In the Grenoble landscape of exemplary projects, the district of *Bonne* quickly acquires a very particular visibility. Launched in 2001, the project to upgrade the former Bonne barracks (8.5 hectares located in the immediate proximity of the city centre) is part of a guide plan entrusted to Christian Devillers, Grand prix de l'urbanisme 1998. The objectives of the Concerted Development Zone are to reconcile functional mix (housing, shops and public facilities) and social mix (rental and accession housing), urban density and quality of life (conservation of the military buildings existing around the Place d'Honneur, creation of an urban park) with a view to strengthening the main centrality of the urban area and with requirements imposed in terms of innovative energy management (bioclimatic design of buildings, optimisation of energy savings, coverage of electricity and hot water needs through the use of renewable energies and cogeneration). In 2009, as part of a call for tenders launched by the French Ministry of Ecology and Sustainable Development, it won the *Grand Prix national EcoQuartier*. However, today, fuel poverty is settling in for households that are not able to use the technological innovations implemented in this district.

- The district of *Presqu'île scientifique* concerns the requalification of an area previously mainly occupied by research laboratories specializing in nanotechnologies and the properties of the French Atomic Energy Commission. Designed to be the laboratory, symbol and artifact of metropolitan policy, the development of this new district has in fact become an urban demonstrator, a territory where innovations and experiments are developed that should eventually lead to the identification of good practices that can be replicated in the rest of the metropolitan territory. The district of *Presqu'île* offers the opportunity to develop technological innovations in favour of a sober and peaceful city, with cooperative energy management, smart-grids and the implementation of a pass-mobility. In addition to these innovations, actions in favour of an "inclusive city" and a "nature city" have to be planned. However, the constant quest for innovation has led to the search for technical solutions to solve social and urban problems. In order to achieve immediate and exemplary results, it led to a sectoral operational project being given priority over a metropolitan strategy and to a minimization of the importance of public debate in the establishment of strategies and the construction of projects. In this district too, fuel poverty is settling in for households that are unable to use the technological innovations implemented.

(b) The Compiègne case

The region of Compiègne and la Basse Automne (or Agglomération de la Région de Compiègne, ARC, in French) is an intermunicipal cooperation structure located in the department of Oise, in the region of Hauts de France, bringing together, since 1 January 2017, 22 municipalities and 81,000 inhabitants, over an area of 265,000 km². Almost half of the population of the ARC lives in the commune of Compiègne. Like Grenoble, the issue of fuel poverty is a significant one for the ARC. The lowest median incomes are found in the central zone (21% poverty in Compiègne, according to INSEE criteria). The other municipalities have rates of 10% or less. Some inner cities have median incomes well above the urban average (3,000 euros and above for an average turnover of 23,760 euros per consumption unit). According to the presentation report of the territorial master plan (SCOT), « at the level of the Compiègnais Country in 2006, 12,630 individuals, or 17.7% of the total population, are below the low income threshold (12.3% on the Oise), i.e. having received an annual income of less than €7,830 ». The low-income earner is generally young, on short-term or part-time contracts and works mainly in three sectors: operational services (cleaning companies, security guards, temporary employment agencies), health and social work, and retail trade. According to the SCOT, the municipality of Compiègne covers 70% of the population covered by the welfare tax credit in the ARC territory. The ARC's housing stock is composed as follows: 23.1% of social rental housing, the ARC concentrates 73% of its public stock on the city of Compiègne. According to data from the regional observatory GES / Energy ADEME-Region, the average energy consumption ratio of homes for heating and hot water production is 206 kwh-ep/m².

Faced with these poor results, the ARC has placed heating renovation as one of the major challenges in controlling energy consumption and wishes to implement policies in favour of the construction of new low energy building and the renovation of old buildings. The improvement of the old private housing stock is a major focus of the local housing plan adopted by the ARC in November 2009, and remains, with the approval of the Territorial Energy Climate Plan (PCET) in 2015, and the commitment of the Master Plan (Plan local de l'urbanisme intercommunal, PLUI in French), a priority for the ARC.

Moreover, in 2015, with a *Territorial Air Energy Climate Plan* (PCAET), the region of Compiègne was recognised as a "Positive Energy and Green Growth Territory" (TEPCV). Several actions are being implemented. At the beginning of 2015, an aerial thermography campaign was launched to identify roof insulation defects. One of the actions carried out under the PCAET in conjunction with ADEME was the creation of an energy renovation platform from 1 January 2016. The purpose of this platform is to federate and coordinate the various actors involved in energy renovation. This "Renovated Housing" platform is a unique resource center to facilitate access to information and simplify the steps towards energy renovation.

As part of our project, the urban area has already expressed the wish that the analysis of fuel poverty should focus, as a priority, on :

- - The Royaumont Linières district in Choisy au Bac (individual housing in peri-urban areas);
- - The Aramont and Pierre Lamaresse districts in Verberie (individual housing in peri-urban areas) ;
- - The district of the great Gardens in Compiègne (a little individual but especially private collective and social landlord areas) ;
- - The Venette district (joint housing in peri-urban areas).

Overall, the interest of this land is to address fuel poverty issues in all types of neighbourhoods: existing buildings or buildings under construction, for Grenoble, or under renovation, rehabilitated or to be rehabilitated for Compiègne and its urban area.

Based on these grounds, selected by the academic team and its partners in Grenoble and prefigured in consultation with the Communauté d'agglomération de Compiègne, the project studies in particular the loop of the following actions: design-implementation-use-improvement/integrated innovation. The project combines the analysis of technical-environmental characteristics (materials, type of buildings, land, etc.) and the analysis of the dynamics of use of social groups marked by their forms of vulnerability linked to their socio-demographic characteristics, life courses and control of processes involved in the ecological approach (D'ercole and Metzger, 2009). These dynamics of use are also studied in relation to the evolution of building users (e. g. the historicity of buildings) and partnerships with social landlords and/or developers.

Conclusion

The objective of the "ENERGY JUSTICE TOOL SUITE" project is to evaluate the partnership process of energy efficiency of buildings and their stakeholders, while developing a modelling, decision-making and consultation tool to assess the efficiency and cost of the proposed scenarios - and thus to participate in the fight against fuel poverty. Through the project, we propose in particular:

- A global analysis of the fuel poverty of the Compiègne urban area and the city of Grenoble, which will provide decision-makers with a new tool for understanding their territory, assessing spatial discrimination between hyperurban and urban areas in Grenoble and Compiègne, urban and rural areas in the Compiègne urban area, and social discrimination between populations.

- To take a global, analytical and detailed look at the political decision-making processes, the sets of actors involved in these processes (both through rationality logics and ideological or imaginary logics), to analyse the technical and managerial implementation of these decisions and to question the socio-economic logics involved, finally, to be able to identify the postures of users who are faced with these technical achievements, to understand the difficulties they encounter, the fragility of postures that manifest themselves in the face of technical, economic and legal challenges, and finally to identify the needs felt to adhere to or validate their capital of "responsible citizenship".
- It is also a question of defining an interoperable and interdisciplinary multiscale model for the evaluation of the energy consumption of an urban area's built stock. To this end, we propose the design, not of archetypes of buildings, but of "archetypes of complex systems" (Vorger, 2014) of multiscale energy systems, combining physical phenomena (real energy performance, socio-economic statistics of INSEE data at the IRIS and INSEE grid scales - which is unprecedented), and human behaviour - by integrating not only users, but also the whole ecosystem working for energy and socio-territorial justice, and from an empowerment perspective.
- Beyond our territories of study and action, we propose the development of a collaborative database of urban typologies. This database will catalogue all the urban forms present in our two study areas. It can be completed and enriched afterwards. Each urban form will be characterized by the criteria necessary to feed the models. The database will present all the "optimal" energy variants of these archetypal projects, allowing urban planners and architects to be informed of a wide range of potentialities. This work would help them to manage the complexity and understand the influence of their choice on urban energy responses, both in terms of performance, but also in terms of the qualities of architectural and urban environments, as well as in terms of socio-economic impacts, and finally in terms of comfort.
- We also propose the creation of a serious digital game to raise awareness among all stakeholders on the issue of heat loss and energy renovations.

Finally, the project aims to characterize, write, evaluate and co-construct an inclusive energy and socio-territorial justice - with the actors of these territories, through the creation of tools to support the energy transition, either a decision support tool (collaborative platform) and a tool to help.

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Smart Energy Transition: evaluation of cities in South Korea

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Abstract: One of the major objectives of smart city development is achieving energy efficiency and moving towards a low-carbon energy society. The idea is that ICT-embedded urban infrastructure can enable efficient energy management and contribute to reducing CO₂ emission. In that sense, a smart city can play an important role in the energy transition. In South Korea, the government plays a major role in smart city development. Since the 2000s the governments implemented informatization and digitalization and since 2008 they started smart city implementation across the country. Then how these government-led smart city initiatives perform in the energy transition? The purpose of this paper is to discover the contribution of government-led smart city initiatives in the energy transition. After building a conceptual framework on smart city and energy transition, we develop a Smart Energy Transition Index. The 161 cities in South Korea are grouped into three categories: 1st and 2nd wave smart cities and non-smart cities. The index score is compared among the groups and the analysis showed that there is a significant difference between 2nd wave smart cities and the 1st and the non-smart cities. The analysis provided empirical evidence of the smart city's contribution to the energy transition.

Keywords: smart city; energy transition, smart energy transition index (SETI), South Korea

Introduction

Rapid urbanization and urban population growth have been accelerating greenhouse gas (GHG) and climate change. Currently, more than half of the world population reside in the urban area and according to the UN's prospect, the urban population will be 68% by 2050 (UN, 2018). These people's daily life cannot be separated from energy consumption and GHG emission. According to the Intergovernmental Panel on Climate Change (IPCC), cities consume around 67% to 76% of energy and produce three-fourths of GHG emissions (IPCC, 2015). Therefore, the factors that influence GHG emission in cities need to be managed for sustainable energy consumption. Those factors include population density, economic activity, climate variables such as heating degree days, household size, and urbanization rate (Creutzig *et al.*, 2015). Since urban infrastructures such as buildings and roads are the main place of energy consumption (Calvillo, Sánchez-Miralles and Villar,

2016), urban form and activities (economic activity, heating, and transport) should be considered in urban energy management.

To ensure environmental sustainability, it is important to manage the aforementioned urban attributes, but also change in the energy system. Today the main energy source is fossil fuel, which is a major contributor to CO₂ emission and climate change. If we use energy at a business-as-usual level, the energy consumption will be triple of 2005 by 2050 (Creutzig *et al.*, 2015). Energy transition becomes an important topic because the growing urban population and urbanization rate will increase energy demand. Energy transition means a drastic change in energy consumption and production pattern to a more effective and sustainable way (Rutherford and Coutard, 2014). It represents moving to a low carbon energy system (Bridge *et al.*, 2013). It is derived by both supply and demand, but the most important driver is the end-users (Grubler, 2012). Therefore, both energy production and consumption need modification.

The smart city literature argues that smart cities can contribute to reducing energy consumption and CO₂ emission (Debnath *et al.*, 2014; Snow, Hakonsson and Obel, 2016). The buildings can be designed energy-efficiently in the first place to automatically reduce energy consumption. ICT can be used to sense and monitor energy use in the building so that people can alter their behavior to reduce energy consumption (Navarro, Ruiz and Peña, 2017). On the road, a major difference can be made by the Automatic Vehicle Location System. This system is implemented in public transportation and help reducing fuel consumption and travel time (Debnath *et al.*, 2014). Sharing transport data can also reduce congestion (Snow, Hakonsson and Obel, 2016) and reduce CO₂ emission. In regard to CO₂ emission reduction, alternative or renewable energy sources are introduced, developed, and applied to generate cleaner energy (Zygiaris, 2013). The use of ICT can relieve the environmental burden (Hara *et al.*, 2016) and smart cities have a high possibility in contributing to the energy transition.

Many countries are interested in the idea of a smart city. The Indian government announced an ambitious goal of making 100 smart cities (Datta, 2015), and many other countries already initiated smart city projects. Especially in South Korea, the government has been investing in digitalization and ICT infrastructure since the early 2000s, and promoted smart city development since 2006. The effort of developing smart cities has been continuous: the government announced Ubiquitous-City (U-City) plan in 2004, established the first smart city (u-eco city) in Songdo in 2009, designated Jeju island as a test bed for smart grid system in 2010, and now develop Busan and Sejong as smart city since 2018. Then how these government-led smart cities are different from regular, ordinary cities? Do they perform better in terms of the energy transition? These questions are valid to check the effectiveness of government-led smart city projects.

The purpose of this study is to analyze the government-led smart city's achievement in terms of the energy transition. The remainder of this paper consists of the following. First, we build a conceptual framework on smart city and energy transition. After reviewing the definition of smart city and energy transition we make the link between them and develop evaluation criteria to evaluate government-led smart cities in terms of the energy transition. Second, we introduce South Korean planning history and policies regarding smart city development and energy transition. Then we move on to the analysis, introducing the data collection, analysis methods, and the results. Finally, we conclude with a summary of the analysis and discussion.

Smart City and Smart Energy Transition

After reviewing 78 academic paper on smart city framework, Yigitcanlar et al. (2018) developed a comprehensive conceptual framework for the smart city following the input-process-output model as shown in 오류! 참조 원본을 찾을 수 없습니다.. To this framework, the city itself is an asset (input).

Technology, community, and policy are the main drivers (process) that produce desired outcomes (output) in fields of economy, society, environment, and governance. These desired outcomes eventually make the city smart. This framework does not perceive the smart city as an end result per se, rather as a process to achieve balanced and sustainable development through three drivers. To put it differently, a smart city is a vision to achieve sustainability (Trindade *et al.*, 2017). Therefore, smart communities, technology, and innovative policies are important features in the smart city. The smart community identifies what they need and encourage developing better services and citizen-centric decision making through online platforms (Romanelli, 2013). The smart city provides an environment that citizens can participate through a various channel and enables mutual communication between citizens and the governments through technology (Moss Kanter and Litow, 2009; Bakici, Almirall and Wareham, 2013; Gil-Garcia, Zhang and Puron-Cid, 2016). Policy paves environments for technology to be applied and implemented in desired places.

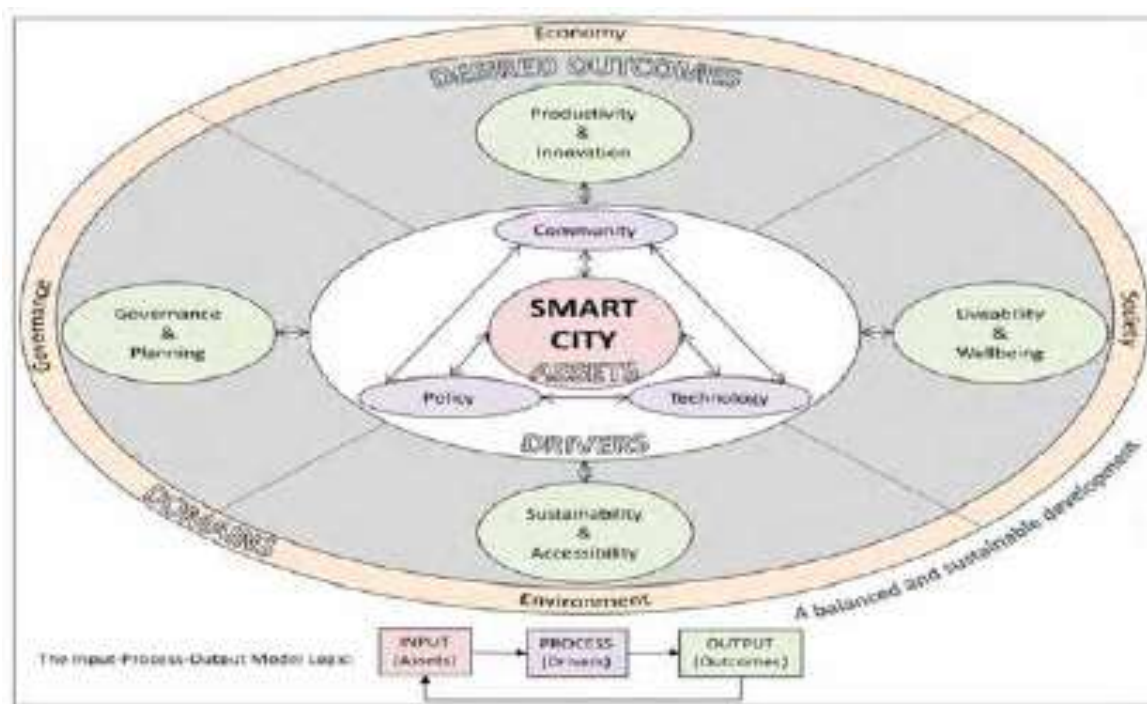


Figure 1 Smart City Framework (source: Yigitcanlar et al., 2018)

Technology in a smart city is mainly ICT such as sensors, broadband, and wireless networks, and mobile devices (Washburn *et al.*, 2009; Schaffers *et al.*, 2011). ICT functions as enabler and facilitator of various actions and innovations in the smart city (Nam and Pardo, 2011b). ICT-embedded infrastructures enable gathering, processing, storing and sharing of real-time information. It creates a ubiquitous connection not only among people, firms, and governments but also with the hard infrastructures (Nam and Pardo, 2011b; Cimmino *et al.*, 2014). Internet of Things (IoT), Cyber-Physical Systems (CPS), and big data are major examples of ICT in a smart city. Technology is a prerequisite that facilitates collaboration and cooperation among actors in the city so that they can find

an innovative solution to local problems and pursue sustainable growth (Nam and Pardo, 2011b). In that sense, community and policy take an important role in shaping a city into a smart one.

A smart community is operated with creativity, social learning, and life-long education and pursuit inclusiveness, cooperation, and democratic decision making (Nam and Pardo, 2011b). Urban Living Lab is an example of innovative community involvement which is public, private and people partnership (4P) model, a user-driven innovation (Schaffers *et al.*, 2011). At the same time, citizens can be empowered and participate more in public decision making in smart cities by providing a communication platform with ICT infrastructure (Stratigea, 2012). It supports prompt communication and higher accessibility to information and data that are needed to solve local social and economic problems (Nam and Pardo, 2011b). Inevitably, the citizens need to have the ability to exploit ICT infrastructure (Stratigea, 2012), and because of this age and socioeconomic difference can create a digital divide (McAllister *et al.*, 2005). To prevent further gaps, inclusive policy intervention is needed.

The policy represents a favorable governance environment for smart city development. In the smart city, e-governance is highlighted because it creates a connection among departments, civil society, and private entities (Nam and Pardo, 2011b). E-governance is the capacity of the government to communicate with citizens via on-line participatory tools regarding public services and satisfying citizens' needs (Odendaal, 2003; Barns *et al.*, 2017). The policies in favor of smart city development include investment in R&D for ICT infrastructure, providing learning programs for citizens who are not used to the ICT devices, and maintaining a good relationship with communities and businesses. Strong leadership, clear goal, appropriate planning, and commitment can encourage and accelerate the smart city development process (Stratigea, 2012). Finally, the government needs to consider what society wants, citizens' ability to exploit ICT infrastructures, and jurisdiction (Odendaal, 2003; Barns *et al.*, 2017).

The three drivers of the smart city do not act separately but they work together to achieve the best results in economic, social, and environmental sustainability (Yigitcanlar *et al.*, 2018). Especially, these drivers can contribute to energy transition. The energy transition can be defined as changing energy production and consumption pattern to a low-carbon society (Grubler, 2012). Low-carbon means producing renewable energy sources that emit less CO₂ emission, storing and distributing electricity according to the supply and demand, and consuming less energy in daily life (Bridge *et al.*, 2013). A radical change in the energy system has been highlighted because of two major trends: technological lock-in to the current unsustainable energy system and the limited amount of fossil fuel that the current energy system relies on upon (Seyfang and Haxeltine, 2012). System-wide change is desired and the smart city can be one of the solutions because the smart city itself is a comprehensive change in the urban system.

In a smart city, ICT-embedded urban infrastructure and open data sharing can enable efficient energy management and optimize energy consumption which can lead to less CO₂ emission (Debnath *et al.*, 2014; Snow, Hakonsson and Obel, 2016). According to Nielsen, Amer, & Halsnæs (2013 p.3), smart energy city means a city with greater energy efficiency using ICT and promoting renewable energy so that it provides a sustainable living environment. Parallel to this definition, Mosannenzadeh, Nucci, and Vettorato (2017) provided a holistic definition based on 5W1H (who, when, where, what, how, and why), in relation to smart city and sustainable city. They define smart energy city as “a component of smart city development aiming at a site-specific continuous transition towards

sustainability, self-sufficiency, and resilience of energy systems, while ensuring accessibility, affordability, and adequacy of energy services, through optimized integration of energy conservation, energy efficiency, and local renewable energy sources (Mosannenzadeh and Vettorato, 2014, p.57).” They also mention ICT and collaboration among stakeholders are important to keep energy transition on-going. In their definition, we could find three drivers of smart city, ICT as technology, major stakeholders including community (civil and private firms) and government (policy).

The energy system follows a procedure of energy production, distribution and storage, and consumption (Calvillo, Sánchez-Miralles and Villar, 2016). In the traditional energy system, there was a clear distinction between who produces and distributes (a government agency) and who consumes (civil society). The traditional energy system involves mass production and distribution of power which needed large infrastructures and investments govern by the government. In a transitioning system, this centralized energy system changes into a more decentralized one, where individuals can become energy producers (Mah *et al.*, 2013). People can install small scale energy production plants such as solar panels to their homes and offices (Mosannenzadeh *et al.*, 2017). Moreover, it is possible to save the residual electricity and sell it to local power plants. The smart grid enables real-time and interactive information sharing on energy production and consumption while the energy storage system (ESS) enables optimizing energy use on demand and enhance stable energy distribution. Also, technological development can increase energy efficiency, meaning using less amount of power to generate the same performance. For example, the household appliance can be designed energy efficiently, so that people can save energy while doing the usual house chore. Energy conservation activities can be promoted by actively involving citizens. For example, people can share cars and bikes and use more public transportation (Geels *et al.*, 2018). As the system changes, the stakeholders’ role in energy systems is changing. The government’s role is expanded from energy producer to comprehensive system manager. The government produces energy, promotes innovation in technology, and facilitates citizens’ participation for a sustainable energy system. The community’s role is also expanded from energy consumer to energy producer using a smart grid system.

Table 1 Theoretical framework

Drivers	Energy Production	Energy Distribution & Storage	Energy Consumption
Technology	Renewable energy	Smart grid, ESS	-
Community	Civil initiatives in renewable energy sector		Energy consumption level
Policy	Supporting technological development Rules and regulations for energy transition		

The main hypothesis is that there is a difference between smart and none-smart cities regarding performance in the energy transition. To check the hypothesis, evaluation criteria are developed as shown in Table 1. The contribution of smart city elements in each process of the energy system is stated in each cell. Technological development enabled more energy production with renewable energy, energy distribution, and storage with a smart grid system including an energy storage system. It also influenced energy consumption by providing energy efficient gadgets and facilities, but we omitted this in the table because those are included in the community’s energy consumption behavior. The community’s contribution is represented as installing small-scale on-site energy generation for energy production, distribution, and storage. For energy consumption, energy conservation behavior and energy consumption level are evaluated. Finally, the policy here means the government’s

activities in regard to the energy transition. It includes the rules, regulations, the legislation's on energy systems, energy conservation campaigns, and supporting technological development in general.

Smart City Development in South Korea

Smart city development is one of the national development strategies in President Moon's administration (Baek, 2017). Smart city development in South Korea started with informatization and digitalization following the introduction of the Internet in the early 2000s. The government then initiated U-Korea Plan (2006~2010) and U-City Plan (2009~2012) and launched 55 U-city projects (45 cities if deducting duplicated projects in the same cities). 'U' stands for Ubiquitous technology that enables unlimited network accessible anywhere and anytime. The main focus of U-city was on technology and infrastructure such as Ubiquitous Sensor Network (USN), Wireless Sensor Network (WSN), CCTV, fast internet network, mobile environment, and public wi-fi. The sensors are implemented in roads, rivers, and major facilities for the management. U-city provides service mainly on transportation information and security (surveillance through CCTV & emergency response). U-city is a prototype of a smart city.

At the same time, the government started to prepare for energy transition under the 'Low Carbon Green Growth' agenda. Phasing with the global trend to low-carbon economy and emphasis on green growth, the government focused on sustainable economic development, especially focusing on green and eco-friendly transportation. The government launched the Guideline for Low-carbon Green City (2009.8) focusing on developing low-carbon green cities to overcome climate change crisis and Low-carbon Green Growth Law (2010.4) regulating compact city, mixed land use, public transportation, new and renewable energy use, water and resource cycle. Also, the government initiated the National Smart Grid Vision (2009), and National Smart Grid Roadmap (2010). At glance, the government's efforts on smart city and energy transition seem to be separated. They both are under the Low-carbon Green City agenda but U-city is rather focused on cutting-edge technology and infrastructure on transportation and security while the low-carbon green city projects focus on purifying and restoring the natural environment and renewable energy. Also, the government used energy transition as a means of economic development, ignoring actual energy transition in general society (Yun, 2009).

Table 2 summarizes the major difference between the U-city and the smart city. Both U-city and Smart city utilize the technology but u-city focus on the technology itself while the smart city focuses on its functionality. U-city focuses on connected infrastructure while the smart city pays attention to human and social capital. The u-city's goal is urban informatization which is implementing technology for efficiency while that of the smart city is urban intelligence, which is making the technology more accessible to the general public. When there is an urban problem, u-city tends to follow ready-made procedures, but smart city diagnoses the problem and prescribes solution based on the data. The initiatives changed from a government-led, city-focused, top-down manner to multi-stakeholder and citizen participation, bottom-up manner. Citizens' role is also expended from mere service users to active service developers. This was administratively assisted by the government as they initiated Open Government 2.0 which is a platform for open administration data service so that people can access to the government data with ease in 2012. The smart city provides more comprehensive and multiple urban services. Based on the lessons from u-city development, South Korean smart city now tries to provide multiple urban services and include citizens and other parties.

Table 2 Difference between U-city and Smart city

Category	U-City	Smart City
Major Focus	Connected Infrastructure (network) Focus on technology	Social Infrastructure (Human & social capital) Focus on functionality
Goal	Urban informatization (efficiency)	Urban intelligence (usability)
Solution to urban problems	Ready-made procedure	Prescription based on data
Initiative	Top-down City focused & Government-led Vertical collaboration	Bottom-up Citizen's participation & Multi-stakeholders Horizontal collaboration
Implementation/ Operation	Limited urban services in telecommunication, security, and disaster prevention Mostly implement in newly developed cities Citizens adapt to provided urban services	Various urban services in administration, transportation, energy, water management, welfare, environment Can be implemented in both new and old cities Provide citizen-centered urban services

Source: Adopted and translated from (Park, Gang and Lee, 2018)

For the analysis, cities in South Korea is categorized into three as the following:

1. First wave smart city (n=34): U-city (u-eco city) and smart city projects by LH and local governments focusing on Transportation and Security (CCTV)
2. Second wave smart city (n=11): Smart city projects providing comprehensive urban management services, including transportation information, facility management, security and disaster prevention, health and welfare, administration, and environment (projects finished by 2016, not including on-going smart city projects)
3. Non-smart cities (n=116): None of the above

Methodology

Administrative districts in South Korea consist of one special city, six metropolitan cities, eight provinces, one special autonomous city, and one special autonomous province (see Figure 2). Including Seoul, Sejong, and Jeju, six metropolitan cities, and 75 Si and 77 Gun, a total of 161 areas are considered as cities for data analysis.

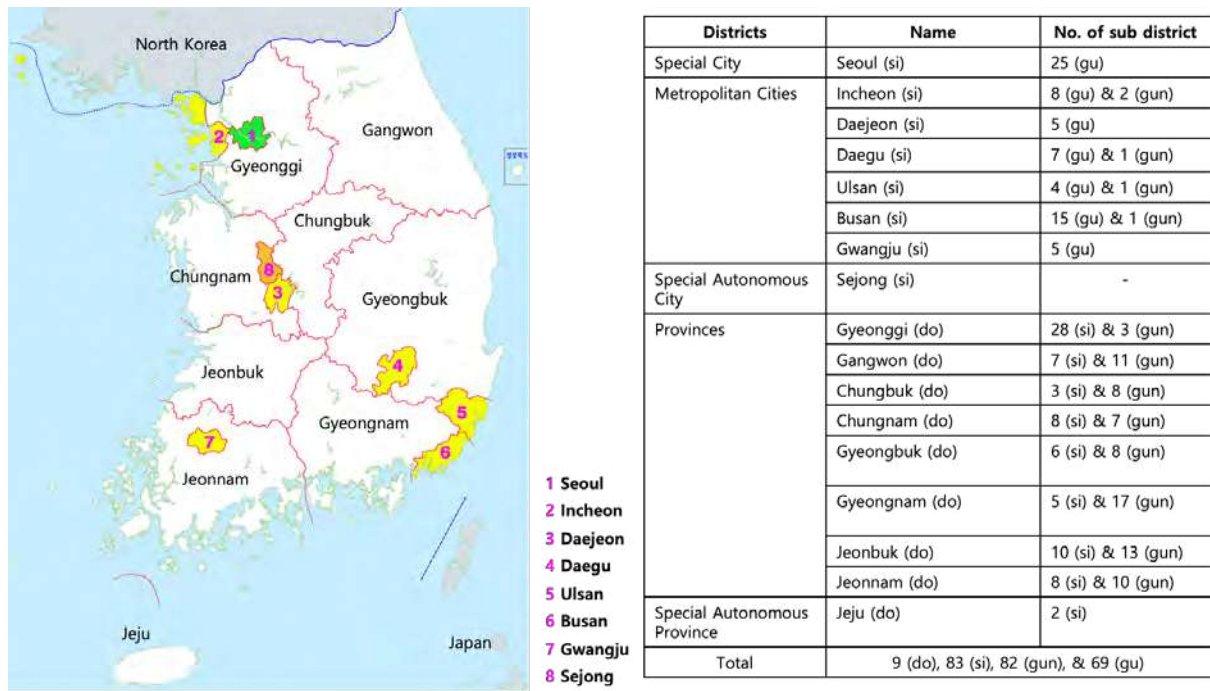


Figure 2 Administrative districts in South Korea

Smart Energy Transition Index (SETI) is developed based on the theoretical framework in Table 1, and the indicators are shown in Table 3. The following indicates how the data was collected and treated for each indicator.

- Renewable energy production: There are provincial level data on renewable energy production, but not on city level. Instead we use ratio of employment in renewable energy power generation to total number of employments. Renewable energy includes solar and hydro.
- Smart grid: The DOE Global Energy Storage Database provides ESS projects around the world. They provide which projects are installed where so that it is possible to establish city-level data.
- Citizen initiatives in the energy sector: There are three forms of the civil initiative that are available as dataset: cooperatives, social enterprise, and town enterprise. It is possible to access to full list of these initiatives and extract the ones specialized in the renewable energy sector. Most of them support local residents in installing or renting solar-panel.
- Energy conservation behaviors: It represents how much people try to reduce energy consumption in their daily lives. The data is from the social survey, which asks whether people try to use public transportation, participate in recycling, use fewer disposable goods, buy eco-friendly goods, and participate in energy conservation campaigns. These are asked on a scale of 5; from 5 (always participating) to 1 (never or not interested). Provinces except for Gangwon, Chungnam, Jeonnam, and Gyeongnam have city-level data on each energy conservation behaviors (n=87). Gangwon, Chungnam, Jeonnam, and Gyeongnam (n=74) only provide provincial level data. It is risky to remove all missing cases so we used provincial level data as each city's data since the provincial data is average of city-level data. The analysis was performed with and without this indicator for sensitivity analysis.

- Energy consumption level: Energy consumption means electricity use. The Korea Statistical Information Service (KOSIS) provides city-level data on electricity use, which is divided into four purposes of the use: home, public, service, and industry. We excluded industrial (agriculture, fisheries, forestry, and mining, and manufacture) electricity use because those facilities are usually built outside of the city. Only home, public and service are considered. The total amount of electricity consumption is divided by the population.
- Financial support: Financial support for technological development is represented with percent of the budget for technology (technology development, R&D, and scientific technology in general) in the local government's annual budget.
- Rules and regulations: Elis.go.kr provides a full list of each cities' current ordinance, rules, and regulations. We count the number of ordinances and rules that are related to energy. The title of frequently appeared includes 'Energy Basic Ordinance', 'Ordinance on Green Roof', 'Ordinance on Response to Climate Change', 'Ordinance on Low-carbon Green Growth', and 'Ordinance on Renewable Energy Provision'.

Table 3 Indicators of smart energy transition index

Dimensions	Category	Indicator	Year	Unit	Weight
Technology	Renewable energy production	The ratio of employees in solar and hydro energy production	2016	%	0.5
	Smart Grid	No. of gov't projects supporting ESS installation	Up to 2018	unit	0.5
Community	Citizen initiatives in energy sector	No. of civil initiatives specialized in renewable energy	Up to 2018	unit	0.33
	Energy conservation behavior	Average energy conservation behavior in using public transportation, recycling, using fewer disposable goods, buying eco-friendly goods, and participating in energy campaign	2016	score	0.33
	Energy consumption	Total amount of electricity use in houses, service sector, and public sector per capita	2016	MWh	0.33
Policy	Financial support	% of the budget for technology (scientific development)	2016	%	0.5
	Rules and regulations on energy sector	No. of local gov't's regulations, laws, or legislation regarding energy sector	2016	unit	0.5

The indicators are normalized and accumulated with equal weighting as shown in Figure 3. We choose equal weighting because three dimensions of smart cities are equally highlighted in the literature (Yigitcanlar *et al.*, 2018).

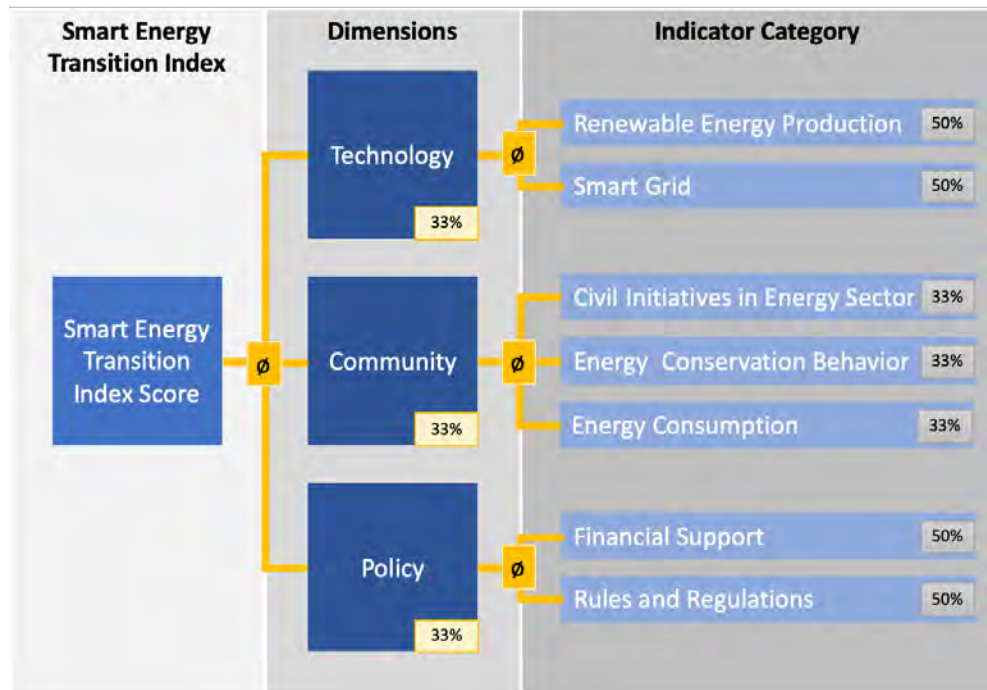


Figure 3 Framework of smart energy transition index

Before normalizing and accumulating indicators into one index, correlation analysis has been carried out to check the suitability of indicators. As shown in Table 4, the smart grid has a positive correlation with community initiatives, technology budget, and energy regulations. The community initiatives are promoting renewable energy use and installing small scale solar panels at houses and both technology budget and rules and regulations represent the government's efforts on energy transition. Therefore, the smart grid has a positive correlation with these three indicators. Rules and regulations on the energy sector have a positive correlation with community initiatives and technology budget. This means the government's effort and communities' effort sync for the energy transition.

Table 4 Correlation among the indicators

	Renewable energy employment	Smart grid	Community initiatives	Energy conservation behavior	Electricity Consumption	Technology budget	Rules and Regulations on Energy sector
Renewable energy employment	1	-.052	-.011	-.111	-.055	-.052	-.051
Smart grid		1	.585*	.073	-.048	.373**	.408**
Community initiatives			1	-.041	-.037	.046	.427**
Energy conservation behavior				1	-.100	.008	-.070
Electricity Consumption					1	-.036	.021
Technology						1	.249**

budget							
Rules and Regulations on Energy sector							1

** . Correlation is significant at the 0.01 level (2 -tailed)

Since the indicators have different measuring units, the indicators are normalized by using z-score and percentile. This way the indicators are on the same scale and they can reveal each city's relative position. Then the equal weight was given to the accumulating total SETI score.

<Smart Energy Transition Index>



<Smart Cities in Korea>

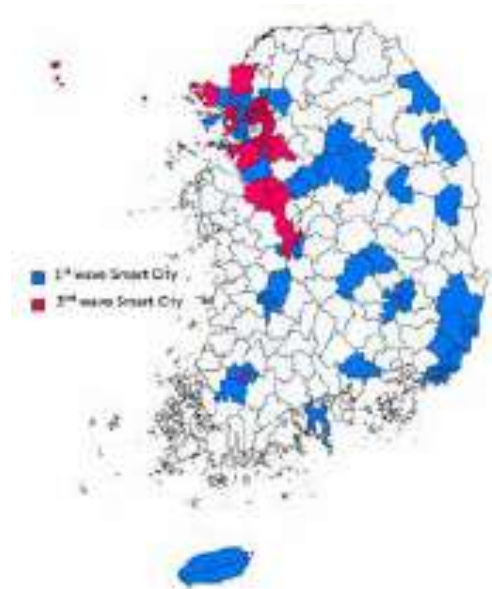


Figure 4 Smart energy transition index scores

The SETI score ranges from 100% being the highest to 0% being the lowest. Figure 4 shows the result of the SETI score and the city categories. Darker blue means a high level of the SETI score. In general, smart cities in South Korea have a higher level of SETI score than non-smart cities. The 10 cities with the highest and lowest score are shown in Table 5. Top 10 cities are mostly smart cities (1st and 2nd wave) and the top six cities are all metropolitan or special cities. The bottom 10 cities are mostly non-smart cities and 'gun' area. However, there are two non-smart cities in the top 10 list and two 1st wave smart cities in the bottom 10 lists.

Table 5 List of top and bottom 10 cities

Top 10 cities with highest SETI score				Bottom 10 cities with lowest SETI score			
Rank	City Name	SETI score	City Category	Rank	City Name	SETI score	City Category
1	Incheon	78.9	2 nd wave smart city	161	Seongju-gun	29.3	Non-smart city
2	Daegu	71.8	1 st wave smart city	160	Goryeong-gun	31.5	Non-smart city
3	Gwangju	70.8	1 st wave smart city	159	Buan-gun	32.1	Non-smart city
4	Seoul	70.7	2 nd wave smart city	158	Gimcheon-si	32.4	1 st wave smart city
5	Daejeon	68.1	2 nd wave smart city	157	Wanju-gun	32.5	1 st wave smart city
6	Ulsan	65.7	1 st wave smart city	156	Jinan-gun	32.8	Non-smart city

7	Yongin-si	62.3	2 nd wave smart city	155	Yeongdeok-gun	34.5	Non-smart city
8	Taejeon-gun	60.3	Non-smart city	154	Gurye-gun	34.6	Non-smart city
9	Cheongju-si	60.1	Non-smart city	153	Boseong-gun	34.6	Non-smart city
10	Bucheon-si	59.6	1 st wave smart city	152	Damyang-gun	35.8	Non-smart city

Table 6 shows the results of the descriptive analysis of each city category and SETI score. The 1st wave smart city is 34 cities, and their mean smart energy transition index score is 47.4, the minimum is 32.4 and the maximum is 71.8. Number of the non-smart city is 115 and their mean score is 44.9, the minimum and the maximum score is 29.3 and 60.3 respectively. The 2nd wave smart city is 11 cities where the mean score is 56.9 and the maximum score is 78.9. The mean score is highest in the 2nd wave smart city and the non-smart city is the lowest. Figure 5 shows the boxplot and histogram of the SETI score by the city category. The 2nd wave smart city has a higher mean and range than non-smart city or 1st wave smart city. The 1st wave smart city and the non-smart city are similar in their position and range but the mean of 1st wave smart city is slightly higher than the non-smart city. In the 1st wave smart city, two cities seem to be outliers: Daegu and Gwangju.

Table 6 Result of descriptive analysis

City	No.	Mean	Standard Deviation	Min	Max
1 st wave Smart City	34	47.4	9.73	32.4	71.8
2 nd wave Smart City	11	56.9	12.2	39.2	78.9
Non-Smart City	116	44.9	7.08	29.3	60.3
Total	161	46.2	8.61	29.3	78.9

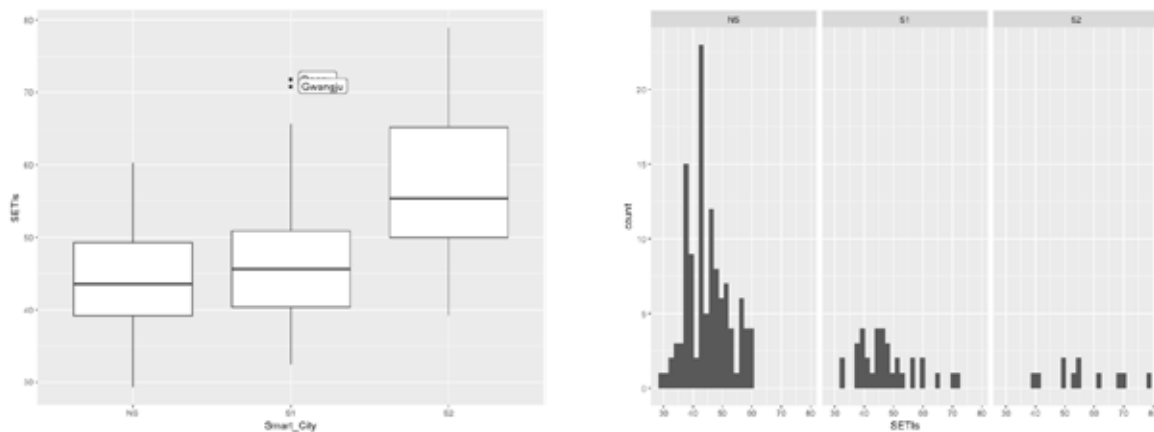


Figure 5 Boxplot and distribution of smart energy transition index score

First, including the outliers, one-way ANOVA is performed to check the hypothesis. One-way ANOVA is useful to check whether there is a significant difference among groups in their mean. Before performing ANOVA, the following assumptions were checked:

1. The data of each group is normally distributed (normality)
2. The data of each group has a common variance (homogeneity in variance)

For the normal distribution test, Shapiro-Wilk test is performed. Non-smart city and 1st wave smart city's p-value are 0.024 and 0.027 respectively which is lower than significant level ($p < 0.05$) which means they are not normally distributed. On the other hand, 2nd wave smart city's p-value is 0.848 and it is normally distributed. Table 7 summarizes the results of the analysis. Levene's test shows homogeneity of variance. The p-value is 0.0605 which is higher than the significance level ($p < 0.05$) so the null hypothesis cannot be rejected. This means the variance is homogeneous. However, since the normality assumption is not satisfied, nonparametric test was performed instead of one-way ANOVA. Since the number of the group is three, we adopted Kruskal-Wallis test. The p-value is 0.004235 which is less than the significance level 0.05, we can conclude that there are significant differences between the city categories. To find which pair of city category has a difference, we performed pairwise comparisons using the Wilcoxon rank sum test. The 2nd wave smart city is significantly different from the 1st wave smart city and non-smart city ($p < 0.05$). However, there is no significant difference between the 1st wave smart city and non-smart city.

Table 7 Results of the analysis

Data: Smart Energy Transition Index score by city categories			
Levene's test	Df	F-value	P-value
	2	2.8556	0.0605
Kruskal-Wallis	Chi-squared	df	P-value
	10.929	2	0.004235
Pairwise comparison		1 st wave smart city	2 nd wave smart city
	2 nd wave smart city	0.0291	-
	Non-smart city	0.2495	0.0041

Since the data on energy conservation behavior is imputation, we exclude this indicator for sensitivity analysis. The adjusted smart energy transition index score is summarized in below. Boxplot and distribution charts are similar to the original (see Figure 6) and the result of the Kruskal-Wallis test and post hoc test is similar to the original (see

Table 8 and Table 9). All in all, there is a significant difference between the 2nd wave smart city and 1st and non-smart city in the mean of smart energy transition index score.

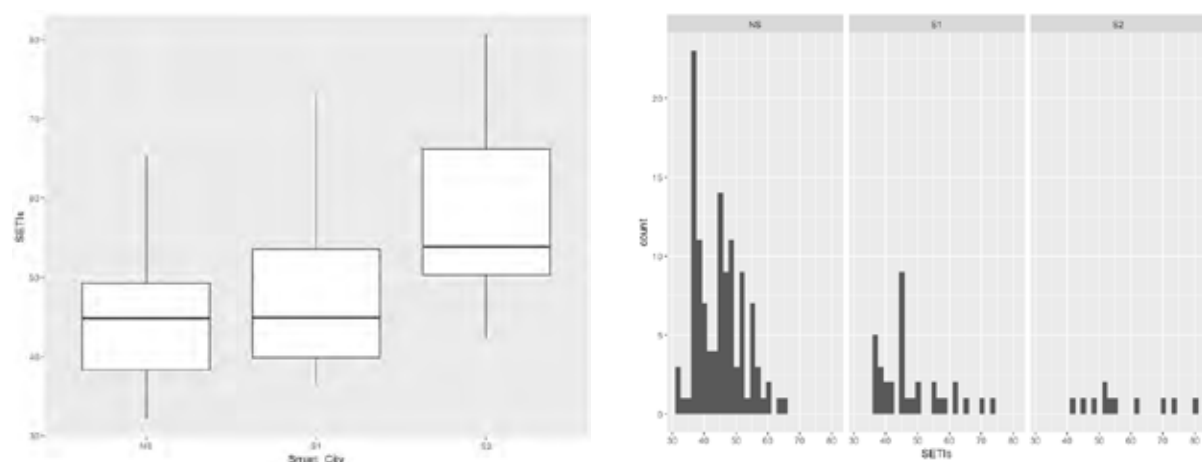


Figure 6 Boxplot and distribution of adjusted smart energy transition index scores

Table 8 Descriptive analysis of adjusted smart energy transition index scores

City	No.	Mean	Standard Deviation	Min	Max
1 st wave Smart City	34	47.6 (47.4)	9.99 (9.73)	36.5 (32.4)	73.0 (71.8)
2 nd wave Smart City	11	57.8 (56.9)	12.3 (12.2)	42.3 (39.2)	80.7 (78.9)
Non-Smart City	116	44.6 (44.9)	7.43 (7.08)	32.2 (29.3)	65.3 (60.3)
Total	161	46.1 (46.2)	9.02 (8.61)	32.2 (29.3)	80.7 (78.9)

* value within the bracket is the original

Table 9 Adjusted Levene's test for homogeneity of variance

Data: Smart Energy Transition Index score by city categories			
Levene's test	Df	F-value	P-value
	2	2.1121 (2.8556)	0.1244 (0.0605)
Kruskal-Wallis	Chi-squared	df	P-value
	13.688 (10.929)	2	0.001066 (0.004235)
Pairwise comparison		1 st wave smart city	2 nd wave smart city
	2 nd wave smart city	0.012 (0.0291)	-
	Non-smart city	0.206 (0.2495)	0.001 (0.0041)
	2 nd wave smart city	0.012 (0.0291)	-
	Non-smart city	0.206 (0.2495)	0.001 (0.0041)

P-value adjustment method: BH

Discussion and Conclusion

There are some findings from the analysis. First, the indicators showed a correlation. The smart grid has a positive correlation with community initiatives, technology budget, and energy regulations and the energy regulations have a positive correlation with community initiatives and technology budget. This shows smart city drivers (technology, community, and policy) are interacting with each other. The community (community initiatives) and policy (technology budget and energy regulations) promote the technology (smart grid). The community initiatives represent cooperatives and social enterprises that are specialized in renewable energy. The policy (energy regulations) provides a favorable environment for those communities to participate in the energy sector. Second, the results of the analysis showed that there is a significant difference between the 2nd wave smart city and the 1st and non-smart cities in the smart energy transition index. This supports the hypothesis of this paper that smart cities perform better than non-smart cities in the energy transition. However, the 1st and non-smart cities do not have a significant difference. This shows the limitation of the 1st wave smart city. The 1st wave smart cities (u-city) focus on implementing connected infrastructure in limited sectors (transportation & security) (Park, Gang and Lee, 2018). On the other hand, the 2nd wave smart cities account the role of community and provide a comprehensive urban management service. This can be supporting evidence of the argument that a smart city is more than a technology (Hollands, 2008). Third, the SETI score is higher in smart cities (the 1st and 2nd wave smart city) than non-smart cities. However, there are non-smart cities that scored higher than smart cities (Taeang-gun and Cheongju-si). Taeang-gun has a higher ratio of renewable energy employees (61%) and community initiatives (77%). And both cities have a higher score in energy conservation behavior (93%, each), energy consumption level (56% each), and rules and regulation on energy transition (79%, each). The

community initiatives and the energy conservation behavior are direct participation of the community, which sometimes initiated without the government's intervention. When we look into bottom the 10 cities, where two 1st wave smart cities are included (Gimcheon-si and Wanju-gun). Even though these cities have government initiatives, their performance in community initiative (33%) and energy conservation behavior (3%) are way below the average. This shows the community plays a critical role in the smart energy transition. Finally, the smart energy transition index score is higher in metropolitan cities (including special cities) than Si or Gun area. Special cities (Seoul & Sejong) and metropolitan cities are considered as the same administrative level (political power) with provinces ('Do') and their population is more than one million. Among eleven 2nd wave smart cities, four are special or metropolitan cities. Perhaps the reason why the 2nd wave smart city performs better than 1st and the non-smart city is that the smart cities are already advanced cities that have more political power and population. Strong political power and leadership ease the implementation (Nam and Pardo, 2011a) and certain population threshold needs to be satisfied to implement a large ICT infrastructure.

The purpose of this paper is to find empirical evidence of a smart city's contribution to the energy transition. We developed an index with seven indicators that represent the possible contribution of three drivers of the smart city (technology, community, and policy) in the energy transition. This study provides an overview of the smart energy transition in South Korea and compares smart and non-smart cities. As the result shows, there is a significant difference between the 2nd wave smart city and 1st and non-smart cities. This reveals the limitation of 1st wave smart cities which mainly focuses on technology implementation. A smart city is more than a technology implemented city (Hollands, 2008), and community and policy also play important roles.

The limitation of this study is that we have used an existing dataset that is available at the city level. Because of this, we used alternative indicators for some of the indicators. For example, renewable energy production is replaced with the ratio of the employees in renewable energy production, smart grid implementation is replaced with the number of ESS projects. Another limitation is that the paper provides only an overview of the smart energy transition. Why and how 2nd wave smart cities perform better than 1st and non-smart cities are not thoroughly studied in this paper. We leave this for further study, where specific case studies can be carried out to examine success and failure stories of smart cities in the energy transition.

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Review of District Heating Systems in Italy for Future Enhancement

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Abstract: District heating (DH) is an energy service based on the centralized production of heat, and its supply to final users. Most DH networks are currently located in the Northern hemisphere, while very few are located in the Southern hemisphere. For what concern the European Union, most networks are operating in northern and eastern countries. Italy, with less than 10% of the population reached by DH systems, has still a significant, but quite low, market share in the European context. The purpose of this review is to present the current situation of the Italian DH sector. The first introductory part concerns the historical evolution of DH systems in a global perspective. Later, the attention moves on the European situation, with focus on the system geographical distribution, the level of technological development, and the implementation of renewables. Italy still plays a marginal role because of climatic differences in the country, the complexity for some areas to access renewable energy sources, and the lack of interest in this technology showed until the 70s. The conclusions of this work underline a large untapped potential that DH systems have in Italy, requiring adequate investments and researches to enhance the use of renewables as energy source.

Keywords: District Heating; Italy; Sustainable Energy Planning; Smart Cities

1.Introduction

The word “district heating” (DH), according to Mackenzie-Kennedy (Mackenzie-Kennedy, 1979), is universally applied to the principle of the utilization of a central thermal source for the heat production and a network of pipes for the distribution of the produced heat to all the different costumers connected to the grid. The thermal source is usually a fossil fuel such as gas, coal or oil, but the production of heat for these kinds of systems can easily integrate renewable sources (RES). In 2012, DH provided 9% of the total heating EU needed for that year but using gas as main primary energy source (40%) and coal as second most used (29%) (‘An Eu Strategy for Heating and Cooling’, 2016). Recently, some RES have been found profitable for the production of energy for heating networks, and sources as geothermal wells, biomass and solar collectors started to enter in the DH businesses. The shift from fossil fuels to RES can be achieved also taking into consideration the use of waste heat from plants and industrial processes, in this way the primary merit of DH networks of providing heating at lower costs than fossil fuels is coupled with fulfilling European directives about lowering environmental impact and contrasting climate changes caused by fossil fuels.

DH is not a new technology for what concern accommodating heating demands: a pioneering example of the utilization of this principle existed already in the XIV century in Chaudes-Aigues, a medieval spa-village in France, where a piping network distributed hot water from geothermal source to town's buildings (P. Raynal, J. Gibert, 1992). In modern times, the world's first commercial system was developed in Lockport, New York in 1877. This system used a central boiler plant in order to provide steam to few neighbor houses and small businesses. By the end of the XIX century DH systems were gaining popularity and in a short time frame numerous small city and industrial centers in the northeast of USA started to install such systems to support local development and people's heating demands.

The network created in Lockport inspired the first European commercial heat distribution systems developed during 1920s in German cities. However, already at the turning of the XX century in Dresden a steam based DH system was initiated to supply heat to priority government buildings in a convenient and practical way and at the same time to reduce fire risks linked to on site generation plants (Council, 1985b).

In the years between 1920 and 1940, the idea of passing from single decentralized heating system to a DH network spread across the European continent. The already existing networks in various German cities (i.e. Dresden, Hamburg, Kiel, and Berlin) became examples for new installments in cities like Copenhagen (1925), Utrecht (1927), Paris (1930), Brno (1930), and Zurich (1933) (Collins, 1959).

After these first examples, DH experienced a considerable development after the end of World War 2. The need of providing the continent with new housing and services after the destruction caused by the war enhanced the possibility for developing networks to deliver heat to the newly built neighborhood. In the 50s extensive networks were laid down in Scandinavian countries (i.e. Finland, Norway and Sweden), Denmark; Germany and in the ex USSR, where in 1976 almost two-third of all the buildings were connected to DH network (Mackenzie-Kennedy, 1979). In the 70s, the oil embargo proclaimed by the OAPC (Organization of Arab Petroleum Exporting Countries) pushed European countries to improve their energy efficiency further to reduce their dependence on imported oil. In this scenario, both central and local government started to award loans, grants and subsidies to encourage the sprout of new heating network systems (Council, 1985a).

2. An overview of Europe

Heating and cooling in industries and buildings represent half of the energy consumption of the European Union (EU). They account for the 50.7% of the final energy consumption, corresponding to 561.3 Mtoe of the total 1,107 Mtoe consumed by Member States (MS) in 2016 ('Review of Available Information on an EU Strategy for Heating and Cooling', 2016).

European households use the 79.2% (222.7 Mtoe) of their total energy use for heating and domestic hot water. Even if it represent a small share of the total final energy use, cooling need to be added to the energy use count, with its 0.8 Mtoe, it affects just for the 0.3% (*Energy consumption in households - Statistics Explained*, 2015). For what concern industry, 70.3% (196.9 Mtoe) of the energy is used for heating and industrial processes, 26.7% (74.8 Mtoe) for electrical processes and lighting, and 2.7% (7.6 Mtoe) is used for cooling (*Heating and cooling - European Commission*, 2013).

As for the last available data, in 2016 still 85% of the total amount of energy needed for heating and cooling was provided by employing fossil fuels, while just the remaining percentage was generated using renewable energy sources. To reach the targets set within the EU 2020 Climate and Energy Package, the emissions caused by fossil fuels and the energy consumption for heating and cooling need to be reduced as much as possible. For this reason, in 2016, the European Commission (EC) launched its first plan to curb energy use and boost RES use in heating and cooling for Europeans households, service sector buildings and industry sector. The strategy includes plans to ease the processes to renovate buildings, guidelines for retrofit projects and modernization of the already existing district heating and district cooling (DC) networks or creation of new networks with the integration, in both cases, of electrical systems ('An Eu Strategy for Heating and Cooling', 2016).

Although EC's plans for the developing of DH systems in Europe are quite recent, the old continent is one of the places where the highest number of DH network are located (Figure 1). It is a wide spread technology across the whole continent with more than 10,000 different networks installed just in the countries part of the EU27 (Euroheat & Power, 2013)

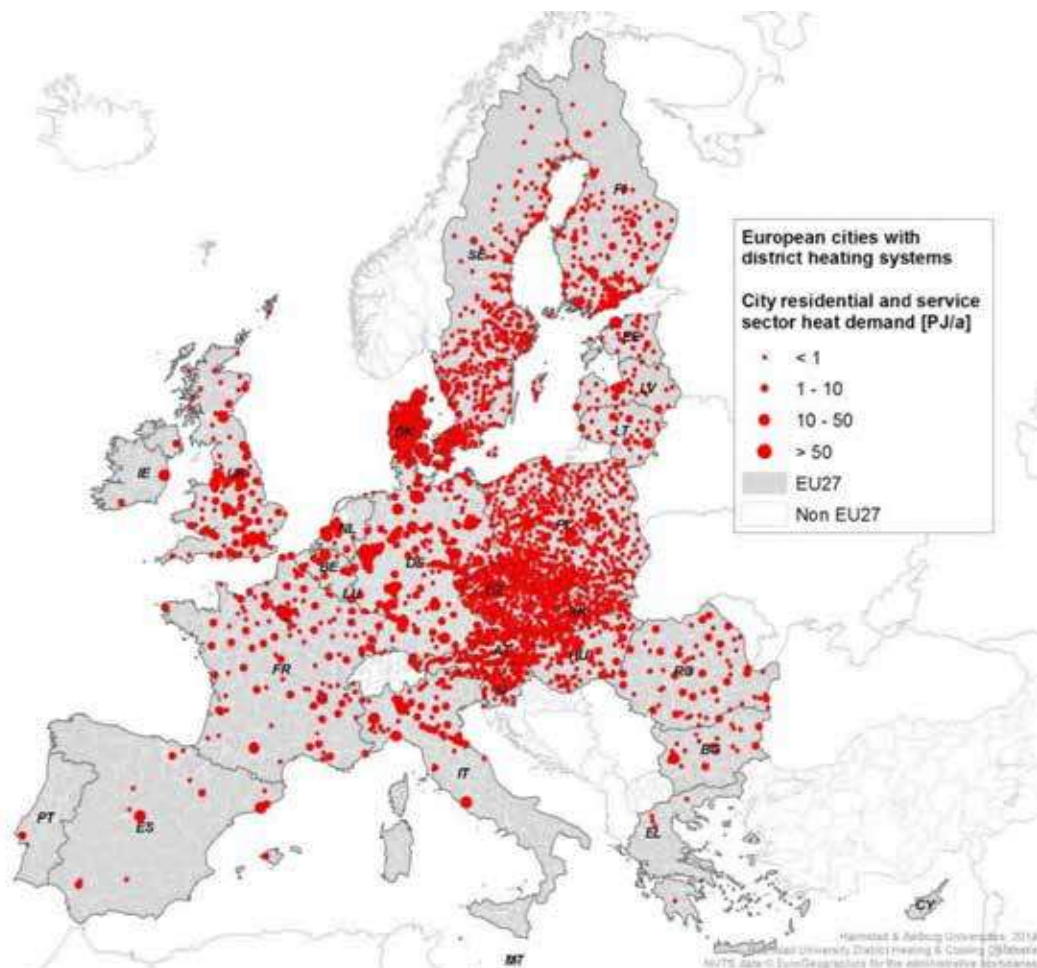


Figure 1 - Map showing European cities with DH systems and heat demand for each system (from Halmstad University District Heating & Cooling Database)

Historically modern DH systems came in Europe after experiencing a technological development in the US because of the commercial nature given to this type of systems in their first applications. However, in EU it experienced a development and expansion different from what would have

happened in the US. In the latest nineteenth century, several small systems found application in Germany, mainly in cities where outdated heating systems were replaced by DH systems to reduce fire hazards in historical buildings containing art treasures (Frederiksen and Werner, 2013). Scandinavian and Baltic countries and Central Europe present a higher degree of DH systems expansion since from the beginning of the twentieth century environmental and energy independence aspects were held in high consideration: the use of MSW in conjunction with coal was a common practice in cogeneration plants. Furthermore, planning practices in Nordic cities used to establish incinerator facilities close to residential areas in order to serve heating in a better way to the housing complexes. The climatic characterization is another important aspect: with its long and cold winter, Central and Nordic Europe have a high heat demand index, this aspect affected the policy makers and private energy societies pushing them to invest into expanding and improving the existing systems (Biele *et al.*, 2014). The oil crisis in the 70s, and the consequent inflation of the oil price promoted by the OPEC (Organization of the Petroleum Exporting Countries) had a devastating effect on the heating sector in the EU. It was not until this time that European countries started to realize the importance of developing regulation for the promotion of sustainable energy sources and the development of alternative systems to single building heating devices. In this situation heat prices were regulated by involving the government in keeping them competitive in the status quo (Amos, Hutchinson and Denman, 1996). As the time passed and the heating demand from the DH grid improved this system first became competitive with traditional heating systems and in the time, it became even more performing justifying initial investments and government involvement. The aforementioned conditions made possible to have a huge expansion of the DH networks in Scandinavian, Baltic and Central European countries (Mazhar, Liu and Shukla, 2018).

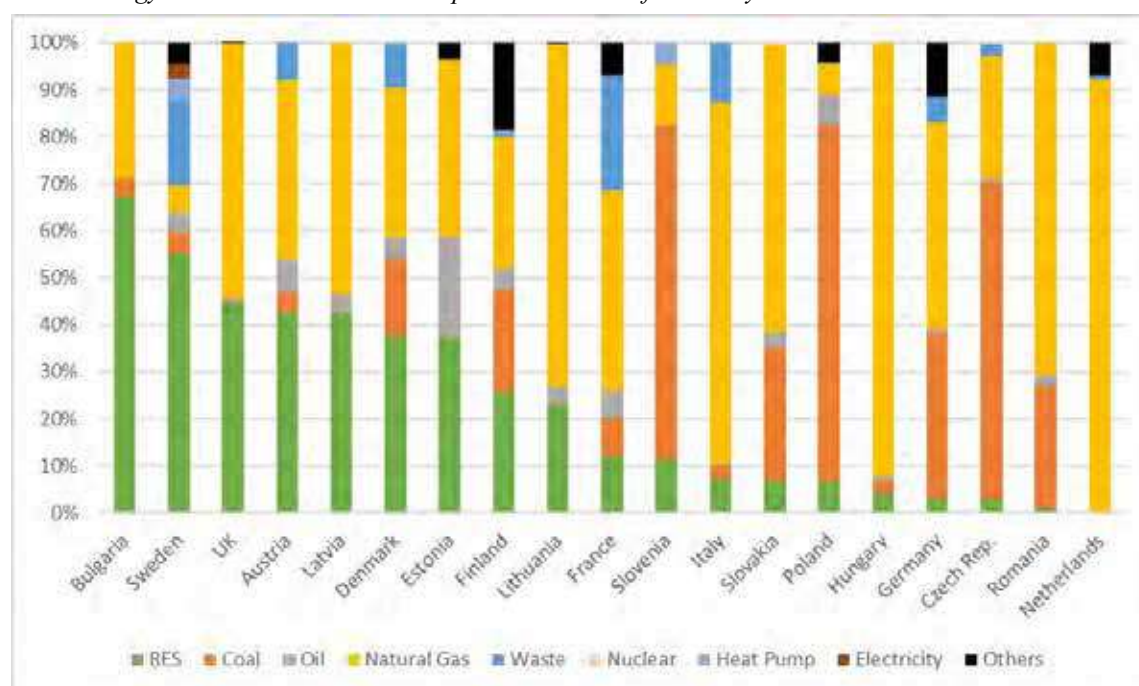
For these reasons, a high share of DH applications for residential buildings characterizes Central and eastern EU regions. The success of these systems happened mainly in urban areas where there are reserves of local sources for the production of heating; also, the cost of DH is highly dependent on the scale of the network. If the density of buildings and heat demand is high then this type of technology is more economical compared to others (Persson and Werner, 2011). This context is not so common in southern European regions where the dominant energy sources are gas and fuel oil and the density of buildings is lower, an exception of this consideration are cities: in countries where climate is more temperate the majority of DH systems can be found in densely built-up areas (Sayegh *et al.*, 2017). Urban areas represent an untapped potential: 50% of the demand for heating in Europe is located in areas with a similar heat density to those areas already connected to a DH system. Exploiting this potential by means of district network will increase the share of European demand satisfied by DH systems, that in these days is stationary at around 10% (International Energy Agency IEA, 2017).

In pre-expansion EU countries, there is a more limited use of coal and a slight increase in the use of natural gas and renewable sources, the latter result from the policies of energy containment and environmental protection. However, in the countries of Central and Eastern Europe, new small production units have been commissioned using natural gas. The use of natural gas as a fuel has increased mainly in Austria and the Netherlands (the latter is a producer). In some of these countries, the problem of the monopolistic presence of a single natural gas supplier provokes rigidity in the primary energy supply system.

Despite this, the use of renewable sources in the territories favored by particular environmental conditions has increased, with the largest increase still being in Austria, Denmark, Finland and Sweden. Coal is the most used fuel in the DH of the newly acquired EU countries with an average of 50% heat produced with this energy source (Euroheat & Power, 2013, 2015).

Considerations previously done emerge from Table 1. The countries that have a higher share of RES for supplying DH systems are from Central, Eastern, and Nordic Europe, but in this case, data are quite fragmented and mostly focused on CHP generation for district systems. In these cases, RES share in producing heat for DH are higher than 30% and the country relies on a quite differentiate energy portfolio: there is not a predominant energy source.

Table 1 - Energy sources used in some European countries to fuel DH systems



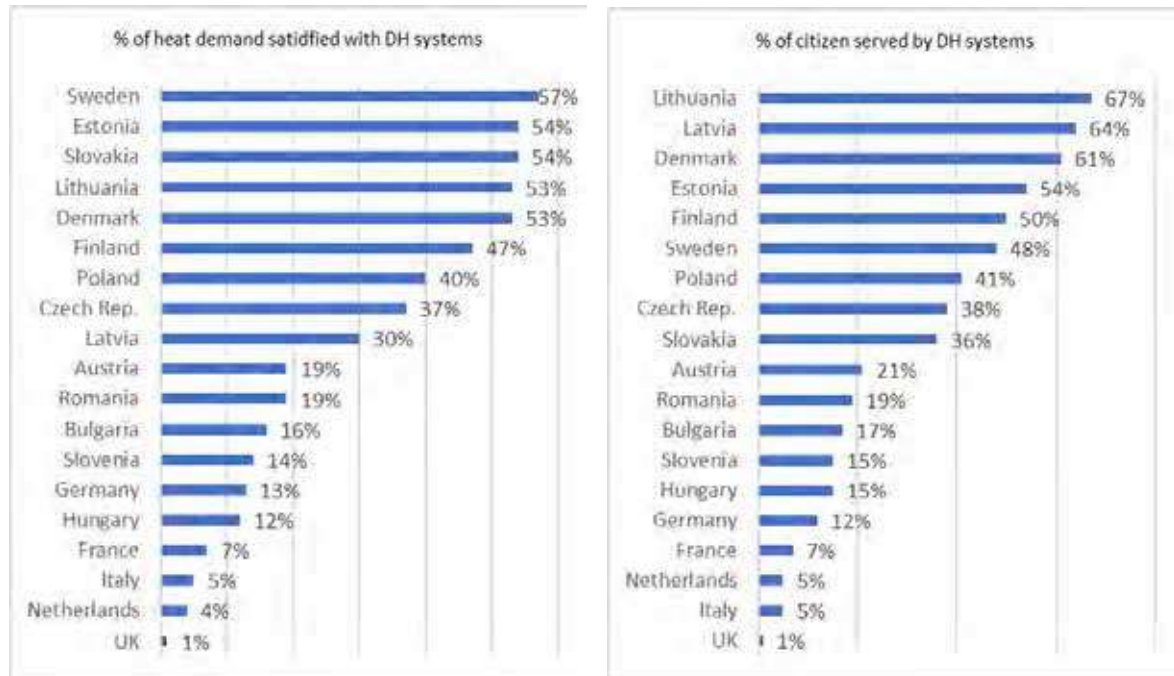
In Central and Northern European countries, the environmental conditions, which are reflected in a high number of degree-days (above 3,000), have led to the development of district heating in the residential sector. The most significant percentages of the presence of district heating in some European countries are as follows: Iceland 95% (not an EU country), Lithuania 67%, Latvia 64%, Denmark 61%, Estonia 54%, Finland 50%, Sweden 48%. In Southern countries as Italy and France there are significant shares in some regions (up to 10% of the heat market) (Euroheat & Power, 2015).

Table 2, instead, presents the percentage of heat demand satisfied by DH systems and the percentage of people served by district systems, data for these tables are taken from Euroheat and Power surveys on European DH systems (*District Energy in Bulgaria* | Euroheat & Power, 2013; *District Energy in Latvia* | Euroheat & Power, 2013; Euroheat & Power, 2013).

Presented scenarios in DH systems and their differences in European countries confirm that it is hard to create a universal action plan for all EU members to implement and enhance district energy systems, each EU country should have an individual analysis that should take into consideration their

own peculiarities. In the next paragraph, the focal point of the work will be the Italian current situation on DH systems.

Table 2 - Percentage of heat demand satisfied by DH systems and the percentage of people served by district systems



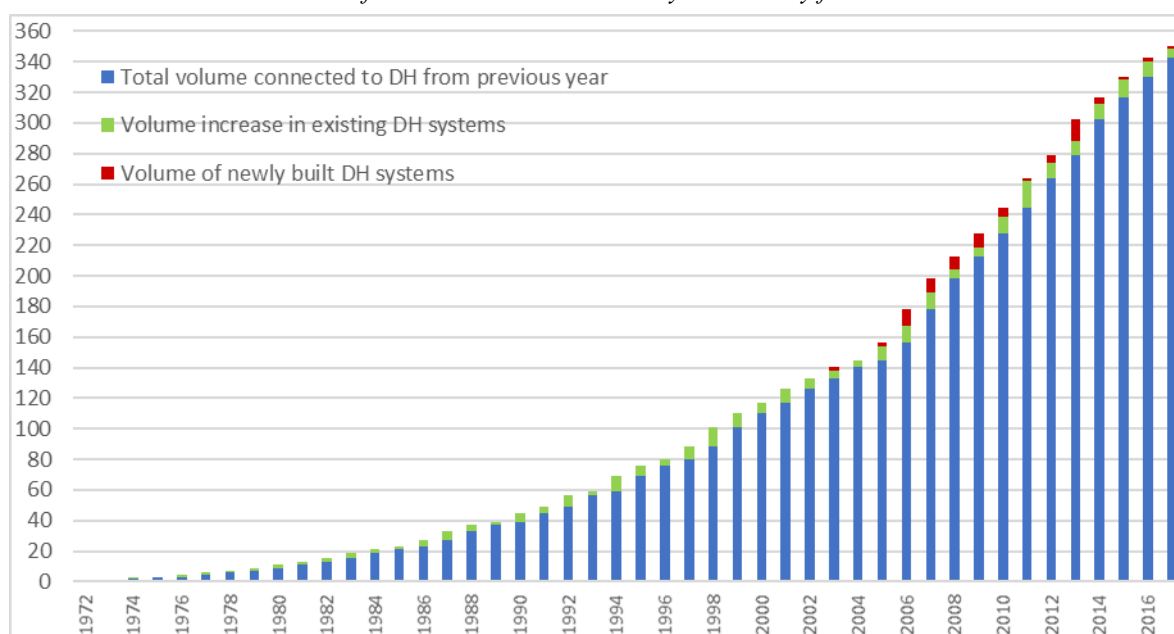
3. The Italian situation

The development of DH networks in Italy started in the 1970s, following the examples of other European and extra-European countries that invested in studying, testing and evolving this particular technology. Specifically, the technology flourished in the north part of Italy after the planning and construction in 1971 of the first DH in the city of Modena (International Energy Agency IEA, 2016). The length of the considered network is of about 10 km and assures the distribution of the heat produced by 4 gas fired boilers, installed in 2015 in substitution of the outdated diathermic oil boilers, to both residential and tertiary buildings. After this first experience in Modena other examples raised before the 80s in new cities: in Brescia (1972) 378 km of piping network supplied by 3 steam turbines, a municipal waste incinerator, and a cogeneration plant. Verona followed in 1973, when a cogeneration system using a gas engine was built to provide heat for a network of 79 km of pipes, Mantua (1978) in which a cogeneration plant provides heat for a network of 65 km, and Reggio Emilia (1979) a network of 213 km supplied by a gas turbine and a cogeneration plant (AIRU, 2017).

During the 1980s and 1990s, other cities adopted DH systems following the success obtained by the pioneer developers in reducing energy costs and CO₂ emissions, passing from 15 Mm³ of heated volume in 1980 to 45 Mm³ in 1990. This trend was not about to stop here. Table 3 shows that between 1990s and 2000s, the heated volumes attached to DH networks had more than doubled arriving to 110 Mm³, showing an increment rate of 12% per year. The increment rate continued to increase even after 2000s: in 2010, the heated volume by DH was 250 Mm³ with an estimated 200 networks working mainly in the northern part of Italy. The last available data is from 2016, at the end of that year, 235

networks were operating in Italy, providing heat for more than 340 Mm³, showing again an increasing interest for this type of heating supply technology (Bottio *et al.*, 2015; AIRU, 2017).

Table 3 - Increase in the amount of volumes connected to DH system in Italy from 1972 to 2017



3.1 Geographical distribution

However, the interest in this type of technology is not equally distributed in all Italian regions. With a deeper analysis at the site where DH plants are located, it is clear that most of the DH networks are in northern Italy with about 200 out of the 236 total existing networks located in northern regions of Italy (Valle d'Aosta, Piedmont, Liguria, Lombardy, Trentino Alto Adige, Veneto, Friuli Venezia Giulia, and Emilia Romagna) (Figure 2). In support of this consideration, it is possible to state that almost the total amount of the volumes heated with a DH network can be found in 4 northern regions: Lombardy, Piedmont, Emilia Romagna, and Trentino Alto Adige. These regions account for 96% of the total heated volume that corresponds to 300 million of m³.

3.2 Networks extension

Considering now the extension of the networks, which supply hot water for the heating of the connected volumes, in the past 15 years it has become 4 time larger than it was in the early 2000s. The total extension at the end of 2016 was 4,270 km. Thanks to a series of investments from local policymakers and stakeholders, the expansion of the piping net for DH systems in Italy, between 2000 and 2016, grew of 193 km per year. In the period after 2010, the yearly increase rate was of 250 km per year, thus demonstrating the great importance that this kind of heating system was, and still is, gaining in the Italian heating sector.

However, since 2013 the number of new connections is constantly decreasing. In 2016, the increase in the connections' number reached 12.5 Mm³, a value 1.1 Mm³ lower than the one recorded for 2015, and this trend is likely to continue in this way. In fact, when considering the heated volumes in direct relation to the network's extension (called linear density of users), it is possible to observe that this

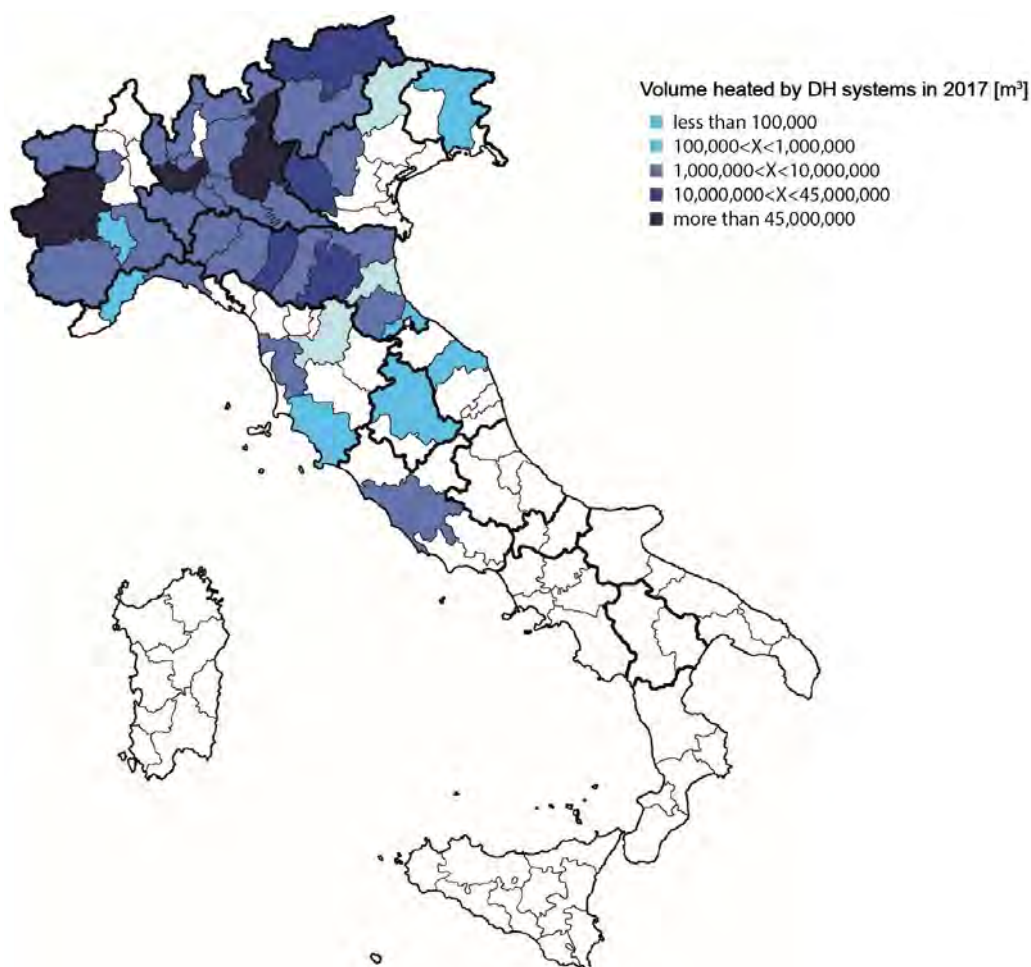


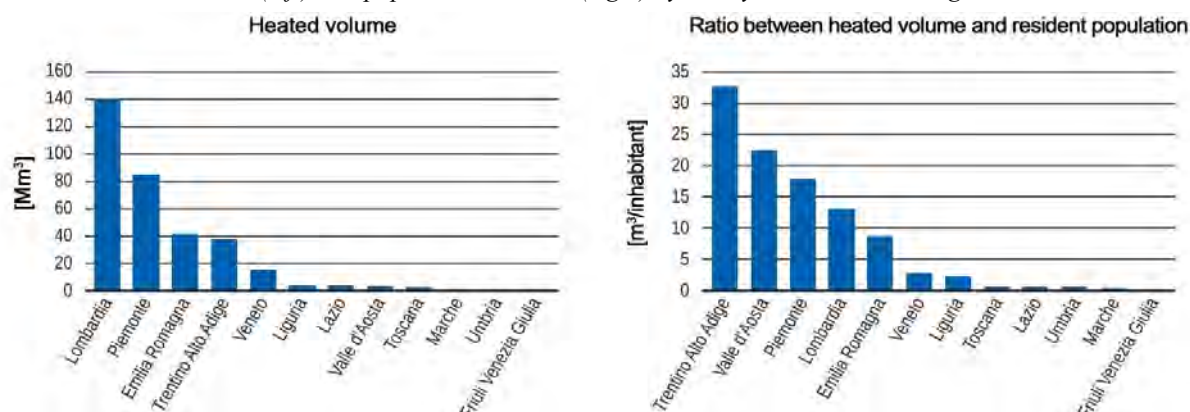
Figure 2 - Volume heated by DH systems in 2017 for each Italian province

particular datum is decreasing year after year. In the last years, the diffusion of DH systems happened mostly in low-density areas, such as rural zones, mountains villages, and small dimension communities. Nonetheless, at the end of 2016 the total volume connected to DH networks was 342.3 Mm³, a value doubled in the last 10 years (in 2006 the total heated volume was 177.3 Mm³), representing a yearly increment equal to 6.8%. As state before the diffusion of DH systems is mostly a trait of norther regions of Italy. This strongly emerge when taking into consideration the ratio between buildings reached by DH and the residing population: the region in which the DH has most diffusion is Trentino Alto Adige with 36.2 m³/inhabitant, followed by Valle d'Aosta with 24.8 m³/inhabitant (Table 4).

3.3. Energy sources

For what concern the energy production in the DH systems, in Italy the most widely used technology is cogeneration systems fired by fossil fuels, particularly more than 1000 MW_t come from thermoelectric power plants, and more than 950 MW_t come from dedicated cogeneration plants that produce also about 800 MW_e. Another type of cogeneration system, which does not rely on fossil fuels, is powered by incineration of municipal solid waste (MSW) and it is responsible for more than 550 MW_t, even if just 13 networks present this type of technology installed. In the last years, cogeneration systems started to include bioenergy derived from biological sources as primary energy,

Table 4 - Heated volume (left) and population reached (right) by DH systems in Italian regions in 2017



reaching 250 MW_t and almost 90 MW_e, but still, these types of biological energies are mostly used as fuel for boilers, producing 370 MW_t at the national level.

As stated in the previous paragraph, a mix of different energy sources is used to create the necessary power for the functioning of the DH systems in the Italian territory. The most widely used vector is still natural gas that represent 71% of the total input, equivalent to 1,313,657 toe, showing that non-RES are still the most used systems to supply energy to power DH systems. The second most used are now MSW, which include both biodegradable and non-biodegradable fraction of municipal waste. In the last 10 years this kind of source passed from representing just a small portion of the total energy mix (1.2% in 1995) to be a quite important representative in the use of RES for the DH in Italy: now it is responsible for 13.7% of the total primary energy used.

Another example on the transition from a fossil fuels-based society towards a greener and more sustainable one is proved by the rise in the use of bioenergy (i.e. biomass, biogas, and bio liquids) for the energy supply in the DH systems. Since 1995, when bioenergy was not used at all, the works done in order to provide cleaner energy vectors for DH systems flourished. In this background made of building new systems and updating and adapting existing ones, bioenergy sources became the third largest energy source used for DH, being responsible for 9.3% of the total amount. For what concern other RES types, energy mix data highlight a positive trend in the use of geothermal sources. The last 10 years prove the interests in this kind of technology: thanks to the inauguration of new plants, the percentage increase was significant passing from 0.8% in 1995 to 1.3% in 2016; however, its full potential is still untapped. Similar considerations can be done for the use of solar collector: only one example of this technology exists in Italy and still it is a young experience with just a one-year lifespan, but this bear witness of the interest that Italian stakeholders have in the use of RES for district systems. Even though this trend is diffuse for almost every kind of renewable source, a different tendency characterized industrial energy recovery processes. During the 90s, the use of this type of process was quite common in most systems that used RES, since it was a first try in finding non-fossil fuels suitable for energy network systems. During the following years, new type of clean energy vectors came up on the market establishing a decrease in the use of recovered heat and energy from industrial processes. In the last survey, this very energy source counted just for the 0.1% in the primary energy mix.

In parallel with the increase in the use of renewables, fossil fuels experienced a decrease. In 1995 gas oil and heating oil were the second most use primary energy source with a 14.3% share, and coal was

in the third position being used in 12.5% of the cases, showing the low interest that was placed in the implementation of sustainable energy. During the last 10 years, the situation changed: coal is now responsible only for 2.6% of the total and the use of gas oil and heating oil almost become insignificant, representing just the 0.1% in the primary energy mix.

A different argument concerns fossil energy used in the national electrical system (NES). In this case, the transition towards sustainable energy sources is still not implemented, and fossil fuels are still widely used to produce energy for the NES networks.

To sum up, in Italy the thermal energy produced by fossil fuels-fired cogeneration plants constitutes 50% of the total energy that flows in the network; 23% is produced by the use of simple boilers that help integrate the energy production during high demand periods. These appliances are powered by fossil fuels, making 73% of the energy that flows into the network produced by non-renewable sources. Energy produced by the use of RES such as cogeneration from renewables, energy recovered from industrial processes, heat pumps, and other technologies constitute the remaining 27% of the produced thermal energy (Bottio *et al.*, 2015; AIRU, 2017, 2018).

The future of the development of district heating in Italy reside in developing and investing for the transition to RES-based DH systems. The same can be said for the entire EU. Usually in the reports where it is mentioned, DH is not seen having a major role in the future decarbonization of European cities. The International Energy Agency (IEA) instead has a different opinion regarding this topic. In its reports from 2012 entitled “Energy Technologies Perspectives”, one of the most important line reads: “Heating and cooling remain neglected areas of energy policy and technology, but their decarbonization is a fundamental element of a low-carbon economy” (International Energy Agency IEA, 2012; Frederiksen and Werner, 2013; Averbalk and Werner, 2017).

4. Energy management in Italy

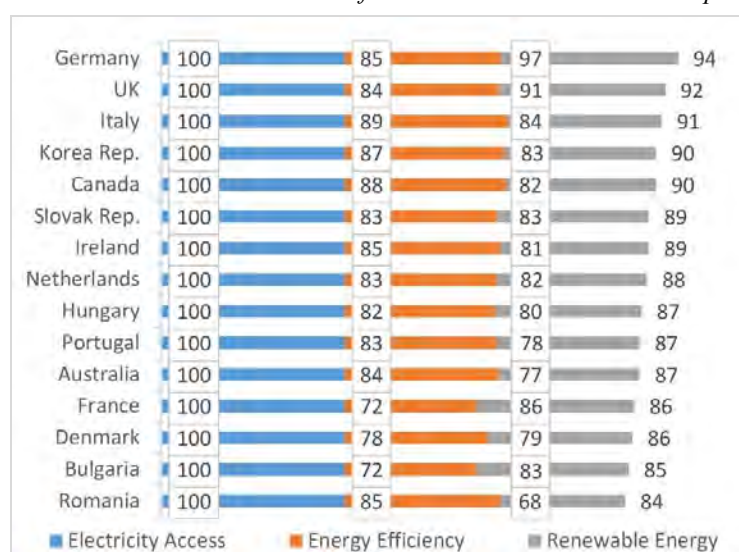
Every year the International Bank for Reconstruction and Development, a branch of The World Bank, compiles a report about global progresses on sustainable energy policies, showing the importance of a planned strategy for the transition to sustainable-energy based communities. This document goes under the name of “Regulatory Indicators for Sustainable Energy” (RISE) and it rates 133 countries, representing 97% of the world’s population, on electricity access, renewable energy, energy efficiency, and access to clean cooking in the period from 2010 to 2017. The latest draft of this document was edited in 2018 and it finds that the whole world has seen an increasing interest and huge uptake in what concern sustainable energy policies, but there’s still more road ahead: progress is far from where it needs to be to reach global climate goals and Sustainable Development on Energy (SDG7) (*Regulatory Indicators for Sustainable Energy 2018*, 2018; United Nations, 2018).

RISE analyzes the adequacy of the policies for a sustainable development and investments in green energy solutions through three pillars: RES, energy efficiency and access to energy, and it has done the same for Italy, but since the Italian peninsula is one of the High-Income OECD countries this last pillar is not considered, assuming that the situation for this aspect is already adequate.

The data collected for the latest report give a positive image for Italy. Table 5 shows the results for the year 2017: the country position itself in the third spot with a total score of 91 out of 100, 5 points higher than the mean value for OECD countries, and after Germany (94/100) and United Kingdom

(92/100), but the most important datum is the one about energy efficiency. In this category Italy position itself in the first place on the list: its attention for national plans for energy efficiency, minimum energy efficiency performance standards, and energy labelling systems for appliances and buildings made possible for Italy to reach the first position in this list, but there are also some less positive results. Italy needs to improve its policies about information provided to consumers and end users about energy usage for heating and electricity and how to achieve savings and avoid energy wastes, and there's still work to do about improving and make the access easier to incentives for industrial and commercial sectors in switching to RES-based activities (*Scores | RISE, 2017; Regulatory Indicators for Sustainable Energy 2018, 2018; ENEA, 2017*).

Table 5 - First 15 countries in RISE 2017 list. 12 out of these 15 Countries are in Europe



According to the parameters and analyzes of the World Bank, Italy does not seem to show a bad political-regulatory framework for the investments in renewable sources and energy efficiency. Indeed, in many cases the regulations in force are in line with international best practices and even more advanced than those adopted in other OECD countries. What perhaps penalizes investments in Italy and creates the basis for a less positive perception of the situation in the country is the implementation of this political-regulatory framework, which not always is as adequate as the legislative decree. Moreover, the uncertain political context, with its unfavorable situation for potential investments seems to have an even higher negative impact (ENEA, 2018a).

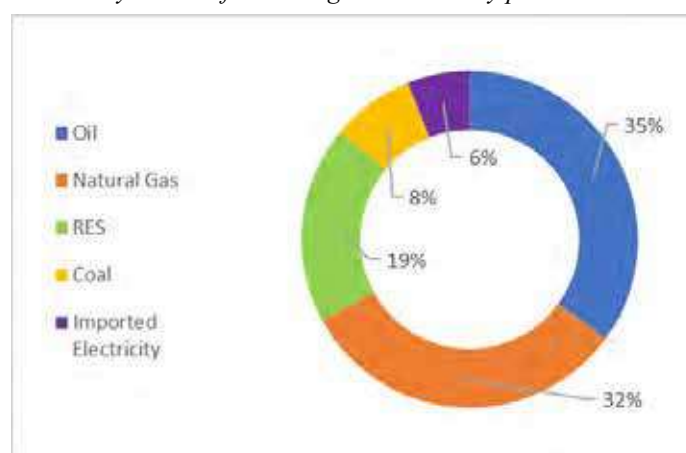
To reach the objectives set by the EC for the reduction of harmful emissions and use of energy, Italian policy makers developed *Strategia Energetica Nazionale* (National Energy Strategy) or *SEN*, a ten years policy document intended as a general guidance and planning tool for the national energy strategies; the aim is to indicate the priorities for the short and the long term to achieve the promotion of renewable sources and energy efficiency (Ministero dello Sviluppo Economico and Ministero dell'Ambiente e della Tutela del Territorio e del Mare, 2017).

Following these directives Italy has reached European targets in advance, with a 17.5% penetration of RES over total consumption by 2015 compared to the 2020 target of 17%, and important technological advances have been made that offer new possibilities to reconcile the containment of energy prices and sustainability and by 2030 the share of renewables on the total energy use is

expected to be at least 27%. To make this prevision possible the policy makers are proposing interventions in various categories such as the use of RES on electricity production, founding programmes to switch fuels to biofuels and most important develop the potential of urban and extra-urban DH systems according to efficiency criteria (*Ecco la Strategia Energetica Nazionale 2017*, 2017; ENEA, 2018b).

To tackle the objective of energy efficiency, from 2021 to 2030 there's the need for a reduction of the consumption of about 9 Mtoe primarily in the residential and in the tertiary sectors, to do so SEN identifies a series of actions. They are all focused on the importance of giving founding for renovation of the existing building stock both from an building point of view and from energy systems aspects, higher the standards for new buildings, promotion of energy efficiency measures also at local levels and switching to sustainable energy sources, but this last aspect, as we can see from Table 6 still need to be implemented, being oil and natural gas still the mostly used fuels in Italy (Ministero dello Sviluppo Economico, 2017; Ministero dello Sviluppo Economico and Ministero dell'Ambiente e della Tutela del Territorio e del Mare, 2017).

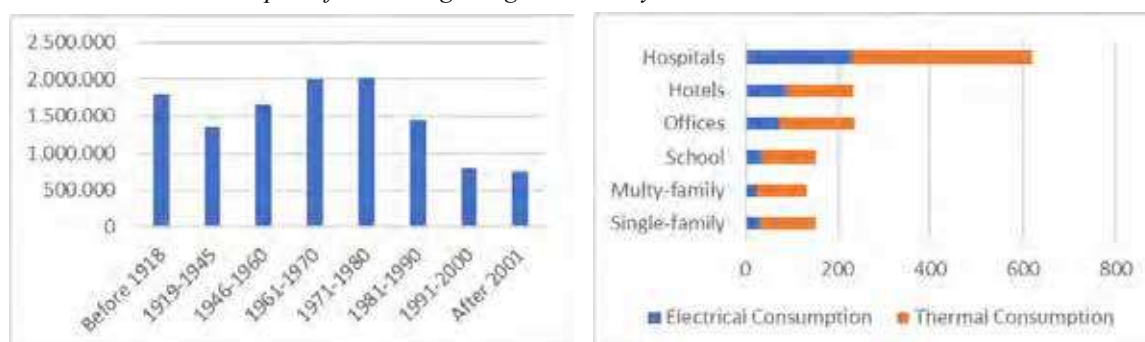
Table 6 - Type of fuels used in Italy in 2016 for heating and electricity production



5. Housing stock and consumption

In Italy there are around 31 million houses and 14.5 million buildings, and 84% of them (12,187,698) are housing complexes. These residential units were mostly built before 1976, year in which the first energy saving law came into effect. As Table 7A shows, 65% of the residential complexes used today date back before 1980 and 15% more were built before 1918 (*Edifici residenziali*, 2015).

Table 7 – A (left) shows the construction year of residential building in Italy; B (right) depicts the electrical and thermal consumption for building categories in Italy



In the residential sector the mostly use energy source is natural gas which is responsible for 47% of the total energy consumption, equivalent to 30 Mtoe; electricity and wood are both responsible for a little less than a quarter of the total. Consumption in the non-residential sector has experienced continuous and strong growth over the years, held back only by the economic crisis of 2008, reaching around 20 Mtoe in 2013.

Energy consumption for the heating and cooling in residential spaces absorbs about 76% of total consumption, a value that has grown in recent years. Consumption for lighting and electrical appliances, like food preparation and domestic hot water (DHW), is almost constant over time (Table 8 and Table 9). But there are differences for what concerns other sectors: in health establishments, offices, and tourist accommodations, the electrical consumption is almost as high as the thermal (Table 7B). This derives from the high number of appliances and instruments that work thanks to electrical energy. Even though in the recent years the shares of RES used for electricity production increased considerably, thanks to the importance given since the 50s to hydro generation and the growth of sources like solar, wind, and geothermal, still there's work to do in order to make the electricity production in Italy greener: the first two sources used are natural gas (39%) and coal (17%) (International Energy Agency IEA, 2016; Portale 4E, 2016).

Table 8 - Shares of primary energy sources used for heating and cooling in the residential sector

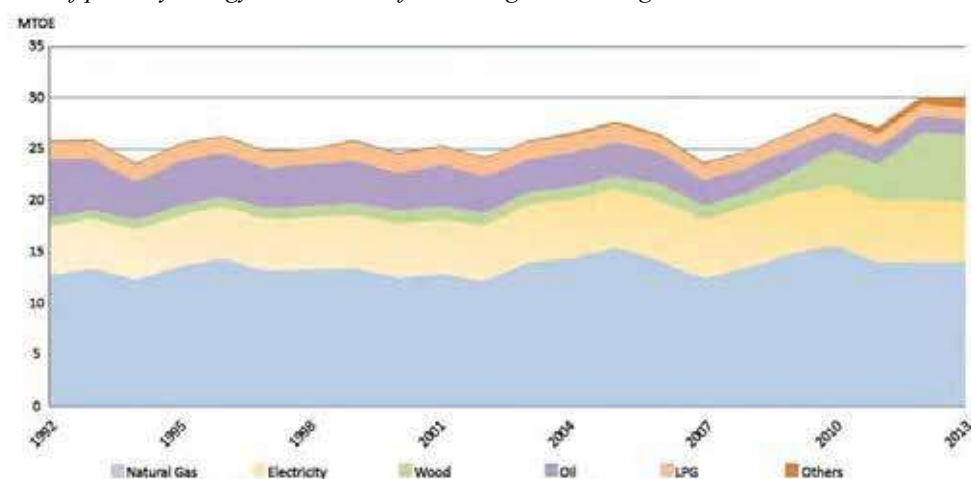
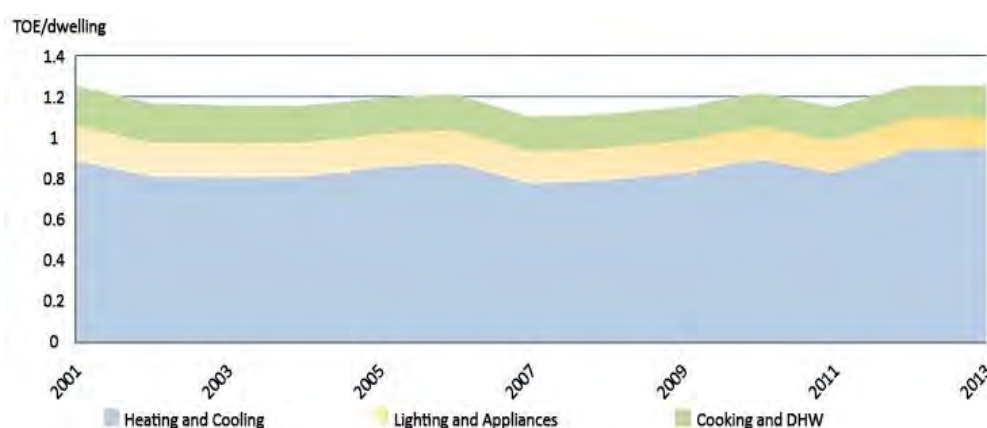


Table 9 - Energy per dwelling used for heating and cooling, lighting and appliances, and cooking and DHW in the residential sector



6. Conclusions

In the previous paragraphs the European and Italian situation regard DH systems was described, after that we saw how network systems, even if not so spread in all the Italian territory, can still play an important role in the reduction of energy use towards a more sustainable future.

For what concern Italy we saw that the expansion of DH networks in the country is still limited to few examples and most of them are located in the norther regions and in mountain areas. This is mainly caused by the climatic differences that divide the country: DH are used mainly for heating reasons and supported by small appliances for DHW located in the single dwellings or in the single apartment block. This division creates a seasonality in the use of DH that makes the investment for the construction of new networks an investment that does not seem smart. Moreover, the fact that generation for district networks systems are still focused on heat, and not combined heat and power doesn't provide a strong motivation in starting works for developing network solutions in areas where heating demand are just focused in small period of time and, instead, demand for electricity is higher because of the hot climate. Regarding this consideration, "established expertise of district heating has paved the way for introduction and deployment of district cooling systems, mainly for covering space-cooling demands in buildings. However, this district cooling development has been more recent compared to the development of district heating. District cooling systems are therefore neither as common nor as extensive as district heating systems" (Werner, 2017). Being Italy still in the development of vast scale networks for heating, is difficult to imagine that district cooling system will make their way to the top priority works for energy consumption reduction and CO₂ savings without a proper support from researchers and institutions.

Technologies analyzed in this paper, regarding how power is produced show that Italy still rely too much on fossil fuels, being oil and natural gas the two most used sources, and the fact that in the SEN still a major importance is devoted to the use of natural gas in the next years, denote the lack of effort that the institutions are giving in try to find alternative renewable sources with which change the current trend.

This is not enough though. To reduce consumption, energy requalification interventions must be planned on buildings, starting from public building stock such as schools, hospitals, and offices without forgetting about housing complexes. With the same goal, it is necessary to reduce the consumption of primary energy: to do this the spreading of district heating technologies is forecasted.

A reduction on the final energy consumption can be done not only by fostering retrofit works, but also with a rational use of all energy sources and investing on the use of RES in every sector. Subsidies need to be granted in order to increase the share of electricity produced by RES and decrease the number of decentralized energy systems. The same goes for thermal energy: the goal set by SEN in 2017 of reaching 16 Mtoe produced by RES in 2030 passes by a high increase in the use of geotherm sources, heat pumps, solar systems, but mostly through an advancement in the number of biomass-fueled systems in the residential and tertiary sector and the development and spreading in the whole Italian territory of high performance DH networks.

The challenge outlined above is so demanding that, to be successful, it will require the contribution of all the technologies available today, and from now on until 2030, without exceptions (*Come l'Italia può raggiungere gli obiettivi rinnovabili al 2030. Report Free*, 2017).

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SP38

Maritime spatial planning
(msp) in europe:
challenges in transition

Conceptual approaches of Maritime Spatial Planning. Principles and Planning Parameters

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Abstract: Maritime Spatial Planning is a fairly new process that offers a useful and valuable context for the sustainable development of the seas. Various international organizations and institutions of international cooperation (UNESCO, UNEP, EU, VASAB etc) approach MSP through their scope, define it, implement it. Every organization chooses an approach that fits its purpose. Characteristic of this is even the name of MSP. Should it be called Marine or Maritime Spatial Planning? Could these terms be used interchangeably as if they give the same meaning to the process? Examining various definitions of MSP, approaching those conceptually, highlighting similarities and differences, this paper seeks their link to the discipline of spatial planning that was focusing on coastal areas and was rather ignoring maritime areas up until recently. Sectoral policies were applied extensively, as if they were the unique user of the sea, ignoring or giving little importance to spatial impacts. Spatial planners were constantly choosing not to plan the sea, facing it as a landscape, significant for its aesthetic value and environmental importance. Has this absence of spatial planning discipline at the beginning of the process caused spatial planning discipline background gaps? There are considerations over MSP implementation. There seems that most marine/maritime spatial plans already elaborated don't have a spatial planning approach but rather a sea use approach. But if the sustainable development of the seas is what is needed, it can be attained through strategic marine/maritime spatial planning instead of sea use plans, a multi-level spatial planning process and various levels of marine/maritime spatial plans. Planning principles and major parameters will be approached in an effort to set the framework of spatial planning process.

Keywords: Maritime/Marine Spatial Planning (MSP), international organizations, spatial planning principles, spatial planning parameters

Introduction

Maritime Spatial Planning (MSP) is a process chosen to implement the objectives of various intergovernmental institutions regarding the sea. Having different perspectives they choose MSP as a tool of implementation, acknowledging that sectoral approaches were proven unsuccessful. Analyzing the various definitions met, there is the need to find similarities and differences in order to understand whether the different beginning of each one of them leads to a different end. There is also the need to find the spatial planning discipline in them, making the key assumption that the Council of Europe Conference of Ministers of Spatial Planning (CEMAT), European Union (EU) and the United Nations Sustainable Development Goals (SDGs) and Human Settlements Programme (UN-Habitat) documents on spatial planning principles could be the basis for such a quest. The main MSP principles documents come from the EU, the Conference of Ministers "Visions and Strategies around the Baltic Sea" (VASAB) and the United Nations Environment Programme Mediterranean Action Plan (UNEP MAP) as forerunners, but also as approaches of European interest. Stocktaking on this, there will be an outline of principles and parameters found on MSP documents based on spatial planning documents of international interest.

Conceptual approaches to MSP

There is the need to make a conceptual approach to MSP, to analyze the definitions met in institutional work and academic bibliography in order to detect individual features, principles and important elements of spatial planning, taking into consideration that regulation and arrangements of maritime activities and uses, in whichever form, has been an informal form of unconscious planning. Coastal and maritime spatial planning has become a conscious process some decades ago in Northern America, Western Europe and Australia and a bit later from international institutions, such as UNESCO and the EU. (Beriatos, 2016)

An important first step: the United Nations Environment Programme (UNEP) and the Mediterranean Action Plan (MAP)

The United Nations system, showing great interest in coastal and marine environment, launched the Regional Seas Programme in 1974. It has been considered since, as one of the major achievements in the environment, as the only legal framework protecting seas at regional (multinational) level. Regional Seas Programme was based on the 1972 Stockholm Conference outcome. All conventions are subject to ratification, acceptance, approval or accession.

The Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention) was signed in 1975 and was adopted in 1976, by the Conference of the Coastal States for the Protection of the Mediterranean Sea. It adopted the Mediterranean Action Plan (MAP). The Barcelona Convention refers to fighting pollution in the Mediterranean Sea, naming its geographic coverage that extends in the Mediterranean waters including gulfs and seas and excluding internal waters, except if there is a different prevision in its protocols. The main objectives of the Convention are the assessment and control of marine pollution, the assurance of sustainable management of natural marine and coastal assets, the incorporation of the environment into the social and economic development, the protection of the marine environment and coastal areas through the prevention and diminution of pollution and the elimination of land or sea-based pollution, the protection of national and cultural heritage, the enforcement of solidarity of Mediterranean coastal states and the quality of life improvement. The objectives are carried out through the 7 Protocols that address specific aspects and complete the MAP legal framework.

The most recent protocol, the Integrated Coastal Zone Management (ICZM) Protocol, goes further and introduces the necessity of integrated planning for uses and activities in coastal areas, covering a land – sea area, with the sea area extending to territorial waters. It is a tool focusing on land-sea interaction, pressure and conflict management in favor of the environment. ICZM is based on principles, considering the hydrological, ecological, socio-economic and cultural elements in an integrated manner, in order not to surpass the coastal area carrying capacity, emphasizing also on economic activities. It manages possible conflicts between various sectoral policies, taking into account the fact that many marine environmental resources, important for human activities, gather in coastal areas, but also the fact that maritime activities start and finish in coastal areas and demand for space and resources. (Avgerinou - Kolonias and Rampavila, 2017) The Contracting Parties (CPs) to the ICZM Protocol decided in 2017 (COP 20) that they need to introduce a guiding document “Conceptual Framework for Marine Spatial Planning” to facilitate the introduction of MSP, as a management tool, into the Barcelona Convention framework, stepping on the work already done by UNESCO IOC and the EU on MSP. This action aims at supporting the achievement of Good Environmental Status (GES) of the Mediterranean Sea and Coasts, investigating in more details connections between land and sea areas, and proposing coherent and sustainable land and sea-use planning frameworks relating with key economic sectors and activities that may affect the coastal and marine resources. Its objectives are to introduce MSP in the framework of the Barcelona Convention, and in particular link it to ICZM, considering MSP as the main tool/process for the implementation of ICZM in the marine part of the coastal zone and specifically for planning and managing maritime human activities according to ecosystem approach (EcAp) goals and to provide a common context to the contracting parties (CPs) for the implementation of MSP in the Mediterranean Region.

United Nations Educational, Scientific and Cultural Organization Intergovernmental Oceanographic Commission (UNESCO IOC)

UNESCO IOC is considered to be an international pioneer of MSP. Ehler and Douvere (2009) as MSP pioneers in UNESCO IOC, in their step-by-step approach define Marine Spatial Planning as “a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process”. Their original choice of the term marine spatial planning for MSP is based on the role chosen by the United Nations system on the environment preservation and protection, and on the approach chosen for MSP as a process to safeguard GES. There is a focus on the analysis and spatial – temporal distribution of human activities in the maritime areas and especially on the result of spatial planning and not on the strategic approach of maritime areas, according to theories of spatial planning. The choice of the distribution of human activities in the sea isn't

the spatial implementation choice of one or more objectives, but rather a management choice of good neighborhood. It is not approached as a process with scientific background but rather as a mapping tool resolving neighborhood conflicts. This is a common issue in many definitions, starting probably from the rather empirical approach of MSP, due to the plethora of professionals, regardless of scientific discipline, that work on MSP. The choice of mentioning the distribution of human activities in the sea includes the element of delimitation in the maritime spatial plans (MSPlans) following the marine boundaries and not the administrative boundaries, inherent element of terrestrial spatial planning (TSP). It is a substantial choice aiming at approaching the ocean as a sum of various interfacing and coexisting marine ecosystems. It is an important choice, taking into account that MSP needs to be specified at regional seas level, exclusive economic zones (EEZ) and various regional sub seas, in order to cover the spatial planning needs at national level and specify them in lower levels of spatial planning, so as to assure the needed specification and a more meticulous approach.

Nevertheless, at the UNESCO IOC internet site on MSP there is now a wider, more prescriptive and more elaborated definition. *“Marine spatial planning is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process. Characteristics of marine spatial planning include ecosystem-based, area-based, integrated, adaptive, strategic and participatory. Marine spatial planning is not an end in itself, but a practical way to create and establish a more rational use of marine space and the interactions among its uses, to balance demands for development with the need to protect the environment, and to deliver social and economic outcomes in an open and planned way.”* The experience gained, as MSP attracts the interest of the countries helps in better defining the content and framing a “good” MSP process. Of course, we should admit that the more the definition is enriched the more the lack of theoretical background is evident. Many inherent elements of spatial planning, self-evident to every spatial planner, are described with a specific reference, in an effort to clarify the term, for those that are not acquainted with the spatial planning scientific discipline. The specific feature of this definition is the chosen analytic and descriptive form, preserving the initial definition given by Ehler and Douvere as a first part. The more elaborate definition focuses on the process of analysis and spatial – temporal distribution of human activities in the sea. It emphasizes as elements of MSP, the ecosystem-based, spatial, integrated, adaptive, strategic and participatory approach. The second part of the definition states that MSP is the means to the end of the spatial vision to be implemented.

The European Union (EU)

The EU following the UN Conventions and the Lisbon Treaty for sustainable, inclusive and smart growth has set the pace for policy developments in the EU, affecting the coastal zone, starting with the Blue Book on Integrated Maritime Policy (IMP), the Marine Strategy Framework Directive (MSFD), the Limassol Declaration, the Common Fisheries Policy, the Marine Knowledge Document, the Directive on a Framework for Maritime Spatial Planning, the Communication on Innovation in the Blue Economy: realizing the potential of our seas and oceans for jobs and growth, but also, early in the procedure, the Recommendation on Integrated Coastal Zone Management.

IMP focuses on developing integrated decision making, aiming at the integrated maritime governance, implementation of integrated strategies per sea basin and further development of intersectoral tools, such as MSP. The main strategic objectives set for IMP are integrated maritime governance, development and application of integrated strategies in sea basins, further development of intersectoral tools, such as MSP for ameliorating the synergies and coordination of existing policies and means. It is of crucial importance to gather all existing data and knowledge, to achieve the collaboration of all stakeholders, to ensure the protection and sustainable use of maritime resources. The Roadmap for MSP identified 10 key principles for MSP, in order to achieve a common approach by the Member States. The one that could be quoted is that we need to define the objectives to guide MSP achieving TSP – MSP coherence. In this way the EU has chosen to define spatial planning of the seas as maritime spatial planning, instead of marine spatial planning, acknowledging that it is a tool for the accomplishment of Blue Growth and facing the challenges, in order to achieve greater trust and safety for investments. (Lukic et al, 2018) However Ehler, Zaucha and Gee (2018) argue that the practice of planning does not always confirm a semantic.

MSP, according to the Directive 2014/89/EU, is a *“process by which the relevant Member State’s authorities analyze and organize human activities in marine areas to achieve ecological, economic and social objectives”*. It is a rather poor MSP definition, result of the needed balance among the EU Member States (EU MSs), in order to reach an agreement on the MSP Directive. EU aims at providing MSs with a planning process in order for them to pursue the achievement of sectoral policies’ objectives in their marine areas. It is incorporated into the wider Europe 2020 strategy for smart, sustainable and inclusive growth. Ivarsson et al (2017) consider that ecosystem services are not fully taken into account in the MSP Directive and that, on the contrary, the EU Strategy 2020 on Biodiversity calls for the implementation of recording and assessing of the state and the value of the ecosystem services. Through MSP, EU MSs should focus at developing maritime energy, shipping,

fishing and aquaculture, preservation, protection and improvement of the environment, climate change resilience, as well as sustainable tourism and sustainable exploration of raw materials. The specific reference of these sectors comes from the competences given to the EU by the EU MSs, according to the EU Conventions, and the need to respect the subsidiarity principle. All MSs remain sovereign and independent states and have decided to delegate some of their decision-making powers to the EU, so that they take decisions of common interest together.

Joint efforts of UNESCO IOC and EU

UNESCO and the EU have a different start line. UNESCO has a humanitarian approach seeking to build peace through international cooperation in education, sciences and culture. It sets the pace but it cannot set binding regulation and it lacks implementation experience. The EU makes policy and can enforce its implementation, resulting on practices and restrictions. However, the different start line of UNESCO IOC and the EU does not affect the result (Platias and Rampavila, 2018). Both the EU and UNESCO IOC have common targeting, based on the need to manage activities in the marine areas in a way that will not create conflicts and will prevent or at least moderate the negative effects, helping achieve ecological, economic and social objectives. The definition elaborated by UNESCO IOC, seems more complete, incorporating as major principles for the MSP process the ecosystem-based, spatial, integrated, adaptable, strategic, stakeholder involvement procedure. Directive 2014/89/EC refers to the MSP process characteristics in an analytic way, in articles 9 and 14 and as footnote in article 6. However, MSP refers to strategic planning, having as main characteristics the spatial dimension, the integrated territorial approach, the revision of the plans and public participation. Probably, the need to encompass all these characteristics in the definition comes from the fact that for UNESCO IOC, MSP is a sub-unit of marine management and the rather sectoral interest of the EU.

Lately, the EU and UNESCO IOC acknowledged the need to cooperate and establish a common approach organizing International Conferences and an International Forum on MSP. The main output of this cooperation is the “Joint Roadmap to accelerate Maritime Spatial Planning processes worldwide” (2017). This document aims at improving cooperation or capacity building to cover the needs of different levels of implementation of MSP processes in the world, including regions where MSP is in its infancy or regions where arrangements for MSP may exist but a strategic approach to facilitate coordination would be beneficial.

Other components of the UN system of interest for MSP

There are many cases where MSP is considered as the means to objective fulfillment and is encompassed as a sub-process in already existing processes. The need to protect and manage the marine environment is inherent in the UN system. Starting from the Agenda 21 (Earth Summit, Rio de Janeiro, 1992) and all the way to Agenda 2030 and the SDGs, the need to protect and manage the marine and coastal environment in a planned way is one of the main concerns. The United Nations Conference on Sustainable Development (Rio+20) held in Rio in 2012, adopting the document “The future we want”, launched the process to develop a set of SDGs. This document highlights that the UN aims at conserving and sustainably using the oceans, the seas and their resources, emphasizes the importance of area-based measures.

In 2015, a landmark year for international policy shaping, “Transforming our World: the 2030 agenda for sustainable development” was adopted at the UN Conference in New York. The post-2015 development agenda consisted of two processes coming out of the 2010 Millennium Development Goals (MDG) Summit, the Johannesburg Implementation Plan and the 2012 Rio+20 outcome documents that resulted, among others at the incorporation of MSP into Agenda 2030 Sustainable Development Goals (SDGs). SDG 14, which is the marine goal, stresses the need to “conserve and sustainably use the oceans, seas and marine resources for sustainable development” and its implementing targets, regarding marine pollution, management, protection and rehabilitation of marine and coastal ecosystems, acidification of the seas, fisheries sustainable development, preservation of 10% of marine and coastal areas etc, promoting the United Nations Convention on the Law of the Sea (UNCLOS) implementation. Evidently, MSP is the necessary precondition for the achievement of SDG 14, as a policy tool, that can resolve spatial conflicts. However, MSP is the main tool for the implementation of Agenda 2030, as it can be the main linking tool of SDG 14 with all the other Agenda 2030 SDGs and especially SDG11, the TSP goal.

Additional to the interest of the UN system, there is another very important definition resulting from the need to enlarge the definition of MSP, already stated by the CPs of the Biodiversity Convention in 2012. According to the definition set out at the technical study “Marine Spatial Planning in the context of the Convention on Biological Diversity” (2012), *MSP is a framework and a means to the improvement of decision making*. In this way it frames the limit of action and sets the way of action, setting the terms for better decision making.

Visions and Strategies around the Baltic Sea (VASAB)

VASAB was founded at the 1992 Ministerial Conference that decided on the need for a long term vision and transnational spatial planning at the Baltic Sea Region based on the document “Visions and Strategies for the

Baltic Sea Region 2010” and the outcome of the final report “VASAB 2010: Towards a Framework for Spatial Development in the BSR” (Tallinn Report) – the common actions are being coordinated by the Committee on Spatial Development in the BSR. The EU Commission, recognizing the focus on strengthening and harmonizing of national and regional spatial policies and highlighting it as a best practice, supports the implementation of the VASAB action programme, securing EU fund and programmes.

Early on, VASAB, being based on both UN Regional Seas Conventions Programmes and EU Macroregional Strategies has created a joint working group with HELCOM on MSP (HELCOM VASAB MSP WG) to discuss a common Baltic approach for MSP and develop tools and methods of such an approach. The Declaration of the 7th Conference of the Baltic Sea Ministers seeks to enhance cooperation and among others increase MSP competence in close cooperation with HELCOM regarding environmental aspects and other essential relevant actors. It is an important case study area, since it is the more advanced macroregion of the EU, in terms of cooperation, governance and cohesion. Following the broad scale spatial planning principles that we analyze in the MSP principles section, they have already implemented a transnational strategic spatial planning document on territorial integration “Long-term perspective for the territorial development of the Baltic Sea Region in 2030” (2009), which leads to territorial cohesion in the Baltic Sea Region. It promotes integrated land-sea spatial planning in order to protect the Baltic Sea environment, ensure the sustainable use of marine resources and make it a model region for the implementation of EU maritime policy.

EU Strategy for the Adriatic and the Ionian Region (EUSAIR)

EU Strategy for the Adriatic and Ionian region (EUSAIR) on the other hand, is a fairly new macroregional policy with regards to VASAB macroregion. Both the Strategy and the Action Plan were adopted in 2014 by the EU Council. It will be coordinated by a Governing Board and the implementation level will be at 4 Thematic Steering Groups (TSGs) (one per each pillar according to the Action Plan). It faces great difficulties, since the *acquis communautaire* doesn't apply to all, but 4 countries. However MSP has raised increased interest and it has been incorporated in 2 (blue growth and marine environment) out of the 4 pillars of cooperation as a tool of implementation of the Action Plan. For Pillar 1 (Blue Growth) MSP represents the tool to a proper joint governance framework for the sustainable and transparent use of maritime and marine resources. For Pillar 3 (Environmental Quality), Integrated Coastal Area Management (ICAM) and MSP are considered to be the tools that will ensure the sustainable use of marine and maritime resources.

There aren't many results at the time, since it's a newborn macroregional strategy, but all countries and the EU expect a lot in the future. It is strongly believed that EUSAIR will be the guiding body to implementing transboundary MSP in the Adriatic and Ionian Seas. At the moment there is an effort to synchronize the work done for pillars 1 and 3 on MSP and define in common possible MSP and ICZM projects.

MSP principles or spatial planning principles?

The UN system and the EU have made important contributions to the MSP principles area with three very important documents: “Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU”, “Baltic Sea Broad Scale Spatial Planning Principles” and “Conceptual Framework for Marine Spatial Planning”. They all seek to achieve their conventional goals and policies by establishing a common context for the implementation of MSP, taking into account that countries show great differences in MSP systems, describing MSP as a tool, an instrument and a process. The EU MSP roadmap builds on existing EU instruments aiming at implementing IMP. The VASAB document seeks to achieve better coherence of MSP systems, being concerned that MSP is not carried out on a whole-Baltic scale, in a way that safeguards the marine and terrestrial biodiversity. The UNEP MAP conceptual framework seeks to strengthen MAP activities in the field of MSP in order to contribute to GES, linking it to ICZM.

In table 1, it is evident that all documents stress the importance of an *area-based approach*, which is a redundancy regarding spatial planning – the scientific discipline that shapes places. However it is being stressed in various ways as the need to plan according to characteristics and special conditions of an area or to plan efficiently. The *strategic approach* to planning, evident in all documents, could be also considered a redundancy. Planning processes, whether they are spatial or not, are strategic, including goal setting, indicator setting, evaluation, and adaptation. *Public participation* wasn't integrated into spatial planning for long, but now one cannot think of spatial planning without stakeholder involvement and consultation. It is interesting, though, that UNEP MAP refers only to cross-border consultation and not on general public participation. The *ecosystem-based approach*, despite the fact that it seems absent as a principle, it is omnipresent since in all documents it is considered something in between a goal and an overarching principle. The *integrated approach*, which is inherent to spatial planning, is specifically mentioned in order to highlight the need for MSP to be coordinated with TSP in coastal areas.

Table 1: MSP Principles in the 3 documents on principles adopted by EU, VASAB and UNEP MAP

PRINCIPLES	EU “Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU” (2008)	VASAB HELCOM WG “Baltic Sea Broad Scale Spatial Planning Principles” (2010)	UNEP MAP “Conceptual Framework for Marine Spatial Planning” (2018)
<i>Area-based approach (Spatial planning)</i>	<ul style="list-style-type: none"> • using MSP according to area and type of activity 	<ul style="list-style-type: none"> • planning adapted to characteristics and special conditions at different areas 	<ul style="list-style-type: none"> • multi-scale approach • suitability and spatial efficiency
<i>Strategic approach principle</i>	<ul style="list-style-type: none"> • defining objectives to guide MSP • incorporating monitoring and evaluation in the planning process 	<ul style="list-style-type: none"> • long term perspective and objectives • continuous planning 	<ul style="list-style-type: none"> • adaptive approach
<i>Participatory approach principle</i>	<ul style="list-style-type: none"> • stakeholder participation • cross-border cooperation and consultation • developing MSP in a transparent manner 	<ul style="list-style-type: none"> • participation and transparency • transnational coordination and consultation 	<ul style="list-style-type: none"> • cross-border cooperation
<i>Ecosystem-based approach principle</i>	<ul style="list-style-type: none"> • ecosystem approach 	<ul style="list-style-type: none"> • sustainable management • ecosystem approach • precautionary principle 	
<i>Integrated approach principle</i>	<ul style="list-style-type: none"> • achieving coherence between terrestrial and maritime spatial planning — relation with ICZM • coordination within Member States — simplifying decision processes 	<ul style="list-style-type: none"> • coherent terrestrial and maritime spatial planning 	<ul style="list-style-type: none"> • land-sea interaction • integration • connectivity
<i>Data</i>	<ul style="list-style-type: none"> • a strong data and knowledge base. 	<ul style="list-style-type: none"> • high quality data and information basis 	<ul style="list-style-type: none"> • knowledge-based project
<i>Dimensions</i>			<ul style="list-style-type: none"> • four dimensions on MSP
<i>Legal effect</i>	<ul style="list-style-type: none"> • ensuring the legal effect of national MSP 		

Source: relevant official texts processed by the authors

All MSP principles’ documents tend to emphasize on the needs of the decisive bodies and the contracting parties, creating a rather distorted image of MSP. They are mainly oriented in economic and ecological aspects, *downgrading social and cultural aspects of spatial planning*. There is no defined will to achieve territorial cohesion (which fortunately was incorporated for the first time in the MSP strategy 2030 document of VASAB). MSP is approached more as a maritime activities’ organizational plan, like land use plans, than a spatial planning approach. It follows the same process but it lacks in abiding with major spatial planning scientific discipline principles. It seems a lot like spatial planning in its beginnings, lacking a planned approach or a clear spatial vision. (Wassenhoven, 2017)

There are certainly a lot of similarities between TSP and MSP that were made obvious during the analysis of the MSP definitions. However there are also a lot of differences that make MSP a more difficult attempt than TSP. Among the differences we count the four-dimensionality of MSP, the continuous mobility of many maritime activities and species of ecosystems, the lack of private property, (EU/DG MARE, 2008) the up-until-now sectoral approach, the fragmented approach in case MSP is implemented regardless of ecosystem integrity. Due to the different physical characteristics and the inability to delimitate dangers met by the marine environment, marine organisms are quite volatile to water circulation, marine pollution, alien species.

All efforts aimed at highlighting the principles that would help elaborate MSPs, overcoming specific difficulties. But what about the European Spatial Development Perspective (ESDP) (1999), is it included in the MSP effort or is it faced as something completely different? ESDP seeks to pave the road to establishing a balanced and sustainable development of the EU territory, long before the enlargement and a series of other international and EU developments, setting 4 policy aims: *spatial orientation of policies, polycentric spatial development, parity of access to infrastructure and knowledge, wise management of natural and cultural heritage*. We can derive the conclusion that only spatial orientation of policies and wise management of natural heritage are included in the MSP principles documents. It should be a spatial planning research area whether

there could be a maritime polycentric spatial development. Parity of access and cultural management are completely absent. There is some literature on how to include social and cultural aspects in MSP. But we should consider that social and cultural aspects are inherent elements of spatial planning. They should be integral parts of MSP and not add-ons. Society interacts with the sea. The sea is part of our culture and at the same time hosts cultural assets. We need to integrate them in MSP, if we want it to be real spatial planning.

Spatial planning, according to CEMAT Torremolinos charter (1983), *gives geographical expression to the economic, social, cultural and ecological policies of society. It is at the same time a scientific discipline, an administrative technique and a policy developed as an interdisciplinary and comprehensive approach directed towards balanced regional development and the physical organization of space according to an overall strategy.* Once again, we can verify that in all MSP principles' documents there is no mention on social and cultural policies of societies. Nevertheless, the concept of geographical expression to the economic and ecological policies of societies is present. At this point, we need to highlight the fact that *MSP documents consider MSP as a tool or an instrument and not as a scientific discipline or policy, downgrading its scientific substance.* Moreover, all MSP definitions lack a regional development approach, focusing on the spatial allocation of activities.

UN Habitat in 2009, following a process of wide consultation with major stakeholders, published the commonly agreed "International Guidelines on Urban and Territorial planning". Despite the fact that it refers to inhabited areas, representing SDG11, it is interesting to look at the set of principles it has outlined, since we need to keep SDG11 and SDG14 in a common scientific discipline approach:

- Spatial policy and governance: participatory decision-making process linked to a strategy, inclusion, transparency, accountability.
- Social development: adequate standards of living and working conditions, equitable distribution of costs, opportunities and benefits of development, social inclusion and cohesion.
- Sustained economic growth: inclusive economic growth, better connectivity at all territorial levels.
- Environmental protection: integrated and sustainable development, environmental and socioeconomic resilience, enhanced adaptation.
- Planning components: continuous and iterative process, enforceable regulation, synergies between territories.
- Implementation: political leadership, continuous monitoring, periodic adjustments.

Seeking these principles in the MSP guidelines documents, it is clear that the principles regarding spatial policy, governance and implementation are fully taken into account, while the principles on social development are completely absent. The principles regarding sustained economic growth and environmental protection are more or less taken into account. *MSP should incorporate all spatial planning principles and not some of them. The differences of MSP and TSP should be treated as specific planning parameters.*

The need to achieve the ecological, economic and social objectives is the necessary "parameterization" of spatial planning according to the spatial planning discipline. However, after the Rio 1992 Summit, the triptych of economic growth, social development and environmental protection and management are considered the 3 basic pillars of development, followed by the cultural pillar, recognized by the Johannesburg Declaration (2002). Taking into account the United Nations Convention on the Law of the Sea (UNCLOS) that governs maritime delimitation, it is clear that the *geopolitical dimension* is really strong. The geopolitical dimension should be included in the MSP definition, since it is one among the initial reflections made by anyone dealing with MSP issues. The maritime zones' delimitation, despite the fact that the procedure is already prescribed in the UNCLOS, provokes tensions in the bilateral and multilateral relations of the countries.

MSP parameters

Having in mind that TSP and MSP have common principles and are subject to the same political and social framework referring to the society of a country or of a group of countries, we need to identify a set of extra parameters for MSP, adding to TSP parameters. The extra parameters, following the documents analyzed, could be: *delimitation of planning areas* and *four-dimensionality*. Ensuring legal effect, lack of data and lack of private property are significant differences of MSP, but they cannot be considered as special MSP parameters. They could be faced as special parameters in a case-by-case approach, regardless of MSP or TSP.

TSP abides with the traditional administrative boundaries in order to define planning areas regardless of the ecosystem boundaries, since the administrative boundaries are usually outlined by rivers, lakes or contours. Choosing the ecosystem-based approach, which is absent from the UNCLOS zone delimitation, as an integral part of MSP, we cannot elaborate MSP plans following the administrative boundaries. A major element of this approach is governance and especially who holds the administrative jurisdiction. Crowder and Norse (2008) consider that an important step to zone delimitation is to identify concentrations of marine organisms and map human activities in the area, socioeconomic overlaps and existing political and institutional arrangements. UNEP MAP Decision IG. 17/6 (2008) acknowledges that the progressive implementation of the ecosystem

approach in human activities management that could affect the marine and coastal Mediterranean environment is a CPs commitment, in order to achieve a real change of the marine and coastal environment of the Mediterranean, while with the Decision IG. 20/4 (2012) decided on the implementation of an EcAp roadmap for MAP, describing a seven step procedure. At EU level, there was selected the coordination and unification of monitoring indicators and measures. MSFD, being the environmental scale of IMP, seeks to achieve GES in EU marine waters until 2020. (WWF Greece, 2015)

Four-dimension planning is a completely new parameter in planning. It raises a lot of concerns on the technical ability to implement it, since it is a quite difficult effort, facing a lot of mapping uncertainties. Spatial analyses tools need to be developed to work with multidimensional data and the visualization of 4D models needs to progress. It is to be seen in practice, testing various mapping tools in a case-by-case approach to find what fits the purpose of legible, informative, clear and specific MSP maps.

Conclusions

During this attempt to highlight the conceptual approach of MSP and to outline some MSP principles and parameters, we tried to pinpoint the different beginnings but common interests of the intergovernmental institutions involved, the pioneers and the important outcomes from their efforts. Trying to highlight the MSP principles, we really consider it important to *think of MSP from the spatial planning scientific discipline point of view*, following the really strenuous efforts on behalf of CoE, UN and the EU to set a common approach on spatial planning. There was made an effort to note that MSP cannot be considered as a process different from TSP. MSP needs to borrow from the experience gained into the years from theoretical research, best and worst planning practices and the general mentality of spatial planners. Building on that, MSP can be differentiated based on the special conditions and needs raised and in this regard, there is a need to set the adding parameters that will ensure the viability and the effectiveness of MSPlans.

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Management plans of Natura 2000 Sites and coastal land use plans: A study concerning an integrated approach to management of coastal zones in the Sulcis Area (Sardinia, Italy)

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Abstract: The Protocol of the Barcelona Convention on integrated coastal zone management defines integrated coastal zone management as "...a dynamic process for the sustainable management and use of coastal zones, taking into account at the same time the fragility of coastal ecosystems and landscapes, the diversity of activities and uses, their interactions, the maritime orientation of certain activities and uses and their impact on both the marine and land parts."

Although integrated approach to coastal zone management has increasingly acquired importance within the international debate, with particular reference to the European Union context, its implementation puts in evidence relevant issues as regards the conflict between conservation measures related to environment and natural resources, and local development-related strategies.

From this perspective, Strategic environmental assessment (SEA) processes are particularly important since they are based on the implementation of a methodological and technical framework which aims at integrating environmental sustainability-related objectives, defined in national and regional strategies, into the local development strategies whose goals reflect needs and expectations identified by the local governments and communities.

In a SEA-based conceptual framework, this study proposes a methodological approach to the integration of strategies and related measures expressed by the management plans of Natura 2000 Sites into coastal land use plans, which generates a system of consistent objectives and related planning actions. The fundamental assumption is that SEA of management plans and coastal land use plans is very effective to build consistency in terms of sustainability-oriented strategies and local development measures. The proposed methodology is implemented in order to integrate coastal planning strategies and conservation measures related to management plans of Natura 2000 Sites with reference to three case studies concerning three municipalities, Calasetta and Carloforte, located in South-Western Sardinia, Italy.

Keywords: integrated coastal zone management; Natura 2000 Network; coastal planning; local development

Introduction

Since the 1970s, spatial planning policy of the European Union (EU) has been characterized by a marked attention to integrated coastal zone management (Saffache and Angelelli, 2010), as per Resolution no. (73) 29 (26 October 1973) of the Council of Europe, which suggests implementing a holistic approach to conservation and protection of coastal heritage.

At the moment, at the international level, integrated coastal zone management is progressively increasing its relevance in theoretical and practical terms, since it is generally assumed as a fundamental point of reference to define and implement spatial policies oriented to sustainable development (Billé, 2008). The “Protocol on Integrated Coastal Zone Management”¹ (ICZM Protocol) was adopted by the EU Council in 2008, and ratified in 2010 (Decision no. 2010/631/EU). The Protocol defines coastal zone management as a dynamic process which implements the sustainability paradigm into management and use of the coastal areas (article no. 2), by taking account of the weakness of landscapes and ecosystems, of the heterogeneous mix of ongoing activities, which include maritime activities, of their interdependency, and of the impacts generated as regards coastal and marine contexts. Moreover, the context-specific nature of the ICZM approach should be carefully considered (Soriani *et al.*, 2015), since coastal and marine planning issues cannot be addressed on a one-size-fits-all basis.

Nevertheless, integrated coastal zone management as regards the relationship between theory and practice is still a critical issue (Burbridge and Humphrey, 2003). Soriani *et al.* (2015) identify two kinds of problematic questions that may arise, which, on the one hand, are related to policies and strategic approaches, and, on the other hand, are connected to the implementation phases of spatial plans.

In this conceptual context, strategic environmental assessment (SEA) may help decision-making processes related to coastal zone management to be effective in addressing the issue at stake (Rochette and Billé, 2010). The Directive of the EU concerning SEA (no. 2001/42/CE) states (article 1) that “The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.” In other words, SEA processes enhance the quality of decision-making by making consistent and integrated economic and social development objectives and sustainability goals (Leone and Zoppi, 2015a).

Furthermore, SEA is effective in supporting national administrations in implementing the ICZM Protocol into strategies and plans related to coastal management (UNEP *et al.*, 2011). Harvey (2000) analyzes the use of SEA with reference to Australian coastal management. Procedures based on SEA-related approaches are used on a voluntary basis in the definition and implementation of the “Strategy for integrated coastal zone management” of Portugal in 2008, as a decision-making tool (Partidário *et al.*, 2009), even though a systematic technical procedure which integrates the ICZM Protocol provisions and the SEA procedure is not available at present.

The approach proposed in this study builds on SEA in order to define a methodology which supports spatial planning processes in implementing the ICZM Protocol into local decision-making procedures. The objectives identified in different plans, namely spatial plans which regulate land uses in the coastal areas (PLUCs) and plans related to management of Natura 2000 Sites² (PMN2s), are examined and compared as regards their

¹ Available online: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22009A0204\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22009A0204(01)&from=EN), Date of access: 08/05/2019.

² Three types of protected areas feature Natura 2000 Sites: Sites of community importance (SCIs) and Special areas of conservation (SACs), identified under the provisions of EU Directive 92/43/EEC (the Habitats Directive), and Special protection areas (SPAs), identified according to EU Directive 2009/147/EC (the Birds Directive).

mutual coherence. Their strategies are made consistent with each other and negative effects of PLUCs on PMN2s are highlighted and addressed. The methodological approach is applied to two case studies concerning two coastal towns located in South-West Sardinia, in the region of Sulcis.

In the next section, the methodology is discussed, the documents and materials, upon which the spatial analyses are based, are identified, and the two urban contexts, considered in the two proposed case studies, are synthetically presented. The third section shows the results of the implementation of the proposed methodological approach, while implications, limits and suggestions for further research are discussed in the concluding section.

Methodology and case studies

The methodology implemented and discussed in this study focuses on building mutual consistency between PMN2s and PLUCs. It is based on the integration of strategies of PMN2s and PLUCs implemented through a logical structure (LS) which makes reference to the SEA procedure. The LS builds on the conceptual category of sustainability, mutual endogeneity of spatial planning and environmental assessment, and the presence of planning alternatives, which feature SEA-based procedures according to the Italian Law concerning SEA (Decree no. 152 of April 2006), which embeds the EU Directive on SEA into the Italian legislative framework (Leone and Zoppi, 2015a).

The LS was already used by Leone and Zoppi (2015b; 2016), who proposed a comparison between the provisions of the city masterplans and the PMN2s based on the reciprocal consistency of their goals. Here, the relationships between PLUCs and PMN2s are assessed as regards sustainability goals, through the identification of the PLUCs' operations which may generate negative effects on habitats and species protection-related goals identified in the PMN2s. Table 1 shows the diagram of the LS. The five columns refer to: i. sustainability goals; ii. thematic issues; iii. PLUC's goals; iv. PMN2's goals; and, v. PLUCs' operations which may generate negative effects on habitats and species protection-related goals identified in the PMN2s.

The proposed methodological approach is applied to the towns of Carloforte and Calasetta, two spatial contexts of South-West Sardinia located in the Sulcis region (Figure 1). The small Island of San Pietro (San Peter), where Carloforte is located, is connected to the mainland by ferryboats which depart from the Port of Calasetta. These towns were selected since they identify a consistent spatial system, whose coastal and marine areas require an integrated management approach, even though each urban area is governed by an autonomous municipal administration. Furthermore, a number of Natura 2000 Sites are located in each spatial context.

The planning documents used in the study are:

1. the PLUC of Calasetta and the PMN2s of the following SACs: ITB042208 "tra Poggio La Salina e Punta Maggiore," ITB042210 "Punta Giunchera" and ITB042209 "A nord di Sa Salina;"
2. the PLUC of Carloforte and the PMN2 of the following Natura 2000 Sites: SAC ITB040027 "Isola di San Pietro" and SPA ITB043035 "Coste e Entroterra tra Punta Cannoni e Punta delle Oche – Isola di San Pietro."

SUSTAINABILITY GOALS	THEMATIC ISSUES	PLUC's GOALS	PMN2's GOALS	NEGATIVE PLUC'S OPERATIONS
Sustainability goal 1	Thematic issue 1	Goal 1 of PLUC	Goal 1 of PMN2	Operation 1 Operation m
			Goal k of PMN2	Operation 1 Operation m
		Goal j of PLUC	Goal 1 of PMN2	Operation 1 Operation m
			Goal k of PMN2	Operation 1 Operation m
	Thematic issue h	Goal 1 of PLUC	Goal 1 of PMN2	Operation 1 Operation m
			Goal k of PMN2	Operation 1 Operation m
		Goal j of PLUC	Goal 1 of PMN2	Operation 1 Operation m
			Goal k of PMN2	Operation 1 Operation m

Table 1. The framework of the logical structure (LS)

Findings

The implementation of the methodological approach into the two urban contexts of the Sulcis Region identifies and analyzes coastal and marine processes which combine planning strategies differentiated in terms of scale, since the local municipal administrations, which study and approve the PLUCs, and the regional and national administrations, which define and implement PMN2s, are involved at once.

The LSs concerning the PLUCs and the PMN2s related to the towns of Carloforte and Calasetta are reported in Table 2 and Table 3. Considering contents and objectives of PMN2s and PLUCs, each of the two tables shows sustainability goals concerning conservation of biological diversity, plants and animals. PLUCs and PMN2s are mutually consistent as regards goals and thematic issues. The PLUCs focus on the following thematic issues: i. relations between coastal and marine ecosystems and services provided on the beaches; ii. conservation and enhancement of coastal and marine ecosystems; and, iii. accessibility to beaches and coastal areas. For example, the objectives of the PLUC of Calasetta focus on the integration of services provided on the beaches and coastal and marine ecosystems, identifying ecosystem conservation as the core issue, whereas the goals of the PLUC of Carloforte focus on the same integration issue, assuming accessibility as the main question. This is explained by the fact that the SAC “Isola San Pietro” overlays the municipal land of Carloforte and, as a consequence, the approval process of proposed spatial transformations is based on the Appropriate assessment procedure, established under the Habitats Directive³, which aims at preventing negative effects of projected operations on habitats and species of SACs, SPAs and SICs.

³ Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives [...] [T]he competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.” (Habitats Directive, art. 6, paragraph 3).

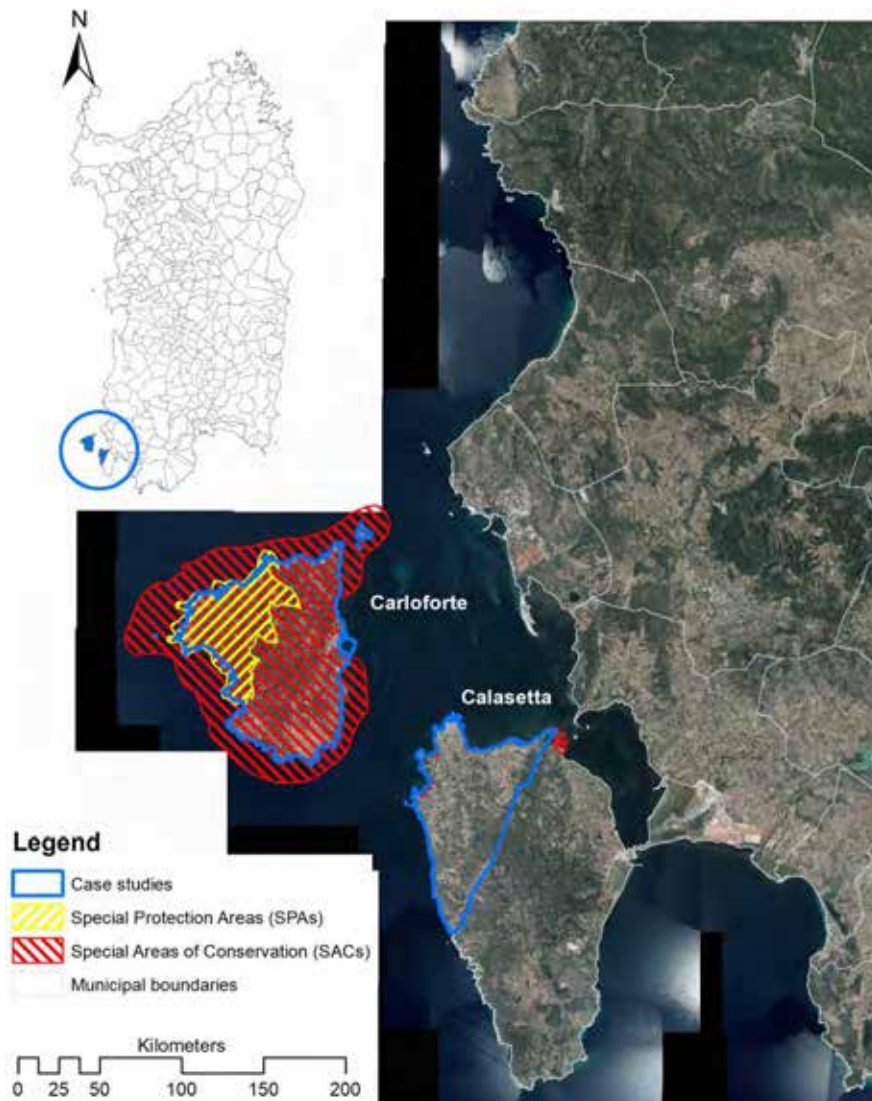


Figure 1. The study area. Source: elaboration by Federica Leone on an aerial photography drawn from <http://www.sardegnaeoportale.it/index.php?xsl=2425&s=324505&v=2&c=14488&t=1&tb=14401>, Date of access: 08/08/2019.

It has to be put in evidence that, notwithstanding PLUCs and PMN2s are mutually consistent as regards their sustainability goals, the PLUCs' planned operations can generate negative impacts on the PMN2s.

In the case of Calasetta (Table 2), the coastal and marine areas are planned both as environmental resources deserving protection-oriented measures and as factors of economic development related to leisure and tourism. The PLUC focuses on the definition of a set of planning policies to exploit tourist attractiveness (Goal CL_PLUC_2) and on prevention or mitigation of erosional processes concerning beaches (Objective CL_PLUC_3). The planned operations aim at developing tourism and at increasing the attractiveness of the seashores (Operations CL_PLUC_O_2, CL_PLUC_O_3, CL_PLUC_O_4, CL_PLUC_O_5, CL_PLUC_O_6, CL_PLUC_O_7 and CL_PLUC_O_8). On the other hand, the goals of the PMN2 focus on limiting tourist presence on the beaches (Objective CL_PMN2_3), on prevention or mitigation of the negative effects generated by human activities, animals and infrastructure on dunal habitats and species (Goal CL_PMN2_4), and, in general, on habitats and species (Goal CL_PMN2_1).

SUSTAINABILITY GOALS	THEMATIC ISSUES	PLUC's GOALS	PMN2's GOALS	NEGATIVE PLUC'S OPERATIONS
Preservation and enhancement of coastal ecosystems and biodiversity	Relations between coastal and marine ecosystems and services provided on the beaches	CL_PLUC_1	CL_PMN2_1 Prevention or mitigation of the negative effects generated by human activities, animals and infrastructure on habitats and species protected under the Habitats Directive	CL_PLUC_O_1 Authorization for pet-care services
			CL_PMN2_2 Restoration of natural coastal morphology	CL_PLUC_O_2 Installation of pedestrian boardwalks
		CL_PLUC_2	Definition of a set of planning policies to exploit tourist attractiveness related to the reefs, in order to identify alternative options related to marine and coastal tourism	CL_PLUC_O_3 Installation of dressing rooms and small cabanas
				CL_PLUC_O_4 AO4. Placement of beach chairs and sun loungers
				CL_PLUC_O_5 Installation of cabanas for the watchpersons
			CL_PMN2_3 Mitigation of overuse of beaches by tourists, in particular during Summer	CL_PLUC_O_6 Installation of toilets and showers
				CL_PLUC_O_7 Installation of kiosks selling beverages and snacks
				CL_PLUC_O_8 Installation of small stands in support of beach services and activities such as small boat charters, diving and sailing schools
				CL_PLUC_O_3 Installation of dressing rooms and small cabanas
				CL_PLUC_O_4 Placement of beach chairs and sun loungers
Conservation and enhancement of coastal and marine ecosystems	Prevention or mitigation of erosional processes concerning beaches	CL_PLUC_3	CL_PMN2_3 Mitigation of overuse of beaches by tourists, in particular during Summer	CL_PLUC_O_5 Installation of cabanas for the watchpersons
				CL_PLUC_O_6 Installation of toilet and shower facilities
				CL_PLUC_O_7 Installation of kiosks selling beverages and snacks
				CL_PLUC_O_8 Installation of small stands in support of beach services and activities such as small boat charters, diving and sailing schools
			CL_PMN2_4 Prevention or mitigation of the negative effects generated by human activities, animals and infrastructure on dunal habitats and species	CL_PLUC_O_2 Installation of pedestrian boardwalks
			CL_PMN2_5 Mitigation of coastal and erosional processes concerning beaches and restoration of dunal systems	
			CL_PMN2_6 Integration of measures aiming at removing <i>Posidonia oceanica</i> deposits from the beaches and at protecting coastal and marine habitats	
			CL_PMN2_4 Prevention or mitigation of the negative effects generated by human activities, animals and infrastructure on dunal habitats and species	CL_PLUC_O_2 Installation of pedestrian boardwalks
			CL_PMN2_1 Prevention or mitigation of the negative effects generated by human activities, animals and infrastructure on habitats and species protected under the Habitats Directive	CL_PLUC_O_1 Authorization for pet services
			CL_PMN2_2 Restoration of natural coastal morphology	
Conservation and enhancement of coastal and marine ecosystems	Promotion of environmental rehabilitation		CL_PMN2_7 Protection and restoration of <i>Posidonia oceanica</i> meadows in the mooring areas	
		CL_PLUC_4	CL_PMN2_6 Integration of measures aiming at removal of <i>Posidonia oceanica</i> deposits from the beaches and at protecting coastal and marine habitats	
		CL_PLUC_5		

Table 2. Logical structure of the integration of the PLUC and of the PMN2 concerning the town of Calasetta

SUSTAINABILITY GOALS	THEMATIC ISSUES	PLUC's GOALS	PMN2's GOALS	NEGATIVE PLUC'S OPERATIONS
Preservation and restoration of marine and coastal ecosystems, with a particular focus on species and habitats protected under the Habitats Directive	Relations between coastal and marine ecosystems and services provided on the beaches	CR_PLUC_1 Planning beach-related services and activities consistently with landscape and environmental protection goals	CR_PMN2_1 Preservation of coastal waters	CR_PLUC_O_1 Authorizations released to boaters of small boat charters
			CR_PMN2_2 Conservation of reef habitats	CR_PLUC_O_2 Provision of the minimum service level in support of tourism in the most popular sandy and rocky beaches
			CR_PMN2_3 Preservation of dunes and of their habitats	
			CR_PMN2_4 Promotion of sustainable uses of sites and related environmental resources	
			CR_PMN2_5 Conservation of arborescent matorral, thickets and phrygana habitats	
			CR_PMN2_6 Conservation of important botanical species (<i>Astragalus maritimus</i> , <i>Rouya polygama</i>)	
			CR_PMN2_7 Protection of the most significant bird species for Natura 2000 Sites in Carloforte	CR_PLUC_O_1 Authorizations released to boaters of small boat charters
			CR_PMN2_8 Protection of the local fauna	
			CR_PMN2_9 Protection of “ <i>Caretta caretta</i> ”, a species of Community interest	
			CR_PMN2_2 Conservation of cliff habitats	
			CR_PLUC_2 Organization of the access point system and of the parking sites in order to regulate public access to beaches and coastal areas, minimizing environmental impacts	
			CR_PMN2_3 Conservation of dunal habitats	CR_PLUC_O_3 Boardwalks installation which make it easier to access the beaches
			CR_PMN2_5 Protection of habitats such as thickets, phrygana and arborescent matorral	CR_PLUC_O_4 Development of parking sites close to habitats and species protected under the Habitats Directive
			CR_PMN2_10 Promotion of a sustainable use of the site and its resources	

Table 3. Logical structure of the integration of the PLUC and of the PMN2 concerning the town of Carloforte

Two issues characterize the case of Carloforte (Table 3). On the one hand, preservation of coastal waters (Goal CR_PMN2_1) and of *Caretta caretta* (Goal CR_PMN2_9), identified as a protected species under the provisions of the Habitats Directive, conflict with the authorized traffic of small boat charters (Operation CR_PLUC_O_1). Indeed, these boats are allowed to sail with no license or certification concerning the technical knowledge of the boaters as regards coastal ecosystems, habitats and plants, such as *Posidonia oceanica* seabed and other peculiar habitats, or protected species, such as *Caretta caretta*. On the other hand, the boardwalks installation which make it easier to access the beaches (Operation CR_PLUC_O_3), and the development of parking sites close to habitats and species protected under the Habitats Directive (Operation CR_PLUC_O_4), are likely to determine negative impacts with reference to preservation of dunes and of their habitats (Goal CR_PMN2_3) and to protection of habitats such as thickets, phrygana and arborescent matorral (Goal CR_PMN2_5).

Discussion and conclusions⁴

The outcomes of the proposed methodology based on the LS show that negative effects may occur on the achievement of the goals of the PMN2s as a consequence of operations planned by the PLUCs. The LSs defined to assess the coherence of the PLUCs and PMN2s concerning the towns of Calasetta and Carloforte put in evidence that the operations planned in the PLUCs may put at risk the effectiveness of the conservation measures identified in the PMN2s, related to habitats and species, since PLUCs and PMN2s were studied and approved following independent procedures, implemented by different public administrations, that is, the

⁴ This Section partially reproduces a discussion proposed in a previous study of the authors (Leone and Zoppi, 2016, Section “5. Discussion and Conclusions”).

municipal administrations in the case of the PLUCs, and the regional administration in the case of the PMN2s. Furthermore, the two types of plan focus on different core issues, since PMN2s deal with conservation measures regarding habitats and species of the Natura 2000 Sites, whereas PLUCs are related to sustainable coastal zone management aimed at catalyzing social and economic local development based on tourist attractiveness.

From this standpoint, this study defines, and applies to the urban contexts of Calasetta and Carloforte, a methodological approach whose scope is to integrate different plans, which take place in the local public domain, that is the Sulcis Region, into a unique planning instrument which makes consistent nature protection-related and development-related objectives.

The study shows, by detailed comparative appraisals of two PLUCs and related PMN2s, that the LS-based procedure entails an enormous potential in order to build consistency and, much more important, to drive the issue of conservation and enhancement of habitats and species outside the narrow boundaries of sectoral policies concerning the Sites of the Natura 2000 Network. The application of the LS makes the issue a comprehensive and fundamental question related to the PLUCs. The implementation of the PMN2-related sustainability objectives into the PLUCs through the LS approach is based on the environmental characterization of the supporting ecosystem services (ESs) supplied by habitats and species (Millennium Ecosystem Assessment, 2003). In the first place, ESs are identified in the spatial context of the Sites of the Natura 2000 Network, and afterwards, during the application of the LS approach, they become spatial and environmental characteristics of the whole coastal and marine areas (Leone and Zoppi, 2016).

The proposed LS-based approach implements PMN2s into PLUCs and, that being so, not only is suitable to assess and drive the definition and establishment of planning decisions (ex ante phases of PMN2s/PLUCs), but also to support the planning policies to be carried out, since the ES-related sustainability objectives entail a monitoring system based on benchmarks concerning the environmental indicators related to the ESs.

Furthermore, it has to be stressed that the planning policies concerning supporting ESs may generate conflicts related to tourism-related ESs, whose land uses may be prevented by conservative measures entailed by the PMN2s. Therefore, LS-based procedures that imply ES-based sustainability objectives should take account of supporting ESs not only in terms of conservation and enhancement of habitats and species, but also as sources of conflict between alternative land uses related to alternative types of ESs, that is supporting and tourism-related. The conflicts are expressed by the trade-offs between protection and preservation of coastal and marine species and habitats, that is, supporting ecological systems, and the pressure for increasing the provision of services for tourists and local visitors in the coastal areas, that is tourism-related ESs, which is the main focus of PLUCs (Lai and Zoppi, 2017).

The results proposed in this essay are very robust in terms of exportability to other EU contexts, since the LS-based procedure implemented into spatial plans (PLUCs) at the municipal level is always based on the same normative framework, established by the SEA Directive. Moreover, the reference of the PMN2s is always the Natura 2000 Standard Data Form, approved by the European Commission with the Decision of 11 July 2011⁵. As a consequence, it can be applied as such in other EU countries, even though different institutional frameworks and planning practices at the national and regional levels may possibly imply more-or-less huge differences in terms of timing and duration and public authorities responsible for the PLUCs and the PMN2s' planning procedures, the quality of the participatory processes and the qualitative and quantitative size of the participating public and stakeholders.

⁵ Available from the European Environment Agency's at <http://natura2000.eea.europa.eu/>, accessed 2 May 2019, Date of access: 08/05/2019.

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SP39

Shrinking cities
and sustainability

Dialectical Understanding on Urban Shrinkage and Growth in China: Taking the Old Industrial Base Cities in Northeastern China as an Example

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Abstract: According to statistical data, nearly 60 percent of China's population had lived in cities, by 2018. Recently, research reports show that China's population growth will enter a period of stagnation, followed by a likely rapid decline. This paper selects the old industrial base cities, in Northeastern China, as the research object. Based on the data of population, urban construction, fiscal revenue and LGDP, etc., utilizing data spatial visualization analysis software such as ArcGIS, this research reveals the space-time dynamic association between urban growth and shrink, happening in cities and in regions. Furthermore, the research analyzes the dynamic process of growth and reduction of population and land-use scale in individual city case, focusing on industrial land-use and the situation of related employment. At the same time, it reflects the socio-economic characteristics of urban outflow population, such as age, occupation, income, and the structural characteristics of the urban secondary industry as well as the transition trends. That means, the areas and cities to which the population flows, and the jobs performed, also have important explanatory implications on the things happening in case cities. Based on the analysis above, the paper proposes an understanding and definition of the shrinking cities in the context of contemporary China. And then it argues that, comparing with the economic growth and population accumulation previously, the status of population outflow, industrial decline and spatial shrink happening currently, still can be regarded as an urban development mode which isn't represented by the growth of space and economic, but by the reconstruction of space, population and industry. Furthermore, the reconstruction of space has the rich connotation of smart growth. It is the right way for cities to seek new development engine and the mechanisms by which the engine works.

Keywords: Shrinking cities; urban development; space-time analysis; Northeastern China

Introduction

Worldwide spread of shrinking cities

The unemployment and marketization of labor force caused by German reunification along with the process of deindustrialization is the reason of population loss and economic recession, and at this time, the German scholar, Schrumpfende Städte present the word 'Shrinking Cities'. In the following research about rustbelt region, 'urban decline' had been used to describe the recession and the loss of population. Not until 1996, 'Shrinking Cities' was adopted by the academe field(高舒琦, 2015).

There is no unified answer to the definition of shrinking cities so far. The current definition of urban shrinkage is more of a description of the characteristics, rather than a typical conceptual definition (Rink and Kabisch, 2009). For now, shrinking cities are defined from two perspectives. One of the perspectives is demographic changes, including changes in demographic structure, population loss, and changes in labor force, such as 'population loss accounts for at least 10% of the population', 'cities with an annual population loss rate greater than 1% per year' (Oswalt P, 2006) or 'a population loss of more than 25% over the past 40 years, accompanied by land vacant and the increasing of abandoned residential, commercial and industrial buildings' (Schilling and Logan, 2008); based on this, another perspective considers the policies of economic and industrial as well such as 'urban shrinkage is accompanied by significant population decline, economic recession, or decline in international standing affecting the development of regions or metropolitan areas' (Pallagst, 2005).

With the process of globalization, urban shrinking is widespread around the world. The study of shrinking cities is no longer confined to individual cities. Scholars have gone further to study the mechanism with a global perspective. Globalization has intensified competition between cities and regions. The global flow of capital caused by the economy liberalism has concentrated most of resources on several global cities. The international division of labor system has further exerted competitive pressure on areas with insufficient development momentum. With the continuous loss of resources and the lack of pulling power, some cities inevitably face the situation such as population loss and industrial recession. Some cities might spend a quite long period in this situation. Therefore, the conception of "urban shrinkage" has been continuously expanded and attracted attention widely in recent years. Many scholars from multi-field have focused on the study of shrinking cities, and some planning strategies for the shrinkage of case cities have been put into discussion.

Shrinking Northeastern China

Since the founding of the People's Republic of China, the Northeast has been a national heavy industry basement mainly made up by resource-based cities and heavy industrial cities which are the net outflow areas of the country in the country's large development pattern and urbanization pattern, and in the long run, the outflow trend of various factors is difficult to reverse and the shrinking pressure it faces is hard to resist. In the study of urban shrinkage identification and overall spatial distribution characteristics in Northeast China, the shrinking cities in Northeast China is characterized by globality, non-equilibrium, development paradox and pseudo-shrinkage. The population of Shenyang Dalian and Chaoyang growth slightly with lower latitudes and the remaining 33 prefecture-level cities have been suffering with shrinkage for a long time. Despite the serious population loss, the urban shrinkage in the entire region has always maintained a land use growth.

1. Study Review

1.1 Quantitative Research in Study of Urban Shrinkage

The research methodology of shrinking cities is mainly based on the quantitative research, combined with spatial analysis methods and qualitative research methods in most circumstances. Starting from the definition of shrinking city, it has become a basic consensus to measure urban shrinkage with urban resident population. By reviewing relevant papers, the quantitative research methodology can

be made up by socioeconomic methods, geospatial statistical methods and geographic landscape methods(刘合林, 2016).

Moran's I is widely used when it comes to spatial correlation analysis composed by global Moran's I and Local Moran's I. Global Moran's I is suitable for analyzing spatial correlation analysis from the whole, reflecting the global spatial distribution and verifying the spatial pattern of a certain element in the region when the local Moran's I is suitable for analyzing the local spatial autocorrelation(吴拥政, 2010).

1.2 Reiprocity of Phenomenon and Mechanism in Shrinking Cities

The growth and shrinkage of cities had appeared in various famous cities that have existed in the history of the world. The reasons were mostly wars, plagues, natural disasters, etc. The shrinking cities in the 20th century developed in a more peaceful and stable era, without drastic changes in external conditions, population loss and economic recession are changing slowly correspondingly, and the causes of urban shrinkage have their particularities (杨振山 和 孙艺芸, 2015). The analysis of the causes of urban shrinkage often starts from the four main aspects of the stage characteristics of urban development, migration and demography structural degradation, the transformation of post-socialist countries and the impact of urban policy.

Research based on the stage characteristics of urban development, focuses on economic globalization, industrial transformation and urban suburbanization. Capital globalization caused by the economic liberalism has concentrated a large amount of capital in several global cities, resulting in global inequality in space, and the gradual improvement of the international labor system forced the transformation of industrial and space in some cities, resulting in economic fluctuation and the flow of population. Population mobility is regarded as a core indicator in the identification and measurement of urban shrinkage in most times. However, demographic change not only serves as a sign of urban shrinkage, but sometimes as a motivation. For example, Japan is facing a shortage of domestic labor resources caused by population aging. The natural population growth rate is low, and the young labors tend to accumulate in large cities such as Tokyo, leading to the continuous shrinking of small towns (Martinez-Fernandez *et al.*, 2016). After the disintegration of the post-socialist states, along with the disappearance of the political boundary, the planned economy being affected by the global economic tide at the same time. The state-owned enterprises with insufficient competitiveness were forced to privatize. Take Leipzig as an example, the dominant manufacturing industry not only faces the challenges of the original capitalist region, but also faces competition from the same type of countries in Eastern Europe, resulting in a population loss of nearly 50%(邓嘉怡 和 李郇, 2018). In addition to the above reasons, urban policies have a direct or indirect impact on the urban economy for the purpose of local ecosystem protection or regional resource allocation, resulting in the wilting of some of the leading industries. For example, Yichun in Heilongjiang is promulgating the Forest Law. The Law and its series of amendments have led to a sharp decline in the output of wood processing and furniture manufacturing, local pillar industries. The large loss of population caused by the job lossing has intensified the shrinking of urban industries(高舒琦 和 龙瀛, 2017).

1.3 Summary

Above all, the causes of a shrinking city always come from various aspects, and the resulting economic sluggishness and population loss often act on urban shrinkage again. The underlying causes are difficult to distinguish and different regions have unique internal mechanisms, making it difficult to form a planning paradigm. At present, a large number of studies have been devoted to the shrinkage and growth between cities or regions, however, research on districts in specific city is still scarce. In addition, at the time of transformation from urban growth to urban renewal, how to deal with the role of urban planning in shrinking cities, should be a question worth considering.

2. Growth and Shrinkage among Districts in Case City

2.1 Shenyang: The Study of a Central City of Northeastern China

As the capital of Liaoning Province and one of the regional central cities in Northeast China, Shenyang is representative in terms of history and economy. Since 2000, with the gradual decline of the secondary industry, the Northeastern economy, which is dominated by heavy industry state-owned enterprises as the wilting of the economy, has been severely impacted and intensified, which has also had a tremendous impact on Shenyang's economic construction and urban development, and problems such as the population aging and the failure of industrial transformation are widespread in the region. Shenyang had not faced the problem of population loss, according to the two population censuses in 2000 and 2010, the permanent residents in Shenyang has increased from 7,037,517 in the

fifth census to 8,106,171 in the sixth census. In the past ten years, the population growth rate is 12.53%. Although the population of Shenyang was growing slightly in quantity, non-Shenyang City area is almost completely degraded. Most of the street population loss rate is within 30%, and even some populations lose 60%, such as Xinchengzi residential district in Xinmin (68.9%) and the suburban town of Liaozhong (73.4%). Shenyang hadn't faced the problem of demographic shrinking according to the number of populations, however, when referring to spatial distribution, the rural hollowing couldn't be ignored. From the perspective of the change in the number of juveniles under the age of 14 In the past ten years, it has decreased by 302,982. In 2010, the population age of the population is 798,013, the population aged 14-65 is 6,529,159, and the elderly population over 65 is 844,597. The number of young people was decreased from 15.21% of the total population to 9.7%. It is clear that under this trend, Shenyang would soon face the problem of population shrinking for the foreseeable future.

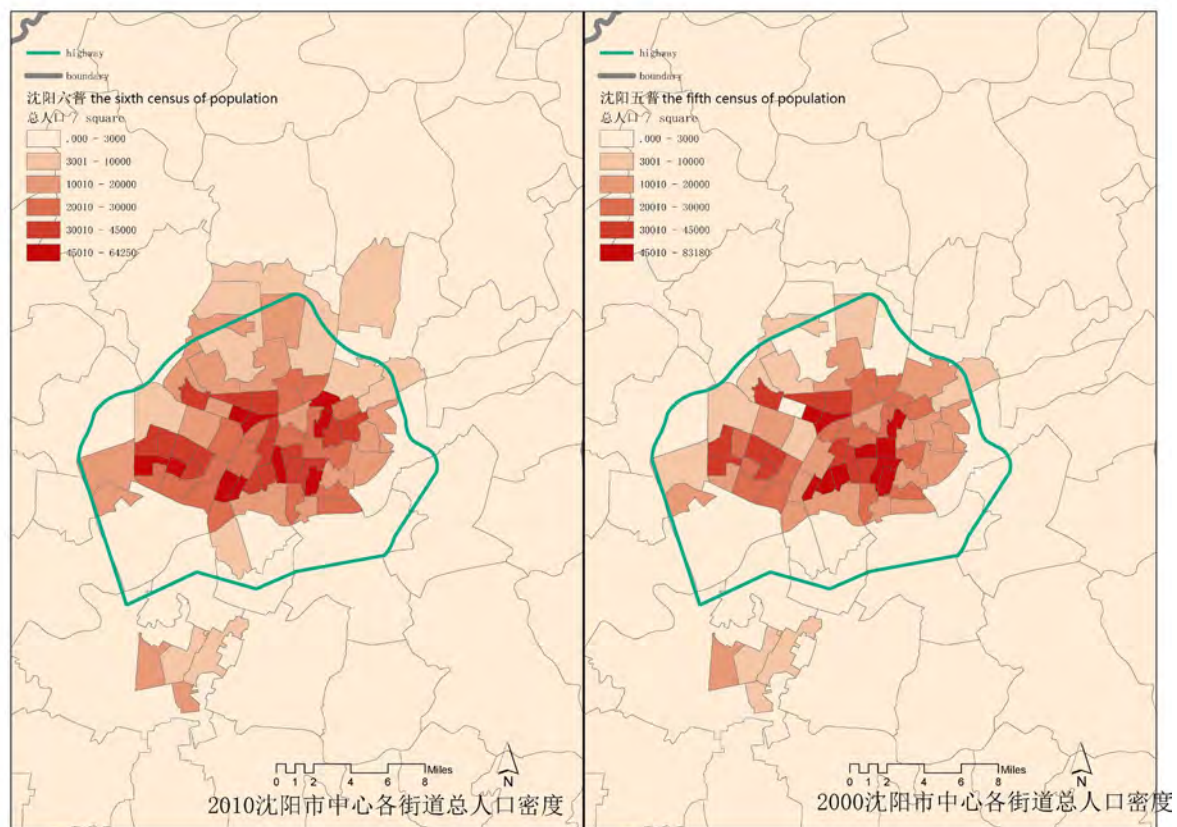
During the interval of the fifth and sixth censuses, the changes in the internal population of Shenyang City also showed certain changes. During the period of rapid urbanization in China, the rural population gathered in large numbers in cities, and the problem of rural hollowing out is also common in China. Although the population of the city has increased as a whole, the agglomeration effect or mutual exclusion effect of the growth and shrinkage of the population within the internal unit reflects the development status of the city. This research perspective has a unique meaning of understanding the urban population shrinkage as well as reflecting the phenomenon.

2.2 Characteristics of Population among Residential Districts in Shenyang

During the two censuses, the administrative divisions of township district in Shenyang had changes a lot. After reviewing the township district directory, the author sorts out the 2000 demographic residential district units that have been split or merged in 2010. The corresponding population is merged into the new unit, with the street unit of the sixth census in 2010 as the basic unit of analysis. In the research area division of Shenyang, the whole area of Shenyang is divided into three layers: the innermost circle is the concentrated construction area enclosed by Shenyang G1501, which is the downtown area of Shenyang; the middle is the boundary of Shenyang. Within the area outside the construction area; the remaining part is the third part, which is the area outside the municipal area within the scope of Shenyang.

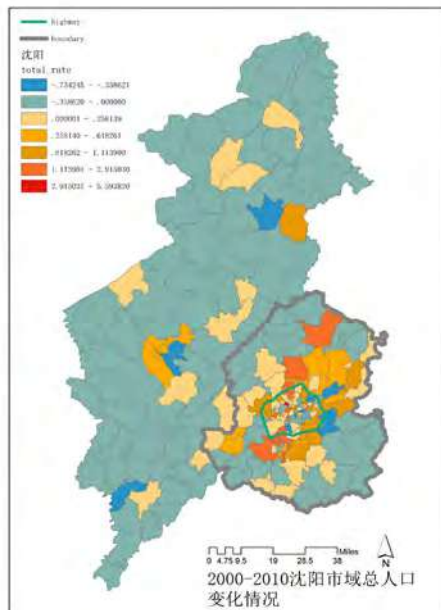
2.2.1 Districts of High Population Density Presenting a Single Center Agglomeration

According to the results of the total population of the fifth national census, the population density of the street units of all towns is less than 3000pop/km² outside the boundary, G1501, the highway around the urban area, in a more evenly distributed state, the second layer of the city beyond the city's high-speed zone also has the same characteristics, while the high-density total population area is concentrated in the innermost layer. From the perspective of global distribution, the high-density area presents the city center. The single-center distribution of the area, the street unit with a population density higher than 20,000 people/km² accounts for 17.13% of the total area. The county-level administrative area under the jurisdiction of Shenyang City has not formed a high-density population distribution pattern, and is at a relatively preliminary stage in the construction of the urban system. However, the distribution pattern of the total population density of township streets in the sixth census after ten years has not changed significantly. The district with a high population density in the urban



Pic.1 Spatial distribution of total population density in municipal

area enclosed by G1501 has increased significantly, and the total population density has reached 20,000 people/km². The number of township units accounted for 21.3% of the total area. From the distribution point of view, it began to appear on the periphery of the original core area, and the area expanded. Comparing the population density distribution of the two census results, the distribution area of the high-density unit of the population began to increase to the north, while the population of the southern part of the urban area did not change significantly, indicating that the area where the population was concentrated in the decade was mainly to the North of Hun River. Regional population change south of the Hun River is still small (*pic.1*).

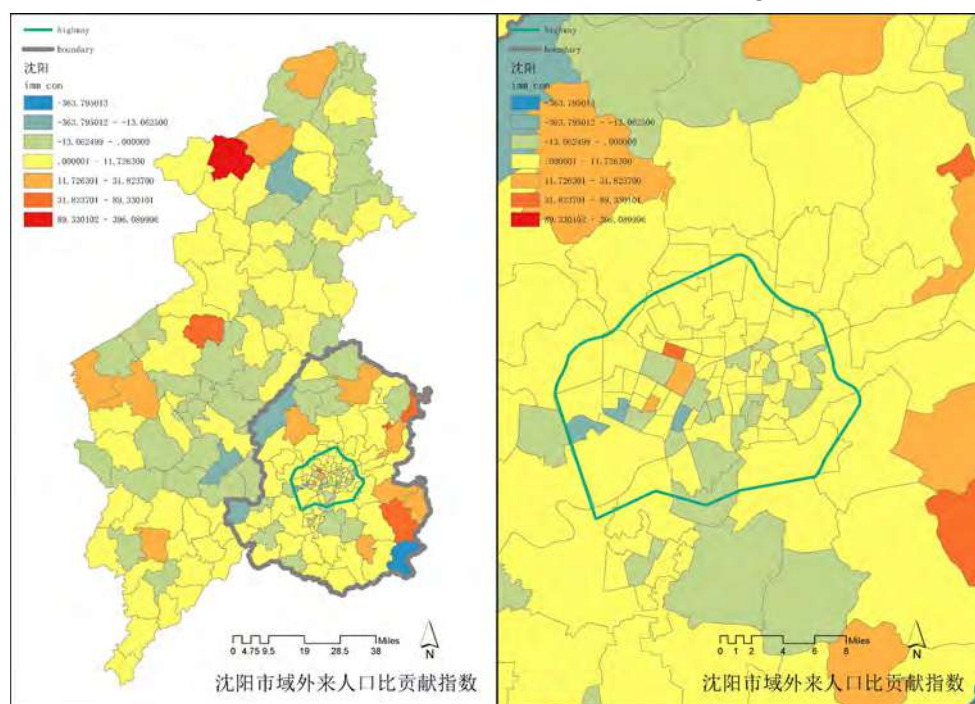


Pic.2 Spatial distribution of changes in total population density

In terms of the change in population density over the past decade (*pic.2*), except for the unit area where the population density has increased significantly within the second circle, the population reduction is the main situation. For the urban area, the population of the old urban area in Shenyang has contracted while the residential district near the G1501 line showed an increase in population density.

2.2.2 Districts of High Ratio of Migrants Presenting a ring agglomeration

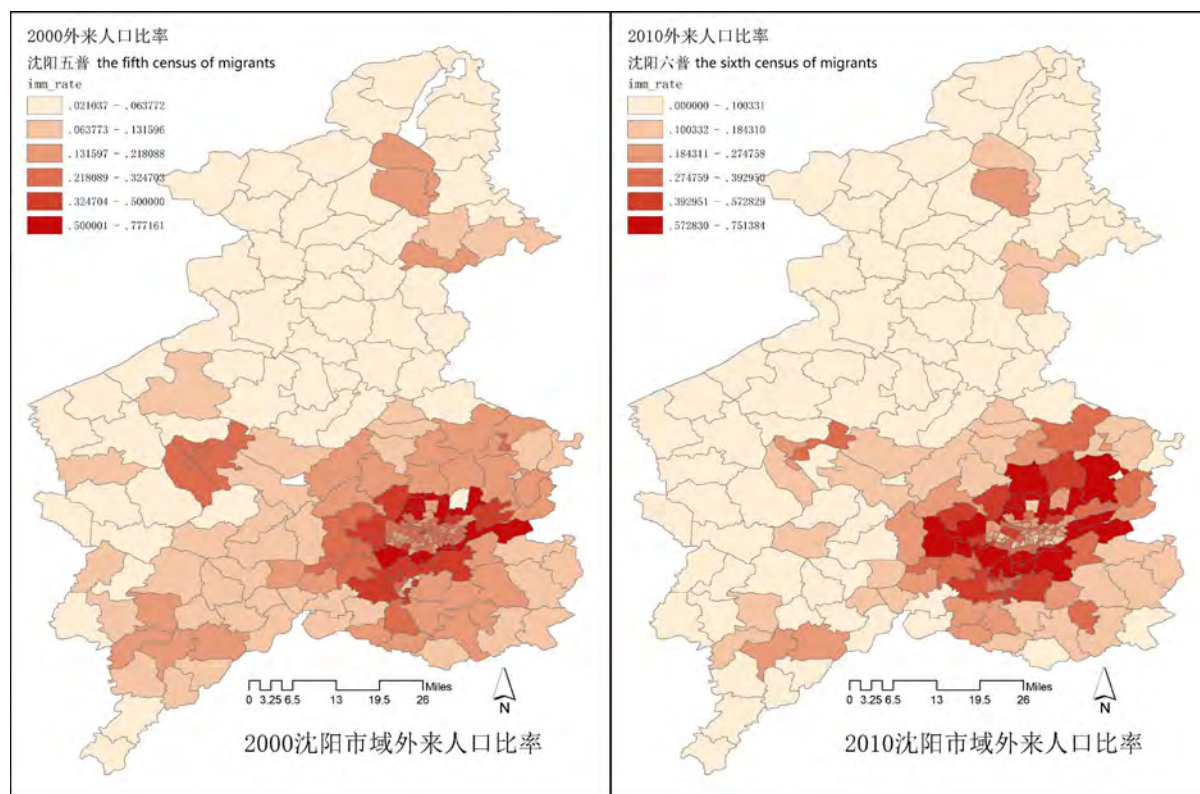
As migrant is the main force of urban development, the contribution index is defined by the change of ratio of migrant rate in the study of Shenyang. Districts with high contribution index will shows more impetus in urban development (*pic.3*). According to the pic. most of districts in Shenyang shows an index lower than 11.7 as well as the index in downtown, but it shows a higher result in the east of



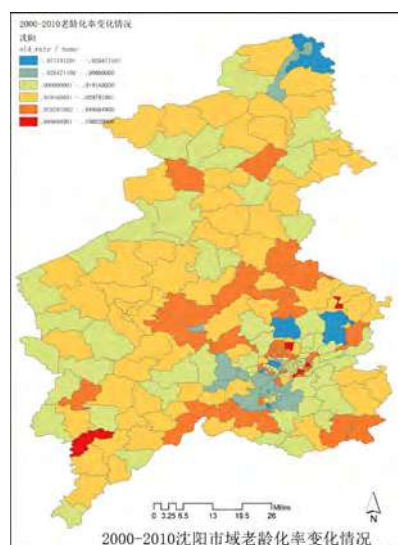
Pic.3 Spatial distribution of contribution index of migrants

Shenyang near to the boundary between Shenyang and Fushun, which means a fierce change in migrant.

According to the spatial distribution of migrant rate, it shows a more obviously concentrate when moving eyes to the edge of the city in the fifth census, and the phenomenon appears again in the result of the sixth census with a more centralized ring around the city (*pic.4*). In the fifth census, the spatial distribution of the migrant rate is more balance over the residential district between G1501 and the boundary of municipal district than it in the sixth census. Overall migrant density become more concentrate over the decade.



Pic.4 Spatial distribution of migrants in Shenyang (two census)



Pic.5 Change of aging rate

2.2.3 Significant Growth of the Ratio of Aging

The outflow of youth labor resources has led to the general problem of aging in the Northeast of China. This section based on comparison of the population ratio of the elderly aged over 65 between two censuses. And take 7% and 13% as the classification criteria which represent the aging degree, below 7% means that there is no aging problem in the city, 7%-13% means that the district has an aging population, and more than 13% means that the district is in an aging society.

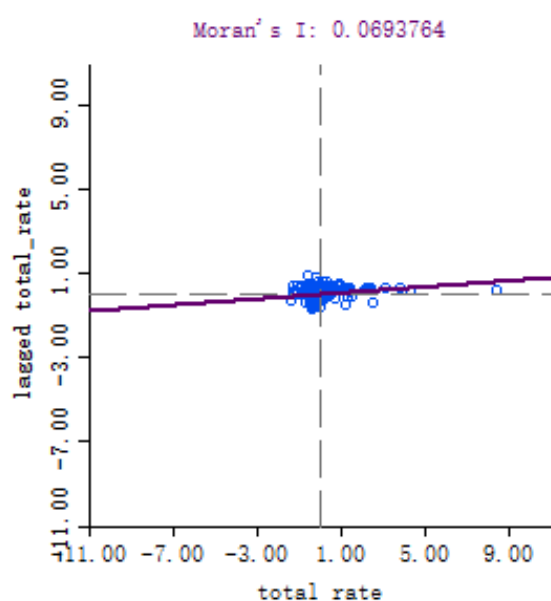
In the fifth census, the number of residential district with an aging population below 7% accounted for 22.2% of the total, and the remaining 77.8% of the district ageing population ratio was almost

13%, comparing with the sixth census in 2010, district with an aging ratio below 7% reduced to about 6.9%, one-third of the former quantity; aging ratio in 82.4% of residential district is between 7% and 13%, facing the problem of aging; 9.3% of the districts had an aging ratio of more than 13% which means entering an aging society. In the past decade, the problem of aging in Shenyang has been highlighted (*pic.5*). The overall aging ratio of cities had also increased from 8.6% to 10.3%. According to the data of the sixth census, almost all street units with an age ratio of more than 13% are distributed in the G1501 city expressway, which means the aging ratio is relatively higher in the urban area of Shenyang, and combined with the juvenile population under 14 years old, the population structure of the city is seriously out of balance, the population's development momentum is seriously insufficient, and aging has also increase the city's financial burden, which could do harm to social development.

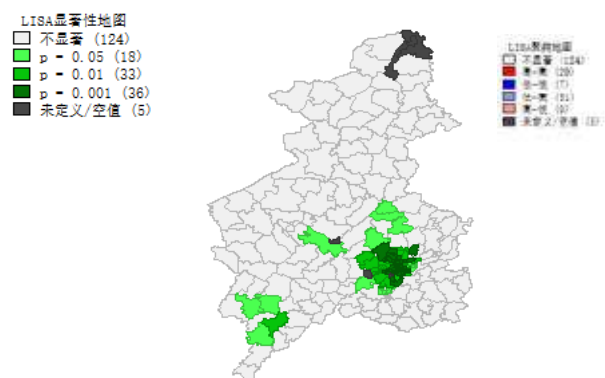
2.3 Spatial Autocorrelation of Demographic Changing in Shenyang

After observing the changes in various population indicators in Shenyang, it's not hard to found that the changes in various indicators have a certain spatial correlation, and continue to calculate the global Moran's I and the local Moran's I and illustrate the point with the graphical representation of spatial autocorrelation. In this case, the method of face and angle adjoining is used as the principle of allocation of spatial weights of each street unit (Queen's Case). The spatial autocorrelation setting $P < 0.05$ was significant, and the credibility reached 95%; $P < 0.01$ means that the credibility reached 99%; $P < 0.001$ means the credibility reached 99.9%. The LISA Significant Map will represent significant residential districts, while the LISA Cluster Map will classify significant districts into high-high, low-low, high-low, and low-high class, the districts are divided into high-high clustering as population agglomeration area; low-low clustering is defined as population contraction area; high-low clustering indicates that the street is in an increasing state to attract populations in other areas; low-high cluster indicates that the street is in a state where the population is being attracted to other regions.

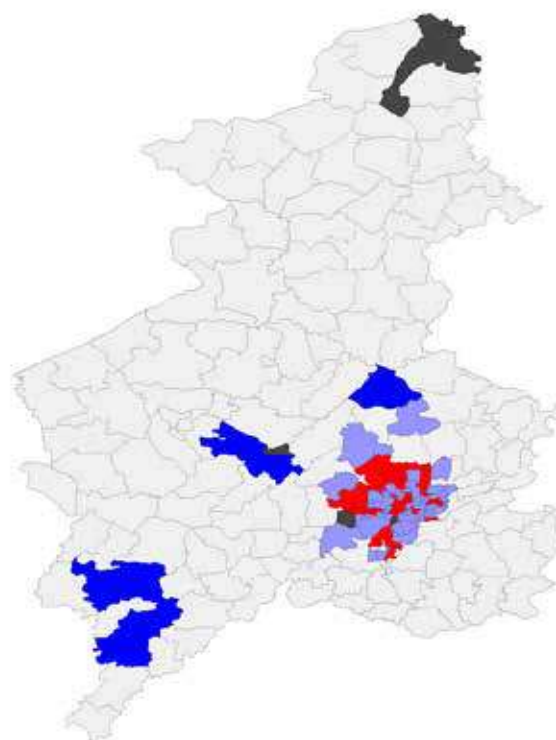
2.3.1 Rate of Change in Total Population



The global Moran index is calculated for the total population change rate of the residential districts in Shenyang, and Moran's $I = 0.0693764$. The global Moran index is positive, indicating that the observed data is significantly aggregated, and the total population change rate has a spatial strong correlation in space. The LISA significance map (*pic.6*) shows that $P < 0.001$ in most areas of Shenyang urban area in terms of total population change rate, which proves that the probability of population change rate in urban areas is 99.9% which is not randomly distributed. In addition, the analysis results of four street units in the western part of Xinmin and

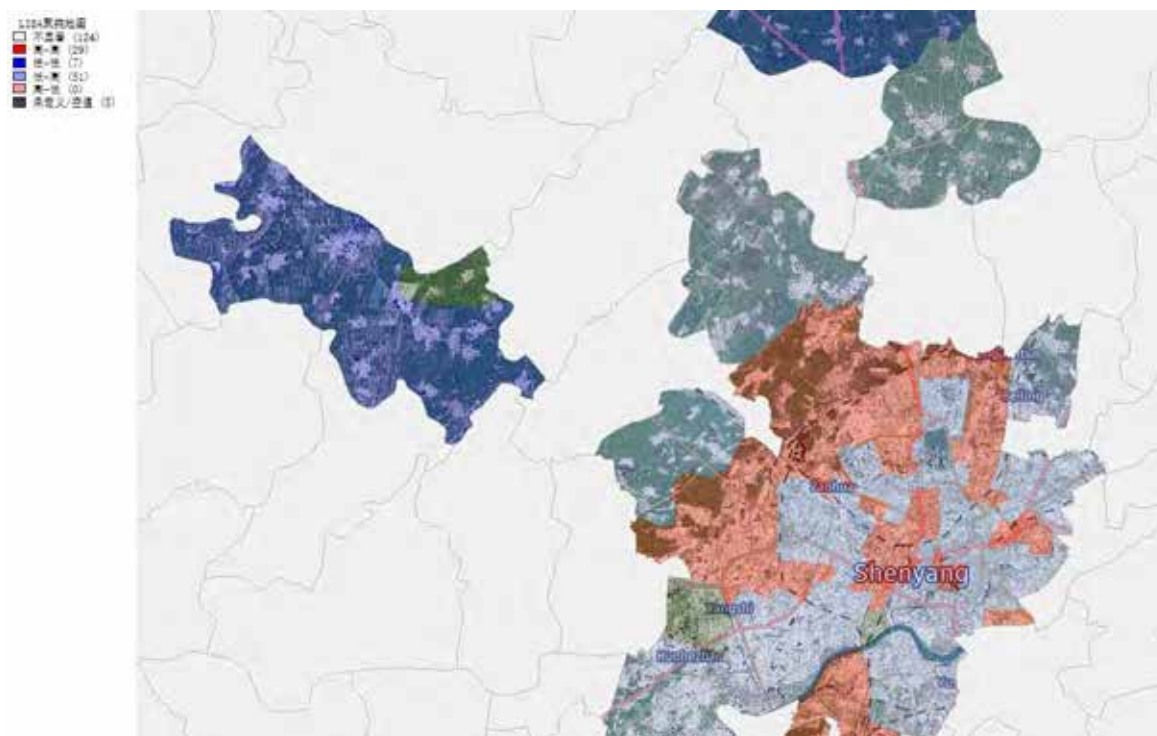


Pic.6 LISA Significant Map of Total Population



Pic.7 LISA Cluster Map of Total Population

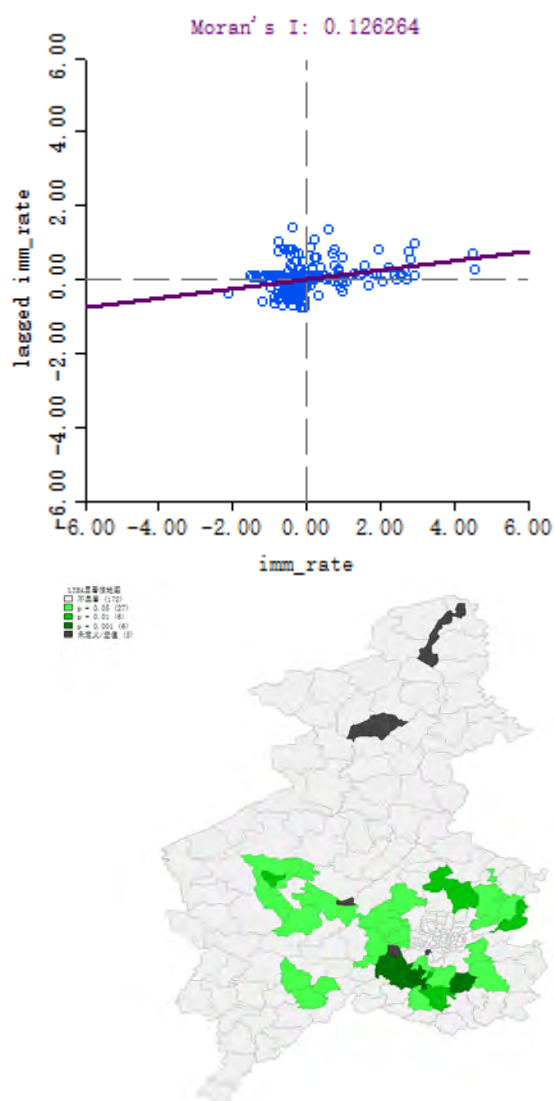
Liaozhong are also significant, with 95% probability being not randomly distributed. Overall, the areas with significant results are concentrated in the urban area of Shenyang.



Pic.8 LISA Cluster Map of Total Population of the Urban Area

The LISA clustering map (*pic.7, pic.8*) shows that the significant areas of Xinmin and Liaozhong are both low-low clusters, which are the shrinking districts of the population, while the urban areas of Shenyang are dominated by low-high clusters and high-high clusters. The high-high cluster area around the northwest of the area forms a semi-ring, surrounded by the built-up area of the city, and several districts in the downtown area also form a high-high cluster area, among other scattered four streets. Four high-high islands are formed in the annulus formed by the low-high cluster, and the other significant regions are low-high clusters. The northwest semi-circular ring has become a significant population agglomeration area, forming a population growth zone, while the urban area has also formed a growth pole. There is a low-high population shrinking zone between the two, and preliminary judgment can be made that people of the shrinking zone was flowing to the both sides. Comparing the quantity distribution maps, it is easy to found that the high-high areas are areas with large population growth, while some districts in the low-high cluster area still have a small increase in population, showing that the population growth is positive, but take a look at the big picture, its population is still in a state of being attracted to other regions.

2.3.2Rate of Change in Ratio of Migrants

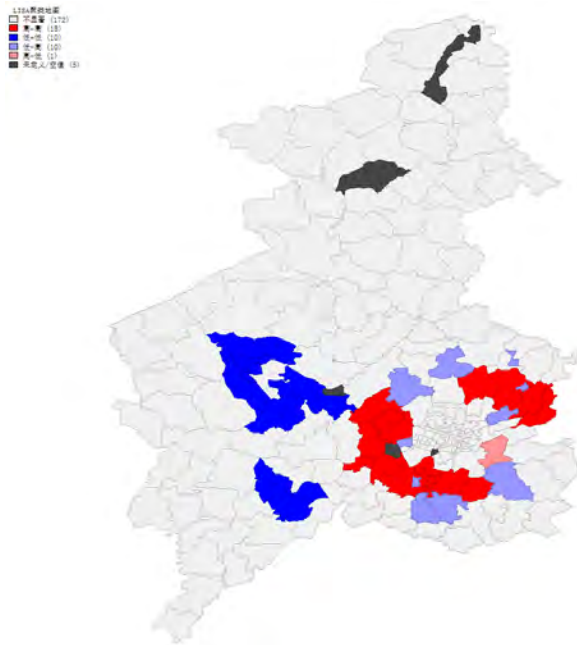


Pic.8 LISA Significant Map of change of migrants ratio

In the spatial cluster analysis of the change of the ratio of migrants in the two censuses, Moran's $I = 0.126264$. The positive value indicates that the changes of the migrants have significant spatial agglomeration distribution characteristics, and the change of the ratio of foreign population has a strong space. Correlation.

The LISA significant map (*pic.8*) shows that the spatial clustering significant area is concentrated in the periphery of Shenyang downtown, showing a roughly complete circular distribution. In addition, the significant area of Xinmin is also connected with the ring, indicating that the districts of Xinmin had an spatial correlation with the urban area. According to the map, P value of most significant areas is between 0.05 and 0.01, the ratio change of the foreign population has a 95% probability of non-random distribution in the spatial distribution, and the area of $P < 0.001$ is concentrated in the outer ring of the urban area. The southwestern region of the belt has a spatial distribution with a 99.9% probability of non-random distribution. The central city area did not show significance under this indicator, and there is no analytical value.

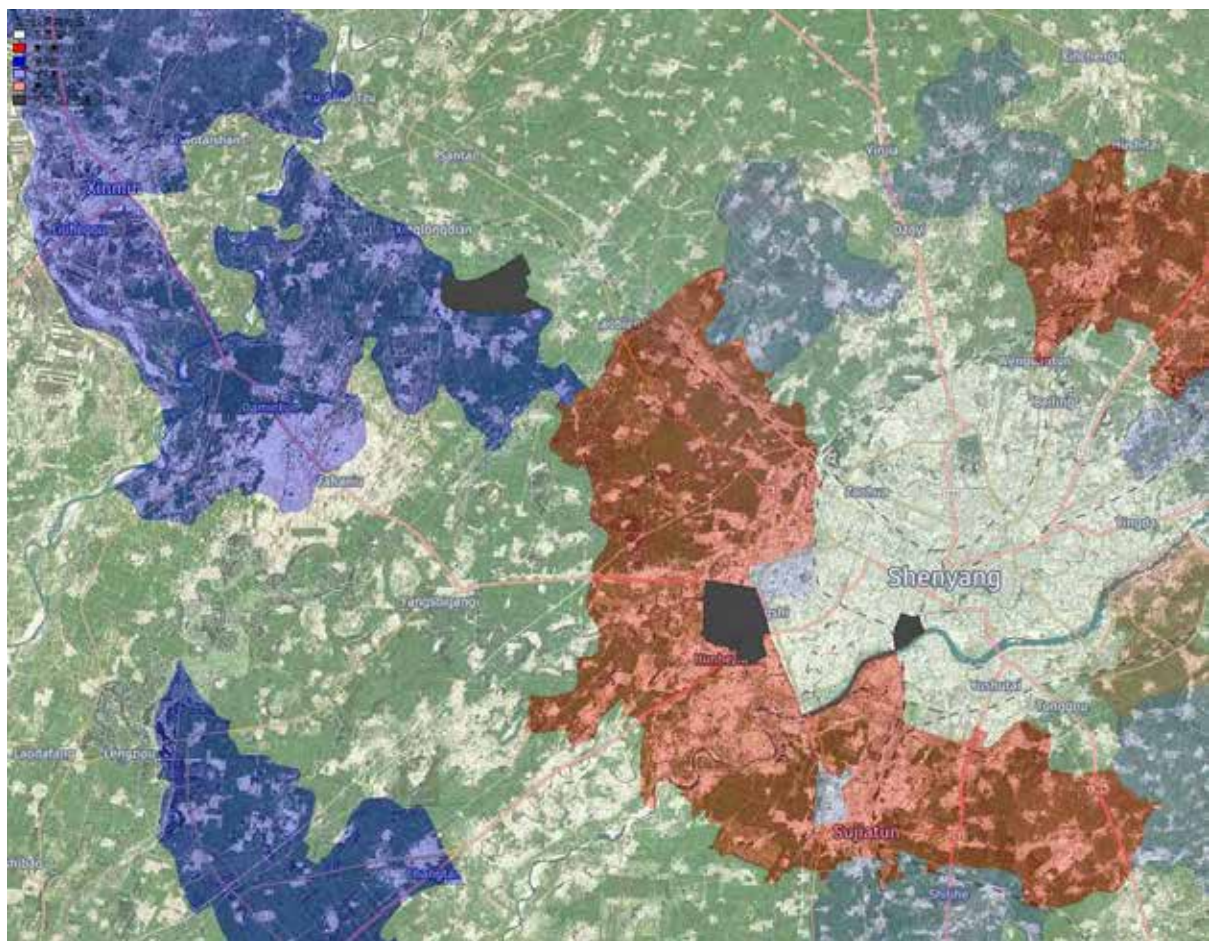
In the LISA clustering map (*pic.9, pic.10*), the



Pic.9 LISA Cluster Map of change of migrants ratio

forms a circle around the urban area, the low-high cluster areas which is composed by attracted districts shows a great increase, so despite the number is growing, they were classified into

significant areas of Xinmin and Liaozhong are completely in the population-loss zone with low-low population clusters, and the population-growth growth zones of high-high clusters in the ring zone are distributed in the southwest half of the outer ring. In the northeast part of Xinchengzi Town (Shenbei New District), the north and south of the ring are two low-high cluster areas, and the high-cluster area is more likely to show the attracted area of the population. In addition, Donghu residential district in Dongling District is the only central gathering area (high-low area), showing the attraction area of the migrant population. Comparing the above observations with the growth rate ratio of the foreign population, there is a similar situation with the change rate of the total population. The region with a higher growth rate of the migrants also



Pic.10 LISA Cluster Map of change of migrants ratio of Urban Area

population-attracted areas in spatial cluster analysis.

2.4 Summary

By comparing the LISA cluster map and spatial distribution of the quantities, it seems that there appears to be a paradox in the index of total population changing ratio and the change of migrants, that is, districts determined shrinking in the LISA cluster map still shows an growth in quantity, which can be defined as a relatively shrinking. This kind of circumstance happens all the time in the process of the analysis, so it is not reliable that identify the growth and shrinkage in cities with the change in value and the synthetic judgement with other index is necessary.

3. Discussion

3.1 Factors of Growth and Shrinkage in the City

In the study of the shrinkage and growth of the inter-city population, a lot of analysis has been done on the causes of the phenomenon of the shrinking, partly because of the stage characteristics of urban development such as globalization, suburbanization and de-industrialization. There are also factors such as the transformation of the state regime, the imbalance of demographic structure, and the side effects of government intervention. However, the reasons for the population shrinking and growing in various districts within the city are obviously different from the research level between cities or regions, and specific analysis is necessary. According to two national censuses in Shenyang, Shenyang City faced the combined effect of the population in the process of urbanization to the large concentration of urban population and the shrinking of the inner-city population at the same time. The period of research in Shenyang is in the decade of China's high-speed urbanization, and the urbanization rate in China has increased from 35.39% to 49.68%, an increase of 14.29%. The rural population migrated to the cities, resulting in the hollowing rural areas. Problems such as aging and population aging, and the expansion of the city's scope has led to a focus on building on the edge of the city, which in turn has caused the population of the inner city to shrink. In the course of the research, although Shenyang City has been found to be facing a severe problem of aging, there has not been a natural decline in population due to imbalances in population structure in countries such as Japan, but associated with the prevalence of minority births and low fertility in the three eastern provinces Shenyang is more likely to face problems such as insufficient population development and lack of labor resources in the foreseeable future.

3.2 Research Prospect

In 2020, the Chinese government is about to announce the seventh national census. Combining with the latest data, the research can study on the changes in the population of Shenyang in the first 20 years of the 21st century more evidentially. In the past ten years, domestic news media have been more pessimistic about the Northeast China region. Shenyang and even the entire three eastern provinces are often come out with keywords such as falling house prices, population loss, aging, and economic downturn. The data of the seventh national census can provide researchers with more accurate information. The source of the data is conducive to in-depth exploration of the demographic changes in the Northeast China, and better feasible strategy can be made. Since 2000, urban renewal is taking the place of urban growth in China gradually, and the shrinkage and growth in city

population must be influenced in a way, this paper just describe the phenomenon of shrinking, and needs a furthermore study of the factor that behind the phenomenon.

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A Study on China's County Sports Center Planning Strategy from Smart Shrinkage Perspective

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Abstract: At the end of 2017, the urbanization rate of China's permanent residents was 58.52%, which has increased by 1.17% over last year. It is expected to exceed 60% by 2020. Rapid urbanization has brought about expansion of large cities and contraction of small and medium cities. Most of counties become population decline areas, which are not suitable for extensive development. Meanwhile, sports facilities in China's counties are extremely lacking. The promotion of sports industry and national fitness policy are imminent. Based on current situation of urban and industry development, this paper points out the problems and misunderstandings of current county sports centers in China, and combines several planning practices to propose the view of “smart shrinkage”. According to the planning and construction of county sports centers, this paper proposes four planning strategies: improving efficiency under shrinkage, intensive scale under precise orientation, function rebuilt under needs and the open and flexible interfaces, intending to guide the development of counties in China and to provide reference for planning and construction of county sports centers.

Keywords: Shrinking County, Smart Shrinkage, County Sports Center, Planning Strategies

1. Introduction

Driven by competitive sports represented by Olympic Games and National Games in recent years, China's sports industry has developed rapidly. The hosting of big events such as the 2008 Beijing Olympic Games, the 2010 Guangzhou Asian Games, the 2013 Liaoning National Games and the 2017 Tianjin National Games led to a construction boom of sports centers. Negative issues were also exposed such as high investment, low utilization and difficult operation. After the reflection of post-Olympic era and the fervent preparation for the 2022 Beijing winter Olympics, the planning and construction of China's sports centers faces new opportunities and choices once again.

For large and medium cities, the planning of new sports centers often follows the principle of “smart growth”, to improve the land exploitation intensity and the output efficiency (Dovey, K., 2012). These sports centers will become catalysts for new developing areas because of their multiple functions and landmark effects. However, for China's 2,856 counties, are in a rapid urbanization process and still developing (Ma, S., and Long, Y., 2018). The condition of counties can't support such extensive development, not to mention the high investment and continuous operation of sports centers. The

strategy of “smart shrinkage” can actively guide land utilization, adapt to the county development trend, and seek the balance between economic input and social benefits (Zhao, M *et al.* 2015). Therefore, author puts forward the smart shrinkage view based on the planning and construction of county sports centers, and carry out a lot of research in order to provide reference for the sports facilities at county level and town level in China.

2. Structural imbalance and planning misunderstandings of county sports centers

2.1. Shrinkage trend of county development

At the end of 2017, the urbanization rate of China's permanent residents was 58.52%, which has increased by 1.17% over last year. It is expected to exceed 60% by 2020. Rapid urbanization has brought about expansion of large and medium cities and shrinkage of countryside (Academic Work Committee of China Urban Planning Society, 2017). But counties are in an embarrassing situation, most of them have become population decline areas. The recession caused by shrinkage is contrary to original purpose of urbanization. The problem is not the shrinkage itself but the methods facing with shrinkage. The construction of large sports centers is obviously not smart, that will overdraw and decentralize limited resources of county under this background. Therefore, it is necessary to form a consensus based on smart shrinkage to adapt to transformation of county economy.

2.2. Unbalanced structure of county sports facilities

Significant achievements of China's sports facilities have been made since new century. However, sports facilities in most of counties are still lacking while total number is growing rapidly, and the quantity, coverage and regional distribution of construction are difficult to meet needs of society. “The Sixth Nationwide Sports Fields Census Data” shows that the number of sports fields in China has reached 1,694,600. Among them, there are 365,983 sports fields in the county, accounting for 22%. The indoor gymnasiums in counties are less than 9%. The rate in towns are even lower, only 5% (General Administration of Sports of China, 2014). The rest are mostly outdoor fields (Figure 1). Compared with the quantity, the quality is also low. They are far from the conditions for organizing sports events or opening to residents. Counties have a sharp contradiction between demand of sports facilities and current conditions.

2.3. Misunderstandings of county sports center planning

For the sports center projects, most governments of counties build for the first time or haven't built for a long time, lacking professional knowledge and construction experience. It is easy to get into blind and luxurious mistakes at the beginning because there is no operational preparation. The excessive standards will increase the cost of construction, operation and even abandonment stage, which will bring continuous burden to local finance. Another situation often facing with is that planning conditions are various and lack accurate correspondence with planning of sports centers, it will result in poor site selection, poor supporting facilities around, poor site conditions and improper scale of site, all of which are negative factors affecting sports center planning.











3. Strategies from the perspective of smart shrinkage

Facing problems and misunderstandings in county sports center planning, author proposes some strategies according to recent projects based on perspective of smart shrinkage.

3.1. Land Use: improving efficiency under shrinkage

3.1.1. Compound development

Traditional sports centers operate on competition economy and related industries. In United States, Europe and some large cities of China, economic returns of sports industry are considerable. However, the county sports centers lack of sports events and population foundation, that can't survive by sports industries. It is necessary to develop multiple functions for sports centers by adding some functions related to residents' life (Thom, M., 2012). For example, the Dongshan County Sports Center in Fujian province, combines cultural functions such as museums, gallery, and theatre to form a culture and sports center that consisted of one stadium and six venues. Meanwhile it connects west an east urban green space to form a city's sports park belt. The Zhongmou County Sports Center in Zhengzhou city merges three gymnasiums in the planning to save land, while adds 42,000m² of commercial spaces

Table 1 Comparison of case indexes of county and district sports centers					
Name	Tengchong City Sports Center	Yanshi City Sports Center	Huayin County Culture and Sports Center	Dongshan County Culture and Sports Center	Tongbai County Sports Center
Site plan					
Grade	County-level City	County-level City	County-level	County-level	County-level
Population	660,000	632,000	263,000	220,000	438,000
Content	1 stadium and 2 gymnasiums	1 stadium and 2 gymnasiums	1 stadium and 1 gymnasiums	1 stadium and 6 gymnasiums	2 gymnasiums
Site	10.7 hm ²	11.6 hm ²	16.8 hm ²	38 hm ²	3.9 hm ²
Area	83,000 m ²	40,000 m ²	71,000 m ²	152,000 m ²	15,000 m ²
Plot ratio	0.77	0.34	0.42	0.36	0.39
Note	No training track	Training track share with school	Multi functions complex	Culture and sports complex	No stadium
Name	Zhongmou County Sports Center	Xinxian County Sports Center	Huinan County National Fitness Center	Xinyang City National Fitness Center	Pulandian City Sports Center
Site plan					
Grade	County-level	County-level	County-level	District-level	District-level
Population	800,000	270,000	370,000	850,000	916,000
Content	1 stadium and 3 gymnasiums	2 gymnasiums	1 stadium and 1 gymnasium	1 stadium and 2 gymnasiums	1 stadium and 2 gymnasiums
Site	8.8 hm ²	8.6 hm ²	3.7 hm ²	16.3 hm ²	18.8 hm ²
Area	35,000 m ²	32,000 m ²	15,000 m ²	48,000 m ²	77,000 m ²
Plot ratio	0.40	0.37	0.42	0.29	0.41
Note	No training track, Complex	No stadium	No stands in stadium	No stands in stadium	Complex

underground as profitable space (Table 1).

3.1.2. Improve utilization efficiency

Different from construction in large cities, the land use and construction scale of county sports center is limited, so we should tighten the layout and shorten the service radius. It takes 2 hectares of land to build a standard athletic track. If you consider some stands and necessary space, that would be at least 3 hectares of land. Meanwhile you must have suitable site on shape and conditions, the cost and scale of land is large for counties. Therefore, the utilization efficiency of land is the key to the success of county sports centers. Table 1 lists planning indicators of several county sports centers. It shows that the land area is mostly in 10-20 hectares, which is also the economic scale of county sports center. According to traditional layout of one stadium and two gymnasiums, we can achieve appropriate plot ratio of about 0.4, but it is difficult to increase training track. In sports center in Tengchong, an attempt is made to plan one stadium and two gymnasiums in mountainous of nearly 10 hectares' site. The density is obviously high that the plot ratio is over 0.7, which affects the quality and usage of outdoor space. Because of limited population and land in counties, priority should be given to building construction, while the outdoor sports fields are less important that can be properly shrunk, without reference to the standard of large or medium sports centers.

3.2. Construction Standard: intensive scale under precise orientation

3.2.1. Reasonable competition level

As most counties lacking of economy, competitions and events support, smart shrinkage should first be considered as decompetition. County sports centers can't host big sports events such as Chinese National Games, Chinese Football Association, Chinese Basketball Association. In a few cases, it can be used as a sub-venue for these events. In "Construction Standards for Public Sports Buildings"(Ministry of construction of China, 2009), competitions hosted by sports centers is classified into special, A, B and C from Olympic Games to local sports games, the level of county sports centers is mostly C-Class or B-Class at most (Table 2). Still take the stadium as an example, Table 3 stipulates relationship between the seats number and urban population. Counties with population less than 200,000 should not build a stadium with more than 10,000 seats, while counties with population less than 500,000 build a stadium of C-Class with 15,000 seats is enough. For small counties, the population should be urban population, because many people are scattered in remote areas that it is difficult to participate in sports, we need to consider the appropriate reduction for this factor. Therefore, it is reasonable that there are no stadium or no stands in some county sports centers such as Xinxian County and Tongbai County.

Table 2 Level of stadium		
Grade	Main events	Seats number
Super	Olympic, FIFA, IAAF World Championships	>60000
Grade A	National and other international competitions	60000-25000
Grade B	Regional and national individual competitions	15000-25000
Grade C	Local and mass sports meetings	5000-15000

Table 3					
Construction scale of stadium according to population					
Area of per seat (m ²) Population	Seats	40000-30000	30000-20000	20000-10000	10000-5000
More than 2 million		1.20-1.25	1.20-1.25	1.10-1.25	1.10-0.80
1-2 million			1.20-1.25	1.10-1.25	1.10-0.80
0.5-1 million				1.10-1.25	1.10-0.80
0.2-0.5 million				1.10-1.25	1.10-0.80
Less than 0.2 million					1.10-0.80

3.2.2. Estimated construction cost

China's county sports centers are in short supply now, especially in the central and western regions. In this case, National Development and Reform Commission of China put forward the overall goal of improving coverage rate of county sports centers, national fitness centers and fitness facilities in the “Implementation Plan of 13th Five-Year Public Sports Popularization Project” (National Development and Reform Commission, 2016). At the beginning of county sports center development, proper understanding of construction standards and costs is guarantee for planning. The cost of Sports buildings is usually estimated by the average cost of seats, but this way is easy to ignore the change of the average cost caused by the increase seats number. If the seats number increases to a certain level, it will cause change in stand form, the building will require a lot of stairs for upper stands, also cause an increase in the span of structure and the area of roof, which leads to a sharp increase in the average cost of the seats (Figure 2)(John, G *et al.* 2017). So, the cost of a stadium with 40,000 seats is far more than two times of one with 20,000 seats. Figure 3 illustrates the average cost of seats in stadium with different number of seats. Choosing an appropriate point on the parabola is the key for government to make decision. For counties, the cost-effectiveness ratio of athletic track and football field is higher than stadium with stands and roofs which should be carefully controlled. The gymnastics have low cost and high utilization rate, so the area can be properly increased. However, it is unnecessary to increase the seats number and diving pools in natatoriums.

3.3. Function planning: function rebuilt under needs

3.3.1. Public fitness function

Including 2021 Shaanxi National Games, there have been eight provinces in China that have hosted this sports event. The participation of whole province benefits the small and medium cities that receive the construction of sports centers. However, current situation in China is that the proportion of large sports center is relatively higher than fitness centers. For the public, small fitness centers are more popular for better participation and flexibility. Those fitness centers should not be the same as traditional stadiums and gymnasiums, but take national fitness as the primary function. In the planning of Tongbai County Sports Center in Nanyang City, Henan Province, we formulated three principles based on the conditions and limitations: Firstly, the park is designed as a national fitness park, adding fitness paths, fitness equipment, open-air fields and other simple facilities; secondly, the old athletic track and gymnasium are completely retained, but reformed the gymnasium into a fitness center;

finally, only a gymnasium and a natatorium are built to save costs. The new two buildings are classified as class-C to serving the public fitness and small competitions. They are designed together and also share some facilities (Table 1). Through above planning measures, with the minimum cost and construction, the fitness conditions for residents have been significantly improved, so that the government and the public get a win-win situation.

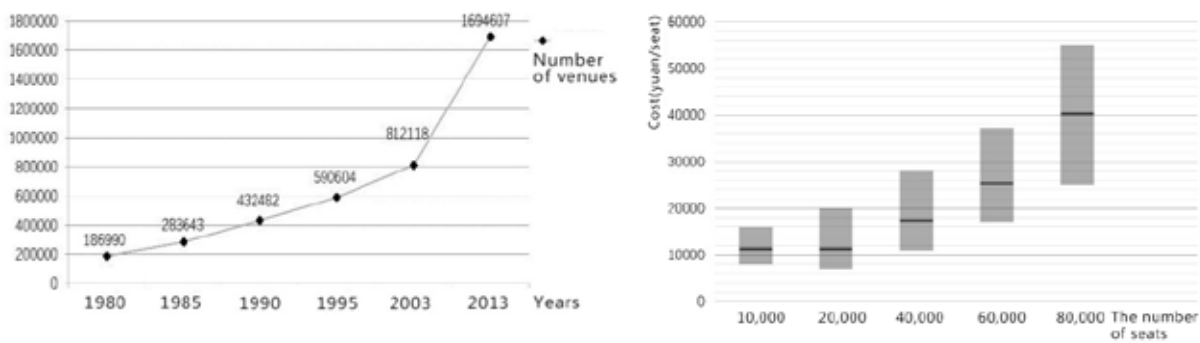


Figure 1. Number of venue in China over the years **Figure 3.** Relationship between the number of seats and the average cost of seats in stadium

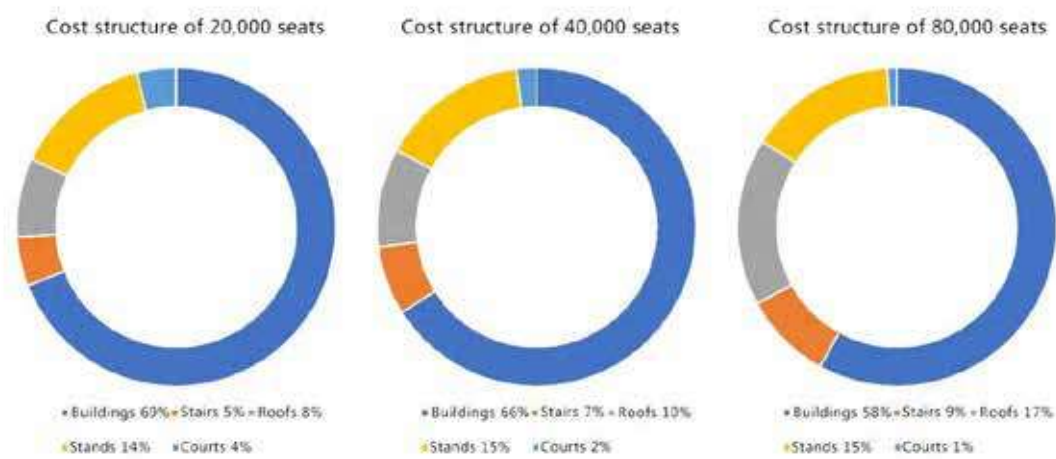


Figure 2. Cost of stadiums with different number of seats

3.3.2 Non-sports function

The county government can not set up sports, culture, media, tourism and other departments separately, instead, a comprehensive bureau is responsible for the operation and management of all those events, creating convenience for the county sports centers to organize activities. Culture, art, commerce, public welfare is highly participatory, which can balance the part of the people and time in sports and form a supplement, which is also a strategy to improve efficiency under the scale shrinkage John, L. K., Philip, E., and Richard, R., 2013). Activities such as commercial performances and exhibition, which are similar with sports in space requirement, can be designed as multifunction; outdoor sport can be combined with sports parks to add entertainment facilities such as outdoor bleachers and theatres, and leave a certain space for temporary facilities as a backup for other temporary events. The Dongshan County Culture and Sports Center will serve as a window to display Guandi Culture and

Minnan Customs after completed, also can be the space for festivals and worships. The Tengchong City Sports Center will also support for cultural activities such as Tengchong Fengma Music and Art Festival and Minority Festival. The sports centers are changing from the traditional “Arena mode” to “Complex mode”, truly becoming the carrier of residents' culture and sports life.

3.4. Continuous operations: open and flexible interfaces

3.4.1. Break up the goal into parts

41.80% of China's sports centers run by public institutions, with redundant personnel structure and weak profitability. And it is easy to leave unused after one-off built, which is not synchronized with regional development. Although the State advocates such modes of operation as "Public Construction and Private Operation" and "Entrusted Management", it is difficult for county to introduce professional operation companies, because counties always lack of geographical and economic advantages. In this case, smart shrinkage is not reflected in the increase of profits but the reduction of operating costs. Smart timing control and building in phases are particularly important. For large projects, one time planning, phased building and flexible strategy can reduce irreversible construction, and operational goals can also be adjusted in the development. The construction of Dongshan County Culture and Sports Center is divided into three phases. In the first phase, a museum and workers' cultural palace are built firstly to meet needs of large festival activities such as the county sports meeting. In the second phase, other gymnasiums will be built to complete the landmark and attract residents. In the third phased, the 20,000 m² platform and other businesses will be built by cooperate with social capital in a long term, after surrounding residential areas developed (Figure 4). Another smart shrinkage is reflected in breaking the whole operational goals into parts to improve operational efficiency and diversity. The planning of Xinyang County National Fitness Center distributes the stadium and two gymnasiums in two blocks. The first two gymnasiums will focus on public service functions such as cultural activities and daily fitness, different from the stadium focusing on large activities and events in the future (Table 1). This strategy can also distract the operational pressure of large sports centers.

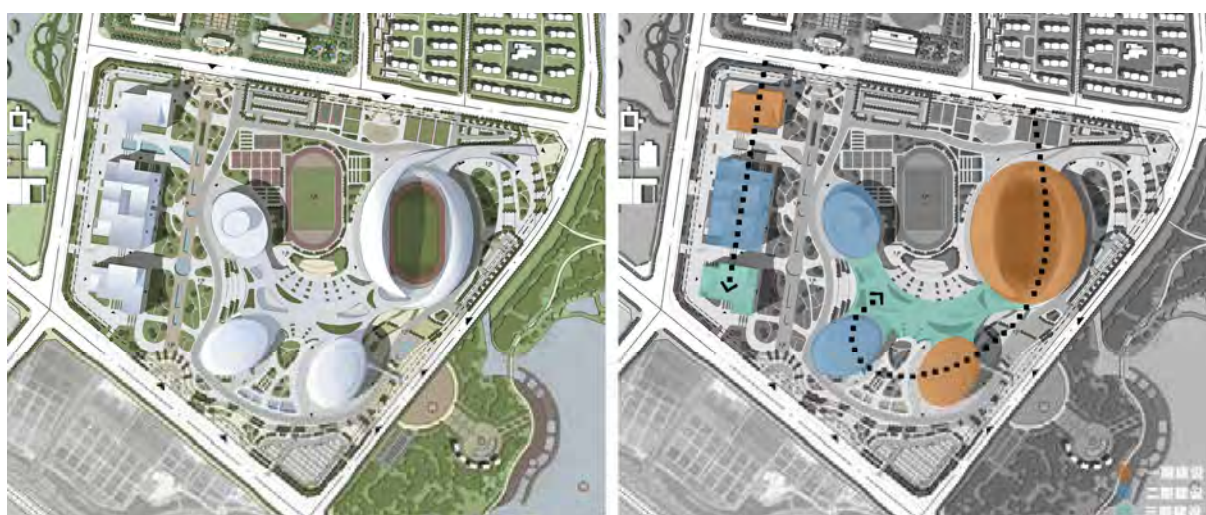


Figure 4. Phased Construction of Dongshan Culture and Sports Center

3.4.2. “Sports +” mode

Blind shrinkage will restrict scale effectiveness of sports centers and lead operation into a alley. Smart shrinkage is also reflected in the focus of performance goals, including the reduction of similar sports functions, the integrating of sports-related industries, and the merger of public services. In order to gather social forces and cross-industry resources to enhance the operation of sports centers, it is necessary to create an open interface of "sports +" for sports centers in planning. "Sports + tourism" is one of the popular models in recent years. Tengchong International Marathon, Mountain Bike Race, Super Mountain Race and other popular sports IP are successful in combination of tourism and sports industry, making the number of tourists increased from 7.5 million in 2015 to 14.14 million in 2017 by nearly 50% per year. The new sports center, which is located face to the Ice and Snow Tourist Town, complements functions and infrastructures each other. By attracting tourists and increasing price, driving great growth of operating income. Another typical model is “sports + training”. Tengchong covers an altitude of about 2000 meters, which is the boundary of the sub-plateau and plateau training base. Huayin Cultural and Sports Center will be built into the largest roller skating base in China. Including the sports center in the high popularity tourist attractions, well-known series events sites, domestic and international competitions, training bases, not only get the benefit of sports, but also the restraint of shrinkage caused by the event-driven economic warming.

4. Conclusions

For a long time, China's county sports centers have been ignored and underestimated due to lack of technical difficulties and major sports events, so they are classified as simple development activities. The meaning of introducing smart shrinkage is that it can help reducing excessive expansion of a single type, unnecessary construction and low value-added projects. By this way, the planning of county sports centers can coincide with regional development. In other words, shrinkage is not an end. It aims to improve efficiency under right scale and makes necessary adjustments on the premise of ensuring quality, fairness and sustainability.

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Deindustrialization and urban shrinkage. Achieving urban sustainability in former industrial cities in France: the case studies of Nantes and Saint-Ouen

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Abstract: Population decline in former industrial cities is an undeniable fact and preparing to respond to it is a necessity. In my research urban sustainability is defined as a process to recover from social and economic recession which are usually linked to deindustrialization. The main goal is to survey how Nantes and Saint-Ouen became resilient after the period of deindustrialization and if they have the needed capacities of urban sustainability in dealing with population decline. The research method is descriptive-analytic. The descriptive method is used in order to define urban sustainability and relate it to previous studies in shrinking cities. The analytic method is used in order to identify the reasons that led to the population decline and the correlations between sustainable urban development and demographic evolution. The performed analyses included a combination of quantitative and qualitative methods. The outcome revealed that the two cities have reached the goal of sustainable urban development as they almost doubled their population since 2000. The final conclusion is that the urban policies implemented by local authorities as long as the economic decisions taken by local enterprises can assist Nantes and Saint-Ouen inhabitants to encounter to social and economic recession resulting from deindustrialization.

Keywords: shrinking city, population decline, sustainable urban development, urban resilience

Introduction

Urban resilience like sustainable development is a multi-dimensional approach that refers to economic development, social cohesion and environmental protection. In the context of former industrial cities achieving urban resilience seeks to increase the number of city's inhabitants and at the same time develop a new balanced city model. A city is considered as sustainable and resilient when not only achieves the goals of sustainable development, but also when it takes measures against possible crisis (like significant population decline) or, when it is needed, manages crisis that have arisen. The crisis that a city can face include not only the population decline but also issues related to the organization and administration of the city like social cohesion, economic growth and environmental protection.

In this research, the cities of Nantes and Saint-Ouen have been chosen as case studies for their population decline as a consequence of the local deindustrialization. The research tries to survey how the urban resilience policies implemented by local authorities in the two cities contributed to significant population increase especially since 2000. From the municipal archives of the two cities we can see that the closure of local industries in the late 1980's led to a population decline but since the

beginning of projects of urban renewal at neighborhood level in the early 2000's both of the two cities doubled their population. The main goal of this research is to survey how Nantes and Saint-Ouen become resilient after the period of deindustrialization and if they have the needed capacities in dealing with population decline. The two main questions raised in the research are:

- Are the two study areas considered resilient in terms of the criteria adopted in the present study?
- Are the social, economic and environmental capacities of the two study areas in accordance with the needs of the local communities in order to achieve population increase?

Methodology

The method adopted for the research was the descriptive-analytic, in which the descriptive method is used in order to link the current research with previous studies and related literature by searching for common definitions of urban resilience and shrinking city. The correlation between urban resilience and demographic evolution was preformed through an analytic method.

The analysis of the two case studies was performed by using a combination of quantitative and qualitative techniques. The quantitative included the analysis of demographic and economic data taken from the two municipalities and the French national institute for statistics and economic studies. The qualitative included the analysis of interviews with local authorities, inhabitants and the teams of architects and urban planners that participated in the projects of urban renewal of the two case studies. Moreover, criteria have been proposed in order to measure the resilience of Nantes and Saint-Ouen which will be discussed in detail later.

Definitions and concepts

Environmental degradation, social inequalities, economic recession and population decline are among the risks that threaten shrinking cities at international level, resulting in the transformation of their spatial and social identity. The close interactions of these factors affect the organization of cities and for many researchers a way to manage their possible impact is through a systemic approach (De Falco, 2018). In the context of the study we define *shrinking city* as a city which faces population decline due to changing contexts and trends in economy, politics and spatial development that have an impact on urban development at local level (Haase *et al*, 2014).

Several definitions of *urban resilience* are available showing that the notion is multi-dimensional. There are definitions derived from physical sciences (Carpenter *et al*, 2001) while other researchers correlate urban resilience and sustainable development focusing on natural, economic and environmental characteristics of urban systems for effective futures stability (Thornbush *et al*, 2013). In the context of the current study we will adopt the definition of Lu and Stead who define urban resilience as the ability of the city to absorb abnormalities while maintaining function and structure (Lu, Stead, 2013) as the cities we analyze managed to recover population decline and at the same time they preserved their industrial identity.

In the current study we will focus on three dimensions of urban resilience (economic, environmental and social) and also to the correlations between economic and environmental resilience and social resilience and citizen engagement. The question of integrating urban resilience in the procedures of

urban planning is nowadays vital, especially in shrinking cities, even though there are still difficulties in implementing its three dimensions (economic growth, social cohesion, environmental protection) at city level. In the report of World Bank entitled *Ecocities2: Ecological cities as economic cities* we can see the difficulties in integrating the three dimensions identified of urban resilience in the studies of international organizations, but also the possible correlation between economic growth and environmental protection in the procedures of sustainable urban planning (World Bank, 2010).

Economic and environmental dimensions of urban resilience

For many researchers like the French, Lascoumes and Tourraine, the possible correlation between the economic and environmental dimensions of urban resilience is already addressed in French public urban policies (Lascoumes, 2001 and Tourraine, 1999). At international level we can see in many reports published after the Conference of the Parties organized by United Nations in 1992 a possible correlation between the two dimensions of urban resilience in the context of sustainable development (United Nations, 1992). In all these reports we can identify an important point for the current research in French industrial cities which is the impact that have the economic activities in the natural environment and in human living conditions. In the context of French industrial cities we should mention the researches of Jacques Theys who mentions that in order to achieve urban resilience in former industrial cities we must balance the economic growth with the environmental and social issues (Theys, 2000).

The element that interests us from all those theoretical debates in the current research for achieving urban resilience in French industrial cities is how we can implement at city level economic policies, inscribed in the context of dynamic resilience, that respect at the same time the environment and allow it to be reconstructed as in pre-industrial era. We will later focus on the analysis of the economic and environmental dimensions of the urban policies implemented in our two case studies, Nantes and Saint-Ouen, and how these policies contributed to achieving urban resilience at city level.

Social dimension of urban resilience

The social dimension of urban resilience has been examined by researchers across a multitude of academic disciplines as it is a component of community resilience. In the context of the current study we will analyze the notion in a broader context which is the social cohesion in order to identify the correlations between citizen engagement and social resilience. The discussion about engaging citizens in the procedures of urban planning dates back in the 1960's and has its roots in social movements like May 1968 in France (Lefevre, 1968). In the context of urban resilience it is interesting to study how the collaboration between urban planners and citizens in the processes of neighborhood planning contributes to achieving better living conditions for all citizens as a response to social inequalities identified in most cities worldwide and which potentially could lead to social resilience.

At international level the interest to engage citizens in the processes of neighborhood planning starts in 1990 and is linked to preoccupations about environmental protection and urban resilience (Guerard, 2004). We can see in quantitative researches of the era in French industrial cities that there was a significant interest by citizens to participate in community planning as a response to global preoccupations about urban resilience (Rui, 2004). For many French researchers like Hoffman-Martinot and Sorbets the direct participation of groups of citizens in the processes of decision making

at neighborhood level helps to integrate in communities marginalized groups (for example immigrants) and thus achieve social cohesion (Hoffman-Martinot and Sorbets, 2003).

In the context of the research about social resilience the elements that interest us from all those theoretical discussions are the tools and methods used by urban planners and local authorities in order to engage citizens in the processes of neighborhood planning. Another significant point to mention in the analysis of social resilience is the role of professional associations that accompany citizens in the design processes while encouraging marginalized groups like immigrants to actively be involved in these processes.

We will later focus on the social dimension of the urban policies implemented in our two case studies, Nantes and Saint-Ouen, and how these policies contributed to social cohesion and urban resilience at city level.

Process analysis

The analysis and the measurement of the urban resilience of Nantes and Saint-Ouen follow the steps mentioned in Figure 1. In the first step of the study we identified several indicators through our empirical research in the two cities (personal observations, data from interviews) that could potentially lead to urban resilience if appropriate urban policies are implemented at city level. In the second step of the current study we defined several criteria in order to analyze and evaluate the three dimensions of urban resilience that we previously mentioned based on the indicators identified through the empirical research. In the third step, according to these criteria we evaluated whether the two cities accomplish them or not from a scale rated 0% (none urban resilience policy implemented at city level) to 100% (resilient city). In the context of the study we assume that each criteria has the same level of importance in measuring the urban resilience of Nantes and Saint-Ouen.

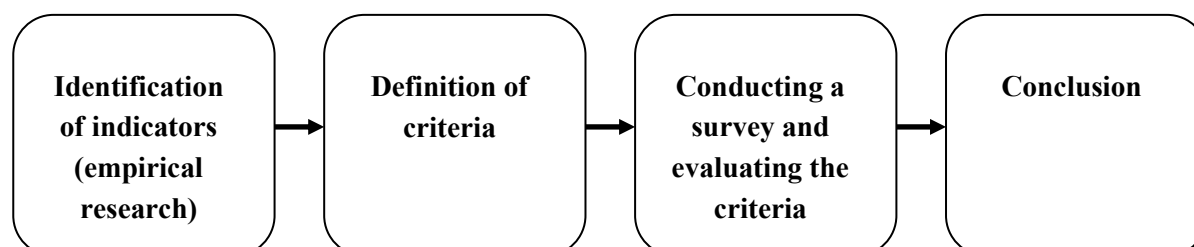


Figure 1. The steps of process analysis and evaluation of urban resilience in Nantes and Saint-Ouen

Indicators and criteria of measurement of urban resilience

The multi-dimensional notion of urban resilience (economic, environmental, social) made essential to consider all these dimensions and citizen engagement, as social capital is associated with social resilience, in order to define the criteria of measurement of urban resilience in Nantes and Saint-Ouen. From the empirical research in the two cities we identified several indicators for measuring urban resilience, focusing on the study of urban projects at different levels (macro and micro). At macro level, urban renewal projects in former industrial sites due to their strategic position (high-density areas usually at the core of cities) allow urban planners to propose new economic activities and land uses in order to reconvert these sites and thus lead to economic resilience through their reconstruction.

At micro level, public spaces (parks, squares, play areas, libraries, cultural centers) are the places where people of different ethnic groups meet and create social relations.

The same indicators are used in other models of measuring urban resilience like Sustainable Livelihood Framework (Department for International Development, 2000) and City Resilience Framework (Arup, 2015). The combination of these models allows us to measure urban resilience in cities facing population decline. In Sustainable Livelihood Framework, *resilience* is defined as the recovery of an urban system from stresses and shocks while maintaining its capabilities and assets both now and in the future. In City Resilience Framework, *resilience* is defined as the capacity of cities to function so that the people living and working in them survive no matter what stresses they encounter. In our case studies of Nantes and Saint-Ouen the definition of urban resilience provided in City Resilience Framework becomes conceptually relevant as sudden shocks, like the closure of industrial units, threaten the collapse of the social tissue. According to these models the identified indicators are organized in three categories which consist the defined criteria for measuring the urban resilience in Nantes and Saint-Ouen. They are briefly presented in Table 1.

The *economic dimension* of resilience refers on one hand to the ability of a system to limit the magnitude of immediate losses and on the other hand to the ability to reconstruct and recover. In this context we identified for our study four indicators.

- *Unemployment rate.* This indicator implies the correlation of professional activity with economic prosperity of a community. In the context of our study the high unemployment rate that the two cities had in the early 1990's led to their population decline. For the qualification of the two case studies as economic resilient cities, we compare their unemployment rate with the French national one in order to underline the good policies implemented at local level.
- *Research and cultural centers.* Combination of expert and common knowledge allows the exchange of data and information that could potentially lead to the solution of collective problems. Both of these indicators in the French context contribute to the creation of new working positions (researchers, art curators), especially in medium size cities and lead to the reduction of unemployment rate.
- *Industrial units.* The case studies of the current study are former industrial cities and it is reasonable to examine if industrial activity continues after their deindustrialization era. The industrial activity is directly linked with economic prosperity of these cities as most of their inhabitants work on this field.
- *Commercial centers.* In the French context this indicator usually refers to a greater scale of that of a city, (intercommunalité) which includes a network of cities whose inhabitants visit commercial centers in a weekly basis for leisure or shopping. This indicator could also be considered as a parameter of social resilience but in the current study we will focus on its ability to bring economic prosperity to a city.

The *environmental dimension* of resilience refers to the capacity of a system to absorb disturbance and reorganize while undergoing change. In this context we identified for our study four indicators.

- *Green spaces in the city.* In the context of our study we are interested to focus on the possible correlation between economic and environmental resilience as in France the presence of green spaces in the city is a parameter to attract people with high incomes.
- *Rehabilitation projects.* This indicator refers to the ability of reversibility of a city in order to be prepared for the needs of its inhabitants in the present and in the future. Spatial reversibility contributes to the reduction of the ecological footprint of a city as the need to construct new buildings is covered by the rehabilitation of old buildings.
- *Sustainable urban projects.* Sustainability in the new urban projects of a city is a complementary parameter to rehabilitation projects as both contribute to the reduction of the ecological footprint of a city. It mainly refers to the use of eco-friendly materials to the new constructions but also to the form of the buildings.
- *Public urban transport.* This indicator refers on one hand to the accessibility of urban space by all users, especially the weak ones (elderly, children, user with mobility impairments) and on the other hand to the quality of cities' environment through the reduction of air pollution.

The *social dimension* of resilience refers to the capacity of people and communities to deal with external stresses and shocks focusing on community preparedness as a response to internal or external risks. In this context we identified for our study three indicators.

- *Urban projects with citizen participation.* This indicator refers to the ability of a city to generate social capital based on its inhabitants' needs. Social interactions especially on issues as urban design projects facilitate information sharing and collaboration.
- *Social houses.* A typical parameter of measuring social resilience in France is the number of social houses of a city. According to French legislation the percentage of social houses of a city has to be at least 20% of the total amount of houses that exist in the city (Loi relative à la solidarité et au renouvellement urbains, 2000, article 55). For the qualification of the two case studies as social resilient cities, we compare their percentage with the minimum percentage demanded by French legislation.
- *Racial and ethnic diversity.* The presence in a city of people with different racial or ethnic origins is a means of social inclusion as it ensures that each individual will have access to the goods produced in a city. In order to qualify the two case studies of the current research as social resilient cities we compare their percentage of foreign-born inhabitants with the French national percentage. We should mention that a law from 1872 (Bleich, 2001) prohibits the French Republic from conducting census by making any officialized distinction between its citizens in terms of race or religious beliefs. In the context of our study we used the national percentage of foreign-born population for France published in the database of the Organization for Economic Co-operation and Development (Organization for Economic Co-operation and Development (OECD),2018).

Criteria	Indicators
Economic dimension	Unemployment rate (\leq French national unemployment rate) Research and cultural centers Industrial units Commercial centers
Environmental dimension	Green spaces in the city Rehabilitation projects Sustainable urban projects Public urban transport (bus, tramway, subway)
Social dimension	Urban projects with citizen participation Social houses ($\geq 20\%$ demanded by French legislation in every town) Racial and ethnic diversity ($\geq 12\%$: estimated percentage by OECD for foreign-born population in France)

Table 1. Criteria and indicators defined in the current study for measuring the different dimensions of urban resilience

Case studies

Nantes is located in the west of France with an area of about 6500 hectares. Its population in 2017 was about 300000 inhabitants. Nantes, which is known for its projects of urban renewal as Ile-de-Nantes as we can see in Figures 2 and 3, was chosen as a case study due to the significant population decline that faced after the closure of the local industries in the late 1980's.

The second case study Saint-Ouen is a city in the Seine-Saint-Denis department. It is located in the northern suburbs of Paris with an area of about 430 hectares. Its population in 2017 was about 90000 inhabitants. Saint-Ouen, which is known for its industrial activities since 19th century, faced as Nantes a significant population decline in the late 1980's due to the departure of local industries in the

periphery of the city. Nowadays, the city is known for its projects of urban renewal as the Docks-de-Seine as we can see in Figures 4 and 5 that started since 2005.

The two case studies chosen show a different vision of the issue of urban resilience policies as they were not implemented at the same period. In the current research we won't compare the urban resilience policies of the two cities but instead we will present them in a chronological sequence, starting from Nantes where urban resilience policies were implemented first, in order to understand the evolution of the notion of urban resilience in French industrial cities.



Figures 2 and 3. Case study I: Nantes



Figures 4 and 5. Case study II: Saint-Ouen

Nantes dealing with population decline

The history of Nantes is linked with its industrial past. In the 1950's the two most important industrial sectors were the naval constructions and the agribusiness. In the 1960's the industrial activities expanded and many enterprises moved in the periphery of the city. The end of the industrial era of Nantes is marked by the closure of shipyards in Ile-de-Nantes in 1987, which had as a result a significant decline in its population in the early 1990's as we can see in Figure 6 (Institut national de la statistique et des études économiques (INSEE), 2018a). According to the definition of shrinking city that we gave previously Nantes was a shrinking city in the 1990's as the changes in its economic model and its spatial development had an impact on its demographic evolution.

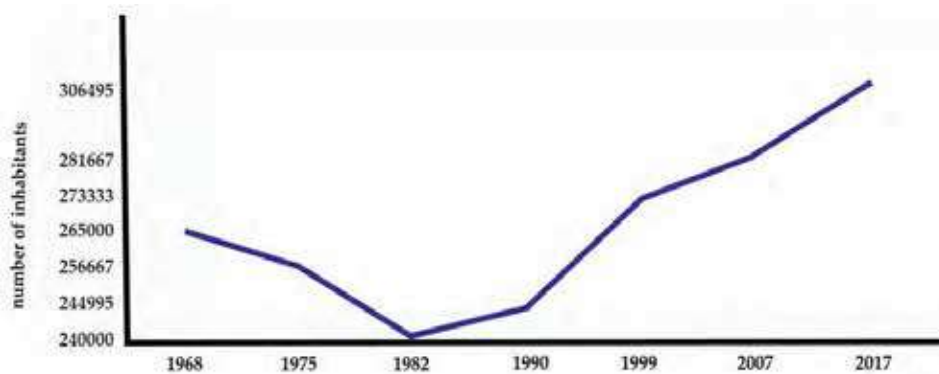


Figure 6. Demographic evolution in Nantes from 1968 to 2017

In this context the municipality of Nantes decided in the early 1990's to integrate former industrial sites in its projects of urban renewal as a policy to control population decline (Comité d'information et de Liaison pour l'Archéologie, l'Etude et la Mise en Valeur du Patrimoine Industriel (CILAC), 2006). The most famous of these projects is the project of urban renewal of the former industrial site Ile-de-Nantes. The new economic model proposed for the site of Ile-de-Nantes reflects the local authorities' vision of urban resilience as it is based in the reconstruction of the economic tissue while at the same time the environmental dimension of urban resilience is achieved through the recovery of the natural elements. We can identify in the strategic plan of the city indicators, that we use in our study to measure the urban resilience of Nantes, like the research institutes and the cultural institutions (Ville de Nantes, 2009), most of which are located in former industrial buildings (indicator: rehabilitation projects) as a means to reduce the ecological footprint of the city due to the construction of new buildings. At the same time the local authorities together with the civil society and the local business owners are interested in achieving environmental resilience through the increase of city's green spaces and the use of eco-friendly construction materials in new buildings (indicator: sustainable urban projects) (Société d'Aménagement de la Métropole Ouest-Atlantique (SAMOA), 2008).

We can also identify indicators in order to measure the social dimension of the urban resilience of Nantes mainly through participatory design processes of public spaces. In this context the municipality of Nantes accompanied citizens to create associations in every neighborhood which would collaborate with the teams of urban planners and architects (Agence d'urbanisme de la région nantaise (AURAN), 2012). Another indicator of social resilience identified both in the strategic plan of the city of Nantes (Ville de Nantes, 2009) and of the region of Nantes/Saint-Nazaire (Nantes/Saint-Nazaire, 2016) was the obligatory construction in every neighborhood of social houses as a means to strengthen social cohesion.

Measuring urban resilience in Nantes

According to the criteria and indicators that we defined for the current study, we used the data that we collected from the archives of the municipality and from the empirical research in urban renewal projects and projects of public spaces in order to measure the urban resilience of Nantes as we can see in Table 2. From *economic* point of view the lower unemployment rate compared to French national one as long as the presence of research, cultural and commercial centers inside the city limits contribute to the economic prosperity of the city through the creation of new working positions. From *environmental* point of view the increase of city's green spaces through the construction of parks, the

rehabilitation of former industrial buildings combined with the construction of new buildings based on the principles of sustainable architecture as long as the presence of a high quality network of public urban transport contribute to the reduction of city's ecological footprint. From *social* point of view, even though the percentage of foreign-born inhabitants is below the limit that we defined in the current study, citizen participation in urban projects with the support of the local authorities as long as the percentage of social houses which is higher compared to the one defined by French legislation contribute to social cohesion.

Economic	Unemployment rate	√ 9,4(French national:10,2)
	Research and cultural centers	√ Hangar 13, Cité des chantiers
	Industrial units	× Exist only in the periphery of the city
	Commercial centers	√ Centre commercial Beaulieu
Environmental	Green spaces in the city	√ Park of the Nefs de la Loire
	Rehabilitation projects	√ Foyer des jeunes travailleurs
	Sustainable urban projects	√ Tripode sector
	Public urban transport (bus, tramway, subway)	√ Tramway:3 lines, buses, Navibus (river shuttle): 2 lines
Social	Urban projects with citizen participation	√ Ma ville demain, Ilotopia
	Social houses	√ 25,09% of the city's houses
	Racial and ethnic diversity	×8% of city's inhabitants have a foreign nationality

Table 2. Nantes: Check list of indicators for measuring the different dimensions of urban resilience

Saint-Ouen dealing with population decline

Saint-Ouen is directly linked with the industrial activities as there was constructed in 1856 a railway station in order to transport goods in Paris. At the beginning of the nineteenth century the two most important industrial sectors were the energy production and the electricity. The end of the industrial era of Saint-Ouen is dated at the late 1980's, even though certain industrial activities as the energy production and the waste treatment still exist, which had as a result a significant decline in its population as we can see in Figure 7 (INSEE, 2018b). Saint-Ouen was a shrinking city at the early 1990's due to the changes in its economic model and its spatial development which had an impact on its demographic evolution.

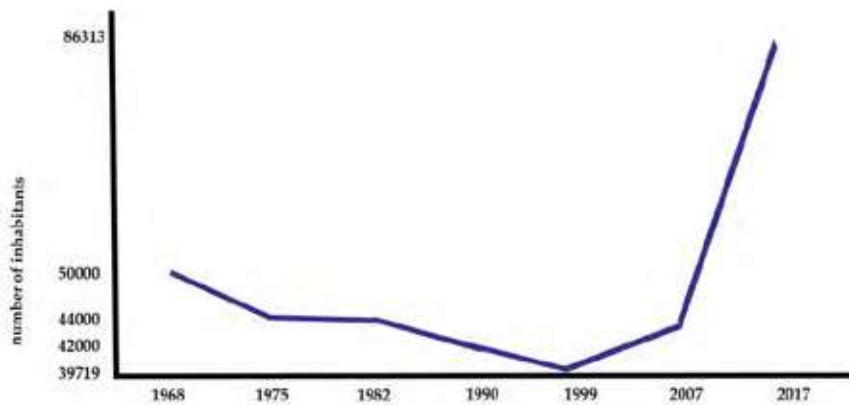


Figure 7. Demographic evolution in Saint-Ouen from 1968 to 2017

The departure of the factories of Total in 2003 and Alstom in 2004 in the periphery of the city left inactive two significant industrial sites near the river Seine and led the municipality of Saint-Ouen to the decision to integrate former industrial sites in its projects of urban renewal as a policy to control population decline (D'Orso, 2014). The most famous of these projects is the project of urban renewal of the former industrial site the Docks-de-Seine. The new economic model proposed for the site of Docks-de-Seine is based on the local authorities' vision to create a resilient and sustainable city both in economic and environmental terms as it reconstructs the economic tissue and contributes to the recovery of the natural elements. The project is also part of the strategic plan of Grand Paris, a project of urban renewal at greater municipality level that includes the city of Paris and its suburbs. We can identify in the strategic plan of the city indicators, that we use in our study to measure the urban resilience of Saint-Ouen, as the industrial units combined with commercial and cultural buildings (Ville de Saint-Ouen, 2008). Most of these activities are located in former industrial buildings (indicator: rehabilitation projects) or in new buildings that follow the guidelines of sustainable architecture (indicator: sustainable urban projects) as a means to reduce the ecological footprint of the city. The economic resilience is combined with the interest of the local authorities and the civil society in achieving environmental resilience through the increase of city's green spaces and the use of green roofs and walls in new buildings (Agence Parisienne d'Urbanisme (APUR), 2006).

We can identify indicators to measure the social dimension of urban resilience of Saint-Ouen mainly through participatory design processes of public spaces. In this context the municipality of Saint-Ouen followed the example of other municipalities in France and accompanied citizens to create associations which would collaborate with the teams of urban planners and architects (Ville de Saint-Ouen, 2016) as they could potentially lead to social resilience due to their capacity to deal with social discriminations. We can identify in this case study another indicator of social resilience both in the strategic plan of the city of Saint-Ouen (Ville de Saint-Ouen, 2008) and of Grand Paris (Plaine Commune, 2014) which is the obligatory construction of social houses in every neighborhood as a means to strengthen social cohesion.

Measuring urban resilience in Saint-Ouen

According to the data that we collected from the archives of the municipality and from the empirical research in urban renewal projects and projects of public spaces we reached the following results summarized in Table 3. From *economic* point of view, even though the unemployment rate is higher

compared to French national one, the presence of industrial and commercial centers inside the city limits as long as the future construction of research and cultural centers (campus hospitalo-universitaire Grand Paris Nord) contribute to the economic prosperity of the city through its productivity and attractiveness. From *environmental* point of view the increase of city's green spaces through the construction of large scale parks, the rehabilitation of former industrial buildings combined with sustainable urban design policies at neighborhood level as long as the accessibility of the city by public urban transport contribute to the improvement of environment quality. From *social* point of view, the higher percentage of foreign-born inhabitants compared to the limit that we defined in the current study, citizen participation in urban projects with the collaboration of local authorities and teams of architects and urban planners as long as the percentage of social houses which is higher compared to the one defined by French legislation contribute to social inclusion and knowledge sharing.

Economic	Unemployment rate	× 15,4(French national:10,2)
	Research and cultural centers	× Haven't been constructed yet
	Industrial units	√ Big energy pole
	Commercial centers	√ Le Cours des Docks
Environmental	Green spaces in the city	√ Park of the Docks
	Rehabilitation projects	√ Halle Alstom
	Sustainable urban projects	√ Dhalenne sector
	Public urban transport (bus, tramway, subway)	√ Metro lines 13,14, RER C, buses
Social	Urban projects with citizen participation	√ Community gardens
	Social houses	√ 25% of the city's houses
	Racial and ethnic diversity	√ 25,5% of city's inhabitants have a foreign nationality

Table 3. Saint-Ouen: Check list of indicators for measuring the different dimensions of urban resilience

Findings

The findings that emerged from the analysis of the two case studies are presented in Table 4. The last row reports the percentages of each case study related to the indicators that we used in the current study to measure their urban resilience. According to the criteria of the study both of the case studies cannot be evaluated as resilient cities as their percentage is lower to 100% (81,81% both for Nantes and Saint-Ouen) that we considered to be the indication for an urban resilient city. In the case study of

Nantes, with the exception of the social dimension of urban resilience, we can note good performances in the other two dimensions, which show the correlation between economic development and environmental protection. In the case study of Saint-Ouen, with the exception of the economic dimension (the department of Seine-Saint-Denis where Saint-Ouen is located is among the poorest in France), we can note good performances in the other two dimensions especially in social as the goal of the local municipality is to achieve social cohesion.

		Nantes	Saint-Ouen
Economic	Unemployment rate	√	×
	Research and cultural centers	√	×
	Industrial units	×	√
	Commercial centers	√	√
Environmental	Green spaces in the city	√	√
	Rehabilitation projects	√	√
	Sustainable urban projects	√	√
	Public urban transport (bus, tramway, subway)	√	√
Social	Urban projects with citizen participation	√	√
	Social houses	√	√
	Racial and ethnic diversity	×	√
%	81,81%		81,81%

Table 4. Summary of check list analysis for measuring urban resilience of both case studies

The analysis of the two case studies brings out some remarks about the correlation between the social, economic and environmental capacities of the two study areas for achieving population increase. A general remark concerns the role of local components (citizens associations, municipalities, enterprises, individuals) and their capacity to collaborate in order to create resilient cities. In the context of former industrial cities the activation of local social capital, as we can see in Tables 5 and 6, contributes to develop synergies (private-public sector) leading to economic prosperity. Economic prosperity and social inclusion are the key issues that we obtained from the empirical research in the two case studies as indicators to attract new inhabitants to the cities. It is important to mention that in Nantes citizens are engaged in all phases of the planning processes from consultation to management of urban renewal and public spaces projects, showing that urban resilience has its roots in the development of new practices and tools. In Saint-Ouen the local municipality insisted in the creation

of a citizens' association in order to become the inhabitants responsible for the development of their city.

1. Inhabitants of Nantes
2. Citizens' associations
3. Groups of architects and urban planners (Alexandre Chemetoff, Marcel Smets, Uaps, Jacqueline Osty, Claire Schorter)
4. Group of project management (SAMOA)
5. Local authorities (Ville de Nantes, Nantes Métropole)

Table 5. Actors implicated in the participatory design processes in Nantes

1. Inhabitants of Saint-Ouen
2. Citizens' association <i>Mon Voisin des Docks</i>
3. Group of architects and urban planners (Anne Rieth de Jonghe, Alain Pasty et Francis Vary)
4. Group of project management (SEQUANO Aménagement)
5. Local authorities (Ville de Saint-Ouen, Plaine Commune)

Table 6. Actors implicated in the participatory design processes in Saint-Ouen

The economic dimension of urban resilience

As we can see in Table 7 the economic feature is considered to be by the two local communities as a key criteria in order to achieve population increase. The conversion from abandoned area to economic prosperous city shows the ability of local community to recover from a serious crisis and to limit the magnitude of immediate losses (in our case studies the closure of industrial units). In Nantes, former industrial sites like Ile-de-Nantes underused for many years were transformed in spaces where research, cultural and commercial centers are now located contributing to the reduction of the unemployment rate. In Saint-Ouen the transformation of former industrial sites like the Docks-de-Seine with an emphasis on the city's history of industrial activities contributed to a progressive

reduction of the unemployment rate. It is important to mention that the increase in cities' population had an impact on their social identity as the new inhabitants mostly work in research institutes or are senior executives and are not industrial workers (INSEE, 2014a and 2014b). In the context of the current study we show the transformation of the cities' social identity by using Tables 8 and 9 published by the French national institute for statistics and economic studies every five years for the professional activities in French cities.

Nantes			Saint-Ouen
Economic	Unemployment rate	√	×
	Research and cultural centers	√	×
	Industrial units	×	√
	Commercial centers	√	√
%	75%		50%

Table 7. Check list analysis for measuring economic resilience in both case studies

Categories	2009	2014
Total	165840	178471
Craftsmen, tradesmen, businessmen	6778	8208
Senior managers and professional occupations	39726	46379
Intermediate professions	49798	54931
Employees	48162	47849
Industrial workers	21376	20457

Table 8. Number of working positions in 5 categories in Nantes (data 2009 and 2014)

Categories	2009	2014
Total	34466	36060
Craftsmen, tradesmen, businessmen	1912	1969
Senior managers and professional occupations	11353	13489
Intermediate professions	8829	8623
Employees	6801	6807
Industrial workers	5571	5115

Table 9. Number of working positions in 5 categories in Saint-Ouen (data 2009 and 2014)

The environmental dimension of urban resilience

Urban renewal and public space projects have a positive effect on urban environment and on quality of the surrounding landscape as we can see in Table 10. In both case studies the cities' relation with the rivers that surround them was improved through the construction of large scale parks alongside Loire and Seine. Another remark is that the quality of local landscape was enhanced through the urban mobility policies and the use of eco-friendly materials in new buildings.

		Nantes	Saint-Ouen
Environmental	Green spaces in the city	√	√
	Rehabilitation projects	√	√
	Sustainable urban projects	√	√
	Public urban transport (bus, tramway, subway)	√	√
%	100%		100%

Table 10. Check list analysis for measuring environmental resilience in both case studies

The social dimension of urban resilience

The exchanges of information and knowledge between experts and citizens as long as the development of new skills show the ability of local communities to find solutions for collective problems. At the same time social and ethnic diversity can adapt the space to the different needs of its users. As seen in Table 11 in both case studies we observe collaborations between the teams of urban practitioners and citizens' associations as long as a significant percentage of social houses that reflect the local authorities vision to create inclusive and resilient cities. It is important to comment that in the case study of Nantes, even though the percentage of racial and ethnic diversity is lower to the limit of the current study, the number of foreign-born inhabitants which was stable for almost fifteen years (1990 to 2005, number of foreign-born inhabitants: 6%) has increased due to the economic prosperity of the city.

Nantes			Saint-Ouen
Social	Urban projects with citizen participation	√	√
	Social houses	√	√
	Racial and ethnic diversity	×	√
%	66,66%		100%

Table 11. Check list analysis for measuring social resilience in both case studies

Discussion and conclusions

The research shows that urban resilience policies can achieve population increase in shrinking cities. Through the mobilization of local actors, urban resilience policies become solutions to adapt the urban space to different needs and crisis situations. They can also act as opportunities to experiment new urban planning techniques and to share knowledge by the meeting of different cultures and social classes. The evolution and the transformations of French industrial cities help us to understand the different aspects of cities' interface, where each one of the elements that consist their urban tissue interacts with the others in a direct or indirect way. The new participatory design processes reflect a different vision of urban resilience as the citizens become true social actors who decide about their living and working conditions and don't depend on political decisions usually taken at national level and not at the level of the city. As a final conclusion of the study we should mention that the transformation of shrinking cities in France is on the one hand the result of urban planning policies designed at local level by the local authorities and the inhabitants and on the other hand of programs of urban resilience planned at national or international level (for example the international program *100 resilient cities*). For these reasons the research will have to investigate the interactions between the policies adopted at national and international level and how to transfer good urban resilience policies, especially social capital, from one country to another.

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IMAGE SOURCES

Figure 1: Author

Figures 2 and 3: La Cité des chantiers, the Park of the Nefs de la Loire (www.iledenantes.com)

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Discussion on the factors of sustainable urban growth in shrinking region: Case study of Eucalyptus Hills in the city of Sakura developed by the private developer Yamaman

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Abstract: There are many previous studies discussing the issues and solutions of shrinking cities, but only a few studies have discussed the sustainable development of shrinking cities. This study focuses on the case of the Eucalyptus Hills development by Yamaman, its private developer, known as a best practice sustainable development of new towns in the city of Sakura in the Tokyo suburb in Japan. The study reviews the recognised aspects and features of the Eucalyptus Hills development as sustainable development by Japanese researchers and aims to abstract the implications for sustainable developments in shrinking cities. As the results, three features, namely, the existence of a mono-developer (town manager), a certain size of population to support living services business and a well-balanced demographic composition, can be considered as the conditions required for sustainable development in shrinking cities. These research results may be applied for dormitory towns in the suburbs of megacities, with sufficient job opportunities for such towns.

Keywords: Shrinking cities, Sustainability, Eucalyptus Hills, Yamaman

I. Introduction

1. Background

Not only in Germany, France and the United States, but also in Japan, there have been many studies on shrinking cities (Adhya, 2017; Baur et al., 2006; Fujii, 2013; Hollander, 2018; Oswalt, 2005; Pallagst et al., 2014; Richardson and CHang Woon, 2014; Ryan, 2012; Yahagi, 2014). There are various patterns of shrinkage in the cities, and one study categorised shrinking cities as having three types: “continuous”, “episodic”, and “temporary”, from the demographic change perspective (Wolff, 2018; Wolff and Wiechmann, 2017).

Generally, population decline is a premise in the discussion of shrinking cities. Most of the research interest is not on adaptation and mitigation of population decline, but on reviving or regenerating urban areas. On the other hand, there is much discussion on sustainable urban developments, including on sustainable urban resource usage and reducing environmental burdens (Cohen, 2017; Flint and Raco, 2012; Moore, 2007). It is very curious that there is such limited previous research discussing the sustainable development of shrinking cities, apart from discussion from a space planning perspective (Ganser and Piro, 2012) and sustainable urban space planning methodology for both urban growth and shrinkage from a spatial planning perspective (Wang and Fukuda, 2019).

What is sustainable urban development specifically? Is it the situation in which urban space with a certain density of urban activity can be sustained in the future? Can these cities be called “shrinking cities”?

The general definition of sustainability or sustainable development is to maintain or to improve the per capita supply or quality of elements in society, the economy and the environment, as triple bottom lines (Elkington, 1998; Hediger, 2000; Neumayer, 2003; Pearce and Atkinson, 1993; World Commission on Environment and Development, United Nations, 1987). In the context of shrinking cities, the situation in which the living quality per capita from social, economic and environmental perspectives is maintained and improved by the degeneracy of the city function and controlling the occurrence of nuisance through urban decline can be described as “sustainable”. However, these general definitions do not provide sufficient knowledge for the appraisal of the validity or special planning of specific development actions for sustainable development in shrinking cities.

In Japan, we have the best practice which most experts agree can lead to successful town development in shrinking cities. This is the Eucalyptus Hills development by Yamaman¹. Normally, typical Japanese dormitory town developments are called “withdrawal type developments”, in which the developer will sell out all the plots in the short term, but the Eucalyptus Hills development is called a “growth management type development”, where the developer will continue to sell plots for a long time, such as over more than 30/40 years (Yamaguchi, 2016). The Eucalyptus Hills case is very well-known practice and many researchers, including the senior director of Yamaman, have already introduced its approach from various aspects (Goda, 2011; Hayashi, 2014, 2013; Iwashina, 2012; Katagiri, 2009; Koutani, 2014; Yamaguchi, 2016). These discussions do not necessarily follow the general definition of sustainability, but their results may have elements of sustainable development in shrinking cities.

2. Aim

This study reviews the case of the Eucalyptus Hills development by Yamaman and the elements that are recognized as success factors by other researchers. Also, this study determines the features of the Eucalyptus Hills development and abstracts the general implications for sustainable development in shrinking cities.

¹ <https://www.yamaman.co.jp/>

II. Methodology

1. Research framework

In this study, 5 axes – demographic change, social aspects, economic aspects, environmental aspects and time frame – are set as a framework to analyze the development activities carried out by Yamaman.

2. Methods

1) Literature study

The literature survey was conducted in NDL-OPAC² and CINII³ using the keyword “Eucalyptus Hills”. Also, the keywords “Eucalyptus Hills” and “sustainability” are used for Google and Google Scholar searches to collect presentations, blogs and published reports.

2) Desktop study

Mainly, the Yamaman corporate website⁴ is checked for the desktop study. Also, information on the population to be supported by living support services are collected as supplementary information.

3) GIS data analysis

GIS data from the National Land Numerical Information download service⁵ and Statistics Bureau, Ministry of Internal Affairs and Communications⁶ are used for spatial analysis.

4) Statistics

The national population census, population statistics for the city of Sakura, and corporate financial data of Yamaman are used as statistics.

² <https://ndlonline.ndl.go.jp/>

³ <https://ci.nii.ac.jp/>

⁴ <https://www.yamaman.co.jp/>

⁵ http://nlftp.mlit.go.jp/ksj-e/gml/gml_datalist.html

⁶ <https://www.e-stat.go.jp/gis/statmap-search?type=2>

III. Results

1. Case study area and company

1) City of Sakura

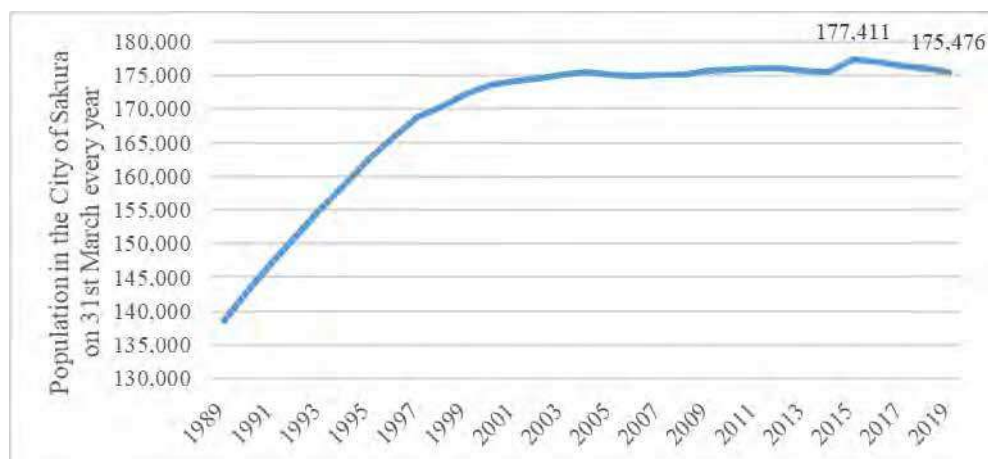
Eucalyptus Hills is located in the city of Sakura, which is in the Kanto region and 40 km from Tokyo Central Station. It is located between Tokyo and Narita airport, and the highway, Japan Railway (JR) and Keisei Electric Railway line between Tokyo and Narita pass through the city. In particular, the Keisei line has a station at Eucalyptus Hills although only local trains call at the station. Therefore, Eucalyptus Hills is one of the dormitory towns for Tokyo Metropolitan Area.



Source: National Land Numerical Information Administrative Zones Data and OpenStreetMap

Figure 1 Location of Eucalyptus Hills in the city of Sakura in Japan

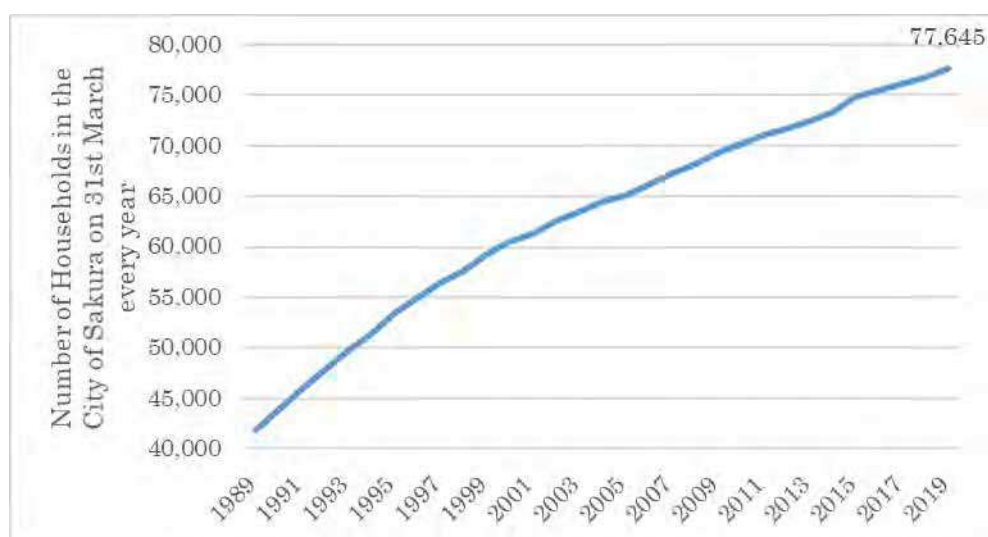
In the city of Sakura, the population was growing until 2000, but it has become stable since 2000. The population in the city peaked at 177,411 in 2015 and is 175,476 as of 31st March, 2019, which means a 1.1 % population loss in four years (Figure 2).



Source : The City of Sakura

Figure 2 Population trend in the city of Sakura from 1989 to 2019

In contrast to the population, the number of households has continuously increased from 1989 to 2019. As of 31st March, 2019, the number is 77,645 (Figure 3). This means that the size of a household (the population in one household) is declining continuously.



Source : The City of Sakura

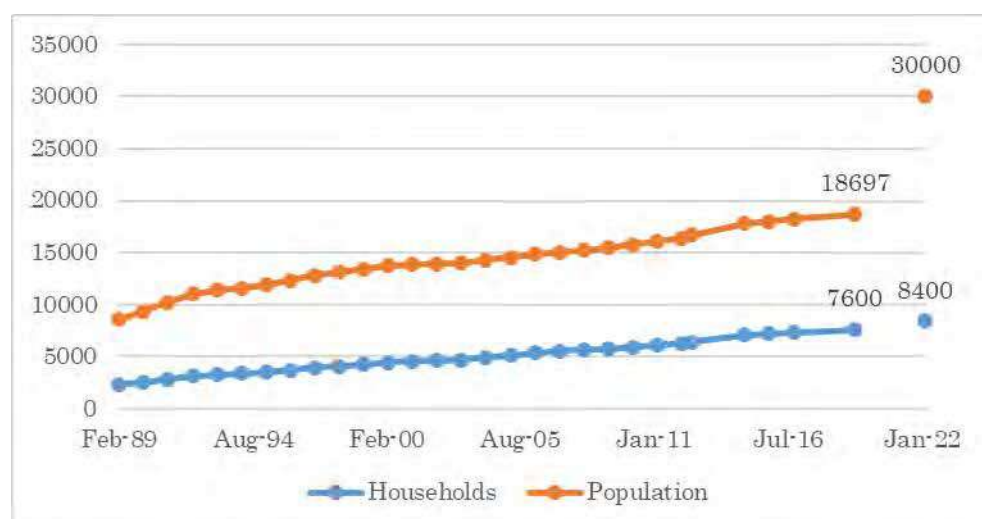
Figure 3 Trend of number of households in the city of Sakura from 1989 to 2019

2) Yukarigaoka (Eucalyptus Hills)

The objective development areas include 1 chome (district) -6 chome of Miyanodai, 1 chome-7 chome of Eucalyptus Hills, Minami Eucalyptus and 1 chome-7 chome of Nishi Eucalyptus. These areas are called shrinking cities.

Eucalyptus Hills has been developed by Yamaman since 1971. Yamaman acquired land in 1971, cleared it and started construction in 1977, starting to sell houses in 1979. Its developed area is 245 ha, the target number of houses was 8400, the planned population was 30,000, and the planned number of annual house sales was 200⁷. The calculated development period was 42 years and the planned completion year was 2022. The targeted population of 30,000 was set from the administrative rule that it can be an administrative unit called a city in Japan if there is a population of at least 30,000; the population size in Letchworth in the UK as a representative new town was 32,000 (Hayashi, 2013).

As of April 2019, 18,697 people and 7600 households live there. The progress rate of households taking up residence is 90.5% and the population is 62.3% (Figure 4). The reason for the difference between the progress rate of households and the population is the decline in the size of households. In the plan, the size of households was considered as 3.57 people/household, but the actual number is 2.46 people/household (as of April 2019). Also, the speed of increase in the number per household is less than the annual supply of 200 houses in the plan (maximum 300 houses if the skyscraper tower apartment rooms are provided) (Hayashi, 2013) recently, and the development speed is also slowing down (Figure 4).



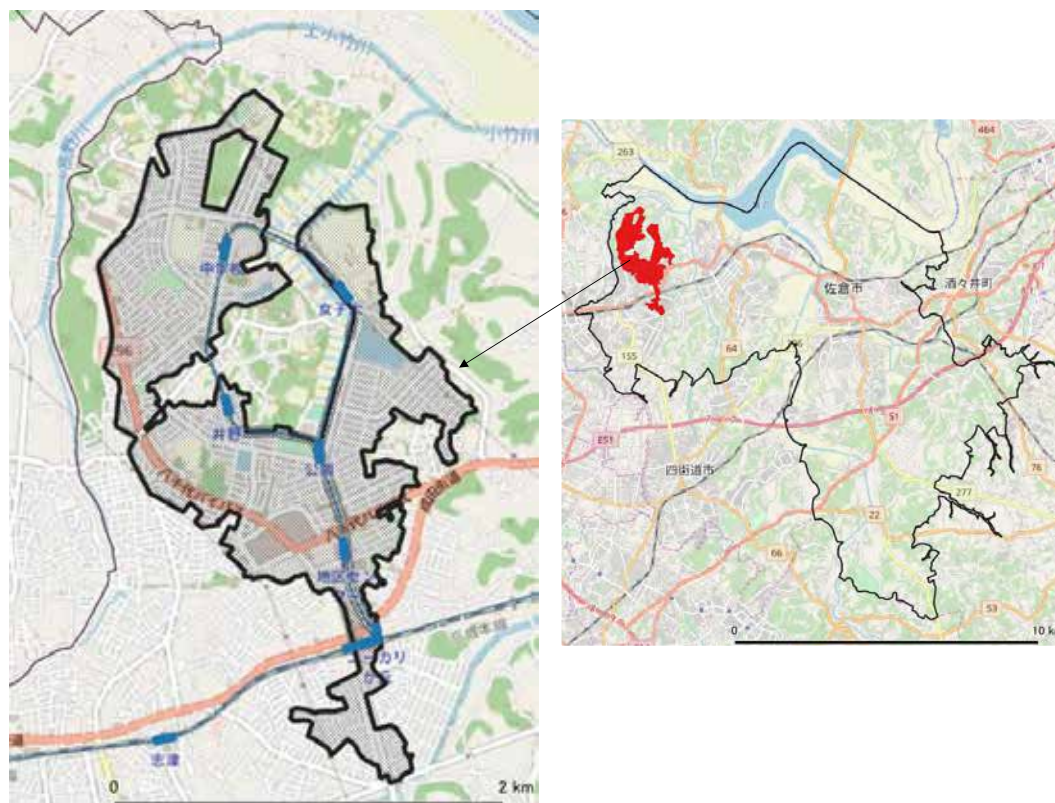
Source: (Hayashi, 2013) and Yamaman website

Figure 4 Goal and progress of the development of Eucalyptus Hills

Eucalyptus Hills is located on the nearside of Tokyo in the city of Sakura and is 7 km from the city centre of Sakura where the city hall is. Eucalyptus Hills is also located in between Makuhari Messe (convention hall area) and Narita International Airport (Hayashi, 2013). Keisei Electric Railway line connects Makuhari Messe, Eucalyptus and Narita airport as well as Haneda airport to each other.

⁷ Step-by-step sale system (Goda, 2011)

Eucalyptus Hills is spread along the Yamaman Eucalyptus line⁸ in a doughnut shape, starting from the Eucalyptus Hills station on the Keisei Line (Figure 5). The centre hole is the original settlements and some woodland and rice paddies still remain next to the developed land. They are outside Eucalyptus Hills.



Source: National Land Numerical Information Administrative Zones Data, Statistics Bureau, Ministry of Internal Affairs and Telecommunications small district boundary data for 2015 National Population Census⁹ and OpenStreetMap

Figure 5 Location of Eucalyptus Hills

Eucalyptus Hills is being developed as a dormitory town for Tokyo and most of the area is being developed as a low-rise exclusive residential area. Many detached houses have been developed there. Middle- and high-rise collective houses (apartments) are also located in the middle-to-high-rise exclusive residential area (Figure 6).

Schools and necessary public facilities are being developed in the Category one medium-to-high-rise exclusive residential area. This is because the urban planning act in Japan allows such public facilities

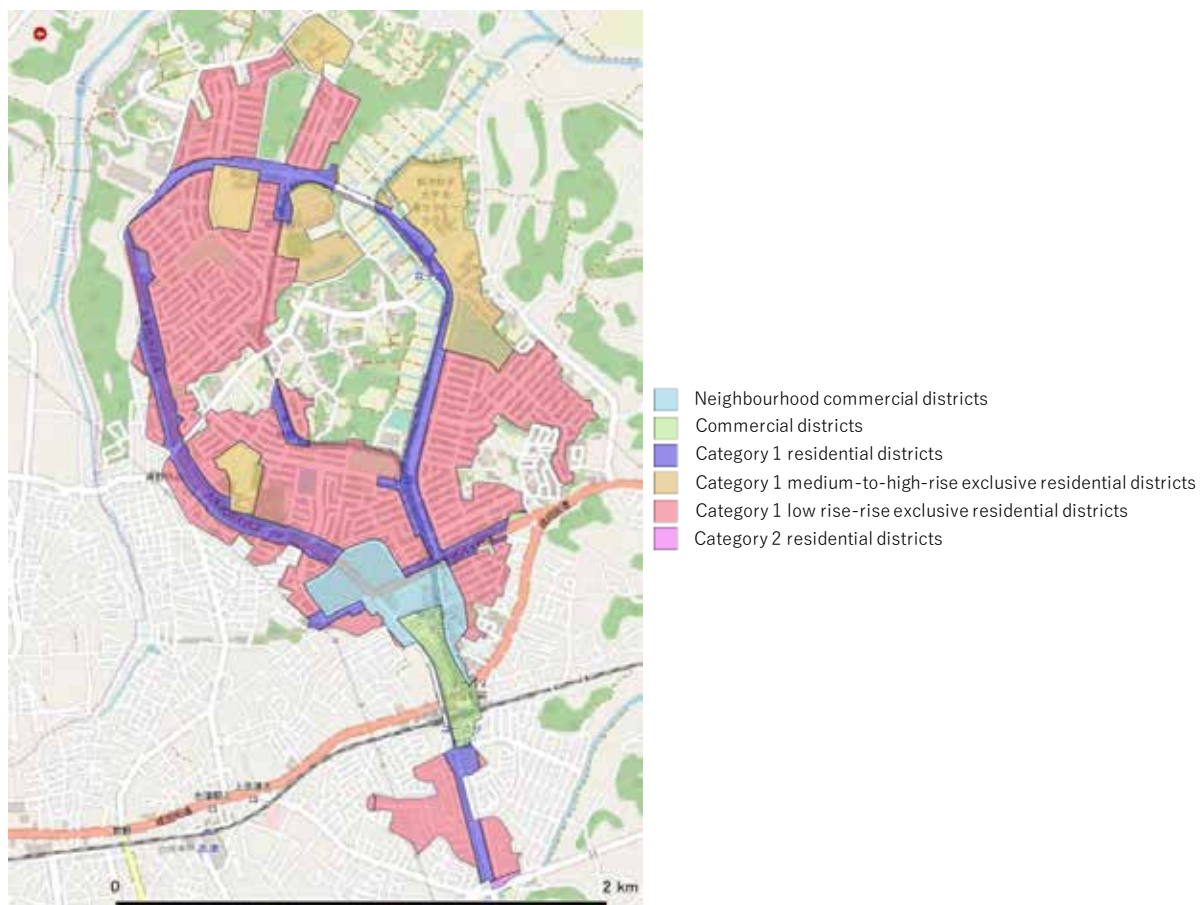
⁸ This is the Automated Guideway Transit (AGT), called Vehicle of New Age (VONA) and middle size public transport

⁹ <https://www.e-stat.go.jp/gis/statmap-search?page=1&type=2&aggregateUnitForBoundary=A&toukeiCode=00200521&toukeiYear=2015&surveyId=A002005212015&prefCode=12&coordsys=2&format=shape>

for residents to be built in these exclusive residential areas. According to the Building Standard Law, the floor area ratio is bigger in the middle/high-rise area than the low-rise area (Figure 7).



Figure 6 Landscape of Eucalyptus Hills



Source: National Land Numerical Information Designated land use districts and OpenStreetMap

Figure 7 Designated land use districts in Eucalyptus Hills as of 2011

In the development areas, commercial zones are also allocated near to the station. The development of office buildings, residential accommodation and commercial buildings is allowed in the zone, but factories and industry-related facilities are not permitted by the urban planning act. Also, the areas along the trunk road and Yamaman Eucalyptus line are designated as a Category one residential district, in which it is allowed to develop commercial facilities like retail shops supporting people's everyday life (Figure 8). These locations are able to support residential consumer life.



Figure 8 Commercial mall in Eucalyptus Hills

Thus, Eucalyptus Hills includes residential areas and commercial zones, but does not incorporate so many office areas and industrial areas. Therefore, the major job opportunities for the residents in Eucalyptus Hills must be sought outside.

3) Yamaman¹⁰

As noted, Eucalyptus Hills is being developed by Yamaman, which also provides community management services after the sales of houses. Yamaman is a private developer. Private developers and public corporations like the Urban Renaissance Agency are typical players in new-town developments in Japan.

Yamaman was founded as a textile wholesaler in February 1951 in Osaka. After that, it moved to Tokyo in 1964 and started residential land development in 1965. It began to develop Shonan Highland in the city of Yokosuka in 1965 and the Eucalyptus Hills development in 1971. It had earlier experience of residential land development before Eucalyptus Hills, including at Shonan Highland, Kami-Shizu housing complex, Uraga housing complex, Yachiyodai housing complex and Koumyouji housing complex. These are all sold-out models and did not specialize in growth management with community management as a necessary element.

In the first case, Shonan Highland is located on the top of a hill, but Yamaman did not provide any public transport services. Access from the nearest station was not convenient and for residents the climb up the hill took 20 minutes. In the last stage of sales, issues of the aging of the first families resident there occurred. These experiences are reflected in the development concept of Eucalyptus Hills (Hayashi, 2013).

The sales turnover of Yamaman in 2018 was 10.112 billion JPY and the number of employees is 136. Yamaman is not listed on the stock exchange. This is because listing a stock is not suitable for long-

¹⁰ This section is based on information from the Yamaman corporate website

term property development like Eucalyptus Hills and it would localize into the Eucalyptus Hills. Therefore, most of the company's employees, including senior directors, live in Eucalyptus Hills and group companies providing community services are also registered to Eucalyptus Hills. Yamaman understands that this localization is useful to determine the community business opportunities because Yamaman can share any conflict of interest with residents and identify needs promptly (Hayashi, 2014, 2013).

The business scope of Yamaman is as follows;

- Real estate appraisal, supervision, trading, brokerage, and management operations of rental rooms, rental buildings, and parking lots and residential land creation sales business.
- Design and construction services for civil engineering, architecture and landscaping.
- General transportation services by rail.
- Management of hotels, sports facilities and play facilities.
- Consultancy services for medical care and health care.
- Lending and selling medical care service business and welfare care equipment.
- Power generation business using renewable energy, etc., and management and operation of it, and business related to buying and selling of electricity.

The following Table 1 shows an outline of the group companies.

Table 1 Typical company of Yamaman group to provide community services in Eucalyptus Hills

Sector	Name of companies	Outline	URL
Facility management	Y.M.Maintenance Co., Ltd	Security guards, general building management, child care business, welfare business, management of leisure facilities, etc.	http://www.y-m-m.co.jp/
Landscape management	Koyo Co., Ltd.	Exterior, planting work, surveying and registration work, etc.	http://www.koyo-yukari.co.jp/
Hotels	Wishton Hotel Co., Ltd.	Hotel, banquet, conference hall, marriage ceremony	http://www.wishton.co.jp/
Agri business	Yamaman Eucalyfarm	Agricultural production in greenhouses. In the future, it is also assumed to take on facility management.	https://farm.yukarigaoka.jp/
Social care services	Yukariyutokai	Life-Care business for local residents (operation of nursing care facilities)	http://www.yutokai.com/

Source: <https://www.yamaman.co.jp/company/group/>

2. Factors of sustainable urban development in the case of sustainable development of Eucalyptus Hills

Typical Japanese new town properties are sold to 30-40-year-olds and sold out for 5 to 10 years. This leads to a migration of the younger generation in about 40 years and issues of aging, as a result of which a new town changes into an old town. In order to avoid this, mixed generation habitation is important. Continuous acquisition by 30-year-olds with young families as the primary owners of houses and catching secondary owners from changes of residence within the same housing complex are necessary (Goda, 2011). In Eucalyptus Hills, Yamaman looks forward in 10 years to developing a community management service and is promoting three-generation living and residence changes to maintain the variety of residential generations (Hayashi, 2014).

Yamamoto has defined residents' intention to settle as the sustainability of a housing complex and studied it in Eucalyptus Hills, referring to this as growth management development. The results of a questionnaire survey (valid responses = 142) on residents' intention to settle in Eucalyptus Hills, and analysis of the results of this survey data by discriminant analysis and factor analysis suggest that three major factors, "parents and children living together", "attachment to the Yamaman Eucalyptus Hill line as a symbol", and "Satisfaction with shopping facilities and transportation functions" are highly related to the residents' intention to settle in Eucalyptus Hills. The interesting point of this study is that most of the respondents do not use the Yamaman Eucalyptus line, but they do feel some attachment to it (Yamaguchi, 2016). This suggests that some symbols attracting residents are necessary for sustainable development in shrinking cities, in addition to practical convenience and economic benefits as discussed in social capital.

Yamaman has continued to sell property since 1979, that is, for almost 40 years. The fact that the company is unlisted is considered to be one important reason why Yamaman can continue its policy. Also, the demographic balance is pointed out as another important factor of sustainable development. In addition, the spatial planning of almost all the areas of Eucalyptus Hills, which can be covered within 10 minutes walking distance from the station of the Yamaman Eucalyptus line (6 stations and frequency of every 13'35'') is another key element. Furthermore, Yamaman provides amusement facilities and services for residents (Hayashi, 2014).

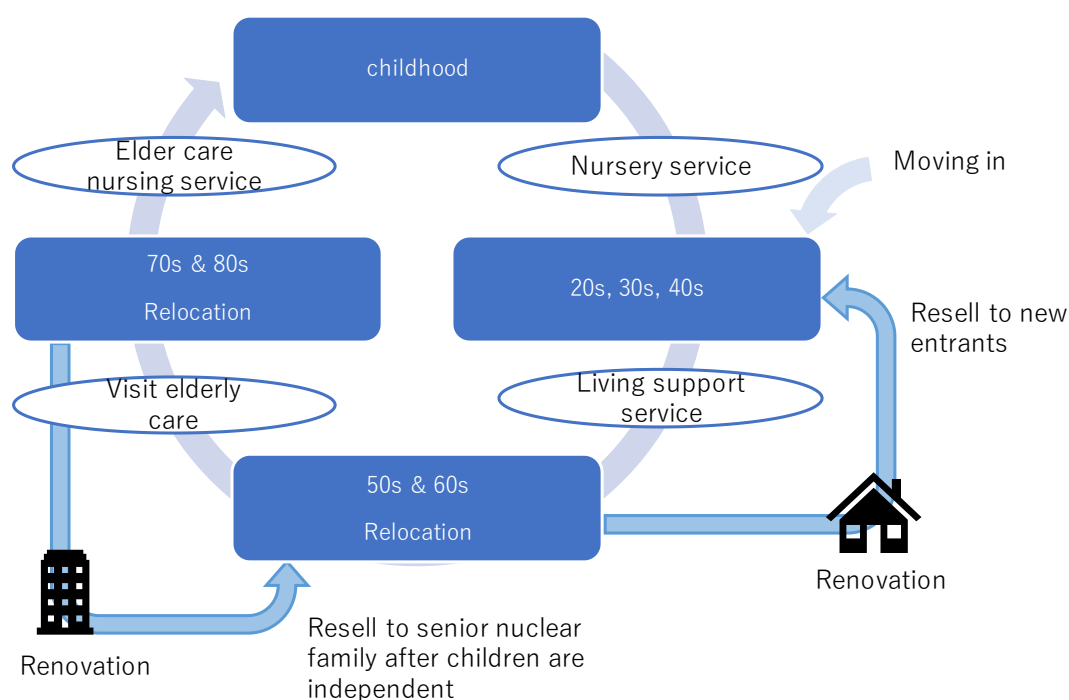
Yamaman has paid much tax to the city of Sakura, but the prefectural government has refused Yamaman's request to establish a police box in front of the stations. So, Yamaman itself established its own security patrolling service centre, comprising four cars and providing 24×7 services.

Moreover, Yamaman pays attention to social care services. In 1997, Yamaman launched the concept of a social caring town development to cope with aging in the Eucalyptus Hills and allocated 15 ha of land for care facilities for the elderly and disabled. Also, Yamaman started to introduce countermeasures to the falling birthrate in the 1990s in order to maintain the demographic balance of the composition of residents in the area. In 1999 it established a nursery with a garden, open till 2200 in front of the station. In addition, non-authorized nursery services, a general child care support centre,

and a schoolchildren's nursery services, Eucalyptus Yuto Pia,¹¹ which is an integrated nursery and elderly care facility, were developed by Yamaman.

From the environmental aspect, Yamaman start to operate an EV community bus service (Hayashi, 2013). Also, historic sites and natural green areas have been conserved as green spaces¹². In addition, an agri-business has been developed for the production of tomatoes and other vegetables in greenhouses and for the provision of farming opportunities for residents (Hayashi, 2014).

Yamaman is now changing its business model from flow-type (sales of property) to stock (sales of services). It proposes a "Happy Cycle System" (Figure 9) to residents. The Happy Cycle System is a package that has been promoting the relocation of residents within Eucalyptus Hills in accordance with their life stage since 2006. Yamaman offers 100% of the purchase price to assess the value of their previous houses, does not charge an intermediary fee for real estate and introduces the next houses to residents. Fifty families have already used this promotion package in 2014 (Hayashi, 2014), and elected not to move out from Eucalyptus hills.



Source : <https://realestate.yukarigaoka.jp/contents/code/happycircle>

Figure 9 Happy Cycle System in Eucalyptus Hills

¹¹ <http://www.yutokai.com/facility/yutopia.html>

¹² The supply of the number of houses is controlled by Yamaman. This means that a small area of development is continuing every year. Some residents complain to Yamaman about destroying the green space and about noise in some cases (Uchino, 2010).

Yamaman has supplied various type of houses and living-support facilities¹³ in Eucalyptus Hills. For example, living-support facilities and high-storey apartments have been developed in front of the station and detached houses with enough space for childcare have been developed in the areas further from the station. These different types of accommodation allow residents to choose suitable houses for their life stage. Yamaman also refurbishes houses purchased from the elderly and sells them to younger people with children in order to attract this generation to Eucalyptus Hills. In Japan, it is often the case that a second-hand house is normally discounted by 20%–30% compared to a new house. Accordingly, the provision of cheaper second-hand houses helps younger families with children to live in Eucalyptus Hills (Goda, 2011).

In addition, Yamaman is inviting a college to set up in order to increase the young population, to provide lifelong learning opportunities, and to utilize the local human resources, including people retired from large companies, research institutes and so on. The aim of setting up a college is to establish a “Continuous Care Retirement Community (CCRC)” (Hayashi, 2014).

In terms of community management by an area management team consisting of three Yamaman employees, the team visits its area of responsibility every day and in some emergency situations, like the Great East Japan Earthquake, it visits solitary old persons to check on their wellbeing as well as to distribute food and drink if necessary (Hayashi, 2014).

Table 2 shows the above-mentioned activities by Yamaman following the sustainability framework.

Table 2 Summary of Yamaman’s strategy and actions for the factors of sustainable development

Perspectives		Actions by Yamaman
Population	Continuous population inflow	Instead of selling homes at one time, the developer will take time to sell to new tenants continuously.
	Balanced demographic composition	In order to develop an area for the long term, it is necessary to consider the development cycle of the area and the population balance. In particular, it is important to make efforts to cope with the aging rate and to increase the number of households with children (increase in primary school children).
Society	Existence of symbol	The presence of a symbol (Yamaman Eucalyptus Hill Line) that enhances the people's centripetal power improves the attractiveness of the residence.
	Provision of crime prevention and disaster prevention services	Yamaman complements its security base in areas where a prefectural police box is not developed and it has the residents operate a crime prevention organization (self-help / co-help).
	Development of childcare facilities	To develop a municipality-approved nursery in front of the station to improve the quality of life of households with

¹³ Multiple commercial facilities have been developed, but some shop space remains vacant. Some residents pointed out the closure of retail shops sometimes (Uchino, 2010). The 20,000 population is not small, but it is true that keeping the service level of living-support commercial facilities is one of the important issues in Eucalyptus Hills.

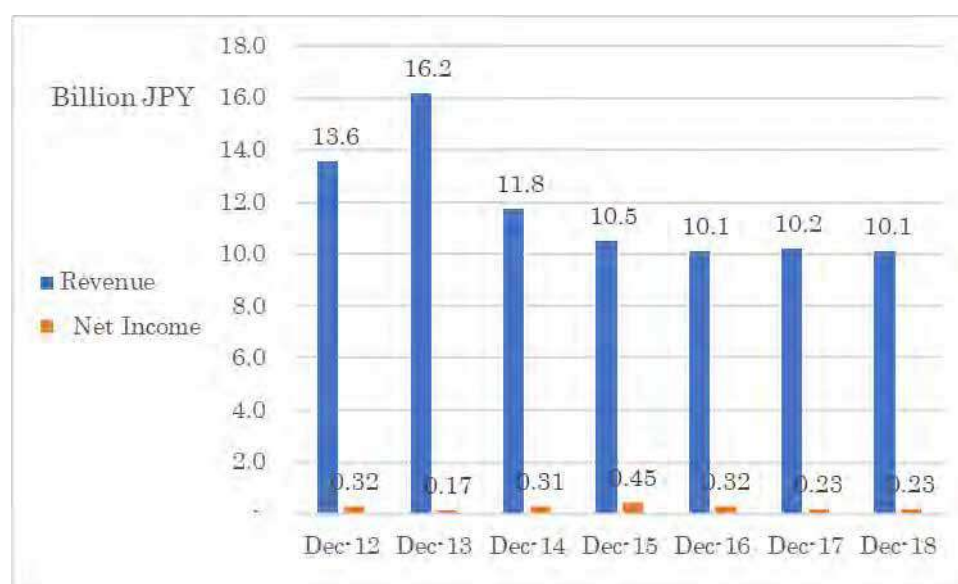
Perspectives		Actions by Yamaman
		children and attract more families with children. In addition, Yamaman set up a nursery school outside authorization, a general child care support centre, schoolchildren's nursery school for primary school children.
	Development of elderly care facilities	To maintain visiting care facilities and nursing homes in the area.
	Community management by area management team	A team of three Yamaman employees visit the area of responsibility daily. At the time of the Great East Japan Earthquake, they visited the homes of the elderly living alone and distributed rice and water as needed.
	Inviting amusement facilities such as cinema complex	Maintenance and operation of leisure facilities such as movie theatres, bowling alleys, and hot bath facilities
Economy	Ensuring the convenience of commercial facilities	To maintain shopping facilities and attract tenants while considering local needs so that shopping is convenient.
	Localization of group companies and creation of local jobs	To secure local employment by setting up a group company specializing in Eucalyptus Hills.
	Being an unlisted private developer	Being unlisted allows developers to continue development from a long-term perspective.
	Relocation support by Happy Cycle system	By purchasing 100% of assessed value of residents' houses when they relocate within Eucalyptus Hills, Yamaman supports the formation of assets of the residents and reduces the economic burden at the time of relocation.
Environment	Community bus service by EV bus	To operate community EV bus that circulates in the area.
	Leaving moderate amounts of space such as green space and small-scale farmland	The landscape is maintained by developing with the historical green areas in the region and the natural green areas such as Satoyama.
	Tomato cultivation for the purpose of sales inside and outside the area	Tomato cultivation at Eucalyptus farm supplies food to the region and provides opportunities for agricultural experiences in the future.
Time-axis	Town development that looks 10 years ahead	To develop services for the community by forecasting 10 years from now. In the last 10 years, Yamaman improved the facilities for the elderly.

3. Financial situation of Yamaman

As stated, Eucalyptus Hills has been developed by Yamaman. So it can be said that the sustainability of Eucalyptus Hills equates to the sustainability of Yamaman's corporate management. Therefore, the financial indices from 2012 to 2018 in Figure 10 are checked.

Yamaman recorded the highest sales of 16.2 billion JPY in 2013, but its turnover was around 10 billion JPY in each of the last three years. Its net profit is also stable and around 0.2–0.4 billion JPY for these 7 years.

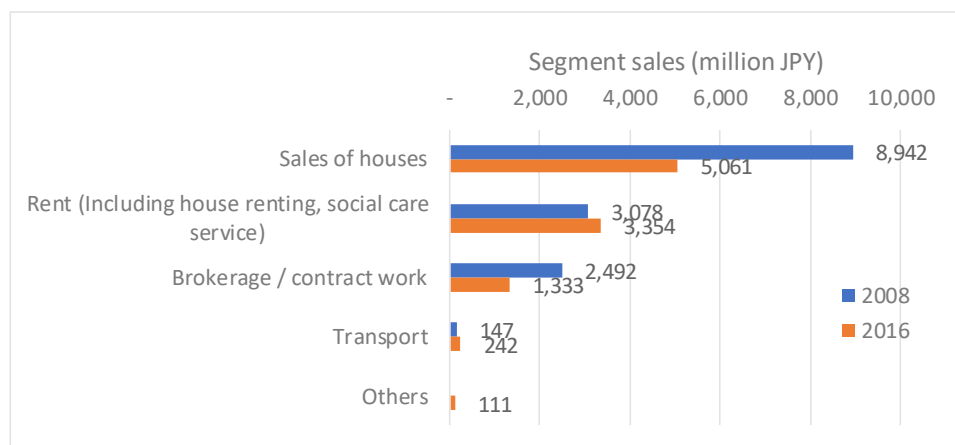
Yamaman provides vertically integrated services, from the housing sales business to living support service after the sales of houses. Because of this, with the maturation of Eucalyptus Hills, the sales composition of the upstream business and downstream business in the Yamaman has also changed (Goda, 2011).



Source: Capital IQ and Yamato Co., Ltd. 61st term financial statement, March 26, 2019 Official gazette

Figure 10 Trend of revenue and profit before tax on Yamaman

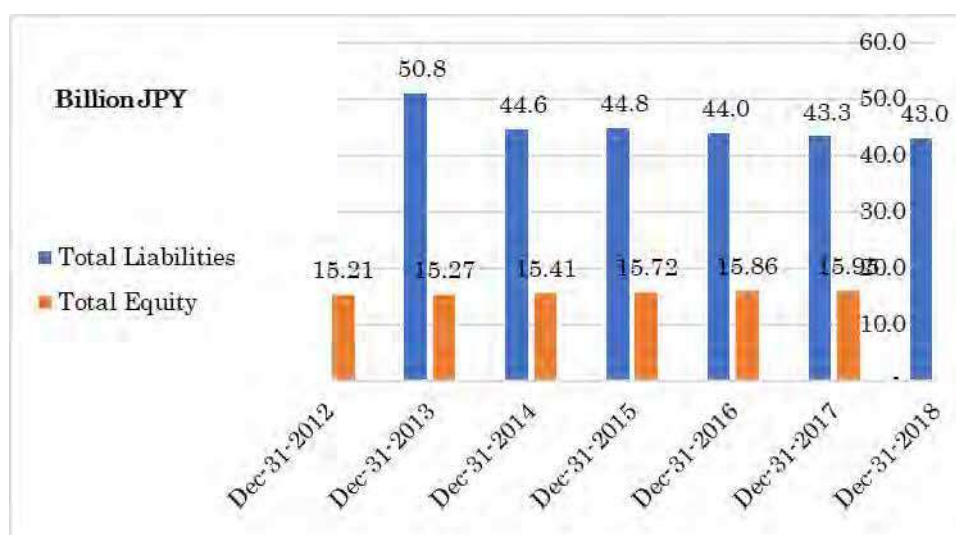
To compare the segmented sales volume between 2008 and 2016 when the segmented sales values are introduced, housing sales in 2008 were around 9 billion yen and 61% of total sales, but they have fallen to around 5 billion yen and 50% of total sales in 2016. On the other hand, house rental income has increased slightly from 2008 to 2016, and has increased from ¥ 3.08 billion (21%) to ¥ 3.35 billion (33%). As the development matures, housing land and home sales revenue is decreasing, and the downstream service ratio is relatively increasing. Since the profit is almost constant, it can be understood that Yamaman, as a community developer, does not have a problem with its sustainability as a going concern.



Source: (Goda, 2011) and Nikkei Corporate Profile

Figure 11 Segment sales of Yamaman

In addition, while the net capital continues to increase, Yamaman has recorded net income every fiscal year, while the liabilities have tended to decrease slightly, and the balance sheet has no major problems.



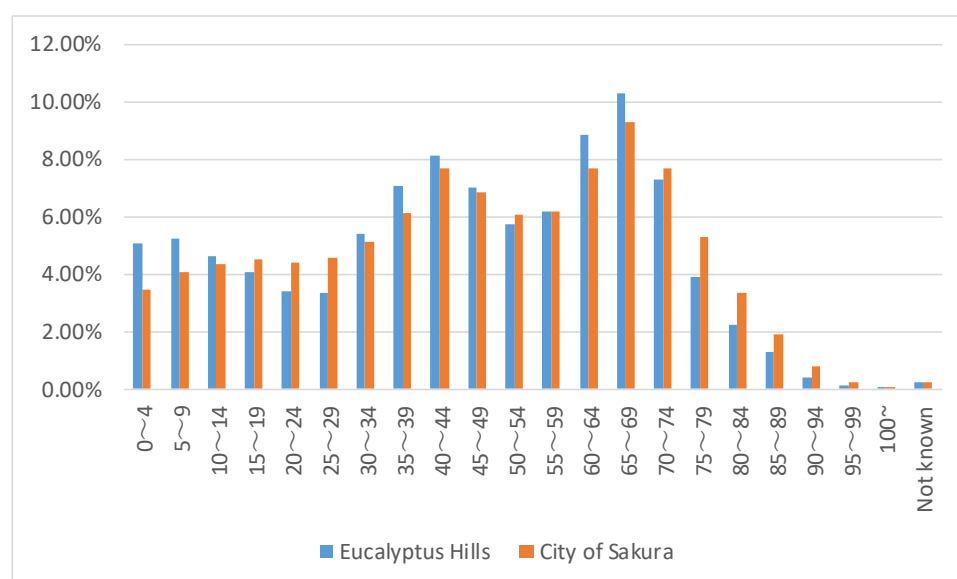
Source: Capital IQ and Yamato Co., Ltd. 61st term financial statement, March 26, 2019 Official gazette

Figure 12 Trend of inventory and total equity for Yamaman

IV. Discussion & Analysis

As stated previously, sustainable community management in Eucalyptus Hills means paying attention to the demographic composition balance, including three generations, as well as developing various social, environmental and economic services which will be needed in the next 10 years. In other words, not only maintaining the population, but also keeping a balanced composition of gender and

ages, as well as drawing in young families with children are all elements of Yamaman's basic strategy. As a result, the demographic composition in 2015 included numbers of residents aged 0–10 years old, 30–44 years old and 60–69 years old that are larger than those in the city of Sakura (Figure 13).



Source: National Population Census in 2015

Figure 13 Comparison of demographic composition between City of Sakura and Eucalyptus Hills

This recovery of young families with children is a critical factor that determines the sustainability of this new town, which is located 40 km from Tokyo. In particular, in Eucalyptus Hills, Yamaman is strategically supplying new housing or renovated housing for young families with children, mainly in districts where the number of primary school children is decreasing (Koutani, 2014).

Although extensive support for children, such as providing nursery schools and schoolchildren's services, is a relatively common method in Japan's depopulated areas, inviting in universities and hospitals are also typical efforts to revitalize shrinking cities in Europe and the United States (Pallagst et al., 2019). In Eucalyptus Hills, a university was invited in by Yamaman, but the aim was a little different from these foreign cases. Yamaman expects to improve the quality of life of elderly persons, and job creation is not the main purpose. Eucalyptus Hills is located between Tokyo and Narita airport and the commutable area to those main working areas. Therefore, job creation in Eucalyptus Hills is not a significant factor in this sustainable area development.

Accordingly, this case cannot be taken as a general case for small and medium industrially declining shrinking cities, but as a case more specifically for dormitory towns in metropolitan suburbs.

The development size of Eucalyptus Hills is a planned population of 30,000, and as of April 2019, the resident population is 18,697. Yamaman, as mentioned, provides many living-support services like a nursery, elderly care service, and the development of commercial facilities to enhance the attractiveness of the area through its subsidiaries. As can be seen in Table 3, a wedding hall and paid

caring facilities are generally difficult to locate in the area because of the service area population, but Yamaman has taken a business risk and provides these services to residents.

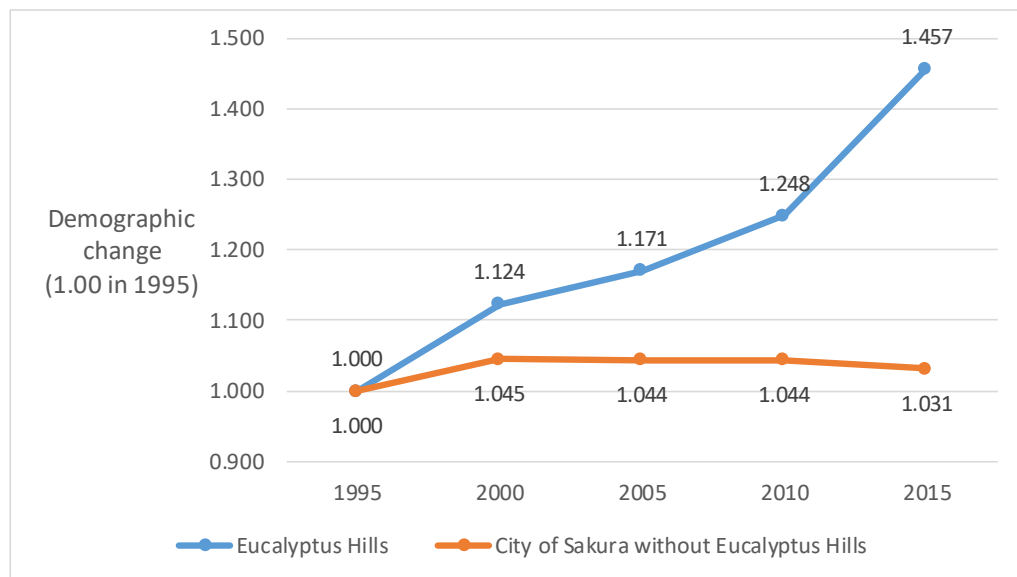
Table 3 Population scale of life-support services and service provision in Eucalyptus Hills

		Population size at which ratio of location of service facility becomes more than 80%
Service facility that can be located on Eucalyptus Hills	Food and beverage retail	2000 people
	Books and stationery retail	2000 people
	Dental clinic	2000 people
	Bar and beer hall	4000 people
	Nursery home care service	4000 people
	Learning acupuncture	8000 people
	Short-stay services	8000 people
	Coffee shop	9000 people
	Bank branch	9000 people
	Music classroom	15000 people
	Game house	15000 people
	General hospital	15000 people
	Long-term care health facilities	15000 people
	Nursery service	15000 people
	Visiting elderly care service	20000 people
	Foreign language class	30000 people
Facilities that are located on Eucalyptus Hills which support population size is exceed the population size of Eucalyptus Hills	Karaoke store	35000 people
	Kindergarten	40000 people
	Fitness club	50000 people
	Paid nursing home	55000 people
	Care treatment type medical facilities	65000 people
	Wedding hall	70000 people
	Shopping centre (sales area over 15000 m ²)	85000 people

Source: (Ministry of Internal Affairs and Communications, 2016)

Conversely, other services can be located in the area from this perspective of service area population. In short, Eucalyptus Hills is of sufficient size to provide enough services supporting daily living for the residents. In the case of a much smaller development, the residents might have greater difficulty in securing such services. This means that not only a balanced demographic composition, but also a certain accumulation of population in certain spatial spaces are also critical to achieve sustainable development in shrinking cities.

As mentioned above, Eucalyptus Hills is still maintaining its population growth, whereas the city of Sakura has been losing its population since 2000 (Figure 14).



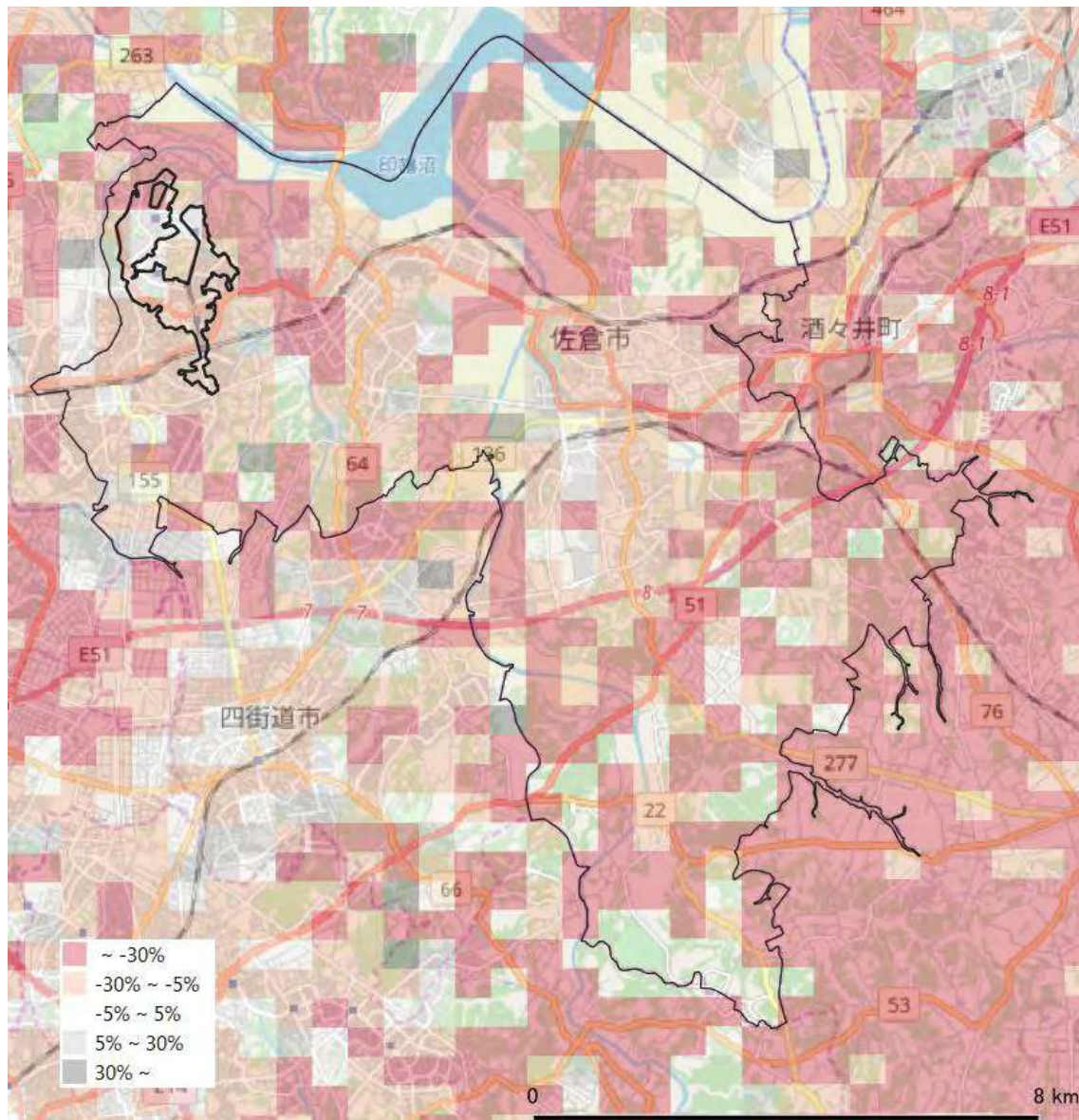
Source: National Population Census each year

Figure 14 Demographic change in Eucalyptus Hills and the City of Sakura without Eucalyptus Hills

This trend is the same for the future. Figure 15 shows the official projected population change rate in a 500 m mesh produced by the Ministry of Land, Infrastructure, Transport and Tourism. The city of Sakura has three big agglomerations of population, namely, Shizu & Eucalyptus Hills, Usui and Sakura. It is natural that the population loss from these agglomerations will be much smaller than in other areas. Of the three areas, Eucalyptus Hills area is losing much less population. Thus, it is firmly expected that Yamaman's efforts may continue to succeed in the future as well.

Next, the development of facilities for the support of daily living will be conducted not only by Yamaman but also by other entities. However, Yamaman retains the responsibility for commercial facilities management. For example, Eucalyptus Hills Safety First Town was developed by Mycal, which was one of the supermarket stores there in 1992, but closed after opening AEON Town Eucalyptus Hills (Figure 8). Yamaman stepped in to revitalize the vacant Eucalyptus Hills Safety First Town as the facility owner, invited in other tenants, and reopened it as Skyplaza Mall in November 2017.

Although vacant commercial facilities in shrinking cities, even in front of the station, can often become a big negative symbol of the downturn, Yamaman was able to prevent such a situation and keep its usefulness for the residents. This type of business activity links to the business model change of Yamaman as introduced in Figure 11.



Source; National Land Numerical Information Population Projections for individual 500 m mesh (National Spatial Planning and Regional Policy Bureau estimates for 2018) (Shape format data) Data

Figure 15 Total population change rate from 2015 to 2050 on 500 m mesh (official projection results)

V. Concluding Remarks

The case of Eucalyptus Hills is well known as a sustainable area development. A key factor for it is to maintain the balance of the demographic composition. It also found that continuously bringing in young families with children is especially important for sustainable community development in the suburbs of metropolitan areas. In addition, it is found that ensuring an appropriate population size in the area, namely, 30,000 people as the planned population (although actually less than 20,000 people as of 2019), and some risk-taking by Yamaman to attract customers are additional keys to success. This suggests that not only the balance of the demographic composition, but also a certain level of

accumulation of population within an area is critical for its survival in shrinking cities. Accordingly, 20,000–30,000 people in 245 ha, namely, 8000 people/km² on average, is the expected density of population needed for survival.

The uniqueness of this case is the continuous involvement by Yamaman in the development of Eucalyptus Hills for 40 years and the transformation of its business structure in accordance with the progress of the development phase. Yamaman can provide the necessary services considering the change of age structure and family structure in Eucalyptus Hills because it owns commercial facilities¹⁴ and can invite in tenants necessary for providing the services. It can be said that Yamaman and the residents have common interests because Yamaman earns from the needs of residents and this co-interest structure results in improving the attractiveness of Eucalyptus Hills compared with neighbouring dormitory towns.

This case can be applied for dormitory towns located in the suburbs of metropolitan regions where job opportunities are available outside these towns, but three conditions are necessary for the application of the case, namely, a single developer (town manager), a certain size of development (at least 20,000 population with more than 8,000 people/km²) and mixed generation living (or long-term development). If these conditions are not met, the following counter- measures are expected.

First, a town management organization rooted in the region, and, if possible, a single entity is needed, and if this is difficult, an organization that is expected to take the initiative will be established. Existing major property companies are good candidates and, of course, a new entity can be established, but the condition is that it should own property like housing land or commercial buildings in the area and that the organization's major sources of income should be from the management of these properties. This co-interest will enable the organization to become a good town manager.

Second, a certain population size (20,000-30,000 people in Japan), which is calculated from the population needing support services to be available for daily living, for a certain density of population (8,000 people/km² in Japan), is required as the target for sustainability in shrinking cities. In other words, if some small community cannot aggregate with an adjacent community because of too great a distance, for example, that community may not be sustainable even in the suburbs of metropolitan areas.

Thirdly, if the age structure is distorted because of the short development period of the area, that structure should be adjusted. In this case, the organization mentioned above should try to control the sales target of renovated houses in the area. Targeting of marketing to families with children and the reduction of some real estate brokerage fees are solutions to consider with that aim. These kinds of countermeasures are also considered to be useful for the revitalization of central city areas.

These three conditions should be satisfied at the same time. This is because some new towns like Shiraoka new town in the prefecture of Saitama cannot satisfy all the above conditions. Shiraoka has

¹⁴ The first well-known case of new town development in the world was Letchworth, and the developer, First Garden City Limited, also owned its developing lands and rented the property for residents and locators (Himeno, 1993).

undergone long-term development for more than 30 years since the 1980s, with a mixed age structure as well as a single private developer (Sougo Jisho¹⁵). But this new town has only 4831 people as of 1st January 2016, about 1200 houses (planned) and 50 ha. The private developer of Shiraoka is planning to withdraw its town management works (Saitama Capacity Building Wide Area Union, 2017). There is no reason for such a withdrawal, but according to Table 3, the population in the Shiraoka new town cannot support living-support services.

The first new town in the world was Letchworth in the UK. Letchworth also had First Garden City Limited as the specified town developer, and it developed not only housing property, but also utilities like the water supply, gas supply and electricity supply as well as landscape management. Later on, First Garden City Limited lost its function as town manager (Himeno, 1993, 1992), but it can still be said that the existence of Yamaman and First Garden City Limited prove the importance of the presence of a responsible town manager sharing co-interests with residents.

In order to expand this case horizontally, the clustering of new towns might be necessary.

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Time Series of Urban Shrinkage Elements in Coal-exhausted Cities: A Case Study of Two Typical Cities in Northeast China

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Abstract: Based on the existing research, this paper first classifies the influencing factors of urban shrinkage into three categories: internal factors, external characteristics and potential factors, and further divides them into four categories: population structure change, economic and industrial change, spatial quality change and public facilities change. Secondly, taking Shuangyashan and Jixi city, two typical coal-based industrial cities in Heilongjiang Province of China as the research objects, from the point of view of time, using the method of big data classification and comparative analysis, the time series of key elements in each city is studied, the priority and lag relationship of elements are obtained, and the time law of mutual restriction of elements in each city is analyzed in depth, and the time series of key elements in each city is established. The time series model of the shrinkage of such coal-exhausted cities is put forward in order to put forward a common strategy to deal with the shrinkage of such cities from a time point of view.

Keywords: Urban shrinkage; Resource exhaustion; Time series; Northeast China

Introduction

Northeast China once owned more than 90% of China's heavy industry bases. Since the 1990s, under the background of traditional industrial transformation and changes in China's overall economic environment, with the depletion of mineral resources and forestry resources, the leading industries of many Northeast cities have gradually declined. Most cities developed by relying on traditional industries are facing a downturn in industrial development and urban development (Yu Tingting *et al*, 2017).

In order to alleviate the problem of population shrinkage in the northeastern China and prevent the serious decline of the Northeast area, Chinese scholars began to study the causes and Countermeasures of such urban shrinkage, so that we can re-recognize the phenomenon of backward development and shrinkage in the Northeast area and try to improve the current situation of urban

shrinkage in the northeast area from a scientific point of view, and guide the healthy development of the cities in the Northeast area.

However, the current research mostly on urban shrinkage includes multi-concept definition, identification, dynamic mechanism, impact and coping strategies (GAO Shuqi,2015). Most of the studies are on the shrinking city in a region or the specific research of a single shrinking city, lacking of comparative research on the same type of shrinking city, and lacking of research on the evolution process of urban shrinkage. According to the experience of urban shrinkage in western developed countries, most resource-exhausted cities will experience a comprehensive decline in population, economy, society and environment (Yang Dongfeng *et al.*2013). There are also many studies on urban shrinkage in China based on the hypothesis of population shrinkage - economic decline - space dilapidation (LONG Ying *et al.*2015). If we make a comparative study on the factors of the same type of cities in the process of population shrinkage from the perspective of time, we will find the similarities and differences in the process of population shrinkage in each city.

Therefore, this paper chooses coal-exhausted cities as the research object to explore the shrinkage process of such cities. In view of the shrinkage situation of Shuangyashan and Jixi city in northeast China, based on the time factor, the shrinkage process is analyzed by time series, including the internal factors, external characteristics and potential factors. And the shrinkage of coal-based cities in population structure, economic and industrial changes, spatial quality changes, people's livelihood quality changes are explored. The relationship between priority and lag of specific factors is studied, and the common law of shrinkage factors and the reasons of difference are compared in depth.

Study area

This paper chooses Shuangyashan City and Jixi City in Heilongjiang Province in Northeast China as the research objects (Figure 1). Both of them are typical coal resource exhausted cities in Northeast China. The two cities are facing a reduction in urban population at the same time, but to varying shrinkage degrees. The comparative study of two cities with different population shrinkage and the same industrial type will have a good reference.



Figure. 1 Location of Shuangyashan City and Jixi City in Northeast China

Data and methods

Selection of Time Series Elements of Urban Shrinkage

In the process of urban shrinkage, many factors are changing, some of which have an impact on the process of urban shrinkage, and some of which are the phenomena manifested in the process of urban shrinkage. According to the existing research on the influencing factors of urban shrinkage (Table 1), the main influencing factors of urban shrinkage include industrial transformation (WU Kang *et al.* 2015, Yang Lin *et al.* 2018), economic environment change (LIU Fengbao *et al.* 2018, Zhang Wei *et al.* 2019), population structure change (WU Kang *et al.* 2015, Yu Tingting *et al.* 2015, Yang Lin *et al.* 2018), natural ecological environment change (Yu Tingting *et al.* 2015, Zhang Wei *et al.* 2019), urban facilities (Yang Lin *et al.* 2018), urban space factor (Zhang Wei *et al.* 2019). Based on the characteristics of coal-exhausted cities in Northeast China, the change of natural ecological environment has less impact on urban shrinkage. Therefore, population structure, industrial transformation, economic development, urban spatial elements and urban facilities are selected as time series elements of urban shrinkage.

Table. 1 Summary of factors affecting urban shrinkage

Author	Causes and Driving Forces of Urban Shrinkage
WU Kang <i>et al.</i> 2015	Regional Economic Development, Urbanization Level, Administrative Level, Deindustrialization or Industrial Transition, Population Structure Change
Yu Tingting <i>et al.</i> 2015	Natural environmental indicators, socio-economic indicators
LIU Fengbao <i>et al.</i> 2018	Population Structure, Economic System, Geographical Environment, Government Policy, Zoning Adjustment
Lin Yang <i>et al.</i> 2018	External economy, location, climate, industrial structure, population structure, infrastructure, culture
Zhang Wei <i>et al.</i> 2019	Natural Ecology Background, Urban Scale, Urban Economic Development, Urban Population Structure, Urban Municipal Construction, Urban Ecological

Factor Arrangement of Urban Shrinkage Time Series

Deepening the selected time series factors of urban shrinkage, combining the characteristics of urban shrinkage in Shuangyashan and Jixi, supplementing the above factors with micro-indicators, and establishing the time series research-factor system of urban shrinkage factors (Table 2). It includes the following aspects:

1. Population structure change;

The population structure of Shuangyashan and Jixi City has changed significantly. Firstly, the total population of the city and city district have decreased. It is expressed by the index of population change rate, which is also a big measure of the degree of urban shrinkage. Then, birth rate and natural growth rate of cities. Low fertility keeps the population growth rate in Northeast China at a fairly low level. What's more is the rate of population migration. In the 21st century, especially after 2010, with the deepening of China's economic system reform, the economic status of Northeast China has continued to decline. Northeast residents migrated from north to south in pursuit of better life, with a net outflow of 2.24 million in 2014. At the same time, the age and education level of the outflow population in Northeast China are low and high. Such a structural outflow of population will inevitably affect the shrinkage process in Northeast China (Zhou Daming, 2018).

2. Industrial Economic Change;

In the 1990s, driven by the recovery and rapid development of coal economy, the GDP of Shuangyashan and Jixi cities maintained a relatively rapid growth. The development of coal and related industries led to the growth of the overall economic level of the city, and the rapid development of urban infrastructure construction. The employment opportunities brought about by it attracted the influx of population. In recent years, under the influence of macroeconomic environment, the golden period of coal has ended, the supporting role of coal industry to the economy has weakened and declined year by year, and the salary cuts and job losses in coal and related enterprises, and the employment environment in cities have also begun to become severe. Therefore, firstly, the total GDP and the output value of secondary industry are selected as economic research indicators to explore the time relationship between urban economic environment and population shrinkage. Secondly, the number of employment at the end of the year, the unemployment rate, the number of employment in the secondary industry and the number of employment in the tertiary industry are taken as industrial research indicators to explore the time relationship between the development of different industries and population shrinkage.

3. Spatial Quality Change;

The change of urban spatial quality is the external representation of urban shrinkage. This paper chooses street greening, street pavement and street storefront activity as research indicators which are easy to extract large data, and reflects the change of urban spatial quality with the change of urban street spatial quality. Due to the decline of coal resources, the closure of some coal-related enterprises has made the spatial quality of some parts worse. If the population shrinks seriously, there will probably be a large area of building vacancies, which will affect the urban spatial quality. Therefore, the identification and research of spatial quality changes will be the focus of urban shrinkage in the future.

Table. 2 Time Series of Urban Shrinkage Elements - Element System

Classification	Large class	Subclass
Internal factors	Elements of Population Structure Change	Change rate of total urban population
		Urban Population Change Rate
		Natural Growth Rate of Urban Population
		birth rate
		Urban population emigration rate
	Elements of Economic Industry Change	GDP
		Second Industry Output Value
		Number of employee at the end of the year
		unemployment rate
		Employment in Secondary Industry
		Employment in tertiary industry
External representation	Elements of Urban Spatial Quality	Street greening
		Road Traffic and Pavement
		Street storefront activity
Potential elements	Elements of Quality of Life Change	Number of health institutions
		Number of health technicians
		Number of teachers per 10 students
		Urban public green space area
		Cultural performances
		Number of Fitness Events
		Number of full-time Sports Coaches

4. Changes in quality of life.

The elements of urban life quality change include health care, education, green space, culture and sports. These factors are the important demand factors for improving the living standards of all urban residents. The allocation of public facilities with different completeness will have an big impact on the attractiveness of different cities and different areas of cities. If the allocation of urban public facilities is inadequate, it will also affect people's pursuit of quality of life, and then choose a better quality of life in other cities. Therefore, the study of the time course of quality of life change will help us to understand the relationship between quality of life and other factors of population shrinkage better, and help us to make timely allocation Countermeasures of public facilities.

Data Processing Method of Urban Shrinkage Time Series Elements

- Data Sources

Data used in the study include: Shuangyashan Social and Economic Statistics Yearbook (2007-2016), Jixi National Economic Statistics Yearbook (2007-2016), Baidu Map Street View 2016 and Tencent Map Street View 2013. Among the small elements in Table 2, except street greening, road traffic and pavement, Street store activity data from Baidu Street View and Tencent Street View data, other data are directly derived from statistical yearbook or based on Yearbook for processing and calculation.

- Data Processing

The data in this study were normalized by Min-Max normalization, also known as 0-1 normalization, which is a linear transformation of the original data, so that the results fall in the 0-1 interval and the transformation function is as follows:

$$x' = \frac{x - x_{\min}}{x_{\max} - x_{\min}}$$

In the formula, x_{\min} is the maximum value in the sample data and x_{\max} is the minimum value in the sample data. By transforming all data into 0-1 data, this data standardization process is conducive to comparing the data of different types of elements in different units, and more intuitively showing the changing trend of various elements.

Data Analysis

Analysis of Population Structure Elements

Combining with the Yearbook data, the data of population structure changes in Shuangyashan City (Table 3) and Jixi City are sorted out and processed. The trends of various data over time are analyzed as follows (Figure 2, Figure 3):

Table. 3 Statistics of Population Structure Elements in Shuangyashan City

End of the year	Urban Population change rate (%)	Urban District change rate (%)	Birth rate (‰)	Processed birth rate	Urban emigration rate (‰)	Processed Urban emigration rate	Natural Growth Rate of Urban Population (‰)
2006	-0.18	-0.25	6.68	0.82	18.2	0.63	0.99
2007	0.33	0.25	7.19	1	20.36	0.79	1.29
2008	0.01	0.27	6.77	0.86	18.63	0.66	1.13
2009	0.23	0.18	6.2	0.66	14.29	0.34	-0.64
2010	0.51	0.15	5.93	0.57	11.74	0.15	-0.65
2011	-0.22	-0.09	5.74	0.5	23.26	1	-0.16
2012	-0.55	-0.84	5.94	0.57	16.27	0.49	-1.37
2013	-0.41	-0.68	6.14	0.64	17.13	0.55	-2.24
2014	-0.53	1.30	6.43	0.74	15	0.39	-1.78
2015	-1.04	-1.29	4.29	0	9.68	0	-4.11

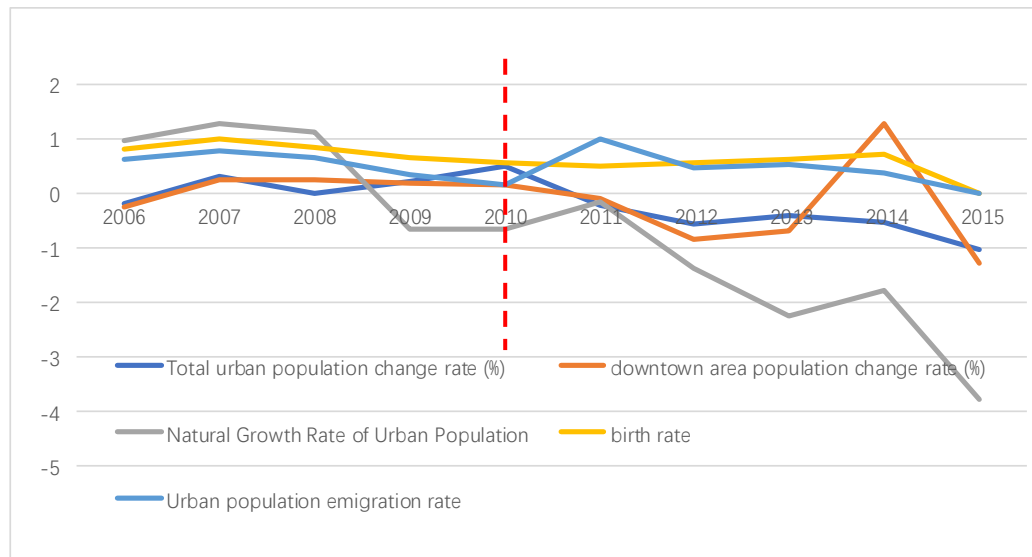


Figure. 2 Changes of Population Structure Elements in Shuangyashan City

Shuangyashan city's population was growing before 2000. The total population fluctuated in a small range from 2000 to 2010. The population declined obviously in 2011. Taking the end of 2010 as the demarcation line of population shrinkage, there was a phenomenon of declining birth rate and a sharp decline in natural population growth rate before 2010, which may be the most important potential impact factor before population shrinkage. From 2011 to 2012, with the increase of population emigration rate, the population shrinkage of Shuangyashan city is obvious. The urban population shrinkage rate in 2012 is 0.84% compared with 2011, and the urban population shrinkage rate in 2015 is 1.04%. Therefore, we conclude that the birth rate of Shuangyashan city declined before its population contracted, and the process of population shrinkage is accompanied by a large number of migration.

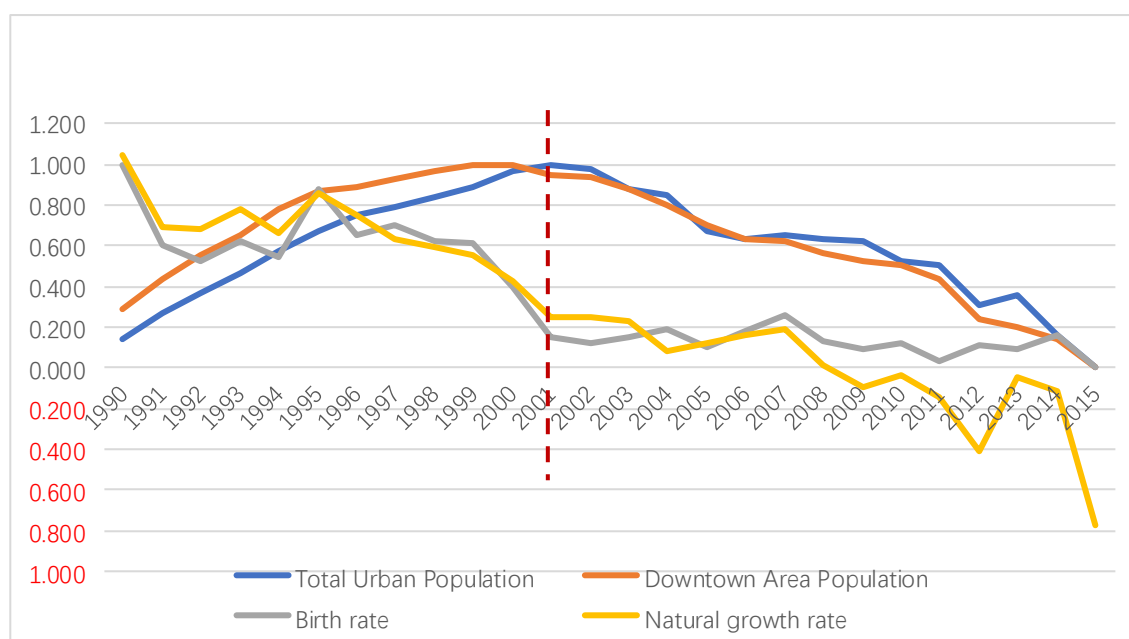


Figure. 3 Change of Population Structure Elements in Jixi City

The phenomenon of population shrinkage in Jixi City started earlier, nearly 10 years earlier than that in Shuangyashan City. According to the data, during the period of population growth from 1990 to 2001, the population increased by 127,000, with an average annual increase of 106,000, with an average annual increase of 0.56%. From 2002 to 2015, the population gradually decreased by 152,000, with an average annual decrease of 117,000. Taking the end of 2001 as the demarcation line, we can clearly see that the birthrate and natural growth rate of Jixi City have decreased significantly before 2001, which may be the main reason for the decrease of the total population of Jixi City. In 1990, the birthrate of urban population was 15.79 while in 2015, the birthrate of population was 5.13 which was 10.66 points lower than in 1990. Therefore, we conclude that the phenomenon of population shrinkage in Jixi City also occurred after the birth rate and natural growth rate dropped sharply. Judging from the situation of population outmigration in Jixi City, due to insufficient data, there is no trend of change in the Figure 3, However, the relevant data show that in recent years, the net population outmigration of Jixi City has maintained 10,000-20,000 people per year, so the process of population shrinkage has been accompanied by population outmigration.

Elements of Economic and Industrial Change

Based on the Yearbook data, this paper calculates the factors of economic and industrial change in Shuangyashan and Jixi (Table 4), and analyses the trend of various data over time as follows (Figure 4, Figure 5):

Table. 4 Statistics of Industrial Economic Change in Jixi City from 2006 to 2015

	GDP(10,000 0 yuan)	Second Industry Output Value (10,000 yuan)	Employment at the end of the year (10,000 people)	Unempl- oyment rate (%)	Employed population in secondary industry (10,000 people)	Employed population in tertiary industry (10,000 people)
2006	2362214	706349	14.65	0.43	10.52	3.98
2007	2752215	832696	15.08	0.46	10.81	4.21
2008	3158814	1024628	13.99	0.48	9.78	4.13
2009	3538182	1384019	13.79	0.56	9.52	4.21
2010	4194931	1774986	13.59	0.59	9.35	4.18
2011	5078321	2130289	13.65	0.59	9.13	4.45
2012	5823381	2382636	13.2	0.76	8.6	4.5
2013	5709117	2199844	13.6	0.79	8.7	4.8
2014	5160088	1535218	12.8	0.57	7.9	4.8
2015	5146868	1336132	14.9	0.56	7.6	5.8

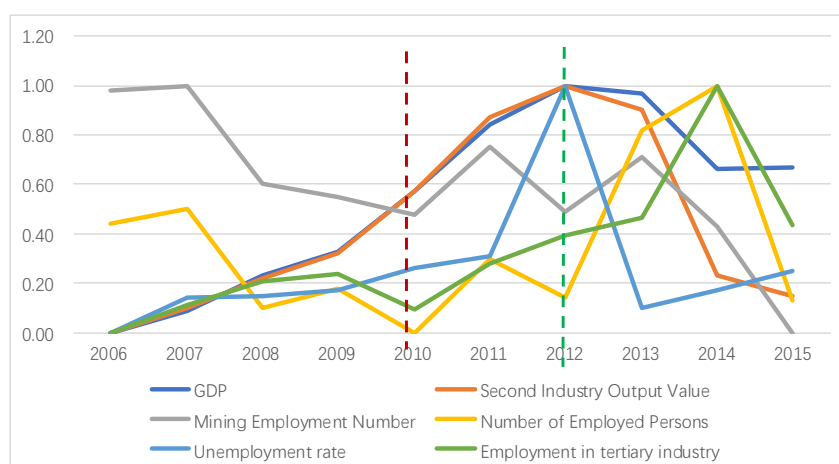


Figure. 4 Changes of economic and industrial Elements in Shuangyashan City

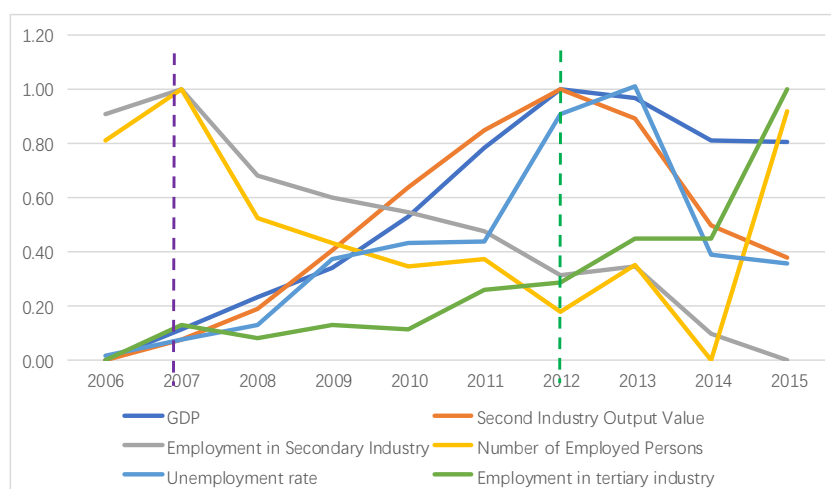


Figure. 5 Changes of Economic and Industrial Elements in Jixi City

Before 2012, the GDP of Shuangyashan City showed a growth state, and coincided with the growth trend of the output value of the secondary industry. However, since 2013, the GDP of the whole city has decreased slightly, while the output value of the secondary industry has decreased dramatically. It can be seen that after the urban population shrinkage began in Shuangyashan, the momentum of the development of the secondary industry has decreased along with the GDP reduction. Mining employment has fluctuated slightly since 2007, showing a declining trend as a whole, and decreased significantly in 2013, which may also indirectly reflect the decline of mining industry. At the same time, the unemployment rate is at the node of 2012. Before the GDP of the whole city decreased, the urban unemployment rate continued to rise, reaching its peak at the end of 2012. The total employment of Shuangyashan City has increased since 2013, and the unemployment rate has decreased, which shows that urban employment has eased down. The development of tertiary industry provides a suitable environment for urban employment. Generally speaking, Shuangyashan firstly has the problems of decreasing employment in mining industry and increasing urban unemployment rate. Secondly, it has the phenomena of declining GDP, declining output value of secondary industry and employment number of secondary industry, and rising output value of tertiary industry and employment number of tertiary industry.

Jixi's GDP also showed a growth state before 2012, and coincided with the change trend of Jixi's secondary industry output value. Similarly, starting from 2013, the GDP of the whole city has decreased and the output value of the secondary industry has decreased. At the same time, urban unemployment continued to rise before the city's GDP fell, and the most serious problem of unemployment occurred at the end of 2013. Since 2008, the number of employment in the secondary industry in Jixi City, mainly in coal mines, has declined in a straight line, and the total number of employment in Jixi City has also declined in the same trend, indicating the reduction of urban employment. Until 2015, the number of urban employment increased significantly, indicating that the development of tertiary industry has eased employment in resource-exhausted cities. Generally speaking, the economic and industrial factors in Jixi and Shuangyashan have the same trend in time dimension. First, the number of employment in the secondary industry decreases, the total number of employment in cities decreases, and the urban unemployment rate rises. Secondly, the overall GDP and the output value of the secondary industry decrease, and the output value of the tertiary industry and the number of employment increase.

Characteristics of Spatial Quality Changes

Through the evaluation of the changes of street scenery in the main urban areas in 2013 and 2016, the evaluation indicators include street greening, pavement and the street store vitality. The spatial quality was evaluated by scoring method, for example, Greening coverage increased by 1 point, unchanged by 0 points, reduced to -1 points; street pavement also scored 1 point, 0 points, or -1 points; street storefront vitality as a result of the city's obvious shrinkage characterization, so scored 2 points, 0 points and -2 points (table 5). Finally, when the total score is greater than or equal to 0, it is determined that the street level rises. Through the recognition and calculation of street scenery, it is concluded that the majority of the street space quality in Shuangyashan and Jixi has not declined. And the declining areas of urban spatial quality are distributed in the urban fringe, and the quality of urban central space is still steadily improved. Therefore, in terms of time, the decline of spatial quality is later than the decline of urban GDP.

Table. 5 Evaluating Indications of Urban Street View Change

Street View in 2013	Street View in 2016	Location	Spatial Quality Evaluation Elements	Evaluation score
			Street greening	1
			Street pavement	0
			Changes in Street Store Vitality	2
			Street greening	1
			Street pavement	1
			Changes in Street Store Vitality	0
			Street greening	1
			Street pavement	1
			Changes in Street Store Vitality	0

Change characteristics of people's livelihood quality

Based on the Yearbook data, data processing and calculation were carried out on the quality change factors of life in Shuangyashan City and Jixi City. The trend of various data over time was analyzed as follows (Figure 6, Figure 7).

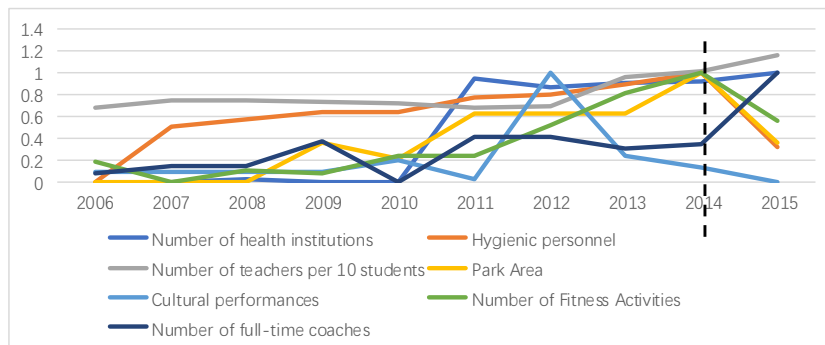


Figure. 6 Changes of quality of life factors in Shuangyashan

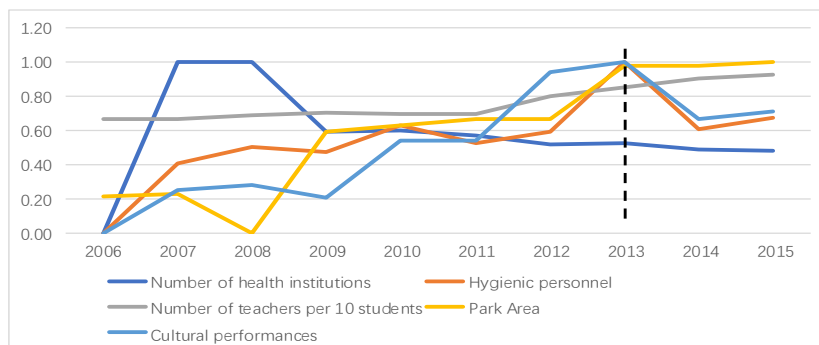


Figure. 7 Changes of quality of life factors in Jixi

From the data of the changes in the allocation of public service facilities, such as medical, education, parks, culture and sports, which are related to the quality of life of Shuangyashan citizens, it can be seen that the allocation of other facilities, such as health institutions, teachers and sports coaches, has increased. However, the area of parks, health technicians and the number of fitness activities held have a tendency to get worse since 2015. So far, there has been no obvious decline of public service facilities. On the contrary, with the population decreasing, the per capita ownership of public service facilities in urban areas has increased.

According to the changes of the related factors of Jixi citizens' quality of life, most public service facilities have shown an overall upward trend except the number of health institutions in the whole city has been slowly decreasing since 2009 and the number of cultural performances and the number of health technicians began to fluctuate in 2014. The future fluctuations are unknown, but if there is a decline, it occurs after the decline in urban GDP. The future development of urban public service facilities also depends on the government's adjustment policies and investment in the face of urban population shrinkage.

Results

By studying the time series of shrinkage factors in Shuangyashan and Jixi city, the two coal-exhausted cities in Northeast China, we find that although the shrinkage degree is different, there are many similarities in the time series of shrinkage factors, which may reflect some common problems in the shrinkage process of coal-exhausted cities. First of all, from a broad perspective, before the process of urban population shrinkage, the elements of urban population structure and the elements of urban economic industry are closely related to each other. However, the quality of urban space and the quality of urban public service facilities are obviously lagging behind and the population structure and economic industry change. From the point of view of sub-categories, comparing the four kinds of factors in time, *we can infer that Shuangyashan and Jixi have the similar time series of shrinkage factors in the process of urban shrinkage:*

Birth rate decline -- Natural growth rate decline -- Population shrinkage accompanied by population migration -- Employment reduction in mining (employment reduction in secondary industry) -- Employment reduction -- Unemployment rate rise -- The decline of output value of urban secondary industry -- The decline of urban GDP (The increase of output value of urban tertiary industry) -- The decline of public facilities such as urban culture and health - The overall change of urban spatial quality and people's livelihood quality.

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SP40

Regional design:
impacts on territorial
governance and
planning practice

Regional Design: impacts on territorial governance and planning practice

Fuelling energy-transition with regional design ateliers

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Abstract: Many countries are ‘planning’ for energy-transition in the light of the challenges imposed by climate change. Energy-transition is expected to radically change the structure, the institutional design and the physical appearance of our energy system. One of the critical issues is to integrate energy-transition with other land-uses and spatial issues. In the Netherlands, regional design ateliers were organised to address these challenges. We studied eleven regional design ateliers to find out what the design ateliers contributed to dealing with energy-transition. Our analysis showed that the design ateliers played an important role in creating insights on the spatial implications of energy-transition. This raised awareness amongst regional stakeholders on the impact of energy-transition, and affected their perspectives. However, our study also showed that some important (spatial) aspects, such as smart combinations with other land-uses and the transport and storage of energy, received little attention. Understanding energy-transition took up a lot of time, leaving little room for a full exploration of relationships with other land-uses, of possible solutions, and of integrated strategies. Therefore, we conclude design ateliers should also be organised in upcoming stages of ‘planning’ for energy-transition to further fuel the transition process and fully employ the benefits of regional design ateliers.

Keywords: regional design, energy-transition, spatial planning.

Introduction

‘Planning’ for energy-transition has become an important topic in the planning domain. The challenges imposed by climate change and the 2015 Paris Agreement urge countries to push their current fossil-based energy system towards a sustainable low carbon system. This is not an easy thing. Energy-transition, that is the transition towards a fossil free sustainable energy system, is a ‘persistent’ problem (Rotmans and Loorbach 2009). Furthermore, existing norms, rules and regulations can hinder or block the uptake and implementation of promising innovations, meaning that in energy-transition institutional and societal innovations are as essential as technical innovations (Hackmann *et al.*, 2014; ISSC, 2013; Sovacool 2014; Weaver *et al.*, 2014).

One of the critical issues in planning for energy-transition is to accommodate and integrate the implications of the energy-transition with other land-uses and spatial issues (De Boer and Zuidema, 2015; Oudes and Stermke, 2018). Recent studies show the enormous impact energy-transition will have on the existing landscape (e.g. Sijmons *et al.*, 2017; Kuijers *et al.*, 2018). This impact not only concerns the allocation of renewable energy sources such as wind turbines and solar panels. Energy-transition also calls for new infrastructures and

distribution networks, for energy-storage facilities, for new smart combinations of land-use, and for refurbishment or replacement of existing buildings. These kind of developments go beyond technical innovations and the spatial allocation of renewable energy sources. They call for policy innovations and new institutional structures and arrangements. However, what exactly is needed and which pathways for energy-transition can be followed is unclear.

In the Netherlands, regions are considered the crucial level of scale for addressing the challenges of energy-transition (SER, 2018; Rijksoverheid *et al.*, 2018). In various regions, leading up to regional debates and in preparation of a regional energy strategy, regional design ateliers have been organised to address these challenges and fuel the energy-transition process. Regional design ateliers can be understood as cycles of multiple (generally two to three) one-day meetings in which regional stakeholders, under the guidance of a team of spatial designers, explore and discuss spatial issues and challenges (Kempenaar and Van den Brink, 2018), in this case focussed on energy-transition in the region. We studied eleven energy-transition based regional design ateliers that were held in 2016 and 2017 in the Netherlands to find out what these regional design ateliers contributed to dealing with the challenges imposed by energy-transition.

Regional design ateliers

In regional design ateliers, spatial designers (e.g. landscape architects, urban designers) prepare, organise and hold multiple atelier sessions, in which various relevant regional stakeholders are invited to participate. The results of these atelier processes generally have the aim to be used in (strategic) spatial planning processes (Kempenaar forthcoming). Within strategic spatial planning they serve multiple purposes and have different roles. Regional designs can have a determining character, for example in establishing the common denominators in a region, a problem-defining and agenda-setting character, when it addresses new challenges and issues, a proposing character, e.g. when it support decision making with multiple options, or a composing character, for example in the situation where it connects stakeholders with actions (De Zwart, 2015).

During regional design atelier sessions both the problem and solution space of spatial issues and challenges are extensively explored and discussed with and between stakeholders (De Jonge, 2009; Kempenaar *et al.*, 2016). While doing so, the characteristics of the regional situation and other spatial developments, issues and challenges are always taken into account. After all, the region is no tabula rasa, and multiple trends and ambitions determine the future of the region. Furthermore, regional design envisions possible future regional situations, including how they can come about, and therefore focuses both on the content and process of future developments. In other words the institutional design of the process of change is, next to the spatial dimension, an integral part of the issues addressed.

Regional design ateliers are soft spaces in which stakeholders and designers freely explore spatial issues and their possible solutions (De Jonge, 2009). They generally have little formal power as decision making takes place in other settings and designated places. Interestingly, this relative absence of power, and a strong focus on substantial issues and real situations, is said to create circumstances enabling a genuine dialogue (Ceschin and Gaziulusoy, 2016; De Jonge 2009). In this dialogue, information, knowledge and perspectives are shared and new relationships emerge. Furthermore, this dialogue enables collective conceptualization and envisioning (Kempenaar *et al.* 2016), opening up new perspectives, possibilities, and never-thought-of ideas. It also changes conditions for future developments as it affects the perception of stakeholders, it prepares them for future action and it builds relationships and networks (Kempenaar *et al.*, 2016). These are valuable assets energy-transition processes.

Methods and Materials

In the spring of 2016 the ‘Deal Pilots Regional Energy Strategies’ was drawn up between various governmental organisations in the Netherlands. A group of five regions were selected out of a group of twelve as pilots and

received funding to develop a Regional Energy Strategy (RES). The focus of the Regional Energy Strategy would be an energy-neutral region in the year 2050.

Part of the funding for developing a RES was labelled for organising regional design ateliers. Initiated by Atelier X of the Ministry of Internal Affairs (formerly part of the Ministry of Infrastructure and Environment), a particular goal within the deal was to employ design in exploring and researching the spatial dimensions of regional energy-transition. This resulted in the organisation of regional design ateliers in all five pilot regions.

In addition to the five pilot regions, six other regions are included in this study that organised energy-transition oriented design ateliers supported by Atelier X. Two regions hooked on to the process of the RES-deal, their interest being to learn and gain experience in the ins and outs of regional energy-transition. Four other regions organised regional design ateliers on energy-transition as part of their own (spatial) planning and development processes.

In line with the five pilot regions, all regional design ateliers included in this study took regional energy-neutrality in 2050 (or earlier) as a starting point. Furthermore, they all focussed on formulating and reifying the regional challenges in reaching energy-neutrality, identifying its' spatial impact and opportunities, and the translation of ideas into possible strategies and projects.

To analyse the 11 regional design ateliers we gathered documents on the regional design ateliers via websites, via contact persons, and via personal contacts. The documents were analysed on four different aspects of the regional design ateliers. These are 1) the input for the design sessions, 2) the process or institutional design of the regional design atelier, 3) the output of the design atelier, and 4) the context of the regional design atelier. To supplement the findings from the document analysis, as well as to triangulate the first findings, six interviews were held with designers, consultants and stakeholders involved in multiple of the studied regional design ateliers. These interviews were analysed on the same four aspects of the eleven regional design ateliers. The findings from the document & interview analysis were then discussed with a focus group of 16 experts stemming from various organisations involved in regional energy-transition processes in various Dutch regions.

Results

The spatial dimensions of energy-transition

The analysis of the 11 design ateliers showed that they all created insights on the regional dimensions of energy-transition and its' spatial implications. In each of the design ateliers the stakeholders looked at, and discussed calculations on the current energy-use in the region, the expected future energy-use, the potential for energy-reduction, the existing regional renewable energy production, and the potential for renewable energy sources in the region. The calculations differentiated between gas-, heat-, electricity and other kinds of energy, and between the different demanding sectors, such as industry, housing, transport, agriculture, and offices. For those stakeholders not stemming from the energy-domain, it was enlightening to start learning about what energy-transition actually encompassed.

In addition to the calculations, the use, the expected use and particularly the expected regional potential for renewable energy was translated into spatial dimensions and mapped out for the region. The potential for wind-energy was for example translated into the amount of wind turbines of a certain height, as was the solar-energy potential translated into ha. of solar-parks. These were then placed on a map of the region, clearly indicating the spatial footprint needed for producing enough energy from renewable sources to meet the regional energy demand (as regional energy-neutrality was the starting point of all design ateliers).

In this mapping, specific regional situations were taken into account. For example obstacles or restrictions related to certain land-uses, or protected sites (e.g. nature reserves) were included in the maps. Also the

opportunities for using residual heat was explored, capitalizing on the proximity of housing near heat producing industries.

The visualisations, and particularly the visualisation of the spatial footprint of different renewable energy sources, triggered a lot of discussions. Most of all it created insights and raised awareness on energy-transition amongst stakeholders. Talking about percentages and peta joules (a much used unit to indicate energy) seemed to have kept the discussions up till then rather abstract. Drawing and mapping the implications made them concrete and foreseeable, revealing the radical impact of energy-transition on the existing landscape and spatial situation.

The ateliers furthermore made the stakeholders aware of various uncertainties and unknowns related to energy-transition. Geothermal energy, for example, is seen as a promising potential energy-source. However, its potential depends on the specific geomorphological/geological regional situation. Detailed mapping of this situation is only available for a few areas in the Netherlands, making it hard to incorporate feasible estimations of geothermal energy in the future energy mix of the region. This also accounts for yet unknown, innovations and the development of promising new technologies.

What not addressed

Despite the extensive mapping and visualising of the spatial implications of energy-transition in the regional design ateliers, not all spatial dimensions were fully addressed and explored in the ateliers. Whereas the spatial footprint of renewable energy sources got attention in all ateliers, only a few touched upon the issue of adjusting and renewing the infrastructure for transport of energy. Nor storage facilities for storing the surplus of produced energy, or the spatial dimension of reducing energy use were extensively addressed and explored. Each of these topics, depending on future developments and choices, has specific spatial implications and land-use demands, and is critical in planning for energy-transition.

Furthermore, in most of the regional-design ateliers the relationship of energy-transitions with other spatial issues, challenges and developments was not properly addressed. Energy-transition, as any other major transformation in the spatial domain, leads to opportunities and obstacles for other existing and future land-uses, with potential synergies and trade-offs. One region did incorporate a first exploration of the relationships of energy-transition with economic developments and the revitalization and renewal of neighbourhoods. However, other land-uses and spatial issues such as agriculture and flood-protection were left untouched.

Outside the scope of the region

All 11 regional design ateliers had their main focus on the region, and the discussions were guided by the idea to make the region energy neutral. This raised discussions in all ateliers on the delineation of regional energy-transition. What should be taken into account and what should be left out. What to do for example with national and international transport, both over land, water and by air, related to the inhabitants and businesses in the region? Also the question arose in some ateliers on what to do about other sources of greenhouse gasses (e.g. agriculture or peat oxidation), should these also be included in a regional strategy? Each region took a pragmatic stance on this in the end and clearly indicated what was taken into account and what not.

Furthermore, the relationship with both the local and (inter)national scale was regularly addressed in the majority of the design ateliers. Although the discussions took place on a regional level, implementation of ideas and concrete actions will have to take place on a local level. In addition, some of the investments needed in the future, particularly where new infrastructure is concerned, cannot be decided on, or financed by the region itself. This calls for participation and action from the national government and actors operating on a (inter) national scale.

Finally, in a few regions the discussion also turned to the position of the own region towards other regions. For example, one of the regions discovered during the atelier-sessions that it probably would be able to cover its own future energy demand quite easily with renewable sources, considering the available space in the region. This opened up the exploration of the idea of becoming an energy-supplying region. However, most regions did not (yet) reached the point to address its' relationships with other regions in relation to energy-transition.

Unfinished conversations

The findings on the design ateliers on regional energy-transition in the 11 regions give the impression that the conversations in the regions on the spatial implications of energy-transition have just started and are far from finished. First insights were created, shared and discussed on the spatial dimensions of renewable energy production, the spatial footprint, on the future energy-use and energy-mix in the region. The analysis furthermore shows that other important spatial implications have only been briefly touched upon were completely left out. These include new energy-infrastructure needs and energy-storage facilities, the spatial implications of energy-reduction, relationships and smart combinations with other land-uses and spatial developments, relationships with the local and (inter)national scale, relationships with other other (neighbouring) regions, and a full exploration of the translation of the spatial implications towards a (spatial) strategy.

The seemingly limited scope of the conversations in the regional design ateliers can be explained in several ways. First of all energy-neutrality within the region was the more or less fixed starting point for the design ateliers and the development of the regional energy strategy. This perspective turns the focus automatically inwards to the region itself and less to (possible) relationships with other regions or the local and (inter)national scale.

Secondly, energy-transition is a relatively new topic in the spatial realm, making that stakeholders rooted in this domain still have to become familiar with the ins and outs of the energy-system and future options. This is also the case for all other stakeholders from outside the energy-domain. Furthermore, a similar thing accounts for stakeholders from the energy domain. They have to become familiar with integral perspective and ways of working of the spatial realm. A lot of 'getting to know' and learning took place in the ateliers in order to have a good conversation on the central issue addressed, that is the spatial implications of energy-transition in the region.

Third and finally, energy-transition is encircled with a lot of uncertainties and unknowns. Although a sense of urgency is felt by many, it is unclear what the best way to go is. For example, certain techniques are quite well developed, such as wind turbines and solar panels, whereas others, such as geothermic, are promising but still underdeveloped and unsure. These unknowns and uncertainties inevitably will change in the future, opening up, but also closing down options and possibilities.

Discussion & Conclusion

The results of the study show that all 11 regional design ateliers on energy-transition produced new insights and ideas, and influenced the perspective of the involved stakeholders. To fully employ this influence potential of regional design ateliers two factors are of interest: the embeddedness of the regional design ateliers in the overarching transition management process, and the range of stakeholders involved in the design ateliers. The studied 11 atelier processes all had a different embedding in the overarching process. Some were part of drawing up a regional energy strategy, whereas others were rooted in the development of new spatial visions. Furthermore, the institutional design of each of these processes was different, leading to different use of the results and outcomes. The context in which regional design ateliers are embedded pre-determines where they are expected to have their influence (Kempenaar *et al.*, 2019). This embeddedness should therefore be a point of careful consideration and attention in the institutional design of transition management processes.

The range of stakeholders involved in the regional design ateliers was broad and varied between the 11 studied ateliers. Predominantly, the stakeholders came from energy-related and spatial planning-related public and private organisations. In some cases the amount of stakeholders involved grew during the atelier sessions up to over a hundred people. The involvement of both inhabitants and politicians was limited in most atelier processes, although most included them at dedicated moments during the process. There seems to be no ‘rule of thumb’ on how or when to involve either of these specific groups in regional design ateliers, whereas particularly the involvement of politicians or other decision-makers can be valuable in influencing decision making. Further research into influential regional design ateliers, or in comparable processes, such as design-charrettes in the US (e.g. Condon, 2008; Lennertz and Luzenhiser, 2014), could be the base for developing guidelines for the involvement of different stakeholder groups.

To conclude, the study of 11 regional design ateliers revealed the value of these ateliers in regional energy-transition processes. However, design ateliers are not the only valuable activity. Research, technical innovations, experiments, implementation project etc. can all make valuable contributions. The various activities should be well embedded in the overall institutional design of the transition process, so that all activities can mutually benefit from each other. Furthermore, the analysis also revealed that the potential of regional design ateliers was not fully employed yet. Leading to the recommendation to continue the organisation of regional-design ateliers as part of the regional energy-transition process. In addition, uncertainties and unknowns develop and will disappear or change over time, also from this perspective it can be worthwhile to organise additional regional design ateliers as part of program of activities that fuel regional energy-transition.

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Regional Design: impacts on territorial governance and planning practice

Land take and regional planning: promoting sustainable settlement development in urban regions

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Abstract: In Germany the national goal of reducing land take is opposed to the increasing demand for new spaces for housing and commercial construction, especially in already concentrated urban regions. Many dominating regional centers are not able anymore to satisfy the settlement pressure within their own boundaries. So regional solutions are required. Regional planning is an important player concerning sustainable settlement concepts in Germany with almost fully developed tools to provide land reduced settlement structures. Within this paper success factors as well as obstacles for the realization of the vision of compact and environmentally sustainable settlement structures in urban regions are shown. On the one hand, it provides a presentation of the regional planning tools promoting this spatial vision. In the light of an implementation deficit of the regional requirements on local level caused by a lack of acceptance for compact and space-saving settlement structures, there is, on the other hand, a need for innovative approaches of informal cooperation, participation and awareness raising. For this purpose, two case examples from the German regions of Hannover and Stuttgart are presented.

Keywords: regional planning; space-saving settlement development; participation; process design

Introduction

Many cities in Germany are facing increasing settlement pressure due to high immigration rates (Milbert 2017). Especially centres in concentrated urban regions are not able anymore to satisfy the demand for new spaces for housing and commercial construction within their own boundaries. Regional solutions are required to guarantee an appropriate settlement development. At the same time the national goal of reducing land take has to be pursued. Within the strategy for a sustainable development from 2002 the federal government stated to reduce land take for the purposes of settlement and transport nationwide to 30 hectares per day until 2020 (Die Bundesregierung 2002). In 2016 this was updated to “under 30 hectares per day until 2030” (Die Bundesregierung 2017). The long-term perspective is a net-zero land take objective of a circular land use, in which first-time land take is largely replaced by a reuse of existing settlement and transport areas (BMUB 2007). By this, land take is equally recognised as environmental problem as climate change or decline of biodiversity (Rink and Banzhaf 2011).

Since the second half of the 20th century land take for settlement and transport purposes in Germany increases constantly and decoupled from population growth. This has mainly ecological effects (loss of open space, damage of natural soil functions as well as flora and fauna), but also negative social (loss of recreation areas)

and economic effects (increasing costs for the maintenance of infrastructure and mobility costs). Namely the daily growth rate of land take for settlement and transport purposes declines as a result of versatile activities in land policy since 2002. Nevertheless, the development trend of 62 hectares in the annual mean of four years from 2013 to 2016 is still high above the goal of 30 hectares, as seen in Figure 1.

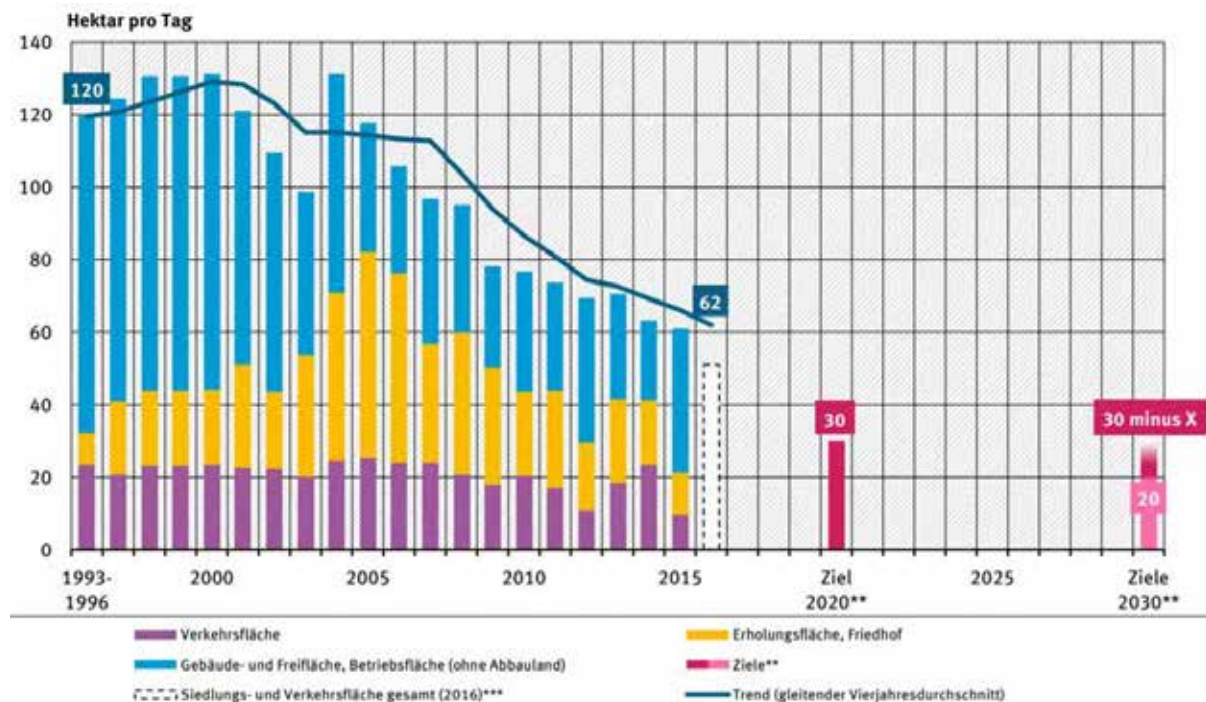


Figure 1: Increase of settlement and transport area in hectare per day (Source: UBA 2017)

Against this background, the development of compact, environmentally sustainable settlement structures in a regional context can contribute to the limitation of negative environmental impacts of land take. Due to cross-border causes and effects a management on local level is no longer adequate. So, regional planning is an important player concerning sustainable settlement concepts in Germany. Based on results from a research project "Compact, environmentally sustainable settlement structures in a regional context" of the Umweltbundesamt (Federal Environment Agency Germany) this paper deals with opportunities and obstacles by implementing this vision. By means of case studies regional planning tools, as well as particularly informal approaches of cooperation, participation and information within the field of action of regional planning, and their management effects were analysed. With regard to latter especially two regions are discussed: the Hannover region and the Stuttgart region. Besides the evaluation of planning documents, it can be relied on intensive expert discussions to conclusively formulate recommendations, how to force space-saving settlement development at regional level.

The definition of compact, environmentally sustainable settlement structures in a regional context

The vision of compact, environmentally sustainable settlement structures in a regional context requires a definition on the basis of qualitative criteria. These rest on the two main negative environmental impacts caused by settlement development: land take and pollution by traffic.

Therefore, settlement structures in a regional context will be compact and environmentally sustainable, if they minimise land take (1), connect new settlement developments to existing settlement structures (2), limit urban sprawl (3) and use land efficiently by developing inner-city areas before greenfield (4). In addition, settlement development should be concentrated on few suitable places, which own an appropriate supply and development

function (5), with accessibility advantages, especially public transport connections (6). The system of public transport therefore serves as base structure of regional settlement development (7) and should be preserved and strengthened (8), so that a reduction of transport related land take and emissions can be achieved (9). At the same time, large open spaces have to be held free from settlement activities (10) and the functions of open spaces to be protected (11). All in all, healthy working and living conditions should be promoted (12).

This definition receives a broad consent among the planning experts of the case studies. It became clear that the aspect of minimising land take is dominant in planning practice, which is why this is focused hereinafter.

Management of compact, environmentally sustainable settlement development by regional planning in Germany

Regional planning in the German spatial planning system is the intermediate level between the both superior levels of national and federal-state spatial planning, and land-use planning on local level. Under the guiding principle of a sustainable spatial development (§ 1 (2) Federal Planning Act (Raumordnungsgesetz des Bundes, ROG)) regional planning concretises the aims and principles of spatial planning, made on national and federal-state level, for the regional level and makes specifications in a regional plan in accordance to § 8 ROG, especially to manage the development of settlement and open space as well as transport, supply and disposal infrastructure. The practical implementation of these requirements on local level occurs by land-use planning. Latter has to adapt the binding aims of spatial planning (§ 1 (4) Federal Building Code (Baugesetzbuch, BauGB)).

The case studies show, that the vision of compact, environmentally sustainable settlement structures in a regional context is embedded in every examined regional plan. Various regional planning tools are used to manage a sustainable, space-saving settlement development. Besides a large-scale location-management (decentralised concentration) and site securing, there are restrictive specifications, which should prevent settlement in unsuitable places and in a not appropriate extent. The single planning tools are designed in accordance to the specific regional conditions in each case.

Basically, the large-scale location-management takes place by defining areas for the concentration of settlement activities; if necessary differentiated for housing and commercial construction. “Central locations” (in Germany defined as municipalities with a determined supra-local supply and development function) generally form such points of concentration for construction. “Development- or settlement-axes” function as regional backbone for settlement development. Public transport stops or stations also often are determined as focal points. This concentration promotes the use and utilization of existing transport infrastructures, whereby simultaneous land take for new ones is avoided. The principle of primacy of inner-city development is also a specification of large-scale location-management. It contributes to the minimization of land take, prevention of urban sprawl as well as keeping and protection of open space.

Another regional planning tool is a small-scale site securing of (preferably regional significant) areas for housing and commercial construction by designated clearly defined priority areas. These prove the connection of new settlement developments to existing settlement structures, the limitation of urban sprawl and focal points of settlement with accessibility advantages.

Besides these prioritised areas for settlement activities, some regions count on a quantitative limitation of spatial development by an obligatory proof of demand for land take. Municipalities have to state their demand for settlement activities on the basis of the expected future population development. The aim is to give them an understanding of strategical consideration of their settlement activities and to prevent open municipal tender planning resulting in land take.

Further limitation of settlement activities occurs by restricting the development framework of certain communes to the extent of their endogenous development (as the reverse of decentralised concentration). This involves the municipalities without supra-local supply and development function. By benchmarking it receives a quantitative dimension. The approaches to determine the local requirement differ in terms of the benchmarks and the related time period. They can refer to a percentage rise of settlement area, but values in relation to population or housing development are more proper, because of their direct reference to the actual needs.

The determination of gross settlement densities for different settlement types to be applied to new housing settlements are another form of quantity management. This contributes to the minimization of land take by using space efficiently. Open spaces and their functions are protected against being built on and damaged.

“Priority areas” and “reservation areas” protecting open spaces work as negative-planning location-management keeping large open spaces free from settlement, and preserving habitats and biodiversity. “Settlement breaks” and “green belts” should, for example, hamper the merging of settlements. Mono- and multi-functional regional planning protected areas complement the open space conversation.

According to an integrated development of settlement and transport regional specifications in terms of securing routes for roads and railways have relevance for compact, environmentally sustainable settlement structures by saving existing lines as well as areas for expansion and new construction. Preservation and strengthening of existing networks prevent land take for transport purposes. Especially routes for new railways are promoting an environmentally sustainable mobility.

Opportunities and obstacles in the implementation of compact, environmentally sustainable settlement structures in a regional context

Opportunities

Objectives and use of instruments in the regional plans in Germany are oriented to the implementation of the vision of compact, environmentally sustainable settlement structures in a large extent. The almost fully developed regional planning tools for this purpose constitutes one of the greatest potential benefits. Regional planning makes use of its regulation and management function in all areas, which are relevant to a sustainable, space-saving settlement development, and influences the development of settlements, open spaces and transport according to the spatial vision. In this respect, it relies on a mix of instruments, which is both qualitative and quantitative, and positive and negative in term of planning. Additional supporting instruments beside the regional plans are systematic monitoring systems for settlement areas on regional level recording factual land take and its change. With steady maintenance these could serve as implementation control of regional specifications.

Off the legally binding possibilities of managing settlement development, currently occasional and regional specific informal approaches in the form of integrated or sectoral concepts, or formats for information, participation and cooperation offer important opportunities for the mediation of the issues and the promotion of the implementation of compact, environmentally sustainable settlement structures in a regional context. Meanwhile mandatory on local level, the use of such informal approaches on regional level is limited yet.

A significant success factor of the vision’s implementation is the awareness of its necessity and the commitment among the regional planners. Expert discussions as well as the design of the regional plan can state this. As addressees and finally responsible authority for the implementation of regional specifications the local level of land use planning and its actors is another important factor. Thus, it is beneficial that awareness and commitment for compact, environmentally sustainable settlement structures is existing among the local planners as well. Formats for exchange between the regional and local level are mentioned as very helpful.

Also, a “strong” status of the regional planning, appearing in consistent assertiveness, has occasionally been stated as an advantage in the implementation of the vision. In connection with inter-community conflicts it is even demanded in the sense of a clampdown. The significance of the regional level for the management of sustainable settlement development is illustrated by this.

Obstacles

Although the regional planning management instruments, characterised by a restrictive locational management approach, constitutes one of the greatest benefit potentials for the development of compact, environmentally sustainable settlement structures, occasionally there are deficits in the implementation of the vision within the regional concept of settlement structure and use of regional planning tools. In particular, wiggle room appears in the limitation of land take and acceleration of a compact settlement structure due to increased densities. Quantified specifications derived from the 30 hectares-goal are hardly made yet.

The regional provisions need to be implemented by the land use planning on local level in accordance with the planning sovereignty derived from the guarantee of municipal self-administration. Therefore, the decision-making as well as their influencing actors on local level constitute central factors. The major obstacle in this context is the citizens’, the business community’s and politicians’ lack of acceptance or awareness of compact, environmentally sustainable settlement structures in a regional context.

Residents influence the shape of new residential areas through their residential preferences, predominant home ownership of single- or two-family house with garden. At the same time, more concentrated structures in their own environment are rejected, caused by stigmatization of clients of multi-floor residential buildings and concerns about traffic-referred exposure or negative effects on city- and landscape. In addition, there is an increased willingness to oppose construction projects. The “Not in my backyard (nimby)”-effect especially occurs, if denser areas of (housing) construction are to be built. Thus, an efficient use of space with reduced land take is hampered and planning processes become increasingly complicated and longer.

Accordingly, a less dense settlement structure is often pursued by political actors as well. Especially in less dynamically developing regions space is even seen as an economic factor, by which the aforementioned residential preferences can be satisfied and residents be gained. This political self-interest at local level is based on financial considerations within inter-municipality competitions, for example for affluent citizens, jobs or income tax. It constitutes an obstacle to the implementation of compact, environmentally sustainable settlement structures and causes excessive land take. Furthermore, the lack of long-term strategic considerations around settlement development at the local level has a negative effect in this context, hampering a needs-based and efficient land use.

Despite an increasing regional way of living, where living, working, shopping etc. take place in different locations, the politicians’ and citizens’ perspective is strongly marked by the local and with regard to a sustainable, space-saving settlement development sparsely beneficial. This is also apparent in the low level of intermunicipal cooperation, especially in the development of commercial areas, which hampers efficient cross-border land use and exploiting locational advantages.

Within the case-study regions, concentrated structures play no role for companies, whereby potentials to save space cannot be taken to advantage. Instead, still space-intensive hall buildings with large parking areas are dominating. Retail mostly is organised single-story as well. Consequently, the accompanying space requirement for industry and commerce regularly is realized on greenfield, followed by a loss of open space and their natural functions.

Another obstacle are speculations by land owners of undeveloped real estate as potential areas for construction or compensation in outer-city areas as well as potential sites in inner-city areas. Therefore, on the one hand development areas, saved by regional planning and suitable in accordance to a sustainable settlement development, on the other hand inner-city development potentials cannot be activated. Efficient land use through inner-city development and simultaneous reduction of land take becomes more difficult, and opportunities for developing suitable sites limited. At the same time, the resulting alternative land take of available open space favours urban sprawl and fragmentation.

Complementary, increased use of informal approaches of cooperation, participation, awareness rising and sensitisation in terms of a space-saving settlement development

The sophisticated regional planning tools indicate, that compact, environmentally sustainable settlement structures in a regional context accompanying reduced land take occurred, if settlement development would follow the strategies of regional planning. But, the regional planning is lacking incentive and executive instruments to strengthen implementation of the vision. Though, within the existing legal framework there are various possibilities to support the regional objective of saving space by increased use of informal approaches and measures. Two good examples of innovative informal participation serve the German regions of Hannover and Stuttgart.

Save space together by regional cooperation and spatial development concepts

Local perspective and motivation of decisions partly differ significantly from regional. Furthermore, a cooperative, intercommunal development of settlement is hardly existing in Germany. So, efficient organisational structures for a more intensive intercommunal or regional cooperation have to be created as a framework for multi-level and multi-actor discussion of this topic. The aim is, at least, to curb local competition for residential populations and enterprise (UBA 2018), to promote a sustainable land use, and to protect open spaces. The basis for collaboration is informal cooperative approaches rested on voluntariness, consensus-building and self-commitment. Building confidence is essential. Within horizontal, network-like cooperation and dialogue, small-spatial as well as thematic aspects can come to the fore. One instrument for showing the results of these processes, and for fixation of objectives and strategies, are regional development concepts (UBA 2018).

Informal cooperation regarding the minimization of land take particularly provides itself in the specific fields around the development of residential and commercial spaces, to come to a fair mutual handling and a win-win-solution for all. Thereby, quantity goals for land take should be discussed and preferably be agreed, and perspectival an equalization of benefits and burden be established. In these more conflict-ridden area, intercommunal cooperation has to be understood as a learning process, which is sometimes suffers backwards steps, before a breakthrough can be achieved. Functioning informal approaches often represent a preliminary stage to official cooperation with long-term impact (UBA 2018).

New elements of process design to convince local decision-makers

As cities and municipalities, as bearers of the planning sovereignty, implement the regional specifications, acceptance for the regional space-saving strategies has to be won among political decision-makers at local level. As a result, inclusion of these in regional negotiation processes is significant to realize compact, environmentally sustainable settlement structures. It is important to put the topic onto the political agenda, to convey the regional-planning vision of settlement development, and to encourage understanding.

A first step is to prematurely involve politicians in the regional plan preparation procedure. Herein regional needs around settlement development, in particular the generation of compact, environmentally sustainable

settlement structures in a regional context, should be clarified and appropriate cooperative goals be identified. By using simulation games, impacts of different development strategies are shown. Results, such as cooperative developed goals, absolutely have to be made visible within the regional plan specifications. A transparent mediation of backgrounds influencing the design of regional planning and of underlying strategies for the regional settlement concept, pursued by the regional plan, contributes to the implementation in local level. The role of regional planning is to initiate, organise and accompany the discussion process as well as show and communicate the results.

Exchange between regional and local level should occur regularly and continuously in order to discuss the themes of sustainable, space-saving settlement. Therefore, an example are mayors' meetings joined by regional planners to convey the regional planning ideas. Further possibilities of awareness rising and required action illustrating are excursions and training events for political decision-makers. By showing best-practice examples for concentrated construction and settlement a positive image is created. Efficient and space-saving land take can be supported by showing or even providing information- and monitoring tools for inner-city development.

Sensitisation of citizens and companies of compact, space-saving settlement structures

Regarding the lack of awareness and even defensive reactions concerning concentrated, space-saving settlement structures among citizens there is a significant need to create macrosocial awareness for compact, environmentally sustainable settlement structures. Thus, the efforts of conveying this vision have to be addressed to citizens and companies as the end users of land as well.

Civil dialogues at local level increased and were specifically planned in the past years, neither did regional coordination and planning processes. Therefore, regional planning should contribute to a public debate and a sensitisation for the vision by using formats of information, communication and participation. Also, persons not directly concerned by construction projects could be introduced to the topic in this way. Especially impacts of behaviour patterns, for example the choice of residential location in relation to working location or the choice of a certain form of housing, have to be discussed. It is important to show regional coherences and effects, which currently increase in everyday live. By including civil and commercial actors in regional planning and development processes their increased need for participation will be met. As already stated, cooperative developed guiding principles serve as legitimisation for regional planning action and objectives' implementation.

The demonstration of positive examples of dense residential and commercial areas, and inner-city development projects, have significant potential to generate acceptance for compact, environmentally sustainable settlement structures in a regional context.

Regional participation process "Vision of the future for the Hannover region 2025" within the preparation of the regional plan

In the run-up to the preparation procedure for its regional plan, the Hannover Region, as a regional planning agency, in 2012 and 2013 carried out a comprehensive new informal participation process in Germany, involving experts and specific stakeholders as well as citizens in order to create a vision of the future for the region. In the following, this served as the basis for the further concrete design of the regional plan.

Through various events for different target groups, two public dialogues as a kick-off and closing event, the internet platform "Dialogue: Future Region Hannover", which offered information but also the possibility of an interactive dialogue for discussion, as well as an accompanying positive dissemination in the media a broad social discourse was created. A total of eight expert workshops and a joint expert dialogue were held for the regional specialist administration teams, the representatives of municipal planning and external experts. An innovative aspect was the early involvement of citizens in the context of regional planning, which was promoted

by the Federal Ministry of Transport, Building and Urban Development as a model project of national urban development policy. Around 12,000 inhabitants participated in five dialogue forums on five core topics and via the internet platform. Regional politics was integrated and informed during the process. In addition, a workshop took place with the regional committee members to discuss the draft of the future vision.

The results of the process are seven “visions of the future” on the topics of equal opportunities in demographic change (1), economic development (2), equal and healthy living conditions (with less space consumed) (3), open space and recreation (4), energy and climate protection (5), mobility (6) and cooperation (7). For each of them, target statements were formulated for the period up to the year 2025, concrete ways of implementation were pointed out and vividly presented via collages. Fixing the seven “visions of the future”, represents the consensual setting of objectives for regional development and serves as a basis for legitimising further regional planning action (Region Hannover 2014). This has created awareness and acceptance among local decision-makers, citizens and companies about the challenges and approaches of regional development. The necessity of a compact, space-saving settlement development with an adequate supply of open space to the cities and municipalities was communicated.

Participation and model process “International Building Exhibition 2027 CityRegion Stuttgart”

An International Building Exhibition (Internationale Bauausstellung, IBA) is an instrument of urban and regional development. It serves the development, testing and presentation of innovative constructing and planning solutions. Under a specific theme, exemplary and forward-looking processes and model projects are carried out in a district, city or region within a limited period of time and space. Current tasks and developments in architecture, urban planning and regional planning should be demonstrated and discussed in and with the international public (Open IBA 2019, Spektrum 2001).

The “IBA 2027 CityRegion Stuttgart” takes place between 2017 and 2027. It is intended to turn the region into a field of urban planning and development by experimenting with exemplary innovative solutions for sustainable urban development. The framework of the “IBA 2027 CityRegion Stuttgart” is built by four different thematic complexes. Within the thematic complex “Building culture of a new modern age” a new urban development and planning model (“Charter of Stuttgart”) should be developed, which in particular addresses the problems of housing shortage and the aspects of mixed use, density, sustainable mobility and urban landscape integration. The second complex “Integrated neighbourhoods” aims at the creation of a mix of urban spatial functions, in which affordable living space is provided and current needs such as intergenerational housing forms and open spaces close to residential areas are addressed. Innovative, space-saving solutions are to be developed against the background of the high regional settlement pressure. The complex “New technologies for the urban region worth living in” refers to resource- and energy-efficient construction and digitisation in urban and regional development. “Region is city and city is region” describes the fourth complex. It deals with bundling regional forces in order to cooperatively manage the current spatial change under the influence of growth, the contrast between building and landscape, city, nature and river (Wirtschaftsförderung Region Stuttgart GmbH 2016). Within the framework of the “IBA 2027 CityRegion Stuttgart” several so-called IBA districts are to be created with model character for other regions and municipalities. The individual projects then form an IBA network: on the one hand, virtually through knowledge transfer and research work in urban and regional development, and on the other hand, in reality through construction and infrastructure measures. Until the final festival of the IBA in the year 2027 further IBA festivals in the years 2023 and 2025 are planned. These are understood as “exhibitions for temporary experimental buildings”. After completion of the IBA, all exhibition projects will be integrated into the region and reused (IBA 2027 StadtRegion Stuttgart GmbH 2018).

Before the start of the “IBA 2027 CityRegion Stuttgart”, a participatory platform process was carried out in 2016. Around 500 people from civil society, politics, planning, architecture, arts and industry took part in various workshops and forums. The results, consisting of the thematic complexes, were recorded in the

"Memorandum IBA 2027 CityRegion Stuttgart" and presented at a closing event (IBA 2027 StadtRegion Stuttgart GmbH 2019). The IBA is managed by the company "Internationale Bauausstellung 2027 StadtRegion Stuttgart GmbH iG" founded in September 2017. Its main shareholder is the state capital Stuttgart. "Verband Region Stuttgart", inter alia responsible for regional planning in the Stuttgart region, and the regional business development are participated as well. Further the Baden-Württemberg Chamber of Architects and the University of Stuttgart have little shares each. An artistic director takes over the artistic and content direction (VRS 2019).

Understood as a field of experimentation, the IBA offers the opportunity to involve a broad spectrum of actors in the themes and challenges of regional development. On the one hand, aspects such as settlement densities in particular can be brought closer to the relevant actors through knowledge transfer and exchange in the IBA networks. On the other hand, IBA projects and neighbourhoods make it possible to experience high-quality, space-efficient settlement structures in a regional context. In this way, they contribute to raising awareness and increasing acceptance of sustainable settlement development. Special interest on the part of regional planning applies to the experimental testing of a greater mixture of spatial functions, the review of regional planning action in view of the lack of implementation instruments as well as innovative approaches of new building law (Region Stuttgart 2018 verbal). By involving planning actors, politicians, companies and citizens in this open-ended framework, new impulses for innovative approaches and implementation instruments for integrated planning as well as awareness rising and acceptance for sustainable, space-saving settlement structures are possible.

Conclusion

The reduction of land take and the realisation of sustainable settlement development are central aspects of the German spatial planning practice. As central interface between federal-state and municipality and equipped with a sophisticated tool box, thereby, regional planning has great importance to the implementation of compact and environmentally sustainable settlement structures in a regional context. Efficient use of space by concentrated settlement structures and active minimization of land take on local level often comes across with acceptance deficits and even resistance among citizens and companies followed by politicians. Informal approaches promoting sustainable, space-saving settlement structures in a regional context can help to rise awareness and commitment. Though, these preparatory and accompanying steps besides legally binding regional planning specifications require additional human, financial and temporal resources. Especially, the increasing need and demand for participation and information, such as rising legal requirements for planning procedures claim manpower and working time of regional planners and create costs. So, there is a need to increase human and financial resources in accordance with the new regional planners' and developers' profile of requirements for an appropriate fulfilment of existing tasks as well as newly arriving ones, like a more intensive participation, communication and awareness rising.

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Regional strategy design

– addressing transformations in multiple ways

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Abstract: Regions in the 21st century are subject to global influences which include climate change, resource scarcities, economic transitions, demographic shifts and ongoing digitalisation. If sustainability is to be achieved within this changing context, new collaborations will be required which shape these transformations more proactively. Alongside this, awareness within planning has been evolving, including the recognition that various regional design approaches can complement established planning procedures. Building on these aspects, this article investigates the option to design long-term strategies for the development of regions which are facing fundamental change. To undertake this, a process is considered which took place within a real life experimental situation over a period of four years. This process involved the testing of a new model for “regional strategy design”, which required the cooperation with stakeholders from diverse institutional backgrounds. The Rhenish Mining Area (RMA) in Germany, which is characterised by rapidly changing circumstances, served as a case study. The discussion of the results reflects on the preconditions (e.g. established regional governance), outcomes (e.g. selective interventions) and the question of transferability. It can be concluded that regional strategy design has the potential to develop further as a field of activity.

Keywords: regional design, regional governance, proactive transformation, strategy making

1. Introduction

This article introduces and reflects an approach – regional strategy design – which is intended to address fundamental regional change in multiple ways. Ideas are based on the fact that regions are experiencing worldwide influences including climate change, resource scarcities, economic transitions, demographic shifts and ongoing digitalisation. The 21st century is therefore likely characterised by transformations instead of incremental changes (WBGU 2011, Randers 2012, Schneidewind 2018). In this context, the goal to achieve **sustainability** has been the consensus position of most nations worldwide since the “sustainable development goals” (SDGs, see: UN 2012). On a broad scale, regional societies have to anticipate and qualify “**proactive transformation**” processes beyond crisis management (Wirth 2019a). Within such a context, various changes within planning conceptualisation can be considered as the foundations for this article:

- At the urban and regional levels of action, demands, complexity and integrative needs are high (Albrechts 2004, Healey 2007, Albrechts 2013, Bryson *et al.* 2017), requiring **both short- and long-**

term action (Albrechts 2004, p. 743). Moreover, it is impossible to fully understand and manage interactions between society and space. In this regard, **systemic perspectives** towards regional development offer realistic ways forward. Pragmatically, questions of boundaries, context-specific methods and interventions can be determined on a context specific basis and also simultaneously to some extent (Hartman and Roo 2013, Sposito and Faggian 2013).

- Since the "communicative turn" (Healey 1992, p. 143) and "cooperative action" (Selle 1995, p. 240) in the 1990's, the ambition exists to integrate societal interests into planning procedures on a more frequent and pluralistic basis. In consequence, **multi-functional demands** beyond the scope of land use zoning have come to the fore. Also more generally, standardised planning tools have reached their limits regarding their perspectives, impacts and legitimacies in Europe and beyond (Fürst 2008, Kunzmann 2013).
- In the sense of **planning as an adaptive process** (Wiechmann 2007), **regional governance initiatives** especially have filled gaps – i.e. network cooperation between public authorities, the private sector, academia and civil society (Adamaschek 2003, Albrechts *et al.* 2003). Within regional governance, the coordination of strategic approaches and pilot projects, as opposed to area-wide planning proposals is usually at the forefront (Fürst 2003, p. 442, 2008, p. 94). If open and democratic, this includes or potentially enables **coproduction** approaches, whereby citizens and grassroots organisations take an active role (Albrechts 2013, p. 48).
- In support of regional governance initiatives, (strategic-) planning is frequently concerned with the definition of identity. Often this is combined with efforts to establish **future visions** for a region. In a few, all-too-rare, examples, such as London/UK or Hannover/DE, such visions have explicitly influenced a sustainability transformation of an inclusive and innovation friendly character (Landeshauptstadt Hannover 2011, Greater London Authority 2018).
- Sustainability challenges like climate change (SDGs No. 7, 12, 13, 15) have radical impacts and need untried solutions which must facilitate responses that are both fundamental and explorative in nature. These will require **new implementation models** at different spatial scales using common quality principles (Ganser 2006) and will frequently combine stakeholder knowledge from both practice and science (Schön 1983, Schneidewind and Wissel 2015).

Strategy making, which can be delivered in many different forms (Wiechmann 2007, 2008), has the potential to integrate various demands (Healey 2007), including those previously referred to. Strategies generally describe complex behaviour patterns to achieve long-term goals. In a regional context, strategies are established within complex institutional settings and offer reference points for stakeholder and citizen action. Strategy making can make use of **multi-methodological** working techniques like networking, scientific analyses, plan development, visioning, local implementation and reassessment (Bryson 2016). **Design** can obviously play a major role within regional strategy making processes – at least if understood as a complex and creative decision-making process between rational ambition and intuition (Schön 1983) that is apt to solve even “wicked problems” (Rittel 1973, p. 155).

Specifically considering action at the regional level, **regional design** approaches have been pursued for decades, if not centuries (Neuman and Zonneveld 2018, p. 1). Regional designing has a great diversity of facets, dimensions and performances (Förster *et al.* 2016, p. 5), but generally responds to long-term visions and development perspectives, especially when pressure for change is significant (Kempenaar and van den Brink 2018, p. 80). Often, both physical dimensions and social processes are emphasised (Neuman and Zonneveld 2018, p. 5). In regulatory terms, regional design is a non-binding supplement to the official instruments within planning systems. By addressing specific gaps e.g. limited vision-making capacity within regional planning, its

participants can act in more fundamental, better defined and more experimental ways. In line with this, the range of stakeholders involved tends to be more inclusive and more public compared to formalised planning processes (Balz *et al.* 2014, Förster *et al.* 2016, Kempenaar *et al.* 2017).

There are also examples, where initiatives have **designed regional strategies** aimed at facilitating long-term transformation processes; a theme particularly relevant for this article. In this context, the German IBA Emscher Park (1989-1999) can be regarded as a special example. Based upon a regional change vision, the initiative implemented 91 local projects. The latter included redevelopment of former industrial sites, new housing areas, technological parks for innovation-oriented enterprises and pilot projects which promoted an ecological modification of the entire regional water system (Ganser 1999a, 1999b, Projekt Ruhr GmbH 2005). Nevertheless, one of its leaders retrospectively criticised the lack of long-term impacts and suggested a more “general strategy for the economical, ecological, cultural and social development of a space” (Ganser 2006, p. 545). The relatively recent project “Metabolism of Albania” is an example that may be seen as the modest beginning of a such an approach (Brugmans *et al.* 2016).

Inspired by such examples, this article addresses the option to design long-term strategies for regional development facing and undergoing fundamental changes. To undertake this, an investigation was conducted within a real experimental situation, based upon the application of a new process model for “regional strategy design”. Out of necessity, the approach reflects changing understanding of planning as previously described, to become instead: systemic and multi-functional in orientation, process based and collaborative in character, involved in transformative visioning and also partially responsible for facilitating implementation. In the discussion, preconditions, outcomes and transferability are considered, before final conclusions regarding the potential future of regional strategy design are outlined.

2. Method

For the investigation, the Rhenish Mining Area (RMA) in the state of North Rhine-Westphalia in Germany served as a case study. The region is experiencing a sudden transformation process, due to the accelerated cessation of mining activity and the wider need to develop new spatial, economic and technological futures (Wirth 2019b). With a focus on selected topics of regional significance, the author designed a strategy for the RMA over a period of approximately four-years (2014-2018).

The design process took place in a real experimental situation. Activities were not only geared towards evaluating scientific evidence, but also towards finding solutions to societal interests and needs (Schneidewind and Singer-Brodowski 2014, p. 126). In this case, it meant the author’s own design activity (Pedgley 2007) operating in tandem with the input of other individuals. This role occurred simultaneously both as a research associate at the faculty of architecture (RWTH Aachen University) and as a project manager within a special regional governance initiative dedicated to innovation-oriented projects for the RMA (Zukunftsagentur Rheinisches Revier - ZRR). This resulted in a joint role for the author in two different tasks:

1. In the context of scientific activity, the primary goal was to extract findings, i.e. which outcomes design interventions can produce under certain preconditions in order to guide transformation processes within a region. Responsibilities also included teaching of design studios (architecture / urban design), which were organised in an exploratory manner as part of the investigation.
2. Within practice, the task initially consisted of designing thematic strategies for regional development. Later, the initiation of site-based concepts and operations, would lead on, to potential delivery of clear added value for the region.

The real experimental investigation brought various institutional groups into interaction (see Figure 1). This involved participants from both science and practice:

- 18 key stakeholders in three discussion workshops on the future of the RMA
- Experts / stakeholders from economy, research and policy fields (between 5 and >100 people, depending on topic)
- 8 practitioners in a changing team of regional development (ZRR GmbH)
- 1 research assistant (geography & resource management) at the university
- 38 architecture / urban planning students in design studios

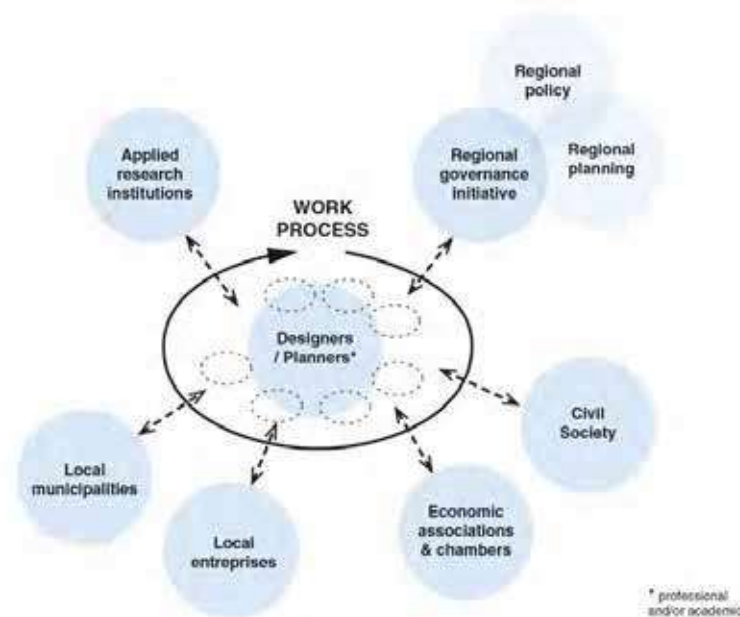


Figure 1: Institutional setting for the real experimental investigation (source: own).

In order to structure the work process, the author tested a new process model for “regional strategy design” (see Figure 2). The model resulted from a criteria-based comparison of six existing models. The latter originated from discourses related to regional governance (Kühn 2008, Bryson 2011), urban metabolism (Oswald and Baccini 2003, Heck 2008) and regional design (Stremke 2010, Brugmans *et al.* 2016). The model for regional strategy design suggests interrelated work sections, which can be understood as building blocks towards a complex strategy. Depending upon the application context, modifications, additions or reductions have to be considered independently on each occasion. Activities within the various work sections can be conducted simultaneously and through partly interactive processes, rather than through use of a traditional linear model. Therefore, linkages and timing were deliberately not specified, at the beginning of the real experimental investigation.

Work of a mainly analytical character was conducted mainly in the scientific sphere and supported by discussions with stakeholders. After the initial activities towards a regional vision (in this case via a series of three events), emphasis was placed upon a second phase with practical activities such as networking within the regional governance institution. Here, actions were considered in more detail, were consolidated and also partially implemented.

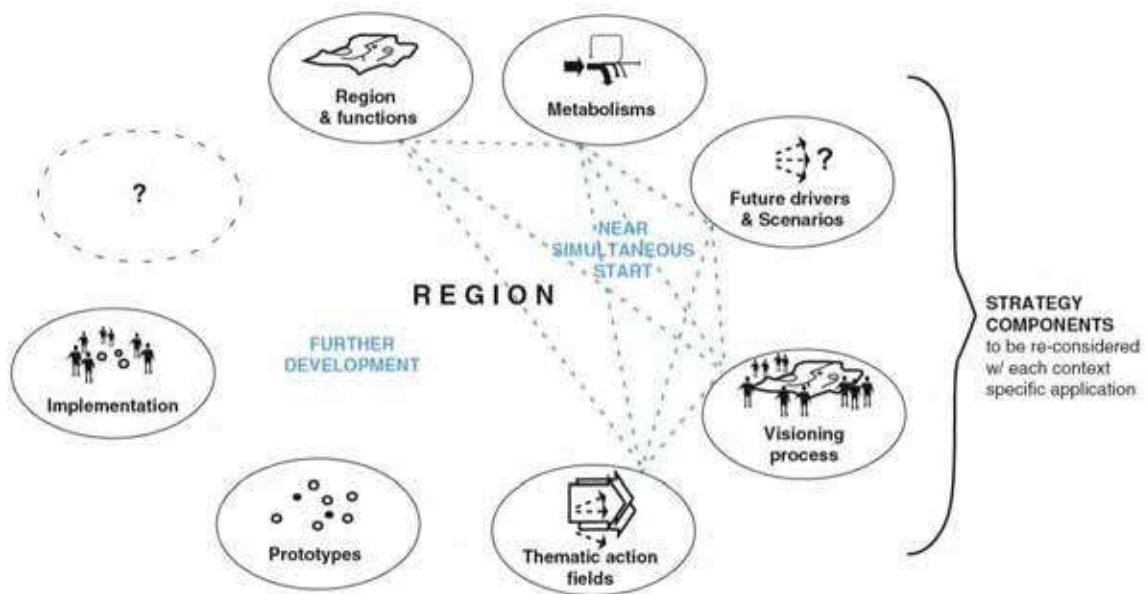


Figure 2: Institutional setting for the real experimental investigation (source: own).

3. Real experimental investigation

This main part of the article reflects the multi-year design process and the resultant experience gained within each work section of the model. Outputs arising from the process, including place-specific results, are also described, in order to provide the reader with tangible examples. However most details regarding these specific results are stated in a further and more comprehensive text (Wirth 2019a).

3.1 Region & functions

In this work section, the space of the region was analysed and key institutions/industries with spatial influence were identified by the author. Later, systematic consideration was given to how far basic socio-ecological needs (e.g. employment, food, recreation or biodiversity) were fulfilled within the region and how far certain assets (e.g. university locations or good soils) were existent. With regards to such questions, a functional analysis was carried out, which concluded with identification of regional strengths and weaknesses. The process started with data-based analysis at university (studies, reports, maps, statistics), then featured visioning with stakeholders (see 3.4) until finally, details were expanded during internal discussions at the ZRR.

The study area is shared by six administrative districts between the cities of Aachen, Cologne, Düsseldorf and Mönchengladbach. An active lignite mining industry is still located in the centre of the Region, although it does not solely dominate the area. About 2.1 million inhabitants live in 64 cities and municipalities (IRR 2014). Overall, various energy and resource-intensive industries such as chemical production, construction, metal, paper and wood processing are active in the region. Regarding land cover, the area consists primarily of fertile loess soils that are used by industrial agricultural enterprises (IRR 2016).

A major **strength** which appeared is that the region is spatially and economically diverse in comparison with other industrial regions in Europe. Moreover, special sites are available for new working and living concepts, including large areas that are being rehabilitated following mining cessation. Advanced knowledge is especially

present in technology-related sectors, e.g. engineering. In the context of a global knowledge economy, the region benefits from prestigious research locations. Finally, albeit still at a purely aspirational level, there is future potential to create a lake type landscape that can evolve following mining activity once open pits are flooded. The core area, the actual RMA, could therefore change in the future from hinterland to become a special destination.

Regarding its **weaknesses**, the study area still represents a region that is largely based upon the consumption of finite resources. In addition to lignite mining, most other industries still act predominantly as linear economic systems. This is associated with negative externalities: CO₂ emissions in the region are high, gravel and sand pits can be found throughout the landscape, nitrate pollution in groundwater and air is problematic, there is low biodiversity within agricultural areas, and aquifers which have been drained for mining now require artificial irrigation to sustain and recreate wetlands. Finally, as far as cultural factors are concerned, the negative effects caused by landscape destruction and relocation/resettlement (also as the result of mining), are obvious and have created considerable controversy for decades.

3.2 Metabolisms

In this work section, metabolic flow analyses were conducted with the help of a research assistant (geography & resource management) at the university. This detailed assessment of inputs, outputs, emissions and sinks for natural resources allowed the development of a variety of conclusions towards creation of a transformative strategy, e.g. one that could lead to a renewable energy supply for the region and/or to circular production patterns for certain industries. With respect to analysis, literature and data were just as important as the exchange of information between experts from statistical agencies and economic sectors. Three out of four investigated metabolisms revealed an acute need for action in the region.

The **energy** system at a state level is facing enormous challenges in view of the nationwide climate protection targets (above 80% CO₂ reduction compared to 1990). This is even truer for the RMA region. The analysis of energy flows demonstrated the great potential for future efficiency measures, which was also confirmed by energy experts. It became clear, that the growth of renewables alone cannot ensure future energy supply and effective climate protection alone.

In **construction** it was revealed that only a small proportion of the raw materials used annually can be substituted by secondary raw materials. A full circular economy is not possible if current consumption patterns continue. Nevertheless, many raw materials still land unnecessarily on landfills or in backfilling. Where recycling still takes place, there is a significant devaluation of the material, since it is only used for earthworks and road construction.

Consideration of the **agricultural** sector could only be made provisionally, due to lack of adequate data. Nevertheless, the high nitrogen excess appears significant. Reduced and more efficient fertilisation is therefore required to minimise excessive inputs of nutrients into ground- and surface waters by agriculture. The small amount of artificial irrigation shows that agriculture has only been irrigated to a very limited extent.

Water resources were still abundant at the time of the investigation. The analysis however, supported by a discussion at the regional water authority, showed potential water issues. With the end of draining currently resulting from mining operations, the hydrological system will fundamentally change (rising groundwater / lakes). Probably this will be barely noticeable for industry and households. However, climate change impacts might require a systematic irrigation of agriculture in the future, which would eventually take a significant toll on the regional water budget.

3.3 Future drivers - scenarios

In this work section the author dealt explicitly with the question of which long-term developments could take place in the region. For this purpose, future influences were examined based on forecasts / literature, often from beyond the regional scale. Scenarios were then derived, which were amended by stakeholders in two workshops. The scenarios illustrated fictive situations in the future with textual and visual narratives, in order to facilitate orientation for the design of the overall strategy.

As explained earlier, the area of the RMA is a versatile cultural space, however it is still characterised by multiple linear economies and their associated negative impacts. Quite obviously this stood partly in contrast to many of the key challenges in the 21st century which were analysed and included:

- climate change
- scarcity of resources
- limited land availability
- rising social inequalities
- economic change
- digitalisation

Hence it became obvious, that the region will undergo a fundamental transformation over the coming decades that will occur across economic sectors and land uses – i.e. well beyond perceived structural change effects due to the end of lignite mining. Subsequently, three future scenario narratives were sketched out. Each of the scenarios described a different speed and intensity of transformation in the RMA until the year 2050. In the "extremely negative scenario" the region reacts too slowly and too defensively to external drivers. The "ambitious scenario" describes the impact more or less of the established policy direction towards more resource efficient and regenerative lifestyles. The "extremely positive scenario" involves the possibility of disruptive innovations (e.g. new energy technologies) and as yet unforeseen, paradigm shifts leading towards a region characterised by rapid material cycles, abundance and an accelerated emergence and urbanisation of the lakes.

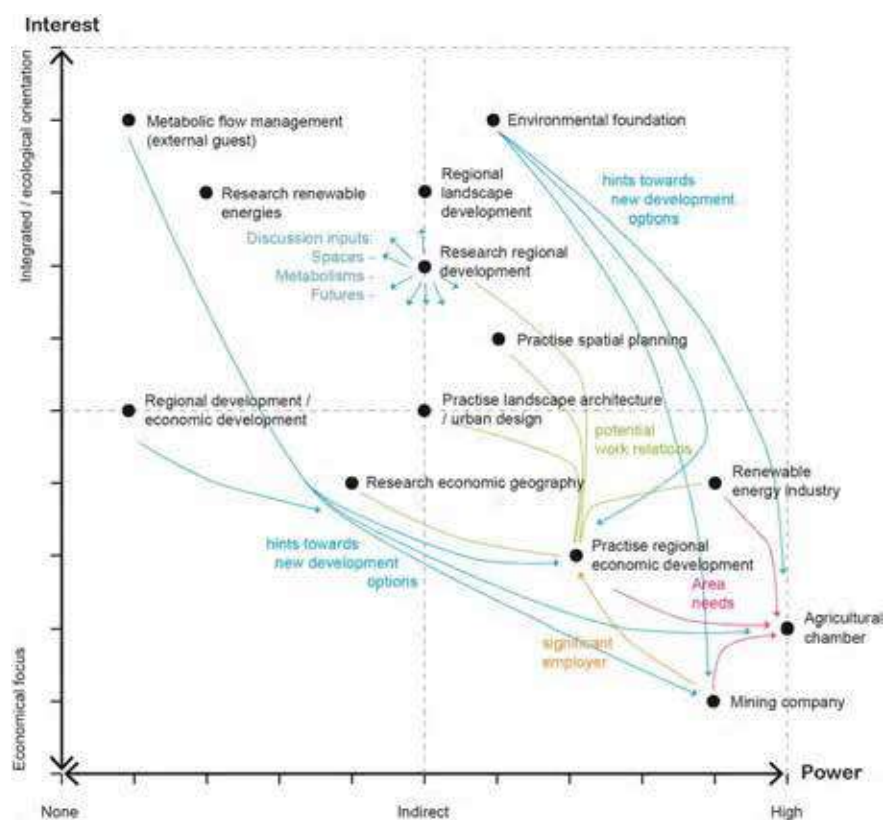
3.4 Visioning process

Drawing on information from the work sections described previously, three in-depth stakeholder discussions dedicated to visioning were organised. In this case only about ten regional stakeholders per discussion were involved, although, ideally, this would have included broader participation / coproduction. Within the overall vision, individuals involved also agreed upon theme-related core competencies that should be mobilised in first steps towards a transformative strategy. The potential spatial impacts of the individual stakeholder types were quite different. In terms of interests represented, stakeholders with mainly economic goals (e.g. job creation) as well as those with more environmentally motivated intentions (e.g. climate protection) exchanged thoughts and positions. By using input presentations as starting points, the author also shaped the discussion process in order to steer the positions of stakeholders in a common direction.

Representatives of mining and agriculture had a direct spatial influence on large parts of the region. Both mining and agriculture also provided a significant number of jobs. At the time of the talks, about 20,000 people were directly and indirectly employed by the mining company. The latter was also engaged in regional development

initiatives, for example through the sale of real estate, the support of projects by the municipalities and expert contributions to update procedures regarding state and regional plans. As a result, there were certain interdependencies between mining companies and regional development initiatives. The actors from research and civil society had rather indirect impact upon regional space, in the form of research contracts or initiation and support of public projects.

Figure 3: During one of the stakeholder workshops (Photo: F. Lohrberg/RWTH Aachen)



Although the mix of stakeholders in the discussions was quite diverse and even controversial, the group achieved a consensus of a common long-term vision. Instead of giving free rein to de-industrialisation, one could steer a proactive reorganisation process that was mobilising the RMA as an "area of opportunity for a future industrialisation" with explicit orientation along ecological sustainability goals and a public re-qualification of space. To follow this vision, outstanding knowledge resources within the region were identified including those which were:

- specialised in energy supply for generations, increasingly also renewable energy
- continuing key industrial production with a wide range of industries including chemistry, metal, construction/building and paper/wood
- high-performance agricultural enterprises benefitting from a mild climate, fertile loess soils and proximity to regional sales markets and metropolitan areas such as the Ruhr area
- planning / realising landscape change on a large scale (recultivation, translocation, redesigned highways, watercourses and lakes in the future)
- many renowned universities and research institutions as potential contributors to regional development

3.5 Thematic action fields

In this section, the author designed thematic action fields (Figure 5) in cooperation with associated stakeholders. Based upon the outputs of the common visioning process, the work was carried out at the interface of university and regional development practice. One workshop or more with theme-related stakeholders was held per action field (with one exception). Overall, not only were immediate regional interests decisive; in addition, democratically legitimised policy decisions at state, federal or global level were incorporated (e.g. climate protection goals) within the discussions. Finally, each thematic action field included a vision, goals, courses of action and an overview of relevant stakeholder groups. The fields became flexibly oriented to all scenarios, but were still meant to steer away from the unwanted negative scenario. In retrospective however, the scenarios had a rather small, at best inspirational influence here.

The work took place up until year 3 of the 4 year research period. It was understood provisionally, to be the precursor of a longer and more comprehensive decision-making process in the future of regional development. During this first step, four thematic action fields were conceived.

1. Regional power plant

The entire region transforms from a fossil fuel consumer and energy exporter into a horizontal power plant that interlinks and controls decentralised producers, utilities and users in technically and spatially new ways.

2. Circular building economy

The region establishes itself as a pilot area for circular economy, especially in the construction sector. New value creation effects arise through a cluster approach between deconstruction, recycling, building material production, planning and construction.

3. Food region

The region evolves from a standard agricultural producer (high yield per hectare with low environmental regulations) to a versatile food region with new cultivars and high-quality production, allowing for a more diverse landscape to develop.

4. Regional open space system ‘lakes’

In stages, a multifunctional open space system improves public access, recreational opportunities and landscape quality in the core area of the region (opencast mines, recultivation and surrounding areas) and future lakes can be already spatially incorporated decades before their final emergence.

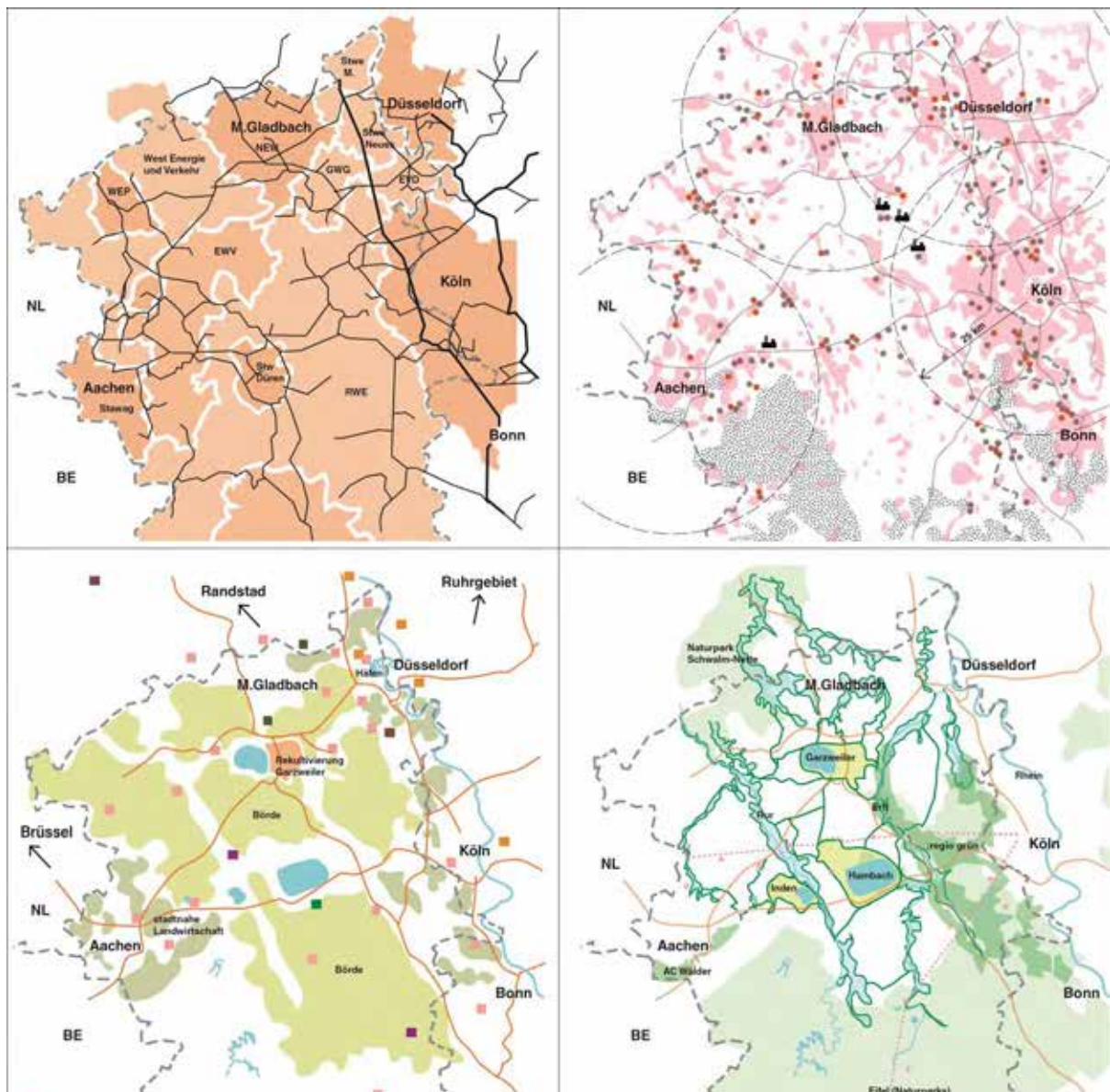


Figure 5: Close-ups of regional maps that were made at university to support the four thematic action fields with strategic considerations.

3.6 Prototypes

In order to direct the thematic action fields towards an actual spatial impact in the future, regional prototypes were designed (Figure 6). In many cases, these already included reference to specific areas or sites. The prototypes 4, 5, 6, 7 and 9 were created in design projects within the context of architectural teaching at university, usually involving a few experts from the region. The other prototypes were conceived outside academia in stakeholder workshops with a more creative orientation. Coproduction via community workshops etc. did not occur, however in principle it would have been feasible with more resources and inputs. Prototype 8 drew upon a best practise example.

A total of nine prototypes were conceived:

1. The **multifunctional energy area** describes the systemic and spatial transformation of energy infrastructure by connecting the networks of electricity, gas and heat with each other and producing renewable energy across different landuses. This included a list of pilot activities and sites from the example of one municipality.
2. The **industrial energy park** demonstrates the application of the same principle, but at the scale of an industrial area including mixed uses.
3. On site of the **circulative building center**, new products are made from building waste. The focus is on applications that have not yet taken place in the state e.g. recycled concrete from the deconstruction of lignite power plants.
4. The **circulative demonstration building** is a prototype to fully preserve the material value after a building's life-cycle by reuse and recycling. Before and after deconstruction, the space can be used as a business incubator for the region.
5. Building on its former use as a power plant, the **industrial redevelopment park** gears towards companies in the renewable energy sector that share common infrastructure, energy, material flows and information.
6. The **food strip** is a startup area that offers land and infrastructure for innovative agricultural businesses, specifically those that are tailored towards regional diversification and sustainability criteria. Each company has 2 hectares of land at its disposal.
7. The **bioeconomy-park** is a place for value-added partnerships in agribusiness, which strive for an integrated production of food, raw materials and energy. A central component is a biorefinery on site.
8. The **open space corridors** feature mainly in the context of the thematic action field that gears towards a regional open space system. The open-cast mines are not expected to become lakes until 2030/2045, but can be embedded within a spatial structure beforehand.
9. Three recultivation areas in the RMA emerge as '**newland**' and need integrated planning. In a first step, visions were developed with students and stakeholders (municipalities, civil society foundation and the mining company). Further needs of society would need to be taken into consideration.

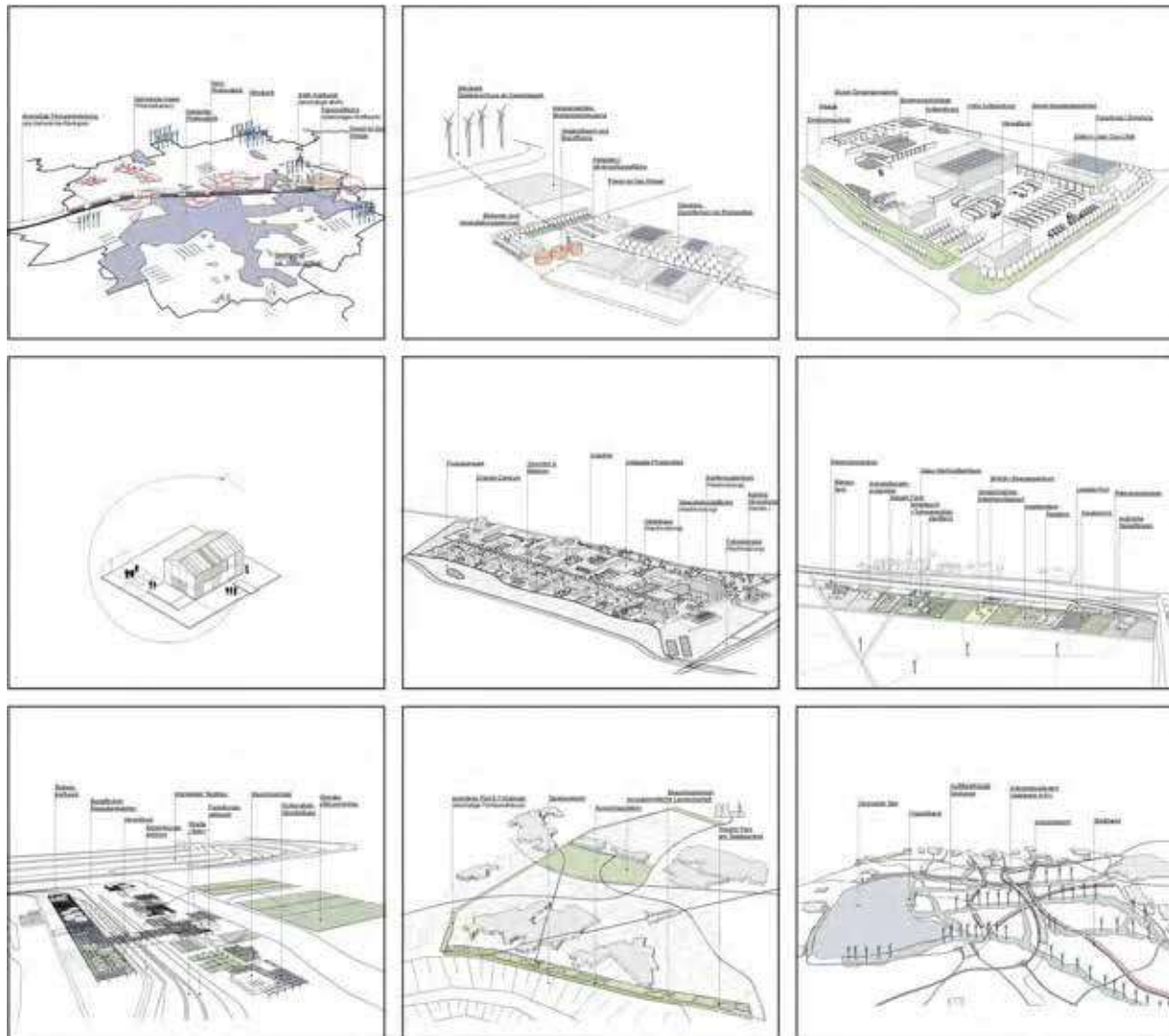


Figure 6: Visual overview of the nine exemplary prototypes.

3.7 Implementation

In this section, implementations of the overall strategy, the thematic action fields and/or the prototypes were tested out. Some of the prototypes could be followed up through network activities and more detailed concepts towards spatial realisation. Depending on how the entire regional governance process will continue (i.e. beyond the scope of the experimental investigation presented in this paper), there is potential for project bids and/or project calls based upon the thematic action fields or certain prototypes.

Complete implementation of the **overall strategy** was not carried out in practice at the regional governance agency. There was a shortage of human and time resources, and the focus of the steering board / shareholders within the initiative was upon starting quick project calls based on public funding options, in order to achieve results within a short time and within a certain critical mass.

The author also attempted further implementations of the **individual thematic action fields** in practice. This was carried out for each topic with different level of input. The effectiveness can only be perceived in qualitative ways through achieving certain milestones:

- A stimulating transdisciplinary workshop, albeit with no further identifiable effects during the time of the investigation, was organised within the strategy field "regional power plant".
- Going further, a comprehensive three-year development project with the author as project manager, was carried out early on in the field of a "circular building economy". Here the implementation could be advanced the furthest. Three of the prototypes could be conceptualised further (see prototypes 3, 4, 5) and stakeholders interested in implementation began the first collaborations. The pilot production and use of recycled concrete in the entire production of a building was initiated, and a strategic follow-project was successfully developed (Wirth and Zabek 2018).
- The thematic action field "food region" was not pursued until further notice, because both the author's expertise and the approval of the chamber of agriculture (as the most relevant stakeholder) were both lacking. Established production patterns were seen as offering little potential for change. However after investigation, a project for the realisation of an agricultural startup site was launched, including interested stakeholders from agriculture and civil society (RWTH Aachen 2019).
- Based upon the initial common ideas arising from the visioning process in the stakeholder discussions, the author brought the concept of an "open space system of 'lakes'" into a regional development workshop, where the idea was developed further. In follow up steps, a professional planning team was commissioned to develop the first planning proposals - both for exemplary implementation projects and the more detailed conceptual work for a regional open space system (IRR 2017).

4. Discussion

How can long-term strategies be designed for the development of regions which face fundamental change? The application demonstrated that it is necessary to interrelate different work sections with each other on a somewhat flexible basis and to include feed-back loops. As expected, design is not conducted in a linear way towards a complex strategy (Figure 7).

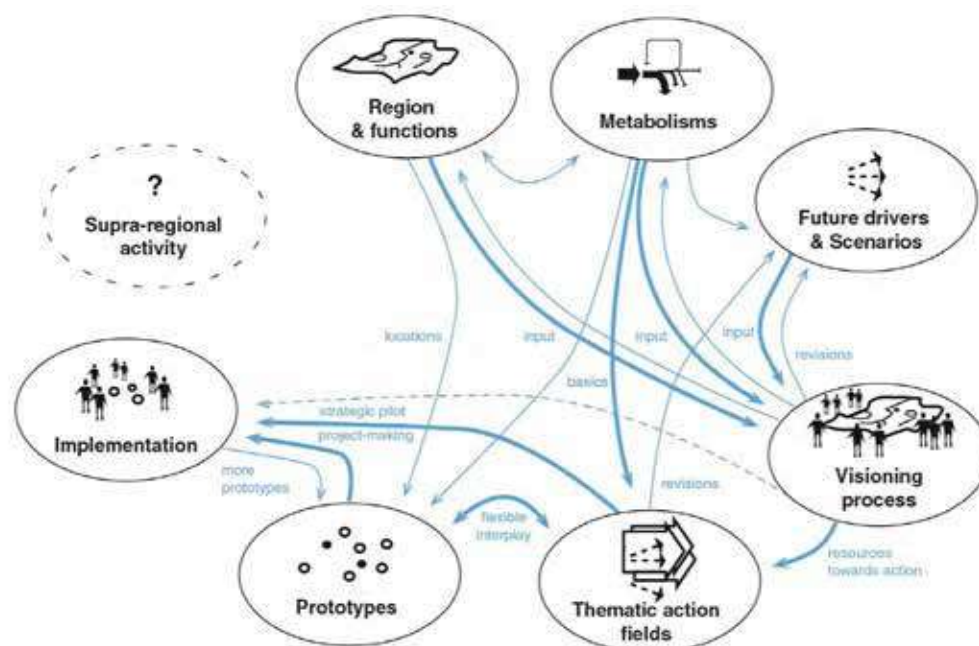


Figure 7: The model applied in the example of the real experimental investigation.

Findings regarding the **preconditions** for conducting regional strategy design can be derived from reflecting upon both the entire design process and its single work sections:

1. **Established regional governance (co-operation or directly embedded).** The multi-year interaction with a regional governance organisation (Zukunftsagentur Rheinisches Revier) and its steering mechanisms proved itself to be effective. Insider knowledge, data, political legitimacy and contacts with the regional stakeholders (business, public authorities, research and civil society) were found here. However, a disadvantage of conducting regional strategy design in the context of regional governance organisations is that these organisations may have a predetermination towards certain results, e.g. in the case of the investigation into new commercial areas.
2. **Functional challenges for society that require collaboration.** The entire strategy design process could only be initiated in response to a requirement for urgent functional challenges, e.g. the need to transform the entire regional energy system, or to enable the compensation of job losses. On this basis, it was possible to expand the range of topics with a view to other functions such as provision of quality food in the region. A more open and democratic process for analysis and later visioning would have been desirable. This should involve the broader public instead of only key stakeholders.
3. **Monetary budgets and workforce.** Initial ambitions and expectations could not always be matched in the process, due to limited resources. The author had to rely on efficient networking, own project acquisition and often voluntary contributions. It would have been more effective with an entire team coordinating regional strategy making. This may be difficult to realise in many parts of Europe and beyond.
4. **Political climate towards change.** Political support for regional governance in recognition of the functional challenges, including support for regional strategy design was crucial. Ultimately as well, the different political motivations of relevant groups of actors was decisive.
5. **Time to act despite urgency.** Despite the need to produce concrete and also short-term results, four years were needed to design the strategy in its multiple dimensions. This stands in contrast to the initiation of a regional development process with rather open / less defined project bids.
6. **Expert knowhow (theme-related knowledge & data).** The intensive need of technical expertise was particularly significant (e.g. forecasts or new technologies regarding energy/reuse/recycling). This also included the possibility of using analytical methods (e.g. metabolic flow analysis) and the availability of particular data (e.g. statistics or GIS data).
7. **Special design skills.** A situational decision-making process between rational ambition and intuition had to be conducted. By definition, this can be the case with any kind of design. A high level of generalist orientation was specifically needed whilst cross sector knowledge was adopted and combined into new solutions. Also, designing the regional strategy required a certain level of expertise in adaptive process management (complexity of different working fields / interrelated activities). Finally, the author had to operate in a mediator capacity between conflicting individual interests, but specifically with a view to long-term sustainability challenges and associated supra-regional policy objectives. An example for this was (inter-)national climate protection goals with democratic legitimation at different spatial scales. Discussions in this context overcame controversy through brainstorming together to determine win-win solutions, instead of fundamental policy debates on fossil vs. renewable energy.

With regards to the **outcomes** of the investigation, the nature of the process model also formed the basis of the results. Nevertheless, more precise observations became possible after application:

1. **Strategy.** A strategy with transformative, i.e. long term orientation, was developed. The strategy is rather complex and is adaptive in its logic. Changes in one of its work sections (e.g. need for more / additional thematic action fields) do not necessarily result in a collapse of the entire concept.
2. **Processual vision, instead of (merely) spatial vision.** The manifold analyses and discussions led to a vision that generally describes a successive and open transformation process of a generative and enabling character, as opposed to a static spatial vision as presented in “the” plan.
3. **Goals, based on multiple scenarios, but targeted appropriately.** Based on multiple future scenarios, thematic goals were set (e.g. model region for circular economy). However, it was agreed with the involvement of stakeholders to navigate towards desirable scenarios, which often coincided with political goals at national level (e.g. climate protection). In retrospect, scenarios were considered less important by stakeholders, compared to the level initially assumed by the author.
4. **New and / or strengthened stakeholder networks for change.** In designing the thematic action fields, a pragmatic synthesis of win-win ideas, institutional responsibilities, and technological progress was sought. This resulted occasionally in a key role of the author as a communicator, while collective work processes within the region were taking place. For developing two of the thematic action fields further (circular economy, regional open space system), the design process helped to initiate new regional stakeholder networks.
5. **Selected projects with explicit strategic focus.** Work on the prototypes led to a rather small selection of models, i.e. potential projects (buildings, work neighbourhoods, infrastructures or larger areas with multiple land uses). For some examples, it was demonstrated that committed individuals can lead such models towards implementation (e.g. circulative building centre). Additionally, project calls in regional development which lead to prototypes with similar thematic orientation would offer potential.
6. **Spatial impact?** Apart from one built pilot project (see 3.7), this aspect remains aspirational and can only be evaluated in the future.

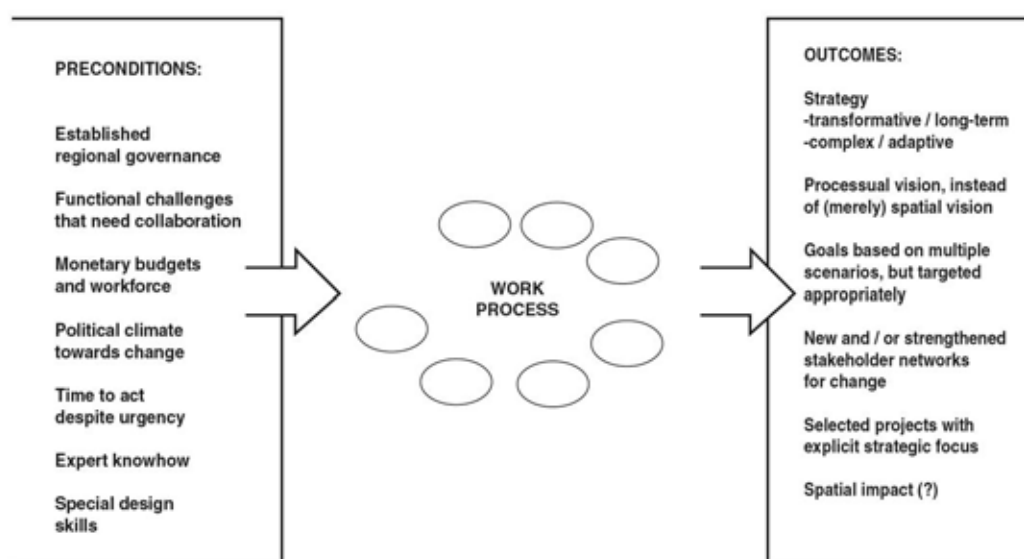


Figure 8: Preconditions and outcomes of regional strategy design, according to the investigation.

The investigation presented in this article has been based on applying a specific process model in the context of a specific case study region. Therefore, the transferability of the findings is not fully guaranteed. Even if a situation matches the described preconditions of the investigation, there may be certain significant variations. For example, regional governance initiatives can take various forms and pursue entirely different goals. There may be examples that do not harmonize with regional strategy design at all. Additionally, in other regions, the influence of the spatial planning system may be more relevant. For the RMA example, the regional planning authorities were not in a position to conduct fundamental strategic work regarding its future. As a result, potential contributions to the process were considered somewhat limited by the author, and only one informal interview took place. In other regions however, this situation may be different, which could alter the entire process and the possible outcome of regional strategy design.

It can also be assumed that other regions might benefit from a modified approach with emphasis upon different work sections, compared with the model introduced by this article. For example, there may be examples of regions that already have pilot projects underway even though there is no overarching regional vision with transformative orientation. Conversely, there may be regions that already have a vision, however no further models and steps towards implementation have been made.

5. Conclusion

How can long-term strategies be designed for the development of regions facing fundamental change? Based upon the example in the investigation and other quite obvious transformative challenges worldwide, regional strategy design has obvious chances to become an emerging field of activity. Apart from using multidisciplinary methodologies, an important precondition is a direct cooperation with regional governance initiatives or other effective steering mechanisms. Moreover, urgent functional challenges, sufficient resources, political support, longer timeframes (of several years) and specific knowledge – including that of the designers / planners – are needed. Overall, regional strategy design requires intensive networking and teamwork.

A strength of regional strategy design is its potential to involve regional stakeholder interests, specialised areas of science and practice in a creative integration process. The latter merges ideas, selects priorities, develops new models and is already partially functioning on a project-specific level. Regional strategy design undoubtedly has a transdisciplinary orientation, and management characteristics. At the same time, it continues to be shaped by the traditional design disciplines such as architecture, landscape architecture and urban design.

A critical point from a practical perspective is the potential predetermination of regional governance mechanisms, which may limit the basic potential of design as an explorative decision making process. This issue leads to academic discourses related to path dependencies, path change and political ecology. From a scholarly perspective, the transferability of the findings remains in question and could be the subject of further research. This could mean further application of the process model in other regions, or comparative case study analysis. Some historical precedents and pioneering examples with similar characteristics exist, and these could provide valuable lessons and a pool of expertise for taking the concept further.

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The darker sides of
smart city development

The darker sides of smart city development

Digital participatory planning tools helpful side and side effects

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Abstract: Participatory planning is one of the latest directions of the urban planning field which began in the second half of the 20th century. Participatory planning back then used old fashion ways in doing so. Lately, urban planners start using digital participatory planning tools. These tools start to get spread worldwide for their help in the urban planning process. In the same time urban planners start having concerns regarding these tools and their side effects. One of these concerns is the issue of data privacy in digital participatory planning tools. This paper will explore the helpful side of digital participatory planning tools and their role in improving the urban planning process. Second, it discusses one of the side effects of these tools that is the issue of data privacy. Third, trying to find a solution for this issue and its side effects. The Swiss city of Zug experimented a solution which could be a possible solution. The experience of international experts of digital participatory planning tools spread worldwide will be collected. Once these tools are closer to solving their issues, these tools can be upgraded significantly in a way opens up a wide advancement towards effective urban planning.

Keywords: Participatory planning, digital participatory planning tools, data privacy.

Introduction

Digital participatory planning tools start to get spread worldwide for their benefits in the urban planning process and for their help in achieving the overall goals of urban planning. Urban planners urge to research these tools more and more to know their value due to the lack of the appropriate research regarding them. In the same time urban planners start having data privacy concerns in these tools. This research paper builds the background for digital participatory planning tools. Starting with a brief history of these tools, definition, their helpful side and benefits, their data privacy issue and ending with a possible solution for this issue. Solving data privacy issue in these tools is demanding because it stands as an obstacle in the way of upgrading these tools which could lead to a wide advancement towards effective urban planning.

This paper presents an early stage of a more in-depth research of digital participatory planning tools. For this reason, some of the methods followed do not have a final result yet but the conclusion will include expected results of these methods.

Literature review

Digital participatory planning tools:

The early stages of participatory tools described by Roger Katan and Ronald Shiffman (2014) they stated that back in the 1970s the use of mass media-television, newspapers, and radio- or getting the answers to questionnaires as methods and how it did not achieve maximum participation. To achieve that the need for sustaining involvement of people and for constant contact and engagement of people at all levels is required. Later on and in recent times, according to Nader Afzalan (2015) “*web-based technologies and social media have intrigued planners and decision makers in their potential for use as tools to resolve issues inherent in participatory planning processes. This potential lies in the ability of these tools to capture local knowledge and facilitate information sharing, social interactions, and collaborative processes (Afzalan & Muller, 2014; Boyd & Ellison, 2007; EvansCowley & Hollander, 2010; Evans-Cowley & Manta Conroy, 2006; Palfrey & Gasser, 2012; Townsend, 2000).*” The previous statement also agreed by Falco & Kleinhans (2018).

The definition of digital tool: it is an online platform, or a website, or mobile application that uses the internet and depending mostly on Information and Communication Technologies (ICT) in which it allows the use of computers and other electronic equipment and systems to collect, store, use, and send data electronically. There are two main stages in these tools data collection and data analysis.

Digital participatory planning tools are internet-based platform that:

- Can build a bridge between the residents and urban planners.
- Allow the residents to communicate and exchange ideas, raise debates, suggest solutions and share their local-knowledge with urban planners.
- Allow urban planner to collect local knowledge information and data to analyze it statistically and systematically to be used in the urban planning process.

The definition above comes from the description of the early Finnish digital participatory planning tools such as: SoftGIS, OPUS forums, The Urban Mediator, Tell a Story, WebMapMedia and Shadew. (Kahila & Kytä, 2009; Staffans *et al.* 2010; Saad-Sulonen & Botero, 2010; Halttunen *et al.* 2010).

The definition of digital participatory planning tool from strictly participation perspective is defined according to the level of the participation allowed in the tool, which can be taken from Arnstein's ladder of participation stages. Digital participatory planning tools nowadays allow the first two stages of the eight rungs ladder of Arnstein (1969). Respectively, they allow firstly to educate and let the citizens hear about the plan, then informing, consultation and placation which means allowing citizens to hear and be heard but without any further power to make their voices carried out or comes to reality. The third stage is not yet taking into consideration in nearly all of nowadays tools, but definitely considered in the Swiss e-voting tool in the city of Zug which will be discussed later in the data collection part of this research.

The early age of digital participatory planning tools was discussed in the book *Digital tools in participatory planning* (2010). Three different approaches digital tools had back then. The first one is data collecting tools to be used by urban planners, tools empower wider urban planning participation and tools and platforms allows co-develop urban planning participation. But nowadays most tools allow the three approaches together with additional advanced features.

Wallin, Horelli & Saad-Sulonen think that these tools clearly changing and improving the way that urban planner work beside its notable side in obtaining information and its widespread communication for reaching participants. And conclude with the believe that the development of digital participatory planning tools will change the field of participatory urban planning in both practice and research. Simultaneously, Staffans, Rantanen and Nummi (2010) stressed that the urban planning institutions cannot depend only on their own information and data anymore.

For those who have skeptic point of view regarding digital participatory planning tools comes the need to point out the linkage between digital participatory planning tools and Geographic Information System (GIS). The reason for this linkage is to show the importance of these tools and their promising future. The current situation of digital participatory planning tools is similar to the early age of GIS back in the late 1960s and how very few used it back then, and how later on all urban planners start depending strongly on it (Yeh, 1999). Nowadays almost impossible to plan without the help of the GIS. It revolutionized the way urban planners think and prepare their urban plans and so will digital participatory planning tools do. This linkage will be explained technically in the next section. In fact, a number of digital participatory planning tools named with the composition of words including the word GIS such as: Participatory GIS, Participatory planning GIS and SoftGIS.

Another evidences on the success of digital participatory planning tools is there worldwide spread. Falco & Kleinhans (2018) have detected 113 digital platform, which are currently active and used in urban development and spread around the world. But current literature regarding digital participatory planning tools is still limited. Digital participatory planning tools need to be addressed and researched more to learn about their benefits and effectiveness in participatory planning. (Afzalan & Muller, 2018). For this reason, Falco & Kleinhans (2018) Stated that their goal is to conduct more in-depth research regarding digital participatory planning tools. The need for these tools is confirmed for the application, functionality and spread of participatory e-planning (Panagiotopoulou & Stratigea, 2017).

Digital participatory planning tools' helpful side:

The benefits of digital participatory planning tools from the current available literature is discussed one by one in the following paragraphs, but some of these benefits could be very broad assumptions, due to the lack of the appropriate research in the literature. In order to have insights regarding these benefits. Table 1 list some of the Finnish digital participatory planning tools and some of the benefits which were researched in the *Digital Participatory Planning Tools* (2010) book by Wallin, Horelli and Saad-Sulonen (2010).

Table 1 Digital participatory planning tools benefits:

Tool Name	Tool type	Tool Aim	Benefits	Literature
SoftGIS	Web-based SoftGIS	Build a bridge between the residents and urban planners. By allowing residents to generate information about their own living environment	Collecting local knowledge, information and data Mapping data collected to be used in GIS	(Kahila & Kytä, 2009).
OPUS Project	Internet-based platform	Connect online discussions on forums to the actual planning and development processes in terms of their timing and locality. Gathering and combining local information and knowledge on urban planning on Internet forums.	Collecting local knowledge, information and data Better decision-making	(Staffans, Rantanen & Nummi, 2010).
Tell a Story (TaS)	Mobile phone application	Support communication during the early phases of urban Planning and tested these technologies in the field.	Collecting local knowledge, information and data Reduce marginalization	(Halttunen, Juustila & Nuojua, 2010).
WebMapMedia	Web mapping application	Support participatory planning	Increase equality Enhance Participation	
The Kotikatu System	Local website	Connect people and create and channel discussion around different topics for the sake of their neighborhood	Collecting local knowledge, information and data Reduce marginalization Increase equality Enhance Participation	(Kanervo, 2010).
Recommendation Machine	Web-based platform	Plan and co-produce ubiquitous services of everyday life and events, in the context of community development of two Helsinki neighborhoods.	Help in consensus building between different parties of the community	(Horelli & Wallin, 2010).
Meeting Point				

Source: Own elaboration

Benefits of digital participatory planning tools on the urban planning process:

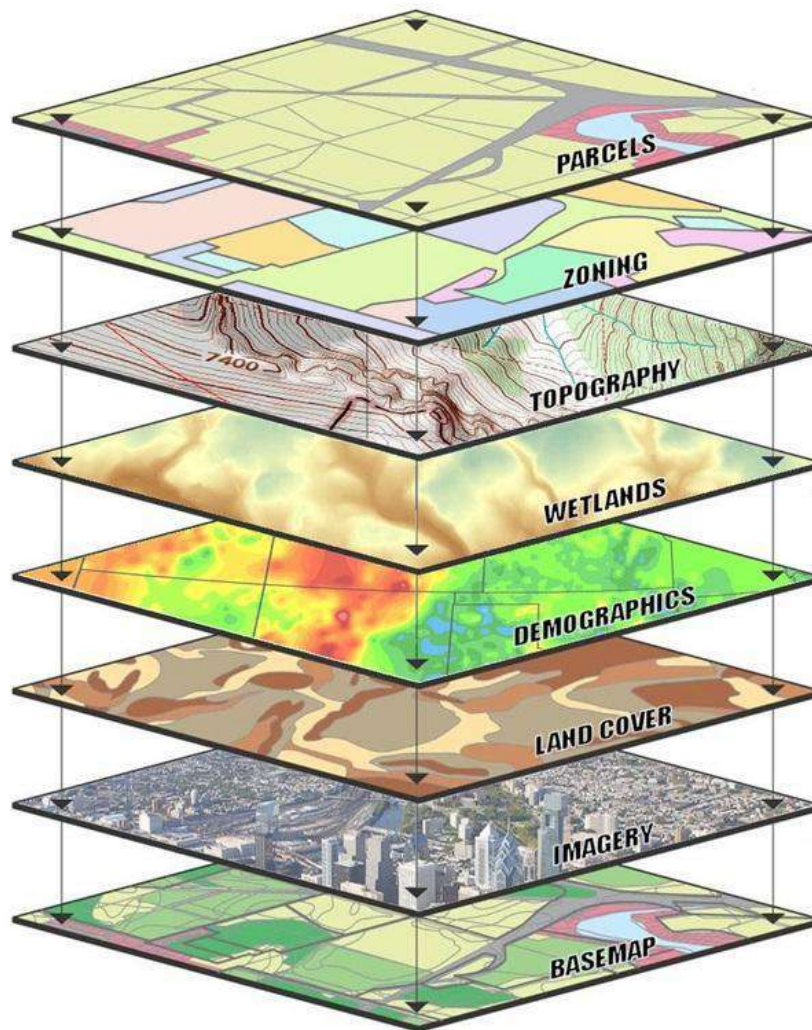
Collecting local-knowledge, information and data: the benefit agreed on by all tools. digital participatory planning tools can help in obtaining location-based data which the urban planners are not capable of obtaining it because they are strangers to the location. Collecting this local-knowledge, information and data to be learned from and used by the urban planners which can benefit the urban planning process and will be explained how in the next paragraphs, along with better decision-making resulting also from the benefits of these tools. (Kahila & Kytä, 2009; Staffans *et al.* 2010; Kanervo, 2010; Wallin *et al.* 2010; Afzalan & Muller, 2018). The instant data collected by digital participatory planning tools can help the urban planner in identifying and defining local needs so they can plan to the need (Fischer, 2000; Rantanen & Kahila, 2009). In which can avoid wasting efforts and resources.

Mapping data collected to be used in Geographic Information System (GIS): In order to explain how data collected by digital participatory planning tools can improve the urban planning process. Digital participatory planning tools are linked to Geographic Information System (GIS). Some researchers even consider these tools as a part from GIS, such as Kahila & Kytä (2009) the SoftGIS tool which comprises and produces a special layer in the GIS to be used by experts, such as urban planners. This special layer will be explained together with the way these tools work in the special layer example later on. According to the *Urban and Regional Planning Education* (2016) book digital participatory planning tools are the transformation of conventional mapping and GIS tools. Usually as long as there are more layers in the GIS which are considered in the urban planning process, the plan supposed to be more effective and the project is more likely to be successful as shown and explained in the above examples of the special layer. In the same way of thinking and using the same logic adding more layers obtained by digital participatory planning tools to the GIS which are could be very useful for current and future planning. For instance, the softGIS (Kahila & Kytä, 2009) is working exactly for this purpose. While Rantanen & Kahila (2009) emphasize on valuing local knowledge by urban planners. Simply the data collected by digital participatory planning tools can be turned into maps and layers to the other layers of the GIS software which will lead to a better and more effective urban planning process, for the reason of considering more data and more input in the planning process. Which it will be explained in the Special Layer examples.

Special layer example: In order to have a clear vision of what this special layer is: I have made an imaginary simple example and illustrate it with some figures of actual layers for further understanding. This example was made after proper researching and understanding the mechanism and the technicality which these tools function and work.

The example begins with listing Geographic Information System (GIS) typical layers, then an explanation about this example with listing the three layers which the special layer consists of and ends with a discussion about the result of this special layer.

Geographic Information System (GIS) typical layers can be: One layer for each of the following: streets, parcels, zoning, topography, wetlands, demographics, land cover, imagery, flood zones, client locations, competition, shopping centers, office parks, demographics, etc. [Figure 1]. When these layers are drawn on top of one another, it allows understanding of the aspects of a certain location.



[Figure 1] Image credit: Ontario County, NY (2016).

Digital participatory planning tools can add to the GIS's layers a special layer. This special layer is based on an instant data and information provided by participants. Basically, this special layer is obtained after mapping participants' instant data and information. In which could be valuable and can help in better planning and better decision-making.

The following simple imaginary example can give a quite understanding of what this Special Layer is: Imagine that urban planners through their annual check, they have noticed that the number of women who marked themselves pregnant is above the usual rate. Through a quick calculation, they found out the need for a new kindergarten in the next couple of years. The goal for the urban planners is to make the most sustainable, ecological, environmental, convenient and low-cost project. The urban planners start the planning process by asking the people of the city to participate and provide them with data, through the following question:

Mark your home location if you are one of following: pregnant, unemployed kindergarten's teacher, unemployed worker, interested in teaching or working in a kindergarten.

The result of mapping the above data is the following three layers: [Figure 2]

Layer 01. Pregnant women

This layer is for women who marked themselves pregnant women and provide the digital participatory planning tool with this data.

By observing the pregnant women's home location. we will find that most the pregnant women are in the center area.

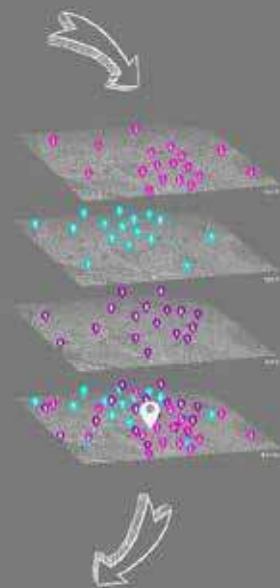
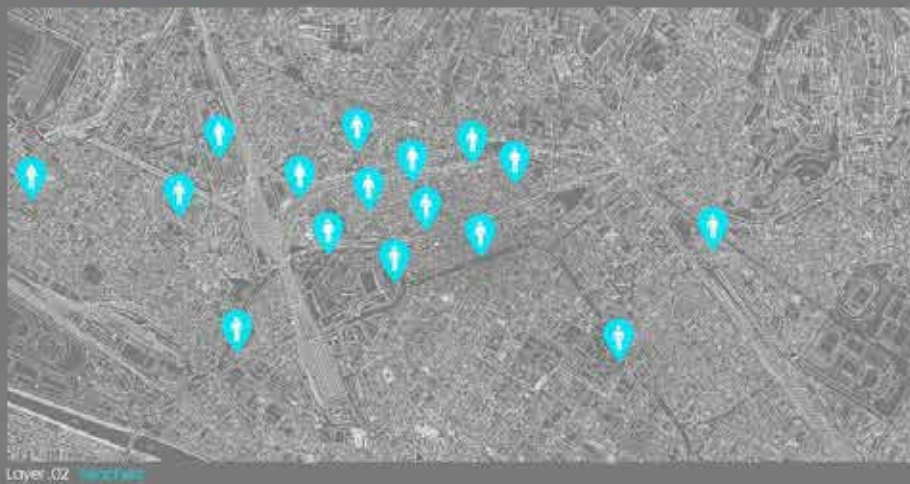
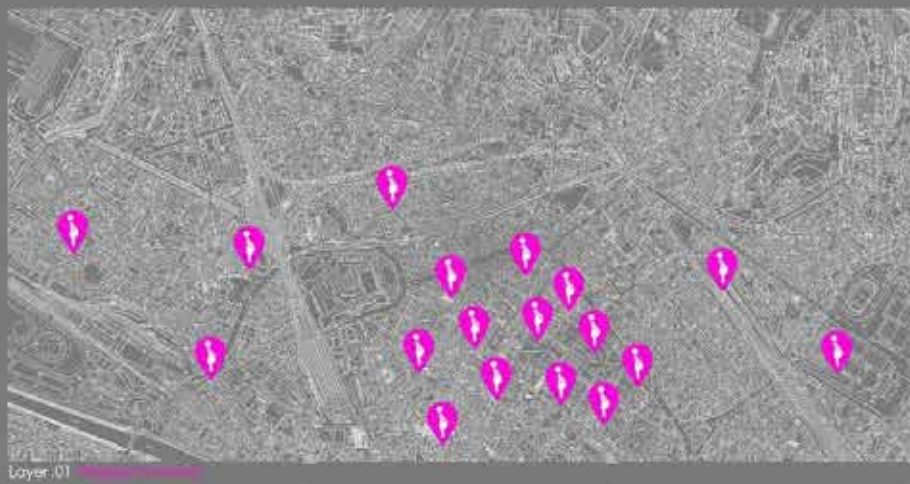
Layer 02. Kindergarten's teachers

This layer is for the kindergarten's teachers. This data obtained through the following possibilities: First, by calculating the number of the unemployed teachers and second by calculating students who are studying kindergarten teaching.

By observing the kindergarten's teachers home location. we will find that most teachers live in the northern part of the city.

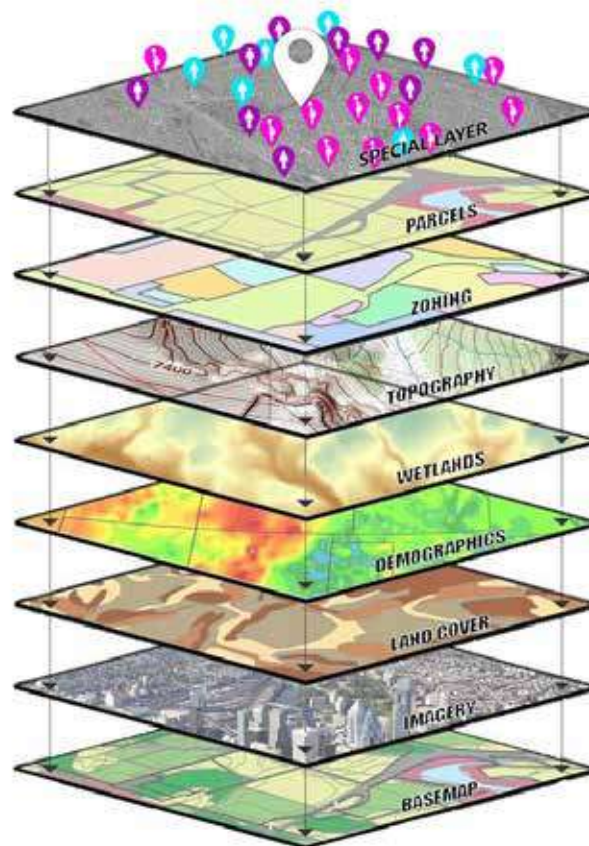
Layer 03. Workers

This layer is for the workers needed for this kindergarten. This data obtained through the following possibilities by calculating the number of the unemployed workers, and people who are willing to work in a kindergarten. By observing the kindergarten's workers home location. we will find that most workers live also in the northern part of the city.



[Figure 2] Special layer. *Source: Own design*

The benefit of this Special Layer can help the urban planner allocating the most suitable location for the new kindergarten: After overlapping the three layers: 01,02,03 The digital participatory planning tool can determine the most suitable location for the kindergarten. The kindergarten location will be a walking distance for all the people involved: which will cut and minimize the use of cars, buses and other transportation. In addition to: Environmental solution: which will protect the environment and reduce the pollution of the area. Save money: cut unnecessary expenses related to kindergarten buses, parents' cars, etc. Save time: time to reach the kindergarten (children and their parents, teachers, workers, etc. Satisfaction: for most people involved. This Special layer could be added to the GIS layers as another important factor to be considered in the planning process of the project. [Figure 3]



[Figure 3] GIS typical layers with the special layer on the top.
Image credit: Ontario County, NY (2016). Except for the Special Layer.

Benefits of digital participatory planning tools on urban planning goals:

Marginalization, equality and public participation: From Table 1, Halttunen *et al.* (2010). Believe that ICT could reduce marginalization through allowing the participation of those most isolated. When the marginalization is reduced the equality hits a higher level by their inverse relation. Digital participatory planning tools can ensure equality (Kahila & Kytä, 2006; Kanervo, 2010). ICT reduces inequality through giving everyone especially the disadvantaged segments of the society same chances

and equal opportunities. Because they can reach a larger number of people. Especially those who cannot participate in public meetings for the reasons of time, place or other restrictions. Beside attracting youth who are fond of technology and technological solutions. For this reason, Kanervo (2010) Staffans *et al.* (2010) Afzalan & Muller (2018) claim that use of digital participatory planning tools could enhance public participation. Several scholars agree on that ICT has the potential for enhancing public participation (e.g. Ann Macintosh: is emeritus professor of Digital Governance at the University of Leeds).

Consensus building: Another benefit of digital participatory planning tools is consensus building. (Horelli & Wallin, 2010; Afzalan & Muller, 2018). Which can lead to reduce unnecessary conflicts between citizens, stakeholders and urban planners beside building trust in the society.

(Saad-Sulonen, & Botero, 2010) Based on the result of their case study of Malminkartano in Helsinki believes that digital participatory planning tools and citizen participation in planning has a positive outcome on the participatory planning process. Although digital participatory planning tools can help planners achieve their public participation goals (Afzalan & Muller, 2018). Babelon *et al.* (2017) argue that e-participation outcomes remain weak or indeterminate. And urge future research to further explore and assess digital tools towards knowing their potential value in urban planning. So, for this reason digital participatory planning tools will be furthered researched in the questionnaire of this research to gain more evidences and insights to support these benefits and overall helpful side. In other words, finding an answer for the question of:

- How could for the digital participatory planning tools help in improving the urban planning process?

Digital participatory planning tools' data privacy issue and its side effects:

The meaning of the term information or data privacy was defined by Westin (1970) "*Privacy is the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others.*"

Due to the limited literature addressing digital participatory planning tools and their benefits, there is also limited literature addressing the side effects of these tools. In this limited literature there are increased concerns from urban planners and researchers regarding the side effects of these tools specifically data privacy. Data privacy is the most assured and pushing issue in this era in the literature, which also has general agreement on.

Data privacy is one of the main issues that digital participatory planning tools are suffering from is data privacy and it is preventing its improvements. Data privacy affecting the participation process and the way digital participatory planning tools work firstly and secondly affecting the safety of the city and the society.

Data privacy concerns: The data privacy concerns are not a recent thing; urban planners expressed their concerns more than a decade ago. But these concerns were increased remarkably lately. Urban planners expressed their data privacy concerns specifically in digital participatory planning tools (Afzalan, 2015; Afzalan & Muller, 2018; Blatt, 2012; Foth, 2006; Fredericks & Foth, 2013; Kahila & Kytta, 2009; Khan *et al.* 2014; McNutt, 2014; O'Sullivan, 2006; Shilton, 2012; Zavattaro & Sementelli 2014). Broader kind of concerns came from Angelidou (2014) Van Zoonen (2016) Viitanen & Kingston (2014) who expressed their data privacy concerns in the whole smart city context and its technologies

which includes data related to participation. These concerns include beside data privacy, the possibility of selling this personal data and personal information. Second, data security and the risk of getting this data stolen. Third, data management and data analysis. These concerns exist in both phases in data collection and data analysis.

The above data privacy concerns are a lot considering the literature exists regarding digital participatory planning tools. The question here is why. Could be because of their possible effects on the participatory process, the urban planning process, urban planners and the participants. These effects will be examined and furthered research by the questionnaire of this research:

- How could for data privacy issue in digital participatory planning tools effects the urban planning process and urban planning overall goals?

In favor of understanding data privacy issue's relation and linkage to digital participatory planning tools, the following discussions give quite insights regarding their effects and consequences. Data privacy effects on the urban planning process and on urban planning overall goals:

Participation rate and data Quality: When participants get skeptic regarding their participation data, they might stop participating or they might participate with fake or inaccurate data to protect themselves in which can lower participation rate and lower data quality which are the two main challenges of digital participatory planning tools. So, in order to obtain a higher participation rate and a higher quality of data, participants need to be assured that their data is secured and handled well, so they can contribute and participate more and with an accurate data. Once these tools obtained high quality data, they will produce high quality information and vice versa. Otherwise, the whole effectiveness of these tools is on the line. Staffans *et al.* (2010) consider the quality of the information as one of the most important aspects in these tools. However, Kahila & Kytta (2009) urge more improvements for digital participatory planning tools to guarantee the quality of the information they produce.

Data privacy effects on the society:

Urban planners' responsibilities: Digital participatory planning tools are not like any other platform. These tools collect critical and sensitive personal data from the participants such as: location, income, race, etc. In case this data fall into the wrong hands they can cause a serious damage and a serious harm to the participants and the city. This put urban planners who run the digital participatory planning tool under massive responsibilities. Angelidou (2014) Elmaghraby & Losavio (2014) agree that Smart City technologies can grasp from people real-time demographic data in way violate their privacy.

The above-mentioned consequences of data privacy issue will be further researched in the questionnaire of this research. The next two paragraph will emphasize on the seriousness of the data privacy issue according to the European law and Information and Communication Technologies ICT field.

General Data Protection Regulation (GDPR)¹: A recent shake-up event in the data field was the European Union's new data privacy law. which replaced the old one of 1995, which was agreed on and adopted in 2016, and started to be applied in 2018. Personal data refers to any information that relates to an identified or identifiable, living individual. Sensitive personal data is data related to your: race, religion, sexual orientation, location, income, health record, contact info, political opinion and others. GDPR gives you the right to the following: to know who is processing your data and why, access your data, to object, to correct your data, to delete your data and to be forgotten. Simply, GDPR law allows you take back control over your data. The reason behind GDPR law is the massive increase in the collection,

storing, analyzing and trading of personal data by companies and governments. In addition to the concern of the possibility of getting your information and data stolen if a database got hacked. The GDPR law marked the turning of the personal data privacy and protection issue to the surface.

Data privacy from the perspective of Information and Communication Technologies (ICT) field: is also quite serious and a hot topic recently. The International Federation for Information Processing (IFIP) which was established in 1960 under the auspices of UNESCO and one of the leads gathering in the field. It has created a yearly international conference focuses on security started in 1986 but in 2003 it starts to be focused on privacy. Data privacy remained steady till 2019 and it became one of their aim. The 2017 IFIP summer school was dedicated to the exploration of new legal solutions to encounter data privacy issue. ("IFIP Information Security Conference & Privacy Conference - IFIP Technical Committee 11"). In their publication *Privacy and Identity Management. The Smart Revolution. (2017)* a blockchain solution was presented. Neisse *et al.* (2017) believe that blockchain technology could be a solution for enforcing the GDPR data privacy law because it allows transparency, auditability, and immutability features.

Blockchain Technology: in order to discover this technological blockchain possible solution, let's go back to the definition of Blockchain technology: "*Blockchain*" is a cryptographic data structure often employed in Distributed Ledger Technology (DTL) that is constructed through successive cryptographic hashing of blocks of transactions. Blockchain benefits from Identify Management point of view (Dunphy & Petitcolas, 2018) could ensure data privacy.

While Dhillon *et al.* (2017) consider that "*the fundamental shift that blockchain technology represents is a method for moving away from an attempt to have a central trusted authority in a massively distributed network. But instead to have multiple sources of trust that must all agree, based on an algorithm that this transaction can be trusted as valid.*" Early examples in 2017 extend beyond financial transactions to cover other aspects of FinTech, RegTech (regulation), InsuranceTech, GovTech (eVoting, licensing, records and certification), HealthTech, and many others. The question here is:

- Could Blockchain technology be the solution for data privacy issue in digital participatory planning tools?

To sum up, although current literature suggests that digital participatory planning tools could have a helpful side on the urban planning process. But only limited literature available regarding them and the need for expanding this literature is demanding. Especially since these tools are technologic-based and technology research is time sensitive and it changes in a short period of time.

Methodology

The methodology will be based on qualitative approach. It will depend on several types of evidences such as documents, surveys and a questionnaire. The methodology followed is need to examine and find answers for the questions of this research paper. The questionnaire method consists of close-ended and open-ended questions and it will be explained in details next.

The questionnaire instrument:

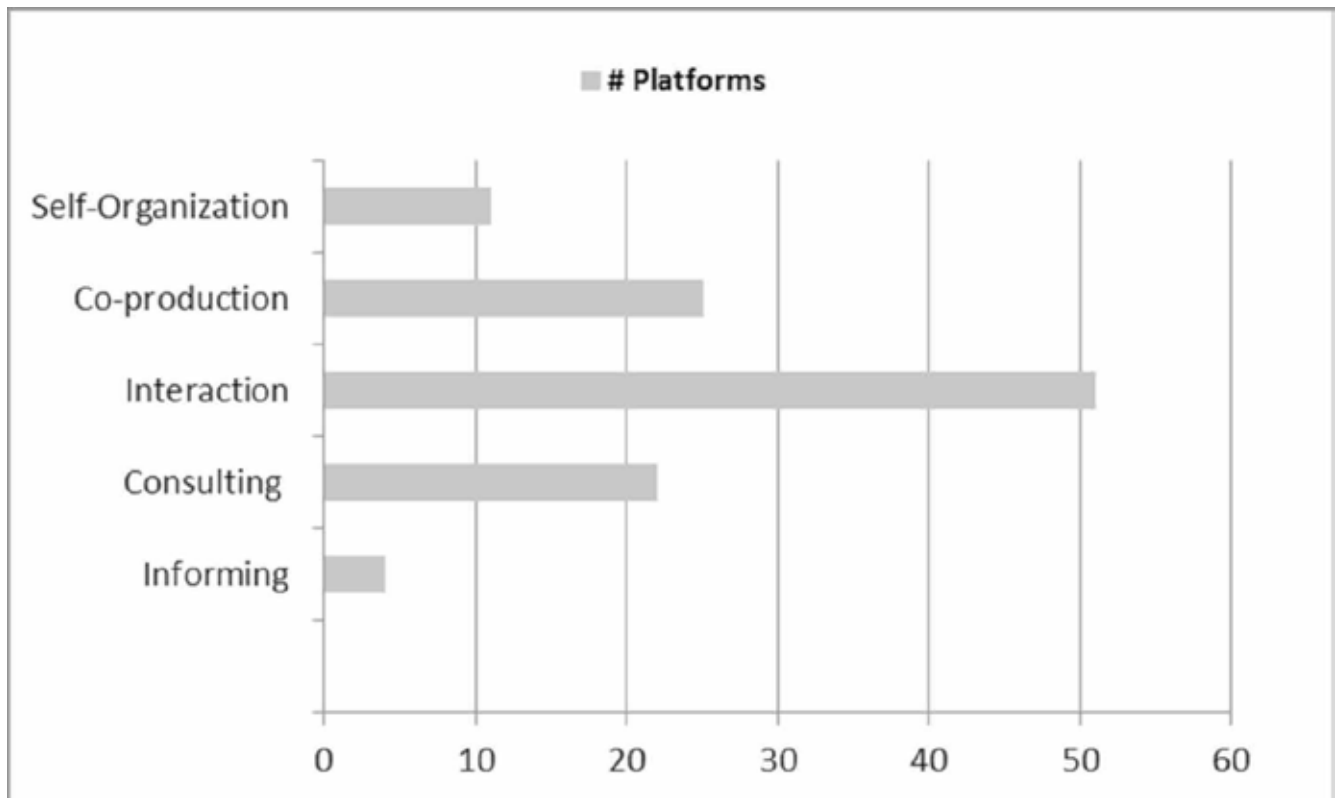
The instrument chosen is web-based self-completion open-ended questionnaire. The reasons behind choosing the methodology are coming from its advantages in saving time, provide fast analysis, cheap, accurate and it could be more effective for such topic which handling sensitive issues. In addition, it allows answers to be richer, longer and more revealing specifically for open-ended questions (Brace, 2004).

Questionnaire design and objectives:

The questionnaire was designed following the instruction of Don Dillman (2011) in his book Mail and Internet survey. The questionnaire will be forwarded and aimed towards 113 international experts in digital platforms. These digital platforms are currently active and used in urban development and spread around the world. They were detected by Falco & Kleinhans (2018) and they are going to be the unit of analysis. The total number of 113 digital platforms are spread over the seven continents as shown in [Figure 4]. according to the level of participation allowed in them [Figure 5].



[Figure 4]² Geographical distributions of digital platforms. *Source: Digital Participatory Platforms for Co-Production in Urban Development: A Systematic Review by Enzo Falco and Reinout Kleinhans (2018). DOI: 10.4018/IJEPR.2018070105.*



[Figure 5]² Number of platforms per level. *Source: Digital Participatory Platforms for Co-Production in Urban Development: A Systematic Review by Enzo Falco and Reinout Kleinhans (2018).*
DOI: 10.4018/IJEPR.2018070105.

Questionnaire purpose:

The purpose of this questionnaire is to explore first, the helpful side of digital participatory planning tools. Second, exploring digital participatory planning tools' data privacy issue and its effects. Third, evaluating whether Blockchain technology could be a possible solution for this issue.

Welcome to the study of exploring digital participatory planning tools

What are the benefits of your participatory planning platform on the urban planning process?

(Please, select all that apply)

- Collecting local-knowledge, information and data that is useful for the urban planning process
- Mapping collected data to be used in Geographic Information System (GIS)
- Analyzing collected data help in planning exactly to the need
- Add another benefit

What are the benefits of your participatory planning platform on the urban planning overall goals?

(Please, select all that apply)

- Reduce marginalization
- Increase equality
- Consensus building
- Reduce unnecessary conflicts
- Enhance public participation
- Add another benefit

Approximately, could you indicate the number of the participants in your platform according to the following years?

Number of Participants	Year
	2015
	2016
	2017
	2018
	2019

What are the consequences of data privacy issue in participatory planning platforms?

(For example: this data got stolen or hacked and fell into the wrong hands)

(Please, select all that apply)

- Put the urban planner under massive responsibility
- Put the participants under risk
- Put the city under risk
- Other *(please specify)*

What are the possible effects of data privacy issue in participatory planning platforms?

(For example: When participants get skeptic regarding their data safety, they might stop participating or they might participate with fake or inaccurate data to protect themselves)

(Please, select all that apply)

- Lower participation rate
- Lower data quality
- Other *(please specify)*

Are you currently applying certain solutions to encounter the issue of data privacy in your platform?

- Yes *(please specify)*
- No

Can Blockchain technology be a solution for data privacy issue in participatory platforms?

- Agree *(Please explain why?)*
- Disagree *(Please explain why?)*

Would you like to provide further comments, evidences, data, case studies, pictures, videos?
(e.g. to enrich any the above questions purposes or your answers to them)

(attach a file)

.....
.....

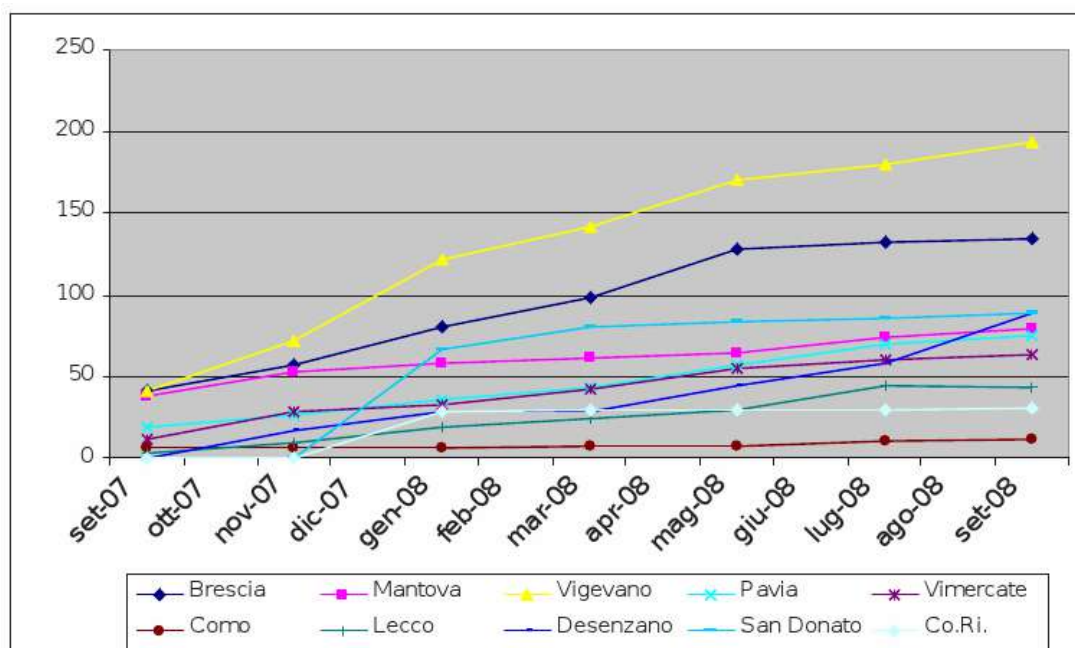
Results and discussion

The promising future of E-participation:

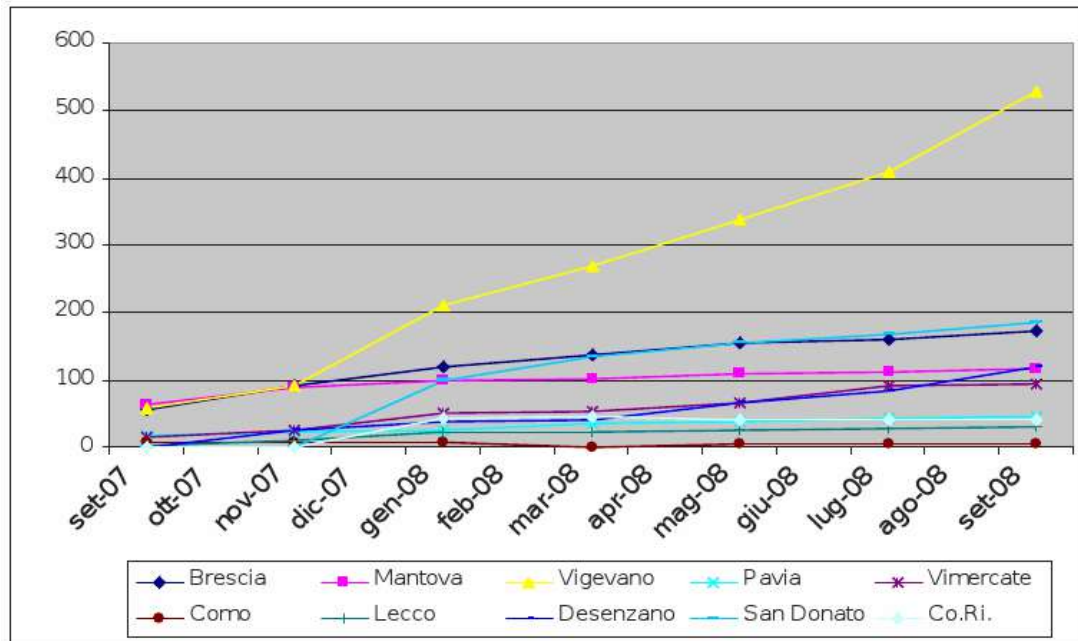
As an evidence on the promising future and growth of e-participation at the urban level, De Cindio & Peraboni (2009) Presented two graphs of the following:

- Number of registered participants [Figure.6];
- Number of messages sent in the CityMap [Figure.7].

In a large field experiment involving ten different municipalities' websites in the Lombardy region, in the North of Italy, for a duration of one year.



[Figure 6]³ The number of registered participants. Source: *Fostering e-Participation at the Urban Level: Outcomes from a Large Field Experiment* by Fiorella De Cindio and Cristian Peraboni (2009). Copyright © 2009, Springer-Verlag Berlin Heidelberg.



[Figure 7]³ the number of messages sent in the CityMap. *Source: Fostering e-Participation at the Urban Level: Outcomes from a Large Field Experiment by Fiorella De Cindio and Cristian Peraboni (2009). Copyright © 2009, Springer-Verlag Berlin Heidelberg.*

The graphs show some basic participation indicators of the activity in the ten websites plotting their e-participation trends. The graphs could tell on the gradually increase in the number of participants and the e-participation over time.

The Swiss possible solution for data privacy⁴ issue in digital participatory planning tools:

In June 2018, the city of Zug in Switzerland made a e-voting platform uses an innovative encryption technology that on one hand anonymizes the votes and on the other hand allows tamper-proof tally and secure audit. This technology is called blockchain and it was created by Luxoft Holding, Inc (NYSE:LXFT) a global IT service provider, partnered with the City of Zug and Lucerne University of Applied Sciences in Switzerland.

The reasons behind choosing the Swiss e-voting platform as role model are the following:

- It's the pilot blockchain-based platform.
- It's an official platform used by government.
- Its purpose is to drive the adoption of this kind of technology in government.
- It is a state-of-the-art platform which was experimented in the middle of 2018.
- No literature on using blockchain-based platform in digital participatory planning tools.
- It is a blockchain based platform uses decentralization which means no authority can see citizens' personal data ("World Economic Forum", 2017).
- The platform is decentralized and deployed on three different data centers in the cloud: two in Switzerland and one in Ireland. By distributing the data into three different data centers,

security and data loss risks are distributed geographically, making the system more robust. What's more, the platform can permanently delete voting data within an agreed time, in accordance with Swiss law.

- “As a result, we believe this technology cannot be owned by a single company. We will make the e-voting platform open source so people can understand what makes up the technology and how it works, ensuring full transparency. Looking ahead, our alliance will encourage more people to develop blockchain-based applications for Governments worldwide.” said Vasily Suvorov, Chief Technology Officer at Luxoft.

50 Giant companies' stand of Blockchain:

Most recently in April 2019, *Forbes* magazine marked the Spring of blockchain technology with a new list features 50 big companies -with minimum revenues or valuations of \$1 billion and U.S. operations, e.g. Amazon, Facebook, Google, Intel, HTC, Microsoft and IBM- that are leading the way in adapting decentralized ledgers to their operating needs. All of these companies plan to use the privacy features of blockchain to profit from their customers' data while protecting their identities. The list of companies' sectors varies from: finance, technology, insurance, transportation, media, retail, healthcare, food to energy. (Del Castillo *et al.* 2019). This list was made through contacting key leaders and consultants in each of these giant companies with positions vary such as: president, VP, General Manager, CTO, CIO, EVP. This list gives insight on the potential of Blockchain technology regarding data privacy issue.

Conclusion

The above-mentioned results and the questionnaire expected results lead to the following conclusion. Digital participatory planning tools can have benefits and a helpful side on the urban planning process and on the urban planning overall goals by providing urban planners with useful information. The future is promising and open for digital participatory planning tools and their importance will be similar to the importance of the GIS. But with the limited literature available regarding these tools comes the urgency to research them more and expand their current literature. Expand their literature towards knowing their benefits and value together with their helpful side in improving the urban planning process (Panagiotopoulou & Stratigea, 2017). Data privacy is quite serious issue in digital participatory planning tools. Because it could affect the urban planning process, the urban planning overall goals and the society. Blockchain technology could be a solution for the issue of data privacy in digital participatory planning tools. The final results of the more in-depth future research will provide additional evidences that support this conclusion.

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Endnotes:

¹ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), OJ L 119, 4.5.2016.

² The two figures credited to Enzo Falco and Reinout Kleinhans (2018) who published their article as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use. They are thanked sincerely for doing so.

³ These graphs are parts of an article that was published in the book by: Macintosh, A., & Tambouris, E. (Eds.). (2009). *Electronic Participation: First International Conference, ePart 2009 Linz, Austria, August 31–September 4, 2009 Proceedings* (Vol. 5694). Springer. The permission of reuse was adapted by an online license agreement with the copyright holder Springer 2009.

⁴ Experiment stated in two media releases: one by Luxoft and one by the communications department of the city. Obtained through direct contact with the town clerk of Zug city.

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